ABSTRACTS OF THE SOCIETY FOR HAWAIIAN ARCHAEOLOGY ANNUAL CONFERENCES

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and
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1st Hawaiian Archaeological Conference Kīlauea Military Camp Hawaiʻi Volcanoes National Park, March 19 & 20, 1988
(Only paper titles available)

March 19
0800 Registration
0830 General Welcome: Bion Griffin
0845 Topical Papers (Time Limit 15 Minutes Each)

1. One Hand Clapping: The Crisis in Hawaiian Archaeology. Rob Hommon
2. Four Stages in the History of Hawaiian Archaeology. Tom Dye
3. Oʻahu Heiau Sites. Buddy Neller
4. Ti Ovens in Hawaiʻi: Where Are They? Barry Fankhauser
5. Experimental Voyaging and Polynesian Settlement. Ben Finney

1030 – 1045 Coffee Break

6. An Overview of Kaʻū District and Some Thoughts on Island-Wide Settlement Patterns. Ross Cordy
7. Marine Exploitation at Kahaluʻu: What Can We Learn from Marine Transects and Fishermen. Craig Severance
8. Characteristics of Land Commission Award in Pelekunu Valley, Molokaʻi. Marion Kelly
9. Cultivating the Past: A Personal Ethnohistory of Taro in Hawaiʻi. Hal Hammatt

1200 Lunch

1300 First Discussion Session
   DLNR Rules and Regulations on State Historic Preservation.
   Moderators: Ross Cordy & Paul Cleghorn
   (Coffee break follows)

1350 Overview of the field trip. Gary Somers.

1430 Commence field trip (return about 1930). Gary Somers will lead the field trip. We travel in the KMC buses, with an expected return after dark. Please pack a lunch or be prepared to go into Hilo for a late dinner.

March 20
0800 Research Reports (Time limit 15 minutes each)

2. Lānaʻi Prehistory: A Preliminary Report on the Settlement and Chronology at Mānele Bay and Hulpoʻe Bay Areas. Steve Athens and Mike Kaschko
3. Settlement Pattern Analysis in Hawaiʻi Volcanoes National Park, Hawaiʻi. Thegn Ladefoged
5. Large-scale Surface Reconnaissance Survey: Hawaiian Riviera and Farms of Kapua (tentative). Alan Haun & Alan Walker
6. The Other Side of Maui: A Summary of the 1987 Field Season. Paul Cleghorn
7. Pololū Lithics Analysis. Lisa Hacskaylo

1000 – 1015: Coffee Break

8. Hale O Lono Restoration. Rudy Mitchell
10. Pōkaʻi Bary, ʻŌhikilolo, Waikele, and RYM Kāneʻohe: Monitoring, Reconnaissance, and Data Recovery. Mary Riford
11. West Beach. Bert Davis
12. West Loch. Paul Rosendahl

1200 Lunch

1300 Human Disinterment: Research Reports
2. Kapalua Disinterment Project. Theresa Donham.
4. Working with Advocate Groups: OHA, the Makena Hui, and the Kapalua, Maui Disinterment Project. Peggy Rosendahl.

1430 – 1445: Coffee Break
1445
General Discussion: Human Disinterment and Reinterment.
Moderators: Ben Finney and Bill Kikuchi

1545
General Discussion: Future Issues in Hawaiian Archaeology
Moderator: Michael Graves

1645
Closing Remarks and Suggestions for the Second Conference on Hawaiian Archaeology, Maui, 1989

1700 Pau
Nā Malā Pōhaku (Gardens of Stone): The archaeology of dryland agricultural systems in leeward Oʻahu
Nathaniel Pak, Perry A. Tourtellotte, L.J. Moana Lee, and W. Bruce Masse, Hawaiʻi State Historic Preservation
It has been approximately 20 years since the pioneering archaeological studies at Lapakahi (Hawaiʻi Island) and Mākaha Valley (Oʻahu) demonstrated the seeming importance of dryland agriculture in late Hawaiian prehistory. However, with few exceptions, the study of dryland agriculture has been largely conducted in piecemeal fashion and with insufficient detail. Our ongoing inventory survey of Hawaiian Homes Lands properties Nānākuli Valley on Oʻahu's Waiʻanae coast has provided the rare opportunity to study a complete set of inland dryland agricultural systems, including the rigorous examination of a portion of one system. This paper discusses our preliminary findings, and provides a forum to discuss the methodology of the archaeological study of dryland agriculture.

Techniques for estimating the duration of cultural periods with radiocarbon and problems with their application in Hawaiʻi
Tom Dye, Hawaiʻi Pacific College
Archaeologists may use radiocarbon dates to (1) date specific events such as the use of a fireplace, or (2) estimate the duration of some phenomenon, such as the length of occupation of a settlement, or a cultural period. In both cases, it generally happens that additional samples increase the range of possible dates, rather than confining it. In all other branches of science increasing sample size gives more precision to an estimate, not less. A technique for solving this problem when estimating the duration of archaeological phenomena has been proposed by Barbara Ottaway of the University of Edinburgh, Scotland. Ottaway’s technique is illustrated with radiocarbon dates from the Lapita and Polynesian Plain Ware periods of Western Polynesia. Possible uses of the technique in Hawaiʻi are discussed and limitations in its use to estimate the duration of the cultural periods proposed by Kirch in Feathered Gods and Fishhooks are noted.

Evaluating the disparity between radiocarbon and basalt glass hydration dating methods
Michael W. Graves and Thegn Ladefoged, University of Hawaii at Mānoa.
Basalt glass hydration dating is still occasionally used by archaeologists in Hawaiʻi, both as an independent estimator of prehistoric and historic occupations and as an adjunct to radiocarbon dating. During two field seasons of excavations on the island of Lānaʻi, several sets of basalt glass and charcoal were collected from matched contexts, either features or stratigraphic layers. Analysis of both radiocarbon and hydration dating from these matched contexts, as well as from unmatched contexts suggests that a dating disparity exists. Hydration dates are consistently older than the dating estimates provided by radiocarbon dates. The implications of this finding are explored within the context of previous work in Hawaiʻi.

The State’s cultural system database and its future application in the Geographic Information System
Annie Griffin, State Historic Preservation Office, DLNR.
This paper introduces the State’s existing cultural system database and its future application in the GIS. The cultural system database (referred to as HPASS or Hawaii Permit and Support System) currently consists of the historic sites inventory subsystem and the bibliography subsystem. The ongoing program design and development of the application of the inventory and bibliography in the GIS will be described.
RESEARCH REPORTS

The Archaeology of North Hālawa Valley, Oʻahu
Robert L. Spear, Applied Research Group, Bishop Museum
Archaeological work in North Hālawa Valley, related to the construction of the H-3 highway, has been ongoing since August 1987. Work in the valley has included extensive surface and subsurface survey and intensive excavation. A total of at least 45 sites has been identified with several other locations yet to be evaluated. A full range of habitation of agricultural sites has been recorded. Radiocarbon dates indicate that the valley has been in use since at least the late 13th century. This paper summarizes the work completed to date and presents examples of various features and sites.

Areal Excavation of a Habitation Platform in North Hālawa Valley, Oʻahu
William R. Fortini, Jr., Applied Research Group, Bishop Museum
Site 50-Oa-B1-84 [SIHP No. 50-80-10-2009] in North Hālawa Valley, Oʻahu, was composed of nine features including a terrace platform. Mitigations of this site consisted of a number of excavations, including a large areal excavation. Numerous subsurface features were identified, including firepits, imu, paving, and postholes. Preliminary results indicate this site was used from the mid-1600s to the late 1700s. The site appears to have functioned as a habitation area with a cookhouse, work areas, and possible sleeping area. Implications for the site’s overall place in the research area are discussed based on the site’s morphological similarity to other sites in the valley.

Bellows Sand Dune Site Revisited
Lynn Miller, Bishop Museum
Between November 1988 and January 1989, archaeological monitoring was conducted during excavation activities related to a U.S. Air Force bridge repair project near the Bellows Sand Sie, commonly referred to as “O-18,” including three distinct occupational levels, firepits, and artifacts. The recovery of specific types of artifacts and radiocarbon dates obtained from charcoal samples may indicate the extent of the Bellows Sand Dune Site and confirm the time frame of the site’s occupation by early Hawaiians.

A preliminary assessment of the archaeology of Nānākuli Valley, Oʻahu
L.J. Moana Lee, Perry A. Tourtellotte, Nathaniel Pak, and W. Bruce Masse, Hawaiʻi State Historic Preservation Division
Archaeologists have generally considered Nānākuli Valley on the Waiʻanae coast of Oʻahu to have been a marginal area of prehistoric occupation. Rainfall is low in comparison to most other portions of Hawaiʻi (averaging less than 20 inches per year), and oral traditions do not suggest the presence of a substantive local population. Nevertheless, our ongoing archaeological inventory survey on Hawaiian Home Lands properties has revealed extensive and well-preserved remains throughout the central and upper portions of the valley. We have documented at least eight sizeable residential/agricultural complexes, including the probable remains of a heiau and other special function structures. These complexes are described, and we attempt a preliminary assessment of the nature of prehistoric settlement and subsistence in Nānākuli Valley.

Kauakahí Adze Quarry, Keāhua, Kauaʻi
William K. Kikuchi, Kauaʻi Community College
Two adze quarry sites have been reported for Kauaʻi Island. The first is said to be on Kilohana Ridge in Waimea and the other on Nounou Hill at Wailua. Neither site has been located. A third site, Kauakahí Adze Quarry, was recently found and confirmed to be an adze workshop. The site, located at an elevation of 550 feet, was uncovered after a very thick hau forest was cleared for an arboretum. Petrographic
analysis may lead to tracing the route of the adze material throughout Kauaʻi and the rest of the Hawaiian Islands.

**Recent work in the Kalapana area of the Hawaiʻi Volcanoes National Park**

*Laura A. Carter, National Park Service*

This presentation includes preliminary results of an excavation project and survey project within the Kalapana-Wahaʻula area of Hawaiʻi Volcanoes National Park. The excavations revealed very early artifacts associated with 13th – 19th century A.D. dates. Identification of charcoal collected from these excavations has provided information on the use of native trees and their availability in the Wahaʻula area. During the six-month long survey 3,400 features were identified within a 52-hectare area. Agricultural features were the primary features identified. These features are the results of an intensive re-working of the pāhoehoe lava surface.

**Kahuwai Settlement, Puna, Hawaiʻi**

*Arthur Saxe and Joe Rogers, Ohio University*

Kahuwai settlement (in the ahupuaʻa of Kahuwai) is a complex of stone constructions and trails. It is located on the Puna coast of the island of Hawaiʻi, about half way between Cape Kumukahi and Honolulu Landing, in a region in which little archaeological research has been done. The climate and geography are well suited high productivity subsistence. Oral tradition identifies Kahuwai as an important chiefly settlement. This paper describes the results of the 1985 Ohio University Field School in Hawaiian Archaeology which included clearing and mapping parts of the site. These activities are set in the context of previous ethnohistoric and archaeological work done by area residents John Orr, Minnie Kaawaloa, and William Carse, among others.

**Cemeteries and Streets in Downtown Honolulu**

*Hallett H. Hammatt, Cultural Surveys Hawaiʻi*

In late 1987, during construction of a storm drain under the mauka side of Queen Street between Mission Lane and Punchbowl Street, 108 human burials were removed. These burials were part of the makai 30 feet of the Kawaiahaʻo Church Cemetery, one of the oldest continuously functioning cemeteries in Hawaiʻi. Shortly after 1918, Queen Street was widened and a 30-foot wide, 400-foot long section of the cemetery was graded and paved, sealing the burials under the street. The burials and associated goods were removed and stored with no post-excavation osteological analysis. On November 20, 1988, exactly one year after the removal of the last burial, all were re-interred within Kawaiahaʻo Cemetery. The results are due to the cooperative efforts of Kawaiahaʻo Church, the State Historic Sites Office, the Office of Hawaiian Affairs, E.E. Black Construction, and Cultural Surveys Hawaii.

**The Mokulēʻia Burial Site**

*Joyce E. Bath, Hawaiʻi State Historic Preservation Division*

Findings from a burial site in Mokulēʻia, Oʻahu, are reported. Based on radiocarbon determinations obtained on charcoal samples from this site, we infer the burial ground was used from as early as A.D. 645 until A.D. 1450. The later date is also associated with an occupation layer. Of particular interest is the association of an immature chicken skeleton with a mature human female burial. Other instances of animal and chicken bones from various Hawaiian burial sites are noted.

**THEORETICAL ISSUES**

**A reputation unmade: J.F.G. Stokes’ career in Hawaiian archaeology**

*Thomas Dye, Hawaiʻi Pacific College*

J.F.G. Stokes’ career in Hawaiian archaeology began with his pioneering survey of heiau platforms on the Island of Hawaiʻi in 1906 and effectively ended when he was dismissed from his position at Bishop Museum in 1929. Most archaeologists today value his work for its descriptive content but are unaware of the theory, derived from Hawaiian tradition, that guided it. One factor that kept Stokes’ reputation...
“unmade” is that he was never able to bring archaeological data to bear on this theory, and in the 60 years since he left Bishop Museum the questions that he set out to answer are no longer asked by archaeologists. It is argued here that Hawaiian tradition is a desirable source of theories, and that it may now be possible, with the aid of modern accelerator dating techniques, to answer the questions posed by Stokes.

A synthesis of early radiocarbon dates in Hawai‘i
Robert Holsen and Terry Hunt, UH Mānoa
Since Emory’s first radiocarbon date at Kuliʻouʻou in the 1950s, various interpretations of radiocarbon data have shaped our notions of Hawaiian prehistory. Continuous application of the radiocarbon dating method has led to the gradual accumulation of a large number of age determinations scattered among various repositories in the islands. A synthesis of the current record may significantly alter our view of initial human colonization in Hawai‘i.

Why study dirt? Geomorphic change in pre-Contact Koʻolau Poko, Oʻahu
Jane Allen, Applied Research Group, Bishop Museum
Geoarchaeological studies conducted in Koʻolau Poko District, windward Oʻahu, suggest that profound landscape changes took places during the pre-Contact period as extensive areas of formerly forested land were placed under cultivation. These changes have serious implications for site prediction and archaeological method. The 5th century A.D. shoreline of Oʻahu was indented deeply in many locations that have since filled with sediments. The earliest sites will be found inland behind the current shoreline. In marshes and upland valleys, sites lie buried deeply beneath alluvial and colluvial sediments, requiring subsurface survey for discovery. Assumptions that deep layers (including those containing “percolated” charcoal) are culturally “sterile” constitute self-fulfilling prophecies unless supported by convincing sedimentological evidence; the term “sterile layer” should be abandoned so that we may begin to recover the sparse but potentially recognizable evidence for the earliest occupations.

An evolutionary perspective on Hawaiian social complexity
Terry Hunt. University of Hawaii at Mānoa
Hawai‘i has long been the focus of research and speculation on the origins of social complexity. By late prehistory, Hawai‘i was the scene of marked social and political hierarchy. Unfortunately, many explanatory accounts for Hawai‘i are founded on notions of progress as a cause. Such outmoded views of historical change ultimately come from Spencer, and not Darwin. In this paper I attempt to provide a more dynamic evolutionary model for the origins of socio-political hierarchy. My attempt draws on the recent work in behavioral and evolutionary ecology as applied to human populations.

Prehistoric bird hunters of Hawai‘i
J. Stephen Athens, Michael Kaschko, and Helen James. International Archaeological Research Institute, Inc. and Smithsonian Institution
An archaeological inventory survey was conducted at the proposed Multi-Purpose Range Complex (MPRC) and Bobcat Trail Road project areas at the Pōhakuloa Training Area of Hawai‘i Island. The MPRC survey located a total of 16 archaeological sites, one of which is a lava tube system containing abundant and unusually well preserved paleontological bird bone remains. Analysis of refuse remains, consisting primarily of bird bones, as well as detailed consideration of potential prehistoric resources in the region, suggests that the primary purpose of site occupation was for the collection of forest birds for their features. Bird hunting of the larger species for food, however, was also a major activity, presumably to support the feather collectors. Given the considerable importance of feathers as emblems and symbols of status and rank in Hawaiian society, it is argued that the MPRC data provide an excellent indication of the timing of the development of complex social organization on Hawai‘i Island (i.e., between A.D. 1400 and 1450).
SYMPOSIUM 1

One hand clapping two years later
Robert J. Hommon, National Park Service
In the two years since “One hand clapping: The crisis in Hawaiian Archaeology,” we have continued to fill our dusty curiosity cabinet with additional piles of unsynthesized, practically inaccessible data. Yet there is hope, for we are now a few steps closer to the development of a computerized data base that will enable us to design and conduct future research based on an understanding of past results. The radiocarbon database compiled recently by Dye and Komori and the entry of archaeological information on the State’s GIS system are both promising developments. Moreover, it appears that softare and hardware necessary for the creation and use of a comprehensive and powerful Hawaiian Archaeological Data Base (HARDBASE) are now readily available.

Facing the nation: Hawaiians and archaeologists in the era of sovereignty
Matthew J.T. Spriggs, Australia National University
Some form of Sovereignty for Native Hawaiians and Hawaiians, involving at least partial control over substantial areas of the Hawaiian Islands, seems inevitable within the decade. Without buying into arguments over who should represent the Hawaiian nation and what forms in detail such Sovereignty might take, archaeologists should recognize that considerable changes will become necessary in their practice and in their formal relations with the Hawaiian community. The most immediate changes will most likely include necessity to consult with local Hawaiian communities or island committees before undertaking any and all archaeological work, research or contract, on land in which a Hawaiian interest is identified. Return of information to local communities in a form understandable to the general public will probably also be expected as well as employment and/or training of Hawaiians from the island or area as part of archaeological projects. Such practices are mandatory by law or at least expected in many of the independent nations of the Pacific and in the various Australian states, and experiences from these areas will be discussed, to suggest ways in which archaeologists and the Hawaiian community can mutually benefit from, or at least live with, the changing socio-political situation.

Preliminary report on the 1989 University of Hawai‘i archaeological field school excavations at Bellows Beach, O‘ahu
Barry Rolett, UH Mānoa
Bellows Beach was the site of the 1967 and 1975 University of Hawai‘i Archaeological Field Schools, excavations which uncovered one of the oldest habitation areas hitherto discovered in Hawai‘i. The significance of the archaeological finds from these excavations stems not only from their antiquity (up to 1700 years old) but also from their stylistic similarity to artifacts from sites in the Marquesas Islands dating to the same period in time. Recent excavations at Bellows Beach suggested that remaining deposits of the early habitation site had eroded away since the 1967 and 1975 field work but that there might be other significant cultural remains in the surrounding area. The 1989 University of Hawai‘i Field School
excavations were designed to investigate this unknown but promising area. True to our expectations, the 1989 excavations led to the discovery of another extraordinarily rich and wholly undisturbed zone of archaeological deposits located inland from the previously excavated site. The finds include an important assemblage of over 50 artifacts, including bone and pearl shell fishhooks, cutting and abrading tools of stone and coral, and *ulu maika* game stones.

**Cultural significance of a double pig burial discovered at Bellows Beach, O‘ahu**  
**Jadelyn Moniz, UH Mānoa**  
An unusual pig burial was discovered during the 1989 University of Hawai‘i Field School excavation at Bellows Beach. The articulated skeletal remains of two pigs were found together in a shallow pit dug in sandy deposits of the coastal dune. One set of remains, that of a male pig more than three years old, consists of only the head and neck. The other set of remains, representing a younger individual, is apparently complete except for the head and tail which are missing. The articulation and context of the skeletal remains suggest that the head and body of these two pigs were buried together. Possible ritual significance of this burial is indicated by the presence of red ochre, and by ethnohistoric evidence for pig offerings.

**SYMPOSIUM 2: PREHISTORIC HAWAIIAN FOOD PRODUCTION: REGIONAL DIVERSITY**

**Agriculture in Windward O‘ahu: Its role in the evolution of the Hawaiian state system of government**  
**Jane Allen, Applied Research Group, Bishop Museum**  
Fertile valley and slope soils were cultivated by A.D. 500 in windward O‘ahu, using irrigated, non-irrigated, and combined technologies. Field complexes in Kāne‘ohe, Maunawili, and Kawai Nui apparently underwent major expansions after A.D. 1200, during a period of great sociocultural change in the islands. These sites are discussed in terms of the implications for increasing social complexity and for the evolution of the Hawaiian state system of government.

**Food production in an arid context: Farming on Lāna‘i**  
**Michael Graves, UH Mānoa**  
Much emphasis has been placed on the description and analysis of dryland and irrigated fixed-field agricultural systems in Hawai‘i. Yet, on several islands large numbers of agricultural features have been located which defy categorization into either of these systems. These features – including mounds, pits, and terraces – are found in arid zones and on some islands they comprise the largest array of structures. Recent work on the island of Lāna‘i suggests these features were used opportunistically, and are part of late prehistoric expansion of agriculture into the most marginal zones of the archipelago. This expansion followed earlier intensification efforts in more optimal zones.

**Pua‘a 2: An upland habitation and agricultural complex in North Kona, Island of Hawai‘i**  
**Carol Kawachi, Hawai‘i State Historic Preservation Division**  
The Kona Field System on the leeward coast of Hawai‘i Island was first described by Soehren and Newman in 1968. Located in an area with no perennially running streams, it was identified as a “dry” system, that is, a field system which was watered naturally by rainfall without assistance from any man-made contrivances. However, the discovery of water control devices and ‘auwai systems in the uplands of North Kona altered the earlier concepts of the Kona Field System. In the upland of Pua‘a 2, North Kona, on a small ridge, were found a possible heiau, agricultural terraces, platforms, mounds, cairns, a stone-lined stream bed, and an ‘auwai. Limited excavation yielded carbon and volcanic glass dates of A.D. 1000 and A.D. 1450. Ethnographic and archival research confirm agricultural use as well as other upland activities such as bird hunting and canoe preparation.
Agricultural intensification during the historic era: The dryland field system of Kalaupapa, Moloka‘i
Thegn Ladefoged, UH Mānoa
Agricultural intensification in Hawai‘i is often attributed to prehistoric sociopolitical development or population growth. The surface remains of the large dryland field systems throughout the archipelago are seen as a direct reflection of these processes. Very little attention has been given to the further elaboration of these field systems during the historic period. Hawai‘i’s incorporation into the world economy spurred the exportation of sweet potatoes to the west coast of America. Research from a dryland field system at Kalaupapa, Moloka‘i suggests that foreign agricultural export was the major impetus for a second period of agricultural intensification.

Gardens of Stone: Prehistoric agricultural intensification in Nānākuli Valley, Leeward O‘ahu Island, Hawai‘i
Nathaniel Pak, C.L. Turner, L.M. Lee, and W. Bruce Masse, Hawai‘i State Historic Preservation Division
The role of dryland agriculture in prehistoric Hawaiian demography and complex societal development has been explored by various authors during the past two decades, but most of this discussion has been based on archaeological data from a small number of projects, largely conducted in unsystematic and piecemeal fashion. Our ongoing study of Nānākuli Valley has provided us with the opportunity to examine intensively a large and well-preserved late prehistoric settlement system, including numerous hectares of complex dryland agricultural features. This paper defines aspects of the structure and evolution of prehistoric subsistence and settlement in Nānākuli Valley.

Hawaiian Fishponds: Showcases of Resource Wealth
Mary Riford, Applied Research Group, Bishop Museum
The prehistoric Hawaiians developed a sophisticated aquacultural system with over 400 fishpond sites distributed throughout the main Hawaiian islands. Ethnographic sources suggest that larger fishponds became symbols of high status within the Hawaiian society and their resources were for exclusive use by royalty. The technology of the Hawaiian fishpond is contrasted with historically introduced methods of fish farming and historical records of fishpond yields to confirm that the Hawaiian fishponds were showcases of resource wealth and probably were not used for feeding the populace.

SYMPOSIUM 3

Waha‘ula [“Red Mouth”]: The symbolic structure and context of Hawai‘i’s first luakini heiau
W. Bruce Masse (Hawai‘i State Historic Preservation Division) and Laura A. Carter (National Park Service)
Waha‘ula Heiau, a large temple complex prominently situated along Hawai‘i Island’s Puna coast, occupies an equally visible position in Hawaiian oral history. Waha‘ula is thought to be the first human sacrificial temple constructed by emigrant Tahitian priest, Pa‘ao, who around A.D. 1300 introduced the kapu system, the ali‘i social order, and several members of the historically-documented pantheon of gods. Ironically, Waha‘ula was the last known luakini heiau to be rededicated before the abolishment of the kapu system in 1820. This paper examines oral traditions, historic documents, geomorphic setting, and the results of recent archaeological data recovery programs in order to discuss aspects of the functional context and symbolic structure of Waha‘ula Heiau.

Calendars, observation, and ritual: Variation in the sacred calendar across the Hawaiian chain
Conrad Erkelens
The sidereal Makali‘i calendar was known ethnographically to vary in interpretation across the Hawaiian chain. Through a comparison with similar calendars in the southern Pacific latitudes, this variation is seen as: (1) The result of the codification and subsequent transferral of a geographically specific, sidereal
calendrical system; and (2) Adds to a growing body of knowledge supporting previously stated notions of regional variation in prehistoric Hawaiian culture.

The archaeology of a destroyed site: New evidence for Kukuiokāne Heiau, Luluku, Kāne‘ohe, O‘ahu
Scott S. Williams

Kukuiokāne Heiau was a large heiau destroyed by Libby Pineapple Company in 1915. Known by historic records to be located somewhere in the ‘ili of Luluku in upland Kāne‘ohe, the exact location of the heiau remains or whether or not they even still exist has recently become an increasingly controversial subject in the community, due to the impending construction of the Interstate H-3 Highway through the area where Kukuiokāne Heiau was originally recorded. Recent archaeological work in the area, together with historic informant interviews, provides new and definitive clues to the location of the heiau remains.

Lono of the Makahiki, Kueku Heiau of Kahulu‘u, Kona, Hawai‘i, and symbols of the kapu system: kapu wohi, kapu mo‘e, kapu wela, and kapu hoano
Rudy Mitchell

The Makahiki god Lono arrives, then departs, promising to return again. To go and come back, even in death, Lono is destined to return in life. The birth of a ruling chief’s first son is symbolic of Lono’s return in life. The infrastructure of Kueku Heiau is explained against the backdrop of the kapu wohi, mo‘e, wela, and hoano and of the malo ula, a symbol to rule the religion, keeper of the god.

SYMPOSIUM 4

Prehistoric Polynesian plan introductions to Hawai‘i.
J. Stephen Athens (International Archaeological Research Institute), Jerome V. Ward, and Stephen Wickler

Recent research along Moanalua Stream in the area known as Ft. Shafter Flats in Honolulu has resulted in the documentation of a largely intact 3,000 year old record of sedimentation and infilling. Through pollen analysis and the identification of macro-botanical remains, the radiocarbon dated sedimentary record provides an opportunity to characterize lowland leeward vegetation communities prior to and following Polynesian settlement, as well as information on the types of plants these first settlers introduced to the Hawaiian Islands and subsequent environmental changes. This later portion of the sedimentary record documents the infilling of the stream embayment and the antiquity of taro pondfields along this portion of Moanalua Stream.

Re-analysis of West Hawai‘i Volcanic Glass Dates: Implications for the Late Prehistoric Population Decline Hypothesis
David Welch, International Archaeological Research Institute

Kirch, Cordy, and Hommon independently have suggested that the prehistoric Hawaiian population reached a maximum by late in the 17th century and ceased to increase even before Western contact. In each case the construction of the prehistoric population curve was based on volcanic glass dating of sites on the leeward coast of the island of Hawai‘i. These dates were determined using Morgenstein’s suggested rind alteration rate of 11.6 μ/100 years. Recent research indicates that volcanic glass alteration proceeds exponentially and that temperature is a critical variable affecting the rate. Re-calculation of volcanic glass dates from ‘Anaeho‘omalu, Waikoloa, and Kalāhuipua‘a using local temperature data and quadratic formulae determined by Nichels shows no evidence of a decrease in the number of sites occupied during the 18th century. These new age determinations offer no support for the hypothesis of a decline in Hawaiian population in the 18th century.
Petrography and chemistry of a pounder and adzes found off of Kauaʻi and Oʻahu Islands
John Sinton, William Kikuchi, and Yosihiko H. Sinoto
[No abstract]

Here today, lava tomorrow: The effects of volcanic eruptions on archaeological sites in Hawaiʻi
Gary F. Somers
The Hawaiian Islands were created by volcanic eruptions and living on volcanoes is a fact of life in Hawaiʻi. Nevertheless, few archaeologists seem to give much thought to the effect volcanic eruptions have on archaeological sites and how those effects can alter our approach to doing archaeological research. Using data and observations from Hawaiʻi Volcanoes National Park, this paper will examine the interactions between lava flows and archaeological sites. Although the primary focus will be on recent lava flows from Mauna Ulu (1969-1975) and Puʻu ʻŌʻō/Kupaianaha (1983 – present), the effects and significance of older flows will also be examined.

SYMPOSIUM 5: WORK BY SHA ARCHAEOLOGISTS OUTSIDE OF HAWAIʻI

Ancestral Melanesian society and the origins of the Hawaiians
Matthew J.T. Spriggs, Australia National University
In The Evolution of Polynesian Chiefdoms, Pat Kirch discussed ancestral Polynesian society, reconstructed from linguistics, archaeology, and comparative ethnography. This is seen as the baseline from which Hawaiian society originated and from which it was progressively transformed. Ancestral Polynesian society did not of course develop ab initio, its own origin was in the Lapita culture which can be traced back in time and place to the Bismarck Archipelago, just east of the Island of New Guinea. The question of ultimate Lapita origins is a more controversial one and will not be pursued in detail in this paper. Instead, the nature of early Lapita culture in the Bismarcks will be examined as a culture directly ancestral to Polynesian culture(s) including the Hawaiian.

Kirch’s Vavaʻu mortuary analysis revisited
Arthur A. Saxe
In 1980 P.V. Kirch published a test of a proposition linking attributes of mortuary structures with societal ranking. Utilizing ethnohistorically documented structures on Vavaʻu, which are linked to the societal framework of 18th century Tonga, he demonstrated that “relative sociopolitical status” rather than societal (genealogical) rank is represented in the data. This, he argued, is contrary to Tainter’s formulation of the energy expenditure hypothesis. Kirch’s incisive test and robust results did not accord with Tainter’s formulation for the same reason that Sahlins argued de facto rank does not accord with de jure rank. This paper argues that Kirch’s results are in accord with what mortuary theory would predict following Goodeough’s insights in social personae. Kirch’s test does provide valuable insights into the sociocultural behaviors that produce mortuary behavior.

Sources of materials for the potters of prehistoric Tonga
Tom Dye
At various times scholars have proposed that the mineral sands and clays needed to produced pottery were not available in Tonga, despite the fact that abundant Lapitoid potsherds are found throughout the archipelago. This supposed lack of materials led to hypotheses about inter-island exchange and the decline of pottery production in Tonga. Survey in the Haʻapai Group and elsewhere in Tonga revealed over a dozen sources of mineral sands similar to those used in the production of Lapitoid pottery. Firing experiments with Tongan clays, coupled with petrographic analyses of potsherds, lead to the hypothesis that suitable clays are widely distributed in Tonga. Contrary to earlier hypotheses, Lapitoid pottery was produced locally in Tonga, and lack of raw materials appears not have been a factor in the decline of pottery production.
Why did Samons stop making pottery? Compositional analysis of early pottery from the Manu’a Islands, Samoa

Terry Hunt, UH Mānoa

Ceramics were produced in the Samoan Islands from the time of first settlement until about the second century A.D. The ceramic sequence changes from many decorated vessel forms to only one undecorated form. The ceramics also appear to undergo technological decline before they disappear altogether. Ceramic compositional (EDS microanalysis) and technological analyses were performed on an assemblage from an early site (Toʻaga) on Ofu Island, Manuʻa, American Samoa. Preliminary results suggest possible production specialization and inter-island ceramic exchange. The changing role of ceramic exchange may be a significant factor in understanding the Samoan ceramic sequence.

Recent marae studies on Atiu Island, Souther Cook Islands

Yosihiko H. Sinoto, Bishop Museum

As part of an archaeological survey in 1969, Michael Trotter of the Canterbury Museum, New Zealand recorded marae on Atiu Island. In 1987 I surveyed and excavated Marae Vairakaia and found a piece of pottery from the overburden deposit. The results of excavation show that the site was used as a chief’s residence. Numerous other marae on the island were found to be graves, suggesting that the term “marae” is applied to sites with varied functions. We are only now beginning to understand the development of Society Islands marae and detailed study of marae in the Cook and Austral Islands may shed light on how these religious structures are related to those in the Society and Tuamotu Islands.

SYMPOSIUM 6

New approaches to old problems in the prehistory of the Hawaiian Islands: Commentary on Hālawa Valley, Moloka‘i

Thomas J. Riley

Archaeological research on Hālawa Valley, Moloka‘i was completed nearly twenty years ago. The system represented there was one of a troika that gave insights into the variability of local and regional economic organizations in the Hawaiian Islands and to the flexibility of the chiefdoms that existed in Hawai‘i at the time of European contact. This early research, while it was important in its day, was sketchy and raised a set of hypotheses at the local level which remain to be tested. The early settlement noted at Hālawa, for example, may have been later in the settlement of the valley than we imagined. There are few signs of apparently early settlement, notably the extirpation of bird populations that sometimes represent such sites elsewhere. The dates for intensification of agricultural systems in the valley are still unclear, though there is some supporting evidence that they are late. Moreover, a major part of the system as it was known historically, the landshelves on the north side of the valley, have not been explored at all. They represent an additional 15-20% of the arable taro land in the system. Hypotheses regarding the settlement are presented and it is argued that the testing of these hypotheses is still a major objective in this valley, and by extension, research results in other parts of the Hawaiian Islands that have fallen into common use for framing later work.

Congenital syphilis in a prehistoric (pre-1778) Hawaiian burial

Michael Pietrusewsky, Michelle T. Douglas, and Bertell D. Davis.

A prehistoric (pre-1778) 22–25 year old Hawaiian female burial exhibits pathological lesions consistent with the differential diagnosis of late congenital syphilis (syphilis tarda). The burial was found, fully articulated in a supine, semi-flexed position in one of several sinkholes excavated in 1989 at Barber’s Point, Hono‘uli‘uli, ‘Ewa, Island of O‘ahu, Hawaiian Islands. Although no grave goods were found in association with the burial, archaeological and sociological analyses indicated the remains are of Polynesian (Hawaiian) ancestry. A radiocarbon date for the burial places the death of the individual sometime between A.D. 1420 and 1650. Stature was estimated to be approximately approximately 164
cm or 5 feet, 6 inches. Parturition pitting was observed on both pubic bones, suggesting the individual had experienced childbirth. The skeleton exhibits several interesting pathological and pseudopathological conditions including Colles’ fracture of the distal ends of the right radius and ulna, cribra orbitalia, enamel hypoplasia, and rodent gnaw marks.

The most interesting pathological changes observed in the skeleton can be attributed to treponemal infection. Gross morphologic and radiographic examination of osseous changes in the tibiae, left fibula, and the cranium were consistent with late congenital syphilis. Particularly noteworthy is the classic “saber shin” deformity present in both tibiae. Some of the other stigmata normally associated with late congenital syphilis, such as Hutchinson’s Teeth, a short maxilla, saddle nose, and mulberry molars, etc. were not observed in the present case. Although the differential diagnosis between congenital syphilis and yaws is problematical, the pathological condition described here shares many more features in common with syphilis than yaws. There are no previously described cases of yaws in Hawai‘i. It has been further assumed that venereal disease (gonorrhea and syphilis) arrived in Hawai‘i with Captain Cook in January of 1778.

To our knowledge, this is the first case of treponemal infection to be described in Hawaiian skeletal remains. The date when Europeans first had contact with the Hawaiian Islands or the possibility that treponemal infections were present in the indigenous inhabitants of the islands may require re-examination in light of the results presented.

The skeletal biology of an historic Hawaiian cemetery
Michael Pietrusewsky and Michelle T. Douglas
Twenty-four sets of human remains disinterred in 1988 from a late Historic (circa 1900) Hawaiian cemetery in Kailua-Kona, Island of Hawai‘i, Hawaiian Islands provided a unique opportunity to examine the skeletal and dental biology of an extended Hawaiian family. The remains, representing primary and secondary burials from unmarked graves, include 17 adults, two children, and 6 fetuses. Six of the adults are males and ten are females. With the exception of three males and one female, most of the adult deaths occurred before 30 years of age. Male statures ranged from 171 to 176 cm and female statures averaged 158 to 165 cm. The general dental and skeletal health of the cemetery population was remarkably good. Evidence for osteoarthritis, spondylosis, possible cranial deformation, healed bone fractures, and enamel hypoplasia were among the pathological conditions observed.

Metric and non-metric features observed on skulls, dentitions, and infracranial skeletons such as rocker jaws, costoclavicular sulci, stature, and the shapes of long limb bones are consistent with Polynesian (Hawaiian) ancestry. A number of dental and skeletal anomalies (some very rare in the general population and in Polynesians) such as abnormally spaced teeth, spina bifida, spondylolysis, presence of third trochanters in the femora, unusually wide suprascapular notches, and distally curved tibiae strongly suggest familial relationships. Based on shared dental and skeletal characteristics and spatial positioning within the project area, several of the individuals can be tentatively assigned to a single lineal descent group. Oral histories recorded in the living descendants and archaeological information support these interpretations.

Living in Wai‘anae: A study of prehistoric settlement on the leeward coast of O‘ahu
Allan Schilz and Kanalei Shun
A diverse artifact assemblage was recovered during excavations and construction monitoring at the Wai‘anae Army Recreation Center, O‘ahu. Included are adzes and adze blanks, chipping debris, modified flakes, abraders, pounders, fishhooks, and fishhook manufacturing debris, octopus lures, and sinkers. These indicate that a range of activities were performed at the site and suggest that occupation at the site was not temporary but was either seasonal or permanent. Using the assemblages from this and other sites in the area, the relationship between coastal and inland sites is discussed.
North Hālawa Valley, Oʻahu: An Interstate H-3 Update  
Robert L. Spear  
An update of the archaeological field work in North Hālawa Valley is presented. This includes a revised site count and a suggested earlier initial period of use based on radiocarbon dates. Some initial settlement pattern observations from the uppe and lower portions of the valley are also discussed.

An abundance of *imu*: Settlement pattern and geomorphological change in upland Kāneʻohe, Oʻahu  
Scott S. Williams  
Archaeological work associated with construction of the windward side of Interstate H-3 Highway in upland Kāneʻohe has provided a rare opportunity to discover abundant features in an environment often assumed to contain few archaeological sites. Most notable among these features are *imu*, some buried nearly a meter below the present ground surface, and found in a variety of topographical settings. To date, 42 *imu* have been radiocarbon dated. These provide important new information on pre-Contact land-use and settlement patterns, and illustrate extensive geomorphological change in the past 1000 years.

Ground penetrating radar: Possible uses in Hawaiʻi  
James Doolittle  
Ground penetrating radar (GPR) provides a rapid, cost-effective, and nondestructive method for detecting the presence and pinpointing the location of buried artifacts. The GPR is being increasingly used for reconnaissance and pre-excavation surveys of archaeological sites. Procedures for conducting radar surveys of archaeological sites are similar to those used in other investigations. Search strategies represent a compromise between available resources and desired level or probability of detection.

Radiocarbon dating in Hawaiʻi: Retrospect and prospect  
Tom Dye and Eric K. Komori, Hawaiʻi State Historic Preservation Division  
A newly created database is used to characterize the history of radiocarbon dating in Hawaiʻi. Topics include the effects of volcanic glass “dating” on the number of 14C dates processed in the 1970s, the laboratories that have produced the dates, the activities dated by archaeologists, the spatial distribution of dates, their precision, and the effects of corrections for isotopic fractionation. Suggestions for the reporting of radiocarbon data and future lines of research are offered.

Living on a lava landscape: Maximum use of resources  
Laura A. Carter, National Park Service  
The pāhoehoe lava flows on the island of Hawaiʻi may be regarded as desolate and uninhabitable landscapes to the uninitiated. The archaeological features found on pāhoehoe flows present a different picture. A variety of features have been identified on these flows and described in the archaeological literature. The features identified represent many activities, from water collecting and agriculture to rock quarrying and habitation. However, certain features have not been examined in depth. This paper looks at one particular feature type – pāhoehoe excavations. The results of various archaeological reconnaissance projects that have been conducted on pāhoehoe lava flows in the Kona, Kaʻū, and Puna Districts of the island of Hawaiʻi are included in this presentation.

Archaeology and Oral Traditions: a View from Aotearoa/New Zealand (keynote address)
Janet Davidson, National Museum of New Zealand
Scholarly and public interest in Polynesian oral traditions has had an important influence on the course of archaeological research in both New Zealand and Hawai‘i. In the 1990s, the growing demands of biculturalism in Aotearoa/New Zealand are requiring archaeologists to consider how they can best take account of Maori perspectives on Maori history. An historical survey of the use and abuse of Maori traditions by New Zealand archaeologists reveals some of the difficulties and dangers in the use of this material, and offers some pointers to future progress.

Late Holocene Lowland Vegetation and Coastal In-Filling in Hawai‘i
J. Stephen Athens, Jerome V. Ward, and S. Wickler, International Archaeological research Institute, Inc.
Recent paleo-environmental investigations were conducted at two low elevation wetland areas on the windward and leeward sites of O‘ahu, Hawai‘i. Long stratigraphic sediment records were documented at both locations. The earliest sediments date to ca. 1500-1000 BC, well before initial Polynesian settlement in Hawai‘i. Sediment deposition is continuous to the modern period at the windward location. Several erosional episodes apparently occurred during the latter part of the depositional sequence at the leeward location. A reliable chronological framework for the sediments was established with numerous radiocarbon dates.

Pollen analysis, supplemented in the leeward location by identification of macrobotanical remains provides for the first time a detailed record of lowland vegetation on O‘ahu both prior to and following Polynesian settlement. Vegetation communities are described, and several major changes are noted during the sequence. The question of Polynesian plant introductions is also discussed. Calculation of sedimentation rates suggests that prehistoric Hawaiians had minimal impact on the process of coastal in-filling.

The South Point Radiocarbon Dates 30 Years Later
Thomas Dye, State Historic Preservation Division
The South Point radiocarbon dating program, designed by Emory, Bonk and Sinoto in the late 1950s to provide absolute chronological control for the fishhook sequence developed for the H1 and H8 sties, still stands as one of the most ambitious in Hawai‘i. Apparent inconsistencies in the radiocarbon dates have complicated analyses, and several discrepant interpretations have resulted in investigators accepted or rejected individual age determinations. A graphical analysis of the full corpus of dates on charcoal and marine shell shows that, with the exception of the uppermost layer at site H8, the dates are internally consistent and that they agree closely with a cross dating of sites based on the fishhook sequence. The results have implications for hypotheses regarding the date of the initial Polynesian settlement of Hawai‘i and rates of change during the early prehistoric period.
A Not So Early Site at Bellows Beach, Waimānalo, Oʻahu, Hawaiian Islands?
Matthew Spriggs, Australian National University
The famous O18 (Bellows) site has previously been dated by radiocarbon and volcanic glass “hydration” methods. There were stratigraphic consistencies in the original suite of dates and doubt has also been cast (in general) on the validity of radiocarbon dates from the Gakushuin Laboratory (Gak-), initially by Kirch. The early dates seemed to be confirmed in 1978, however, by Tuggle, Cordy and Child. In 1976, I initiated a program at UH of redating early Windward Oʻahu sites and further radiocarbon from the original and subsequent Bellows excavations were assayed. As part of a related project volcanic glass samples were remeasured by two different laboratories. Both techniques have failed to confirm the c. 400 AD dating for O18, suggesting initial occupation at about 900-1000 AD. A potential problem of dating kukui (Aleurites) is raised, as is the non-reproducability of “hydration” and thickness measurements using current techniques.

Early Upland Settlement Expansion and the Effect of Geomorphological Change on the Archaeological Record in Kaneʻohe
Scott S. Williams, Applied Research Group, Bishop Museum
Archaeological research along the H3 corridor has shown that upland Kaneʻohe, previously thought due to the presence of few surface remains to be a marginal area in terms of permanent habitation and use, was instead an area of early growth and intensive settlement. Few archaeological sites were recorded in previous surveys because the majority of the pre-Contact sites are buried under sediments or historical period features. Seventy-seven radiocarbon dates from 36 sites indicate that upland Kaneʻohe was exploited as early as 600 A.D. and underwent rapid growth, with dryland agriculture increasing around 950 AD, followed by a rise in permanent settlement around 1150 AD.

Living on the Lava Landscape in Western Puna
Laura A. Carter, Hawaiʻi Volcanoes National Park
[abstract not available]

Site 50-OA-B1-108 Preliminary Report
Maurice Major, Applied Research Group, Bishop Museum
[abstract not available]

The Sound of One Head Banging: Kukuiokane Heiau One Year Later
Scott S. Williams, Applied Research Group, Bishop Museum
Reexamination of the archaeological and historical data related to Kukuiokane Heiau provides new insight on what and where are the remains of the heiau. Relevant data are summarized, and previous hypotheses regarding the functions of various features within the complex are discussed. A new interpretation based on the examination of all the data is presented for the Kukuiokane Complex.

Differential Faunal Recovery and Models of Subsistence Change: an Example from Kauaʻi
Elizabeth Gordon, UH Mānoa
Sampling is an important issue in the analysis and interpretation of faunal remains from archaeological sites. The effects of screen size on diversity measures were examined from
Variation in richness, the number of taxa present, and evenness, the order of abundance values, are shown to be related to sampling bias produced by different recovery methods. Consequently, inferences made about prehistoric subsistence change are questionable. Qualitative studies are suggested as a feasible approach to analyzing faunal remains, particularly fish, recovered in this manner. The use of smaller screen sizes is emphasized as the more effective approach to sampling.

One Hand Claps Again: the Hawaiʻi Archaeological Information Interchange
Thomas Dye, State Historic Preservation Division
In a series of papers at earlier SHA Conferences, Rob Hommon has made the case of an Hawaiian Archaeological Database (HARDBASE). The Hawaiʻi Archaeological Information Interchange (HARII) is a proposed set of minimal standards for the relational structure of archaeological databases, which, if adopted by the archaeological community, will provide a starting point for creation of a viable HARDBASE. This paper discusses 1) the relational database theory behind HARII, 2) the social organizational basis for cooperation, 3) the burden HARII imposes on archaeologists, and 4) some possible benefits.

Health and Disease in Pre-Contact Hawaiʻi
Diane Trembly
One of the objectives of osteological examination of remains from archaeological contexts is to develop a picture of health and disease in the subject population. This paper will present mortality curves for several pre-contact Hawaiian samples, and discuss postulated causes for the high rate of early childhood deaths, based on present-day populations with similar childhood mortality curves. The majority of those who survived early childhood could look forward to a reasonably long life, but not always an entirely healthy one. Various diseases from which people suffered, as revealed in the skeletal and dental record, will be presented.

Farming in Pre-Contact Hawaiʻi: Radiocarbon Chronology and Implications for Systemic Change
Jane Allen, Applied Research Group, Bishop Museum
Radiocarbon dates have been processed for over 120 agricultural fields, terraces, and garden plots at archaeological sites on Hawaiʻi, Kahoʻolawe, Kauaʻi, Maui, Molokaʻi and Oʻahu Islands. Methodological refinements now permit differentiation of dryland from irrigated and intermediate field types, producing a more precise data base than was formerly available. Both dryland and irrigated fields are in evidence by AD 600 in windward valleys on Oʻahu and probably Kauaʻi. Dryland field use may have peaked around AD 1000 on Oʻahu. Supplementally-irrigated fields became common in certain wet areas after AD 1200. Terraced pondfields proliferated on Oʻahu between AD 1200 and 1600, as the Hawaiian state system of government developed.

The Hawaiian Piko Ritual Reexamined
Catherine Glidden, National Park Service
In this study the Hawaiian piko ritual is reexamined with concomitant evidence gleaned from early ethnographic accounts, Hawaiian legend, and archaeological data recovered from surveys conducted by the National Park Service along coastal regions of Hawaiʻi Volcanoes National Park. Ethnographic accounts identify two tumulus knolls where the piko ceremony was
traditionally practiced. This report identifies four additional piko knolls all of which are located along ahupua‘a boundaries and at the junction of an east to west trail. The geographic location of these knolls is central to the focus of this paper which suggests a relationship between the piko ritual and the worship of Lono, god of the Makahiki festival.

**Settlement Patterns in Hawai‘i: Change and Continuity After European Contact**
*Maria Sweeney, UH Mānoa*

Most settlement pattern studies in Hawai‘i have focused on attempting to define change within the prehistoric period to derive models for social stratification and the interaction of Hawaiians with the landscape. This paper discusses the patterns of change and continuity that can be identified when the prehistoric and historic periods are examined. The best documented settlement pattern studies have been chosen for analysis: Lapakahi, Hawai‘i and Makaha Valley, O‘ahu. According to my analysis, the major change occurring after European contact was the horizontal expansion of the use of residential space created by adding additions to previously existing structures. Otherwise, there seems to be much continuity in the composition of residential areas. There is a great potential for understanding the effect of European contact on Hawaiian populations in settlement pattern studies. We may eventually be able to document when, if, and where population collapse occurred in Hawai‘i. This paper will also discuss why this cannot yet be achieved, and how we can achieve it.

**European Contact, Disease, and Population Collapse in Fiji**
*Melissa Kirkendall and Terry L. Hunt, UH Mānoa*

Recent archaeological studies in the Americas reveal catastrophic depopulation occurred with early European contact. The question of population collapse in the Pacific Islands, while likely to have been severe, has yet to be examined by archaeologists. We discuss the historical evidence for the introduction of disease to Fiji. We hypothesize a trajectory of population collapse and suggest a possible Precontact population estimate for Fiji. Archaeological research designed to provide data for the timing and magnitude of indigenous Fijian population collapse is discussed.

**Ceramic Production and Exchange on Waya Island, Fiji**
*Terry L. Hunt and Matthew J. McDermott, UH Mānoa*

We analyze ceramic assemblages from Waya Island, Fiji, for several dimensions of technological and compositional variability. We use statistical modes to reflect variation in raw materials and pottery manufacture to measure production uniformity and distribution of technological groups among assemblages. Following technological (macroscopic) study, we sampled sherds for clay elemental quantitative analysis (by SEM/EDS) to determine the compositional diversity of the assemblages. Together these results provide a preliminary view of the scale of pottery production and exchange among island communities.

**Anthropogenic Environmental Change, Agricultural Intensification, and Sociopolitical Evolution in Polynesia**
*Patrick V. Kirch, UC Berkeley*

This paper review the results of a pilot program of inter-disciplinary research on Mangaia in the southern Cooks (in 1989), and the projected research program for an extended study this year. Ethnohistoric sources indicate that Mangaia at European contact was an “Open chiefdom” (in the
sense of Goldman), representing the transformation of classic, hereditary chiefship to a more dynamic, openly competitive political system. Our project seeks to explore this transformation in the context of severe anthropogenic ecosystem disturbance, high population density, and production intensification (especially irrigation). Initial archaeological, palynological, and paleontological results from the 1989 study indicate significant deforestation, erosion, and faunal depletion during the past 1,000 years of Mangaia prehistory. These initial results are to be further explored and tested in a forthcoming season of intensive field work.
The Significance of Hawaiian Archaeology in World Prehistory (keynote address)

Timothy Earle, Dept. of Anthropology, UCLA

Hawaiian archaeology has a special place in studies of world prehistory. Investigations of the independent evolution of complex chiefdoms on the Islands have challenged long-held theories and have served to stimulate an emerging consensus on evolutionary process. I will briefly recapitulate my model of Hawaiian social evolution formulated in the 1970s. It described the growth oriented political economy of Hawaiian chiefdoms in which mobilized surplus was invested in the sources of power (the economic infrastructure, a warrior elite, and ceremonies of legitimation). I then evaluate how this model has been criticized, augmented, and supported by research of the past twenty years. An outline of a new consensus for the evolutionary processes of chiefdoms will be presented; this consensus sees interacting dynamics of the environment, the subsistence economy, the political economy, and the cultural cosmology.

SYMPOSIUM 1: KAUA‘I ARCHAEOLOGY PAST, PRESENT AND FUTURE

A Forgotten Kingdom: An overview of the previous archaeological studies and the historic preservation program on Kaua‘i: Planning for the Future—a partnership

Nancy A McMahon, DLNR, Hawai‘i State Historic Preservation Division.

This is a brief historical overview of the past archaeological studies conducted on Kaua‘i since the 1900s. The Historic Preservation Program has been evolving and shaping the development of archaeological research being conducted on Kaua‘i since the 1970s. Four years ago, the State Inventory of Historic Sites contained a little over 159 site files for Kaua‘i with 342 numbers issued. Now, the Inventory of Historic Sites for Kaua‘i is well in the thousands. Four years ago there was a little over 114 archaeological reports for Kaua‘i. Today, there are over 300 reports. This boom of information has increased the number of areas surveyed, increased the number of historic sites and increased the public’s interest. During the past several years, the State, the County, the public, and various community groups have had a more active role in archaeological research. This presentation will conclude with suggestions for possible future avenues for historic preservation partnerships.

Upland Agricultural Fields on Kaua‘i

William Kikuchi, Kaua‘i Community College

Traditionally, agricultural sites, both non-irrigated and irrigated, were concentrated in lowland and valley areas on Kaua‘i. Agricultural terraces were noted in the higher, innermost parts of valleys that were well watered from rain and drainage streams. Recently, upland agricultural sites were located in the leeward parts of Kaua‘i, many in native Hawaiian forests at elevations from 1000 to 2000 feet. The archaeology and definition of the locations, size, and number of these fields may be correlated to the desertification of the lowland coastal regions and increasing need to expand agriculture into marginal slopes on Kaua‘i.
The Koloa Field System
Hallet Hammett, William Folk, and Mark Stride, Cultural Surveys Hawai‘i

A complex of wet and dryland agricultural fields and associated habitation sites occur in the lava tablelands of the makai portion of Koloa ahupua‘a or the south coast of Kaua‘i. Although soil deposits are thin and the land is rocky, plentiful irrigation water was available from Waikomo Stream and plentiful sunlight would have provided for fast growth and early crop maturity. This agricultural system, which at its peak covered over 1,000 acres extending from the present Koloa town to the shoreline was first thought to be a later development than the major valley systems. Recent research shows its inception, expansion, and intensification is contemporaneous or earlier than the origin of the other documented agricultural networks on Kaua‘i and other islands. Its elements include parallel and branching ‘auwai, terraced lo‘i, and dryland plots. Later intensification includes aqueducted ‘auwai, irrigated mound fields, and subdivision of lo‘i and kula plots. The Koloa System, at its apex in the early 19th century, represents one of the most intensive cultural landscapes in Hawai‘i.

Slingstones: Techniques and Sequence of Manufacture: an Example from Kaua‘i
William Folk and Rodney Chiogioji, Cultural Surveys Hawai‘i

A cache of 21 slingstones was unearthed in a cultural deposit dating to as early as AD 1500 at Waipouli, Kaua‘i. The slingstones are in various stages of completion which allowed for the formulation of a tentative sequence of manufacture for these objects. Seven (7) phases are described in the sequence from hexahedral shaped blank to finished slingstone, based on criteria derived from a very limited number of observable characteristics including scars of reduction and shaping techniques.

Kaneiolouma: In search of a Heiau and its Archaeological Implications
Kanalei Shun, DLNR, Hawai‘i State Historic Preservation Division

An archaeological inventory survey of the County of Kaua‘i Poipu Beach Parek was recently undertaken. A major impetus of the survey was the identification of Kaneiolouma Heiau, generally located at the southeast corner of the park and the heiau’s eligibility for nomination to the National Register of Historic Places. A critical question to the survey is the dialectic between historic and archaeological documentation. The implication of this question to archaeological research is addressed.

Nā Pali Coast Archaeology: A Retrospective View for the Future
Martha Yent, DLNR Division of State Parks

The remoteness of the 16-mile shoreline along Nā Pali on the island of Kaua‘i has preserved a large number of historic sites. This complex offers an ideal opportunity to address questions about settlement-subsistence patterns, agricultural development, trade networks, social organization, and religious traditions through archaeological research. To date, research has been limited to the 1920s survey by Wendell Bennett, the excavation projects conducted by Kenneth Emory and others from Bishop Museum in the 1950s and 1960s, and the ongoing research conducted since 1979 by the Division of state Parks. From this research, a cultural history for the Nā Pali coast has been proposed. An early settlement is indicated on the dunes along the windward coast of Haena. This was followed by a movement into the valleys of Nā Pali and the development of extensive irrigated agricultural field systems. The leeward settlement at Polihale is currently being studied to understand its place within this cultural sequence. This paper will
provide an overview of the archaeological work conducted, the research questions being addressed in current research, and a look at the future of archaeological research along the Nā Pali coast.

**The People of Keoneloa: evidence of skeletal biology**

*Michele Toomy Douglas and Rona Michi Ikehara, Dept. of Anthropology, UH Mānoa*

Human skeletal remains representing 38 individuals were recovered from the Keoneloa Bay Villas Project Area, Weliweli, and Pa’a ahupua’a, south Kaua’i, Hawai‘i in 1990-1991. The 13 males, 19 females, and six subadults are representative of a village cemetery population. The remains were highly disturbed by ongoing construction activity, past sand mining operations, cattle ranching, and human, animal and vehicular traffic. Completeness of the skeletal remains ranges from substantially complete skeletons to a single mandible. Two of the skeletons are believed to predate the cultural layer at the site (AD 1150-1370) and at least three others are suspected to have died after European contact.

The cranial and infracranial metric and non-metric observations indicate the remains are of Polynesian ancestry. There are unexpected sex differences in the frequencies of some of the traits and indication of variability between this sample from Kaua’i and other comparative island populations. The males were 5 feet 7 inches in height and the female stature averaged 5 feet 3 inches. Paleopathological observations in the remains indicate that the dental health was generally good, with a low frequency of caries and abscessing. There are indications of spinal tuberculosis in three adults, a fracture non-union of the femoral neck in a single male, and the unusual occurrence of an amputation of the arm below the elbow. There is slight osteoarthritis of the appendicular and vertebral skeleton.

This report provides the first comprehensive discussion of the physical remains of Hawaiians from the island of Kaua‘i and suggests that there may be real inter-island differences which require additional analysis and skeletal samples.

**Are there patterns of culture in the locations of prehistoric burials on Kaua‘i?**

*David Shideler, Cultural Surveys Hawai‘i.*

Previous archaeological consideration of the geographic locations of prehistoric burials in Hawai‘i has tended to suggest randomness in distribution within preferred landforms (sand dunes, caves). Recent research on O‘ahu and Hawai‘i Island has suggested the possibility of patterns of preferential selection of locations for prehistoric burial sites reflecting both sociopolitical complexity and cultural values associated with the east/west transit of the sun. The distribution of prehistoric burials reported in the archaeological literature for Kaua‘i is examined in search of evidence of such patterns of culture.

**Tooth Evulsion in Ancient Hawai‘i**

*Michael Pietrusewsky and Michele Douglas, Dept. of Anthropology, UH Mānoa*

Tooth evulsion, or the intentional knocking out of the front teeth, as a sign of bereavement, is relatively well documented ethnographically in early Hawaiians. Written accounts and oral histories, however, are sometimes vague and contradictory as to the category of people involved, the precise manner and pattern of extraction and the spatial and temporal limits of the custom. Deliberate tooth evulsion is recognized by a specific pattern of tooth loss (one which is often repeated and symmetrical) in the presence of otherwise generally good dental health. This study examines, through macroscopic and radiographic observation and review of earlier studies, the
osteological-odontological evidence for this unusual cultural practice. The material consists of prehistoric, late prehistoric and early historic Hawaiian skeletal series.

Our findings suggest that 1) the most typical pattern of tooth evulsion in Hawai‘i is the removal of mandibular and maxillary incisors; 2) mandibular (especially central) incisors are more frequently avulsed than maxillary incisors; 3) the incidence of evulsion in males is slightly greater than that observed in females; 4) skeletal-dental series from Hawai‘i Island have the highest concentration of evulsion; 5) the series with the single highest incidence of tooth evulsion is from ‘Anaeho‘omalu, South Kohala, Hawai‘i Island; 6) the practice appears to be limited in time from the late 1700s to the early 1800s; 7) individuals less than 17 years of age are not affected; 8) the frequent presence of residual tooth roots supports a traumatic rather than an extractive method of tooth removal.

Several hypotheses to explain the temporal and spatial distribution of this cultural practice are advanced including that its origin is on the island of Hawai‘i at or around the time of King Kamehameha’s unifying reign of the Hawaiian Islands and the arrival of Captain Cook in 1778 or perhaps through foreign influence. Limited comparisons of other Pacific Island populations indicate that this cultural practice is unique to Hawai‘i. Tooth evulsion, associated with the rite of puberty, is well documented in Jomon skeletons from Japan and among Aboriginal groups in Taiwan and the neighboring Asiatic mainland.

SYMPOSIUM 2: BURIAL ISSUES IN HAWAIIAN ARCHAEOLOGY

Suggested Identification Procedures Regarding Unmarked Burials
Alan C. Zeigler, Kane‘ohe Hawai‘i

The 1990 Burial Act brought long-overdue recognition of the significance of ancient Hawaiian human remains and much needed protection for them. Legislative concern was not limited to remains of this one ethnic group alone, however, as indicated by the Preamble statement: All human skeletal remains and burial sites within the state are entitled to equal protection under the law regardless of race, religion, or cultural origin. The work of the various Island Burial Councils established under the Act was generally been diligent and commendable, but has been marred in a few instances by an assumption of Hawaiian ethnicity for unmarked remains, and apparent attempted unilateral disposition of such, without reliance on proper evidence to support this conclusion. While most older unmarked internments here undoubtedly are Hawaiian, an unrecorded number represent members of other ethnic groups, especially those dating from the first century of the post-Contact period.

Neither oral tradition, location and style of burials, nor type of accompanying burial goods (or lack thereof), are invariably valid indicators of ethnicity. Physical anthropology studies, especially those utilizing the most modern scientific procedures, while certainly not infallible, probably constitute the most objective and reliable single means of determining ethnicity of older skeletal remains.

In the case of a current death, routine recording of at least certain minimal data relating to the deceased is legally required, for both the information and well-being of living relatives, associates, and later lineal descendants. This procedure is also required because of its obvious current demographic importance to the general public, as well as its future historic value, especially to the ethnic group represented by the deceased. The same holds true for information obtainable from older skeletal remains inadvertently discovered in Hawai‘i, especially those of representing the Hawaiian race, for which so much of pre-Contact history is still unknown. It
seems terribly presumptuous for anyone today to say that future Hawaiians will never want to know that part of their cultural heritage now available only from the remains of their ancestors.

The Burial Act implicitly requires the Department of Land and Natural resources to determine ethnic origin of older skeletal remains, and a suggested procedure by which this might be most accurately and effectively carried out will be the primary points enumerated. These steps should be incorporated into forthcoming Rules and Regulations and would be applicable whether the remains are to be preserved in place or are to be relocated.

**Perspectives on Hawaiian Burial Issues**
*Edward Halealoha Ayau, SHPD Burials Program*

The overall theme of the presentation is an attempt to explore the misplaced role of Hawaiian cultural values in addressing problems created by contemporary burial concerns. The presentation will begin with a discussion of historical developments leading to the problem of exhumed and removed Hawaiian remains. Next, it will include personal perspectives on the importance of the interdependence between living and dead Hawaiians, the resulting responsibility to the ancestors, and the vital role of the ancestors in the future of kanaka maoli. In addition, it will address competing concerns raised by the conduct of osteological analysis by non-Hawaiians.

**Cultural/Historical Perspectives on Hawaiian Burials**
*Kanaʻi Kapeliela, SHPD, Burials Program*

This paper will examine some Native Hawaiian cultural historical issues and concerns as they pertain to Hawaiian burials and the state Burials Program, with emphasis upon the role of archaeologists and osteologists in the process of disinterment and the collection of data.

**SYMPOSIUM 3: HAWAIIAN HISTORICAL ARCHAEOLOGY**

**What Happens at Contact? Archaeological Evidence from the Historical Era**
*Jane Allen, Applied Research Group, Bishop Museum*

From AD 1778 through 1820, during the first forty years after Euroamerican Contact in Hawaiʻi, imported materials and foreign ideas apparently influenced life primarily at the individual or household level. Certain items and ideas were accepted; others were modified or rejected. Interaction between Hawaiians, who were often aliʻi, and visiting foreigners was of several types, all involving direct contact. The changes that took place after AD 1820 were dramatically different, transforming Hawaiian religion, education, land tenure, and economics; and transcending local spheres of influence. Many Hawaiians who ultimately accepted these changes had not met foreigners directly but rather received their influences through intermediaries—the ruling Hawaiian elites. The differences existing between these two distinctly different types of contact, and the pivotal role played by Hawaiʻi’s aliʻi in effecting a transition from one to the other, are informative regarding which foreign influences were successful, and why.

**Science to Sentiment: the value of Ethnography in Cultural Resource Management**
*Paul Christian Klieger, Applied Research Group, Bishop Museum*

Developmental concerns, including those of the private sector, have become increasingly sensitive to the human element in cultural resource management. The standard “archaeological and historical” procedures for mitigating the adverse impact of development in Hawaiʻi have by
themselves become problematic, especially if such procedures perpetuate an alienation of the general and target communities from the process of interpretation. These problems become especially acute if those communities which are under the impact of development express a continuity of affiliation with the peoples of those prehistorical and historical periods under investigation. While the collection of oral histories is often mandated in cultural resource management in response to this perceived alienation, it is often driven by methodologies and budgets specific to archaeological or historical interpretation rather than by ethnology in its own right. Thus lacking sufficient paradigmatic depth, the context, objectivity, reliability, and validity of such ethnographic data must be called into question. In Hawai‘i, as Graves and Erkelens have noted (1991), such representations are often assumed as fact and utilized for subsequent archaeological and historical interpretations. Oral history data can be utilized by archaeologists within a degree of confidence (as has archival data) provided a degree of methodological autonomy is maintained and that such data collection is appropriate to and compatible with tan encompassing, heuristic paradigm. Examples from on-going H-3 fieldwork in Luluku, Halekou Interchange, and North Halawa valley will be provided.

**Halawa Histories (I): Household Archaeology**

*Jonathan Damp, Applied Research Group, Bishop Museum*

There are many histories that pertain to events in Hawaiian archaeology. Ethnohistory relies upon the observations of several early chroniclers. Archaeological histories generally rely upon developments in the technoeconomical domain; ie. Fishhooks, adzes, agricultural systems. This history looks at evidence for domestic structures or household clusters from the later time periods (post 1750AD) in the North Halawa Valley, O‘ahu. It is argued that the Hawaiian household cluster was a significant unit of social and economic production, that, when organized, had political leverage. It is further argued that we will not understand socio-economic transformation if we do not have a history that is based on methods that deal with people and processes and not just artifacts and events.

**The transformation of Site B1-75 at North Halawa Valley, Halawa Ahupua‘a in the District of Ewa From the Prehistoric to the Historic Period**

*Tomasi Patolo, Applied Research Group, Bishop Museum*

Archaeological investigation at site B1-75 are still needed in order to obtain sufficient information pertinent to the placement of the site in reference to its place in the settlement pattern within the valley. Many cultural recent modifications are evident at the site. Evidence of these recent modifications encompasses approximately 90% of the site’s features. It is known through history as well as through existing cultural remains, that the site was one of the few in North Halawa valley to have been utilized and extensively altered while utilized in the historic era.

Both surface and sub-surface cultural remains indicate usage of the site in both prehistoric and historic times. However, history seems to indicate that the site was probably abandoned for a long period of time before it [was] utilized historically. This paper is an attempt to interpret site B1-75 with reference to the pre-historic settlement pattern in North Halawa Valley, as well as, to address the numerous changes imposed upon the site in the historic period. The materials to be used at this presentation will be derived primarily from the results of test excavations conducted earlier at the site as well as materials recovered from data recovery test excavations currently under way.
Fear and Loathing in O‘ahu  
*Kevin Thomson, Paul H. Rosendahl, Inc.*

In the latter part of 1991, PHRI personnel undertook large scale excavations at the Kaʻahumanu Parking Structure Redevelopment site, located on the Diamond Head side of old Honolulu Harbor. The PHRI investigation focused on the recovery of materials dating to the Prehistoric and Historic Contact occupations. Several techniques facilitated this goal. Use of a Total Station laser transit, digitizer, plotter, and historic fire insurance maps were incorporated as a means of identifying portions of the site which were not disturbed by historic activities. This eliminated the need for extensive, time consuming testing to locate in-situ materials associated with the prehistoric occupations. The Total Station also served as an analytical tool to highlight intra- and inter-component relationships. Large block excavations simplified the differentiation of occupations, allowed the exposure of specific activity areas, and aided the identification of associated materials. Lastly, the use of high pressure water screening allowed the processing of a large volume of material in an expeditious manner without significant damage or loss.

Old Honolulu: Subsurface Archaeological Records, Kaʻahumanu Site  
*Gwen Hurst, Applied Research Group, Bishop Museum*

Political events and commercial redevelopment of early settlement areas of old Honolulu during the past 150 years appear to have heavily impacted most subsurface archaeological deposits in the downtown Honolulu area. Monitoring during demolition of the Kaʻahumanu Parking Garage and subsequent archaeological testing determined that redevelopment impacts in downtown Honolulu tend to preserve, rather than destroy, early development features, contact and pre-contact period deposits.

Excavations in Hawaiian Land Commission Award 1515 (ʻApana 2) at Fort DeRussy, Waikiki, Oʻahu  
*Bertell D. Davis, International Archaeological Research Institute, Inc.*

Subsurface archaeological reconnaissance based on extensive archival research relocated the remains of fishponds, ʻauwai, and associated prehistoric and historic habitation deposits buried by the early 20th century development of Fort DeRussy and the surrounding Waikiki plain. Radiocarbon dating of *kukui* nut and charcoal samples from fishpond/ʻauwai habitation contexts at Fort DeRussy, together with previously dated habitation remains at the Halekulani and Pacific Beach Hotel sites, suggest the Waikiki region has been continuously settled since at least the early 15th century. Recent work at Fort DeRussy centered on native Hawaiian settlement during the early historic period. With the Great Mahele in the mid-19th century, western concepts of private land ownership usurped native use-rights. Hawaiians and foreigners alike could claim land. When validated, the new lands were known as Land Commission Awards, for the adjudicating Board of Commissioners to Quiet Land Titles. Previous testing had shown the potential for documenting aspects of this important transitional period archaeologically. Limited areal excavations in one native Hawaiian claim on the beach front at Fort DeRussy confirm the presence, degree of preservation, and data potential to warrant further work. Age analysis of charcoal from clearly late contexts in particular demonstrates the feasibility of radiocarbon dating this recent end of the time scale.
Summary of Human Burials Excavated at Luluku, Kane‘ohe, O‘ahu
Lonnie Somer, Applied Research Group, Bishop Museum

Twelve historic human burials were excavated from three archaeological sites at Luluku, O‘ahu. The majority of the recovered osteological remains were in poor condition and, in a few instances, had apparently entirely decomposed. Only one complete skeleton was discovered. Individuals of diverse geographical affiliations are represented in the skeletal sample (Hawaiian, East Asian, and possibly European), and the associated grave goods and, in two instances, burial practices are representative of various ethnic groups. In those burials that did not yield skeletal material, cavities in the pit fill that have been interpreted as “cranial impressions” were found. These impressions facilitated the finding and recovering of fragile dental enamel “shells” that may have otherwise been damaged during excavation.

Dressed for Burial: Clothes of the Deceased
Laura Carter, Hawai‘i Volcanoes National Park

[Abstract not available]

New Horizons in Ethno-Archaeology: The Consumption Method
Don Person and Wanda Ah Chan, Applied Research Group, Bishop Museum

Historical Archaeology and Ethno-Archaeology often use the Comparative Method to keep themselves firmly planted within the goals of Anthropological Archaeology. ‘Imu have long been considered important ceremonial events in Hawaiian culture. Their use in the construction of ‘auwai have been recorded historically for almost 100 years. However, ‘imu have been difficult to determine archaeologically. In the summer of 1991, the Luluku Project constructed an ‘imu which will soon be excavated and used as a comparative tool for archaeological fieldwork.

Charcoal Kilns of Windward O‘ahu: Construction and Use
Mary Riford, Barbara Dolan, and Virgil Meeker, applied Research Group, Bishop Museum

In this paper the authors explore the introduction of charcoal production to Hawai‘i by the first Asian immigrants to these islands. On the island of O‘ahu, this early production of charcoal developed into a true cottage industry. Although much of the charcoal was intended for personal household use, a sizeable amount was produced for local sale as well.

Archaeological investigations and interviews with local informants have brought to light the various types of kiln features, the techniques and methods employed in construction, and the effectiveness of these different forms for producing charcoal. A synthesis of the 23 charcoal kiln features recorded for upland Kane‘ohe and Maunawili, O‘ahu will be discussed.

SYMPOSIUM 4: INTERPRETATION OF ARCHAEOLOGICAL SITES

Introducing Interpretation: Stories without Ps
Myra Tomonari-Tuggle, International Archaeological Research Institute, Inc.

This paper introduces the different facets of public interpretation that are currently being carried out in Hawai‘i. Public interpretation? Archaeologists generally use “interpretation” to mean translating their raw data into a professional language of information exchange. But this is a language full of Ps: “perhaps”, “possible”, “probable”. Public interpretation, on the other hand, uses only one “P” of significance: PUBLIC. That is, taking our message to the non-professional public.
Public interpretation begins where the conventions of CRM and academic archaeology end. Although many archaeologists consider their work done with technical monographs and professional journal articles, another realm of archaeological interpretation is translating our professional results into a language that the general public will be interested in, understand, and act upon. Public interpretation requires creativity and concise writing. It also requires a boldness to commit to a story that may be etched in stone, distributed on glossy paper brochures, or passed on by tour guides to all-believing visitors. And this is a story without any “P”s.

The Historic Preservation Division’s Program of Regional Interpretation

Ross Cordy, DLNR, Hawai‘i State Historic Preservation Division

The State’s Historic Preservation Division has been developing a program of regional site interpretation over the last 3-4 years. Interpretation is focused on multiple themes, such as prehistoric settlement adaptations, royal centers, and religious patterns, to name but a few. Nearly all interpretive preservation resulting from contract archaeology plays a role in this regional planning, which is also being linked to existing museums and historic parks. Examples are given from Kona, Kohala and Puna on Hawai‘i Island, Waia‘anae on O‘ahu, and Koloa on Kaua‘i.

A Visitor’s Perception: When is a Heiau more than a Pile of Rocks?

Martha Yent, State of Hawai‘i, DLNR, Division of State Parks

A number of significant historical and cultural sites can be found within Hawai‘i’s state parks. The visitors to these sites arrive with a varying degree of knowledge about Hawaiian culture and history. A visitor with limited information about Hawai‘i’s cultural resources may not recognize a site’s value and follow practices that damage sites and are disrespectful to the cultural traditions. Such practices include offerings of stone wrapped with ti leaves and walking on stacked rock walls. Interpretation is potentially a very effective means of increasing visitor awareness about Hawai‘i’s historical sites and encouraging visitor activities that promote site preservation. The use of interpretation as a management tool is currently being evaluated in the Hawai‘i state park system as new signs and brochures are installed in the parks.

Cultural Interpretation

Toni Han, Dept. of Anthropology, Bishop Museum

Community involvement is essential to sound cultural interpretation. In the past, the community has often been neglected, sometimes purposefully, in the interpretation of their own history. Archaeological information can bridge the gap between the past and the present. Modest, informal, and inexpensive displays, events, and gatherings can provide the forum in which scholars and the community can come together. Information displays and cultural history programming on Lāna‘i and Maui at the Ka‘anapali Beach Hotel will be presented.

An Interpretive Cultural Plan for Kaunolu, Lāna‘i

Boyd Dixon, Applied Research Group, Bishop Museum

Kaunolu has been recognized as one of the most pristine examples of the Late Prehistoric to Early Historic Hawaiian coastal village since the pioneering work of Kenneth Emory in 1921. During six months in 1991, the Bishop Museum conducted an intensive mapping and recording program of the site prior to the development of a system of interpretive trails, signs, and a brochure for Castle and Cooke, Ltd. This paper will discuss preliminary interpretations of the
archaeological data as well as present the interpretive themes, the orientation, and the proposed implementation of the program.

**Fort Alexander Interpretive Exhibit: Order from Chaos**

*Hallett Hammatt and David Shideler, Cultural Surveys Hawai‘i*

Cultural Surveys Hawai‘i was asked to research and design an interpretive exhibit to be placed at the surviving remnant of Russian Fort Alexander at Princeville, Kaua‘i. This project was part of the redesign of the Princeville Mirage Hotel. The exhibit was to be housed in a gazebo between the fort and the hotel and include four (4) display panels. After a review process of over 2 years, the final plans were approved and the exhibit was installed. A review of the logistical and methodological problems involved enlightened us as to how to approach future projects of this nature, and to consider the vast distinction between archaeological/historical research and public presentation.

**SYMPOSIUM 5: ARCHAEOLOGICAL THEORY AND METHOD**

**A Radiocarbon Based Periodization of Hawaiian Prehistory and Some Implications for Social Change**

*Tom Dye, DLNR, Hawai‘i State Historic Preservation Division*

Temporal patterns in three independent radiocarbon data sets were interpreted in the context of ecological and social change theories. This interpretation points to three broad periods of Hawaiian prehistory characterized by different relations between population and agricultural resources, and offering different constraints and opportunities for the exercise of supra-familial authority.

**Functional Analysis of Gender Specific Areas in Hawaiian Residential Complexes**

*Christi A. Mitchell and Michael J. Kolb, DLNR, Hawai‘i State Historic Preservation Division*

The archaeological identification of gender specific spatial components within residential complexes is an important step in identifying family activity areas, determining site functions, and informing cultural reconstructions of pre-contact Hawai‘i. This paper presents an ethnohistoric model that can be used to predict gender specific activities in the archaeological record. The implications and problems of a functional analysis will also be discussed, with specific emphasis on the problems of identifying gender specific activities. Based upon historical sources, this paper will assume that the material remains associated with the activities of Hawaiian females differ from the material remains associated with the activities of Hawaiian males. The model outlines what artifacts and midden we could expect to find in such residential components as *hale ʻāina, hale mua, hale kuku,* and possibly *hale peʻa.* This model also considers the spatial and architectural elements of these structures. The overwhelming lack of identification of spatial components connected to women’s activities is a result of the lack of inter-site midden analysis, and that this in turn can be rectified by expanding sampling designs to include excavation of a wider range of spatial and architectural components within residential complexes.
Recovering and Interpreting Spatial Data: Methods for Contract Archaeology in Upland Koʻolaupoko, Oʻahu

Gavin H. Archer, Applied Research Group, Bishop Museum

Systematic, sub-surface testing and trend surface analysis were used to investigate an exiguous deposit of flaked stone artifacts. Work was conducted by the Bishop Museum in upland Koʻolaupoko, Oʻahu, and was funded by a contract associated with the H-3 highway corridor. The sampling strategy was designed in accordance with both contract requirements and limitations, and a research design. The data recovery strategy maximized coverage and resolution within the limits dictated by pragmatism. The quantitative results are displayed using contour mapping and “fish-net” graphs. Spatial data is used to understand site function by examining the topographic and stratigraphic frequency distribution of flaked stone artifacts.

The Use of Ground-Probing Radar in Volcanic Terrains

Floyd W. McCoy, G.D. Stice (Windward Community College) and S. Papamarinopoulos (University of Patras, Greece)

The use of ground-probing radar (GPR) for geoarchaeological exploration was demonstrated in the southern Aegean on the island of Thera (Greece) during the summer of 1991. Here a violent Plinian eruption (the fourth largest in recorded history) in BC 1628 buried a Late Bronze Age (LBA) topography and civilization. Pumice, ash and lithic debris were deposited in four large eruptive pulses leaving four major deposits, with distinct contacts, that are imaged in GPR records as horizontal reflectors. The buried paleotopography appears as a dipping over irregular layer on GPR profiles at the base of the LBA volcanic deposit. Subsurface penetration was up to 30 meters. Geological control on volcanic layer thicknesses and contacts was constrained by profiles run along the edge of a quarry wall where the volcanic stratigraphy could be directly measured. Numerous archaeological structures were buried by this eruption of Late Minoan IB age, the most famous being the buried city of Akrotiri. One continuous profile was run in a traverse around this site with the GPR using 80 to 120 mHz frequencies; the LBA archaeological structures appear as distinct vertical reflectors on the GPR profiles. Archaeological control remains unclear until this part of the Akrotiri site is excavated. Alignment of prominent reflectors on GPR records to streets and buildings in the site do suggest that these vertical reflectors are buried portions of the LBA city. The application of this technique to volcaniclastic settings in Hawaiʻi for geoarchaeological subsurface mapping would seem to hold great promise.

Marine Reservoirs and Dating Archaeological Shell

Tom Dye, DLNR, Hawaiʻi State Historic Preservation Division

Marine shells are a potentially useful but little used dating material. An obstacle to their general use in archaeological dating is determination of a valid reservoir correction factor for a given sample. This paper reviews all age determinations on marine shells of known age to revise the general marine reservoir correction factor for Hawaiʻi. Paired marine shell charcoal dates are also reviewed. The data suggest that there are significant interspecific and regional differences that must be taken into account when determining sample specific reservoir correction factors.

El Nino and the Peopling of the Pacific

Arthur Saxe, Dept. of Anthropology, Ohio University

Recurrent but aperiodic in timing and variable intensity, the event sequence known as the El Nino/Southern Oscillation could have significantly affected the evolution of the Polynesian
chiefdoms. Simultaneous multiple changes in patterns of winds, currents, sea levels, precipitation, typhoons, sea and air temperatures, etc., would not only result in significant environmental perturbations but could also create opportunities not otherwise present. This paper will present data from the 1983 ENSO and their implications for the peopling of the Pacific. Is the prepositional image “Sailing against wind and water…” gone with the wind?

SYMPOSIUM 6: PACIFIC REGIONAL ARCHAEOLOGY

Archaeological Settlement Patterns of Southwest Moloka‘i
Maurice Major and Boyd Dixon, Applied Research Group, Bishop Museum
At the request of Alpha USA, the Applied Research Group of the Bishop Museum conducted an archaeological inventory survey of a 6,350 acre parcel of land enclosing the southwest corner of the island of Moloka‘i in the ahupua’a of Kaluako‘i. A total of 34 previously known sites were located and 134 new sites were recorded raising the total of documented features in the area to 596. Twenty-one units were excavated at 20 sites expanding considerably the data base now available from leeward Moloka‘i.

Three radiocarbon samples were submitted for data analyses to Beta Analytic with dates of AD 1302-1482 and AD 1622-1912, perhaps spanning much of the occupation of Kamaka‘ipo Gulch. Artifacts of traditional Hawaiian manufacture and associated midden debris analyzed at the Bishop Museum indicate a heavy reliance on locally available food and raw material resources. The remains of religious structures, simple to complex residences, agricultural construction, a possible fishpond, and lithic quarries suggest a more stable population in discrete portions of the project area than previously suspected.

Archaeology of Kalaupapa
Earl Neller, National Park Service
From June to November, 1991, the National Park Service conducted sample surveys at Kalaupapa National Historical Park, Moloka‘i. Using the survey data, aerial photographs, and archival records, an archaeological map of the park was constructed of the cultural landscape in the 1800s. Using the map, estimates were derived for the productive capacity of the region and the size of the population.

Excavations at Two Religious Sites on Pāhe‘ehe‘e Ridge, Wai‘anae District, O‘ahu
Michael J. Kolb, Patty Jo Conte, and Michael McFadden, DLNR, Hawai‘i State Historic Preservation Division
This paper examines the topological, architectural, and material characteristics of one terraced-enclosure and one walled-enclosure found on the slopes of Pāhe‘ehe‘e Ridge, Wai‘anae District, O‘ahu. The function and design of these structures are examined within the context of the general settlement pattern of the Wai‘anae District. Because these sites lack midden, manufacturing, and domestic debris, they do not appear to have functioned as residential structures. Based upon site size, site location, and site architecture, however, it is argued that these structures served some ritual or religious function. In terms of chronology, these enclosures fall into the current model of architectural design sequence for ancient Hawaiian dry-laid stone structures, which state that the terrace is a stylistic design chronologically older (ca. AD 1400-1650) than most walled-enclosures (ca. 1650-1800).
The Last (?) of Barbers Point
Lynn Miller, Applied Research Group, Bishop Museum
Archaeological testing and salvage excavations were conducted in conjunction with the proposed construction of a container storage facility adjacent to the deep draft harbor at Barbers Point. The sites were situated within two remnants of the *kiawe* forest, located one-half mile north of the Chevron Oil Refinery at Campbell Industrial Park. A total of twenty sites, including seven previously excavated features, were investigated within the two study areas. These included four enclosures, two sinkhole caves, and agricultural clearing, one *ahu*, one historic structure, and eleven modified and unmodified sinkholes.

North Halawa Valley, Oʻahu
Robert Spear, Kāneʻohe
After more than four years the fieldwork in North Halawa Valley is winding down. It is appropriate then, that we review what that work has accomplished. This review is done by addressing the primary research problems that guided the fieldwork and discussing them based on the data that has been recovered. General conclusions are drawn concerning agriculture, settlement pattern, and social organization.

Lithic Exchange and Shifting Alliances on the Island of Hawaiʻi
Donna Graves, Paul H. Rosendahl, Inc.
Recent data recovery projects near Kailua-Kona, on the Island of Hawaiʻi, provide evidence for prehistoric lithic exchange. Samples of volcanic glass and basalt from known source areas, and lithic artifacts from dated contexts were analyzed using x-ray fluorescence (XRF) to characterize the chemical compositions of each specimen. Analysis indicated that the majority of the volcanic glass recovered from the project areas originated at Puʻu Anahulu, located near the boundary separating the North Kona and South Kohala Districts. A secondary source area has not yet been identified. A comparison of the relative percentages of artifacts indicates that the distribution of Puʻu Anahulu glass declined over time. Inferences are made regarding prehistoric exchange, procurement, and shifting political alliances.

Whence Paʻao
Rudy Mitchell, Haleiwa
An analytical approach through research to denounce erroneous claims by past historians as to what place the Kahuna Nui Paʻao and Aliʻi Nui Pili Ka’aiea originated from.

Terebra Shell Chisels and Peckers in the Early Polynesian Culture
Toni Han, Dept. of Anthropology, Bishop Museum
Nearly 200 Terebra shell chisels and pecking tools were retrieved from the Vaito‘otia and Faʻahia sites on Huahine Island, in the Society Islands. These tools represent approximately 10% of the artifact assemblage from the site area. A descriptive comparative history of this tool type will be presented.

Population Change in the Society Islands Based on Radiocarbon Dates
Eric Komori, Dept. of Anthropology, Bishop Museum
In the Society Islands, archaeological research by French and U.S. archaeologists has resulted in 61 radiocarbon age determinations. Almost all samples are from excavations of habitation and religious features, and about one third are from a single island, Huahine. The effect of these biases on regional chronologies is examined, and an assessment incorporating exploratory data analysis is presented.

Micronesian Fishhooks: A Fishhook Assemblage from Gun Beach Site, Guam
Yosihiko Sinoto, Dept. of Anthropology, Bishop Museum
Over 200 fishhooks were uncovered from the excavations of Location Y of the Gun Beach Latte Period site at Tumon Bay, Guam. Dr. Hiro Kurashina the Micronesian Area Research Center conducted the excavations.

About half of the hooks are small one-piece hooks and the other half are inverted V-shaped hooks called gorges. The majority are made of isognomon shells. There are no detailed historical records about how the inverted V-shaped hook was lashed to the fishing line. Several bone sticks with a notch at the end were found also from the excavations and these may have served as shanks for the gorges. Also found were nine bonito hook points.

Shell Artifacts from Guam
Bertell Davis, International Archaeological Research Institute, Inc.
A possible new artifact type is reported from Guam in the Mariana Islands. The interior of the apertures of molluscan shells have been modified in various stages, the most complete of which is a near-perfect circle. Selection appears restricted to smaller members of the genera Strombus, Cymatium, and Vasum. Modification clearly results from rotational abrasion. The form of the artifact and the fact that the noted abrasion often perforates the dorsum of the shell suggests the artifact derives its shape from use rather than intentional manufacture. Secondary evidence further suggests a hypothesis that the shells were used as pivots to support the free end of a bow-drill or similar rotating device.

SYMPOSIUM 7: THE DEVELOPMENT OF COMPLEX SOCIETIES IN THE HAWAIIAN ISLANDS

Introduction to Complex Societies
Ross Cordy, DLNR, Hawai‘i State Historic Preservation Division
A brief overview of past research of this topic is given. Despite terminological confusion state vs. chiefdom, simple vs. complex chiefdom, etc., many general changes and interrelated variables involved in the changes have been agreed upon for 15 years. Multiple, and often similar, very general models of the changes have been and continue to be proposed. The aim of this symposium is to focus on 1) current work and 2) where research should go to test the general models and start to develop more specific models.

The Butterfly Effect in Ancient Hawai‘i
Robert Hommon, US Navy Pacific Division, Naval Facilities Engineering Command
Discovering how, during some 15 to 20 centuries, the populous, complex, competitive polities of late 18th century Hawai‘i developed from a single, small, isolated Ancestral Polynesian
community is one of the major challenges and should be one of the major concerns of Hawaiian archaeology. The science of deterministic chaos offers new perspectives from which to view such sociocultural evolution. Chaos theory suggests that while the trajectory of a sociocultural system through time is fundamentally unpredictable in detail, its general form may be stable and discernible over long periods, that changes in the system may arise solely from factors internal to the system, that such changes may result directly from apparently minor events, and that such changes can happen very quickly.

**Ideas from the Oral Historical Record: Formative Complex Societies, the Prelude to Island Unification**
*Ross Cordy, DLNR, Hawai‘i State Historic Preservation Division*

Most researchers agree that island unification and the well-known complex societies of late prehistory were present in the time of Līloa on Hawai‘i, Pi‘ilani on Maui, and Ma‘ilikukahi on O‘ahu, dating from the mid-AD 1500s-1600 (using a 20 year/generation count). Hawaiian oral histories provide clues on earlier, formative political developments from the AD 1200s to mid-1500s. Smaller competing polities appear to be indicated in the late 1200s-1300s, based on accounts of wars, rulers, named ruling centers and ancillary lands, and marriage ties. Island unification or near-island unification is suggested in the AD 1400s and early 1500s, based on appointments of junior sons to district chief offices, marriage ties, and named lands and heiau under a ruler’s control.

**The Development of Social Power and Chiefly Authority Through the use of Ceremonial Architecture in the Island Polity of Maui**
*Michael J. Kolb, DLNR, Hawai‘i State Historic Preservation Division*

Variation in the design and use of ancient Hawaiian ceremonial architecture reflect changes in the strategies of control used by chiefs to centralize their authority. Changing patterns of labor investment demonstrate that economic control was vital to long-term chiefly authority, but could only be sustained or consolidated through additional military, political, or ideological power legitimation. Early expenditures of monumental capital investment document a period when Hawaiian polities competed for resources. A decrease in labor investments through time illustrate the process of island-wide consolidation, a period when the legitimacy of chiefly rule became increasingly based upon absolute political power rather than on senior kinship status. Changes in the function of ceremonial architecture through time reveal that the growing primacy of chiefly ideological power also coincided with the development of chiefly absolute rulership.

**The Manufacture and Distribution of Stone Adzes on Hawai‘i Island: Reexamining Redistribution and Craft Specialization in Hawaiian Chiefdoms**
*Barbara Withrow, Minneapolis, Minnesota*

In a now-classic hypothesis, Service proposed that environmental diversity, specialized production, and centralized redistribution of resources were crucial to the development of chiefdoms, including those of Hawai‘i. There have been few explicit attempts to test Service’s hypothesis with archaeological data, but recent sourcing studies of Hawaiian stone adzes indicate that adzes and/or the stone used to make them were probably not centrally redistributed. In addition, analysis of adze manufacturing debris from the Pololū site as well as finished adzes from other sites does not indicate that adzes were produced by craft specialists who were sponsored or directed by the Hawaiian chiefs. Adze makers may have been independent
specialists who sometimes manufactured adzes for others, and adzes were probably acquired through informal exchange. The production and distribution of differentially available necessities like adzes seems to have been carried out within the “domestic” economy of the Hawaiian chiefdom. Nevertheless, adzes were sometimes used to complete important tasks for the chiefs: adze makers may have been motivated to create special adzes for these tasks and have tried to enhance their reputations by association with chiefs.

**Royal Centers on Hawai‘i Island: Part of the Archaeological Record of Complex Society Development**

*Ross Cordy, DLNR, Hawai‘i State Historic Preservation Division*

Late prehistoric royal centers on Hawai‘i Island are briefly described—Waipi‘o, Hilo, Punalu‘u, Hōnaunau, Kealakekua, Kahalu‘u, Hōlualoa, Kailua, Kawaihae, and Pu‘uepa-Kokoiki. Their component features are analyzed. The potential of archaeological study of these centers related to the analysis of complex societies is discussed.

**Of Complexities and Kings**

*H. David Tuggle, Tucson, Arizona*

The concept and terminology of social complexity are briefly reviewed from a historical perspective. Issues in the study of complexity are then examined by reference to the royal complex at Kahalu‘u, Kona, Hawai‘i and by comparison with the problems of the study of complexity in the American Southwest.

**Chiefdom or State: Models and Empirical Evidence for Complex Societies of Hawai‘i**

*Jane Allen, Applied Research Group, Bishop Museum*

Four complex societies centered on Kaua‘i, O‘ahu, Maui, and Hawai‘i Island at Euroamerican contact have been described in the anthropological literature as chiefdoms, complex chiefdoms, complex rank societies, primitive states, and states. Archaeological evidence of various types has been cited as support for these models individually or as a group. These data bases include evidence for differential house site and burial construction (differential labor expenditure inferred); status associated artifacts; territorial size, site size, site number (population sizes inferred); and standardized construction of agricultural complexes (supralocal supervision inferred).

**SYMPOSIUM 8: MARINE ARCHAEOLOGY**

**Maritime Archaeology and the Queensland Labour Trade**

*Peter Gesner, Queensland Museum, Australia*

This presentation will discuss the archaeological potential of the site of the schooner *Foam*, wrecked on Myrmidon Reef in Townsville (Queensland) while engaged upon a labour recruiting voyage to the Solomon Islands.

**The ‘Aua I‘a (Fish Traps) of Huahine Island, Society Islands**

*Paul Atallah, Dept. of Anthropology and Marine Option Program, UH Mānoa*

This paper concerns the ‘aua i‘a (stone fish traps) of Lake Fauna Nui on the island of Huahine, Society Islands, French Polynesia. Located within Lake Fauna Nui is a series of stone fish traps. Water currents and wind guide various types of fish through the lake where they become trapped.
The author conducted archaeological work in Huahine with Dr. Yosihiko Sinoto, archaeologist with the Bishop Museum, from September 22, 1991 through October 3, 1991. During my stay in Huahine, I photographed the traps and conducted interviews to gain more information on the fish trapping system. The fish trapping system is still being utilized by the local population. Future plans for the system include restoration of the remaining, unrestored areas, creation of a lookout post and development of interpretive signage for visitors.

**Archaeological Conservation of Marine Artifacts from an 18th Century Galleon, the *Nuestra Señora de la Concepción***

*Myrna Clamor, National Museum of the Philippines*

Long before the Spaniards came, maritime trade and commerce flourished in the Malay archipelago with the Philippine Islands as the center of trade and commerce. For 250 years, the Manila Galleon sailed the Pacific between Manila and Acapulco, Mexico, carrying oriental goods, jewelry and gems bound for Spain via mule trains from Acapulco to Vera Cruz. The trip to Acapulco was always faced with danger, hardship and untold tales of terror and agony. Vessels bound for Spain were replenished in the Marianas Islands, then known as the Ladrones Islands or Island of Thieves. On September 20, 1638 the *Nuestra Señora de la Concepción*, reputed to be the largest galleon in its time, was wrecked by a tempest along the coast of Saipan at Agingan Point.

In October, 1986 Pacific Sea Resources signed a contract with the Commonwealth of the Northern Marianas Islands to search and recover the lost galleon, *Concepción*. On March 14, 1987 the site of the *Concepción* was found through the archaeological recovery operations of Pacific Sea Resources, Inc. with a crew of 30 men and women, which included 7 different nationalities: That, Malaysian, Singaporean, English, Filipino, Australian, and American. The survey vessel *M/V Suhaili* arrived on site in March 1987 until July 1987 with significant finds. In January 1988 operations resumed with the recovery vessel *M/V Tengar* outfitted with a conservation laboratory. Over a two year period, the team salvaged more than 1,800 pieces of gold jewelry, 156 storage jars, cannon balls, metal artifacts of silver and copper, ceramic sherds, Chinese coins and conglomerates containing organic compounds, glass beads, and musket shots.

In my presentation, I will discuss the documentation, conservation, treatment, stabilization procedures and significance of the finds in the on-board conservation laboratory. I will also talk about the feasibility of an on-site conservation laboratory, its problems, solutions, and recommendations. I will conclude with the present status of the finds, publications made and the significance and importance of the project in the field of archaeology.

**Shipwreck at Ahukini, Kaua‘i**

*Robert Weisman, Koloa, Kaua‘i*

[abstract not available]
New Light on the Polynesians’ Ancient Ancestors: Lapita Archaeology in the Western Pacific (keynote Address)

Patrick V. Kirch, Department of Anthropology, UC Berkeley

In the mid-centuries of the second millennium B.C., a remarkable cultural development occurred in the Bismarck Archipelago within western Melanesia. Reflecting a cultural, linguistic, and genetic "synthesis" between expanding populations of Austronesian-speaking peoples from the west, with prior inhabitants of these tropical islands, the Lapita Culture played a critical role in the history of the Pacific Islands. Within a few centuries, some of these “Lapita people” had explored and colonized islands as far to the east as Samoa and Tonga, and their descendants would become the first true "Polynesians". This keynote address draws upon major new archaeological work in Lapita sites of the southwest Pacific and explores the implications of these discoveries for understanding the prehistory of Polynesia, including the Hawaiian Islands.

SYMPOSIUM 1: HAWAI‘I RESEARCH REPORTS

Complex Adaptive Systems in Ancient Hawai‘i

Robert Hommon, U.S. Navy

The science of complex adaptive systems, developed within the last decade, offers new perspectives from which to view the evolution of the ancient Hawaiian polities. The science of complexity considers a culture to be a self-organizing system whose evolutionary creativity, like that of an organic species, the human mind, or an ecosystem, derives from its position poised between order and chaos. Complex adaptive systems are emergent phenomena; they cannot be understood by analyzing their separate parts. These systems are characterized by positive as well as negative feedback loops and tend to be sensitive to small perturbations (the butterfly effect).

Where to Shelve it? The Need for Centralizing and Standardizing Archaeological Materials

Angela Steiner-Horton and Elaine Jourdane, Bishop Museum

Archaeological collections are the cultural resources for future generations. The need for an archaeological repository in Hawai‘i is great in light of the growing amount of land development and contracted archaeological work. These non-renewable resources need to be preserved for research, education, and public awareness. A state-sanctioned repository, whether it be a single repository or individual island repositories, would allow collections to be curated under standard procedures insuring availability and access to everyone interested in studying them.

Health and Disease in Precontact and Historic Hawai‘i: the Osteological Evidence

Michael Pietrusewsky and Michele T. Douglas, Dept. of Anthropology, UH Mānoa

Using a variety of skeletal and dental indicators, we assess the health of Hawai‘i’s indigenous inhabitants before, at and after Western contact traditionally identified as beginning with Captain James Cook’s first sighting of the Hawaiian Islands in 1778. Using data from both published and
unpublished sources, this is one of the first such surveys which systematically assesses health and disease in precontact and contact Hawaiians. One of the central issues addressed in this study is the presence or absence of infectious diseases such as tuberculosis and syphilis in precontact Hawai‘i.

The skeletal series surveyed include seven prehistoric and four historic samples from Hawai‘i, Maui, Kaua‘i, and O‘ahu. The indicators of health include mortality data, stature, enamel hypoplasia, cribra orbitalia, limb bone fractures, degenerative osteoarthritis, several dental pathologies and infectious disease. Although sampling remains a problem, especially among the historic samples, this study demonstrates a significant difference between precontact and contact series for several of these health indicators.

Rigorous assessment of the paleodemographic characteristics of precontact and contact Hawai‘i will prove elusive until larger and better provenienced samples become available and the basic assumptions behind life table construction are fully addressed. Precontact and postcontact male Hawaiians are about an inch taller than those measured around 1920. There is little change in female stature from precontact to postcontact times. A modest but significant increase in enamel hypoplastic defects was found in the contact series compared to the precontact skeletal series. Osteoarthritis of the limb skeleton was found to be significantly greater in the historic than in the precontact skeletal series, but there were no significant differences in the frequency of degenerative changes in the vertebral column. Calculus formation and alveolar resorption were significantly greater in the historic than in the precontact skeletal series. The most clear-cut difference in this survey is the more severe dental attrition in the precontact Hawaiians that suggests a coarser, less refined diet or an occupational use of teeth in prehistoric times.

The problems of temporal provenience have compounded the interpretations of the existence of treponemal infections (yaws or syphilis) in precontact Hawai‘i. In Hawai‘i, there remains only one example of treponemal disease from a clearly precontact situation, but other examples of treponematosis and/or skeletal tuberculosis have been described in skeletons from Honokahua (Maui) and Mokapu (O‘ahu), both prehistoric. Whether these Infectious diseases were introduced to Hawai‘i with Western contact or were already present before 1778 can now either be challenged or confirmed by the osteological record. These matters aside, the present study suggests that there are indications of a general deterioration in health from precontact to historic times in Hawai‘i.

Post-Contact Population Decline in the Hawaiian Islands: Fact, Myth, and Controversy
Barbara W. Dolan, Applied Research Group, Bishop Museum
This paper examines the various population figures postulated for the precontact period in the Hawaiian Islands, together with the havoc brought about by exposure to new and often deadly diseases. There is little doubt that such exposure to diseases against which the native peoples had no natural immunity played a major role in the decline in Hawaiian population. Nonetheless, the percent of decline depends entirely on the total population prior to any contact with Europeans and the diseases they introduced to the islands; and this remains the area of myth and controversy. Can such a decline or loss of population be reflected in the archaeological record? This paper explores that question with regard to sites in the ‘ili of Luluku, ahupua‘a of Kane‘ohe, O‘ahu.
Where are the Casualties? An Investigation of Warfare in Hawai‘i
Michele Toomay Douglas and Laura C. Schuster
Inter and intra-island warfare in Hawai‘i is documented by the early Hawaiian scholars and explorers. Battles were fought to control land, resources, and people, beginning in AD 1100 and extending through contact until all of the islands were unified under Kamehameha I. In spite of the frequency and large numbers of men and material involved in these battles, there is little archaeological or osteological evidence of warfare. Casualties of war include both the dead and the wounded survivors. The victors are said to have buried their dead, yet the larger skeletal series excavated in Hawai‘i were typically made up of women and children, with a deficiency of men. The Hawaiian weapons of battle include long and short spears, daggers, clubs and slingstones, many of which should leave recognizable patterns of injury in the skeletal remains. Although injuries which may be ascribed to warfare are described in the osteological literature in Hawai‘i, a survey of fractures of the skull and long limb bones reveals low frequencies and patterns of occurrence, which are not typical of warfare.

Hāmākua: Ka Moku ʻĀina i ʻIke ʻOle ʻIa (Hāmākua: The Unknown District)
James Head, Paul H. Rosendahl, Inc.
The district of Hāmākua, on the northeast corner of the island of Hawai‘i has, until recently, been archaeologically unknown. Early work on heiau was done by Thrum, Stokes, and Hudson in the first part of this century, but due to private ownership of many of the makai sections, little work has occurred since. Two large inventory surveys were conducted on Hāmākua Sugar Company lands near Waipi‘o Valley and Laupāhoehoe by PHRI during the last two years. Many features appear to be indicative of wet agricultural activities, and are limited to unplowed areas such as gulches and kuleana. Research questions raised by these projects relate to the establishment/confirmation of a chronology for the Hāmākua coast, the exploration of possible “agricultural systems” here, and the location of permanent housing.

Honokahua Burial Site: Patterns in Burial treatment and Associated Materials
Theresa Donham, Historic Preservation Division
The Honokahua Burial Site is a large sand dune located immediately inland of Honokahua Bay, in the ahupua‘a of Honokahua, West Maui. Data recovery excavation was conducted on the site by Paul H. Rosendahl, Ph.D., Inc. between August 1987 and December 1988. During the excavation, skeletal remains representing a minimum of 1029 individuals were recovered, and subsequently reburied on the site. The artifacts, faunal remains, organic materials, and various types of soils that were observed with the primary burials are summarized. The discussion of these findings is focused on identifying patterns in the occurrence and elaborateness of these materials, using the factors of time, space (within and between different areas of the site), gender, and age. Interpretive conclusions indicate that the Honokahua Burial Site exhibits a) changes in the use patterns of certain artifacts and materials through time, b) spatial patterns within the site that are most likely related to social organization, and c) some form of stratification, whereby a selected few individuals were afforded special burial treatment and relatively elaborate artifacts.
Kekaulike Redevelopment Project (Phase I): a Site Chronology
Tim Denham, Archaeological Consultants of Hawai‘i, Inc.
The preliminary results of mechanical and manual excavations are presented. The archaeological findings are interpreted within the context of a stratigraphic chronology for the site. This structure allows the cultural materials to be presented within the broader, geomorphological context. Beginning with the coral reef environment, the sequence of land progradation is briefly outlined. The evidence for pre-European arrival, Hawaiian occupation of the site is presented and an impression of the environment they encountered is rendered. The chronology extends into the nineteenth century with the anthropogenic in-filling of the property and the occupations which occurred in-between filling episodes. The results from this site are compared to those that have been reported for other sites in the vicinity.

Kealakehe, North Kona: Data Recovery Project
Constance O’Hare, Paul H. Rosendahl, Inc.
In 1992 and 1993, a data recovery project was conducted by Paul H. Rosendahl, Inc. in the Kealakehe Planned Community Project Area in the Land of Kealakehe, North Kona District, Island of Hawai‘i. Two key research goals of this project were to develop a project area-specific settlement model and to evaluate agricultural field subzone-patterning. In order to accomplish these goals, five large sampling blocks (Blocks A-E) were superimposed on the project area map. The blocks incorporated a wide range of feature and site types and crosscut the project area by elevation gradient. Within these blocks, every feature underwent detailed recording, and at least ten percent of the features within these blocks underwent subsurface testing. The techniques and methods that were used to conduct the field work will be discussed. In addition, a preliminary report on results obtained up to this time from the data analyses will be given.

Potentials of Dryland Agriculture in Maui: Comparative Data
Terry Stocker, Applied Research Group, Bishop Museum
A brief summary of recent Bishop Museum archaeological projects in the Wailea, Maui region is presented. One research concern was agricultural productivity. Historical documents and comparison with other areas of Hawai‘i were examined. We also compared the productivity potential of similar areas elsewhere in the world. The emphasis of this presentation is on other global areas having similar volcanic soil types and rainfall pattern. The area of north central Arizona not only has a similar soil type, but a lower annual rainfall (250-300 as opposed to southwest Maui’s 400). It is of interest that the simple structures in the two areas are similar.

Population and Land-use on the Keauhou Coast, Hawai‘i Island
Greg C. Burtchard, International Archaeological Research Institute, Inc.
Ecologically-based models generally argue for initial settlement and increasing land-use intensity on leeward Hawai‘i Island beginning circa 900 years ago. These models and available data from the Kona Coast suggest increasing population density from that time through prehistoric to initial post-contact periods. Through much of that time, Kona Coast agriculture was pursued in an elevationally graduated system of terraces and agricultural zones generally referred to as the Kona Field System. The Mauka Land inventory survey project provides an 800 acre sample of upland terrain and associated archaeological features lying between 400 to 1100 feet above Keauhou Bay. Data from the Mauka Land project indicate that use of upland terrain in this area conforms to the general Kona pattern in terms of time span and field system structure. The
highest feature density is found on upper elevation zones of older, more weathered lava flows. The pattern most effectively maximizes agricultural productivity under the unique environmental conditions of Mt. Hualalai’s western slope. It is suggested that basic elements of the Kona Field System are a response to ecological constraints of the region. Because of these constraints, that system should have been an integral part of initial settlement, changing only in internal complexity and increased use of marginal ground until population collapse in the early nineteenth century.

**A Lava Tube Shelter and Workshop at the Base of Mauna Kea, Pōhakuloa, Hawai‘i**

*David Welch, International Archaeological Research Institute, Inc.*

Test excavations at Site 5003, a lava tube shelter cave at the base of Mauna Kea near the Saddle Road, have revealed the presence of stratified deposits dating to the late prehistoric period. Bird bones include the remains of dark-rumped petrel, small songbirds, and a few large indigenous species, in proportions similar to those found in several other lava tube sites in the Pōhakuloa area. The recovery of thousands of basalt flakes indicates the use of the shelter by persons transporting and working stone from the Mauna Kea Adze Quarry. Petrographic analysis of nine flakes confirmed that eight were flaked from Mauna Kea hawaiite, but one flake was found to be a tholeiitic basalt from a different source.

**Luahiwa: a Rain Heiau and Petroglyphs Re-examined**

*Mikilani Ho*

Heiau and petroglyphs are not usually found together. The site known as Luahiwa, on the island of Lana‘i, presents a rare opportunity to examine the petroglyphs within a culturally functioning context. This tiny, three acre site contains all the elements which link the gods, nature, and man; the Hawaiian concept of *lokahi*, harmony.

This paper explores the WHY in the selection of the site as a rain *heiau*; its uniqueness in its physical configuration, and its relationship to the petroglyphs. Dirt archaeologists, anthropologists, and ethnohistorians have been unable to place those two-dimensional images in a temporal or cultural framework due to the lack of datable matrix and oral histories. Hence, Luahiwa can serve as a model in how we look at other petroglyph sites. We will also look at how the ravages of time and nature, alterations and vandalism tend to distort petroglyph interpretation from its ‘original’ intent. My research has identified several categories: Stylistic Sequence, Artistic/Period Sequence, Cultural Sequence, and Cultural Function Sequence (based on site function). The first three are based on the anthropomorphic motif. When these categories are considered in the context of Luahiwa, perhaps they will help in our understanding of the role petroglyphs played in precontact and historic Hawai‘i.

**Symposium 2: Current Investigations of Hawaiian Heiau**

**The Royal Center at Wailuku: the Setting for Understanding Haleki‘i-Pihana Heiau**

*Ross Cordy, Hawai‘i State Historic Preservation Division*

Wailuku *ahuʻpuaʻa* was one of the main royal centers of Maui in late prehistory - AD 1300s-1700s. It was within the context of this royal center that Haleki‘i-Pihana operated. This paper reviews the settlement pattern of Wailuku *ahuʻpuaʻa* based on oral historical, historical and archaeological information. It also looks at the place of Wailuku in Maw’s history up through the 17005, using oral historical and historical information. The intent is to provide a
setting for better understanding Halekiʻi-Pihana heiau.

The Royal Center at Wailuku: Construction and Ceremony at Halekiʻi-Pihana Heiau
Michael J. Kolb, Hawaiʻi State Historic Preservation Division
This paper discusses archaeological findings at Halekiʻi and Pihana heiau. Halekiʻi served as an important chiefly residential complex of while Pihana served as the great luakini temple for West Maui. Evidence indicates that both temples were constructed in a series of building episodes spanning 800 years, including a period of brief abandonment of Pihana in the eighteenth century AD. Changes in the ritual use of these heiau mirror the changing aspects of chiefly activities during this time period. The scale and style of architecture of these temples are also placed within the scope of heiau construction throughout Maui.

Heiau Construction and Political Hegemony at the Site of Kaunolu, Lanaʻi, Hawaiʻi
Boyd Dixon, Alan Carpenter, Francis Eble, Christi Mitchell and Maurice Major, Applied Research Group, Bishop Museum
During five months in 1991, the Applied Research Group of the Bishop Museum conducted an archaeological inventory survey and mapping of the sites of Kaunolu and Mamaki, in the ahupuaʻa of Kaunolu and Kealiakapu, on the island of Lanaʻi. Preliminary analysis of these data suggests both sites were occupied from at least the early 1600s AD until the end of the 19th century. A study of monumental scale heiau construction style, orientation, and location at both sites suggests that Maui island political hegemony was reinforced on Lanaʻi in part by the manipulation of symbolic ritual space, both on a community and regional level.

A Stylistic Analysis of Maui Heiau Traits
C. K. Cachola-Abad, UH Mānoa
The research potential of analyzing stylistic heiau traits in conjunction with available archaeological and ethnohistorical data is discussed. An application of such an approach presented in which Maui heiau stylistic traits are seriated to assess the relative temporal ordering of sites. Seriations of Maui heiau stylistic traits completed for four regions also provide inferences regarding prehistoric settlement patterns.

Puʻuhonua Sites and the Politics of Rules and Exceptions
John Schoenfelder, UCLA
Through a comparison of sixty-four Hawaiian refuge sites, it is established that there are no physical attributes shared by all puʻuhonua. Archaeological methods alone cannot prove that a site offered absolution (the Kaupo, Maui site of Popoiwi is a case in point), but potential remains for investigations of the socio-political role of ethnohistorically proclaimed refuges. Puʻuhonua vary in form, siting, and symbolic associations; tendencies within this variation suggest several strategies used in site-by-site negotiation of the conflict between the paramount’s obligation (as symbolic parent) to forgive trespasses, and his or her need (as ruler) to maintain law and order.

House or Heiau?- A Conflict between Science and Belief?
Conrad Erkelens and Mac Goodwin, International Archaeological Research Institute, Inc.
Archaeologists worldwide are often confronted with the particularly difficult problem of
resolving differences between their findings about a place with traditional beliefs people have about that place. The archaeologists’ belief system is based in science while the traditional belief system usually has its roots in other realms of human knowledge. In Hawai‘i this problem can be especially acute. In some instances it has led to anger, distrust, and conflict. In this paper a case study at Kalaupapa is examined with the aim of opening a dialog on the problems and issues involved.

SYMPOSIUM 3: CURRENT ARCHAEOLOGICAL RESEARCH ON MOLOKA‘I

Micro Disposal Patterns in a West Moloka‘i Fishhook Workshop
William Folk and Hallett Hammatt, Cultural Surveys Hawai‘i
Excavation of Site 38 at Kawkakiu Nui in 1979 showed that the site was used for habitation, the focus of which was the manufacturing of bone fishhooks. The most complete fishhook manufacturing sequence to date from Hawai‘i was formulated around the hooks and detritus from Site 38. Another exciting discovery was the ability to identify the specific animal bone and bone parts used in making the fishhooks. Distribution patterns of the fishing related artifacts in Site 38, over two successive periods of multiple site use, were used to argue that possibly one and no more than two people at a time were engaged in the fishhook manufacturing process in a routine of movement reflected in a similar disposal pattern through time. Results of recent work on distribution patterns of bone refuse within Site 38 from crude measurements of bone density by weight will be compared with the artifact distribution patterns and ethnographic patterns elsewhere to test the model of in-site behavior patterns.

Geochemical Sourcing of Artifacts from Southwest Moloka‘i
Kevin T. M. Johnson, Boyd Dixon, and Maurice Major Bishop Museum
Eight basaltic artifact fragments from southwestern Moloka‘i have been analyzed by X-ray fluorescence and ion microprobe to obtain their chemical compositions for the purpose of determining their sources. Three of the samples were collected from habitation sites and five from lithic workshops. While the compositions of all samples are consistent with an origin in the West Molokai volcano complex, several of the samples are probably from the ‘Amikopala quarry of the central West Moloka‘i volcano. Precise knowledge of the sources for the other samples requires improved sampling of quarries in this area.

Kamiloloa, Moloka‘i: Settlement Models
David Tuggle, International Archaeological Research Institute, Inc.
Several models of pre-contact settlement have been proposed for the south-central coast of Moloka‘i. These models are considered in the shadow of data from recent survey and excavations at Kamiloloa. Methodological issues include the problems of measuring residence characteristics. Substantive issues include the history of agriculture on the lower leeward slopes of the island.

A Kalaupapa Sweet Potato Farm
Conrad “Mac” Goodwin, International Archaeological Research Institute, Inc.
In the mid-1840s an unknown Hawaiian farmer built a large stone platform circled by a stone wall on a slight rise at the northern tip of the Kalaupapa Peninsula. The farmer used the platform as his house and presumably enclosed and roofed parts of it with traditional post and thatch
construction. The residents ate, slept, stored their belongings, and engaged in other activities on the platform proper. They prepared their food immediately outside the platform around a line of hearths on the leeward side. Small compartments at the corners served as storage areas or for keeping animals. A stone lanai extended off the northwest corner. Several other stone features, including a C-shaped shelter, were within the encircling wall. South and down the hill from the main compound, the farmer had built stone walls around two depressions to keep cattle away from the crops grown inside. This enterprise, established primarily to produce sweet potatoes as a cash crop in part to help feed the California Gold Rush (1849-1851), had ceased operation by 1866, when the leprosy colony was created on the peninsula. In this paper the author summarizes the methods and results of the archaeological data recovery operations at the site between August and November 1992 that led to the preceding scenario.

Archaeological Resources at Kalaupapa

Earl Neller, Kalaupapa National Historical Park

From the west end of Kaua‘i to the east end of Hawai‘i, from Polihale to Kumukahi, the stone ruins of ancient Hawaiian society are not all the same. Just as there were local differences in the spoken language, there were local differences in culture and custom which are reflected in today’s archaeological resources. The ruins at Kalaupapa, now protected in a National Park, provide an archaeological pattern not found in existing public parks.

SYMPOSIUM 4: ARCHAEOLGY AND THE COMMUNITY ON MOLOKA‘I

Panel Discussion Led by Maurice Major, Bishop Museum

During the past few years, relations between archaeologists and the communities in which they work have grown increasingly adversarial. This session will feature a panel discussion by several Moloka‘i residents who have worked on local archaeological projects and who represent a middle ground between archaeologists and the community at large. As non-professionals, their perception of archaeology differs from that of the scientist. As the members of communities we affect, their insights and feelings are too often ignored. Discussion will focus not only on the differences in perception of the archaeological process, but on the interests and goals shared by archaeologists and the community. Conducted outside the bounds of a particular project, this session provides an opportunity for non-adversarial feedback without the sense of urgency that can complicate community-archaeologist relations in the field.

SYMPOSIUM 5: PACIFIC REGIONAL ARCHAEOLOGY

Cultural Dental Modification in the Mariana Islands

Rona Michi Ikehara and Michele Toomay Douglas, International Archaeological Research Institute, Inc.

Evidence of cultural dental modification in a prehistoric skeletal sample of four individuals from the Academy of Our Lady of Guam (AOLG) gymnasium site in Agana, Guam is documented. Two of the individuals from AOLG exhibit purposeful dental modification. A middle-aged male has three vertical incised lines in the maxillary right central incisor. A young adult female displays horizontal abrading or filing of the anterior teeth. Although deliberate alteration of the dentition, including tooth extraction, filing, and inlays, have been documented in human groups worldwide, little has been written about these cultural practices in the Mariana Islands.
Examination of the available literature on prehistoric human remains from the region reveal four patterns of dental incising and similar cases of dental abrasion. While the origins of these practices are not known, the presence and style of the intentional alterations may be sex-specific, cosmetic in nature, or an indication of status in ranked society. Alternatively, they may signify membership in a particular group or lineage, or mark a rite of passage. Because of the limited and small samples and obscure provenience of many of the specimens, temporal variation cannot be ruled out.

**New Data from the As Nieves (Taga Stone) Quarry, Rota, CNMI**

*Scott S. Williams, Akihiko Sinoto, and Jeffrey Pantaleo*

The As Nieves Quarry on Rota, also known as the Taga Stone Quarry, represents the ultimate expression of Late Period architecture in the Northern Marianas Islands. It contains the largest known examples of latte shafts and caps, larger than those of the House of Taga on neighboring Tinian, although not as well known since the majority are unfinished and still in place in the bedrock of the quarry. The quarry was sketched and mapped by Hornbostel in 1924 and described by Spoehr in 1957, but no detailed map of the quarry had been produced until 1992, when, as part of a project sponsored by the government of the CNMI, detailed mapping and recording were undertaken by the authors. The mapping revealed previously unrecorded architectural features at the quarry, and provided new data on the mechanics of quarrying such large latte stones. The new data are discussed, and some hypotheses regarding abandonment of the quarrying activities are offered.

**A Survey of the Shaped Whale Tooth Pendant as an Indicator of Early Sites in Hawai‘i**

*Toni Han, Bishop Museum*

A comparative analysis and survey of shaped whale tooth pendants is presented as an indicator of early sites in eastern Polynesia. Widely used in Polynesia, tooth pendants in the natural and shaped form, have been focal points in discussions concerning rank, status, and design symbolism. Many of these specimens are from surface and personal collections with little or no contextual information. Age of this form of ornament can determine the relative antiquity of traditions associated with rank and status as well as aesthetic symbolism.

Recent finds from Huahine and Hawai‘i, with associated radiocarbon dates help put these ornaments within a framework to be used for relative dating of sites. Equipped with this information, we can now begin to explore the dynamism that produced such objects within the context of an evolving culture.

**Archaeological Site Classifications in the Society and Hawaiian Islands**

*Eric Komori, State Historic Preservation Division*

A comparative analysis of formal and functional classification systems for archaeological sites in the Society and Hawaiian islands.

**Prehistoric Interisland Exchange in the Marquesas: Evidence from XRF Analysis of Phonolite Flakes**

*Erik Pearthree and Barry Rolett, Department of Anthropology, UH Mānoa*

Geochemical characterization of lithic artifacts is a powerful analytic method for addressing
questions of prehistoric exchange in Polynesia. This study uses X-ray fluorescence to compare four phonolite flakes from archaeological sites on three islands in the Marquesas (Tahuata, Ua Huka, and Nukuhiva). All four flakes appear to derive from the same source. Current geological data for the Marquesas suggests that the source lies either on Tahuata or Ua Pou. Phonolite, though archaeologically uncommon, appears to have been widely exchanged between about 1000 and 1400 AD. These findings suggest a prehistoric network of interisland contacts. XRF analyses of basalt adzes should provide additional evidence for documenting both the extent and frequency of prehistoric interaction.

**New Evidence for the East Polynesian Homeland: Current Research in the Marquesas**

*Barry Rolett Department of Anthropology, UH Mānoa*

Islands within the culture area of East Polynesia lie at the furthest limits of prehistoric expansion into the Pacific. The nature of this expansion, beginning around 100 B.C., is a subject of much controversy. Recent research suggests systematic two-way voyaging, beginning with the exploration of East Polynesia and continuing as a network of interaction that linked distant archipelagoes for more than a thousand years. A collaborative University of Hawaiʻi/Université Française du Pacifique archaeological project in the Marquesas is yielding new data for testing this model, from an exceptionally rich archaeological site within the time period and area of the hypothesized East Polynesian homeland.

**SYMPOSIUM 6: ADVANCES IN HAWAIIAN CHRONOLOGY**

**Bellows Sand Dune Site, Oʻahu: a View from the Back-Dune**

*Kanalei Shun, State Historic Preservation Division*

A series of 20 radiocarbon dates from charcoal recorded in intact and undisturbed cultural deposits from several areas mauka of the Bellows Sand Dune Site, Site O-18, are analyzed to investigate prehistoric settlement. The location and stratigraphic context of the radiocarbon dates are reviewed. At least two periods of occupation of the back-dune are identified. The first, dating to A.D. 900 and even possibly as early as A.D. 500, appears at the base of the cultural layers in several areas. The second occupation, A.D. 1300-1800, is found throughout the back-dune area. The implication of the results of this analysis to the dating of site O-18 is reviewed.

**Ocean Reservoir Correction Factors for Hawaiʻi**

*Tom Dye, State Historic Preservation Division*

The $^{14}$C ages of 8 marine shells of known age and 11 marine shells stratigraphically associated with dated wood charcoal show considerable variation from expected ages. One source of this variation is seashore geology; 6 AMS dates on 3 species of shallow water, herbivorous gastropod shells from Pleistocene limestone and recent volcanic coasts shows that shells from limestone coasts have an apparent $^{14}$C age up to 660 years greater than do shells of the same species from volcanic coasts. Data collected so far indicate that there is great inter- and intra-specific variation in the apparent ages of gastropod shells from limestone coasts. Gastropods from limestone coasts might not be suitable for dating archaeological sites. In contrast, shells of gastropods from lava coasts and bivalves that filter food from reasonably well-circulated ocean water yield relatively consistent results.
Under the Watchful Eyes of Waʻo: a Preliminary Settlement Chronology for Kula, Maui
Michael J. Kolb, Patty Jo Conte, Jenny O’Clary, James Hayden, and Valerie Nagahara, State Historic Preservation Division
Excavations in the Hawaiian Home Lands communities of Keokea and Waiohuli have resulted in the analysis of 30 $^{14}$C age determinations for 19 permanent habitation sites and two heiau. These 30 dates allow a preliminary analysis of settlement chronology in the upcountry region of Kula. Sixteen of these age determinations fall within proto-contact times ca. A.D. 1650-1820, when upland Kula was characterized by intense dryland farming and large scale permanent habitation. Eleven of these ages date to ca. A.D. 1400-1650 and document the expansion of permanent upland settlement. Surprisingly, two $^{14}$C ages date to the thirteenth century and one to the tenth century AD. These early dates document very early permanent occupation of upland Kula, a period when Kula’s upland forest was probably being exploited.

An Analysis of Matched Volcanic Glass Radiocarbon Samples from Lanaʻi and Kahoʻolawe
Eric Komori State Historic Preservation Division
Hawaiian archaeologists used the hydration rind dating method over twenty years ago to determine the age of volcanic glass samples from Halawa, Molokaʻi. The technique has been the subject of sharp debate and many fundamental problems linger pending further experiment and theoretical development. Recent studies of the relationship between matched hydration and radiocarbon dates from Lanaʻi and Kahoʻolawe have reiterated concerns about the validity of hydration dates and challenged their use in the development of archaeological models. In this study, the data from Lanaʻi are used to show congruence between radiocarbon and hydration dates, while a large suite of matched samples from Kahoʻolawe illustrates potential problems. These results offer encouragement for additional research on hydration rind dating, and support the validity of its use in Hawaiian archaeology.

Delta R Values for Calibrating Radiocarbon Dates on Coral from Hawaiian Islands
Richard C. Nees and Scott S. Williams Ogden Environmental and Energy Services Co.
Delta r values for correcting the marine reservoir effect have been established for two species of coral, *Porites compressa* and *Montipora varrucosa* (Hawaiʻi), by radiocarbon dating specimens of known age from windward Oʻahu, collected by the Bishop Museum prior to 1935. The calculated delta r values were used to calibrate radiocarbon dates from samples of identical coral species recovered from well-provenienced archaeological contexts. These include two samples from a coral head that was placed as an offering at Kukuiokane Heiau during the late pre-Contact or early post-contact period, and a third sample believed to represent coral fill dredged from Kaneʻohe Bay, which was placed on a portion of the heiau in the 1950s. The calibrated radiocarbon dates from the archaeological coral samples corroborated dates obtained from temporally diagnostic artifacts and radiocarbon-dated charcoal from features associated with the coral samples.
Archaeology of Huilua Fishpond, Kahana Valley, Windward O‘ahu
Martha Yent and Alan Carpenter (Division of State Parks), Floyd McCoy (Windward Community College)
Recent studies have been conducted at Huilua Fishpond within Kahana Valley State Park by the Division of State Parks archaeology program and the Marine Options Program at Windward Community College. These studies began with historical research and development of a temporal sequence of change at the fishpond as indicated by photographs, maps, and oral histories. Many changes occurred in the 20th Century as a result of a series of tsunami in 1923, 1946, 1957, and 1960. To understand these changes and evaluate the construction and operation of the fishpond prior to these most recent changes, archaeological and geological excavations are being conducted and a model for adaptive change is being developed. The research at Huilua Fishpond is directed towards understanding the construction techniques and structural features for a future restoration project. The geological research questions are directed towards determining the deposit that the fishpond wall was constructed upon, dating this deposit, and distinguishing the sediments along the walls and within the pond that resulted from both cultural and natural forces. This paper will provide an overview of the research, the problems encountered in conducting research at coastal fishponds, and the relevance of the findings to understanding fishpond development and change. The findings will also be related to fishpond restoration and park interpretation.

Kaloko and Aimakapa Fishponds at Kaloko-Honokohau National Historical Park
Laura Carter Schuster, Kaloko-Honokohau National Historical Park
This presentation is an introduction to two fishponds located within the ahupua‘a of Kaloko and Honokohau, North Kona, Hawai‘i. The National Park Service is the custodian of these cultural features and is currently developing appropriate management strategies for these resources. Integration of both natural and cultural considerations will be critical elements in meeting and final management objectives.

Hawai‘i Fishponds: Static Symbols of Chiefly Status or Dynamic Indicators of Cultural Change
Paul L. Cleghorn BioSyslems Analysis Inc.
Fishponds are unique innovations of prehistoric Hawaiians that functioned for the true raising of selected species of fish. Fishponds have been generally viewed as being controlled by the paramount chief or his overseer, so that a constant supply of fish would be available for chiefly consumption. As such, fishponds have been interpreted as symbols of chiefly status, symbolizing the chiefs’ right to ownership of the land and resources. No argument is made against this prevalent interpretation, however, it is argued that interesting questions about cultural change can be addressed when fishponds are viewed as dynamic changing cultural features that are responsive to various cultural pressures. Results of recent investigations at two fishponds on O‘ahu, supported by funding from the U.S. Army Corps of Engineers, are used to illustrate the dynamic nature of fishponds.
Hawaiian Fishponds Today: Ponds without the Fish*
Marion Kelly, Ethnic Studies, UH Mānoa

Arguing first that most of the contents of a fishpond in pre-contact times, were available as a source of food for the inhabitants of the *ahupua'a*, the author suggests that the destruction of fish resources, including fish traditionally cultivated in fishponds, by filling in the ponds, by dredging reefs along the shoreline, and by other environmentally destructive actions, should be labeled as acts of cultural genocide. Because fish were the most important sources of protein for *Nā Kanaka Maoli*, who were and many of whom are still dependent on subsistence fishing for their basic livelihood, this destruction, whether done consciously or unconsciously (the results are the same), must be seen as nothing short of disastrous for *Nā Kanaka Maoli*.

*With apology to Roger Keesing.

A Study of Community-Based Hawaiian Fishpond Restoration and Use on Moloka‘i
William A. Brewer and James T. Berdach, MBA International

A project was undertaken to study and facilitate community-based restoration and use of ancient Hawaiian fishponds on Moloka‘i Island, State of Hawai‘i. Input and opinion of local residents was solicited by means of a community survey questionnaire and workshop. This input was utilized in formulating conceptual, organizational, and operational plans and models for restoration of two “demonstration” ponds, Honouliwai Fishtrap and Kahinapohaku Fishpond, both located on the eastern end of Moloka‘i. Recommended plans for reconstruction and operation of the ponds reflected a high degree of sensitivity to the need for preserving their cultural value. Environmental assessments (EAs) of the two demonstration ponds were carried out, and applications for permits for restoration activities under Section 404 of the U.S. Federal Water Pollution Control Act (Clean Water Act), were submitted to the U.S. Army Corps of Engineers.

In addition, descriptions for 69 ponds on Moloka‘i, based on available information, were entered into a computer database. The database was used to establish relative ease of restoration for the 69 ponds. This was accomplished by taking into account 1) presence or absence of regulatory constraints such as heavy siltation, mangrove encroachment, or endangered species; and 2) practical considerations of cost of restoration relating to pond basin area and pond wall length. A master Conservation District Use Application (CDUA) was developed as a mechanism for further streamlining permit acquisition for the remaining ponds on Moloka‘i. Based on the database hierarchy, 38 ponds were selected for inclusion in a “model” master CDUA.

It is intended that the present work will provide a model for permit streamlining for fishpond restoration activities on Moloka‘i, and ultimately, at other sites throughout the State. Once restored, ancient Hawaiian fishponds can provide a vehicle for the revitalization of cultural practices of traditional value and significance to the Hawaiian people.

SYMPOSIUM 8: DYNAMIC PACIFIC LANDSCAPES

Paleoenvironmental and Cultural Change in the Coastal Lowlands of Guam, Marianas Islands, AD 500-1500.
Jane Allen, Bishop Museum

A growing body of archaeological, geological, and botanical evidence from sites throughout the Indo-Pacific region suggests significant infilling of many coastal lowland areas with terrigenous
soils and sediments during the late first and early second millennia A.D. Since both natural and cultural changes typically occurred, it is often difficult to disentangle the individual processes that were involved. Various processes that may have contributed to landscape and cultural change in one of these areas, Guam, in the Marianas chain, are briefly reviewed. These include sea level changes and related stream shifts, forest clearing and botanical changes, agricultural intensification and/or expansion, population increase, and shifts in cultural residential patterns. Evidence from a few sites including Agana Marsh and the Agana and Fonte River drainages, where research has emphasized geoarchaeological analyses, suggests that coastal changes on Guam between AD 500 and 1500 were brought about by combinations of natural and cultural processes, with sea level change possibly providing the initial impetus to change; subsequent cultural land use in the uplands hastening erosion and redeposition at the coast; and both natural processes and cultural uses contributing to continuing changes in the newly-created lowlands.

**Coastal Morphogenesis and Human Settlement, Aitutaki, Cook Islands**

*Melinda S. Allen, Department of Anthropology, Bishop Museum*

Sedimentary, radiometric, and archaeological evidence from Aitutaki, Cook Islands point to the geological recency of the island’s western coastal plain. Shoreline progradation and aggradation appear to have been initiated by a minor Holocene sea level regression between ca. 4000 and 1500 BP. In the process, a beach barrier developed and subsequently became the focus of human settlement. Additionally, small coastal marshes formed in the backshore trough of the barrier, therein providing critical habitat for wet taro cultivation. Human settlement is documented by AD 900-1150, but the associated flora and fauna suggest that colonization may have been several centuries prior.

**Paleobotanical Investigations on Kahoʻolawe Island, Hawaiʻi**

*Stephen Athens and Jerome V. Ward, International Archaeological Research Institute, Inc.*

Paleobotanical investigations were undertaken on the island of Kahoʻolawe in 1991 in order to determine the original flora of the island prior to massive erosion and landscape degradation as a result of human impacts. Unlike previous studies of historic and prehistoric vegetation by Allen (1992), Murakami (1992), and Spriggs (1991), the present study sought to obtain detailed information on Kahoʻolawe’s Holocene vegetation prior to its settlement by prehistoric Hawaiians. Field investigations involved primarily the taking of soil borings from 5 upland volcanic craters (none having any evidence for recent volcanic activity), though samples were also obtained from the erosion face of an upland gully and the back beach area of a coastal location. The collected soil samples were analyzed for pollen. Only the upland gully samples yielded abundant pollen. Though not precisely dated, it appears that the earliest sample represents the time period prior to human contact. Other samples date to the Hawaiian occupation and more recent periods. Based on these limited samples, it appears that the pre-human contact vegetation of inland Kahoʻolawe was characterized by what can be called a Lowland Dry Shrubland community, probably with a few scattered large shrubs or small trees. This finding contrasts with the dryland forest community other investigators have inferred for inland Kahoʻolawe. It is likely, nevertheless, that some of the larger gulches, having a greater moisture content, supported somewhat lusher communities, perhaps including *Pritchardia* palms much as Nihoa Island does today.
Charcoal Identification from Archaeological Assemblages on Kahoʻolawe: Implications for Reconstructing Prehistoric Vegetation Communities and Change

Michael W. Graves (Dept. of Anthropology, UH Mānoa), and Gail M. Murakami (Botany Department, University of Hawaiʻi)

The identification of charcoal has advanced considerably during the past 10 years. New reference taxa have been added and the ability to identify previously unidentified material has been substantially improved. With this in mind, we have re-analyzed charcoal collected from sites on Kahoʻolawe previously analyzed by Murakami. These sites are distributed across both coastal and inland localities. With this degree of geographic variation in site location, it is now possible to use wood charcoal identification to determine the nature of prehistoric vegetation communities in different areas of the island. Currently, we have evidence of at least three broad vegetation areas on Kahoʻolawe. There are limited but intriguing data that suggest some changes in the composition of upland vegetation and the geographic extent of the two coastal communities. These may have resulted from human impacts, climatic change, or some combination of the two factors.

What is the Paleoenvironmental Record Telling us about Human Colonization of the Pacific?

Terry L. Hunt and Brian L. Colin Dept. of Anthropology, UH Mānoa

Late Holocene paleoenvironmental sequences from islands in the South Pacific and Hawaiʻi record dramatic changes in vegetation, frequency of fires, sedimentation, and extinctions. Some of these changes are natural, while others are clearly associated with human activity. However, ascribing change to natural or human agency relies on assumptions of chronology. Island research from Madagascar, the Mediterranean, and the Caribbean show that anthropogenic changes can significantly predate traditional archaeological evidence. We review Pacific sequences and examine the concordance of paleoenvironmental evidence and dates for human colonization.

POSTERS

Interpreting Kaunolu, Lanaʻi

Boyd Dixon, Bishop Museum

Interpretive signage and a one km footpath have recently been completed for an archaeological interpretive park at the site of Kaunolu on the island of Lanaʻi. A brochure for self-guided tours has also been developed which provides both background material on Hawaiian culture and a map of the salient features interpreted along the trail.

Kamakaʻipo Settlement Pattern

Maurice Major, Bishop Museum

This exhibit is intended for the non-archaeologist public and has been on display at the Bishop Museum and the Molokaʻi Library. Its purpose is to illustrate pre-contact settlement patterns of terms of three environmental zones: coastal, gulch interior, and uplands. A model, feature planviews, illustrations, and text are used to express the relationship of function to environment on the semi-arid West End of Molokaʻi, where Kamakaʻipo was one of the more extensive sites.
Bayesian Calibration of Radiocarbon Dates

*Tom Dye, State Historic Preservation Division*

Bayesian statistics are distinguished from classical statistics by their inclusion of prior information. The prior information used in Bayesian calibration of radiocarbon dates is a model of the chronological ordering of dated archaeological contexts based on stratigraphic or other evidence. The inclusion of contextual information in the statistical model shifts the object of calibration from the calendar age of the dated sample to the age of the event or the duration of the period represented by the dated sample(s). Bayesian calibration techniques developed primarily at the University of Nottingham in Great Britain yield probability distributions for the ages of events or periods and several derived statistics, the nature of which depend on the situation under investigation. This poster illustrates an example of the Bayesian calibration of 5 radiocarbon dates from archaeological contexts related to three building events a Maui Island *heiau* excavated by Michael Kolb. The layout of the graphical display and the interpretation of its component parts, including probability distributions of the dated events, pairs of dated events, and intervals between events, are described.

Hawai‘i Archaeology Week

*Marta Yent, Chairperson Education Committee, Society for Hawaiian Archaeology*

The Education Committee of the Society for Hawaiian Archaeology will sponsor an exhibit at the poster session to promote the development of an archaeology week in Hawaii. Most states already have an annual archaeology week that promotes public awareness and participation in archaeology and historic preservation in their state.

During this week-long event, archaeologists, historical organizations, and governmental agencies present talks, exhibits, and other activities that teach the public about archaeology and inform them about projects happening in their state. The Education Committee will take the lead in coordinating such groups as the State Historic Preservation Office, the National Park Service, the University of Hawai‘i and the Community Colleges, State and County Parks, Bishop Museum, consultant archaeology firms, and the Office of Hawaiian Affairs to organize Hawai‘i’s first archaeology week. An effort will be made to make this a statewide event with some activity scheduled for each island. This event is tentatively scheduled for 1994 in conjunction with the Society’s annual Hawaiian Archaeology Conference. This poster exhibit will introduce the idea of an archaeology week in Hawai‘i’s through a display of posters announcing archaeology weeks in other states. At this exhibit, the education committee will seek the input of the Society members on developing the details for a Hawai‘i Archaeology Week. Hopefully, the exhibit will prompt sufficient interest on the part of members that they will volunteer to assist with the events.
Ancient DNA in the Pacific (keynote address)
Rebecca Cann and Koji Lum, Dept. of Molecular Biology, UH Mānoa

Anthropological geneticists have been slow to examine the validity of labels used to describe Pacific Islanders. Now, there is ample DNA evidence to allow us to come to the same conclusion that some archaeologists, linguists, and ethnographers have had, namely, that our labels are too simplistic and/or downright inaccurate. Based on the genetic material of modern and ancient donors, we can clearly state that the geographic labels of Polynesia, Melanesia, and Micronesia used for Oceanic populations do not conform to any biological reality, but reflect mostly the other constraints imposed on island peoples by colonial administrators.

Throughout most of Polynesia and Eastern Micronesia, one cosmopolitan maternal lineage group exists, and extends even into South and North American coastal populations. MtDNA sequence data from non-coding hypervariable segments unites these groups, who are not normally thought of as a single gene pool. Levels of high gene flow can also be inferred from nuclear gene sequences. This could only reflect recent migratory events, as oral traditions have asserted.

Polynesian populations in Hawaiʻi, Sāmoa, and the Cook Islands also share maternal lineages with Highland Papua New Guinea, while some Micronesians from Belau share lineages with Australian Aborigines. We are eager to explore the time scale associated with the movements of these maternal lines, in an archaeologically defined setting. In particular, it would be important to examine these connections as reflections of primary colonization events or secondary contact events, and search for asymmetric patterns of migration between males and females.

We have also been engaged in studies of DNA from ancient donors on Henderson Island (Pitcairn Group) in collaboration with Dr. Marshall Weisler. Sequences from these donors may confirm that a lineage found in Hawaiʻi today, which we had previously questioned as authentic Hawaiian, truly represents an indigenous maternal line. These donors have now been returned for reburial, but they represent an important key in examining questions of Polynesian exchange networks and eastern Polynesian expansion to South America.

Continued exploration of genetic diversity in Indonesian, island Melanesians, eastern Micronesians, and South American groups will help us document the extent of past migratory movements in the Pacific. Data on special informative blocks of MtDNA sequences for assigning ethnicity, and the adaption of these blocks for sensitive assays of the survival of DNA in ancient populations, will be discussed. Due to the common genotypes shared among Pacific peoples, it will be impossible to distinguish most Hawaiians from Samoans, Marquesans, Tahitians, Tongans, Marshallese, or Rapa Nuians using MtDNA sequences. That may be bad news for some archaeologists The good news in that methodologies for extracting DNA from bone are getting are reliable and simpler (but not yet cheaper!).
Kaʻūpūlehu: the Settlement Patterns  
*James Head, Paul H. Rosendahl, Inc.*

The last four years have seen several large inventory surveys in the *ahupua’a* of Kaʻūpūlehu located in North Kona District of the island of Hawaiʻi. The findings of three of these inventory surveys will be discussed. A proposed settlement pattern for those lands between the ocean and c. 650m elevation is suggested. A posited upland agricultural system *mauka* of this elevation is also suggested.

Lithic Exploitation in Pre-Contact Hawaiʻi: Archaeological Investigations around Kalahuipuaʻa, Hawaiʻi Island  
*Scott Williams, Ogden Environmental*

The Kalahuipuaʻa-ʻAnaehoʻomalu area in Waimea *Ahupua’a*, Hawaiʻi Island, is noted for abundant remains of scoriaceous lava abrader manufacturing, including abrader shaping basins, grooves, and slicks; abrader rejects in various stages of manufacture; and pits, sometimes modified by staked walls. These remains occur in the area of the Kaniku ‘a‘ā lava flow and the surrounding older pāhoehoe flows. As a result of resort development, the cultural resources of this region have been the subject of extensive archaeological study over the last 20 years, and various hypotheses regarding the nature and extent of abrader manufacture, and the function of the numerous pits in the area, have been offered. These remains have been interpreted as evidence for a large-scale abrader industry, the products of which were traded outside of the region. Based on recent survey work in the area and experimental studies of abrader manufacture, re-evaluation of the nature and extent of abrader manufacture in the area is proposed. Rather than representing an intensive industry or specialized craft, it is suggested that abrader manufacture in the regions was an opportunistic activity conducted by non-specialized individuals on a small-scale basis.

Settlement Patterns and Volcanic Lava Flow Data from Ahalanui, Oneloa, and Laepaoʻo in the District of Puna, Hawaiʻi Island  
*Leta Franklin, Paul H. Rosendahl, Inc.*

Paul H. Rosendahl, Ph.D., Inc (PHRI) conducted an inventory survey and testing program at the proposed 200-acre A & O Golv Course in the lands of Ahalanui, Oneloa, and Laepaoʻo in the District of Puna, Island of Hawaiʻi. This work complements earlier work conducted by Archaeological Consultants of Hawaiʻi (ACH). The findings of this project are interesting primarily for two reasons. First, the study area encompasses almost the entire *ahupua’a* (Ahalanui). As a result, the archaeological settlement pattern data for this land are fairly complete. Two hypotheses of land use within Ahalanui will be presented in this paper. Second, the sites in the project area lie on four dated lava flows from Kīlauea Volcano. Recent geologic dates on these flows (provided by Hawaiʻi Volcano Observatory) provide interesting archaeological implications to the settlement patterns.

Archaeological Inventory Survey of the *Makai* Portion of ‘Ohiʻa Cave  
*Constance O’Hare, Paul H. Rosendahl, Inc.*

Between August 23 and August 28 of 1993, Paul H. Rosendahl Inc. conducted an inventory survey of the *makai* portion of ‘Ohiʻa Cave, which is situated in the proposed ‘Ohiʻa Cave
Historic Preserve at the Keauhou-Kona Resort in the land of Kahalu‘u, North Kona District, Island of Hawai‘i. The makai portion of ‘Ohi‘a Cave consists of a central tube c. 1,650 feet long, two shorter parallel side tubes and three natural openings to the surface.

During the inventory survey, seventy features within 13 feature/feature complexes and twenty-one prehistoric/historic human skeletal remains/burials clusters were identified in the interior of the three lava tubes. Ten of the thirteen feature/feature complexes were located in rather inaccessible portions of the cave and were blocked off from the main chambers near the three entrances by the natural or artificial barriers. Five radiocarbon dates, ranging from AD 1474 to post-1950, were determined for charcoal samples collected from structural features or ecofactual deposits on the cave floor. The dates and the type of features recorded in the cave indicate that this site was used for temporary habitation and refuge in the late prehistoric to early historic periods and was also a focus for ceremonial activities (burials) which began in the prehistoric period, but extended into the later historic period, after the cave had ceased to function as a habitation/refuge.

**Line of Descent: of Umbilical Cords, Ancestors, and Ahupua‘a**
*Cathy Glidden, Paul H. Rosendahl, Inc.*

This paper details the specific result of the 1989 and 1990 archaeological surveys in Hawai‘i Volcanoes National Park in which over 700 petroglyphs were recorded and mapped for the first time. The geographic location of the petroglyphs was found to be along or on both currently defined ahupua‘a boundaries and unknown ahupua‘a and ‘ili boundaries, raising the possibility that these political units shifted through time. This paper will explore the significance of this finding and the importance of the god Lono in the arid region of the coastal Puna district where worship to this god of fertility and rain may have been linked to the piko ritual which was performed at both Pu‘u-Loa, Pu‘u-manawa-le‘a, and additional areas identified within the park.

**Prehistoric Inland Expansion of Settlemet and Agriculture, O‘ahu, Hawai‘i**
*Steve Athens and Jerome Ward, International Archaeological Research Institute*

The inland expansion of prehistoric Hawaiian settlement and agriculture relates to a number of issues concerning adaptation to an island environment and social organization. Data directly relevant to this subject recently have been obtained from a sediment core removed from a small wetland in upper Maunawili Valley. This location, on the windward side of O‘ahu near the foot of the Ko‘olau Mountains, represents an optimal setting for documenting initial inland settlement and agriculture. Findings from the Maunawili core are presented and other relevant paleoenvironmental information is summarized along with data from several recent inland archaeological surveys. It is suggested that inland settlement and agriculture were unlikely to have occurred before about AD 1200.

**The Many Faces of Hawaiian Petroglyphs: Some Problems with Contribute to Faulty Interpretations and Understandings of Island Petroglyphs**
*Mikilani Ho, Rock Art Research and Preservation, Hawai‘i, Ltd*

Problems exist when people try to interpret Hawaiian petroglyphs; the differences in initial perception, superpositioning, the frame of reference used by the observer and vandalism, to name a few, all contribute to faulty assumptions of what the petroglyphs “mean.”
Upland Agricultural Fields on Kaua‘i
William Kikuchi, Kaua‘i Community College
Traditionally, agricultural sites, both non-irrigated and irrigated, were concentrated in lowland and valley areas on Kaua‘i. Agricultural terraces were noted in the higher, innermost parts of valleys that were well watered from rain and drainage streams. Recently, upland agricultural sites were located in leeward parts of Kaua‘i, many in native Hawaiian forests at elevations from 1000 to 2000 feet. The archaeology and definition of the locations, size, and number of these fields may be correlated to the desertification of the lowland coastal regions and the increasing need to expand agriculture into marginal slopes on Kaua‘i.

Exploring the Causes of Hawaiian Avifaunal Extinctions
Jadelyn Moniz, UH Mānoa
Research in Hawai‘i has revealed evidence of many extinct or extirpated endemic birds; most were not previously known from the contemporary or historic period. Researchers attribute the causal mechanisms for these extinctions primarily to human impact on the environment; Hawaiians caused these extinctions primarily through habitat destruction. Few studies, however, have been completed or have fully documented the relation between extinct avifauna and the native prehistoric Polynesians of Hawai‘i to support the model as it is presently discussed. This paper will address the problem of Hawaiian avian extinctions.

In the Pits: Classifying Fire Features in Luluku, O‘ahu
Helen Leidemann, Bishop Museum
Many subsurface fire feature shave been uncovered recently in Windward O‘ahu as part of the Interstate Highway H-3 archaeological investigations. Examination of the various fire features shows that there are several physical characteristics that can be discussed, including feature diameter; feature shape in profile; contents; whether there is evidence for reuse; and feature location in relation to surrounding topography. Variability in these traits shows up, and patterns are emerging that can contribute to a discussion of cultural interpretations for the features other than a simple assumption of “cooking” as their function. With the help of radiocarbon dating, identification of charred wood and plant remains, residue analysis, ethnographic literature, and a description of the traits mentioned here, archaeologists should be able to get more information from, and better interpret, these ubiquitous fire features.

SV…PRN…UTC…PDOP…: Hawaiian Archaeology and the Global Positioning System
Eric Komori, DLNR, Hawai‘i State Historic Preservation Division
The NAVSTAR Global Positioning System (GPS) offers Hawaiian archaeologists an efficient and relatively low cost way to obtain geographic and projected coordinate data for survey and mapping. Topics examined in this paper include field procedures, differential correction, and data interpretation and reporting.

Kaunolū’s Place in the Prehistory of Lāna‘i
Maria Sweeney (UH Mānoa), Melinda Sue Allen (Bishop Museum), Boyd Dixon (Bishop Museum)
Lāna‘i is among the least known of the Hawaiian islands, despite the extensive survey of Kenneth Emory over 70 years ago. Among the more impressive remains observed and mapped
by Emory were those of Kaunolū, a settlement which included nearly the full complement of traditional Hawaiian architectural features. Despite its size and complexity, Lānaʻi’s most prominent settlement has also remained poorly known. We recently returned to Lānaʻi to test excavate a variety of archaeological contexts, including large residential compounds, small C-shapes, and an overhang shelter, with the goal of placing Kaunolū in its broader temporal and social context. This paper considers Kaunolū’s settlement chronology, local land use patterns, and architectural variability in relation to findings from other recent archaeological studies on the island.

The Cultural Resource Management Program in the National Parks—1994

Robert Hommon, National Park Service

The seven National Parks in Hawaiʻi together comprise about 400 square miles, equal to the combined land area of Molokaʻi and Lānaʻi. Among the cultural resources in the parks are six national Historic Landmarks and 11 additional National Register Properties. Surveys in the parks have recorded over 15,000 archaeological features in some 3,600 sites. Fully 96.5% of park land areas remain to be surveyed. This paper summarizes the Hawaiʻi parks’ cultural resource management program of the year just passed, during which four archaeologists were added to park staffs.

SYMPOSIUM 3: PACIFIC ISLAND MATERIAL CULTURE

The Importance of Material Culture Research in Hawaiian Archaeology

Yosihiko H. Sinoto, Bishop Museum

With more than four decades of modern archaeological research in Hawaiʻi behind us, material culture research needs to be reaffirmed. Studies on material culture are fundamental to archaeology, and without them our knowledge of Hawaiian prehistoric culture cannot be expanded. Somewhere along the way, our reliance on the results of absolute dating techniques, such as volcanic glass hydration rind analysis and radiocarbon analysis, has led to the diminution of the significant data available from the consideration of artifact types and structural morphology.

Given a pristine site, we know that type “A” artifact from the bottom layer is older than a type “B” artifact from the top layer. Although, we do not know how many years separate type “A” from type “B,” once such a stratigraphic context is established, the relationship cannot be changed, with the exception of a new type “C” that may occur in between.

A Typological Sequence of artifact types or structural (house or heiau) forms would be a useful and necessary tool for Hawaiian archaeology. The importance of such data will be demonstrated with some examples from Hawaiʻi and other parts of Polynesia.

An Analysis of Style and Function in the Nuʻalolo Kai Fishhooks

Jadelyn J. Moniz, UH Mānoa

Researchers in the Pacific have recognized variability, as demonstrated in early artifact typologies. Fishhooks, often abundant in archaeological sites, were used as indicators of cultural sequences and as a link to tracing migrations across Polynesia. However, not all variation represents homologous relations. The recognition of variability is key to the use of evolutionary theory in archaeology, and the explanation of cultural change. This paper will discuss a re-analysis of fishhook collections from sites K3 and K5 from Nuʻalolo Kai, on the Nā Pali coast of
Kauaʻi. I will discuss temporal variability in the fishhook assemblage, as well as stylistic and functional traits.

**The Kauakahi Adze Workshop, Keahua Arboretum, Wailua, Kauaʻi**

*Robert L. Spear (Scientific Consulting Services Inc.) and Scott S. Williams (Ogden Environmental)*

This paper describes the Kauakahi Adze Workshop located in the Keahua Arboretum, Wailua, Kauaʻi. The artifacts from this site consist generally of flake adze blanks, preforms, and debitage. Additional artifact types include cores, hammerstones, and other tool forms that indicate a broader range of activities than simply adze production. The workshop is also discussed in terms of Weisler’s (1990) suggested pan-Polynesian flake adze strategy.

**Marks of their Passing: Tattooing Needles and Culture Contact in East Polynesia**

*Catherine L. K. Fuller, UH*

A pearl shell tattooing needle recently discovered during excavations at Haʻatuatua, on Nukuhiva in the Marquesas is remarkably similar to other early archaeological specimens from a neighboring island (Ua Huka), as well as from Huahine in the Society Islands. All of these needles date to before AD 1400 and exhibit stylistic differences in comparison with late precontact and ethnographic examples. These findings are interpreted in the context of models for long distance interaction during early east Polynesian prehistory. The results suggest a period of cultural continuity followed by one of later divergence.

**Ethnological Evidence for Central Polynesian Interaction Spheres: Gishop Museums’ “Bloxam Dagger”**

*Barry V. Rolett, UH Mānoa*

Although Central Polynesian archipelagoes were relatively isolated from one another at the time of European contact, archaeological evidence identifies an early prehistoric period of substantial long distance interaction. Bishop Museum’s “Bloxam Dagger,” an Austral Islands ceremonial spear point collected in 1825 in the Cook Islands, offers rare ethnological evidence for late inter-archipelago exchange. The significance of this specimen is discussed in the context of models for long distance two-way voyaging in East Polynesia, with implications for aspects of prehistoric exchange that remain archaeologically invisible.

**Early Eastern Lapita to Polynesian Plain Ware at Tongatapu and Lifuka**

*Tom Dye, DLNR, Hawai‘i State Historic Preservation Division*

Exploratory data analysis is used to hunt out sources of uncertainty in a comparison of pot sherd assemblages. Uncertainties in dating and sampling are estimated and used in the comparison. Systematic differences in assemblages point to a potentially significant source of uncertainty due to mixing at a multi-component site. Mixing plausibly accounts for apparent differences between the assemblages. The exploratory approach should be widely applicable in comparative analyses.

**Distribution and Functional Variation in Octopus Lures of Micronesia and Polynesia**

*Michael T. Pfeffer, UH Mānoa*

In this paper I examine one kind of composite fishing implement, the octopus lure, found in two basic forms throughout Oceania. The distribution and origins of the hooked “coffee-bean” lure, and the non-hooked, “imitation rat” lure are documented from island groups in Micronesia and
Polynesia. The presence and use of the hooked lure form in Hawai‘i are examined in depth. Classificatory elements of each form of lure are defined and identified for Polynesian assemblages. Finally, I examine functional differences that relate to variable marine environments in Polynesia.

SYMPOSIUM 4: LAVA TUBE UTILIZATION

Lava Tube Archaeology: Overview and Introduction
Maurice Major, Bishop Museum
As an introduction to the symposium, I will examine the scope of what is known about human utilization of lava tubes in the Hawaiian Islands, and what makes them valuable resources for archaeological inquiry. A brief survey of current models of lava tube utilization by pre-Contact Hawaiians will lead to a discussion of directions in which lava tube research might progress. The peculiar physical context of lava tubes as well as their cultural sensitivity will be addressed in terms of the constraints imposed on researchers. Archaeological study will then be placed in a broader context, emphasizing other disciplinary understandings and research interests as well as Native Hawaiian concepts about lava tubes and their study by scientists.

Preservation of Hawai‘i’s Cave Resources
Francis Howarth (Bishop Museum) and Fred Stone, Hawai‘i Community College
Caves in Hawai‘i (including lava tubes, shelter caves, fissure caves, sea caves, etc.) contain important cultural archaeological, paleontological, biological, geological, hydrological, recreational, and aesthetic resources. People use caves for various reasons, and the uses often conflict. Hawaiians used caves for shelter, places of refuge, water sources, burials, and as sacred places where important life events took place, such as birth and death. Archaeologists know that caves preserve cultural artifacts in situ, providing information about the lives of people in the past that is not available from other sources. Caves also preserve bones of birds that are now extinct, giving paleontologists a view of species and ecosystems of long ago. Biologists find a diversity of cave adapted species living nowhere else in the world, so caves provide a unique “living laboratory” that reveals evolutionary processes. To geologists, lava tubes reveal the processes of lava flow and island formation. Recreational cavers seek the thrill of exploring the unknown. An important part of preserving cave resources of Hawai‘i for future generations is sensitizing all groups to the important needs and values of other groups, so conflicts and inadvertent damage is avoided. Stronger action may be necessary to preserve Hawai‘i’s precious cave resources for the future.

Utilization of Caves as a Water Source for Irrigation of Hawaiian Dry-Land Agriculture
Fred Stone (Hawai‘i Community College), Erik Peartree (UH Mānoa), Francis Howarth (Bishop Museum), and Kepa Maly (Hilo)
It has long been known that Hawaiians had mastered the art of growing crops on bare lava flows in the arid zones of the Hawaiian Islands. It has also been assumed that the quarried pāhoehoe bubbles used for agriculture did not require irrigation water. However, preliminary field observations show a close relationship between quarried agricultural sites in Kalapana and Ka‘u and water catchment sites in adjacent lava tubes. These observations are supported by information from early Hawaiian newspaper articles. This allows for hypotheses about ways in which Hawaiians might have utilized all the resources available to enable them to grow crops.
under harsh conditions. Further research is needed on the ecological interactions that allowed Hawaiian agriculture to exist on bare lava flows.

**Underground Culture: Continuity and Change in Lava Tube Usage**

*Maurice Major, Bishop Museum*

Archaeological investigation of lava tubes often reveals traces of both indigenous and foreign material culture, leading to the inference that at least some caves have been utilized before and after European contact. Native Hawaiian knowledge also indicates that awareness and use of lava tubes never ended. However, even where repeated utilization may be clear from the archaeological record, continuity of function is not. Cases from Puna on the Big Island will be used to illustrate arguments for persistence and discontinuity of lava tube functions through time. Impacts of repeated use on the archaeological record will be addressed, as will the effects of “rediscovery.”

**SYMPOSIUM 5: HISTORICAL ARCHAEOLOGY ISSUES**

**The Kaʻahumanu Site (50-Oa-A5-19) in Downtown Honolulu: Defining New Research Directions for Historical Archaeology in Hawai‘i**

*Susan Lebo, Dept. of Anthropology, Bishop Museum*

Utilizing the historical and archaeological data from the Kaʻahumanu site in downtown Honolulu, an attempt is made to define new research directions for historical archaeology in Hawai‘i. The Kaʻahumanu site was excavated in two major phases, the survey inventory and initial data recovery work was conducted by Bishop Museum in 1991. A second data recovery phase was undertaken the same year by Paul H. Rosendahl Inc. (PHRI). Together, these two data sets offer an excellent opportunity to examine cultural change at a site that was continually utilized since before Contact and into the twentieth century. Similarly, other sites have recently been excavated in downtown Honolulu (e.g. Marin Towers), which together with the Kaʻahumanu site offer an excellent opportunity for historical archaeologists in Hawai‘i to begin comparative studies of culture change among Native Hawaiians and foreign settlers and workers during the early post-Contact through nineteenth century period.

The historical and archaeological data from the Kaʻahumanu site reveals a rich assemblage of Chinese, English, and American artifacts imported for use by a variety of ethnic groups. An examination of these artifactual assemblages and their comparison with assemblages reported for other historical sites in Honolulu demonstrates not only the need, but the rich possibilities of comparative studies of culture change for this period. Such studies may include the development of predictive models about the kinds of features and artifactual assemblages associated with early post-Contact Hawaiian domestic sites, predictive models about changes in diet or foodways among native Hawaiians and foreigners during the nineteenth century, changes in acquisition and use patterns of imported goods, among others.

**Early Households and later Merchants: Nineteenth-Century Development at the Edge of Honolulu’s Chinatown**

*Conrad Goodwin, International Archaeological Research Institute, Inc.*

In essence, archaeology is arguably the study of the human use of space. We strive to learn the sense of place, of how people used space, how they used the landscape. Such a goal necessitates not poking telephone booth holes in the ground or digging long trenches, but rather in areal
excavation over sizeable blocks of land. IARII adopted this strategy of large-block areal excavation for the Marin Tower data recovery project in downtown Honolulu. In this paper, we examine one of the blocks. The results reveal details of household use in the first decades of the nineteenth century to the changes wrought as shopkeepers and merchants moved onto the property offering their diverse services and products. These details include human burials, residential and commercial trash deposits, lime kilns, privies, sheet midden, and although sparse, some structural remains. They provide a rich picture of changing land use and human perceptions of space as Honolulu grew from a small village to the modern city of today.

Changes in Diet from Traditional Lifeways to a Market-based Subsistence

*Bruce Jones and Coral Rasmussen, Aki Sinoto Inc.*

The ecofacts and biological remains recovered during the archaeological investigations at Site 50-50-14-3194 located at Makena, on the island of Maui, provide inferences on subsistence and dietary patterns. In terms of dietary contributions, shellfish offered the greatest calorie return with mammal and fish protein providing smaller portions of animal food utilization. *Cyprea* (cowries) provided a significant contribution to the molluscan protein pool in the strata representing traditional lifeways, but decreased in importance during later periods. *Nerita* (*pipipi*) remained fairly even throughout the transition from a traditional to a market-based subsistence pattern, however, the procurement of *Patella* (*ʻopihi*) increased dramatically. Also, the persistence of Westernized cash economies led to an increase of food purchased in metal and glass containers, such as sardines, fruits, vegetables, and condiments, which provided supplementary protein and vitamins.

A Tale of Two Cities: the Village of Kou and the Faces of Honolulu in the Nineteenth Century

*Thomas Riley (University of Illinois), Joseph Kennedy (Archaeological Consultants of Hawai‘i), Sandra Ireland (Archaeological Consultants of Hawai‘i)*

Excavations conducted at two sites in downtown Honolulu as part of the Kekaulike Redevelopment Project, Ewa Phase, yielded remains of settlement from the Polynesian Colonial (with dates of ca. AD 900-1000) and Protohistoric periods (ca. AD 1680-1750), and from three distinct time periods within the nineteenth century. The prehistoric and protohistoric features at the site are important in themselves, and radiocarbon dates suggest that the fish pond site that is part of the complex (50-80-14-4587) is earlier than might have been expected, with its construction dating to the Colonial Period. The date correlates well with a definite prehistoric coral platform feature that may be associated. This fish pond is just as important, however, for the date of its abandonment and infilling, which occurs between 1852 and 1879. The archaeological material recovered from the filling of the site will be shown in this paper to be bracketed by historic events that would forestall any of the material dating after 1879. Since the ceramics, glass, smoking pipes and other items recovered from the fish pond fill must represent the first eight decades of the nineteenth century, the remains from the feature can serve as a test of the efficacy of certain measures for dating features by artifact assemblages. In this regard, Stanley South’s weighted mean ceramic dates are tested against the known record and are found to date later than expected. Other dates, such as the mean ranges of pipes and glass, appear to present a more accurate reflection of the time period represented by the infilling of the pond. The pond is interpreted as being filled earlier rather than later in the 27 year period represented by the artifact assemblage, perhaps as early as 1870. An interesting distinctly American theme is
represented in the TD pipe bowls found, suggesting that Kamehameha IV’s worries about American influence in the Hawaiian Islands in the mid-nineteenth century was not unfounded. The distributional evidence of ceramic pipes that supports this conclusion will be discussed.

**Archaeology and History at Mokuʻula, King Kamehameha III’s Private Residence in Lahaina**

*Paul Klieger and Steve Clark, Bishop Museum*

Historical research has demonstrated that the private retreat of King Kamehameha III and much of his immediate family is presently located under a baseball field in Malu‘ulu o Lele Park off Front Street in Lahaina, Maui. The palace and a mausoleum had been built on a small island, Mokuʻula (Sacred Island), in the fishpond Loko o Mokuhinia, by Kamehameha III in 1837 and was utilized as the Royal Family’s main residence until the capital of the kingdom was moved to Honolulu in 1845. For planning purposes, among other considerations, Maui County Cultural Resources Commission authorized an extensive historical background search and subsurface archaeological testing at the site to determine the integrity of architectural structures from the period of aliʻi residence and the exact placement of the site. Funds have been administered by Lahaina Restoration Foundation.

Archaeological testing at the site has located basalt retaining walls and other well-preserved features and artifacts that most likely relate to the period of the early monarchy in Hawaiʻi. Traditional artifacts and debitage may reflect a pre-Cotact period of human occupation of the site. Radiocarbon dates and other data may provide knowledge as to the age of the village of Lahaina and its first occupation by aliʻi.

**Sail and Steam, Shipwrecks and Landings**

*Pete Hendricks, Hilo*

This talk will cover the earliest visitors to Hawaiʻi Island, transocean and interisland travel and trade, and the way things were done when everything moved by ship.

**SYMPOSIUM 6: BIOSKELETAL RESEARCH**

**Treponemal Infection in Pre-Contact Western Micronesia**

*Diane L. Trembly*

Treponemal infections include venereal syphilis, non-venereal syphilis, pinta, and yaws, all caused by the spirochete *Treponema pallidum*. Whether *T. pallidum* was present in the pre-Columbian New World and spread from there to Europe, or the other way around is a hotly debated topic. In the Pacific, its presence in pre-contact Polynesia is arguable. In western Micronesia, the antiquity of yaws was established in 1950 by the discovery of undisputed yaws pathology in pre-contact human skeletal remains on the island of Tinian in the Marianas.

Subsequent work by Hanson, Suzuki, Pietrusewsky, and others has revealed a high prevalence of yaws pathology in pre-contact skeletal remains from Saipan and Guam. Recent work by P. H. Rosendahl, Inc. has found yaws to be present and common in virtually all sites studied. Where sample size is sufficiently large to make a reasonable estimate of prevalence possible, the estimate is that 17-27% of adults and 10% of children over the age of four suffered from skeletal yaws. This ranged from mild infection of one bone to severe, destructive pathology of many bones.
Archaeological Recovery of Smallpox in Hawai‘i: Scientific Investigation or Public Health Threat

Like many of the world’s cities, Honolulu has at least one cemetery dedicated to the victims of a smallpox epidemic. As urban development increases, these cemeteries are sometimes the focus of relocation efforts by archaeologists and others. This paper discusses the potential for reintroduction of the *Variola major* virus through disturbance associated with relocation efforts. The World Health Organization has declared the world “smallpox free” in 1978, but the presented evidence will demonstrate that reintroduction is possible and that archaeologists may be the vector.

**SYMPOSIUM 7: CURRENT PACIFIC RESEARCH**

**Hawaiian Origins and East Polynesian Relationships: a Critical Review**
*Terry L. Hunt, UH Mānoa*

Prehistorians have assumed a simple A to B to C sequence of Polynesian colonization with some subsequent inter-archipelago contacts. The conventional scenario was deduced largely from historical linguistics and limited archaeological comparisons. In this view for example, Hawai‘i was settled from the Marquesas with a secondary migration from Tahiti. Similarly, Aotearoa saw settlement from Tahiti with secondary contacts from the Marquesas. Such orthodoxy has become entrenched in the literature to the point scholars have ignored significant refuting evidence. In this paper I challenge the received view of East Polynesian relations—with particular reference to Hawai‘i—using recent data from archaeology, historical linguistics, and biological anthropology. These complementary lines of evidence do not support primary, exclusive links among specific archipelagos. Instead, a pattern of regional homelands and multiple voyages of settlement emerges from diverse evidence now available. This reanalysis of East Polynesian relations has important implications for concepts of evolutionary divergence in the region.

**Reevaluating Contact Spheres in Prehistoric Polynesia**
*Erik Peartree, UH Mānoa*

Recent work on interaction and voyaging in the Pacific is causing us to reinterpret our beliefs about Polynesian prehistory. Irwin’s recent model of prudent intentional exploration suggests rapid and early settlement of Polynesia. This occurred during a period of intensive voyaging with decreasing contact over time and a subsequent contraction to the voyaging spheres known as European contact. Recent work in the Marquesas suggests that settlement may have occurred somewhat later and that post-colonization patterns of contact are closely linked to distance. The proto-historic level of interaction was adequate to keep all the societies of central Polynesia in contact with the outside but interaction took place at differing scales. Only the truly marginal societies had lost contact with the rest of Polynesia.

**Patterns of Interaction in the Southern Cook Islands**
*Melinda S. Allen, Bishop Museum*

Over the past two decades, we have increasingly come to appreciate the skill and effectiveness of Polynesians in traversing the watery expanse of the Pacific. Not only did they effectively settle
far-flung islands, but they maintained communication with homelands and neighbors. Augmenting voyaging studies, geochemical research is playing an important role in identifying the directions, intensity, and character of interaction between Polynesian communities. While the long-distance exchange networks of Polynesia’s early Lapita colonists have been much discussed, only recently have the possibilities of smaller, but parallel, networks of interaction in East Polynesia been considered. This paper examines emerging evidence from the southern Cook Islands and, in particular, geochemical and artifactual data from Aitutaki Island. The Aitutaki research and related studies elsewhere in the region have important implications for our understanding of cultural continuity and change.

**Inferring Ceramic Production and Exchange in the Yasawas, Fiji**  
*Matt McDermott, UH Mānoa*

Ceramic Assemblages were collected from surface sites throughout the Yasawa Islands in northwestern Fiji. Preliminary results from technological (macroscopic) and compositional (clay elemental study by SEM/EDS) analyses of sherds from the southernmost island provided tentative evidence for a technologically and compositionally distinct ceramic, a possible trade ware. The sample was expanded as assemblages from throughout the island chain were sampled for clay elemental study. This determined a number of compositional groups for the entire chain and provided a means of comparing the data from the southernmost island with its northern neighbors. These results provide a preliminary view of the scale of pottery production and exchange among island communities.

**East Polynesian Ceramics: Evidence of Original Colonization or Subsequent Exchange**  
*David Addison, UH Mānoa*

Ceramics have been reported from several different sites in both the Cook and Marquesas Islands. The initial material from the Marquesas Islands, in apparently early contexts, was interpreted as evidence of colonization directly from Melanesia or West Polynesia. The more recent finds from the Cook Islands have been interpreted as evidence of post-colonization contact between the Cook Islands and islands to the west. Recent field research and reinterpretation of sites from which ceramics have been found in the Marquesas raises questions about the context of the Marquesan sherds. Ceramics in east Polynesia are discussed in relation to these new findings and more general ideas about contact and voyaging in Polynesia.
Hawaiian Origins: A Multi-Disciplinary Approach (keynote address)
Roger C. Green, Dept. of Anthropology, University of Auckland
The immediate origins of the Hawaiians in central East Polynesia has long been a topic of discussion among oral historians, paleobiological anthropologists, historical linguists, archaeologists, and those studying the imported biota (plants, animals) which accompanied these human migrants. However, most scholarly writings on this topic usually focus on the details of only one or two lines of evidence from among the various sub-disciplines, largely to the exclusion of the others. This presentation looks at the variation in probable outcomes about origins suggested by current research in each of these fields. An attempt is made to outline how each in turn contributes to some possible solutions of this long-standing issue, and the kind of picture that seems to emerge when all are considered.

SYMPOSIUM 1: O‘AHU: AN ISLAND PERSPECTIVE

A Political Geography of O‘ahu
Tom Dye and Eric Komori, DLNR, Hawai‘i State Historic Preservation Division
Geographic information system technology is used to explore the traditional Hawaiian moku and ahupua‘a of O‘ahu. The resource bases of the six traditional moku are described using Hommon’s “salubrious core” model. Ahupua‘a are shown to incorporate both land and portions of the sea. Although today they are often referred to as land divisions, ahupua‘a are productively viewed as divisions of both fresh and saltwater.

A Brief Overview of O‘ahu’s Political History
Ross Cordy, DLNR, Hawai‘i State Historic Preservation Division
This presentation is an excerpt of a paper that reviews the history of O‘ahu from initial settlement through the conquest by the Maui kingdom, using archaeological and oral historical information. This presentation looks at the changing political history of O‘ahu, based on oral histories and pan-Polynesian ethnological data.

Hawaiian Native Lowland Vegetation in Prehistory
J. Stephen Athens (International Archaeological Research Institute) and Jerome V. Ward
This paper summarizes recent and ongoing research concerning prehistoric changes in the lowland vegetation of O‘ahu. Presently, over a dozen paleoenvironmental projects have been completed or are underway by IARII. These provide a rich mosaic of information covering different time periods and environments. Here the pristine native vegetation is characterized for the period prior to prehistoric Hawaiian colonization. Dramatic changes from a dominant Pritchardia palm forest to an open agricultural landscape with the advent of Hawaiian settlement and population growth are then described. Problems of chronology, temporal variation, and Polynesian introductions are discussed, as are the prospects for future research.
Fractured Views of Fragments: Hawaiian Culture and Archaeology
Muriel B. Seto, Hawai‘i’s Thousand Friends
Passage of the National Environmental Policy Act has played a major role nationally in the creation of an anthropological hybrid: “contract” archaeology. “Experts” are called in to assess, in a limited time, the significance of sites which may be impacted by public and private projects. Their recommendations seldom reflect values held by native Americans and/or the general public. Potentials for conflict are increased by other legislation mandating archaeological rather than ethnographic input to proposed actions (or ongoing activities) of agencies and landowners having cultural resources under their purview. Thus, the ascendancy of archaeology in public consciousness has led to unfortunate anthropological confusion and public suspicion. One result has been the native American Graves Protection and Repatriation Act.

Archaeologists have a responsibility to educate the public about their “scientific” approach in attributing worth to cultural sites. By the same token, public and ethnographic sensitivities require more than mere “science,” if, in Hawai‘i, we are to celebrate our unique cultural heritage into the future. Citizens have equally valid but often ignored value systems associated with rapidly diminishing urban and rural cultural landscapes. This results in criticisms of archaeology as being too limited and of archaeologists as being too poorly trained in Hawaiian culture to appropriately evaluate Hawaiian cultural remains.

Selected O‘ahu examples of “them” and “us” perceptions of archaeological decisions will be presented, in the hope that the citizenry, archaeologists, and public planners can create opportunities to forge non-confrontational, mutually beneficial partnerships.

GIS and Hawaiian Archaeology
Eric Komori, DLNR, Hawai‘i State Historic Preservation Division
In order to form useful inferences about Hawai‘i’s past, researchers often evaluate and integrate information from a wide range of increasingly specialized disciplines. Geographic information systems (GIS) provide an effective way to manage the rapidly expanding body of relevant data and to access powerful tools for developing and testing spatially referenced models. This paper summarizes information about the GIS under development by the State Historic Preservation Division and its significance to archaeological research in Hawai‘i.

Images of O‘ahu Heiau
Jan Becket, Kamehameha Schools
Jan Becket will present images from a six-year documentation project centered on heiau and other Hawaiian religious sites on O‘ahu. The project, which includes another half-dozen participants, has covered approximately 100 sites to date, and may ultimately end up as a publication. In presenting the images, Becket will discuss some of the problems of identification, terminology, and treatment of heiau in a publication. This work is partially funded by a grant from the state Foundation on Culture and the Arts.

SYMPOSIUM 2: HAWAI‘I ARCHAEOLOGY I

Land-use and Archaeology in Kīlauea’s East Rift Zone, Puna District, Hawai‘i Island
Greg C. Burtchard, International Archaeological Research Institute, Inc.
Repeated volcanic activity along Kīlauea’s east rift zone has long posed problems to settlement and to interpretation of the region’s archaeological record. Environmental studies mandated for
proposed Puna geothermal development provided an opportunity to model long-term land-use patterns and to devise means to examine model implications in the field. Extant literature and local environmental constraints suggest that prehistoric use of the region can be modeled in a series of settlement and agricultural zones, each with characteristic archaeological signatures. Field procedures to examine those patterns primarily focused on the identification and study of older volcanic kipuka within the volcanically active environment. The settlement model and associated field procedures are discussed, emphasizing implications for prehistoric land-use patterns and for continuing regional research.

Hawaiian Ingenuity: Living on ‘A‘ā
*Catherine Glidden and Laura Schuster, Kaloko-Honokōhau National Historical Park*
Kaloko-Honokohau national Historical Park provides a number of interesting and varied features that illustrate the ingenuity of Hawaiians who lived along craggy and unaccommodating ‘a‘ā flows. Sometimes the function of the ‘a‘ā sites is obvious, such as in the case with heiau and shrines. All too often, however, ‘a‘ā features defy functional classifications. This paper will address the myriad of possible functions of ‘a‘ā features using specific examples from Kaloko-Honokohau national Historical Park and elsewhere. It is specifically suggested that the placement of features on ‘a‘ā may hint at certain ideological, spiritual, and political determinants in addition to purely functional uses for these types of features.

An Introduction to Archaeological Use of a Differential Global Positioning System on Hawai‘i
*T. E. Scheffler, Kaloko-Honokōhau National Historic Park*
Global Positioning systems (GPS) are an expanding technology that in essence uses three-dimensional satellite triangulation to pinpoint the location and elevation of points anywhere on the surface of the globe. The use of computers to correct for subtle errors in transmission (Differential GPS) has made the accuracy of such positioning in some cases better than standard archaeological techniques. The GPS is especially suited to archaeological work on Hawaii‘i because of the environments and topography presented on the island.

Applications for archaeology range from tracking remote survey locations, to mapping and recording sites and features and to navigate to and from coordinates. GPS integrates very conveniently with Geographic Information Systems (GIS) which are becoming the norm in the handling of spatial data.

This paper presents an overview and introduction to the power of this tool. Within are presented as examples some of the data collected at KAHO and HAVO National Parks, as well as some of the problems encountered, and associated drawbacks of the particular system in use.

Archaeology and Hawaiian Mythology
*Leialoha A. Perkins, UH West O‘ahu*
This paper is an attempt to classify Hawaiian myths in accordance with archaeological data and the time lines suggested in Kirch’s *Feathered Gods and Fishhooks*. Several hypotheses concerning the structural features of the gods (about whom the myths concern), the sites (where the myths can be “predicted” to be found), and the sites’ inhabitants (whose use of the myths are based on economic and social factors of land, sea, and sky) are presented. For and against the hypotheses are pitted sample cases based on the oral tradition of the “Hawaiians” of different phases of time periods showing how myths did not only conserve old traditions but undermined
them for the changes that were anathema to the concept of ancestral tradition. That is, Kirch’s chart allows for explanations of very different explanatory models of mythic structures. This paper will show the chart’s usefulness as a guide and also some of the major problematic issues that seemingly cannot at this time be addressed for testing.

SYMPOSIUM 3: LITHIC TECHNOLOGY

Organizational Changes in Basalt Adze Manufacture Strategies on the West End of Moloka‘i
An 6350 acre archaeological survey of southwest Moloka‘i has revealed a cluster of Workshop/habitation compounds and possible agricultural terracing in the middle of a basalt adze quarry zone in Kamaka‘ipo Gulch. These remains suggest a deliberate strategy of more concentrated exploitation of lithic resources and dryland crops than predicted by earlier research in the area. This evidence is hypothesized to be a response to increased demands for stone tool use required by agricultural intensification and other related activities in windward Moloka‘i during late and pre- and perhaps early post-Contact times. A comparison of excavated lithic data from the largest quarry, one workshop compound, and several coastal residences will be presented to illustrate these changes.

Adze Production and the Pololū Site, Island of Hawai‘i
Barbara Lass, UH Hilo
The Mauna Kea Adze Quarry has been the focus of extensive research, but little is known about adze manufacture at smaller sources of adze stone known to exist on the island of Hawai‘i. This paper describes research on one of these smaller sites and focuses on the form of raw material used and stages of manufacture carried out at an adze manufacturing site in the Pololū Valley. Data suggest that the adzes were manufactured from flake blanks and that only relatively early stages of manufacture were carried out at the site.

Recent Results from a Reanalysis of Lithic Assemblage from Pintu/Busibus Site, Luzon, Philippines
D. Kyle Latinis, University of Hawaii-Mānoa
The original interpretation of the Pintu/Busibus Rockshelter was that it served as a temporary, Intermittent camp site from about 4,000 B.P. to 1,500 B.P. by groups of hunters/collectors in which a number of activities occurred including butchering, scraping and woodworking (Peterson 1974). A reanalysis of the lithic assemblage suggests that this site was instead utilized as a quarry/chipping station for the production of adze blanks and preforms. It is further suggested that the preforms and blanks were transported, finished, and utilized elsewhere.

THE PUʻU MOIWU ADZE QUARRY COMPLEX:
AN OVERVIEW OF RECENT WORK

The Puʻu Moiwu Adze Quarry Complex: An overview of Recent Work
Pat McCoy, DLNR, Hawai‘i State Historic Preservation Division
Archaeological investigations of the Puʻu Moiwu Adze Quarry in 1992 revealed the existence of previously unknown manufacturing locales and several new examples of what appear to be ritual
remains. The recording of artifact attributes on forms in the field provided the first quantitative
data on the frequency of different adze types and other aspects of the manufacturing technology.
The results of the 1992 project are briefly summarized and discussed in terms of their relevance to
several research questions.

**Geological Sourcing of Marquesan Adzes: Archaeometric Evidence for Inter-Island Contact**
*Barry Rolett, John Sinton, and Eric Pearthree, UH Mānoa*
This study draws upon both archaeological and ethnographic data from the Marquesas, a remote
archipelago of 10 volcanic islands, to investigate prehistoric East Polynesian voyaging spheres.
Geochemical analyses of lithic artifacts (primarily basalt adzes) from excavations at the Hanamiai
Dune, on Tabuata, provide clear evidence for interisland contacts spanning about 750 years in
Marquesan prehistory, beginning ca. AD 1000. This material evidence for voyaging is
interpreted in the broad context of ethnohistoric records describing Polynesian cultures at the time
of European contact.

**SYMPOSIUM 4: OʻAHU FISHOPONDS I**

**Fishponds and Fishtraps of Oʻahu**
*William K. Kikuchi, Kauaʻi Community College*
There are between 170 and 190 fishponds and fish traps on Oʻahu Island. The largest numbers
represented are the *loko wai* (fresh water) ponds, followed by *loko kuapa* whose seawalls
impound a portion of the sea. Oʻahu’s large numbers of ponds are attributed to its shore and
inland geography. The sea level recession during the Holocene and Pleistocene provided
stranded ponds, raised fringing reefs, shallow coastlines, large shallow deltas and an indented
coastline. This geography provided the Hawaiian farmer with an ideal fresh to salt water
environment to utilize. The Hawaiians’ skill in tapping this resource led to the innovation of an
incipient aquaculture whose likes are unknown in the rest of Oceania. Tied to this innovation
were the socio-economic and religious threads to a rising status group of chiefs. The culmination
enhanced and exemplified the wealth of the chiefdom of Oʻahu.
Hawaiian Fishpond Management

Carol Araki Wyban

Management of an ancient Hawaiian fishpond requires a unique blend of art and science. A fishpond is an ecosystem with site specific characteristics and no two fishponds are identical. Though each fishpond is unique there are basic management perspectives and approaches which a pondkeeper implements in the tasks of maintenance and care of a fishpond which will be discussed in this paper.

ʻUkoʻa: The Evolution of a Fishpond Near Haleiwa, Oʻahu

J. Stephen Athens (International Archaeological Research Institute, Inc.), Jerome V. Ward, and Dean W. Blinn (Northern Arizona University)

Based on the recovery of three sediment cores, an 8,000 year paleoenvironmental sequence is described for ʻUkoʻa Pond, located near Haleiwa on the north shore of Oʻahu. Sediment changes and accumulation rates are discussed, as are pollen and diatom assemblages. The pond is shown to have undergone a series of significant environmental transformations since it first formed, with salinity levels in continuous flux. Information concerning Hawaiian settlement and prehistoric vegetation change are also noted. Implications for Hawaiian use of ʻUkoʻa Pond are discussed.

SYMPOSIUM 5: HISTORICAL ARCHAEOLOGY

Sampling the Post-Contact Archaeological Record on Oʻahu, Hawaiʻi

Susan A. Lebo, Bishop Museum

What methods and techniques are being utilized by archaeologists to sample the post-contact archaeological record in Hawaiʻi, most specifically on Oʻahu? Have these methods and techniques been developed within an explicit theoretical framework? Do we have explicit research goals directing our sampling of this portion of the archaeological record? Our answers to these questions have serious implications for how we interpret the excavated post-contact record of Oʻahu. Emphasis is placed on comparing sampling strategies among rural and urban settings; early contact, post-contact 19th c., and 20th c. sites; among Native Hawaiian and foreign-impacted assemblages and contexts, and midden and feature contexts.

A Brief History of Halawa, Oʻahu, with Implications for Archaeological Interpretations

Paul Klieger, Bishop Museum

Historical and ethnographic research relating to North Halawa Valley in ʻEwa, Oʻahu, has been completed and is in press. Halawa was a classical leeward Oʻahu ahupuaʻa, and its history reads as a textbook illustrating the monumental changes that befell the Hawaiian kingdom in the post-Contact era. Halawa, with slightly less than 10,000 acres, was perhaps most noteworthy during pre-Contact times for its rich diversity of natural resources and diverse subsistence technologies used to exploit them. Having coastal, lagoonal, and riparian shorelines, Halawa contained a wide range of aquatic habitats. Mauka of the pelagic and reef coastal fisheries were two large, sand-banked fishponds. Two fish weirs, along found throughout Polynesia but rare in Hawaiʻi, were located along the Halawa section of the Pearl Harbor lagoon. Seven artificial freshwater fishponds have been documented within the Halawa Stream estuary. The natural pond at Makalapa Crater also served as a freshwater fishpond. At the time of the Mahele, from 75 to over 90 irrigated taro patches still existed adjacent to the Halawa Stream estuary and 22 open kula
fields were claimed. Although taro patches have been documented in the very back of North Halawa Valley, most lo‘i were in the vicinity of the present Aloha Stadium. Dryland terraces characterize the lower to mid-valley regions.

During the nineteenth century, land use in Halawa, as elsewhere in Hawai‘i, changed from subsistence fanning, hunting, gathering, and fishing to a cash economy. Extractive harvesting for sandalwood, timber for constructions, and firewood provisioning most likely greatly impacted the valley forests. Cleared lands were turned over to livestock ranching as early as the 1830s in Halawa. As Native Hawaiians left their kuleana in lower Halawa in the 1850s, Chinese immigrants converted many lo‘i into rice paddies. Subsequently, with the development of enhanced irrigation facilities and the use of imported labor, much of Halawa became a massive sugar plantation by the turn of the century. The historical-period sites in North Halawa Valley relate to either the mid-nineteenth century cattle ranching period or to the sugar plantation which settled Hispanic immigrants in the valley. In the twentieth century, the growth of Pearl Harbor Naval Base not only destroyed the utility of the fishponds, but reduced the acreage and ultimately the profitability of sugar. Since World War II, Halawa has been further transformed by residential, light industrial, and infrastructural development.

**Preliminary Analysis of All Land Commission Awards on the Island of Kauaʻi**

*Victoria Creed, Cultural Surveys Hawaiʻi, Inc.*

In a 5-year project to computerize and collect all the land Commission Award records (1848-1853) of Native and Foreign registers and of Native and Foreign Testimonies of all the Hawaiian Islands taken from the State Archives, the Island of Kauaʻi is approximately complete. The discussion here centers on a preliminary analysis for the island of Kauaʻi of the number of claimants, their location, their cultigens and house lots, both island-wide and by ahupuaʻa. Three in-depth studies recently done for Hanapepe, Nawiliwili, and Waioli by Cultural Surveys Hawaiʻi, Inc. add perspective to the Land Court Award information. There are different styles of claims, some use more formalized language with less freedom of individual expression and in other areas individualized descriptions flourish.

**The Russian-American Company (RAC) in King Kaumualiʻi’s Court: Preliminary Investigations of Fort Elisabeth, Waimea, Kauaʻi**

*Peter R. Mills, UC Berkeley*

Preliminary results are presented from U.C. Berkeley’s 1993 and 1994 summer field schools at Fort Elisabeth, Kauaʻi. Fort Elisabeth is a stone-walled structure that was built following an alliance between Kaumualiʻi, paramount chief of Kauaʻi, and George Schaffer of the RAC in 1816. George Schaffer and the RAC were forced to leave Kauaʻi in 1817 which left Kaumualiʻi in sole control of the fort. Historical accounts of the site have emphasized the "Russian” nature of this site and have generally ignored the role of Hawaiians in determining the location, scale, method of construction, and uses of the fort. This is in spite of a period of occupation by native Hawaiians spanning much of the 19th Century. The armament was not dismantled until 1864. Ethnohistorical and archaeological data are used to help understand the fort and surrounding landscape within a diachronic framework that incorporates European and Hawaiian perspectives.
SYMPOSIUM 6: HAWAI‘I ARCHAEOLOGY II

Warfare, Refuge, and Settlement: A Re-evaluation of the Role of Caves in Ancient Hawaiian Society
James E. Brady and Joseph Kennedy, Archaeological Consultants of Hawai‘i, Inc.

Investigations at the Mauka Refuge Area of Cave Site 5060 located in Keopu 2nd ahupua‘a raise questions concerning some of the basic assumptions being made about Hawaiian cave utilization. Cross-cultural data and extensive experience with cave archaeology in other areas suggest that the habitation function attributed to Mauka Refuge Area and other caves is unlikely. Instead, recent work has documented architectural modifications to the cave morphologically different than those proposed by previous work (Schilt 1984). Evidence suggests that the entire area of intensive utilization was in fact a “built environment.” The labor expenditure on cave modification exceeds the expenditure on nearby surface architecture, suggesting that the role and importance of these features can be reinterpreted. The role of the refuge cave is analyzed in the context of ancient warfare and the possibility that cave location may have determined the placement of settlement is raised.

Community Patterning in Two Late Prehistoric Coastal Settlements Kanaio, Maui
Patrick V. Kirch (UC Berkeley), Frank Eble, (BioSystems Analysis, Inc.), and Paul L. Cleghorn (Pacific Legacy, Inc.)

Two coastal settlements in the ahupua‘a of Kanaio, Maui, were studied through intensive surface mapping and observation of structural, artifactual, and faunal variation. Despite some variation, we argue that consistent patterning within these settlement complexes is consistent with a model of extended household clusters. We present several hypotheses for the organization of such households which may be of wider regional significance.

The Gray Literature Shows its Colors: A Review of Contract Archaeological Reports for Moloka‘i
Maurice Major, Bishop Museum

The majority of archaeological literature in the State of Hawai‘i exists in the form of technical reports written to fulfill archaeological contracts. Although scholarly publications often make selective use of these documents, and contemporary contract reports generally mention them in discussing “previous archaeology,” an overview of this segment of the literature has not yet been done. In this paper, I attempt to do such an overview for the island of Moloka‘i with methods that can be replicated and depend on analyses of reports as artifacts rather than subjective literary critique.

Over fifty variables were recorded for each report, recording the amount of text, figures, and tables used to cover content areas such as environment, history, previous archaeology, site descriptions, material remains, significance, and discussion. Other variables were recorded as possible causal factors affecting these, including: level of investigation, date of the report, its authors and their employers, type of client, etc. Finally, reference lists from the reports were examined in order to see whether or not standard sources were used and to assess how often authors cited sources outside of Hawai‘i as well as their own work.

Eventually, a broader consideration of the contract literature is needed, but this project presents techniques that may be applied elsewhere. Patterns and trends that have emerged from the current analysis also suggest considerable variation through time and between actors in the
archaeological consulting business. As well as providing a historical glance at the first two decades of contract archaeology, I hope that these findings may encourage discussion -- and perhaps reassessment – of the standards and cultural assumptions implicit in archaeological writing.

SYMPOSIUM 7: MARIANAS ARCHAEOLOGY I

Settlement of the Mariana Islands: Implications for Human Movement in the Western Pacific
John Craib, Bonhomme, Craib, & Associates
Recent excavations have demonstrated the antiquity of humans in the Marianas to at least 3500 BP. Associated with this date are incised and stamped pottery and Conus shell ornaments. Similar antiquity or artefacts are found nowhere else in Micronesia. Comparisons are made with assemblages from Southeast Asia and Melanesia and general implications for human movement in the western Pacific is discussed.

Coastal Site Formation in the Marianas
Gary Mangold, Bonhomme, Craib, & Associates
Evidence of pre-3000 B.P. settlement in the Marianas is restricted to remnant calcareous beach deposits found along much of the islands’ coastlines. Although relative sea level has been the predominant factor controlling coastal sedimentation patterns during the Holocene, previous interpretations of coastal site formation in the Marianas have been based on a poorly defined notion of storm deposition. The storm process concept has become virtually fixed in the local archaeological literature despite a lack of analytical data to support it and has been applied to deposits that contain no sedimentary features diagnostic of storm activity.

Sedimentary analyses carried out on the north coast of Rota, and a review of published reports from other islands, indicates that artifact-bearing remnant beach deposits comprise single fining-up cycles of ‘normal’ beach sedimentation, laid down as prograding wedges under the influence of falling sea level. Relative sea level began to fall around 3000 B.P. and the beach sands were finally stranded landward of wave activity around 1600 B.P., at which time soil formation commenced.

The mid-Holocene sea level highstand lasted from approximately 5000-3000 B.P. and during this period the coastal zone was very narrow, with little backbeach or elevated sandy areas for human occupation. The initiation of human settlement in the Marianas coincided with the closing stage of the highstand and although the subsequent fall in sea level, of from 2-4 m, would have tended to preserve any intact deposits dating to 3000 4000 B.P., it is not clear what the depositional environment of occupation sites would have been at this time, as the beach sands themselves would have provided very insecure landforms for habitation. Once sea level change is taken into account, most of the pre-3000 B.P. cultural deposits identified in the Marianas would seem to have accumulated within or just above the intertidal zone. Some of these deposits show no evidence of having been reworked, and the sea level chronology for the area would make extensive reworking unlikely. A tentative interpretation is that coastal habitation in early Marianas prehistory involved stilt houses or structures built on thin beach sand in order to place floors well above maximum wave and tidal activity. Stilt houses built in shallow water are widespread today in Papua New Guinea and have been recognized in early Lapita prehistory.
Hard Times in Small Places, the Late Prehistoric Settlement of Aguiguan
Brian Butler, Southern Illinois University

Aguiguan is the smallest and most resource-poor of the islands in the southern portion of the Marianas. Poor access and resource limitations, most critically the lack of surface water, forestalled permanent settlement of the island until late prehistoric times. A survey of the island has revealed an extensive and complex pattern of late prehistoric settlement under less-than-optimal circumstances. The distribution of settlements suggests a compromise between the need for direct access to the sea as opposed to access to arable land. Ceramics from the island suggest that the inhabitants benefited from extensive trade contacts among the southern islands.

Ceramic Production Centers in the Marianas: New Data from Aguigan
Jeannette Simons, BioSystems Analysis, Inc.

In 1990, an assemblage of pottery rims was collected from Aguiguan Island during surface survey conducted by Brian Butler, Center for Archaeological Investigations, Southern Illinois University, Carbondale. The collection represents a period of approximately 900 years from c. A.D. 800 through the latter part of the 1600s. Based on attribute analysis, and comparing those data with data produced from pottery assemblages from the other Mariana islands of Rota, Guam, Tinian, and Saipan, Butler hypothesized that the collection derived from multiple production centers, none located on Aguiguan. To test this hypothesis, ceramic ecology and paste characterization methods were invoked. Techniques with replicable standards were applied to quantify variation in the paste that is revealed in mineralogical, color, and other physical property and style attributes observed by qualitative examination and quantitative measurements. The evaluations were considered against geological relationships, firing behavior of clays, cultural treatment and assumed geographical patterns of occurrence. Laboratory investigations were successful in determining the general structure of variability of ceramic pastes represented in the Aguiguan samples, and the hypothesis was found acceptable.

Archaeological Investigation of Loko Kuwili
Robert L. Spear, Scientific Consultant Services, Inc.

In 1993, archaeological inventory survey investigations were conducted at Loko Kuwili. A number of stratigraphic layers were identified, including the fishpond deposits. A series of radiocarbon dating samples were collected for analysis and coring for pollen information was carried out. The results of the analysis provided a chronology for the project area and evidence for environmental change over time.

Dating and Construction of Loko Kunana
Scott Williams (Ogden Environmental and Energy Services) and Tom Dye (DLNR, Hawai‘i State Historic Preservation Division)

This paper is about archaeological models and how they might be used in the interpretation of radiocarbon dates. A paleoenvironmental core was taken through Loko Kunana, a traditional Hawaiian fishpond at the mouth of Halawa Stream which was completely filled during construction of the Pearl Harbor Naval Base in the 1930s. Eight sediment samples from within, below, and above the fishpond sediments were dated with the AMS method. These dates were calibrated with the OxCal program developed by Christopher Ramsey at Oxford. An initial
model of sediment deposition at Loko Kunana agreed poorly with the radiocarbon dates. Iterative refinement of model assumptions lacking support in the data led to construction of a model that agrees well with the radiocarbon dates. This model, combined with the radiocarbon dates, indicates that Loko Kunana was constructed between AD 1400-1550. Data needs for further refinement of the model include additional radiocarbon dates and further analysis of at least one sediment to verify its posited composition.

Pehu’s Place: A Small Fry Pond Provides Data on Large Issues in Hawaiian Archaeology

Joseph Kennedy (Archaeological Consultants of Hawai‘i Inc.) and Thomas J. Riley (University of Illinois)

In 1993 an inventory survey in Chinatown identified a small (.0324 hectare) pond that was associated in name with Pehu, a commoner konohiki in the early historic period. Subsequent data recovery work at this site presents a new possible date for early fishpond construction in Hawai‘i and identifies a very narrow time window in which the pond must have been filled. The diagnostics used to fix this temporal cap freeze Hawaiian material culture and allow other archaeologists to recognize clearly what can be expected during this time period in other parts of Honolulu and by extension other parts of rural Hawai‘i. It is upon this base that significant trends in material cultural distribution may be calibrated.

CLAMS, SNAILS AND MUD: A RECIPE FOR GEOMORPHOLOGICAL CHANGE AT MOKAPU, O‘AHU

Clams, Snails and Mud: A Recipe for Geomorphological Change at Mokapu, O‘ahu

Timothy P. Denham (BioSystems Analysis, Inc.) and Paul L. Cleghorn (Pacific Legacy, Inc.)

Based on the available evidence from Nu‘upia Ponds and Mokapu Peninsula, a model of coastal formation and fishpond development is proposed. A variety of geomorphological and environmental evidence, including coastal morphology, stratigraphy, land snails, and marine shell assemblages, is re-evaluated. A brief cultural history of the ponds is presented within the context of broader environmental and geomorphological changes. The paper concludes with the presentation of several research questions to guide future work at Mokapu.

SYMPOSIUM 9: O‘AHU RESEARCH

A Discussion of Two Habitation Sites and Land Use Patterns at Fort DeRussy, Waikiki, O‘ahu

Ingrid K. Carlson, BioSystems Analysis, Inc.

BioSystems Analysis, Inc., under contract to the U.S. Army Corps of Engineers, Pacific Ocean Division, has conducted monitoring operations at Fort DeRussy, Waikiki since January 1993. In this time a total of 42 features and 17 distinct burial locations have been recorded. In evaluating these data, two distinct habitation areas were revealed on the makai side of Kalia Road. When the information gathered from these two sites is added to previous work conducted in the area, a chronology of land use patterns can be refined for the Kalia/Fort DeRussy area.

Bertell Davis (1984), using dates taken from volcanic glass samples, first proposed a model of settlement patterns for the western half of Waikiki, which posited pre-Contact Hawaiian use of the region by the 17th century AD. Davis described three broad zones of land use, running from mauka to makai: an inland agricultural zone; an intermediate area containing
the fishponds; and the shoreline habitation zone. With the results gathered during our monitoring work, it would appear that land use began by the 15th century. Further, the results warrant the reformulation of Davis’s model of land use for the DeRussy area.

**Dead Birds, Disparate Data: A Thanatopsis on ‘Ewa Plain Archaeology**

*Dave Tuggle, International Archaeological Research Institute, Inc.*

Bird extinctions and human intervention have constituted an undying theme for the archaeology of the ‘Ewa Plain. This issue is the background for a review of ‘Ewa Plain research. Research problems and archaeological data are dissected in regard to environmental reconstruction, human-induced environmental change, occupational growth, and settlement systems. It is argued that many of the patterns proposed for ‘Ewa environmental change remain poorly documented. Yet another plea is made for improving methods of data collection and analysis in the moribund field of multidisciplinary research.

**Human Settlement of the ‘Ewa Plain Revisited: Data Recovery Findings of the ‘Ewa marina Community Project**

*Leta Franklin, Paul H. Rosendahl, Inc.*

From December 1993 to March 1994, PHRI conducted data recovery excavations at the ‘Ewa Marina Community Project area in ‘Ewa Beach, O‘ahu. Ninety-two units were excavated in archaeological features (mostly enclosures, C-shapes, and mounds) and nineteen in sediment-filled sinkholes with the potential for containing paleontological deposits. The field and analytical methods of the project were geared towards generating data useful in addressing two regional research questions, both of which have been presented and tested in previous studies by B. Davis and A. Sinoto. The first research question seeks supporting evidence for the hypothesis of “prehistoric anthropogenic change”—that paleoecological change in the regions was directly, or indirectly, influenced by the actions of native Hawaiians. The second research question addresses the nature of settlement and land use patterns on the ‘Ewa Plain, a relatively marginal environment, through time. This paper will present the findings of the project relating to these research questions, and compare these new data with the findings of previous studies. Suggestions for the direction of future work will be presented.

**Agricultural Development and Intensification: A Reconstruction of Pondfield Expansion in West Loch, O‘ahu**

*Susan T. Goodfellow, Paul H. Rosendahl, Inc.*

This paper presents a reconstruction of the pondfield sequence revealed as a result of data recovery excavations at site 3324 (pondfield system) within the West Loch Estates project area. The results of the 1986 excavations within site 3324 indicated the presence of deeply buried pondfield soils over much of the lower plain, several of which yielded early prehistoric dates in the range A.D. 1020-1670. Data recovery work was therefore oriented towards identifying the extent of the pondfield soils and recovering sufficient radiocarbon samples to permit reconstruction of the pondfield system through time. A total of 232 backhoe trenches was excavated at site 3324 as part of data recovery work, the majority of which revealed buried pondfield soils overlying the pre-cultural landscape. A total of 45 samples was submitted for radiocarbon analysis from strata identified as pondfields; these yielded calibrated calendric age ranges (two sigma) of AD 320-1950. Correlation of the dated pondfield strata across the project area provided sufficient data for a preliminary reconstruction of pondfield development and
expansion during the prehistoric period. Reconstruction of the pondfield sequence during the historic period was supplemented by information from historic documents and maps. After the basic data are presented, hypotheses concerning the social and economic context associated with initial development and subsequent expansion of the pondfield system will be posited, and the data compared to models of agricultural intensification extant in the literature.

SYMPOSIUM 10: MARIANAS ARCHAEOLOGY II

Toward an Explanation of Diversity in Latte Phase Burials on Guam
Rosalind Hunter-Anderson, Micronesian Archaeological Research Services
Archaeological similarities among Guam’s coastal and interior upland burials (and in other aspects of culture) during the Latte Phase (ca. AD 1000-1700) suggest an island-wide cultural system with many shared practices and beliefs. Nonetheless, there are differences between interments in the two geographic settings which indicate burials at interior upland sites represent a narrower range of individuals qualifying for mortuary treatment there. The differences include sex, age, and association with latte stone features. These are accounted for by a model of social differentiation within the settlement system of large districts combining coastal and inland habitats. Implications for further study are deduced.

Health and Disease in the Mariana Islands: A Preliminary Assessment from Human Osteology
Michael Pietrusewsky, Michelle Douglas, and Rona Ikeharam UH Mānoa
Using several skeletal and dental indicators, an assessment of the health and disease in the early inhabitants of the Mariana Islands is made. Included in this survey is the relatively large (N=152) skeletal series from Apurguan, Tumon Bay, Guam and several smaller skeletal series from Guam, Rota, Tinian and Saipan. A total of 383 individuals are included in the survey. The majority of the specimens are from pre-Latte (BC 1000 - AD 1) and Latte (AD 1000-1521) periods. These data derive primarily from unpublished osteological reports on file at the University of Hawai‘i.

The osteological indicators of health and disease utilized include mortality and paleodemographic data, estimated stature, dental enamel hypoplasias, dental caries, dental abscessing, periodontal disease, premortem tooth loss, dental attrition, *cribra orbitalia*, limb bone fractures, degenerative osteoarthritis, infectious disease (including terponemal infection), and cultural modification of bone and teeth. Where appropriate, tests of significance are calculated to determine the presence of any patterning in the differences observed within and between the skeletal series.

Several of the larger skeletal series surveyed have paleodemographic features that are consistent with long-term cemetery populations. Females tend to be under-represented in most of the series and most of the subadult deaths occur in the 2-5 year age interval. The average age-at-death in adult females is generally high that that seen in males. The estimated average statures of prehistoric inhabitants of the Mariana Islands exceed living Chamorros measured in the early part of the present century. With some exceptions, the frequencies of premortem tooth loss, dental caries, dental abscessing, periodontal disease and dental enamel hypoplasia are generally low in the remains from the Mariana Islands. Betel-nut staining is relatively common in all series. Tooth evulsion, although rare, has been tentatively identified in some series.
Fractures are not uncommon in these skeletal series although the frequency and patterns of fractures do not suggest widespread or frequent warfare. Bony change suggestive of treponemal (probably yaws) disease are common in most skeletal series from the Mariana Islands. Evidence of metabolic disease, such as *cribra orbitalia*, are relatively low in these series. Comparisons of osteoarthritis support a greater prevalence of degenerative changes in females than in males. Evidence for removal of bones after skeletonization, for cultural alteration, is relatively common in these remains. The unusual association of human bone spear points, found with some individuals, suggests the use of the retrieved skeletal material.

**Observations on Occipital Superstructures in Human Populations of the Pacific**

*Vincent J. Sava, UH Mānoa*

Various types of bony tubercules and processes located in the lateral and sagittal midline of the posterior cranial vault, collectively called occipital superstructures, were first described by anatomists in the latter part of the 19th Century and the 20th Century. These structures have recently become a topic of interest to anthropologists. These features appear to have a high frequency of occurrence in Pacific populations and it is possible that some aspects of this variation may only be found in people from this region.

A search of the past literature indicates that occipital superstructures occur primarily in skulls from Papua New Guinea and from the Mariana Islands. Recently, prominent examples of these features have been observed in photographs and in skull casts of prehistoric Hawaiians as well as in approximately 50% of the crania in a small skeletal series from Pangaimotu Islands in Tonga. Occipital superstructures in the Pangaimotu remains are described and compared to those found in prehistoric Mariana Islanders.

A tentative differential diagnosis for this unusual cranial variation is advanced. The most popular explanation of these structures is the hyperdevelopment of the posterior head and neck musculature due to an underlying genetic component, occupational stress, or a combination of both.

**Skeletal Biology of Apurguan, A Pre-Cotnact (Pre-1521) Chamorro Cemetery on Guam, Mariana Islands**

*Michelle Douglas, Michael Pietrusewsky, and Rona Ikehara UH Mānoa*

Human skeletal remains of at least 152 pre-contact Latte period (AD 1000-1521) individuals recovered through archaeological excavation at Apurguan, Tamuning District, Guam, are described. The sample represents one of the largest series of pre-contact Chamorro skeletal remains to be analyzed in recent years. Applying current standard techniques of human skeletal biology, we report on aspects of paleodemography, cranial, dental, and infracranial morphology, and evidence of dental and skeletal paleopathology observed in the Apurguan series. Limited comparisons with other skeletal series from the Mariana Islands and the Pacific are made.

Included in the Apurguan series are the remains of subadults (n=51) and adults (n=101). Adult males (n=53) outnumber females (n=43). Life expectancy at birth is 28.6 years. The highest mortality among subadults is between 2 and 5 years of age. The average age-at-death among adults is 43.5 years. Aspects of cranial vault morphology observed in the Apurguan skulls are similar to other Chamorro series. Shoveling occurs in 37.5% of the permanent maxillary incisor teeth and Carabelli’s cusps are recorded in 14.4% of the permanent maxillary molars. Dental health of the Apurguan series is generally good. Dental caries, abscessing, the incidence of periodontal disease, and dental enamel hypoplasias are relatively low. Examples of third
molar impaction, betel staining, and possible evidence of tooth ablation were observed in these remains. The average male stature is 171 cm and average female stature is 162 cm. Costo-clavicular sulci, supraclavicular foramina, and tibial and talar squatting facets are relatively common in the infracranial skeletons. Paleopathological observations included healed fractures (involving the skull, ribs, vertebrae, ulna, hand, femur, tibia), osteoarthritis, possible treponemal infection (10 individuals), gouty arthritis, etc. Two males have enlarged bilateral tubercules of the occipital bone. Fifteen burials exhibit prehistoric disturbance for the removal of skeletal elements. One individual, a young adult male, is associated with multiple human bone spear points.

The relatively large size of the present skeletal series, combined with the detailed, systematic recording of skeletal biological features, provides an important database for assessing the paleodemography, health, and biological origins of the prehistoric inhabitants of the Mariana Islands.

This research was supported by International Archaeological Research Institute, Inc., Honolulu.

SYMPOSIUM 11: GEOARCHAEOLOGY AND MICROMORPHOLOGY PAPERS

Sea-level Change and Coastal Terraces Formation in Samoa: Geoarchaeological Evidence from the Toʻaga Site
Patrick Kirch, UC Berkeley
On many Oceanic Plate islands, coastal terraces are a significant geomorphological environment for the preservation of mid-to-late Holocene archaeological sites. An understanding of the formation processes of such terraces, especially in relation to fluctuating sea levels and tectonic movements, is therefore critical to Pacific archaeology. This paper summarizes the results of recent work on Ofu Island, Samoa, where a changing sequence of coastal terrace formation and destruction has been revealed through stratigraphic excavation, geoarchaeological analyses of sediments, and radiometric dating.

Paleoenvironmental Change and Traditional Land Use in the Coastal Lowlands of Guam, Mariana Islands
Jane Allen, Ogden Environmental and Energy Services
A Growing body of geoarchaeological and botanical evidence from sites throughout the IndoPacific region suggests that many coastal lowlands experienced infilling with terrigenous soils and sediments between AD 500 and 1500, during the cultural era. Both natural and cultural changes are represented and it is often quite difficult to disentangle the individual processes that produced them. In Guam, evidence from Agana Marsh and the Agana and Fonte River drainages suggests that these processes include: initial sea level and stream changes; upland forest clearing and agricultural intensification or expansion or both; erosion of upland soils and sediments and their redeposition at the coast; coastal accretion and infilling; and population centralization in coastal areas, with continuing cultural and natural changes in newly-created lowlands.
Sources of Sand Tempers in Prehistoric Tongan Pottery
Tom Dye (DLNR, Hawai‘i State Historic Preservation Division) and William Dickinson (Dept. of Geosciences, University of Arizona)

The sources of volcanic temper sands in prehistoric pottery found on low-lying raised-coral islands of Tonga have long been uncertain, with importation from the active magmatic arc to the west or even Fiji suggested in the past. The sample mineralogy of the tempers, which are composed almost exclusively of pyroxene and plagioclase mineral grains, volcanic rock fragments, and opaque ferromagnesian oxide grains, is compatible with derivation from Tongan volcanics, but island volcanoes of Tonga lack deposits of rounded and well sorted sands that are similar texturally to the tempers. Discovery of local placer deposits composed of volcanic sand on beaches otherwise composed of calcareous reef detritus within the Ha‘apai Group of central Tonga provides a satisfactory local source for temper on the shorelines of inhabited low-lying islands. The beach placer sands were apparently derived from reworking of thick tephra deposits that mantle the raised-coral islands. Detailed compositional analysis of numerous ancient Lapitoid potsherds from all the constituent island groups of Tonga implies that pottery making was once a widespread local industry making use of widely available local raw materials for clay and temper. Stylistically distinctive protohistoric Fijian pottery can be distinguished sharply from indigenous ancient wares by its anomalous tempers, none of which can be associated unequivocally with the older Lapitoid potsherd assemblage.

Searching for Moku‘ula: Results of Initial Archaeological Testing in Malu‘ulu o Lele Park, Lahaina, Maui
Stephen D. Clark, Bishop Museum

Moku‘ula was the site of the private residential complex of Kauikeaulani, King Kamehameha III of Hawai‘i, from 1837 to 1845 when Lahaina was capital of the kingdom. Moku‘ula was a small island (about one acre) in a freshwater pond, Loko o Mokuhinia, in south Lahaina. The fishpond was filled in during the early 1900s and is currently the site of Malu‘ulu o Lele Park. The purpose of the initial test excavations at Malu‘ulu o Lele was to confirm the location of the island within the park, to determine its current extent, and to determine if any cultural features are present.

Initial excavations identified eleven different stratigraphic deposits associated with the island of Moku‘ula and revealed cultural features, including buried basalt retaining walls, basalt boulder alignments, cinder deposits, animal burials, pits, a posthole, an intact (possible) wooden pier, charcoal stained areas, mottled sediment areas, and concentrations of faunal (mammal and fish) remains. Artifacts recovered include primarily post-contact ceramic, glass, and metal, as well as sparse traditional artifact forms.

A series of 14 sediment cores, extracted from within the pond and underlying Moko‘ula, provide initial clues to the history of the pond’s sedimentation and the formation of Moku‘ula. Radiocarbon dates from the pond sediments indicate that the pond was formed well before Polynesian settlement of the Hawaiian Islands (BC 1411-1043). Pollen analysis from one core in the pond’s center revealed pollens from Polynesian introduced plants.

Sediments Hold the key to the Past? Interpretations at the Kalia Fishponds, Waikiki, O‘ahu
Tim Denham, BioSystems Analysis, Inc.

Drawing on previous and current work, the Kalia Ponds are the locale for investigating fishpond sediments both diachronically and synchronically. A broad chronology of geomorphological and
environmental change is presented for the Fort DeRussy area. This chronology provides the context for understanding how the Kalia Fishponds were constructed and used. A picture of a typical fishpond sediment is constructed through radiocarbon, pollen, diatom and sedimentological analyses. Within this general framework, the problem of isolating and interpreting the stratigraphic sequences associated with the last phase of use and abandonment is brought into focus. Using the Kalia work as an example, some general methodological problems in the investigation of pond sediments are reflected upon.

**SYMPOSIUM 12: GEOARCHAEOLOGY AND MICROPOMORPHOLOGY WORKSHOP**

*Tim Denham and Steve Clark (Chairs)*

The workshop is open to anyone attending the conference. A group of core participants will raise topics for discussion. These topics may range from techniques which have been used within the fields of geoarchaeology, micromorphology, and paleoenvironmental work generally. The workshop will be broad in focus.
9th Annual SHA Conference, Aston Wailea Resort, Maui, April 26-28, 1996

Reviving Polynesian Voyaging (keynote address)
Ben R. Finney, Dept. of Anthropology, UH Mānoa
[no abstract available]

SYMPOSIUM 1: IN HONOR OF DR. YOSHIKO SINOTO

Ethnocarchaeological Observations on Santa Cruz Island Shell Armband Manufacture
Patrick C. McCoy (DLNR, Hawai‘i State Historic Preservation Division) and Paul L. Cleghorn (Pacific Legacy)
Ethnocarchaeological observations on the manufacture of Trochus shell armbands, made in the context of a six-month long research project in 1977-78 on the island of Santa Cruz in the eastern Solomon Islands, are briefly summarized. The ethnoarchaeological study, which followed on the excavation of an armband manufacturing area in a late prehistoric, multi-component site, was undertaken for the primary purpose of obtaining data relevant to the archaeological interpretation of manufacturing stages and debitage discard patterns. Prior to undertaking the ethnographic study the archaeological assemblage of broken ring fragments was briefly examined and informal experiments in flaking the shell undertaken to postulate a stage/step manufacturing sequence, which was then tested by ethnographic observation. The technology, recorded by means of “controlled experimentation” using an acknowledged craft specialist, involves the application of a series of different techniques (direct percussion flaking, heat treatment, grinding and filing) in a multi-stage reduction process that encompasses two spatially/functionally discrete activity areas. Recording of the actual process of manufacture was accompanied by inquiries on raw material procurement, causes of failures, and native terminology, which exists for each major operation in the production sequence. Lyric verses relating to armband manufacture and the acquisition of wealth were also recorded. Several examples of each discrete state were made by the craftsman and collected for comparative use in analyzing the archaeological assemblage in terms of the stage/step framework.

Spatial-Temporal Variability in Leeward Hawai‘i Agriculture
Melinda S. Allen and Maurice Major, Bishop Museum
This paper looks at the traditional Hawaiian agriculture features of the Amy Greenwell Ethnobotanical Garden, Island of Hawai‘i, within its larger regional context. The Greenwell Garden, developed by Bishop Museum in the 1970s, is one of the few places where the public can see well-preserved examples of the once extensive dryland agricultural fields of Kona, known by archaeologists as the Kona Field System. The archaeological features found here are amplified by accounts of early Euro-American visitors, who commented at length on the flourishing fields inland of Kealakekua Bay. Indeed, at this juncture much of what we know about the content, organization, and agrotechnical aspects of traditional agriculture in leeward Hawai‘i comes from their descriptions of this agronomically rich locality. However, many areas of the Kona region are lacking in the deep soils which characterize Greenwell Garden and other nearby localities. In this paper, we draw on our own work at Greenwell and the last two
decades of contact work in Kona District to explore spatial variability in leeward Hawai‘i land-use practices. We also suggest a chronological framework for the development of the Kona Field System.

Re-analysis of the Avifaunal Material from Site H1, South Point, Hawai‘i Island

Jadelyn Moniz, UH Mānoa

In recent years we have seen an increased interest in re-analysis of previously collected archaeological materials (Collins 1995; Thomas 1995). These collections can provide archaeologists with important information and represent “new” sources of data. South Point (Site H1), for example, is perhaps best known for the chronology of fishhook change that was based in part on the large collection obtained here (Emory, Bonk and Sinoto 1959). This dune site, however, also yielded a vast amount of faunal material which includes not only fish, but a large amount of bird bone as well.

The avifauna from Site H1 represents perhaps one of the largest and most well preserved collections recovered from the lowland region of Hawai‘i Island. This collection, along with others from throughout Hawai‘i Island, is currently part of a larger ongoing analysis to investigate the effects of human and introduced animals on the extinction of endemic birds. This paper will present the initial results of a re-analysis of the avifaunal material from Site H1.

Religious Architecture of the Society Islands

Ethan Cochrane, UH Mānoa

Sixty years of archaeological field work in the Society Islands, French Polynesia, has generated an impressive quantity of data on the monumental architecture marae. As of yet, however, no precise chronology of the construction of marae throughout the archipelago has been developed. In this paper, the method seriation places all of the marae (212) from the windward Society Islands into several precise chronological sequences varying in geographic inclusiveness from island group to single valley. Seriation produces chronological orders by arranging the marae based on their variable incorporation of specific architectural traits. Not only do the marae seriations often produce more precise chronologies than radiometric dating techniques, but the seriations also hint at spatial patterning of marae and their constituent architectural features with implications for the structure of prehistoric group interaction.

An Analysis of Radiocarbon Dates from the Society Islands and Hawai‘i

Eric Komori, DLNR, Hawai‘i State Historic Preservation Division

The peopling of the East Polynesian islands has remained a central issue in Polynesian studies for over 100 years. In this study, radiocarbon dates from habitation sites in Hawai‘i and the Society Islands are analyzed using approximate randomization techniques to examine the chronology of the colonization process for the two groups.

The People of Henderson Island Southeast Polynesia: Preliminary Findings

Sara Collins (DLNR, Hawai‘i State Historic Preservation Division) and Marshall Weisler (University of Otago)

Recent archaeological work on Henderson Island has shown that a human population lived on the island between about AD 1000 and the early 17th century. With the permission of the Pitcairn Island Council, selected skeletal and dental remains of these people were recovered from two burial rockshelters on Henderson (HEN-2 and HEN-14) and analyzed. The burial site
remains, together with isolated elements recovered from midden contexts at three other habitation sites, represented at least 17 individuals, including males, females, and children. In general, both children and adults were of good health, although severe dental attrition and antemortem tooth loss hint at a diet high in tough, fibrous foods and/or grit content. Morphometric data obtained from adult remains indicated a general Asiatic or Mongoloid population affinity, many findings were also consistent with a Polynesian ancestry. The presence of females, males, and children in Henderson burial sites strongly suggests the presence of a permanent settlement on the island in pre-Contact times.

Nihoa Island in Hawaiian and Polynesian Prehistory

*Terry Hunt, UH Mānoa*

The diminutive island of Nihoa lies 240 km northwest of the main Hawaiian Islands. The island was intensively occupied, but abandoned prior to European re-discovery in 1790. Evidence suggests that Polynesian settlement on the island was late and of short duration. Understanding the prehistory of this small island is significant to larger research questions. In particular, as Irwin hypothesizes, abandonment of Nihoa, like other “mystery islands,” may calibrate the decline of inter-island (even inter-archipelago) voyaging. Irwin’s thesis is examined from the perspective of recent archaeological work in Nihoa. Comparisons of Nihoa architecture suggests formal similarities within Hawai‘i and beyond, with implications for contacts and their chronology in Polynesia. Research on Nihoa points to additional factors, including environmental ones, that may figure prominently in the island’s abandonment.

**SYMPOSIUM 2: ARCHAEOLOGY OF KULA, HONUA‘ULA AND KAHIKINUI DISTRICTS, SOUTHEAST MAUI**

Introduction to the Symposium on Archaeology of Kula, Honua‘ula and Kahikinui Districts

*Ross Cordy, DLNR, Hawai‘i State Historic Preservation Division*

This presentation briefly reviews the three districts covered in this session, as an introduction. Rainfall patterns and distances to major upland fields are noted. Different settlement models considered for these areas are briefly mentioned.

Findings of the State Historic Preservation Division’s Kula Survey (Waiohuli and Keokea)

*DLNR, Hawai‘i State Historic Preservation Division Staff*

From 1992-1995, the SHPD conducted archaeological inventory survey work of much of the upland areas of two ahupua‘a, Waiohuli and Keokea, as well as a transect in the intermediate zone and excavations on the shore at Kalepolepo. This is the first major survey in the uplands of Kula. The presentation briefly summarizes the findings—discussing the field system patterns of these lands and heiau and housing patterns. The chronology of settlement which extended back to the AD 1200s-1300s is also discussed.

Household Archaeology in Kula: Archaeological Excavations at Keokea

*Michael Kolb, Northern Illinois University*

The 1994 UH Mānoa field school was operated by the State Historic Preservation Division, with Michael Kolb directing the work. Work involved horizontal excavation of several adjacent
habitation structures in the ahupua’a of Keokea. Striking midden patterns were found in these structures, providing some new ideas on household activity areas and on interpreting the function of structures.

**Settlement Patterns in the Makena Area of Honua‘ula**
*Stephan Clark, Bishop Museum*
Several years ago the Bishop Museum concluded archaeological survey and data recovery of a sizable parcel in the Makena area, north of their survey areas of the late 1970s. This presentation looks at general settlement patterns in this area of Honua‘ula district based on the new findings.

**Findings of the SHPD Kahikinui Survey in the Upper Elevations**
*Boyd Dixon, Patty Conte, Valerie Nagahara and Koa Hodgins, DLNR, Hawai‘i State Historic Preservation Division*
Currently, the State Historic Preservation Division is conducting archaeological inventory survey work in the upper elevations of several ahupua’a in Kahikinui district. These elevations are at the upper edge of the former field system at the interface with the forest of late prehistory. Initial findings of this work are presented.

**Lava Landscapes: Land Use and Sociopolitical Complexity in a Late Prehistoric Hawaiian Chiefdom**
*Cynthia Van Gilder and Patrick Kirch, UC Berkeley*
At the time of initial European contact, Maui Island was the focus of one of four great Hawaiian chiefdom polities. Intensive archaeological survey of an eight square kilometer sector of Kahikinui district in southeastern Maui has produced a database of more than 1,000 archaeological features dating to the late prehistoric period. Settlement patterns indicate highly intensive land use in a marginal environment. A complex hierarch of heiau informs as to the sociopolitical context of this settlement landscape.

**The Kahikinui Project - Early Plans for a District-Wide Study by U.C. Berkeley, SHPD and NIU**
*Ross Cordy and Boyd Dixon, DLNR, Hawai‘i State Historic Preservation Division*
Three institutions are currently working in Kahikinui District - the State Historic Preservation Division surveying Hawaiian Home Lands in general, UC Berkeley focusing on the two ahupua‘a of Kipapa and Nakaohu, and Northern Illinois University studying ritual sites. These institutions are now loosely coordinating their research plans, and we all hope to more closely coordinate a district-wide research plan. Some early ideas on kinds of topics and work that will be focused on are discussed.

**SYMPOSIUM 3: WAILUKU AHUPUA‘A SETTLEMENT PATTERNS**

**Settlement Patterns of Wailuku Ahupua‘a from Mahele Records**
*Ross Cordy, DLNR, Hawai‘i State Historic Preservation Division*
This presentation reviews the settlement pattern of Wailuku ahupua‘a based on oral historical and historical information, with a particular focus on the Mahele records. It will enable the audience to see where different types of sites - houses, heiau, 1o‘i, and fishponds - were located prior to 1850.
Nisei Veterans Memorial Center Project - Habitation Deposits from Near the Shore in Wailuku
Demaris Fredericksen and Walter Fredericksen, Xamanek Researches
This presentation looks at the appearance and location of habitation deposits found at the front of Iao Valley at the base of the large sand dune. One of the earliest dates for Maui and Wailuku comes from lower layers of this site.

Habitation Deposits from the Lower Valley of Wailuku
Bea Burgett and Robert Spear, Scientific Consultant Services
This presentation will discuss the appearance and age of habitation deposits found along Lower Main Street in projects conducted by Scientific Consultant Services.

Sites from the Wailuku Sand Dunes
Jeff Pantaleo and Aki Sinoto
[no abstract available]

Irrigated Taro Sites from the Lower Valley of Waiheʻe
Bea Burgett, Scientific Consultant Services
Information will be presented on the appearance and nature of taro 1oʻi sites from a project in the lower valley of Waiheʻe. Chronological information, if available, will also be discussed.

Building Sequences Over Time at Halekiʻi and Pihana Heiau
Michael Kolb, Northern Illinois University
This presentation looks at one of the better known sites of Wailuku – Halekiʻi and Pihana Heiau. Fieldwork has identified different phases of construction, beginning in the AD 1200s-1300s. The presentation looks at the changing size of these sites at different points in time.

A Summary of Archaeological Finds in Wailuku Showing Settlement Patterns
Theresa Donham, DLNR, Hawaiʻi State Historic Preservation Division
Recent private development and public works projects in the Lower Iao Valley area of Wailuku have resulted in the identification of numerous subsurface deposits associated with the late precontact period. Information obtained from 15 identified sites is summarized, with a focus on period of site occupation, inferred activities, and relationship to other known Wailuku sites.

SYMPOSIUM 4: HISTORIC PRESERVATION AT THE COMMUNITY LEVEL: EXAMPLES FROM MAUI COUNTY

Friends of Mokuʻula
Akoni Akana
An era of renewed interest in the importance and presentation of Mokuʻula, the Lahaina’s sacred island was launched through the efforts and research findings of the Kaʻanapali Beach Hotel Poʻokela Project, and the Friends of Mokuʻula Group. The momentum of these groups was largely responsible for acquiring a County of Maui Grant for the archaeological investigations conducted at the Site in 1993. The findings of the study are summarized, along with important
information found in chants and legends. The future of the site, both short and long range, is discussed.

The Maui County Cultural Resources Commission and Education Committee
Doroth Plye
The Maui County Cultural Resources Commission was established from an existing Historical Commission, which focused its energies on the County historic districts of Lahaina and Wailuku. In redefining the goals and functions of the new commission, the County of Maui became a Certified Local Government, and is now eligible for Federal assistance in cultural resource management programs. The primary activities of the Commission are summarized, with an overview of the more prominent initiatives and reviews that have occurred. The background for the establishment of the Public Education Committee is discussed, along with current projects and goals for the coming year.

Cultural Monitoring During the Kahoʻolawe Cleanup
Bert Sakata
[abstract not available]

Preservation Efforts by Community Groups and the Maui/Lānaʻi Islands Burial Council
Dana Naone Hall
Efforts to preserve culturally significant lands and historic sites on Maui are discussed, including some of the problems community groups have encountered with development projects and with contract archaeologists. The recent work of the Maui/Lānaʻi Island Burial Council is summarized. Finally, implications and new directions resulting from the recent Supreme Court PASH decision will be addressed.

Malama Na Iwi I Na Kupuna (Care for the Bones of the Ancestors)
Charles Kaaluwehi Maxwell, Sr.
Iao Valley is currently respected in the Hawaiian community as a Wahi Pana, and as an area that was sacred to our ancestors as a burial place of past aliʻi. Recent efforts by community members have been focused on protecting the Valley from T-shirt vendors, and other forms of commercialization that are not appropriate to the areas. The spiritual importance of the connection between the kanaka maoli and the iwi is also discussed.

The Cultural Landscape in Presentation Planning
Elizabeth Anderson, Maui County Planning Dept.
Planning in Maui County places value on retaining the character of unique communities. In fact, the 1994 Hana Community Plan calls for “preservation and enhancement of the current land use patterns which establish and enrich the region’s unique and divers qualities”. The Keʻanae-Wailuanui cultural landscape study examines the elements which comprise the unique character we are supposed to protect. In the cultural landscape study, the historic context of the region is described in detail. Components of the cultural landscape such as taro cultivation, vegetation, water circulation networks, structures, clusters, boundaries and archaeological sites, as well as land use patterns, are identified as a traditional cultural property using interviews on traditional land use, cultural practice and subsistence use areas. Applications of anthropology and archaeology to regional planning are evident in the Keʻanae-Wailuanui cultural landscape study.
Prehistoric and Historic Era Taro Cultivation in Keʻanae and Wailuanui, East Maui

Hal Hammatt, Cultural Surveys Hawaiʻi

The loʻi of Keʻanae and Wailuanui were briefly surveyed as part of a cultural landscape study with the Keʻanae loʻi studied in more detail as a type locality. Comparisons of the extent of the prehistorically cultivated loʻi systems to that of the presently active areas reflects a changing economic base, a decrease in population, and more clustered settlement patterns. The presently cultivated systems of Keʻanae and Wailuanui, viewed as living, functioning archaeological sites, appear to have been relatively unmodified from their original prehistoric configuration and were not consolidated for the rice industry. Modern mechanical “improvements” to the system presently (1994) consists of 194 cultivation loʻi compared to 265 plotted in 1908. Ownership patterns showing spatial contiguity reflect a community concept of land use with free access. Ownership lines parallel directions of water flow, reflecting traditional arrangements for water rights.

Moated Sites of Northeast Thailand: Change and Continuity in the Phimai Region

Archaeological Record

David J. Welch, International Archaeological Research Institute, Inc.

Moated sites, sites surrounded by ditches and earthen walls, are a prominent feature of the archaeological landscape of northeast Thailand. Most of these sites appear to have been farming villages and to have formed a part of a settlement pattern that also includes numerous similar, but unmoated, habitation mounds. They vary greatly in size, the number of moats and walls, height and thickness of walls, and are found in all the major inhabited ecozones in northeast Thailand. The Khorat Basin Archaeological Project has conducted three seasons of field work in the Phimai region of northeast Thailand, an area first investigated by Wilhelm Solheim and the University of Hawaiʻi-Thailand Fine Arts Department Mekong-Valley project in the mid-1960s. The research focused on understanding the dating and function of these moated sites and their distribution across the landscape. This paper summarizes the results of these investigations and their implications for interpreting population distribution and growth, agricultural intensification, exchange patterns, and the political and economic organization of late prehistoric and early historic societies in mainland Southeast Asia.

The Social Context of Choice: The Potter’s Craft in a Philippine Village

Miriam Stark, UH Mānoa

The recent emergence of specialized pottery production in the Kalinga village of Dalupa reflects a dynamic interaction between social milieu and craft technology. Pottery production for exchange is one economic solution for households faced with limited resources. A nexus of social, economic, and political factors promote productive intensification among some Dalupa potters. This study explores the material correlates of this system of intensified production. Product standardization is studied with respect to production scale and intensity in an ethnoarchaeological context, in which both behavior and material patterning can be documented.
Recent Investigations in Early Historic Cambodia
Michael F. Dega, UH Mānoa
Despite much attention on Funan as an early historic “kingdom” centered in the Lower Mekong Delta of Cambodia and Vietnam, full-scale archaeological work in the core area of Funan has not been attempted until recently. Recent archaeological investigations have revealed (a) monumental architecture, (b) an extensive hydraulic system aiding in the cultivation of rice and influencing local and international links, and (c) an extensive material culture that has not been previously described at Angkor Borei, Cambodia, one of the capital centers of Funan. This paper will address archaeological interpretations resulting from this field research undertaken in the summer of 1995.

Traditional Subsistence Patterns in Eastern Indonesia
D. Kyle Latinis, UH Mānoa
Current and traditional subsistence patterns in eastern Indonesia show similarities with patterns emerging from the archaeological record. Specifically, subsistence economies (primarily arboriculture) will be comparatively explored in the following discussion of resource acquisition, transport, processing, and redistribution. Arboriculture is central to both past and present subsistence practices. This report stems from archaeological field research conducted in Maluku from 1992-1994, and from health, nutrition, and subsistence field research undertaken in 1994. Evolutionary and ecological approaches are utilized to explain lines of historical continuity as well as change in subsistence economies in central Maluku.

Style and Variation in Agta Projectile Points
P. Bion Griffin, UH Mānoa
The ethnoarchaeology of variation in arrow head style has a strong literature within Americanist theoretical approaches to understanding archaeological data. The present paper examines variation in style and use of arrow heads among the Agta, a foraging people of eastern Luzon, the Philippines. Three dialect groups’ arrow styles are compared and data drawn from ethnographic observations considered. While ethnographically observed differences in use are clear, many types of points are less easily differentiated among the three social groups. Following Dr. Wilhelm Solheim’s early and long lasting interest in ethnoarchaeology, several lines of future inquiry are suggested as we consider projectile points.

SYMPOSIUM 6: ARCHAEOLOGY IN THE WESTERN PACIFIC

Anatomy of a Terrace in the Republic of Belau
Felicia Beardsley and David J. Welch, International Archeological Research Institute, Inc.
Nearly every island in the Pacific has a feature or set of features that lend themselves to the romanticism suggested by words like "mysterious" or "enigmatic". From the perspective of the archaeologist, however, these mysteries are more often perceived than actual - the moai (statues) on Easter Island, the pā (fortifications) in New Zealand, and in Belau the bukl and ked (terraced hillsides). The following discussion outlines what is known and what is not known about the most visible sites in Belau, the terraces, and attempts to place these massive architectural features into a context accessible to interpretation. Oral history and previous archaeological investigations will be summarized along with the problems and questions that have arisen in site interpretation, namely, when were the terraces built, why were they built, how were they used, and when and
why were they abandoned? Some resolutions to these questions are offered, setting the stage for
the next level of investigation, beyond identification and description. New and experimental
applications of routine radiocarbon dating techniques are offered, additional details on
construction and the process of construction are described, and new (or newly revisited)
interpretations of site use are outlined.

Carolinas Kastiyu Highlands of Southern Tinian Island, Commonwealth of the Northern
Mariana Islands (CNMI), Micronesia
Jeannette Simmons and Nancy Farrell
Archaeological remains representing traditional Chamorro occupation, pre-World War II
Japanese/Okinawan occupation, and World War II Battles were recorded during archaeological
survey and limited subsurface testing in September 1995. The project area comprises
approximately 20 acres of sloping, emerged limestone reef that leads from the Carolinas Kastiyu
Plateau of southern Tinian to the plain that occupies central Tinian. The geological situation of
this rocky slope has apparently discouraged development and the use of heavy equipment, and as
a result the sites are in a fairly good state of preservation.

The traditional Chamorro site contains three latte sets of varied size and yielded an
assemblage of stone and shell artifacts, pottery sherds, and midden collected from surface and
subsurface provenience, and a possible latte quarry feature. Pre-World War II
Japanese/Okinawan sites include a Shinto shrine, railroad bed, and a cistern. World War II sites
include Japanese rock and cave defensive positions and human remains. It appeared as though
the World War II sites had not been touched since the last battle which secured American
Possession of Tinian and which ultimately led to the end of the war.

Climate, Vegetation, and Prehistoric Landscape Change on Tinian, Mariana Islands
Stephen Athens (International Archaeological Research Institute, Inc.) and Jerome Ward
This paper summarizes findings from a 6.6 meter lake core recovered from Tinian Island in
1994. A series of 10 radiocarbon dates along with pollen and sedimentary evidence indicate that
the core contains a nearly continuous sedimentary record that includes part of the late Pleistocene
and all of the Holocene since about 8,000 years B.P.. This record provides detailed information
on the former native forest of Tinian, the date of initial human colonization, and the chronology
and nature of human impacts to the landscape. Importantly, the record also provides insight into
past climatic conditions in the western Pacific.

Archaeological Excavations at Unai Chulu, Tinian, CNMI
Joseph Jimenez and Alan E. Haun, Paul H. Rosendahl, Ph.D., Inc.
Paul H. Rosendahl, Ph.D. Inc. recently completed a testing and data recovery excavation project,
funded by the United States Navy, at Unai Chulu, on the northwest coast of Tinian,
Commonwealth of Northern Mariana Islands. The purpose of the research was to define
boundaries and to obtain a large areal sample of the earliest component of what was reported to
be one of the oldest sites in the Marianas archipelago. Based on 260 test excavations, the
horizontal and vertical extent of the site was determined to be much greater than that estimated
by previous researchers. A 144 square-meter portion of the site was selected for controlled
cavation, based on the testing results, which identified stratified deposits nearly two meters
deep. The field work findings and subsequent laboratory analyses document prehistoric use of
the site spanning more than 3,500 years. The areal excavations exposed intact strata and features,
including postholes, burials, prepared floors, firepits, and earth ovens. These represent two components, one dated to between AD 20 and AD 340 during the early Transitional Pre-Latte Phase, and one dated to between BC 1520 and 970 during the Early Pre-Latte Phase.

**Stone Structures of the Phoenix Islands**  
*Mike Carson, UH Mānoa*

The Phoenix Islands were uninhabited at the time of European contact, but undeniable evidence of previous human occupation comes from the observation of monumental architecture on these islands. The architectural remains were recorded in the 1930s, but the findings were never published. Drawing on data from the unpublished manuscript and editorial notes of Kenneth Emory’s abandoned work-in-progress, a classification of the stone structures potentially forms the basis for: (a) a chronological seriation; (b) an investigation of labor investment; and (c) a study of possible cultural affinities with other islands.

**The Archaeology of Faga, Taʻu Island, Manuʻa Islands, American Samoa**  
*Paul Cleghorn, Pacific Legacy*

In 1967, Bill Kikuchi, then a young graduate student at the University of Hawai‘i, was in American Samoa conducting field research for his Master’s thesis. He recorded the abandoned village of Faga on the north coast of the island of Taʻu as the oldest and most traditionally important village in the Manuʻa Island Group. In 1991, Hurricane Val destroyed the coastal road that traverses the fringe of Faga Village. Federal FEMA funds have been allocated for the rebuilding of this road. As part of the Section 106 compliance procedures, Pacific Legacy archaeologists Paul Cleghorn, Lisa Shapiro, and Will Shapiro with an American Samoan crew from the villages of Fitiuta and Fagalasau conducted archaeological investigations at Faga. This well-illustrated paper will present the initial findings of these investigations. The variability and frequencies of surface remains will be described. The potential for subsurface deposits, based on the earlier work of Jeff Clark, will be addressed. Finally, important methodological considerations will be presented that have important applications for future work in Samoa as well as other areas of the Pacific where surface archaeological features are plentiful.

**SYMPOSIUM 7: ARCHAEOLOGY OF HAWAIʻI**

**Preliminary Results of Investigations within Mauka Sections of the Panau Iki/Lae Apuki Ahupuaʻa, Hawaiʻi Volcanoes National Park**  
*Catherine Glidden, Research Corporation of the University of Hawaiʻi*

This paper details the results of an emergency archaeological survey and subsurface testing project conducted within Hawaiʻi Volcanoes National Park between February and April of 1995. This project was initiated due to encroachment of a new arm of lava upon archaeological sites within inland (mauka) sections of the Panau Iki/Lae Apuki ahupuaʻa. Though this project was primarily a salvage effort, archaeological investigations conducted in this area of the park provided data crucial to further understanding mauka residential and agricultural subsistence activities and settlement practices within late prehistoric and historic times.
A Hawaiian Decorative Stone-Splitting Technique
Janet M. Zisk, KSBE
Several sites on O‘ahu have been observed to contain rocks with a triangular pattern of breakage along one or more edges and even an otherwise flat face. The patterning can be quite elaborate with very pronounced “toothing” separated by scooped out incising repeated the length of the rock’s edge. A number of variations in patterning have been observed. Rocks so decorated have been found in association with a small heiau, a basin and ahu site, a stone-working site, and most numerous and varied on a site which includes a work area for splitting large rocks with toothed patterning resulting. This paper will concentrate on the basin site which has the most complete range of evidence revealing how the stone-splitting was planned and accomplished.

The purpose of this paper is to draw attention to these rocks so that more sites containing patterned rocks will be identified and an interest in their research encouraged. The “decorations” on these rocks are not immediately obvious unless one is aware of the possibility and deliberately looking for them. So far, there are no obvious clues as to “who, when, why” in regard to this style of stone-splitting.

Paleoenvironmental Investigations in a Former Honolulu Wetland
Jane Allen, Ogden Environmental and Energy Services, Inc.
Geoarchaeological coring completed by Ogden Environmental and Energy Services at the Symphony Park construction site in downtown Honolulu has produced soils, sedimentary, pollen, and radiocarbon dating information concerning the former Kewalo wetland, which once extended from near King Street to the coast, surrounding the site. The project produced several important findings that are promising for future research in wetland areas in Honolulu, even those now covered by modern landfills.

A marine bay existed in the area cored by ca. BC 2500 and possible earlier, becoming lagoonal before AD 300-500, as initial Polynesian settlement was taking place on O‘ahu. Growth of Cheno-ams increased in surrounding areas, tentatively suggesting disturbance of earlier native tree or shrub vegetation; Pritchardia (loulu) decreased, as seems to have happened in many areas on O‘ahu during the early cultural era. After ca. AD 500 grasses increased nearby and possibly in the wetland itself, and sedges increased. Cheno-ams remained relatively dominant; coconut, a Polynesian introduction, increased; and loulu continued its decline. This portion of the wetland was probably a marsh throughout much of the sequence; no evidence suggests cultivation of taro or rice here.

Land and Freshwater Snails in Hawaiian Archaeology
Robert C. Cowie, Bishop Museum
The shells of land and freshwater snails are perhaps the most frequently encountered animal remains in archaeological investigations. Because of the known habitat preferences of the snails, these shells can inform the archaeologist much about the former environment of the site. In addition, because some snail species were originally introduced to the islands by early Polynesian voyagers, and others have only been introduced in historic times, their presence or absence can provide important corroboration of dating derived from other sources. Analysis of snail shells can therefore significantly augment many archaeological investigations. Shell identification services are readily available in Hawai‘i.
Stereotypic Versus Realistic Perspectives in Identifying Heiau and their Functions
C. Kehauanani Cachola-Abad, KSBE
Numerous problems exist in determining if a site is or is not a heiau and in assessing whether or not a site served a specific religious function. Most important of these difficulties is the diversity displayed among ethnohistorically documented heiau. Heiau variations are evident along many dimensions, even within single sets of heiau such as heiau luakini. Examples of this diversity suggest that widely held notions of “classic” heiau attributes are rather stereotypes of heiau. These stereotypic perspectives should not be employed when assessing sites for possible religious functions. Unrecorded sites should be compared to a large and representative heiau data base to produce valid function evaluations.

Plants and Archaeology at Kalaupapa National Historical Park, Hawai‘i
Earl Neller, Kalaupapa National Historical Park
Plants are archaeological resources. Polynesians brought about 30 cultivated plants to Hawai‘i, including taro, which became a major staple in the Hawaiian diet. Some of these plants are seldom seen today, such as uhi, the Hawaiian edible yam. Remnant patches of these plants at Kalaupapa National Historical Park on the island of Molokai are artifacts of Hawaiian culture, to be recorded and studied, just like the ruins of stone walls which were once field boundaries. Propagation of these plants in the gardens of Kalaupapa gives Park visitors and archaeologists first-hand experience with plants important in Hawaiian culture, an aspect of culture barely visible in the existing archaeological landscape. Plants are a legacy of ancient Polynesian culture that can enrich our lives today.

Pompeii in North Kona: Recent Investigations Near Weliweli
Barbara Lass, UH Hilo
Archaeological reconnaissance survey was conducted by students from UH Hilo from January 1996 through April 1996 in the vicinity of two anchialine ponds located near Weliweli in North Kona. Numerous sites including cave shelters, walled shelters, platforms, and wells were located as well as several trails and modifications to the ponds. Archaeological and documentary evidence indicates that the sites represent the former village of Wainanali‘i which was overrun by the 1859 lava flow from Mauna Loa.

Life Under The Fast Lane: An Interstate H-3 North Halawa Valley Site
Lynn Miller and Alan Corbin, Bishop Museum
Site 50-0a-B1-76 (State #50-80-10-2138) is one of the original eight archaeological sites recorded by Oshima and Dye during their survey of North Halawa Valley in 1976. At that time they found one postcontact feature. This was a circular enclosure, three meters in diameter, constructed of large boulders.

In 1992, the highway corridor was realigned through the flood plain of site B1-76 in order to circumvent the culturally sensitive area of B1-75, which is makai of B1-76. Sixteen new archaeological features were recorded during the inventory survey of the proposed new roadway. These included terraces, charcoal features, depressions, and several rock clusters of unknown function.

In the summer of 1995, an additional eighteen features were recorded as a result of the archaeological monitoring of construction activities. The large backhoes and bulldozers
removed extremely dense *hau* forest, graded the future H-3 corridor, and excavated and graded the new access road along the base of the slope that borders the east side of the site. Different types of cultural features were exposed by each of these construction activities. Of particular interest are extensive agricultural terraces, alignments, cobble pavements or possible house platforms with related artifacts, several *imu*, and three charcoal manufacturing kilns, one excavated into the base of the slope.

Field analysis of these features and artifacts, plus taking into consideration the data from four abutting archaeological sites (50-Oa-B1-75, 77, 85, and 86) strongly indicates that 50-Oa-B1-76 is a multiple component site occupied from pre-contact through modern times.

**Progress Report of Land Commission Awards for the Island of Maui**

*Victoria S. Creed, Cultural Surveys Hawai‘i, Inc.*

In a 5-year project to computerize and collect all the Land Commission Award records of Native and Foreign Registers and of Native and Foreign Testimonies at the State Archives, the Island of Kaua‘i is approximately complete. The Island of Maui is nearing completion. The discussion here will present the status of the project and a preliminary analysis of claimants, their location, their cultigens and house lots. Some of the differences noted between Kaua‘i and Maui will be noted. Certain vocabulary in the Maui LCA appears to reflect features of gathering and agriculture unique to Maui.
Hawaiian Archaeology: Past, Present, and Future (keynote address)
Patrick V. Kirch, Dept. of Anthropology, U.C. Berkeley

SYMPOSIUM 1a: ARCHAEOLOGY OF KAUAʻI

Post-ʻIniki Stratigraphy of the Poʻipū Shoreline, Koloa, Kauaʻi
Hallett H. Hammatt, Cultural Surveys of Hawaiʻi
A series of wave-cut profiles showing multiple cultural layers was exposed along the south shore of Kauaʻi by Hurricane ʻIniki in 1992. For a brief period, these exposures stretched from the Waiohai Hotel at the location of Kihonua Heiau (twice destroyed in the last 15 years) to Poʻipū Beach Park with continuous cultural layers stretching for hundreds of feet. The stratigraphic relationship of building phases, horizontal and vertical variations in intensity of residue, as well as environmental change and chronology are interpreted from the study of this catastrophically created, but unique, glimpse of bared ancient layers.

Russian Forts and Hawaiian Monuments: Archaeological Investigations at Fort Elisabeth, Waimea, Kauaʻi
Peter R. Mills, University of Vermont
Chiefly competition in nineteenth century Hawaiʻi is re-evaluated through an examination of Fort Elisabeth State Historical Park, Waimea, Kauaʻi. Fort Elisabeth was built in 1816 following an alliance between Kaumualiʻi, paramount chief of Kauaʻi, and Georg Schäffer of the Russian-American Company (RAC). Accounts have generally ignored the role of Hawaiians in determining the location, scale, method of construction, and uses of the fort. Ethnohistorical data suggest that Kaumualiʻi’s agenda to break away from Kamehameha I was initiated well before the arrival of the RAC. Archaeological data also expose features of the site that testify to the importance of Hawaiians in shaping the event.

An Overview of the Geologic History of Hawaiʻi and Kauaʻi and its Relation to Human History
Chuck Blay and Rob Siemers, TEOK Investigations, Kauaʻi
The geologic and natural history of the island of Kauaʻi extend to about 5.1 million years ago, representing only about 0.11% of the time since the origin of the earth about 4.6 billion years ago. Even though human history extends to about 4-5 million years ago (about the time of the first hominids), the archaeological, anthropological, and Hawaiian cultural history of Kauaʻi occupies only the last 2,000 years, or only about 0.04% of the age of the island. Polynesian and Hawaiian oral history on the island extends to the time of its first occupants; however, written history encompasses less than 220 years, since the time of the first significant contact by Europeans. The early inhabitants of the volcanic islands were limited in terms of available natural earth materials, of possessing only stone-age type implements at the time of that contact. An integrated perspective of these various histories provides for a more comprehensive understanding of Kauaʻi’s place in time.
Prior to the early 1960s, during which time geological theories of plate tectonics and magmatic hot spots originated and radiometric dates of the island’s volcanic rocks were first published, most geologists thought that the Hawaiian Islands were produced by volcanic eruptions along a long fissure in the oceanic crust. Relative ages of the high volcanic islands, generally with Kaua‘i being the oldest and Hawai‘i the youngest, were based on degrees of erosion and the biogeographic distribution of native plants and animals. Current thought on the origin of Kaua‘i and the rest of the Hawaiian island chain indicates that the oceanic volcanoes were produced as the 3-5 mile thick oceanic crust of the Pacific tectonic plate moved northwestward across the Hawaiian magmatic hot spot. Molten magma was injected through the relatively brittle crust from a relatively stable magma chamber, 35-105 miles below the Earth’s surface, in the upper portion of the mantle. The 132 islands of the state of Hawai‘i, extending over 1600 miles from Kure to Hawai‘i, have been produced during the past 28-30 million years as the Pacific plate moved across the hot spot at an average rate of about 3.4 inches/year. Low islands northwest of Kaua‘i are most subsided and eroded oceanic volcanoes, the tops of which now display extensive coral/algal atolls and reef-generated sand islands. Completely submerged, flat-topped volcanic mountains called “seamounts” extend another 260 miles northwest and then 1250 miles north (The Emperor Seamount Chain) to where ocean volcanic mountains greater than 75 million years old are being subducted back into the earth’s mantle at the apex of the Aleutian and Kuril Trenches near Kamchatka Peninsula.

The ocean volcanic mountain/island of Kaua‘i is approximately 23,000 feet high above the Pacific Ocean floor, including the 5,243 feet (Mt. Kawaikini) above sea level. The near circular island (approx. 33 x 25 miles) previously has been thought to have been produced as a single shield volcano; however, current thinking suggests that Kaua‘i itself may represent at least 2 major shields. When combined with the slightly older island of Ni‘ihau, it is now thought that at least 3 shield volcanoes formed the Ni‘ihau-Kaua‘i mountain/island complex which existed as a single island until 1.5-2.0 million years ago. Subsidence resulted in separation into the 2 islands by the sea. Geologically, the island of Kaua‘i displays the 3 major constructive states of volcanic eruption, including the late-stage explosive cinder and tuff cones that were active until 400,000 to 500,000 years ago. Throughout its history, Kaua‘i also has been subjected to a variety of destructive processes, including: 1) weathering and stream erosion by the atmosphere, 2) wave erosion and removal of coastal sediments by the surrounding ocean, 3) tectonic subsidence and faulting, and 4) mass wasting of the volcano’s slopes under the influence of gravitational forces. Such destructive forces will continue for at least another 2-3 million years until Kaua‘i becomes an uninhabitable low island similar to the 895 foot high, 156 acres (0.25 mi²) island of Nihoa, 170 miles to the northwest.

Oranges and Potatoes in the Land Commission Claims
Alexander Mawyer and Victoria S. Creed, Cultural Surveys of Hawai‘i and Wai Hona ‘Āina
This presentation touches on two introduced species—oranges and Irish potatoes—documented in the Mahele and Kuleana claims (1848-1853), and presents information on their distribution and aspects of their use. These records corroborate and elaborate information from other historic accounts and provide insight into two early instances of Hawaiian agricultural production of introduced crops pursuing the international market economy.
Spectral Encounters at Hawaiian Sites
E. Kalani Flores
Spectral encounters have been documented and experienced by various people at Hawaiian cultural sites. Several of these accounts will be described and highlighted with incidents that have occurred on the island of Kaua‘i. Some of these encounters may provide further insight and information in answering many of the questions posed by archaeological investigations. Appropriate cultural protocol for archaeologists working at these sites will also be discussed.

SYMPOSIUM 1b: PRESERVING KAUA‘I’S PAST: A COMMUNITY EFFORT

Preserving Kaua‘i’s Past through the Oral History of a Community
Aletha Kaohi
Much of the knowledge about the history and culture of a place is held by people who have lived within the community for generations. Often, this knowledge is unwritten and shared through oral traditions. The oral history project conducted at Mānā, in the Waimea (Kona) District, in the early 1990s will be briefly discussed to highlight how oral traditions hold many clues to a community’s past, as well as its future. But asking community members to share this knowledge is not always an easy task—it requires that a sense of trust be established before the sharing can begin. Once shared, the knowledge and cultural sensitivity must be respected.

Where History and Archaeology Meet: Historic Preservation Efforts in Wailua
John Lydgate, Kaua‘i Historical Society
The Rev. John M. Lydgate arrived on Kaua‘i in 1896 and took an active interest in the history and botany of Hawai‘i. With time, this interest became centered around the myths, heiau, petroglyphs, and other cultural sites of the Wailua area. Along with others interested in the historic sites of Kaua‘i, the Kaua‘i Historical Society was founded in 1914. The early efforts of the Society were directed towards the prevention of further desecration of the heiau sites from contractors taking rock from the heiau walls for roadbeds. Lydgate pushed for greater preservation of the historic sites with the creation of parks along the Wailua River in the 1920s, many of which now comprise Wailua River State Park. By the 1930s, efforts of the Kaua‘i Historical Society shifted towards restoration and interpretation, including restoration efforts at Kalaeokamanu Heiau at Holoholokū, the placement of historical plaques at the major sites along the Wailua River, and the general public awareness through writings and public presentations.

Malae Heiau: Partnering with the Community
Sabra Kauka (Malae Heiau Advisory Committee) and Martha Yent (DLNR, Division of State Parks)
The Malae Heiau project is presented as a case study in community partnering for furthering the historic preservation efforts on Kaua‘i. To foster community involvement in the preservation of the cultural sites within the state park system, an advisory committee was created to assist with the planning, interpretation, and public visitation of Malae Heiau within Wailua River State Park on Kaua‘i. The committee has been instrumental in seeking community assistance where State funds are lacking for such projects as the clearing of vegetation from the site. Through their participation in the archaeological excavations and historical research, the community is playing an active role in developing an interpretive program that is sensitive to the culture, history, and archaeology of the site.
The CCC Camp at Kōkeʻe: A Continuing Story of People Serving a Place
*Marsha Erikson, Kōkeʻe Natural History Museum, Hui o Laka*

A battered but sturdy complex of wood frame buildings nestled in the mesic forest of Kōkeʻe State Park for over six decades will see a new century of service, thanks to a community-driven effort to restore the camp. Built in 1935 to accommodate President Franklin Delano Roosevelt’s Civilian Conservation Corps (CCC) program of the Depression years, the camp sheltered a succession of programs in this isolated mountain park until 1982, when Hurricane Iwa struck. In 1990, Hui o Laka ~ Kōkeʻe Natural History Museum proposed to restore the camp for use as Museum office and work space, a field station for researchers, and a support site for park and museum volunteers. This presentation will explore how the camp has been “saved” for the future by developing a strong connection with the past.

Interpreting Kauaʻi’s Sugar Plantation Heritage
*Chris Faye, Kiki-a-Ola Foundation*

Kiki-a-Ola Foundation was founded to preserve and interpret historic assets of west Kauaʻi pertaining to the sugar industry, including records, artifacts, and oral histories. The overall goal is to share this history with the public through educational devices, such as tours, displays, videos, and historic preservation of plantation structures. Waimea Mill Camp and Waimea Plantation Cottages provide alternatives to traditional museum displays. The buildings, plantings, and outdoor features provide a wealth of interpretation by volunteer guides from the community for Kiki-a-Ola foundation. With the rapid decline and phase out of sugar operations on the island of Kauaʻi, there is a critical need to preserve and tell the story of the sugar industry before it is lost to the community.

**SYMPOSIUM 2: PACIFIC ARCHAEOLOGY**

Chiefdoms and Monumental Architecture in the Marquesas Islands
*Barry V. Rolett, Dept. of Anthropology, UH Mānoa*

Recent ethnographically-based interpretations of Marquesan sociopolitical structure suggest that while the power of the chieftainship initially increased through time, chiefly authority became attenuated during later stages in prehistory. New field work in the southern Marquesas is designed to test this hypothesis through an investigation of monumental architecture, the most enduring archaeological manifestation of Marquesan chiefly power. This presentation summarizes the results of our ongoing UH/Andover Foundation for Archaeological Research project. The work centers on survey and excavation of an integrated complex of residential, ceremonial, and agricultural sites in the interior of Vaitahu Valley (Tahuata).

Computerized Mapping and Modelling of Archaeological Sites
*Mike T. Carson, Dept. of Anthropology, UH Mānoa*

Computers have gained a prominent and revolutionizing role in modern archaeology, perhaps as influential in our present-day society as was the printing press in the 15th Century. Computerized mapping and other forms of information technology have prompted archaeologists to think in new ways and to communicate information in greater volume than ever before. An ongoing archaeology project in the Marquesas Islands has presented an opportunity to create an
amazingly detailed three-dimensional map and subsequently, to explore the potentials of information technology in archaeology.

Surface Structural Remains from the Faga Village Site, Taʻu Island, Manuʻa Islands, American Samoa
Paul L. Cleghorn, Lisa A. Shapiro, and William A. Shapiro, Pacific Legacy, Inc.

In 1967, Bill Kikuchi, then a young graduate student at the University of Hawaiʻi, was in American Samoa conducting field research for his Master’s Thesis. He recorded the abandoned village of Faga on the north coast of the island of Taʻu as the oldest and most traditionally important village in the Manuʻa island Group. In 1991, Hurricane Val destroyed the coastal road that traverses the fringe of Faga Village. Federal FEMA funds have been allocated for the rebuilding of this road. As part of Section 106 compliance procedures, the authors with an American Samoan crew from the villages of Fitiuta and Faleasau conducted an intensive archaeological surface survey at Faga. This well illustrated paper will present the findings of these investigations. The variability and frequencies of surface remains will be described. The potential for subsurface deposits, based on the earlier work of Jeff Clark, will be addressed. Finally, important methodological considerations will be presented that have important applications for future work in Samoa as well as other areas of the Pacific where surface archaeological features are plentiful.

SYMPOSIUM 3: RECENT STUDIES IN LITHIC TECHNOLOGY IN THE PACIFIC

Bird Cooking Stones from the Island of Hawaiʻi: Multiple and Contested Meanings
Patrick C. McCoy, DLNR, Hawaiʻi State Historic Preservation Division

Previous interpretations of a distinctive class of objects from archaeological sites on the island of Hawaiʻi as pestles are challenged on the basis of ethnohistorical information and a study of the formal properties and locational contexts of the finds. Available evidence indicates that the objects are bird cooking stones called pōhaku ʻeho manu or just ʻeho. A closer study of these objects, including an analysis of raw material characteristics, breakage patterns, and the term ʻeho itself, suggests other symbolic meanings or uses. The relationship of these objects to stone boundary markers and god images, also called ʻeho, is also briefly discussed.

Hawaiian Lithic Technologies in the Early Historical Period: A case Study from Fort Elisabeth State Historical Park, Kauaʻi
Peter R. Mills, University of Vermont

Historical period lithic assemblages are discussed relating to data derived from Fort Elisabeth State Historical Park, Waimea, Kauaʻi. Contrary to common assumptions, lithics are a common aspect of historical sites and can provide important information on continuity and change in indigenous lithic technologies. Excavations in 1993 and 1994 at Fort Elisabeth revealed numerous classes of lithic debitage including non-local cherts of various quality, slate, local marine cherts, basaltic glass, and a limited amount of basalt debitage. Site formation processes and spatial analyses of lithic artifacts are discussed to help interpret the site.
New Names for Old Rocks: A Comparison of Petrographic Analysis and X-Ray Fluorescence Spectrometry in Sourcing Hawaiian Adzes
Barbara Lass, Dept. of Anthropology, UH Hilo
A sample of adze fragments from various parts of the island of Hawai‘i were subjected to petrographic as well as XRF (x-ray fluorescence spectrometry) analysis. Results of these two methods of tracing artifacts to their sources were then compared in order to assess the apparent accuracy and usefulness of the two techniques. For well-known materials such as stone from the Mauna Kea adze quarry, the two methods compared quite favorably; for some other materials, the results were only roughly comparable. More sources of adze stone need to be located and sampled in order for either method to be used with complete effectiveness.

Adzes, Artisans, and Archaeologists in American Samoa
D. Kyle Latinis and Mike T. Carson
UH Mānoa
The Tataga-matau adze quarry in Tutuila has received considerable archaeological attention over the last several decades. The lithic technology surrounding the production of adzes in Samoa has also been heavily researched. However, the configuration of adze production at the scale of an industrial level production complex has escaped detailed study. A perhaps overzealous emphasis on the Tataga-matau adze quarry has overshadowed research of other adze quarries until recently. The following discussion relates not only to the organization of adze production at an industrial scale, but also the role of material exchange networks in prehistoric Polynesian society.

SYMPOSIUM 4: KAHIKINUI MAUI

Introduction and Retrospective
Patrick V. Kirch, UC Berkeley
Since 1995, intensive archaeological research has been conducted in Kahikinui District, Maui by teams from the State of Hawai‘i Historic Preservation Office, the UC Berkeley, and Northern Illinois University. These teams are collaborating on the survey and study of this district, perhaps the only entire moku with an intact archaeological landscape. This paper introduces a symposium based on this recent research, setting the individual projects in terms of the larger research design and the history of archaeological research in Kahikinui.

Kahikinui Mauka: Preliminary Results from Survey and Testing in the Upland Forest Periphery of Leeward East Maui
Boyd Dixon, Patty J. Conte, Valerie Nagahara, and W. Koa Hodgins, DLNR, Hawai‘i State Historic Preservation Division
An archaeological survey in a 2000 acre parcel of DHHL land in upland Kahikinui, Maui, has recorded over 500 features / 300 sites within three ahupua‘a. Subsurface testing of almost all these sites has revealed a landscape dominated by relatively intensive production of sweet potato around permanent habitation clusters between 2100 and 2500 feet above sea level (fasl). Between 2500 and 2800 fasl at the upper edge of the original dryland forest, more dispersed temporary settlement is found perhaps associated with the swidden farming of dry taro as well as sweet potato. Subtle differences in land use and settlement patterns between ahupua‘a suggest differing population sizes and status relations between communities. Architectural remains
include a range of habitation types and sizes, garden enclosures and longer boundary walls, ritual structures of differing sizes and forms, and a hōlua slide. Preliminary dating of habitation features within this field system suggests initial settlement in the early 1500s, followed by intensification into the late 1700s. The almost total absence of post-Contact remains suggests this mauka area of Kahikinui was rapidly abandoned in the early 1800s, perhaps in favor of lower elevations judging from the post-Mahele records.

**Household Archaeology in Kahikinui, Maui**
*Cynthia L. Van Gilder, Dept. of Anthropology, UC Berkeley*
Areal excavations at three household clusters in Kīpapa and Nakaohu have provided the opportunity to learn about the organization of daily life in these ahupuaʻa. Preliminary analysis has resulted in interesting spatial patterning both within and among the structures comprising these kau hale. These patterns are considered in light of ethnohistoric descriptions of Hawaiian households, as well as the broader research results of Kahikinui Archaeological Project.

**Lithic Use in Kahikinui, Maui: Preliminary Results from Kīpapa-Nakaohu**
*Tina M. Lichens, Dept. of Anthropology, UC Berkeley*
Distributions of basalt and volcanic glass vary considerably both within and among the three households excavated in Kīpapa-Nakaohu, Kahikinui, Maui. These patterns are discussed along with the preliminary results of basalt sourcing data obtained through energy dispersive x-ray fluorescence (ED-XRF). XRF results of excavated materials will be compared to known basalt sources on East Maui and Hawaiʻi Island.

**Faunal Analysis in a Household Context: Three Assemblages from Kahikinui, Maui**
*Sharyn R. Jones, Dept. of Anthropology, UC Berkeley*
Current work on the fauna from three households in Kīpapa-Nakaohu, Kahikinui, Maui will be presented. Marine invertebrate and vertebrate fauna remains from the kau hale complexes will be discussed in the context of distributions both within and among structures. An attempt will be made to place the faunal assemblages within the larger picture of resource exploitation in Kahikinui.

**Paleoecological Investigations in Kahikinui: Problems and Possibilities**
*James Coil, Dept. of Anthropology, UC Berkeley*
This paper discusses progress in and future plans for palaeoecological investigations into the natural landscape of Kahikinui moku. First, the applicability of palaeoecological techniques including palynology, palaeomalacology, and macrobotanical analysis are considered. Primary emphasis is then placed upon the identification and interpretation of the area’s abundant archaeological wood charcoal. The large-scale landscape survey focus of the Kahikinui Archaeological Project may provide opportunities to expand upon charcoal analysis methodologies previously employed in Hawaiian archaeology. Finally, ways in which palaeoecological interpretation can lead to an understanding of other archaeological issues in Kahikinui are briefly considered.
Archaeoastronomy in Hawai‘i: an Overview
David Tuggle, International Archaeological Research Institute, Inc.
In the history of Hawaiian archaeology, very little attention has been given to the study of archaeoastronomy. This seems a peculiar omission given the immense importance of the celestial realm in traditional Hawaiian culture. With the dramatic presence of comet Hale-Bopp in the sky - even as we speak - this seems an appropriate time to discuss this subject. The potential for archaeoastronomical research in Hawai‘i is summarized and examples of sites that may reflect attention to celestial events are provided.

The Celestial Exploits of Maui-a-kalana: Implications for Polynesian Voyaging and Chronology
W. Bruce Masse (Hawai‘i State Historic Preservation Division)
Hawai‘i is justifiably famous for the richness of its genealogically-based oral traditions about the supernatural exploits of legendary Hawaiian chiefs and demigods. These stories were likely part of an elaborate ritualized system of recognizing and reifying royal chiefs by using the observance of naked-eye visible temporary celestial events (e.g., novae, supernovae, comets, meteor storms) to create birthing and circumcision stories in the form of chiefly naming chants (“mele inoa”) and chiefly genital chants (“mele ma‘i”). This paper explores the possibility that the fantastic stories surrounding the famous exploits of the Hawaiian chief Maui-a-kalana are birthing stories which encode a bright passage of Halley’s Comet and a bright nova event in the Pleiades during December and January of AD 684-685.

The Ku‘ula Legend: its Place in Hawaiian History
Janet Kaʻeo Bradford, UH West O‘ahu
The Legend of Ku‘ula and his son ‘Ai‘ai continues to be passed down through generations of Hawai‘i’s fishermen. This paper discusses two versions of the Ku‘ula legend and its place in Hawaiian history. The first version is by Beckwith (1970), Hawaiian Mythology, and the second version is in D. Kawaharada (ed., 1991), Hawaiian Fishing Traditions. Both versions cite as their source the “Wahiako Version” that is found in Thrum’s Tales taken from the Hawaiian account of “Moke Manu and others” of Hana, Maui. Kawaharada’s account adds some factualized fishing data to his account. The latter data are contemporary versions of these Hawaiian stories.

In my examination of the Ku‘ula legends, I review the special training of the young and the use of kaona, “hidden meaning” in Hawaiian storytelling. Place names are reexamined and compared in legends from both sources. Some additional factual data concerning fishing shrines and the genealogy of certain high chiefs linked with the building of certain fishponds are also discussed. Overall, this analysis suggests that Ku‘ula had specific kahuna “specialists” knowledge that was handed down to his son ‘Ai‘ai, and from ‘Ai‘ai to his son Punia‘iki and then to the rest of Hawai‘i nei. This legend not only reveals traditional Hawaiian socio-political order, conservation techniques, and religious rituals, and also how by recounting this legend today, Hawaiians continue to instill their family values in future generations.
Hawaiian Hōlua Sledding: a Willing Offer to the Gods of Hawai‘i
Thomas K. Stone, UH Mānoa

The role of athletic performance in ritual expression often is overlooked or disregarded despite the fact that archaeological remains, monumental in scale, bear witness to a prior and primary significance accorded to Athleticism. The archaeological remains that reflect the importance of hōlua can be found throughout Hawai‘i in places as Keauhou, Ka‘ena Point, and newly discovered Kahikinui. The immensity of these slides attest to the mohai (tribute) given to the ancient gods of the Hawaiians. Hōlua sledding is one type of athletic feat that was performed in Hawai‘i before the 19th century. Carried on a long, thin wooden sled, athletes rode down elevated stone rampways, some as long as 1200 meters. Immense slides such as these can be found at Keauhou and possibly at Kahikinui, where a previously unaccounted slide is now known to us today. Results of experimental sledding and recent archival research and field reconnaissance on hōlua slides are presented; the act of hōlua sledding is re-situated within the ritual cosmology of ancient Hawai‘i.

A View from the Top: Hawaiian Land-utilization above Anahulu
Leann McGerty and Michael Dega, with contributions by William Fortini, Jr., Leina‘ala Benson, and Amy Dunn

This presentation provides a brief synthesis of recent archaeological fieldwork in the Kawailoa Training Area (KATA), a military-owned parcel of land extending from Wahiawā to Pūpūkea on O‘ahu’s North Shore. After briefly summarizing the surface features comprising sites encountered during the 6-week inventory survey phase, we will attempt to elucidate several criteria defining a land utilization model for prehistoric through early historic Kawailoa. Occurring in the middle to upper valleys (east) of Kirch and Shalins (1992) study of Anahulu, the Kawailoa survey area, never previously exposed to systematic archaeological survey, provides an opportunity to further address the Anahulu model of Hawaiian land utilization and provide additions to the model for further mauka areas.

ʻUlu in Hawai‘i- Worth Another Look
Maurice Major, Dept. of Anthropology, Bishop Museum

ʻUlu (breadfruit, Artocarpus altilis) is something of a paradox in Hawaiian Archaeology. Although well represented in mythology, it was less esteemed than other vegetables. And despite the presence of large groves in several areas from Hawai‘i to Kaua‘i, it was often referred to as a famine food. Unlike kalo (Colocasia esculenta), ʻuala (sweet potato, Ipomoea batatas), and even non-food crops like ʻawa (Piper methysicum), there was only a single cultigens of ʻulu in ancient Hawai‘i, a strange situation among farmers who prized variety and who supposedly came from the Marquesas where breadfruit is abundant and diverse. Some explanations for these facts have been offered, but these are more often based on opinions and hunches than on data.

In this talk, I will draw together what we think we know about ʻulu. Ethnobotanically, we know this tree as the source of numerous useful materials other than food, from the skin of the fruit to the sap to the wood. Culturally, the tree represented a haven and protector. But archaeologically, little is known, save that it was present, and that it formed a significant part of the field systems of Kona. In my research, I have repeatedly encountered people who say Hawai‘i lacks the storage pits that prove ʻulu’s importance in the south Pacific. Although not numerous, I have found what appear to be these features in Hōnaunau at the elevation of the breadfruit zone. I also have done research into how ʻulu may have functioned in an agroforestry...
component of the Kona Field System, a perspective that suggests the tree may have been extremely important to the development of Hawai‘i. A second glance and new questions may help us learn more from what has long been considered a done deal in Hawaiian archaeology.

Bird Catchers and Bullock Hunters in the Upland Mauna Kea Forest: Cultural Resources of the Hakalau Forest National Wildlife Refuge
Myra Tomonari-Tuggle, International Archaeological Research Institute, Inc.
This slide presentation will discuss the results of reconnaissance survey and comprehensive archival research carried out for the Hakalau Forest National Wildlife Refuge, which covers over 33,000 acres on the east flank of Mauna Kea and crosses the upland portions of 8 ahupua‘a of the Hilo district. The upper refuge shows evidence for a continuum of specialized resource collection from at least early contact through the 19th century. Boundary Commission records document traditional Hawaiian bird catching activities that sequed to bullock hunting in the late 1800s. Archaeological sites in the upper refuge that may correlate to these activities include stone platforms and enclosures; large petroglyph-inscribed boulders are the remains of the boundary surveys.

Land Snail Extinctions at Kalaeloa
Tom Dye and David Tuggle, International Archaeological Research Institute, Inc.
The hypothesis that Hawaiians were responsible for the extirpation of land snails at Kalaeloa is based on a single, unique stratigraphic sequence. The interpretation was then applied to other land snail sequences despite their lack of evidence for Hawaiian influence. We show that directional change in land snail populations at Kalaeloa was underway before Polynesians colonized O‘ahu and speculate that this was due to changes in the water table after the mid-Holocene high sea stand. We also show that land snail populations underwent a period of environmental stress, and that this dates most likely to the post-Contact era when the regional environment was radically altered by sugar cane cultivation.

Evidence of Human Induced Impacts on Dark-rumped Petrel (Pterodroma phaeopygia) Breeding Populations of the Island of Hawai‘i
Catherine Glidden, Darcy Hu, Laura Carter-Schuster, and Bobby Camara National Park Service
This paper details evidence of human induced impacts on Dark-rumped Petrel (Pterodroma phaeopygia) breeding populations on the Island of Hawai‘i. Archaeological analysis of current nesting areas on the slopes of Mauna Loa, indicates the probable past modifications of these areas for the purpose of harvesting petrel fledglings. This finding further testifies to the devastating impact of prehistoric island populations on the biodiversity of Pacific island birds.

Sex Determination in Prehistoric Hawaiian Skeletal Remains using the Femur and some Observations on its Sexual Dimorphism
Vincent J. Sava, UH Mānoa
A new method for determining sex in Hawaiian skeletal remains using femoral measurements is presented. Maximum femoral length (MFL), maximum head diameter (MHD), midshaft circumference (MSC) and epicondylar width (EPW) of 499 femora (156 male and 343 female) from Honokohua, Maui, Hawaiian Islands, are used. Summary statistics are used to establish the
distribution of metric variation, by sex, for each femoral feature. These distributions, or size ranges, are subsequently used to predict sex in this series. Three of the four features correctly predict sex in relatively high frequencies (ie. greater than 80%). Midshaft circumference has the highest total frequency of successful sex determinations for the combined sample (85.8%) followed by MHO (83.5%) and EPW (81.2%). Maximum femoral length (64.2%) is shown to be a relatively poor sex predictor. These predictive accuracies, especially those for MSC, are consistent with those found in previous studies which examine different human groups.

Hawaiian Origins: Skull Shapes and Trees
Michael Pietrusewsky and Rona Ikehara-Quebral, UH Mānoa

The use of skulls as a source of taxonomic information for reconstructing human phylogeny remains an important staple of the discipline. Earlier attempts at understanding the biological variability of Polynesians, which suffered from a flawed theory and lack of an objective methodology, have given way to improved statistical procedures and an emphasis on evolutionary theory. In this presentation, two multivariate statistical procedures, Mahalanobis’ Generalized Distance and stepwise discriminant function analysis are applied to cranial measurements recorded in 9 male and 9 female Polynesian/Fijian groups for assessing the biological origins of Hawaiians. Two different clustering techniques, Unweighted Pair Group Method Algorithm (UPGMA) and the Neighbor Joining (NJ) methods, are further compared for the first time. Although differences were observed, these new analyses demonstrate a morphological similarity between crania from Hawai‘i and Tonga-Samoa, an unexpected connection. The results further indicate similarities between Hawai‘i and cranial series from eastern Polynesia, the most plausible homeland of Hawai‘i’s first inhabitants. Broader comparisons which include cranial series from all parts of Oceania Australia, Southeast Asia, North/East Asia further indicate an Asian origin of Polynesians.

SYMPOSIUM 6: ANALYTICAL ARCHAEOLOGY IN THE PACIFIC: APPLYING THEORY TO THE EMPIRICAL RECORD

Assessing Archaeological Methods (or So Many Answers, So Little Time)
Ethan E. Cochrane, UH Mānoa

The level of inter-archipelago interaction, the timing of island colonization, the nature of the development of social complexity -- all are important debates in Pacific archaeology. Often, the line between opposing viewpoints can be drawn in the sand of archaeological method. Evaluation of different archaeological methods is a vital step in judging the correctness of particular conclusions we make about the past. In this paper, I outline a process for evaluating archaeological methods using seriation as an example. Three interrelated concepts guide the evaluation of seriation: model-building, observation, and quantification. When properly applied, seriation is a valid archaeological method for generating data on historical relationships, including the tracking of prehistoric interaction and movement.

Issues of Quantification: a Re-analysis of Ceramic Material from Navatu, Fiji
Karen F. Aronson, UH Mānoa

Pacific archaeology has long been dominated by the requisite analysis of ceramic material at sites where few types of artifacts survive the tropical conditions of Oceania. Debate over the
most accurate method of quantifying ceramic materials have persisted since the beginnings of archaeology in the Pacific. More recently, sourcing studies have become a prevalent feature of archaeological inquiries regarding not only the movements of human groups but also levels of post-colonization contact in the Pacific. In investigations regarding the intensity of exchange or movement of materials, quantification of ceramic material then becomes an unavoidable issue. I will discuss various methods of quantifying ceramics using examples from the site of Navatu, Fiji, which was originally excavated by E.W. Gifford.

Rediscovering Nuʻalolo Kai (KA-C10-2): a Systematic Classification
Julie S. Field, UH Mānoa
Artifact types in Hawaiʻi were originally created with anthropological goals in mind, This resulted in a functional typology of material culture, which is based on normalized depictions of ancient Hawaiʻi. This typology divides the archaeological record into implicitly defined activity areas such as “household equipment” or “agricultural tools,” thus limiting how archaeologists view the empirical record, and reducing variability to ‘noise’. This kind of typology is not appropriate to truly archaeological research, which focuses on the variability of artifacts through time in order to answer questions about culture change. A systematic reclassification of Hawaiian artifacts from the Nuʻalolo Kai site on Kauaʻi can demonstrate the utility of archaeological classifications, and when linked to evolutionary theory, can provide an explanation for change through time.

Use and Abandonment of Fishing Localities Along the South Shore of Oʻahu, Hawaiʻi
Michael T. Pfeffer
In Hawaiʻi’s near shore waters, researchers have recently identified significant archaeological deposits. Anecdotal evidence suggests that these deposits are associated with koʻa, or “fishing grounds.” Along Oʻahu’s south shore, artifacts recovered from marine contexts include a range of tools typically associated with marine procurement. Here, I examine raw material use from five assemblages of marine procurement artifacts recovered from discrete “fishing grounds” along Oʻahu’s south shore to identify patterns of abandonment during the proto-historic and historic periods. Available evidence, suggesting that patterns of abandonment may be correlated with depopulation and urbanization during the proto-historic and historic period, is evaluated.

Theoretical Considerations in Identifying Early Post-Contact Hawaiʻi
Susan Lebo, Bishop Museum
The Hawaiian archaeological record is routinely divided into the pre- and post-contact period on the basis of a single attribute- the presence or absence of historic artifacts. Features containing mixed assemblages of traditional Native Hawaiian and imported artifacts are often identified as secondary or disturbed. What does a primary post-contact traditional native Hawaiian site look like? How can such sites be identified in the archaeological record if historic artifacts are absent? This reliance on the presence/absence of historic artifacts is explored. Emphasis is placed on the development of, and application of theoretical models for examining post-contact culture change in Hawaiʻi.
The traditional Fijian polity was both complex and competitive: oral traditions and early ethnohistorical accounts reveal byzantine power configurations and frequent, internecine warfare. The highly specialized character of traditional Fijian weapons further attests to the ancient pervasiveness of warfare, as do the thousands of fortified sites dotting the Fijian archaeological landscape. Explanations accounting for political complexity and aggression in ancient Fiji have advanced a variety of causal factors, including the influence of forces external to Fiji, and cultural evolutionary processes in the form of “functional adaptations.” Socioecology, an explanatory model based in evolutionary ecology, is suggested as a theoretically rigorous alternative to understanding early sociopolitical developments in Fiji. The theoretical bases and implications of such an approach will be discussed, and emphasis will be placed on the application of socioecological principles to Fijian oral traditional and ethnohistorical evidence.
Mea Makamae and the Evolution of the Representation of the “Other” (keynote address)
Adrienne L. Kaeppler, Smithsonian Institution

Mea makamae have been traveling around the world for some 220 years, often becoming “treasures” and “works of art” in the cultural traditions of other nations. I will explore how these treasures have become integrated into the traditions of other lands and how they are presented and recontextualized in their new homes. Each object has its own story to tell if its biography and history are known, but when arriving overseas, they tend to become simply objects and representative of a class or type of object. A Hawaiian artifact, and the class it represents, is usually perceived to be different from objects and classes of objects in the culture to which it has been transplanted. Their makers, then, no matter how ingenious, might also be different. Differences in objects, technologies for making them, attitudes toward them, and ideologies about them, are bases for what has become known as the “other.” It is at least partly from these classifications and their representation in museums during the late eighteenth century, that Europeans "invented" Hawaiians as “others.” At home in Hawai‘i, objects and people had more individual identities and belonged to specific lineages - in Europe, they were simply Hawaiian. I will attempt to put these concepts, especially as related to museum exhibitions, into an international perspective and to explore how ideas about the “other” have changed over time. I will address myself primarily to mea makamae outside of Hawai‘i, but I suspect that there are corresponding notions here in Hawai‘i.

SYMPOSIUM 1: ARCHAEOLOGY AND DIRT IN HAWAI‘I

Agricultural Fields of Waimea
Conrad Erkelens

The Waimea Town Center data recovery investigation involved a 158-hectare project area in Waimea (Kamuela) on Hawai‘i Island. Previous archaeological research in the project area documented a large agricultural system associated with an extensive irrigation network that was thought to pre-date European contact. Examination of data from 81 trench excavations and 24 archaeological sites, suggests that undertakings by Kamehameha at Kawaihae in the period between AD 1789 and 1802 prompted the development of an extensive, supplementary irrigated field system that extended from Pu‘u Kapu in the project area westward as far as the Lalamilo area. There is a lack of definitive evidence indicative of occupation sites pre-dating development of this field system in the late eighteenth century. Recovered faunal remains from these earliest occupation sites indicate exploitation of coastal, upland forest, and the project area’s dry shrubland habitats. Analysis of 15 radiocarbon samples, the presence of post-European artifacts at some sites, and supporting documentary data resulted in approximate known occupation dates for most sites in the project area.

Data Recovery Excavations at Site 19039, Lanihau 2, Kailua-Kona, Island of Hawai‘i
Robert L. Spear, Scientific Consultant Services, Inc.
In late 1997 data recovery excavations were conducted on Site 19039, Lanihau 2, Kailua-Kona, Island of Hawai‘i. Several block excavations of various sizes were placed in and around selected architectural features to obtain data on feature function and intra-feature relationships. While the analysis of the collected data is ongoing, initial conclusions and additional lines of research will be presented.

**Evolutionary Ecology and Avian Extinctions**

Jadelyn J. Moniz Nakamura and Kathleen Sherry, Pōhakuloa Training Area, Environmental Office

Bird extinctions have been of interest to many archaeologists and paleontologists. While land birds have heretofore been the primary focus in studies of the extinction process, the bones of seabirds generally dominate archaeological assemblages. To understand the evolutionary relationships between human settlement subsistence, and extinction, seabirds are an important environmental feature. Here the changing archaeological distributions of bird populations in Hawai‘i over both space and time are explained by models from evolutionary ecology. Two aspects of seabird behavior and ecology make their populations a relatively dense and predictable resource. Their distribution over the landscape is also a function of changes in the population size and location of humans. Analysis of bird bone from coastal and inland contexts as well as early and late archaeological assemblages on the island of Hawai‘i illustrate how evolutionary ecology can contribute to the interpretation of variation and subsistence traits.

**Early Hawaiian Adze Manufacturing at Pōhakuloa, Island of Hawai‘i**

James M. Bayman (UH Mānoa) and Jadelyn J. Moniz Nakamura (Pōhakuloa Training Area)

Most research on early Hawaiian adze manufacturing has centered on Mauna Kea, the largest known quarry in the Pacific region. Work at Mauna Kea indicates that its production intensity waned in the post-contact period, as traditional stone technology was replaced by a European derived metal technology. Recent discoveries of adze manufacturing locales at Pōhakuloa offer intriguing insights on an alternative traditional technology that is located outside the Mauna Kea quarry. This paper reports on research conducted by the UH Archaeological Field School to document and interpret this enigmatic traditional system for manufacturing and circulating stone adzes (perhaps in the post-contact period).

**Observations Regarding Soils and Hawaiian Archaeology**

Bob Gavenda, U.S.D.A. Natural Resources Conservation Service

Soils and related information may effect some archaeological interpretations. The following observations regarding soils, geology, and paleoclimates may be of interest to archaeologists in Hawai‘i:

- the term “Pahala ash” should be limited to ash from Kīlauea summit eruptions from about 20 to 30 ka.
- volcanic ash in Kona is not from one eruption; ash thickness generally correlates with landscape age.
- Asian aerosol accumulation indicates buried surfaces but not gleying, volcanic ash soils generally do not display much gleying.
- Little Ice Age of about 600-200 years ago may have disrupted Polynesian migrations for agricultural expansion.
- Hawaiians exploited a wide variety of soils resources.
- Pre-contact forest cover in leeward Kohala is not as extensive as is popularly believed; grasslands dominated below 300m elevation.
The Pulu Processing Center at Nāpau, Hawai‘i
Catherine L. Glidden, Hawai‘i Volcanoes National Park

This paper addresses the historic pulu industry in Hawai‘i. Historically, pulu, a golden, feathery substance found within haupu‘u ferns, was found to be ideal for use as pillow and mattress stuffing. Beginning in the 1850s, several prominent businessmen employed Native Hawaiians to pick, dry, and bail pulu for shipment to San Francisco, Vancouver and New Zealand. Several pulu-processing centers were built on the island of Hawai‘i, including one at Nāpau Crater currently within Hawai‘i Volcanoes National Park. In February 1997, this site was threatened with an upsurge of volcanic activity near Pu‘u O‘o. Park archaeologists were called upon to thoroughly document the site and conduct test excavations. The results of our findings will be discussed including the economic, social, and political impact of this cottage industry on the Native Hawaiian community.

Archaeological Assessments for an Urban Landscape: Doing Historical Homework
Myra J. Tomonari-Tuggle, International Archaeological Research Institute, Inc.

Intensively developed urban landscapes suggest little likelihood for archaeological preservation. What could possibly remain under the crushing weight of a multi-story building or the scraped and pounded earth of an airport landing strip? A scant remnant probably, but historical research offers a means to augment the limited archaeology, and at the same time, build a general model of settlement and land use that can be used for regional investigations. By fortuitous conjunction, assessments for archaeological potential were carried out for several, very small, highly developed parcels on the Moanalua-Halawa coastal plain, that is, the area of Honolulu airport/Hickam AFB. Historical research allowed educated assessments of the likelihood for subsurface remains, as well as the types of remains that might be there and how they fit into the broader regional pattern of the coastal plain.

Introduced Species as Time-Markers for Historical Sites in Hawai‘i
Peter R. Mills, UH Hilo

Dating historical archaeological deposits in Hawai‘i often depends upon known manufacturing dates of select western artifacts (particularly ceramics and bottle glass). This method establishes a terminus post quem date based upon a limited range of artifacts that are conceivably absent in many native Hawaiian historical sites. Other methods of terminus post quem dating can be developed and expanded to refine historical chronologies. The identification of introduced plant and animal species in archaeological deposits is a less common method for dating historical deposits, but could greatly refine historical chronologies. The potential applications of this method in Hawai‘i are discussed.

Hawai‘i on the Edge of Colonial Spain
Richard W. Rogers

Captain Cook noticed the "visages, not being unlike Europeans" in the Hawaiian race before he first dropped anchor off Kaua‘i in 1778. Officers of the Resolution and Discovery wrote of the Hawaiian knowledge and possession of iron tools before their arrival. Signs of the cross were noticed on Maui and Hawai‘i. These and other observations caused a debate aboard those ships that has persisted for over two centuries.
Did the Spaniards visit the Hawaiian Islands before their discovery by Captain Cook in 1778? Most 19th century historians asserted that indeed they were. However, many 20th century scholars have concluded that they were not. Hundreds of maps and charts of the Colonial Pacific accurately depict a group of islands that could only be the Hawaiian Group. Careful study of Pacific cartography indicates a pattern of discovery and rediscovery of this same cluster.

Images, recovered from Hawaiian valleys, depict men in Colonial attire. Some appear to have been carved with metal tools. Hawaiian chant and legend detail some of the visits and no less than two of the shipwrecks that came to these shores. Museum collections hold valuable artifacts that still retain information which can shed more light on the 16th through 18th centuries. Woven sailcloth and very old iron tools have yet to be studied using the latest technology.

Modern archaeology has unearthed skeletal remains that indicate that certain western diseases were to be found in the ancient Hawaiian population. It appears now that syphilis and tuberculosis may have been introduced long before Captain Cook sailed. Cumulative evidence indicates that the Spanish and Dutch influence in Hawaiʻi may be much greater than previously thought. We would like to encourage modern scholars to look for more evidence of this fascinating facet of our collective history.

Coastal Communities of Kahikinui
Cynthia L. Van Gilder, Valerie Nagahara, W. Koa Hodgins
Recent investigations along the coastline of Kahikinui moku, Maui, have given insight into the post-contact occupation of this area. Whereas the uplands seem to have been largely abandoned by the beginning of the 19th century, coastal occupation may actually have intensified in this period. Although documentary sources for this district are relatively sparse, it is well known that by the 1840s it was home to enough practicing Catholics to support the building of St. Ines Church. This paper assesses our current state of knowledge regarding the later phases of occupation in Kahikinui, with particular attention to coastal patterns of reuse and finally, abandonment.

Archaeology along the Old Government Road, Keaʻau, Puna, Island of Hawaiʻi
Barbara Lass, Archaeological Research Facility, UC Berkeley
In 1997 UH Hilo and the State Division of Forestry and Wildlife conducted an archaeological reconnaissance survey along a portion of what is commonly called the ‘Old Government Road’ in the ahupua’a of Kea’au in Puna on the Island of Hawaiʻi. Documentary research indicates that the road was constructed in the mid nineteenth century over the route of a pedestrian trail used in pre-contact and early postcontact times, and much of the original stone construction is intact. Fourteen sites were recorded along the road including walls, agricultural enclosures, a World War II bunker, and two trenches possibly dating to World War II as well. The survey area is one of the few areas of northern Puna, which is still relatively undisturbed and contains intact archaeological sites.

Early Trade Items in Hawaiʻi: A case Study of Metal Adzes from the Bishop Museum
Susan A. Lebo and Ines D. Gordon, Bernice Pauahi Bishop Museum
Although often mentioned as an early trade item in Hawaiʻi, metal adzes remain a poorly understood artifact type. Whether brought to Hawaiʻi as completed tools or fashioned in the islands, metal adzes were an important component of Hawaiian toolkits in the early post-contact period. Archaeological and ethnological specimens in the Bishop Museum collections provide an
An invaluable opportunity to examine this important woodworking tool. This is accomplished through review of logs and journals of early visitors and detailed artifact analysis of the adzes. This analysis includes descriptions of the raw materials and their sources, adze morphology (e.g., size and shape), and method of manufacture. This study improves our understanding of their availability and importance in early postcontact woodworking.

Archaeological and Other Investigations on Lisianski, Northwest Hawaiian Islands
Alan C. Ziegler, Zoological Consultant
A two-month surface and subsurface investigation of this small (400 acres or 160 hectares), low, sandy uninhabited island 1,000 miles (1,600 km) NW of O‘ahu included a special attempt to document prehistoric Hawaiian use. Wave activity periodically obliterates most evidence of human visitation along the peripheral beach berm, and no certain pre-contact midden accumulations were found here or elsewhere on the island. An unmodified flake of dense volcanic material discovered on the interior surface proved to be from an indeterminate Pacific Rim locality rather than from an oceanic high island. Burrowing activities of nesting seabirds significantly disturb stratigraphy on the island’s loose upper sand layer, and would undoubtedly have long since toppled and ultimately buried any possible ancient Polynesian-erected beachrock uprights or surface alignments. This same stratigraphic mixing, however, served to reveal a habitation area used by at least as early as 20th-century Japanese plumage hunters, apparently representing an extraisland population of the Laysan Duck hunted to extinction by shipwrecked American whalers in the mid-1800s. They were recovered in various contexts. This same wreck resulted in the introduction of the House Mouse (Mus musculus); disappearing here about 1915), but no evidence was found for occurrence of the communal Polynesian Rat (Rattus exulans).

SYMPOSIUM 3: STARS AND STRUCTURES: ARCAEOASTRONOMY IN HAWAI‘I

Celestial Connections: the Great Square of Pegasus and Malahe‘akoa
E. Kalani Flores, Mana‘oi‘o
When my ancestors of these Hawaiian Islands sought proper direction for a project, they often looked into the heavens for an answer. Divine power and insight was requested through their prayers. A determination for the configuration and placement of a particular site could be obtained through these means. Once a site plan for a special religious or civic structure was revealed, the findings were formally presented to the paramount king or council of chiefs. During an evening meeting, a large wooden calabash was brought into the circle of chiefs, priests, architects, seers, astronomers, and other important advisors. Then the bowl was filled with the waters of Kane. As they peered into this calabash, the pulsating stars from above could be seen upon the surface of the water. These reflections provided a mirror image of the celestial bodies. A description of the site to be built was outlined and its configuration was pointed out in the corresponding stars that reflected in the calabash.

Malahe‘akoa is a comparable site that is believed to have been conceived with a celestial connection. Located in the ahupua‘a (land division) of Wailua and within the moku (traditional land district) of Puna on the eastern coast of the island of Kaua‘i, it is over two acres in size. It is concluded that the dimensions of Malahe‘akoa were systematically plotted by using the Great Square of the Pegasus constellation as the architectural blueprint during the construction of this site. When comparing the measurements of the exterior walls from the survey plan of “Malae Heiau” (conducted by the State Parks archaeologists) and the measurements of the Great Square
from a star map (printed from the “Voyager II” computer program), they affirm a mirror image of each other. The corners of Malaeha akoa correspond with the following stars that delineates the Great Square; Scheat (north-east corner), Markab (north-west corner), Algenib (south-west corner), and Sirrah/Alpheratz (south-east corner).

In addition, there seems to be certain solar alignments associated with the location of this site which can be observed through the middle entrance in the eastern wall, traversing points on the western wall, and extending to particular peaks on the mountains of Maunakapu, ‘A‘ahoaka, and Nounou. After vegetation removal, further investigations at this site during the summer solstice, winter solstice, and equinoxes are deemed necessary in order to verify these solar alignments.

So as we explore, excavate, survey, or research Hawaiian cultural sites, perhaps we should take the opportunity to peer into the heavens for answers. But then again, it may just lead to more questions.

**Kūkaniloko**
*Will Kyselka*

Is there astronomical significance at the horizon with regard to astronomical events in the arrangement of stones at the piko, the navel of Oʻahu? In AD 1500 certain stars were traveling directly over Kukaniloko, but due to precession they are presently making a path across the heavens that takes them just north of Kaua‘i.

**Calendar Stones at Kahinawai: an Archaeoastronomical Site in Kaluakoʻi, Molokaʻi**
*Maurice Major and Catherine Aki*

At the head of Kahinawai Gulch above the south coast of Kaluakoʻi, Molokaʻi, is a site including an alignment of large boulders that have a calendrical function. Other than the roughly east to west orientation, the boulders appear at first glance to be like other outcrops in the area, but closer examination shows that they have been artificially set into place. Within this feature are two stones that mark the equinoxes by casting a very distinct shadow onto the center of three grooves. Ethnographic information suggests that a bowl carved into another of the boulders is also significant in marking time, and it is hoped that further relationships may be revealed through continued study. The study area is close to traditional makahiki grounds for West Molokaʻi, and may be related to other megalithic sites at the same elevation. This site provides empirical evidence of a traditional Hawaiian solar calendar, and together with ethnographic information and further scientific investigation, provides an opportunity to learn more about ancient Hawaiian astronomy and reckoning of time.

**The Kukiʻi Heiau in Puna, and its Relationship to the Land and Sky**
*Tom Wolforth, Paul H. Rosendahl, Inc.*

The Kukiʻi Heiau in Puna has received only sporadic archaeological attention over the past century. Visits to the site have been short and the heavy vegetation has hampered site inspection. Recently, repeated visits to the site and its environs have resulted in new data on the heiau architecture, organization, extent of impact due to historic activities, and its relationship to its surroundings. The Kukiʻi Heiau and associated features at the top of Puʻu Kukae may have been situated in the Kumukahi landscape to articulate with several known solar and lunar mythological and physical phenomenon.
Archaeoastronomy in Hawai‘i: Introductory Remarks and Closing Comments
Dave Tuggle, International Archaeological Research Institute, Inc.
The symposium on archaeoastronomy is introduced with comments on the relevance of the subject to historic preservation in Hawai‘i. Closing comments are made concerning archaeoastronomical potential of specific temples on O‘ahu and the Big Island.

Reconstructing the Peopling of ‘Umi’s Sites: Selections from Folklore
Lei Perkins, O‘ahu Community College
This paper attempts to coordinate the “fit” of mo‘olelo Hawai‘i that is oral, traditional, anonymous and non-discursive communication with site data from archaeological data such as appears in Kirch’s Feathered Gods and Fishhooks and other scientific data such as found in Armstrong’s (et. al) Atlas of Hawai‘i. It is an attempt to reconstruct rules for discovering specifics of the everyday religious and social life of persons of different political rank, social status, economic class, age, gender, education/occupation, and disposition - with types of sites that have been archaeologically tested and dated. Two accounts of ‘Umi/“Umi” will serve to show the double nature of the many sided versions of mo‘olelo, classifiable as stereotyped and radical. The stereotyped morphic surface stability, in which one mo‘olelo archetypal mold of story [seemingly] fits many types of stories (myth, enohistory, fable, biography, critique), but is in fact a dense compaction from stacking. Multitudinous stories are compacted and undercut by a radical underlying oral hermeneutics, giving conciseness and freedom, with parts recycled in patterns of story types both bio-systemically and building-block built. The condition satisfies the need for specific applications with enormously complex relationships embedded but realigned when retold. The ‘Umi/“Umi” stories operate for “fit/refit” as one dual case sample of archaeological, anthropological, and folkloric data, but not without many questions raised, especially about the underlying everyday philosophy.

PRE-CONTACT ADAPTATION TO UPLAND FORESTED KAHIKINUI, MAUl
Pre-contact Adaptation to Upland Forested Kahikinui, Maui
Boyd Dixon, Valerie Nagahara, W. Koa Hodgins, and Patty J. Conte, DLNR, Hawai‘i State Historic Preservation Division
Archaeological and paleoenvironmental data recently analyzed by SHPD from DHHL land in Kahikinui, Maui, indicate initial permanent settlement of elevations between 1600 and 3000 f.a.s.l. by AD 1400. Rather than a gradual process of intrusion into the lowland dry/montane dry forests, however, it appears that a fully mature settlement and agricultural system was implemented over a relatively short period of time, exploiting all elevational zones and micro-environmental niches simultaneously, while preserving intact portions of the native landscape. It is argued that this evidence indicates a conscious chiefly settlement policy, only intensifying after AD 1650. The virtual abandonment of this upland system for lower elevations not long after Contact may therefore reflect the abandonment of chiefly control over the productive capacity of the landscape.

SYMPOSIUM 4: PACIFIC ARCHAEOLOGY

Japanese Cord-marked Pottery (Jomon) found in Vanuatu
Yoshihiko H. Sinoto, Bernice Pauahi Bishop Museum
French archaeologist, Jose Garanger, collected potsherds from the surface of yam gardens
in Mele Village, Efate Island in the early 1960s. He reported that 14 of the shards he collected had cord-impressed designs completely different from locally known Mangaasi pottery and he could not place them in the Vanuatu pottery typological sequence. After analysis, it was determined that they were made in Aomori Prefecture in northern Honshu, Japan about 5000 years ago, during the early Jomon Period. The question of how those potsherds reached Efate Island is a mystery still to be solved.

Precarious Landforms: Recent Research on Pacific Atolls
Marshall I. Weisler, University of Otago
I summarize a five-year archaeological research program in the Marshall Islands, a group of 29 atolls situated 2,500 miles southwest of Hawai‘i. Research themes addressed include: chronology of human colonization; prehistoric settlement patterns; marine subsistence; Cyrtosperma agriculture; variability in material culture; and inter-island interaction.

The Formation of Traditional Villages in Prehistoric Palau
David J. Welch, International Archaeological Research Institute, Inc.
Recent geomorphological, paleoenvironmental, and archaeological research has provided the evidence on which to base a preliminary revised cultural sequence for the Palauan island of Babeldaob. New radiocarbon dates suggest that many of the major transformations that mark Palauan prehistory may have occurred earlier than previously indicated. This paper focuses upon the formation of the traditional villages, the settlements in which Palauans were living at the time of Western contact. It examines the relationship between these villages and the terraces which dominated the archaeological landscape of the previous period of Palauan prehistory, suggests new dates for the initial settlement of these village locations, reviews the relationship of Babeldaob with other islands in Palau, and discusses the archaeological evidence for the type of social and political organization that may have characterized these villages.

Holocene Pollen Records from Babeldoab island, Palau, Western Caroline Islands
Jerome V. Ward, J. Stephen Athens, and Carol Hotton, International Archaeological Research Institute, Inc.
In 1996, twenty-two wetland cores were recovered from a variety of geographical contexts on Babeldaob and Koror Islands in Palau as part of several major archaeological projects. This paper considers findings from four cores with long Holocene sequences from Babeldaob Island. Using pollen, charcoal particles, and sedimentary data, evidence is presented on vegetation succession, climate change (the earliest indication of anthropogenic disturbance), plant introductions, differential patterns of land use through time, and terrace building. These results, as with recent studies on other Pacific islands, demonstrate that wetland paleo-environmental investigations can offer significant insights on an island’s prehistory not readily discernable by standard archaeological techniques.

The Terraces of Palau: New Information on Function and Age
Jolie Liston and Dave Tuggle, International Archaeological Research Institute, Inc.
The terraces of Palau are an archaeological wonder. This paper presents (1) a brief literature review of their possible functions; (2) a summary of new data concerning their age and functions; and (3) a consideration of methodological problems in the study of their functions.
The new evidence indicates that burial, habitation, ritual, and defense were certainly among their uses, in addition to the agricultural function, as commonly accepted.

Archaeological Sites in Akite Valley, Huahine Island, French Polynesia
Eric Komori, DLNR, Hawai‘i State Historic Preservation Division
The results of archaeological investigations in Akite Valley, Huahine, are compared with those from the chiefly center in the nearby Mata‘ire‘a Hill area. Preliminary results indicate a close chronological relationship between the two areas, however, site densities and distributions differ greatly. This may be a reflection of the unique organizational structure of the Huahine chiefly domain.

Monumental Architecture and Cultural Landscapes in the Marquesas Islands
Barry Rolett, Jennifer Kahn, Mike Carson, and Eric West, University of Hawai‘i at Mānoa
We report on a two-year study designed to chart the development of cultural landscapes among Polynesian chiefdoms of the Marquesas Islands. Our work involves survey and excavation of an integrated complex of residential, ceremonial, and agricultural sites in the interior of Vaitahu Valley (Tahuata). Evidence points to the late prehistoric/early historic period emergence of monumental architecture, together with extensive modification of the valley through terracing and the use of stone embankments to stabilize river channels. The excavations yielded four stone heads (tiki) carved in bas-relief.

Chronology of Hawaiian Fishponds and Prehistoric Environments: a Case Study from the Nu‘upia Fishpond Complex, Kāne‘ohe Bay, O‘ahu
Michael Dega
Several independent lines of evidence are profitably utilized when attempting to understand initial construction, use, and abandonment of Hawaiian fishponds. A case study from the Nu‘upia Fishpond Complex utilizes palynology, dating samples, diatoms, shell, and historical data to infer construction and use of the ponds. These data, mostly environmentally-derived, also contribute to the growing database concerning changes in the environment (both human and naturally induced) over time. The paper concludes with examining the possible methodologies available to address questions concerning dates of Hawaiian Fishpond use and past environmental conditions.

The Buried Pondfields at West Loch, Island of O‘ahu
Tom Wolforth, Paul H. Rosendahl, Inc.
Paul H. Rosendahl, Inc. (PHRI) conducted data recovery excavations in the floodplain at the mouth of Honouliuli Stream on O‘ahu, and encountered prehistoric agricultural pondfields, fishponds, and habitation below a meter of historically deposited sediments. This investigation has generated information on the changing shoreline and environment over the last 6,000 years, settlement and subsistence practices from the 10th century through the historic period, and effects of prehistoric activities on the landform and fauna in the lower Honouliuli Valley.

SYMPOSIUM 5: THE ARCHAEOLOGY OF NORTH HALAWA VALLEY

The Radiocarbon Dates from North Halawa Valley, O‘ahu
Shannon P. McPherron, Bernice Pauahi Bishop Museum
This paper will present an updated summary of the radiocarbon data from North Halawa Valley and discuss its implications for the chronology of valley settlement and use. The quality of the
Assessments of Stone Architecture: a Case Study from North Halawa Valley, O‘ahu
Susan A. Lebo and Michael D. McGuirt, Bernice Pauahi Bishop Museum
Archaeologists working in Hawai‘i have long relied on ethnographic sources and surface observations of architectural form to assess the uses of traditional stone architecture. This reliance reflects the practical constraints imposed on research when dealing with regional contexts characterized by multiple sites that have extensive stone architecture. Efforts aimed at enhancing the reliability of architectural assessments through modifications in sampling strategy have met with varied success. Using data from North Halawa Valley, we examine the effect of sample structure on the interpretation of architectural use and discuss practical approaches to improve the reliability of future assessments.

Lithic Activity Sets in North Halawa Valley, O‘ahu
Deborah I. Olszewski, Bernice Pauahi Bishop Museum
Forty-eight sites in North Halawa Valley yielded lithic assemblages, totaling in excess of 47,300 artifacts, including basalt (86%), volcanic glass (13.9%), cryptocrystalline silicate, and quartz (0.1% combined). These assemblages are best studied within their site-specific contexts, whether from the layers/levels of a particular feature, such as a terrace, or from the layers/levels within sites lacking surface architecture. Using basic lithic attributes, it is possible to isolate activity sets involving generalized basalt core reduction, basalt adze reworking, basalt adze resharping, and generalized volcanic glass core reduction. Some of these activities appear to occur within spatially discrete areas of the valley, while others suggest temporal changes in lithic activity emphases during the late pre-contact to early post-contact periods.

Methodological Considerations for the Recovery of Land Snails in Archaeological Deposits: a Study of the Subfossil Record from North Halawa Valley, O‘ahu
Leslie L. Hartzell and Robert H. Cowie, Bernice Pauahi Bishop Museum
Archaeological investigations in North Halawa Valley, O‘ahu (1987-1997) recovered land snails from a number of site contexts. These data provide an opportunity to critically analyze differences in recovery techniques using conventional dry-screening methods (1/4 and 1/8-inch mesh) versus flotation. Results from analyses of field studies of extant populations, historical records, and land snails recovered using various excavation methods illustrate the need for improved quantified, fine-grained recovery techniques. Snail data provide the strongest evidence for tracking paleoenvironmental changes through time and space and are fundamental to our ability to better understand the ecological consequences of human activities in the settlement of the Hawaiian Islands.

Kai a leo o ʻEwa (The Silent Fish of ʻEwa): marine Shells and other Coastal Resources from Archaeological Sites in North Halawa Valley, O‘ahu
Helen Leidemann and Leslie Hartzell, Bernice Pauahi Bishop Museum
Recent inventory survey and data recovery investigations at various sites in North Halawa Valley, O‘ahu have produced a wide array of marine resources. Moderate to large amounts of unworked shell, fish bone, and coral have been collected; shark teeth, crustaceans, and
echinoderms are a minor component. A small number of artifacts made of shell, fish bone, turtle shell, and coral are also present. These resources are found throughout the valley, but particularly in four large terraced sites and in numerous rockshelters. This paper will present selected aspects of these assemblages, such as the fact that the weight totals for bivalves greatly predominate over the gastropod totals (reflecting an interesting reversal of the ratio of bivalve to gastropod species present in Hawaiian water), as well as look at the possible significance these coastally-derived assemblages have in relation to the settlement pattern of this inland portion of Halawa Ahupua’a.

Archaeobotanical Finds from North Halawa Valley, O‘ahu
Heidi A. Lennstrom, Bernice Pauahi Bishop Museum
This paper concerns plant remains recovered from sites in the North Halawa Valley. These materials include wood charcoal, seeds, leaves, stalks, corms, roots, and tubers. The archaeobotanical remains were recovered both by on-site screening and by use of water flotation. Together the materials can be used to begin to understand the use of plant resources in the valley over a period of several hundred years. Both food and industrial plant products are included, and a comparison of archaeobotanical materials associated with feature and sites types helps to interpret the patterns present in the valley.
The New Section 106 Regulations, Traditional Cultural Properties, and Native Hawaiian Participation: A Perspective (keynote address)

Thomas F. King, National Preservation Institute

The revised regulations for Section 106 of the National Historic Preservation Act, adopted recently by the Advisory Council on Historic Preservation, contain many words promoting more participation by Native Hawaiian groups and more attention to traditional cultural properties. Unfortunately they don't contain procedures to match.

SYMPOSIUM 1: PACIFIC LITHICS

Opening Remarks
Scott Williams, Ogden Environmental
[no abstract available]

Cryptocrystalline Silicates in Hawaiian Lithic Assemblages
Peter R. Mills, Dept. of Anthropology, UH Hilo

Cryptocrystalline silicates (CCS) including chert, flint and chalcedony appear in Hawaiian lithic assemblages, particularly in the historical period. Debitage and wear patterns suggest that these materials were primarily used for strike-a-lights and gun-flints. Although many have assumed that all CCS were imported as gunflints or ballast stone, there are local sources of CCS. The identification of these materials in Hawaiian archaeological sites opens up the possibility of local commodity exchange rather than a full dependence upon imported goods. Two documented source areas--Waiahewahewa Gulch, Moloka‘i, and the Barber's Point/Lualualei region, O‘ahu--are discussed. An initial attempt at source characterization using Oxygen isotopes is presented.

Immunological Analysis of Volcanic Glass Edge Altered Flakes, Site 19039, Kailua-Kona, Island of Hawai‘i
Robert L. Spear, Scientific Consultant Services, Inc.

Immunological Analysis of 50 volcanic glass flakes was undertaken specifically to assess their use on plant materials. A total of 31 edge altered flakes were analyzed with 16 of these artifacts showing positive results. In contrast, only two of the 19 pieces of debitage produced positive results. This paper will discuss the detailed results of the analysis and the implications for interpreting site function based on these results.

Glass Technology from Postcontact Sites on O‘ahu
John E. Dockall, Dept. of Anthropology, Bishop Museum

Glass as a raw material source for flaked tools has been documented during postcontact occupation in many areas of the Pacific. Recent analysis of archaeological assemblages from a number of sites on O‘ahu has yielded additional artifacts to indicate that glass was employed as a
raw material for flake production and tool use. A series of technological and morphological attributes was employed to identify possible modified glass artifacts from collections recovered from Anahulu Valley and the Kāneʻohe Interchange Project. Glass artifacts from Anahulu Valley and the Kāneʻohe Interchange Project reveal potentially distinct patterns of flake production from bottle bases and the use of modified glass sherds as flake tools. Core variability and flake size differences suggest at least two distinct methods of flake production. This data coupled with information from previous researchers in Hawai‘i, indicates that glass was occasionally employed as a tool material resource during the postcontact period.

**Adze Production at Pōhakuloa: the Implications for Mauna Kea**

*James M. Bayman, (Dept. of Anthropology UH Mānoa) and Timothy M. Rieth (International Archaeological Research Institute, Inc.)*

The University of Hawai‘i Archaeological Field School investigated newly discovered adze-making locales at Pōhakuloa during 1998 and 1997. These adze-making locales contain unmistakable evidence that Mauna Kea basalt was used to manufacture adzes outside the main quarry. This paper explores the implications of this finding for interpreting precontact economic organization at the largest quarry (i.e. Mauna Kea) in the Pacific region.

**The Pōhakuloa Chill Glass Quarry Complex**

*Scott S. Williams, Ogden Environmental*

The Pōhakuloa Chill Glass Quarry Complex is a large complex of surface chill glass quarry sites on a relatively young pāhoehoe flow in the saddle region between Mauna Kea and Mauna Loa. The quarry, which covers nearly a thousand acres and is composed of several distinct quarry features ranging in size from a few meters to several hundred meters in diameter, is the second largest quarry site in the Hawaiian Islands. In addition to the quarry areas, where surface chill glass was quarried to produce flakes and cores, some stacked stone architectural features such as cairns and low walls are present. Although chill glass quarries have been recorded in the Pōhakuloa Training Area before, the size and scale of this recently recorded complex indicates that volcanic glass quarrying occurred at a much more intensive scale than previously thought.

**SYMPOSIUM 2: O‘AHU ARCHAEOLOGY**

**Settlement Pattern and Chronology in Schofield Barracks, O’ahu**


Archaeological sites in Schofield Barracks have been studied to produce a model of settlement pattern and chronology in an inland portion of O‘ahu. The results are useful for interpreting long-term processes of land use, particularly regarding agricultural practices. Also, the architectural remains of identified sites were studied in detail to demonstrate site forms and lay-outs, and this information is discussed in relation to past site functions and time periods of occupation.
The Prehistoric Temporal Patterns of Kawailoa: The Timing and Nature of Land Utilization Within Upper Anahulu, O‘ahu

**Michael Dega and LeAnn McGerty, Scientific Consultant Services/ Cultural Resource Management Services, Inc.**

During two phases of archaeological inventory survey sponsored by the U.S. Army Corps of Engineers, forty-four sites were documented within the Kawailoa Training Area, O‘ahu, most sites representing traditional Hawaiian activity loci. The sites have been interpreted as wetland and dryland agricultural features, temporary and permanent habitation loci, trails, and ceremonial structures. Radiocarbon dates obtained from a multi-component site featuring agricultural terracing, habitation structures, and a ceremonial platform suggest initial construction ranges from c. AD 1400s-1600s, a range contemporaneous with several other excavated sites within Kawailoa. These preliminary dates suggest Pre-Contact agriculture and associated habitation through historic times and may be inferred to represent complexes established prior to King Kamehameha I's intensification period in the upper valley c. 1795-1820s.

Archaeology in the Hawaiian Commons

**Mike Desilets and Tom Dye, International Archaeological Research Institute, Inc.**

The interpretive implications of doing archaeology in common lands, away from permanent settlements and facilities, are explored with the results of areal excavations at Bellows Air Force Station conducted recently for the Army Corps of Engineers. We argue that a productive approach focusses on the rights and obligations of traditional Hawaiian use of the common lands. We believe this focus helps explain one of the most enigmatic findings of our research—an estimate that Hawaiians in the course of two or three hundred years imported, used, and discarded on the order of 500 metric tons of low quality *imu* stones at Site 50-80-15-4853.

Old Wood Behind the Bellows Dune Site

**Tom Dye, International Archaeological Research Institute, Inc.**

Dates from sites behind the Bellows Dune Site (O18) have the potential to resolve a dispute between prehistorians who argue for an early occupation prior to AD 600 and those who argue for use around AD 900 or later. In fact, early dates from behind the dune, which would disconfirm the hypothesis of relatively late use, might be the only way to resolve the dispute: the extant dating evidence is ambiguous; a project to date materials curated from earlier excavations failed to clarify matters; and the site itself, which has been mostly lost since it was last excavated in the 1970s, most probably will not yield definitive information. This paper analyzes nearly 50 radiocarbon dates from sites behind the Bellows Dune Site, half of which were made on identified wood charcoal and half on unidentified material. The effects of in-built age are identified and discussed. It is concluded that radiocarbon dates from sites behind the Bellows Dune Site do not disconfirm the hypothesis that the site was first used around AD 900 or later.

Bringing Along Wood for the Fire

**Gail Murakami and Tom Dye, International Archaeological Research Institute, Inc.**

This paper analyzes the origin of identified wood charcoal from more than 20 dated traditional Hawaiian fire features at Bellows Air Force Station. The fire features, which all date to the end of the traditional Hawaiian period, show that kindling and shrub material for small fires was likely collected in the immediate vicinity. Some hau was most likely collected from along Puhā Stream. Several kinds of wood found in the fire features would not have grown on the sandy Waimānalo plain, however, and were likely brought to the coast from relatively wet inland areas.
with terriginous soils. If a native, lowland forest once existed on the Waimānalo plain, it was either gone or much reduced when these fire features were used.

SYMPOSIUM 3: SHA AND HAWAII MUSEUMS ASSOCIATION SPECIAL FORUM

Sharing Perspectives: New Directions for Archaeological Collections Management in Hawai‘i
Susan A. Lebo and Leslie L. Hartzell, Anthropology Department, Bishop Museum
Archaeologists have a responsibility for maintaining that portion of our non-renewable cultural record that we impact through our archaeological investigations. In order to meet this ethical responsibility, we as a discipline need to more effectively manage the extensive cultural collections in our care for future generations in Hawai‘i. Collections management does not just involve day-to-day storage of artifacts. Effective management requires our commitment to an organizational framework that integrates our diverse communities in decisions regarding long-term curation of our shared heritage. This integrated approach is essential to give equal voice to our communities in establishing appropriate curation guidelines, policies, and access to information about Hawai‘i’s cultural past. In order to achieve this integrated approach, this forum identifies collections curation problems and priorities from varying community perspectives and establishes work groups for developing new collections guidelines, procedures and policies.

SYMPOSIUM 4: SHA WORKSHOPS

Archaeological Collections Issues Working Group
Moderators: Susan A. Lebo and Leslie Hartzell, Bishop Museum
The discussion initiated during the forum will be continued during this workshop. The focus is on developing solutions to the problems associated with archaeological collections management.

Lithic Technology Workshop
Organizer: Scott Williams, Ogden Environmental
The purpose of this workshop is to discuss topics such as the advantages and disadvantages of different types of lithic analyses, what kinds of collections are appropriate for various types of analyses, how to recognize adze reduction if no blanks or preforms are present, and in general to answer any questions about stone tools that interested persons may have. The workshop will be a very hands-on affair, with examples of tool and flake types for participants to examine.

Obtaining Efficient Faunal Analysis
Marine Invertebrates: Helen Liedemann, Bishop Museum
Terrestrial Invertebrates: Carl Christenson
Vertebrates: Alan Ziegler
Analyses of faunal remains are often contracted out to specialists in the field. Several of these specialists have gathered to help inform general archaeologists on the best techniques for collecting, processing, and identifying faunal remains. Also, participants will learn what to do and what not to do when sending samples to a specialist. The goals of this workshop are to increase the understanding of the best practices for gathering faunal data, to improve
communication between archaeologists and specialists, and as a result, to increase the efficiency with which faunal analyses are performed.

Archaeobotany and Agriculture Discussion Group
Although the workshop in Archaeobotanical Techniques was canceled, those interested in the roles of plants in Hawaiian Archaeology are invited to participate in an informal discussion group. Besides being an opportunity to share and receive information about topics such as collecting archaeobotanical data, Polynesian agricultural systems, and analytical techniques, the workshop provides a chance to network with other people who have similar interests. The format will consist of informal discussions regarding topics of mutual interest.

SYMPOSIUM 5: FROM HOLOCENE TO HELL: ARCHAELOGY IN THE WESTERN PACIFIC

Geomorphological and Palynological Investigations on Kagman Peninsula, Saipan, Commonwealth of the Northern Mariana Islands
Michael Dega, SCS Archaeology
This paper presents data and initial conclusions derived from environmentally-focused research in Saipan during June-July 1998 under contract by the Army Corps of Engineers. The current investigations follow Dr. Paul Cleghorn's initial research at the project area in 1996. The investigative period stretches from c. 7,000 BP, much earlier than human settlement of the landscape, through the present, and documents important paleoenvironmental changes through time on the peninsula. Both natural and cultural processes affecting the landscape over time were apparent through both geomorphological and palynological data.

Prehistoric Climate, Vegetation, and Human Settlement on Guam: The Laguas Paleoenvironmental Core
J. Stephen Athens, International Archaeological Research Institute, Inc.
This paper provides a preliminary account of findings from a 28-meter sedimentary core recovered from the Laguas River wetland in Guam as part of a Phase I archaeological inventory Survey performed for the Dept. of the Navy. The radiocarbon, pollen, and sedimentary sequences will be discussed. Implications for understanding Guam's prehistoric settlement and land use will be emphasized, including the date for initial settlement, possible climatic shifts that may have propelled settlement, land use intensification, the formation of savanna vegetation in Guam's uplands, and the introduction of non-native plants such as coconut.

An Investigation of Ceramic Exchange at Qaranicagi Rockshelter, Waya Island, Fiji
Karen Aronson, Department of Anthropology, UH Mānoa
Archaeological data and ethnohistoric accounts suggest that interaction between Pacific archipelagoes may have played a significant role in the prehistory of Oceanic populations. Little is known, however, about the diachronic nature of these phenomena. This paper examines the occurrence of imported pottery in a dated archaeological deposit in the Yasawa group of northwest Fiji. Petrographic analyses of ceramic tempers from the Qaranicagi Rockshelter on Waya Island and sands from local temper sources yielded grain counts of mineral inclusions. These data, when explored quantitatively, provide an effective method with which to distinguish between locally and non-locally manufactured wares. Cluster analyses of compositional data
indicate that three primary temper types occur at Qaranicagi Rockshelter. Two are comprised of ferromagnesian mineral grains with varying frequencies of calcite and are compositionally analogous to local Wayan sands. The third is quartzofeldspathic; unlike any of the local sands, but typical of sands from the Sigaroka Delta on the main island of Viti Levu. Radiocarbon dates associated with non-locally tempered sherds suggest that imports appear sometime after AD 1200 and increased in relative importance at approximately AD 1500.

Behind the Cathedral: Early and Late Settlement in the Town of Agana, Guam
David J. Welch and Judith R. McNeill, International Archaeological Research Institute, Inc.
Subsurface testing, data recovery excavations, and monitoring were conducted in 1991 at the construction site of a gymnasium for the Academy of Our Lady of Guam in Agana, the main town on Guam and the former Spanish capital of the Marianas. The archaeological deposits appear to date primarily to two phases of settlement: an Intermediate Pre-latte phase (late first millennium BC) traditional Chamorro occupation and the nineteenth century Spanish occupation. The prehistoric remains include the burial of a woman with filed teeth, trash pits, postholes, midden remains, and lime-filled impressed sherds. During the Spanish period the site, located directly behind the town church (now a cathedral) and next to the former governor's residence and the central town square, contained outbuildings and probably gardens. Excavations uncovered the compacted coral floor of one of these buildings, a wine bottle-lined pathway, trash pits with Chinese and Mexican potsherds, roof tiles, and butchered animal bones, and a largely intact dome-shaped cistern constructed of cut coral blocks, carefully fitted together. The cistern fill contained a rich collection of Chinese blue and white porcelains, American and English porcelains and pearlwares, and cut glass tumblers. These demonstrate the wealth of at least a small segment of Guam's population, the extent of Guam's participation in the world economy, and the dominance of Chinese, American, and English imports over Spanish goods.

Whaling and the Expansion of the University of Hawaiʻi Maritime Archaeology and History Program into the Pacific
Suzanne S. Finney, Department of Anthropology, UH Mānoa
Whaling was an important industry in Hawaiʻi during the 19th century. Hundreds of ships anchored at Honolulu and Lahaina for rest, provisioning and repair. One of the long term goals for the University of Hawaiʻi Maritime Archaeology and History Program is the expansion of the program into the Pacific region beyond the islands of Hawaiʻi. Whaling was an important industry throughout the Pacific and this topic lends itself to the expansion of our research and projects. This paper deals specifically with Pohnpei, one of the islands in the Federated States of Micronesia. Pohnpei saw many American whalers, especially in the middle of the 19th century. This area has great potential for the retrieval of cultural materials from shipwrecks and ships anchoring within the southern harbors of Pohnpei. These harbors are no longer in use and could provide a wealth of material for further work concerning whaling and the Pacific.

The Archaeology and Historic Preservation of Japanese World War II Sites in Micronesia: An Example from Laulau Bay, Saipan.
Tara Moorman, Ogden Environmental and Energy Services
This paper represents a portion of ongoing research on Japanese fortifications and military sites at Laulau Bay, Saipan, Commonwealth of the Northern Mariana Islands. A brief overview of the battle for Saipan will be followed by a discussion on general coastal defense and theories on Japanese strategic points on Saipan, as gleaned from detailed study of maps of Saipan and the
descriptions of the sites at Laulau Bay. Arguments for the historic preservation of these sites and those like them throughout the Pacific will conclude the presentation.

**Not Just another Battle Statistic: The Excavation of a Killed in Action, World War II Soldier**

*Lisa Anderson, Ogden Environmental and Energy Services*

Recent Hollywood movies such as "Saving Private Ryan" and "The Thin Red Line" have personalized war tragedies by telling the stories of individuals. Adding personal and detailed information to history is new to the discipline of archaeology. Through the use of archaeological techniques, data can be uncovered that can help put a face on war casualties and add details to history. The excavation of the remains of a World War II Japanese soldier killed during the suicide charge at Tanapag, Saipan, allows a glimpse into the personal tale of one of over 32,000 men who lost their lives there.

**SYMPOSIUM 6: ʻE ʻOLA HOU I NA WAHI KAHIKO: REVIVING ARCHAEOLOGICAL SITES**

**A Tale of Two Sites: An Overview of Archaeological Site Restoration and Maintenance**

*Maurice Major, Hawaiʻi Division of State Parks*

Archaeological sites are being cared for in a variety of ways in Hawaiʻi, ranging from passive preservation, to reconstruction of heiau, to rebuilding ancient fishponds and reviving their production potential. Reasons that people take on such projects also vary, with some being maintained as community beautification projects, others being used for educational purposes, several serving as hotspots of Hawaiian pride and cultural revitalization, and also sites being restored for economic reasons. People involved in restoration projects include private landowners, government agencies, and a growing number of interested community members; most projects are accomplished by partnerships. A major dichotomy among site restorers is a product of their attention to rules and regulations, with some projects travelling the long paper trail to approval, and others jumping straight to the physical work. This is in large part a cultural divide between the EuroAmerican emphasis on a government's role regarding cultural resources, and a more Hawaiian focus on “menehune action,” wherein work is done in response to physical conditions and indigenous cultural imperatives.

The maintenance and restoration of two sites is described. At remote Nuʻalolo Kai, Kauaʻi, a long history of academic study has evolved into an educational program. Rather than more excavation, work now involves clearing and mapping of features. Although State Parks currently lacks the resources to reconstruct the massive stone features, vegetation is being managed with the goal of restoring an appropriate cultural landscape and presenting visitors with a better sense of ancient Nu'alolo. The project is also establishing a pool of laborers and cultural experts, whose input will eventually sustain and expand the current program. At Keaiwa Heiau on Oʻahu, easy access has meant that more people can visit and learn about the site, which was dedicated to ancient healing practices. Unfortunately, it has also meant that the structure is much more susceptible to damage. Much of the massive stone enclosure wall was taken away for road-building years ago, but impacts continue as visitors make new pathways, leave what they think are offerings, and build stone features as part of non-Hawaiian, new age rituals.
Mauka to Makai: Restoring the Subsistence Base in Ahupua‘a o Kahana
Maurice Major, Hawai‘i Division of State Parks

Because they are wahi pana (special places), heiau (temples) have been the site type most frequently maintained and restored. In Kahana Valley on O‘ahu, however, residents are concentrating on restoring the traditional means of production for the most important foods to Hawaiians: fish and poi. This takes place within the context of Kahana Valley State Park, the only living cultural park in the state, in which an entire ahupua‘a (traditional land district) is being managed to educate people about Hawaiian culture. Contributing to the interpretive goals of the living cultural park is a requirement for residents, but projects restoring Loko Huilua (Huilua Fishpond) and several lo‘i (taro ponds) have grown to involve large numbers of people from outside Kahana. Besides providing educators with real, functioning examples of Hawaiian agriculture and aquaculture, these features are providing native farmers with trial and error experience, and will become sustainable economic resources as the taro and fish are harvested. Although social organization and technology have changed since ancient times, the central fact remains that building or rebuilding such resources depends on a large amount of hand labor.

Pi‘ilanihale Heiau Stabilization
Frank Sinenci, National Tropical Botanical Garden

The preservation program for Pi‘ilanihale Heiau in Honomā‘ele, Maui has been greatly strengthened by the efforts of the National Tropical Botanical Garden (NTBG) during the past year. A plan developed by Dr. Yoshihiko Sinoto in coordination with the State Historic Preservation Division, was implemented by NTBG to stabilize the main exterior walls and terraces of the site. Interior features and deposits were left undisturbed for future research, and changes to exterior structures were recorded through mapping and photographic documentation. Experts in dry-stone masonry from Hana were hired by the NTBG to work on the project. This has provided the local community with a unique opportunity to participate in the historic preservation process.

Community Action: Preserving Two Archaeology Sites in Kawai Nui Marsh
Charles Pe‘ape‘a Makawalu Burrows, EdD, ‘Ahahui Malama Ika Lokahi - Kawai Nui Heritage Foundation and other Allied Organizations

For the past two years ‘Ahahui Malama Ika Lokahi, a Hawaiian conservation organization, and the Kawai Nui Heritage Foundation along with other allied organizations have been involved with protecting and preserving two Hawaiian archaeological sites in Kawai Nui Marsh of the Kailua Ahupua‘a, Ko‘olaupoko, O‘ahu. One of the sites called Holomakani Heiau (The running wind) was presumed to have been destroyed according to McAllister’s account in 1933 but was rediscovered in 1987. Archaeological surveys suggest that this site may be a possible prehistoric heiau or large terrace structure of some significance. This site is located on private property, on the slopes of Ulumawao Peak about 0.7 miles from the intersection of Kalanianaole Hwy and Kapa‘a Quarry Road. Off road vehicles have damaged the rock wall of the heiau in recent years. Volunteer working groups have cleared the heiau terraces, planted Polynesian cultigens and posted a sign to inform others of the Hawaiian cultural and religious significance of this site. Na Pōhaku O Hauwhine (The rock formation of the Hawaiian Mo‘o goddess and guardian of Kawai Nui Marsh) is located on state land on the makai side of Kapa‘a Quarry Road before the Kapa‘a Landfill Transfer Plant. This site offers a panoramic view of the Kailua Ahupua‘a and looks directly into the piko of Kawai Nui Marsh, where one can observe the wetland birds and marsh vegetation. It is listed in the State of Hawai‘i Kawai Nui Marsh Resource Management
Master Plan as a potential mini-park bordering the marsh. However, since the DLNR of the State of Hawaiʻi lacks the budgetary funds and personnel to implement this plan, the above community allied organizations for the past two years, have (1) initiated a project to remove alien vegetation, (2) constructed an accessible loop trail and (3) landscaped the area with native plants to recreate a dryland forest and marsh ecosystem. A preliminary archaeological survey has revealed the existence of ancient Hawaiian terrace walls that align the massive basaltic ponded lava outcrops. This archaeological site in ancient times could have served as a lookout point for the kilo iʻa (fish watcher) into the prehistoric ocean waters of Kawai Nui Bay.

Nā Hoa o Puʻu o Mahuka, Curators of Puʻu o Mahuka Heiau
Butch Helemano, Nā Hoa o Puʻu o Mahuka
Our group was founded in 1996, and consists of members of my Hawaiian language class that I teach on the north shore of Oʻahu. Since the early 80's, I have had an interest in the site and wanted to do more from a community level to help maintain and preserve this sacred Hawaiian site. So I formed the curator group using my students as the main support. Our first goal was to clear the entrance road of debris and old cars discarded on the entrance road, and then open up the view plain to let in more natural light. By clearing out the trees and shrubs that surrounded the site, it made it more pleasing and safe for visitors and practitioners to enjoy. Our first steps to attempt site stabilization began with a temporary lele or stand to divert visitor ʻālana (offerings) to this area and prevent damage to the fragile wall. We noticed a change in damage to the walls the very next day. People do not climb on the walls to get to the kīpapa (terrace). We also added small signs asking guests to not destroy the site by removing rocks for “ti leaf offerings” (we also removed all of the introduced ti plant from the inside of the Heiau to prevent future use of these leaves. The work performed consists of mowing lawns and general spraying of systemics, and weed eater work. We gather our labor force from the Hawaiian language class and we have several who are very dedicated volunteers. The initial clearing of the surrounding and internal portion of the site has made it more accessible for visitation. There are hundreds of visitors on a monthly basis. The once numerous car break-ins have slowed, due to a “presence” at the site, and the fact that it looks like it is being maintained. Small state-provided brochures help to explain the site's prehistorical uses. Ninety percent of the wall damage has been stopped due to signs and the added lele on the outside of the site. Daily visits by our curator group help to report any impacts due to vandalism or natural causes. Due to the amount of foot traffic at the site during high surf to view the waves, we feel that we have helped to preserve the site by stabilizing visitor impact.

SYMPOSIUM 7: GENERAL HAWAIIAN ARCHAEOLOGY

The Canoe Shed in Traditional Hawaiʻi
Coral M. Magnuson, East Carolina University and International Archaeological Research Institute, Inc.
Traditional Hawaiian canoe houses provide important information on the structure of the cultural landscape as well as a variety of cultural activities. They have often been ignored or viewed as little more than a shed in the historical and archaeological records. Canoe houses were an important feature in coastal village life. A wide range of male activities occurred within the canoe house such as canoe manufacturing, fishing gear preparation, eating, sleeping, and teaching. Canoe house locations were influenced by the marine environment. Features the Hawaiians looked for included a way to transport the canoe into the water, protected bays or
inlets, and protection from storm waves. Like other maritime cultures, this factored into village location and was probably the leading element in village placement in Hawai‘i.

Archaeological Research and the Public Good: A Recent Example from Moloka‘i
Archaeological investigations this past January and February were conducted at Mo‘omomi, west Moloka‘i by invitation from Hui Malama o Mo‘omomi. The hui, through lease from the state, manages several miles of the Mo‘omomi coastline as a community-based subsistence fishing area. Our archaeological research was designed to obtain information on prehistoric marine subsistence strategies that may aid the hui in their management of the coastal resources and to increase local awareness of the archaeological sites along the adjacent coastline. The project also provided an opportunity for three participants of Maori descent to interact with members of the Hawaiian community for exchanging ideas and information on topics of mutual concern and benefit.

PASH for the Archaeologist
Marion Kelly, Ethnic Studies Department, UH Mānoa
In November 1990, Public Access Shoreline Hawai‘i (PASH) and Angel Pilago, a resident of Kona, requested a contested case hearing on the application by Nansay for a Special Management Area (SMA) permit. The permit was intended for development of about 450 acres on coastal land at Kohanaiki, North Kona, Hawai‘i. The 1995 decision of the Hawai‘i State Supreme Court ruled that PASH [Kohanaiki] had “sufficiently demonstrated standing to participate in a contested case.” The decision was based on the fact that the applicants were native Hawaiians who have exercised such rights as “were customarily and traditionally exercised for subsistence, cultural, and religious purposes on undeveloped lands” (Antolini 1997; Public Access Shoreline Hawai‘i and Angel Pilgro v. Hawai‘i Planning Commission). As a result the developer withdrew its SMA application. A previous case dealing with similar "access rights" had been considerably restrictive (Kalipi vs. Hawaiian Trust Co., Ltd., 1982). However, both the Pele decision (Pele Defense Fund vs. Paty, 1992) and the PASH 1995 decision have opened the door to revisiting laws that have been on the books since the Mahele of 1848. These rights were spelled out in greater detail in the Kuleana Act of 1850, and carried through in all Revised Laws and in the Constitution of the State of Hawai‘i (Article XII, Section 7, 1978).

There is some indication that the decision will be scaled down in the future, but at the moment developers may feel pressed to restrict their developments, at least temporarily, to already developed land. Undeveloped land, where the PASH decision has its greatest impact, may attract less development and may, as a consequence, provide fewer jobs for archaeologists.
Archaeological Investigation of an Ancient House Location at Wainiha, Kaua‘i
Mike T. Carson, Scientific Consultant Services and Department of Anthropology, UH Mānoa

Archaeological excavation at a beach dune in Wainiha, Island of Kaua‘i, found the remains of an ancient house location, dating to the earliest period of human occupation at the coast of Wainiha. A summary of results is presented to highlight analyses that included a study of site formation processes, temporal change in the faunal assemblage and artifactual remains, and spatial distribution of food debris and artifactual material in different parts of the ancient house location.

Lava Tubes of Hawai‘i Volcanoes National Park: A Cultural Context and Current Management Practices
Bobby Camara, Hawai‘i Volcanoes National Park, Cave Resources

Hawai‘i Volcanoes National Park was established in 1916 to “conserve the volcanic features, endemic Hawaiian ecosystems, Hawaiian cultural and archeological remains...” The Federal Cave Resources Protection Act of 1988 mandates that Federal agencies inventory and manage cave resources on their lands. Cave resources in Hawai‘i fall into three broad categories included in the basic inventory: geology, biology, and archeology.

Caves in the Park are synonymous with lava tubes and contain at least some evidence of past human activity. Some caves were used for burials or collecting water, while others served as temporary or permanent habitation sites. Archaeological features include terraces, platforms, trails, shrines, and petroglyphs. While there are few published references concerning uses of caves found within the Park, insight has come from the Boundary Commission Testimonies, which have provided information about cave locations, and names associated with such geological features.

The knowledge gained about Native Hawaiian uses of lands managed by the Park is an invaluable aid to resources managers whose job it is to preserve and protect these resources for future generations. Perhaps more importantly, we can share our insights about the history of Park lands and their resources with the public, giving all of us a deeper appreciation of this fascinating place.

Eolian Features and Implications for Ka‘ū Desert Archaeological Resources
Taylor Houston, Hawai‘i Volcanoes National Park

Lava, earthquakes, and tsunamis have largely been considered as the only geologic events threatening the Big Island archaeological record. In Hawai‘i Volcanoes National Park, these threats are certainly a nemesis, witnessed by the emergency rescue archaeology program at Waha‘ula Heiau and Ka‘ili ‘ili Village. In the Ka‘ū Desert area, however, active eolian features inundate, cover, and reveal archaeological features, and albeit more benevolent than the cascade of lava down coastal pali, they present special research problems for park archaeologists. Eolian activity is the product of wind and loose sediments; two resources the Ka‘ū Desert has in plentiful supply. Ash layers overlying dunes from the phreatic explosion of Kilauea culminating in 1790 suggest active eolian processes before the European entrada into the archipelago. Later, goat depredations on the Ka‘ū Desert landscape, coupled with the establishment of evasive alien plant species and their subsequent removal by land managers, along with loosening of sediment from the twentieth century military presence may have aided the accumulation of eolian sediments. This paper will elucidate eolian activity in a Ka‘ū Desert context, and how it concerns the archaeological resources of the Ka‘ū Desert.
Overview of Kaʻū Desert Archaeology
Warren Wulzen, Hawaiʻi Volcanoes National Park
The first systematic archaeological survey of the Ka'u Desert in Hawaiʻi Volcanoes National Park, with a focus on the “1790 Footprints,” a property on the National Register, reveals an interesting pattern of use. Known for the fossil footprints, clusters of habitation structures and missing three different lithic procurement strategies have also been identified. The land seen as barren and useless by Euro-American visitors gave access to varied resources from a Hawaiian perspective. The widespread pattern of footprints in tephra deposits suggests that Hawaiians roamed the Ka'u area without reference to trails. As Europeans and Americans began to visit Kilauea, and visitor accommodations improved, Kaʻū missing Volcano horse and mule trails scored the land, followed by the establishment of roads.

Underwater Archaeology in Hawaiʻi
Hans Van Tilburg, University of Hawaiʻi Marine Options Program
This presentation will briefly cover the state of underwater archaeology in the islands. Past projects, such as the National Park Service's work at Pearl Harbor (USS Arizona and USS Utah), the Smithsonian's project on Kauaʻi (“Cleopatra's Barge”), and the University of Hawaiʻi’s field surveys at Waikiki, Kāne'ohe, the Kona Coast of the Big Island, and Midway, will be quickly reviewed. Future plans involving submerged aviation archaeology and inter-island shipwrecks and landings will be mentioned, as well as the upcoming initial survey of Shipwreck Beach on Lānaʻi and this summer's field project at Waimānalo. The presentation will conclude with a short description of the UH Marine Option Program's graduate certificate course in maritime archaeology and history, the only academic program in Hawaiʻi currently focusing on submerged cultural resources.

Marine Archaeology from a Captain's Perspective
Captain Richard W. Rogers, Pilialoha Consultants
While the archaeologists are coordinating their professional staff and applying for permits, a chain of events must occur once a research vessel is hired. In the case of the Haʻaheo O Hawaiʻi project in Hanalei Bay; the project coordinator was in Washington D.C. and the research vessel 'Pilialoha was home-ported in Haleiwa, some one hundred miles from the worksite. East-Coast museums and archives held a wealth of information about the vessel's construction and early career, but the local archives contained the correspondence to and from the people that knew her in these waters. That information was collected, in part to tell her full story, and in part to help in the location of her remains. High-tech magnetometers are more efficient for finding old shipwrecks when they are utilized in conjunction with archival research and old maps, some of which give hints of wreckage.

Long before the bags are packed and the regulators checked out for the summer season, specialized equipment must be designed and constructed to suit the needs of a specific underwater-archaeological project. Outboard boat and motor, pumps, compressors, generators, power tools and lots of SCUBA tanks may need to be purchased and maintained well in advance of the start of a project. Chain, line, spare parts, and auxiliary equipment will need to be gathered and stored aboard. Working in open ocean, backed up to the reef-wall, facing tradewinds would require numerous anchors, chain and line. Mechanical breakdowns need to be dealt with quickly when the season is fixed and the clock is ticking. If the parts are not on board, the one must know where to find and ship them quickly. Archaeological sites often entice visitors to come for a
look. With a marine project, this requires moving people with small boats and keeping an extra eye on the people that are not familiar with waterborne activities.

The goal of this talk is to leave the audience with the understanding that the project coordinator must work closely with the research vessel's operators to make Marine Archaeology run smoothly.
Huahine Island: Its Position in the Prehistory of the Society Islands (keynote address)
Sir Yosihiko Sinoto, D. Sc.
[abstract not available]

SYMPOSIUM 1: MAKING THE PAST AVAILABLE FOR THE FUTURE: CURATING HAWAIʻI’S ARCHAEOLOGICAL COLLECTIONS

Status Report on Hawaiian Archaeological Collections Holdings
Leslie L. Hartzell and Susan A. Lebo, Bishop Museum
Earlier this year the Society for Hawaiian Archaeology’s Ad Hoc Collections Committee developed a survey questionnaire that was mailed out to 200 institutions, agencies, businesses, and private landowners that potentially own or maintain archaeological collections. The survey provides baseline data on the size of the holdings, facilities, and policies and procedures used to curate their collections. The survey results are analyzed with regard to how well each facility meets federal standards specified in CFR 79.9. Recommendations are presented to help respondents improve curation standards in the short-term. The longer-term goal of developing multiple curation facilities in Hawaiʻi that meet minimum federal standards is also explored. An integral part of meeting any of these goals is to seek community input, and involve cultural experts to ensure respectful as well as appropriate methods are used in handling cultural collections.

Archaeological Collections Management, Step One: Taking Control
Jo Lynn Gunness, Dept. of Anthropology, UH Mānoa
This paper outlines the first steps to bringing your archaeological collections up to minimum curation standards, including a preliminary inventory and survey of condition, establishing your goals, setting priorities, and devising various cost-effective means of achieving your goals. Such basic curation concerns as preservation, security, and regularly migrating electronic media to current standards will be emphasized. By taking simple steps, your collections can become a stable and accessible resource.

Where, With Whom, and for How Long? - The Curation Maze in Federal Contracting
Laurie Lucking, US Army Garrison, Hawaiʻi
For many years Federal agencies in Hawaiʻi have been using contractors to perform archaeological fieldwork for compliance with the National Historic Preservation Act of 1966, as amended. These contracts usually contain a one-line reference to curation of materials recovered during fieldwork, field notes, maps and related reports. For the Army, the materials related to cultural resource management contracts are now housed at a variety of institutions, contractors’ offices and storage spaces. No monies are budgeted for this curation and the materials are often not accessible for research. The reports developed as a result of these projects are also very poorly disseminated. This paper examines techniques for assuring proper curation, accessibility
and budgets are programmed into every cultural resource contract, and examines alternatives for long-term curation facilities to meet these requirements.

**SYMPOSIUM 2: GENERAL PREHISTORY**

**Rediscovering Nu‘alolo Kai: Artifact Inventory and Analysis**

*Julie Field, Dept. of Anthropology, UH Mānoa*

Recently conducted research at UH, Mānoa has focused on the inventory and analysis of archaeological materials recovered from the site of Nu‘alolo Kai, located on the Nā Pali coast of Kaua‘i. Excavated by Bishop Museum archaeologists in the late 1950s and early 1960s, the collections from the site include rarely preserved organics such as kapa, wood, and cordage, and a diverse collection of stone and coral tools. The data presented in this paper describe the deposits of the site, and also summarize analyses of artifacts in the collection that have the potential to contribute to current debates in Hawaiian prehistory.

**Expanding the Role of Artifact Analysis in Hawaiian Archaeology: A Comparison of Coral and Basalt Artifact of Nu‘alolo Kai, Kaua‘i**

*Windy Keala McElroy, Dept. of Anthropology, University of Hawai‘i at Mānoa*

The Nu‘alolo Kai site is an ancient habitation site on Kaua‘i which was occupied as early as the 12th century AD. Over 4,000 artifacts were recovered from Nu‘alolo Kai, many of which have never been analyzed. A number of worked basalt objects which terminate at a point are significantly represented at Nu‘alolo Kai and rarely reported elsewhere. They are similar in appearance to coral implements associated with fishhook manufacture, commonly known as coral abraders. I postulate that the pointed basalt objects showing similar morphology and wear patterns may have been used for fishhook manufacture in the same manner as the coral abraders. I test this hypothesis by comparing the morphology and wear of the pointed basalt artifacts with the same attributes of the coral abraders. By emphasizing raw material in artifact classification, I found that the coral and basalt objects that are superficially similar in morphology are actually very different. The contrast may be attributed to variability in material type. Patterns of usage overlap between the two kinds of objects.

**Agricultural Terraces in the Kona Field System: Information on Chronology and Morphology from Excavations in the Upper Elevations of Onouli 1st, South Kona**

*Thomas R. Wolforth, Scientific Consultant Services, Inc.*

Excavations were conducted in the Kona Field System near the town of Kealakekua by PHRI in 1998. Backhoe trenches and hand excavation units produced data on stratigraphic relationships of formal walled field features, and introduced information on habitation features, and food processing features. Ten radiocarbon dates were generated, and relative stratigraphic relationships interpreted to provide information on the changing developments within this part of the apa’a. Based on these investigations, it was determined that: The kua‘iwi and terrace network was probably created during the 1300s. Cross-slope terraces can be made of earthen berms. A possible pole structure suggests that habitation was present as early as the 1300s. A residential complex with stone foundations was created and used in the area during the late 1600s. Mapping at 2-foot contour intervals can provide important information on field morphology.
Settlement Pattern and Chronology in the Kula Zone, North Kona District, Island of Hawai‘i

Mike T. Carson, Dept. of Anthropology, UH, Mānoa

This work identifies archaeological site and feature types, highlighting observable differences. These differences are then discussed in relation to spatial distribution and temporal patterns. Archaeological field work in the kula zone of the North Kona District (Hawai‘i Island) provides the data base for this study. The results of this study are helpful in formulating predictive modeling for archaeological study and planning in the region.

Recording Rock Art in the Park

Edward Stasack and Diane Stasack

The Volcano Art Center received a grant (1998-2001) from the Hawai‘i Community Foundation to record rock art sites in Hawai‘i Volcanoes National Park that involves fifteen cooperating public and private entities. Ed and Diane Stasack, principal investigators, have completed reports on eight sites and fieldwork on eighteen sites. They will present a preliminary methodology, (to be used most reliably upon completion of many more reports), for statistical analyses of possible correlation between rock art types and topographic context. e.g., ahupua ‘a and district location, and proximity to trails, settlements, caves, and remote destinations. Kamo‘oali‘i, a remote upland site in eastern Ka‘ū, is an example. It has petroglyphs adjacent to a mauka trail, active steam vents, a walled structure with petroglyphs pecked on a key rock in the east facing wall, and a few inscribed words. Ethnological information prompted a search for connections between these elements.

SYMPOSIUM 3: PUBLIC ARCHAEOLOGY

Public Archaeology at the Lyman Museum

Lynne Mackin Wolforth, Lyman Museum

What is Public Archaeology? This paper reviews some of the current focuses and current concerns voiced by archaeologists and anthropologists about public knowledge of and participation in the discipline. Clearly anthropologists are concerned with the problem of making anthropology more public, as well as, helping the public to be more anthropological. Ongoing transformations in American museums should help in this effort. American museums are moving toward becoming community museums. As community space, museums can provide a place for interaction between professionals and the public. For example, the Lyman Museum’s public archaeology programs are reviewed as fledgling public programs that bring the community and archaeologists together. Museums are a space for dialogue about the past and the collection of information about it. Dialogue and interaction promote the common goal that diverse voices be heard along with the latest professional scholarship translated into a finished interpretation for a popular audience.

Whose Footprints Are They Really?

Jadelyn J. Moniz Nakamura (HAVO), W. Costa, T. Houston, and C. Quisang

Recent archeological research at Hawai‘i Volcanoes National Park suggests that the story behind the creation of fossilized human footprints in the Ka‘ū Desert may be more complex than originally thought. Footprint impressions found in desert ash layers were believed to have been created by the army of the Hawaiian Chief Keoua on its way back from battle over land and
power with Chief (later King) Kamehameha. With his army split into three groups, Keoua passed by Kīlauea Volcano. While in the area, Kīlauea is said to have erupted, sending ash down on one group, apparently suffocating them. The others made it out alive, apparently leaving their footprints in the then-wet ash. The ash dried, forever memorializing this event. Or did it? Geologic evidence, coupled with the recent discovery of hundreds of archaeological features indicates much more prehistoric activity in the area thus suggesting other people contributed to the footprint impressions.

**Archaeology Week and Hawai‘i State Parks**

*Martha Yent and Toni Han Palermo, DLNR, Division of State Parks, Interpretive Program*

Archaeology week has been recognized by many states as an effective means of public education to share the message of archaeology and preservation. Initiated in 1995, Hawai‘i Archaeology Week is a means of public outreach to promote understanding and awareness about Hawai‘i’s past and encourage the public’s assistance in protecting and preserving Hawai‘i’s unique cultural resources. Over the past 6 years, State Parks archaeologists have been active in the development of the Hawai‘i Archaeology Week program. In 1998 and 1999, an opportunity for school children to experience a hands-on excavation was provided on Kaua‘i. This activity pointed out the need for both pre-visit and post-visit lessons in the classroom that would expand the students learning and understanding and make the field experience more than just an excursion. Future Archaeology Week programs and Lapakahi State Historical Park in North Kohala on the island of Hawai‘i will serve as the pilot programs for the development of archaeological lesson plans by State Parks and directed toward elementary school students. This paper will share State Parks efforts to promote public archaeology through educational outreach in Hawai‘i’s schools.

**Land Boundaries and Divisions**

*Tom Lenchanko, the Friends of Kūkaniloko*

kūkaniloko- to anchor the cry from within  
hoʻolonopahu- to observe the piercing  
kā‘ananāau- land boundaries and divisions O‘ahu island  
kā‘ananāau demarcates 36,000 acres in central O‘ahu  
lo ali‘i heritage – Līhu‘e, Wahiawa, Halemano  
established moku and ahupua‘a boundary  
traditional significance  
iki pau hoa ali‘i - of divine descent ali‘i, akua, wela  
‘ike maka eye witness testimony  
waiahau heiau  
hāwea and opuku  
public concern  
modern day petroglyphs - graffiti  
acquisition of 2200 acres of Galbraith lands  
900 acres buffer zone  
cultural park and healing complex  
Hawaiian civic club resolutions

**SYMPOSIUM 4: HISTORICAL ARCHAEOLOGY**

*From Trail to Road: a Late Historic Way Station on the Puna Trail on the Hawai‘i Army*
National Guard Keaukaha Military Reservation, Hilo
Wendy Tolleson, Hawai‘i Army National Guard

State Site 50-10-35-21771 is a complex consisting of a low platform, enclosure, a possible imu, and a meadow located adjacent to the Puna Trail. Archaeological investigations recorded artifacts related to road construction and short-term lay-overs by road workers who widened the trail to a road in the late 19th century. Road workers consisted of Native Hawaiians, Chinese, and Euro-Americans, and artifacts reflect the ethnicity of the workers, including Chinese ceramics, a poi pounder, and myriad wine, beer, whiskey, and patent medicines. Other artifacts suggest maintenance of road building equipment, such as donkey shoes, sharpening wheels, and hoof files. Research reveals that this may be the only extant site of this type in Hawai‘i.

A Walk Through History: UH Hilo Field School Survey of the Old Government Beach Road, Honalo to Honua‘ino, North Kona
Peter R. Mills, Dept. of Anthropology, UH Hilo

Results are presented of the survey of nearly two miles of a nineteenth century road system, now known as the “Old Government Beach Road” in North Kona. Beginning just south of the Lekeleke burial ground generally associated with the battle of Kuamo‘o (1819), the road passes through the ahupua‘a of Honalo, Ma‘ihi, Kuamo‘o, Kawanui, Lehū‘ula, and Honua‘ino. Several heiau, a hōlua slide, house clusters, and burial sites were all documented adjacent to the road reflecting traditional Hawaiian land use patterns. Many aspects of the road itself, as well as walls associated with livestock control, gates, fences, and nineteenth century house sites demonstrate changing aspects of in the North Kona community in the historical period. Of particular interest are the archaeological remains of a Native Hawaiian/Christian Revitalization movement camp associated with the prophet, Ka‘ona.

Archaeological Perspectives on Hawaiian Royalty at Kaniakapūpū, Nu‘uanu Valley, O‘ahu
James M. Bayman, Dept. of Anthropology, UH, Mānoa, and Susan A. Lebo, Bishop Museum

Hawaiian society underwent significant economic, technological, and socio-political change in the mid-19th century as European colonization of the Pacific intensified. It was during this period that King Kamehameha III (Kauikeaouli) built a summer house in the ‘ili of Luakaha. This royal house, known as “Kaniakapūpū,” was completed in the early 1840s. Documentary sources indicate that Kaniakapūpū functioned as a retreat for King Kamehameha III to escape the pressures of governing the Hawaiian kingdom. Kaniakapūpū is perhaps best known for the Restoration Day Feast of 1843. The lī‘au – attended by over 10,000 guests - celebrated the restoration of Hawaiian sovereignty after a land dispute with British subjects. This paper summarizes efforts by the UH Mānoa Archaeological Field School to examine the archaeological consequences of Hawaiian and European contact and interaction at Kaniakapūpū.

Ōkolehao: Illegitimate or Invaluable?
Bambi Nakamura, Dept. of Anthropology, UH Hilo

Many cultures joined in Hawai‘i over a century ago and produced what came to be known as ōkolehao. During Prohibition the practice went “underground” and as a result received very little formal written documentation. The practice survived and thrived, however, and many of the original still sites may exist. A unique society was formed in Hawai‘i and much of this formation and transformation can be understood via study of ōkolehao still design, fermentation/distillation
and distribution. In order to produce ʻokolehao on a consistent basis one would require a basic knowledge and understanding of the scientific process. This process would then be combined with the individuals’ previous knowledge, any newly acquired knowledge, personal skill and available resources. Vital information pertaining to the many ethnic traditions which were brought to Hawaiʻi, as well as the technological, economic and cultural changes may have been recorded at these sites. In this way, studies on ʻokolehao could reveal a great deal about Hawaiʻi’s history on both a societal and personal level.

The 19th Century Mahele and Kuleana Acts may not have dispossessed unawarded tenants in North Kohala and elsewhere. There are implications present in the knowledge of modern residency by ʻohana descendants of those who were not awarded lands
Victoria S. Creed and Muriel B. Seto

Previous research indicates many of those persons named in unawarded Mahele and Kuleana documents, along with neighbors making no claims, have ʻohana descendants present today in the ahupuaʻa, despite the intervening 150 years, with many ʻohana names alive and well. We pursue similar research in North Kohala, in the belief that there may be profound implications if continuing descendant ʻohana land use tenure is found for those whose ancestors are named in unawarded claims following the Mahele or Kuleana Acts. NAGPRA and access question issues may present just two of several native rights questions which are sure to be raised. After all, in the entire Hawaiian Island chain, there were 5,350 claims not awarded, each of which on average mentions the land holdings of three neighbors. Most of these were, similarly, not awarded lands. In addition, 538 claims had no numbers or were assigned wrong numbers, to further complicate matters. On the Island of Hawaiʻi, there were 1,251 claims not awarded, and in the District of Kohala, there are almost 100 awards, with 30 claims not awarded. Our research is expected to result in surprises to share with you, not unlike those experienced by Chief Kauhiakama when he found the truth in the claim, “Covered is Kohala with men to the very point of land.”

The Pilialoha and Underwater Archaeology
Capt. Richard W Rogers, Pilialoha Consultants

The converted Naval launch Pilialoha has been conducting underwater investigations in Hawaiian waters for the last decade. High and low technology have been used to investigate abandoned interisland landings, aircraft wrecks and an assortment of Hawaiian shipwrecks. Her latest voyage was the final season of the excavation of Haʻaheo o Hawaiʻi a king’s vessel, which sank in April of 1824 at the mouth of the Waiʻoli River, in Hanalei. Prior to that she conducted a magnetic survey of Kealakekua Bay, Hawaiʻi and a portion of the North Shore of Maui, where there are accounts of pre-Cook shipwrecks. Privately owned and funded, the R. V Pilialoha may prove to be a tool that archaeologists involved in marine matters find useful in projects to come.

SYMPOSIUM 5: KAHOʻO LAWE

Historic Preservation and the Kahoʻolawe Ordnance Clearance Project
Hallett Hammatt, Cultural Surveys Hawaiʻi

Historic Preservation activities are an integral part of the Kahoʻolawe Island Reserve ordnance clearance project, and have provided archaeologists with unique challenges and experiences. These activities include two phases of survey of each work area followed by protection of
selected historic properties during clearance. Documentation and recommendations are formulated in the context of one-hectare square grids and apply to each phase of clearance—vegetation clearance, surface clearance of ordnance, subsurface detection of ordnance subsurface excavation of ordnance and ordnance blown in place. In addition to reidentifying sites documented in the Navy sponsored survey in the 1970s. Over 200 additional historic properties have been recorded since the project began over 2 years ago. Categories include traditional Hawaiian sites as well as ranching era sites World War II military bunkers and numerous plane crashes. Properties containing metal debris present special challenges since the clearance includes collection of all metal scrap. Documentation of archaeological sites and particularly large numbers of exposed artifacts allows reevaluation of settlement pattern interpretations previously developed by Hommon and Rosendahl.

Coastal Settlement Patterns on Kahoʻolawe Island
Joseph Jimenez, Cultural Surveys Hawaiʻi
The settlement pattern of the Island of Kahoʻolawe consists of permanent habitation complexes on the coast primarily located at the gulches, with temporary and/or special purpose sites situated in the uplands of the eastern portion of the island. Examination of the spatial arrangement of the structures within the coastal gulch settlement complexes reveals a consistent pattern, particularly in the placement of the religious structures or shrines. It is demonstrated that this pattern is consistent throughout Kahoʻolawe and can even be found on other Hawaiian Islands. It is suggested that this pattern of the arrangement of “settlement space” is not unlike other uses of public and private space in prehistoric Hawaiʻi.

Upland Site Erosion on Kahoʻolawe
Theresa K. Donham, U.S. Navy Archaeologist
Extensive erosion in the eastern uplands of Kahoʻolawe is responsible for widespread physical displacement of cultural material from in situ contexts, and has compromised the interpretive, educational, research, and cultural value of archaeological features. The goal of this study is to design a format for measuring and documenting the site erosion process, primarily through the application of geoarchaeological principles. The approach is non-site oriented, and focuses on discrete types of surface material dispersion patterns, which generally vary within and between identified site boundaries. An area of approximately 500 acres, located on the upper slopes of Puʻu Moaʻulanui is being used in a pilot study to test and refine the typology. Correlation with environmental variables and spatial patterns are examined through use of the Kahoʻolawe Geographic Information System. It is hoped that when completed, the model will provide a working tool for the design and implementation of appropriate erosion control measures for archaeological resources.

Adze Manufacture on the Island of Kahoʻolawe: Domestic Use or Export Industry?
Tanya Lee, Cultural Surveys Hawaiʻi
Because of the excellent flaking qualities of extremely dense and fine-grained basalt, this variety of basalt is the preferred type for lithic tool and craft manufacture. In Hawaiʻi, fine-grained basalt is difficult to come by, occurring for the most part, in small discrete patches throughout the island chain. Next to the Mauna Kea Adz Quarry, Kahoʻolawe Island possesses one of the premier basalt quarrying sites in Hawaiʻi. Gaining insight into specialized lithic procurement strategies is essential when considering the archaeological record with regard to adze
manufacture and its implications for the existence or nonexistence of an adze export industry on Kahoʻolawe. An important question regarding the exploitation of this distinctive resource is whether basalt adzes were manufactured primarily for domestic use or for export. Optimal-foraging subsistence models and their potential application for addressing this question are explored in this analysis.

SYPOSIMUM 6: AND OTHER ADZE PRESENTATIONS

Life in Captivity: Comparison of Ethnographic and Archaeological Collections of Polynesian Stone Adzes
Barbara Lass, Hearst Museum of Anthropology, Berkeley
In Polynesia where there is clear cultural continuity between the precontact and postcontact periods, ethnographic artifact collections are commonly used by archaeologists in interpreting the archaeological record. However, comparison of Polynesian stone adzes from archaeological and ethnographic collections at the Bishop, Lyman, and Hearst Museums indicates differences between the two types of collections in terms of artifact size, bevel angle, and other characteristics. It is suggested that such differences are in part attributable to the fact that adzes in ethnographic collections tend to have been acquired earlier in the use life process. Ethnographic collections may also include atypical artifacts acquired from particular sectors of native society and even artifacts expressly provided for “ethnographic” purposes. Research also suggests that “ethnographic” collections commonly include artifacts collected from the surface by artifact collectors, and these artifacts may actually constitute a third kind of collection with its own biases and characteristics. In conclusion, ethnographic collections may not correspond to the archaeological record, and the biases inherent in different sorts of collections should be recognized.

Use, Maintenance, and Discard of Basalt Adzes: A Case Study from Anahulu Valley
John E. Dockall, Anthropology Dept., Bishop Museum
The lithic assemblages from Anahulu Valley, O‘ahu include a number of basalt adzes and adze-related debitage. Stone adzes are typically small, quadrangular, and untanged. These artifacts provide a unique opportunity to examine the physical patterning of such behaviors as use, maintenance, and discard of stone adzes in habitation-related contexts. Evidence to date suggests that basalt adzes from Anahulu Valley were viewed not only as a significant component of the individual tool kit, but also as a viable source of raw material for the manufacture of other types of flaked tools. Ultimately, heavily used and reflaked adzes were employed as hammerstones. Consistent patterns of resharpening and recycling are revealed through a combined analysis of both tools and debitage. Although the actual number of whole and fragmentary adzes in the Anahulu Valley collections is small, debitage analysis indicates that they were consistently being resharpened and reflaked as cores. Debitage characteristics employed to distinguish adze resharpening and reflaking include the striking platform angle, location of polish facets, flake shape, and type of striking platform.
The Hawaiians Own Their Past; and the Past is Not Dead, It’s Not even Past (keynote address)
*P. Bion Griffin, UH Mānoa*
[abstract not available]

**SYMPOSIUM 1: ARCHAEOLOGY OF KAHIKINUI, MAUI**

**Reconstructing Kahikinui Vegetation Through Time**
*James Coil, UC Berkeley*

Archaeobotanical work in Kahikinui over the past several years has provided an empirical basis for reconstructing the vegetation communities of this leeward slope at the time of early Hawaiian occupation, and for tracing subsequent changes over time. The primary materials used for this reconstruction are carbonized wood samples obtained from archaeological sites, and from sediment trenches. Additional information is provided by microbotanical evidence, by distribution of old wood/trees, and by contemporary vegetation patterns. The implications for fog-drip precipitation and paleohydrology are also discussed.

**Defining Risk in the Settlement of Kahikinui, Maui**
*Dixon, B. (AMEC Earth and Environmental), P. Conte (SHPD), V. Nagahara (SHPD), and K. Hodgins (Cultural Surveys Hawai‘i)*

Rather than viewing the culture history of Kahikinui, Maui, as a process of gradual population growth and ecological adaptation, this paper proposes that the settlement and subsistence system found in the district at European contact was implemented virtually intact in the mid-15th century as a deliberate and conscious chiefly strategy - both to avoid the social risks inherent in increasingly factionalized windward polities and to minimize the environmental risks involved in settling this dry leeward district. Possible archaeological correlates of social and environmental risk will be defined here, using Kahikinui as a case study.

**Newly Discovered Petroglyph Sites of Kahikinui**
*Sidsel Millerstrom, Dept. of Anthropology, UC Berkeley*

Prior to the renewed archaeological research in Kahikinui, beginning in 1994, only a single petroglyph site had been reported for the district (footprint petroglyphs at Luala‘ilua, reported by Emory). Extensive field survey over several square kilometers has now resulted in the discovery of several new petroglyph sites, both along the coast and in association with inland rockshelters. There is some variation in technique, and this may correlate with temporal periods. The new sites are described and illustrated.

**Zooarchaeological Variation in Kahikinui Household Sites**
*S. O’Day, University of Florida*

Excavations at 10 pre-contact household clusters in the Kīpapa-Naka‘ohu region of
Kahikinui District have yielded a significant array of vertebrate and invertebrate faunal assemblages, displaying considerable variation both between clusters, and between individual features within clusters. This zooarchaeological variation is considered in the context of received ethnohistoric models of traditional Hawaiian households. Functional differentiation within households, and possible differences in social status of households are considered.

Where Did the Adzes Come From? XRF-Sourcing in Kahikinui
Jennifer Kahn (UC Berkeley) and Marshall Weisler (University of Otago)
Using both destructive and non-destructive XRF, we have chemically characterized a large sample of both diagnostic (adzes) and non-diagnostic (flakes and cores) basalt lithics excavated from a variety of habitation sites in Kahikinui. We have also obtained extensive suites of local potential source rock for comparison. Preliminary results of our analysis are presented here, including evidence for importation of finished adzes from several extra Kahikinui sources.

Initial Results of the Mauawainui Survey, Kahikinui
Lisa Holm, UC Berkeley
Previous survey in Kahikinui had concentrated on the core Kīpapa-Naka‘ohu ahupua‘a, which straddle a series of relatively young lava flows of the Hana volcanic series. In 2001, we commenced a new phase of survey in Manawainui ahupua‘a, which is situated on older, more dissected Kula volcanics. Initial results of this work, including the recording by GPS of more than 300 new sites, are discussed. Differences between the settlement landscape of Manawainui and that of Kīpapa-Naka‘ohu are also considered.

Are Kahikinui Heiau Astronomically Oriented?
Patrick V. Kirch, University of California at Berkeley
A sample of more than 30 heiau from several ahupua‘a in Kahikinui District has now been mapped in detail. These sites appear to display a discrete set of primarily three cardinal orientations. To some extent, orientation is associated with architectural form, although there is considerable variation. The possible symbolic and ritual meanings of this architectural pattern are explored.

A Native Hawaiian Perspective on Kahikinui Archaeology
Donna Simpson, Ka ʻOhana o Kahikinui
Donna Simpson is a founding member of Ka ʻOhana O Kahikinui and represents one of several families now resettling the moku. She has been involved with the archaeological work in Kahikinui, and presents a kanaka ma‘oli perspective on what the archaeological sites and cultural landscape of Kahikinui mean to her, and discusses the responsibilities of living on the ʻāina with its ancestral history.

SYMPOSIUM 2: GREATER PACIFIC BASIN

Hydraulic Engineering at Angkor Durillg the Khmer Empire
P. Bion Griffin, (Mānoa) and Bertel Davis (Scientific Consulting Services, Inc.)
Competing hypotheses seek to explain the massive water storage and movement systems that were engineered between AD. 800 and AD 1400. One sees, simply put, water controlled for the irrigation of rice. The other suggests cosmological or ideational explanations, with water related
to the temple mountains such as Angkor Wat. The situation and explanation is far more complex and is yet to be understood. Our current research is presented and the water further muddied.

**Myths of Rapa Nui Prehistory?**

*Terry Hunt, UH Mānoa*

The archaeology record of Rapa Nui (Easter Island) is among the most intensively studied in the world. Archaeologists and natural scientists have documented a great deal about what happened in the islands dynamic history. We now better understand Rapa Nui’s place in Polynesian prehistory, its chronology, palaeoenvironmental transformations, and the dramatic social changes that unfolded on this small, remote island. However, some theories proposed for the island are not supported by the evidence. In this paper I critically review these potential “myths” promulgated for the island and report on our recent field research.

**Austronesian Origins and the Neolithic Revolution in Seafaring**

*Barry Rolett, UH Mānoa*

Newly discovered adze quarries in the Perghu Islands, midway between Taiwan and the East coast of mainland China, reveal evidence for systematic seafaring during the period of Austronesian origins.

**A Long Sequence of Mariana Prehistory: Excavations at Ague Cove, Guam**

*David J. Welch (International Archaeological Research Institute), Boyd Dixon (AMEC Earth and Environmental), and Tina Mangieri (School for International Training)*

Evidence of early human settlement in the Marianas is limited, nearly always found in sandy beach deposits, and often extensively disturbed. However, at three rockshelters at the base of the cliffline near Ague Cove on the northwest coast of Guam, deep deposits of cultural materials dating from the end of the Early Pre-Latte Period (2700-3000 BP) through the remainder of the Pre-Latte Period have been recovered. Residues indicate that pottery vessels were used for cooking taro, fish, and shellfish. During the subsequent Latte Period, the rockshelters received minimal use, as occupation focused on the narrow coastal plain at the head of the cove. Pottery, stone tools, midden, and burials have been recovered, but there is no evidence of permanent architecture in the form of latte pillars. The results suggest a number of hypotheses concerning early settlement in non-beach locations, periodization of Marianas prehistory, movement of pottery, prehistoric boundaries, and small-scale Latte Period occupation of non-optimal locations.

**Marquesas 2001: New University of Hawai‘i Excavations**

*E. West, Robert Bollt, and Barry Rolett (UH Mānoa)*

This paper presents initial results for the summer 2001 field season on Tahuata. Our research focuses on Marquesan chiefdoms and contact period changes in economy and political structure.

**Student Training, Research, and Community Service: Reflections on the University of Hawai‘i Archaeology Field School**

*James M. Bayman, Michael Graves, P. Bion Griffin, Terry Hunt, Barry Rolett, and Jo Lynn Gunness, (UH Mānoa)*

Archaeology field schools by the University of Hawai‘i have been undertaken in the Hawaiian Islands, Oceania, Southeast Asia, and North America for over half a century. The
accomplishments of the field school are numerous and varied, including the first radiocarbon date in the Pacific region, training of several hundred undergraduate and graduate students in field methods, the completion of professional papers, articles and reports, and the development of historic preservation on public and private lands. Moreover, numerous participants in the field school have secured key positions in archaeological consulting, government agencies, museums, and universities. The field school has also assisted the local community in its efforts to preserve its archaeological heritage. This paper examines and evaluates these contributions with respect to student training, research, and community service. We also consider new directions for strengthening the value and relevance of this ongoing program to the community and the discipline of archaeology.

The War in the Pacific: Archaeological Investigation into Civil War Activity in Micronesia

Suzanne S. Finney, UH Mānoa

While many people equate the Civil War (1861-1865) with naval activity in the Atlantic and the eastern seaboard, the conflict between the United States of America and the Confederate States of America actually impacted every continent except Antarctica. In the Pacific this activity was largely the result of raiding activities by the C.S.S. Shenandoa, a Confederate raider sent to destroy the Union whaling fleet in the waning months of the war. During her thirteen-month voyage she captured nearly 40 vessels, circumnavigated the globe and virtually destroyed the whaling fleet out that season, a blow that helped to permanently cripple the American whaling industry. This presentation will examine the archaeological remains from one episode of this voyage, the sinking of four whaling ships at Pohnpei in Micronesia. The results of two field seasons will be discussed and will serve as an introduction for what I hope will be additional fieldwork concerning both the Shenandoah in the Pacific and the impact of 19th century whaling amongst a wide range of Pacific Islands.

SYMPOSIUM 3: HAWAIʻI ISLAND

An Overview of University of Hawaiʻi Research on Prehistoric Agricultural Development in North Kohala, Hawaiʻi Island

Michael Graves and Lahela Perry, UH Mānoa

Archaeologists at the University of Hawaiʻi have recently initiated new field research in North Kohala, Hawaiʻi Island on the dry land agricultural field system. The Kohala Field System was the subject of several seasons of field work by UH archaeologists in the early 1970s. This new work builds on that research, extending its objectives by adding a geographic component. Our goal has been to establish the environmental factors which were critical to the establishment and expansion of dry land agriculture in this leeward context. We have also developed a technique for relatively dating field border walls and trails in different sections of the KFS. We are extending our work to include consideration of: 1. livestock management, 2. soil geochemistry, and 3. the stylistic analysis of residential and religious architecture.


Peter R. Mills, UH Hilo

In May 2001, an archaeological project was initiated on the coastal terrace of Laupāhoehoe Nui, an ahupuaʻa near the northwestern extreme of the Hāmākua District in East Hawaiʻi.
The approximately 120-acre terrace contains extensive remains of agricultural fields and house structures, some of which were partially buried in a large landslide in late 1822 or early 1823. Human influences to the terrace after the mid-nineteenth century appear to have been minimal. As part of a Watershed Management grant being funded through the University of Hawaiʻi’s Stream Research Center, helicopter access was provided to the area over the summer of 2001 to begin conducting an archaeological survey. Results are presented from the survey, as are preliminary results from material analyses supported by an additional University Research Council grant. Data collected from the Laupāhoehoe Nui coastal terrace will be used to create the first complete ahupua’a map of coastal archaeological features in any portion of the Hāmākua District. Buried features on the edge of the 1822/1823 landslide will also provide the best possible context for evaluating the extent of modifications in early nineteenth century Hawaiian agricultural practices and economic systems in remote sections of Hāmākua.

Mapping Underwater Features at ‘Aimakapā Fishpond, Kaloko-Honokōhau National Historical Park, North Kona, Hawai‘i Island

Junqueira, Elisa, UH Mānoa and Lyman House Museum

Various archaeological studies have been conducted at Kaloko and ‘Aimakapā fish ponds, located on the north Kona coast on the Island of Hawai‘i. Remnants of fishponds and fish traps surround this general area, suggesting a community sustained by aquaculture. A cluster of rocks, now partly underwater, forms a sea wall structure located adjacent to ‘Aimakapā Pond on the ocean side. This study was conducted to map and to determine the possibility of another fishpond and its dimensions. Measuring and photographing of the sea wall were conducted in shallow water during low tides. The underwater survey of a submerged sea wall that once enclosed a portion of the ocean was only possible during high tide for better visibility and safety. The result is a measured sea wall that runs perpendicular to shore for about 482 feet and has an average width of 32.4 feet. This sea wall has man made circular fish shelters, a platform, openings and other characteristics of Hawaiian fishponds. At the end of the seawall structure, a shallow reef runs northward; parallel to the beach with a long cluster of rocks forming a potential segment. A map of rock alignments and a cross section of the sea wall reveal a distinct channel inside a section of the wall. The purpose of mapping, photographing and evaluating the underwater features adjacent to ‘Aimakapā pond is to document, collect evidence and define dimensions for an interpretation of the aquaculture method used by ancient Hawaiians who once lived in the study area.

Petroglyph Recording at Kaloko-Honokōhau National Historical Park, North Kona, Island of Hawai‘i

Ed Stasack and Diane Stasack (Pōhaku Art):

Recent vegetation removal projects have uncovered a unique set of petroglyphs along the Honokōhau-Kealakehe ahupua’a boundary of Kaloko-Honokōhau NHP. The purpose of this paper is to present the techniques used to record this difficult site as well as give a thorough description of the petroglyph field. The authors hope to use this presentation as a forum to elicit further ideas and comments on the content of this particular field.
Recruiting the Community and Lineal Descendants to Help Protect and Preserve Cultural Properties: A Site Stewardship Program at Puʻuhonua o Hōnaunau National Historical Park

P. Nelson and N. Nelson (National Park Service)

Puʻuhonua o Hōnaunau National Historical Park, located in the Kona District of Hawai‘i, was established in 1961 to protect and preserve the place of refuge and adjacent cultural sites and features including the village of Kiʻilae. There are currently over 300 recorded cultural sites within the park and many more which have yet to be documented. With 500,000 visitors annually and limited staff, the park has partnered with lineal descendants associated with the cultural sites and other community members to develop a Site Stewardship Program to monitor the park’s irreplaceable resources. The park provides the prerequisite field and classroom training and the stewards provide their time, energy, and a commitment to cultural and natural resource preservation activities. The goals of the program are to: protect heritage resources that have spiritual or traditional significance for Native Hawaiians; preserve significant archeological and biological sites; increase public awareness of the significance and value of cultural and biological resources and the damage done by theft and vandalism; discourage vandalism and the sale and trade of cultural and biological resources; and promote better understanding and cooperation among agencies, organizations, and individuals concerned about the preservation of cultural and biological resources.

Environmental Factors Inhibiting GPS on Tutuila Island, American Samoa: Strategies for GIS Data Integration Where GPS Cannot Go

Epi Suafoa and T. Houston (National Park Service)

Occupation of the Samoan archipelago began 2,000 to 3,000 years ago. The National Park of American Samoa did not have staff until 1993. Archeological research at the National Park of American Samoa has identified an array of feature types such as star mounds, adze quarries, habitation sites and grave sites on high mountain ridges. Most of these features are located in deep valleys or along narrow and rough ridgelines, beneath a dense paleotropical rainforest. National Park Service archeologists have sought to use new technology, such as global positioning system (GPS) hardware and geographic information system (GIS) software to document Samoan archeological features. The Samoan landscape and environment, however, present special problems for GPS and the integration of field data into a GIS. The high ridges of Samoa, a thick forest canopy, and high humidity are factors that become a challenge to GPS field users. This paper will discuss how mapping strategies can incorporate new technologies with “older” field methods in order to overcome these environmental conditions, aiding in the modern documentation of the archeological record represented within the National Park of American Samoa.

Why Don’t Hawaiian Archaeologists Date Surface Architecture?

Thomas Dye (T. S. Dye & Colleagues, Archaeologists, Inc.)

Surface architecture is a ubiquitous feature of the Hawaiian archaeological record; but for some reason archaeologists rarely attempt to date its construction. Recent results from Hawai‘i and Maui indicate that surface architecture construction dates can be investigated productively. This
paper sets out some practical techniques to use for fieldwork, a protocol for laboratory analysis, and a Bayesian statistical technique for deriving a probability distribution for the date a surface architectural feature was constructed.

Where Science Meets Compliance: Partnerships Between the Hawai‘i Army National Guard and Cultural Resources Management

*Wendy Tolleson, (Hawai‘i Army National Guard)*

The Army National Guard manages cultural resources on 45,000 acres on seven islands in the state of Hawai‘i. Research and compliance are two mandates primary to the management of these resources. By developing partnerships with the National Park Service, University of Oregon, University of Hawai‘i, the U.S. Geological Survey Biological Resources Division, and the U.S. Fish and Wildlife Service, the Army National Guard has developed innovative management protocols to manage these resources, and investigate cultural activities through time. These investigations have resulted in joint ecosystems restoration and address the prehistoric and historic settlement on Army National Guard lands.

SYMPOSIUM 5: ARCHAEOLOGICAL METHODS

Archaeobotanic Sampling

*Linda Scott Cummings, Paleo Research Institute*

Pollen, phytoliths, starches, and macrofloral remains all have the potential to represent human activities involved with growing, processing, using, or consuming plants. Each of these remains has unique properties, including preservation and distribution, that are important in the selection of the appropriate database or databases to examine questions of plant use. This paper addresses some of these properties, as well as both horizontal and vertical sampling strategies for examining various research questions.

Site Identification, Classification, and Interpretation; What You See Is What You Get, or Is It?

*Bertel Davis, Scientific Consultant Services, Inc.*

What is an archaeological site? More particularly at the survey level of investigation, what are the criteria by which we decide what a site is and what its likely extent might reasonably inferred to be? Of course, the most facile answer, and one very much the practical reality, is that it is whatever the investigator recognizes / chooses it to be. This position is premised on the argument that what constitutes a site and its extent is an artificiality of the first order. To a degree this is certainly true, but is it always? Past practice in Hawai‘i all too often failed to give credence to the mundane, the minimal- indeed- the arcane manifestations of human behavior. Once an observed feature was actually decided to be a site, there was a companion presumption that may best be expressed as “what you see is what you get.” The situation today seems little improved especially with work conducted under the aegis of Culture Resources Management. With few exceptions, the decision-making is dominated by architecture or related phenomena (caves etc.). In other words, the fundamental equation is structure-is-site, which too easily becomes site-is structure and that begins to close off possible alternatives. This has especially serious consequences for making preliminary functional/temporal assessments-i.e., potential significance-necessary for CRM purposes. The following paper will examine a number of situations where what was seen had very little to do with what was ultimately obtained.
Formation Processes in Coastal Settings: Characterizing a Buried Hawaiian Site
Michael Dega and M. Buffum, Scientific Consultant Services, Inc.

A buried cultural horizon with thirty-five associated subsurface features was identified near the shoreline on the northern coast of Kaua‘i. Site features were well preserved beneath modern fill and alluvial/colluvial sedimentation through time. The process of artificial and natural deposition of four to five meters of foreign and local sediments acted to preserve the deposits. Based on six radiocarbon dates, occupation of the site and the formation of its constituent features occurred over a period from the early AD 1300s through late 1600s. The site is suggested to represent a permanently inhabited traditional Hawaiian settlement occupying the ecotone between several distinctive environmental zones. Settlement thus held an advantageous position bordering steep slopes to the south and west (which eventually covered the site), a strand and fringing reef to the east, and alluvial flats to the north. Such a location is ideally situated to readily take advantage of both marine and terrestrial resources and therefore, amenable to very localized subsistence diversification. An understanding of the site was only achieved when local geomorphic conditions were analyzed in terms of formative processes. Reconstructing the past occupation of this site was clearly furthered by returning to first principles regarding natural and cultural formative processes evinced in the local geomorphic environment.

Wet Wood Revisited: Wooden Artifacts from Huahine
Toni Han
[abstract not available]

SYMPOSIUM 6: HISTORICAL AND UNDERWATER ARCHAEOLOGY IN HAWAI‘I

Cabins, Caves, Cattle, Cowboys, Convicts, and the CCC: Preliminary Report of the 2001 U.H. Hilo Summer Field School at Keanakolu, North Hilo District, Hawai‘i Island
Peter R. Mills, UH Hilo
In June and July of 2001, the author led a U.H. Hilo archaeological field school in the area of Keanakolu (“the three caves”) between 5,300 ft. and 6,400 feet elevation on the slopes of Mauna Kea near the border of the North Hilo and Hāmākua Districts. Over the course of three weeks, students conducted regional survey, mapping, and preliminary testing of various sites. Significant aspects of the project included: 1) documentation of a late nineteenth century koa log cabin homestead; 2) mapping and preliminary sampling of extensive wood charcoal deposits in the Keanakolu cave complex; 3) identification of a house site believed to be that of Ned Gurney, an early bullock hunter, often held suspect in the death of the famous botanist David Douglas in the 1834; 4) the mapping of several early ranching complexes, including an 1860s German settlement and an early twentieth century paniolo camp; and 5) documentation of various structures on the upper mountain associated with the Civilian Conservation Corps program initiated with Franklin D. Roosevelt’s “New Deal” economic policy.

Airplane Crash Sites as Archaeology
Hallett Hammatt (Cultural Surveys Hawai‘i) and R. Hill (Maui Military Museum)
Archaeological survey of the Island of Kaho‘olawe associated with the ordnance clearance project has focused mostly on traditional Hawaiian sites. In place protection of pre-contact archeological resources from impacts of clearance operations through awareness training and
monitoring has proven successful. However, historic properties containing metal debris (ranching and military era sites) cannot be left undisturbed, since detection of ordnance is impeded by the presence of any metal objects on the ground surface. Historic airplane crashes on the island are being recovered in total. The archaeological information gathered on the configuration and condition of the parts and -yes- even the stratigraphic context, provide indisputable physical evidence which adds a compelling dimension to the archival crash records.

**Maritime Cultural Landscape: Shipwreck Beach, Lāna‘i**

*Hans VanTilburg, UH Mānoa*

Though the north shore on the Island of Lāna‘i is known as being the resting place for multiple historic shipwrecks, there has been no serious cultural survey for these elements of Hawai‘i’s maritime past. Not only have dozens of vessels crashed accidentally onto Lāna‘i’s treacherous reef, but the area served the 19th century inter island navigation companies (namely Inter Island Steam Navigation Company and Wilder Steam Navigation Company) as a dumping ground, a “rotten row” for their old and worn out ships. Since then inter island shipping and the ships themselves have virtually vanished. These wreck sites are the last traces of the plantation-era industry, spanning the entire transition from sail to steam. For maritime researchers, the shoreline is a gold mine of historic information. For two weeks a team of staff and students from the University of Hawai‘i camped on Lāna‘i and recorded maritime cultural features on the north shore, in the water and on the adjacent beach and rocks. The survey area lends itself to the perspective of the “cultural landscape,” a holistic approach to the artifacts, topographical features, and history of localized maritime activity.

**The Shipwrecks of Maui County**

*Richard W. Rogers, Pilialoha Consultants*

Situated in the crossroads of the Pacific, centered in the chain of the inhabited Hawaiian Islands, the four islands that comprise Maui County have been witness to numerous maritime calamities. With a few notable exceptions, submerged cultural resources have been somewhat ignored by academia and generally unfunded by resource managers. This seems at odds with the rate of technology available and the vast number of sport divers that are rapidly gaining access to these sites. The ocean has not proven to be a gentle guardian of underwater sites. Seasonal changes and the occasional storm act to deteriorate and disguise submerged sites more rapidly than adjacent land sites. Conversely, she also acts to preserve certain artifacts better than those in dry landscapes. This paper will touch on some of the one hundred and forty odd shipwrecks situated within the boundaries of Maui County. This will allow us to briefly look at artifacts that represent modern shipping and tourism, the sugar, fertilizer and lumber trade as well as the two world wars of the twentieth century. Nineteenth century shipwrecks speak of the whaling industry, the missionary and monarchal packets that traveled between the islands, as well as the fur and sandalwood trade. Although less well defined in the archaeological record (so far), the maritime history of Maui County also had a significant relevance to the early explorers, ancient Hawaiians and very possibly the Spaniards’ Manila Galleons.
The ECS Files: Culture, Biology, and Complexity
Dr. Robert J. Hommon, National Park Service

Culture, no matter how you view this elusive concept, is fundamental to the proper study of our species. For archaeologists to think of human beings as well-adapted organisms is not all wrong, but it is only half right. Our cultural behavior differs from that of all other organisms in fundamental ways in that we reverse Nature’s direction of control. We have only poorly appreciated our behavioral differences not because they are obscure, rare, or difficult to decipher, but because, like water for fish, they so totally envelop us, hidden in plain sight. The evolved human brain is the adaptation to end adaptations. Using our brain’s enormous capacity, we have fundamentally transformed how we interact with each other and with our environments in the following three ways.

First, we have developed a powerful approach to dealing with the environment that reverses the process of adaptation. An adapting organism responds to selective pressures by modifying its form or behavior to fit its environment. In contrast, we human beings practice what we can call ecaptation, the process of altering the environment to fit ourselves by inventing taro fields, compressed air, Boeing 767s, ice sculpture, screwdrivers, beagles, tattoos, Mexico City, and all else that we modify from naturally occurring raw materials.

The second uniquely human process of interest is “appropriatizing,” or "proping" for short. The behavior of other organisms is determined almost entirely by their genes and by individual experience of the environment. Our species, the most intensively social animal on the planet, have added appropriatizing, the ubiquitous, interactive process by which human agents exercise a broad array of techniques (advice, instruction, gossip, insult, humor, etc.) by which each of us constantly strives to alter the behavior of others. Among other things, this means that members of our species, far more than any other, are constantly altering our behavior without requiring shifts in gene frequencies or personal experience of the reason for the alteration.

The third uniquely human feature is best understood by observing that living systems at many levels, from cells to organisms to ecosystems, operate as Complex Adaptive Systems (CASs) that exhibit distributed or polyarchical control. For example, a flock of birds in flight is not following the orders of some boss-bird, but is under the control of all the birds working together. The flock is able to act as a unit because each bird follows a set of simple mental rules that ensure that it flies close, but not too close, to the other birds. In contrast, we, alone among species, we have invented simplified subsystems that exert large-scale centralized control to accomplish tasks. One such subsystem is the stratified control hierarchy whose tiered pyramid of offices forms the framework for large-scale human groups (e.g. states, corporations, and armies).

While human groups share some basic features of CASs, they differ fundamentally because they exercise marked control over the environment by means of ecaptation, distributed control over participating individuals by means of proping, and marked centralized control through stratified control hierarchies. In recognition of these differences, human groups can be termed Ecaptive Complex Systems (ECSs). Archaeology is well suited to the study of human groups as ECSs. It focuses on the ways that the ecaptively-generated factosphere (“material culture”) evidences cultural change and stability (generated by appropriatizing), as well as the origins and early history of centrally-controlled large-scale societies (“complex societies”).
Why Nu'alolo Kai? Community Archaeology in the Midst of Nii Pali
Alan Carpenter, Division of State Parks

Nu'alolo, among the most isolated shoreline areas in the Hawaiian archipelago, would seem an unlikely candidate to become the focus of any State Parks program. Initiated in 1996, the Nu'alolo Kai project has nevertheless evolved into a model for parks archaeological resource management and research. This paper will take a look back at the history of archaeology at Nu'alolo, highlight the ongoing efforts of today, and look forward to why Nu'alolo just may represent the future of State Parks archaeology.

Lo'i o Kēʻē: An Agricultural Landscape by the Sea
Maurice Major

Hā'ena, the last ahupua‘a before Nā Pali District begins, has peaks and valleys and caves and sites rich in history and archaeology of the Hawaiian people. Below the peak of Makana and west of Limahuli Stream, Kēʻē presents the last level land before the coast becomes vertical, and although the area may be better known for its legends and beaches, Hawaiians made intensive use of this landscape for growing taro. As they began to do so again, community members and State Parks archaeologists cleared and mapped 4.4 acres of lo‘i and ‘auwai. What they found indicated a long, stable history of managing natural systems to agricultural advantage. Adaptations to local conditions, to catastrophic natural events, and to cultural change all can be seen in surface features and sediments. Change and continuity over centuries of human presence emerge from stratigraphic analysis and from taxonomic identification of charcoal. These findings provide insight regarding models of social complexity, the development of irrigated agriculture, and the chronology of occupation.

The Turning Hands of Hā‘ena
Irene Calis

An archaeological inventory survey was conducted at Limahuli National Tropical Botanical Gardens on the island of Kaua‘i as part of the on-going rehabilitation of an abandoned taro (lo‘i kalo) agricultural system. Limahuli Stream is one component that makes Limahuli Valley an extremely suitable area for the farming of kalo, and, therefore, an area for archaeological inquiry. Architectural remains within the project area represent the blueprint of a carefully designed, complex agricultural system. The degree of labor investment required to so transform this natural landscape is seen as strong evidence of the intended long-term utilization of the area for agriculture. The final configuration of the Limahuli system implies a commitment undertaken by the area’s earliest architects and farmers to provide an agricultural legacy that future generations of farmers could build upon.
This paper will present a brief snapshot of U.S. Air Force cultural resource management activities for the 2002 fiscal year. Presentation of a “Historic Preservation Compliance Report” is an annual requirement, although this presentation will hopefully also serve as a brief introduction to DoD and USAF CRM policies and procedures for people unfamiliar with them. We will familiarize people with the 15th Air Base Wing’s land base in Hawai‘i, and will discuss how the Air Force works with Section 106, NAGPRA, ARPA, and so forth. Most of the discussion will be archaeology focused, although there will be some discussion of the Air Force’s historic architecture and TCPs.

The Waimea Field System Reconsidered: Implications of the Waimea Town Center Project
Greg C. Burtchard and M.J. Tomonari-Tuggle, International Archaeological Research Institute, Inc.

An association of low earthen ridges, cross-cutting irrigation channels, and small residential localities on the Waimea Plain was first documented in the 1980s during archaeological survey for proposed highway improvements between Kawaihae and Waimea town. Called the Waimea Field System, this complex has been described in the archaeological literature as one of three major agricultural complexes that were developed in the late precontact period to intensify agricultural production on leeward Hawai‘i Island. Recent investigations on the Waimea Plain suggest a reconsideration of the field system. First, it is smaller than originally recorded, with more than half of the “field ridges” found to be the result of World War II military activity. Second, the irrigation network, which was thought to be a defining component of the Waimea system, is a result of mid to late 19th commercial agriculture. The earthen field ridges and residential sites remain evidence of prehistoric use of the Waimea Plain. Earliest residential locations date to the early 1400s, although the greatest overlap among dates is the late 1600s. Paucity of midden remains, multiple, overlapping hearths, and minimal investment in structural features at these sites suggests seasonal and/or limited duration use; most plausibly in support of dry-land sweet potato production in nearby fields. Low earthen ridges appear to be windbreak accumulations associated with this or subsequent agricultural practices on the plain.

Ukumehame’s “Hidden” Heiau
Vanessa J. Potter

A brush fire in 1999 revealed a previously unknown site in the West Maui Mountains. The structure’s characteristics are consistent with other late prehistoric heiau in Maui. Its apparent isolation offers an interesting opportunity for study as the structure does not appear to have been supported by any nearby areas of permanent settlement. Work conducted at the site included preparation of an instrument plan map. A radiocarbon date obtained from a test unit indicated that the heiau was constructed and used during the very late prehistoric period. Suggestions are offered as to the purpose of heiau construction at such an isolated location during late prehistoric times.

SYMPOSIUM 3: CULTURAL IMPACT STUDIES

What Are Cultural Impact Studies and What Constitutes an Assessment?
Holly McEldowney, DLNR, Hawai‘i State Historic Preservation Division
In 2000, the Hawai‘i State Legislature amended the state’s Environmental Impact Statement Law to require agencies and private developers to disclose the impacts of their actions on “cultural practices.” In passing this law, the legislature also recognized a need for “native Hawaiian cultural impact assessments” and reaffirmed the importance “cultural resources” and the exercise of “native Hawaiian culture.” This amendment followed several decades of public debate, court decisions, and proposed legislation that repeatedly asserted the rights of native Hawaiians to exercise broadly defined customary practices on private and public lands and the need for government agencies to recognize these rights in the decision making process.

This series of events has left most government agencies and private developers struggling to comply with the letter and intent of the law and abide by the court rulings. Native Hawaiians are left with heightened expectations that such customary practices and cultural resources will be afforded greater protection and that they will be included in the decision making process. Archaeological consulting firms and the State Historic Preservation Division have found themselves being the ones most frequently asked to provide consultant and oversight services for these assessments although their expertise, experience, and legal mandates have generally been restricted to the more narrowly defined cultural resource called archaeological sites and historic properties.

Based on their experiences, symposium participants will address six areas in which considerable confusion and uncertainty remain in preparing and assessing the mandated cultural impacts. The first and second issues examine what level of effort constitutes an assessment in widely differing circumstances and who is responsible for judging the adequacy of completed assessments. The third issue concerns the problem many have in finding individuals to conduct these assessments and what efforts can be made to encouraged students to pursue fields of study that would qualify them to prepare cultural assessments. The fourth and fifth address the fundamental issues of identifying which resources and practices should be considered in the assessment process and who in the community should be sought and brought into the process. Finally, as assessments are submitted as written statements or reports, the question often becomes what basic components are needed to demonstrate that a good faith effort has been made to assess culture impacts.

Who Judges the Acceptability of a Cultural Impact Study? Or, the Ups and Downs of the Relationship between the Environmental Impact Statement System and Cultural Impact Assessments

Jeyan Thirugnanam, Office of Environmental Quality Control

The relationship between the Environmental Impact Statement System and the Cultural Impact Assessment process has its benefits and burdens. This presentation will list the advantages and disadvantages of this arrangement and will suggest avenues for improvement.

Who Can Do the Work and What Expertise Do You Need?

Peter R. Mills, UH Hilo

The ability to produce quality cultural impact studies requires different sets of skills than those that are typically emphasized in archaeological fieldwork, and the differences pertain mostly to identifying customary practices, sacred sites, and other non-archaeological aspects of culture. Identifying these various issues involves ethnographic fieldwork, and as such, HPD’s draft administrative rules governing the professional qualifications of ethnographers (Title 13, Chapter 281, section 6) apply. These draft rules require that certain academic standards and professional research experience standards be met by the principal investigator. Although the intent of these
rules is clear, their language leaves considerable room for varying interpretations, such as “substantial contribution;” “recognized cultural authorities;” “demonstrated familiarity;” etc.

The State of Hawai‘i currently has no sustained educational program geared towards training people to conduct Cultural Impact Studies (or Cultural Resource Management in general), and given that professional CRM educations in mainland institutions rarely prepare individuals to deal with the nuances of Hawaiian CRM, there is a genuine need to train local students to conduct CRM research, including Cultural Impact Studies. Last year, UH Hilo listed the development of a Master’s program in Cultural Resource Management as one “potential post-baccalaureate program” in its new Strategic Plan. Although this goal is probably still years in the making (if it happens at all), SHA members and other cultural specialists have the opportunity to participate in lobbying for it and designing it, including addressing the intent of the 2000 revisions of Hawai‘i’s Environmental Impact Statement Law.

Who Do You Consult?
Kepa Maly, Kumu Pono Associates

While conducting oral history interviews and consultation, several standard criteria for selection of who would be most knowledgeable about a study area may be followed. Among these criteria are:

a. The interviewee shares genealogical ties with traditional families of the land (study area)—such as, is a descendant from families who applied for, and in some case were awarded land in the Mahele of 1848, or is descended from recipients of Land Grants from the Kingdom or Territory of Hawai‘i.

b. Age—the older the informant, the more likely the individual is to have had personal communications or first-hand experiences with even older, now deceased Hawaiians and area residents; thus giving the interviewee first hand knowledge of the cultural landscape of the study area.

c. An individual’s identity in the community as being someone possessing specific knowledge of lore or historical wisdom pertaining to the lands, fisheries, families, practices, land use and subsistence activities in the study area; and

d. Recommendations from community members.

Criteria a, b, & c above, are of particular value to the interview/consultation process. The documentation of elder kama‘aina (native and non-native alike)—describing traditions, customs, activities, beliefs and things observed—can be demonstrated to have time depth. Good interviews in partnership with good documentary research will generally demonstrate that what knowledgeable informants describe today, shares common themes and continuity with the broader documentation recorded in Hawaiian history since ca. 1778.

The primary focus of the interview/consultation program is to elicit traditional information— that is knowledge handed down in families about the cultural landscape from generation to generation. The process should document traditional values and practices that are still retained in the lives of Hawaiian families associated with the lands, fisheries and resources (an ahupua‘a-‘ohana perspective) of the study area. The consultation should also seek out information on other sites or features identified by the interviewees as being associated with families and cultural practices, and collect information so as to form an overview of community concerns and recommendations for long-term protection of the resources. During the course of conducting the interviews, several historical maps should be referenced, and when appropriate,
site names or locations should be marked on the map(s). The right of review and release of documentation by interviewees is critical to the integrity of the process. A trusting relationship will lead to better recordation of information.

What Resources Are Being Impacted?
*Tina Bushnell, Cultural Surveys Hawai‘i*
When looking at cultural resources, ask yourself some questions:
1) What is the location and extent of the project area?
2) What was the former land use of the project area?
3) What kind of community lives in or near your project area?
4) What is the proposed development/project?
Answering these questions can take you a long way into knowing what kinds of resources to look for, to ask about. Comparing three different cultural impact assessments conducted on O‘ahu, this paper will give you a glimpse of the kinds of resources which may be impacted at these places.

What Is Required and How Do You Prepare a Cultural Impact Study Report?
*Maria Orr*
When Act 50 was passed in April, 2000 it amended the EIS law (Section 343-2, Hawai‘i Revised Statutes) to include Cultural Impact Assessments or Studies (CIS). In response to this impending change, the Office of Environmental Quality Control (OEQC) developed a set of guidelines in November 1997. These guidelines presume a good faith *level of effort* in conducting the study, and provide a methodology and content protocol. Based on these extensive guidelines, a CIS can include comprehensive research of a range of cultural resources that are subject to assessment such as traditional cultural properties, historic sites and submerged cultural resources. To this end OEQC recommends that individuals who conduct these studies adopt OEQC protocol, observe OEQC content requirements, discuss research strategies and problems, and summarize data analysis and potential effects of the undertaking.

However, two things really influence how one determines what is required and how one prepares a CIS report: 1) the phrase *"level of effort"* and 2) the word “recommends.” The problem with *“level of effort”* is that the “powers that be” have not stipulated who determines *“level of effort”* or what exactly they mean by this phrase. The problem with “recommend” is that inevitably, there is no standardization of what constitutes a CIS report.

**SYMPOSIUM 4: HISTORICAL ARCHAEOLOGY**

The Archaeology of Ranching on Kahoʻolawe
*Hallett Hammatt, Cultural Surveys Hawai‘i*
A sequence of unexpected events has led to the preservation and subsequent documentation of Kuheia, a well preserved ranching center on the north coast of the island of Kahoʻolawe. This center, which culminated a 70-year history of ranching on the island, included three residences, a garage, a cowboy bunkhouse, a blacksmith shop, water catchment and storage systems, corrals, roads and trails. The center was abandoned suddenly in December 1941 by military order and never reoccupied. Thus it constitutes a unique record of the early ranching industry in Hawaiʻi, unaltered by the influence of post-War use. It has recently been designated for subsurface ordnance clearance, which requires that all metal items-both surface and subsurface-must be
removed. Documentation of features and collection and cataloging of artifacts give clues to the harsh realities of ranch life. Conservation of resources (especially water) and recycling and innovative use of materials were some of the adaptive strategies in this arid and isolated setting.

Laupāhoehoe Nui: A GIS Representation of an Archaeological Survey
Ellen Markin, UH Hilo
This presentation offers an overview of a project involving the creation of a Geographical Information System (GIS) representation of the Laupāhoehoe Nui archaeological complex in the Hāmākua District, Hawai‘i Island. It uses data gathered as part of a UH Hilo archaeological survey directed by Peter Mills to create a computerized representation of the site that can be used to access various kinds of data, and to guide future exploration of the complex. This overview includes a description of the processes used to create the representation and some of the preliminary results of the project.

The Search for Ned Gurney, Botany Bay Man
Peter R. Mills, UH Hilo
In 1822, a 20-year-old British man named Edward (Ned) Gurney arrived in Hawai‘i from Botany Bay, where he had been sent for stealing lead fixtures from the roofs of houses in England a few years earlier. He wandered the islands for a while, and fought in the battle of 1824 at Pā‘ula‘ula o Hipo/Fort Elisabeth on Kaua‘i, before eventually settling in to the life of a bullock hunter on the slopes of Mauna Kea. We probably would not even know his name, except that he was the last person to see the famous botanist David Douglas (eponymous with the Douglas Fir Tree) alive, and Gurney has sometimes been held suspect in Douglas’s death in 1834 on Mauna Kea. The recent discovery of a house foundation on Mauna Kea that matches a location described as “Ned Gurney’s” on a 19th century map, offers the possibility of learning more about the daily lives of bullock hunters, their families, and the creolized cultural patterns at play in such specialized rural population areas of nineteenth century Hawai‘i. A discussion of the architecture of the domestic complex is presented, with a special emphasis on the clues held in lime plaster that was discovered there.

The Shipwrecks of Kaua‘i
Captain Richard W. Rogers
The underwater archaeological excavation remains of Haʻaheo o Hawaiʻi by the Smithsonian Institution in the 1990s illustrates that submerged cultural resources can be surprisingly well preserved, even after being buried in shallow water for over 170 years. The island of Kaua‘i is host to over 70 historic shipwrecks that may be researched, located and examined to give us some insight into the many aspects of the maritime history of the island. While the Bering (1815), Young Thaddeus (1822) and the Haʻaheo of Hawaiʻi (1824) speak to the early fur and sandalwood trade, so does the whaleship Jefferson (1842) reference her commerce. Before reliable ground transportation was established on Kaua‘i, the various communities were served by small schooners that were often caught in harm’s way. Of the dozens of those small vessels that were cast ashore, a sampling might be found in Hanalei around 1850 in the Kikeuluohi, Lehua and Victoria.

Clipper ships carrying machinery from the industrial ports of the Atlantic, lumber from the Pacific Northwest or nitrates from Chile have been lost servicing the Kaua‘i sugar industry. Examples of these once fine sailing ships include the Ramsdell (1879), Nettie Merrill (1888),
Ivanhoe (1915), Prosper (1916), Rithet (1917), and the Okonagan (1919). Inter-island steamships were not exempt from disaster. The boilers and machinery of the C.R. Bishop and the Pele serve as markers for that period in transportation. Larger Freighters such as the Andrea Lukenbach have also met their fate on the island. While we tend to focus on the larger, more dramatic losses, the remains of fishing vessels and yachts speak to other types of activity. We might also consider the abandoned ports and landings on the island of Kaua‘i. There is no doubt that the Garden Isle has a great deal to offer the maritime archaeologist interested in investigating her maritime landscape.

Beyond Pearl: Navy Properties in Hawaiian Waters
Hans Van Tilburg, UH Mānoa
The US Navy has a long and significant history here in the islands, and much of that past is reflected in the material remains of sunken aircraft, submarines and ships. Thanks to a recent grant from the Naval Historical Center in Washington D.C., an inventory of submerged navy property has finally begun. This initial effort focuses on tapping local contacts and scattered documents and archival collections to create the first-ever comprehensive report on known navy wrecks in Hawaiian waters. This report, besides featuring some of the more interesting cases such as the wrecks of the USS Saginaw, Neches AO-5, Macaw ASR-II, and the Stickleback SS-415, reveal the many ways in which material is deposited around the islands: war losses, training accidents, and sinking exercises or “target assets” account for most of the sites. The total amount of material is surprising. Navy resources in Hawaiian waters highlight the military significance of the islands, as well as the ways in which we view the surrounding ocean. “Out of sight, out of mind.”

SYMPOSIUM 5: HAWAIIAN AND PACIFIC ARCHAEOLOGY AT UH MĀNOA

A Preliminary Look at Moanalua Cave Shelter (Site 0-15), Island of O‘ahu
Juanita A. Agueberre-Beck, UH Mānoa
Moanalua Cave Shelter (Site 0-15) is located in an intermediate position between the coastal lowlands and the uplands of Kamana-nui Valley, on leeward O‘ahu. This site was first excavated by the Bishop Museum in 1964, and later by the UH Mānoa Archaeology Field School in 1980. Although the excavations and record keeping at this site were exceptionally detailed, a final report was never produced for the UH Mānoa fieldwork. Fortunately, however, several analyses of the archaeological assemblages were undertaken by archaeology students at the university. This paper provides a brief summary of my thesis for the UH Mānoa Undergraduate Honors Program on the 1980 archaeological field records and artifact collections from this site. In addition to providing a preliminary account of the field project and the laboratory analyses, I acquired the first radiocarbon age-estimation of plant charcoal from the site. This charcoal is derived from a gourd plant (Lagenaria siceraria) commonly known by its Hawaiian name as ipu. In addition to assessing the relevance of this date to Hawaiian archaeology, I suggest several directions for future work on the collections from Moanalua Cave Shelter.

Measuring Interaction in Precontact O‘ahu through the Use of Heiau Architecture
Kekuewa S. Kikiloi, UH Mānoa
In Hawai‘i, monumental architecture has long been the focus of investigation by archaeologists. Using the method of seriation, we seek to understand the process of social differentiation in the island setting of O‘ahu. This research explores how this method has been successfully applied to
heiau architecture to enable us to track interaction between populations across the landscape and through time.

**Stylistic Variability in Poi Pounders from Kaua‘i, Hawai‘i**

*Windy Keala McElroy, UH Mānoa*

Hawaiian *poi* pounders are unique artifacts which have received inadequate attention from the archaeological community. Three varieties of *poi* pounders are recognized today: the common knobbed form, ring pounders, and stirrup pounders. These artifacts have never been systematically analyzed, and a great deal of variability exists within the three categories. The greatest variation can be seen in *poi* pounders of Kaua‘i Island. My paper examines variability in the morphology of *poi* pounders from Kaua‘i. Using measurements from digital photographs, I developed a paradigmatic classification for these unique artifacts. This classification highlights some of the variability within and between the traditional three-group classification and identifies patterns in *poi* pounder form across the five *moku* districts of Kaua‘i.

**Introducing MAHHI: The Maritime Archaeology and History of the Hawaiian Islands Foundation**

*Suzanne S. Finney, UH Mānoa*

The Maritime Archaeology and History of the Hawaiian Islands Foundation (MAHHI) is chiefly concerned with research, training, and education in maritime elements of submerged cultural resources in Hawai‘i and the Pacific. Submerged cultural resources, primarily shipwrecks and underwater aircraft crash sites, represent a largely untouched resource in the Pacific Basin. Few have been found, many more await discovery. This presentation will discuss the creation of MAHHI by myself, Hans Van Tilburg, PhD., and Don Froning, short-term and long-term goals of the organization, and some comments on the future direction of submerged cultural resource management within the Pacific.

**Palauea Cultural Preserve, Maui: Update on New Findings**

*Theresa K. Donham, UH Mānoa*

The twenty-one acre Palauea Cultural Preserve was established by Maui County Ordinance in September 2000, and the first phase of a four phase preservation plan was approved by the State Historic Preservation Division in June 2002. Prior to commencement of subdivision construction adjacent to the preserve, data recovery excavations were conducted at five previously identified sites, and at two newly identified sites that were found during monitoring of vegetation removal. Preliminary data from this fieldwork indicates that permanent settlement in coastal Palauea was more sustained and denser than previously thought. Vegetation clearing within the preserve area in connection with the revegetation plan has resulted in the discovery of new features, resulting in additional revisions of the settlement pattern for coastal Palauea. These new findings are summarized, along with research plans for the upcoming UH field school.

**Marquesan Warfare**

*Robert Bollt, UH Mānoa*

This paper summarizes a study of warfare as it was practiced traditionally in the Marquesas Islands of East Polynesia. The major goal of this presentation is to examine how warfare can evolve according to the needs of a particular time and place, and how it can shape a society.
Warfare in the Marquesas was a dynamic means of change that was essential to a trajectory of social evolution unique in Polynesia. This study focuses on war as a means to social power by specifically examining how and why the sacred and ritual authority of the Marquesan hereditary chiefs (haka ‘iki) declined. Where similar examples of the loss of chiefly power are encountered in Polynesia, the warrior (toa) class is the beneficiary. The Marquesas is unique in this respect because it was the class of inspirational priests or shamans (tau’a) who benefitted most through warfare, which was often instigated by them through a complex system of demands for human sacrifice and tribute. The tau’a class used warfare to achieve social prominence, although it did not participate in war directly. Warfare then becomes more than a consequence of circumstances and a brute means to power, but rather a subtle engine of change that can be seized and manipulated to serve specific ends. Both ethnology and archaeological evidence are used to demonstrate this process.

Preliminary Investigations on Nacula Island, Fiji: In Search of Lapita
Terry Hunt, Joshua Bauer, Tim Rieth, Lisa Humphrey, Alex Morrison, and Kelley Esh, UH Mānoa
During the summer of 2002, the University of Hawai‘i at Mānoa began an archaeological field school on the island of Nacula, in the Yasawa Group of western Fiji. Given the discovery of early (Lapita) sites elsewhere in the Yasawa Group, we anticipated a similar antiquity for the settlement of Nacula. Thus, our primary goal was to locate early cultural deposits on the island. In this paper we report some results of our continuing research building on more than 10 years of research in Fiji by the University of Hawai‘i. Future work on Nacula will focus on early settlement, landscape and ecological changes, settlement shifts, subsistence, and a range of other related questions for local and regional prehistory.

SYMPOSIUM 6 - ARCHAEOLOGY OF KONA

The Spatial Distribution of Pāhoehoe Pits at Manini‘ōwali and Kūkiʻo 2nd Ahupuaʻa
Thomas S. Dye
_Pāhoehoe_ pits are a common feature type on Hawai‘i Island whose functions in traditional Hawai‘i are not well understood. 1,196 pits at Manini‘ōwali and Kūkiʻo 2nd _ahupua’a_ are described and contrasted with another common feature type, the ‘a‘ā pit. The spatial distribution of the _pāhoehoe_ pits is explored using geographic information system software.

The Promise of Pumice
Bobby Camara, Tom Dye, and John Sinton
In 1991, a crew from the Bernice Pauahi Bishop Museum spent three months conducting an inventory survey of about 380 acres at Manini‘ōwali, North Kona, Hawai‘i Island. During the project, more than 1,000 man-made pits which had been created in _pāhoehoe_ lava were located and mapped. Several functions were hypothesized for the pits. Among them were quarrying, agriculture, and exploring for lava tubes. Each pit was drawn to scale, associated broken rocks mapped, and notes made of unusual features found, including soil, vegetation, and artifacts. Pebbles of a lightweight, pale brown material were found in several of the pits and brought to the attention of Camara, who was part of the field crew. His initial reaction was that the pebbles were pumice, they were waterworn, and that they did not originate in Hawai‘i. Those comments generated lively evening conversations. Because the _pāhoehoe_ pits were thought to
have been created primarily for agricultural use, one hypothesis was that the pumice was somehow procured and used for purposes related to agriculture. Samples were sent to a lab for chemical analysis and the pumice was determined to have originated outside Hawai‘i.

Subsequently, in the late 1990s, Moniz-Nakamura, Glidden, and Hu, working independently, determined that pāhoehoe pits in the Pōhakuloa Training Area along the Saddle Road, and on the upper slopes of Mauna Loa in Hawai‘i Volcanoes National Park were used as nesting sites by ‘ua‘u (Dark-rumped petrels). This led Camara to think that perhaps the pumice found at Manini‘ōwali was deposited in those pits by seabirds feeding their young.

Recent analysis of the pumice by Sinton demonstrates that some of the pumice has a distinctive white coating of hydrous phosphate, which likely formed when the pumice was in a bird’s crop or gut. This leads us to believe that at least some of the pits at Manini‘ōwali were nesting sites for seabirds such as petrels and shearwaters, and that the pumice was accidentally ingested while the adults fished and then regurgitated when they fed their young.

*Thomas Dye*
In the 1970s and 1980s, looters excavated all of the cultural deposit in many habitation caves along the Kona coast. They kept “good” artifacts, but left behind small and common artifacts and all of the faunal remains in large, partially sorted backdirt piles. Material from backdirt piles at three coastal caves was sieved through 1/8” screen and large collections of vertebrate faunal remains were made. The diverse fauna identified in the collections is compared with smaller collections reported from elsewhere in leeward Hawai‘i Island. It is argued that archaeological investigations of vertebrate faunal remains would benefit from larger collections than typically reported in the literature.

Kahaole on Kauhale: Looking at Surface Residential Patterns in Kekaha
*Maurice Major, Cultural Landscapes Hawai‘i*
In most considerations of settlement space within Hawaiian household clusters, or kauhale, the importance of interpreting feature functions reigns supreme. In practice, however, the data needed to make reliable conclusions come from large excavations that generally occur during data recovery mitigation, which only comes after decisions have been made regarding the fate of cultural resources. Recent detailed mapping of numerous features along the North Kona coast in Kekaha Kai State Park provided an excellent opportunity to look at the household cluster on the basis of evidence typically available in inventory and evaluation phases: surface architecture in its physical context. Data from the ahupua‘a of Kūki‘o, Manini‘ōwali, and Awake’e suggest that careful consideration of intra- and inter-cluster patterns—without attempting particular functional interpretations of components—may reveal information useful to academic and CRM archaeologists. Particular issues addressed with these data include environmental adaptations, spatial and temporal extent of occupation, and the usefulness of the kauhale model in interpreting features.

In Search of the Perfect Archaeological Map: Reflections on Merging Old Tools with the New (and Finding Inner Peace)
*Mary Ann Maigret, DLNR, Division of State Parks*
The basic mapping tasks of the field archaeologist have not changed much over the years but the tools to collect, analyze, and portray geographic data have. Are we making good maps? With a growing number of options available for collecting data and producing maps, some dialog on the relevance of map accuracy and instrument precision could be useful toward defining the purpose of maps in inventory, data recovery, and preservation settings.

During the inventory of Kekaha Kai State Park in Kona, Hawai‘i Island, we succeeded in marrying two mapping methodologies to serve multiple purposes: to record in detail the archaeological features in the park, to create a meaningful framework for interpretation of site complexes, and to provide a foundation for practical management of the archaeological resources. A combination of two data sets, one derived from traditional plane table and alidade, and one derived from differentially corrected resource grade GPS, will succeed in meeting these goals. Our efforts have produced both a set of highly detailed, geo-referenced site complex maps, and a mechanism for objectively evaluating the internal accuracy of these maps. For the field team, however, perhaps the most important outcome was the affirmation that using the plane table creates an opportunity to really see what one is mapping and to connect, in a most personally satisfying way, with the landscapes we study.

**SYMPOSIUM 7: FISHPONDS**

**Restoration of Kaloko Fishpond, Kaloko-Honokōhau National Historical Park, West Hawai‘i Island**

*Rick Gmirkin, Kaloko-Honokōhau National Historical Park*

Kaloko Fishpond has been described as the most massive of the Hawaiian-built fishpond seawalls. Constructed by the 16th century, the *kuapā* is 800 feet long, 25 to 35 feet wide, and 9 feet high. It impounds an area of 11 acres. Kaloko fishpond was specifically claimed by Kamehameha I. The pond was managed and maintained until the 1950s, when it became uneconomical to continue commercial fish production. By the 1980s high surf had reduced the wall to a mass of stones. From 1987 to 1992 mangrove was removed from the pond, and in 1998 restoration began on the south *mākāhā* and *kuapā*. This paper is intended to discuss the history of the pond, current restoration efforts, and future plans. The ultimate goal of this project is to manage Kaloko fishpond using traditional Hawaiian aquacultural practices.

**Moloka‘i Fishponds Revisited**

*Joe Farber*

Hawaiian fishponds, *loko i‘a*, are a unique cultural resource and food production system developed and refined by pre-Western and post-Western contact Hawaiians. It is estimated that there were over 480 fishponds statewide with an annual yield of 1,991,520 lb./yr. There are two general types of fishponds, saltwater and freshwater, with six main styles. The salinity of the water served as an important element determining type of construction as well as what types of seafood that could be raised and their level of productivity. Archaeological studies reveal that the highest frequency of fishpond wall lengths are between 1,200 and 2,000 feet- the average wall containing 33,719 cubic feet of stacked rocks and coral fill. Historical accounts note that, “Making of the large fishponds required the labor of more than 10,000 men.”

Fishponds have declined statewide in importance and value as result of many contributing factors yet many of these *loko i‘a* systems are in restorable condition and can be a vehicle for providing employment, economic opportunity, fisheries enhancement, education and
cultural values for the people of Hawai‘i. Recently there has been a growing movement statewide to restore and reuse these cultural treasures. On Moloka‘i, community-based organizations have restored three fishponds and once again are cultivating fish and other aquaculture products within fishponds. Fishponds are a cultural treasure worth preserving for future generations. Inherent in their design, construction, use and maintenance are the values, mores, skills and traditions of the Hawaiian culture.

SYMPOSIUM 8: ARCHIVAL RESEARCH

Cultural Landscapes and Legal Issues in the Boundary Commission Records
Victoria S. Creed and Kepa Maly (with help from other Waihona ‘Āina Corp. directors, Alexander D. Mawyer, Muriel B. Seto, and Hallett H. Hammatt)
Like the Mahele records the Boundary Commission records are brimming with the details of traditional life, with place names, personal names, catching and gathering practices, cultivation and constructions of mankind, restrictions, taxation and sharing practices. Unlike the Mahele, the Boundary Commission descriptions are a history of the memorialized past that circumscribes the daily lives of the inhabitants of the ahupua‘a. Tales and reminders of other lives and times are attached to the hills, walls, mountain tops, rivers, caves, and sea by place names. There are examples that tell of these boundaries being recounted during rests from cultivation. The accounts also tell us that the entire family group was familiar with the named places, and that knowledge of the boundaries was important as they were guarded from trespass by those from outside the named ahupua‘a. Other areas, where only the larger upland monuments are visible from dwelling and cultivation places, the connecting details were known to the konohiki or haku of the ahupua‘a and by those who used the uplands, such as the bird catchers, canoe makers, quarriers, and religious practitioners. These records span a period from 1862 to 1935, but some testimonies are from persons who were alive at the time Captain Cook sailed into Hawaiian waters, and witnessed the rise of Kamehameha I. This paper is dedicated to Rufus A. Lyman, who more than any other Land Commissioner, let the Hawaiians tell their own stories in their own words.

Mano‘o Nui vis-a-vis “Significance”
Muriel Seto
In 1990, Dr. Matthew Spriggs spoke to the Society for Hawaiian Archaeology regarding the need for archaeologists to recognize our indigenous people’s prior ownership of Hawaiian lands and continuing ownership of their own culture. In 2001, Dr. P. Bion Griffin, in a well-developed, multi cultural argument urged professional recognition of living Hawaiians’ rights to determine for themselves the “significance” of traditional sites based on their own criteria, unlimited by archaeological determinants. This paper will examine some difficulties Hawaiians may experience in trying to reclaim their birthright, given more than a 200-year history of overlain cultural prejudices and practices.

SYMPOSIUM 9: ARCHAEOLOGY IN THE PACIFIC

Beads, Baubles and Bangles - NOT...
Toni Han Palermo
Imagine if you will, a village where men folk are chipping away at a large piece of wood carving out a canoe, while others are returning with the catch of the day or grating coconuts as women
pound *tapa* and gather shells from the nearby reef and children frolic in the calm seas. Well, it happened over a thousand years ago at two sites on the small idyllic island of Huahine in the Society Island archipelago.

Over 5,000 artifacts have been uncovered from two wet sites of Vaitoʻotia and Faʻahia, on Huahine Island in the leeward portion of Society Island chain, some 100 miles northwest of Papeete on the island of Tahiti. Better known for the large and significant specimens of canoe planks, cordage, bailers and smaller wooden artifacts that were discovered there, the sites also yield smaller artifacts that supported the construction of intra-island canoes. Discovered nearly 30 years ago, Vaitoʻotia and Faʻahia still remain as premiere sites where artifact variability as well as one-of-a-kind specimens were found. While it appears that canoe building was a major activity for the village at that time, 800-1200 years ago, the artifacts left behind such as a variety of adzes, fishhooks, graters, and others, reveal a vibrant culture active in manufacturing and domestic chores. To my knowledge, no other site has ever yielded unique items such as a hafted adze, a bow, arrows, harpoon points, and *tapa* beaters as well as lots of fishhooks and pieces of netting which have been preserved for a thousand years.

Besides wooden specimens that have become synonymous with these sites, a review of domestic tools and ornaments, with an emphasis on the use of pearl and terebra shell and turtle bone will be presented.

**Archaeological Research: Mataʻireʻa Project, Te Ana Complex, Zone I, Area 2**

*Eric Komori*

This paper summarizes the results of archaeological excavations conducted in Maeva Village on the island of Huahine, French Polynesia. Maeva is known for the large numbers of well-preserved prehistoric sites located in the area and as the traditional residence of the chiefs of the island.

A series of archaeological studies in the area by Sinoto has identified concentrations of spatially associated sites that have been grouped into site complexes. Excavations conducted on sites in the interior areas of the complex indicate that the area may have been occupied as early as AD 900, though most of the sites are associated with later prehistoric periods.

Research in the coastal part of the complex, however, has been problematic. The burrowing of land crabs has displaced subsurface deposits and the water table in the area is very high, often less than 30 cm below the ground surface. In general, this situation exists throughout the Society Islands and relatively few coastal sites have been investigated in this region. The results of the present research show, however, that in spite of the extensive disturbance of the sediment layers, important archaeological and cultural materials have been preserved. Artifacts that have been recovered *in situ*, during the present work, include a large number of well-preserved water logged wood objects such as house posts, planks, and a tapa beater; a variety of organic materials, including pandanus keys and coconut shell; and numerous stone and shell tools.

**A Typological Sequence of Tahitian marae and Observations of Recent marae Restoration Programs in the Society Islands**

*Yosihiko H. Sinoto, Bishop Museum*

In 1933, Kenneth Emory published a monograph entitled, *Stone Remains in the Society Islands*. In his analysis of the *marae* (traditional religious sites) of the islands, Emory found that the *marae* of the Windward and Leeward islands of the group could be separated into the Coastal,
Intermediate, and Inland “types.”

While I was conducting a stabilization project for marae in the Society Islands, I became intrigued by the stylistic differences exhibited by the Coastal Type of marae in the Windward Islands and the Leeward Islands. After surveying a site complex comprised of more than thirty, unrecorded marae atop Mata‘ire’a Hill on the island of Huahine, I was able to propose a typological sequence of marae in the Society Islands.

Recent site restoration work conducted in Opoa (Ra‘iate‘a Island) and in Maeva (Huahine Island) by the Tahiti Department of Archaeology has been heavily criticized by the respective local communities. What happened in Opoa and Maeva will be examined in this paper and some steps to guide a proper restoration program will be discussed.

SYMPOSIUM 10: RECENT RESEARCH IN AMERICAN SAMOA

Chronology in Samoan Archaeology: An Assessment after Forty Years of Research
Julie M. E. Taomia, American Samoa Historic Preservation Office
In recent years archaeologists have reviewed and critiqued chronological sequences in Polynesia. Some radiocarbon dates have been found to be faulty. The Samoan archipelago however has not been included in these assessments. A substantial number of early radiocarbon dates in Samoa have been used to develop a chronological sequence for the archipelago were run through Gakashuin Laboratories at a time from which results are questionable (see Kirch 1975, 1984; Spriggs & Anderson 1993). This paper will critique the available radiocarbon dates for the Samoan archipelago, and assess the effects on Samoan chronology of eliminating the Gakashuin dates.

Preliminary Studies of the Samoan Plainware Assemblage from Tualauta County, Tutuila Island, American Samoa
Mike T. Carson
Preliminary results are disclosed concerning a collection of more than 2500 undecorated earthenware ceramic sherds from inland habitation sites in Tualauta County, island of Tutuila, American Samoa. This assemblage presents an excellent opportunity to address a number of research questions concerning the Samoan Plainware ceramic tradition. Research topics include the association with different types of sites, the characterization of vessel forms, and the identification of possible changes over time in the ceramic sequence.

Additional Evidence of a Late Ceramic Period in American Samoa
James R. Moore and Joseph Kennedy
Preliminary test excavations at the villages of Aganoa and Utumea on the island of Tutuila reveal the presence of pottery use and manufacture that date between the 9th and 16th centuries AD. This is during a period in Samoan history that Davidson and others suggested was devoid of any pottery evidence. This brief paper is submitted, in part, as collaboration of evidence presented by Clark, et. al in their 1997 work on finds in ‘Aoa and adds to a growing body of evidence that suggests the Samoan pottery tradition survived longer than formally thought.

Archaeological Excavation and Monitoring at Faga: An Abandoned Village on Ta‘u Island, Manu‘a, American Samoa
William Shapiro, Paul Cleghorn and Lisa Shapiro, Pacific Legacy, Inc.
Recent archaeological excavations at the coastal village of Faga on the island of Taʻu, Manuʻa, American Samoa are discussed and illustrated by color slides. These testing, data recovery and monitoring excavations were conducted by Pacific Legacy, Inc. and Scientific Consultant Services/Cultural Resource Management Services, Inc., on behalf of the U.S. Army Corps of Engineers, Pacific Ocean Division pursuant to the Taʻu Road Improvement Project.

Based on the results of a 1995 surface survey for a proposed new road alignment through Faga, it was determined that improving the existing road through the site would provide the least amount of impact to the resource. In 1997, two excavation phases occurred at Faga in advance of the road improvement project. Subsurface cultural deposits measured 2.5 meters deep, some being well stratified and containing abundant shell and bone midden. Radiocarbon dates were obtained spanning the time-period AD 665 to 1890. In 1998, additional excavations were conducted which identified subsurface burial features at Faga. Of a total of 18 units excavated during these various work phases, four (22%) contained unmarked burial features. In 1999, monitoring and salvage excavations occurred at Faga during the initial road improvement construction. Sixteen subsurface features were identified, including two possible lime-making feature, seven ʻili ʻili pavements, and nine burial features.

Evidence of war dead is suggested by four adult male burial features, and is explicated by informant data, missionary records, and legendary accounts of a battle which took place between Faga and Taʻu villages. Radiocarbon data suggest that this battle took place sometime between AD 1400 to 1650. Discussion also touches upon the lack of ceramic assemblages and the importance of assessing the effects of colluvial deposition on the archaeological structure of the Faga site.

Archaeological Surface Remains and Feature Complexes at Faga: An Abandoned Village on Taʻu Island, Manuʻa, American Samoa
Lisa Shapiro, William Shapiro and Paul Cleghorn, Pacific Legacy, Inc.
The results of an archaeological survey through a portion of the coastal village of Faga on the island of Taʻu, Manuʻa, American Samoa are discussed and illustrated by color slides. The investigation was conducted by Pacific Legacy, Inc. on behalf of GMP and Associates, Inc., and the American Samoa Power Authority pursuant to the Taʻu Road Improvement Project.

This initial work in 1995 involved an intensive surface survey of a proposed new road alignment through the abandoned village of Faga, previously described as among the oldest village in all of the Samoan Islands, traditionally and mythologically. The survey identified twenty-one feature complexes or concentrations of surface structural remains along the proposed road alignment. These complexes are composed of 106 surface archaeological features including evidence of 37 fale, 42 burial monuments, 14 terraces, 2 enclosures, 9 rock walls, one rock alignment and one abandoned road. In addition to describing the various feature complexes and their components, this paper summarizes the previous archaeological investigations which have occurred at Faga and discusses the field methods employed during the survey and the ethnographic information provided to us by our rnatai crew members. Due to the impacts which would have occurred to existing plantation areas and the large number of features and potential burials that would be disturbed by the new road construction, an alternative to the new road alignment was eventually selected in which the existing road through the site was improved.
16th Annual SHA Conference, Windward Community College, Kāne‘ohe, O‘ahu, October 24-26, 2003

SYMPOSIUM 1

Ua Mau Ke Ea O Ka ʻĀina I Ka Pono: Kaniakapupu as a Living Legacy
Session Chair: Lynette Cruz, The Living Nation
Participants: Mel Kalahiki, Malama Kaniakapupu
Dr. Kekuni Blaisdell, Ka Pakaukau
Gerard Jervis, Esq.
Scott Kekuewa Kikiloi, Anthropology Dept, UH Mānoa

This will be a panel discussion on recent efforts to bring life to an archaeological site – Kaniakapupu, the summer house of Kamehameha III. The discussion will focus on how Kaniakapupu has become a vehicle for revitalizing Hawaiian culture through community participation and restoration. Mel Kalahiki is chair of Malama Kaniakapupu; Gerard Jervis is an attorney working with the organization to protect Kaniakapupu and associated areas, including burial sites; Kekuewa Kikiloi is a graduate student and archaeologist; Kekuni Blaisdell is a long time resident of Nu‘uanu, who is knowledgeable about Kamehameha III’s history, why he uttered the words Ua Mau Ke Ea O Ka ʻĀina I Ka Pono (the state motto), and how those words related to this important site. The discussion will be illustrated with selected images.

SYMPOSIUM 2

Stewardship of Hawaiʻi’s Cultural Resources
Session Chair: Martha Yent, Hawaiʻi State Parks

This session will have some of the programs created to promote the care and preservation of Hawaiʻi’s cultural resources. These programs reflect a range of projects, including education and interpretation, restoration, and regular site maintenance.

E Mālama no kēia mua aku. Preserving Hawaiʻi’s Past for the Future
Martha Yent, State Parks Interpretive Program

Cultural sites are a legacy of our past for those of the future, and to insure the continuation of this legacy we must be effective stewards, managers, and protectors of Hawaiʻi’s fragile and irreplaceable cultural resources. While archaeologists conduct the research and document these cultural sites and make recommendations about which sites should be preserved, much of the long-term responsibility for the care and management of cultural sites falls to government agencies, landowners, communities, and Hawaiian organizations. This paper will introduce the concept of stewardship as it relates to Hawaiʻi’s cultural and archaeological sites and explore the goals of stewardship, identify what stewards do, and ask the question “Who should be stewards?” The curatorship program within the Department of Land and Natural Resources,
Division of State Parks will be presented as an example of a stewardship program for cultural sites with the state park system.

**Nu‘alolo Kai: The Continuing Epic of Community: Archaeology on Kaua‘i’s Remote Nā Pali Coast**

*Alan Carpenter (Hawai‘i State Parks) and Sabra Kauka (Nā Pali ‘Ohana)*

Nu‘alolo Kai is a focal point of the State Parks Archaeology Program. Empowered by their formal curatorship responsibilities, the Nā Pali ‘Ohana progresses towards achieving the goals of protecting and documenting the fragile archaeological legacy of this sacred place. Members of the ‘Ohana and State Parks will share their preservation efforts.

**Kō Kōkou Kuleana: Stewardship at Keaiwa Heiau**

*Lahela Perry, UH Mānoa*

PA‘I Foundation is the Pua Ali‘i ‘Ilima Halau’s non-profit organization under the direction of Kumu Hula Victoria Holt-Takamine. Kumu Takamine is a long time resident of ‘Aiea. She has been visiting Keaiwa Heiau over a 20-years period. During this period, there has been an increase of inappropriate activities at Keaiwa Heiau. A primary goal of the PA‘I Foundation is to perpetuate and maintain Native Hawaiian traditions and cultural practices. To meet this goal PA‘I has recently established curatorship of Keaiwa Heiau with Hawai‘i State Parks in order to begin to restore the heiau to its appropriate cultural use. This paper will explore how Keaiwa Heiau is our collective kuleana.

**Mālama a Kawai Nui**

*Dr. Charles Pe‘epe‘a Makawalu Burrows*

Kawai Nui Marsh, Hawai‘i’s largest wetland, is located in the ahupua‘a of Kailua and Ko‘olau District of O‘ahu. Carved out of the bowels of the Ko‘olau caldera eons ago and inundated by primordial ocean waters, it was a brackish water lagoon when the first Polynesians/Hawaiians settled on its ancient shoreline around 1500 years ago. In time, its waters were transformed into a loko wai (inland fishpond) and intensive lo‘i kalo (wetland) and kula (dryland) farming took place within the ahupua‘a, making it mōmona (protective) and able to sustain an increasing population. Prominent heiau and other structures were constructed, and Kailua became a seat of power for the ruling chiefs. However, with the decline in population after first European contact and environmental impacts on the natural and cultural resources, Kawai Nui became degraded. Heeding the call of Hauwahine, Kawai Nui’s spiritual guardian, community, environmental, and governmental groups, as in ancient times, united to protect, mālama and restore the health of Kawai Nui and the Kailua Ahupua‘ā.

**ʻIke ʻĀina: Native Land Trust**

*Tom Lenchanko (ʻIke ʻĀina) and Fred Cachola*

The goals of the newly formed land trust organization called ʻIke ʻĀina are education, stewardship of land, and the growth of the cultural “practitioner.” This paper will introduce ʻIke
ʻĀina, its statewide mission, governance structure, and community projects. The paper will also explore the “what, how and why” for participation in the stewardship of Hawaiʻi’s cultural sites.

**SYMPOSIUM 3: PROFESSIONALISM IN ARCHAEOLOGY**

*Session Chair: Michael Dega, Scientific Consultant Services*

Professionalism and ethics/standards issues pertaining to local, national, and international archaeological work have moved far into the public realm in recent times. On a local level, contemporary debates on rules and practices for conducting archaeological work in Hawaiʻi that benefit both the discipline and the public are ongoing. This panel seeks to open discussions on some of the pressing issues related to the discipline in the state, from reviewing ROPA standards to evaluating guidelines under which archaeologists conduct work in the state. Panelists, selected from a range of archaeological backgrounds and experiences in the state, will each open with brief remarks about one or more of these issues.

The audience is encouraged to engage the panelists through comment or question in what is being promoted as an exchange of ideas to both evaluate and foster increased professionalism in Hawaiian archaeology. Panelists include Dr. Sara Collins, Dr. Tom Dye, Dr. J. Stephen Athens, Dr. Michael Graves, Drs. P. Bion and Annie Griffin (pending availability), and Dr. Bertell D. Davis, among others. Both panelists and audience members are encouraged to review the Register of Professional Archaeologists’ website prior to the conference.

**SYMPOSIUM 4: KALAUPAPA ARCHAEOLOGY**

*A Brief History of NPS Involvement and Cultural Heritage Management at Kalaupapa, Molokaʻi*

*Jennifer Cerny, Chief of Cultural Resources, Kalaupapa National Historical Park*

Established in December of 1980, Kalaupapa National Historical Park, located on the island of Molokaʻi, Hawaiiʻi, is a unique component of the U.S. National Park Service. Approximately 11,000 acres in size, backed by the world’s largest sea cliffs, and rimmed by rocky ocean shores, the peninsula and associated valleys have served local communities for at least 1000 years. Endowed with a National Historic and National Natural Landmark designations, geological and marine resources, endangered Hawaiian flora and fauna, and countless intact archaeological sites, the park remains home to a group of once-active Hansen’s Disease (leprosy*) patients ordered by law as early as 1865 to live out the rest of their lives in this place of great geographical isolation. Today, the National Park at Kalaupapa functions as a resident co-managing agency alongside the State of Hawaiʻi Department of Health, which, while administering to patients’ medical and living needs, maintains primary jurisdiction. Embedded within this resident patient community, operating primarily under cooperative and lease agreements, and holding our annually for the “Christmas in July” Barge Day, circumstances at Kalaupapa have made for a uniquely challenging management situation for the National Park Service.
In an attempt to lessen the stigma attached to the terms “leprosy” and “leper” and to advocate the quest for dignity and understanding regarding both former and active patients world-wide, the term Hansen’s Disease has gained global recognition in contemporary times. Norwegian Dr. Gerhardt Henrik Armauer Hansen’s discovery of the bacillus (*Mycobacterium leprae*) in 1873 led to the eventual finding of a cure for the disease in the early 1940s.

**Introduction: Overview of Kalaupapa National Historic Park Cultural and Natural Resources**

*John Holson, Pacific Legacy, Inc.*

Located on the windward side of Moloka‘i, the Kalaupapa Peninsula, until recently, has not been the subject of as intensive or systematic archaeological study as other windward areas of the Hawaiian Island archipelago. This is due, in part, to the natural isolation of the peninsula, restrictions on access since the 1860s, and historical focus on the post-contact history of the Hansen’s Disease settlements of Kalawao and Kalaupapa. The park itself contains a mosaic of biotic, hydrologic, and geologic features including the Kalaupapa Peninsula, Wakolu, Waihānau, and Wai‘ale‘ia Valleys, and the Nihoa landshelf which were exploited and occupied by pre-contact inhabitants of the area. While sporadic archaeological research has been undertaken at Kalaupapa beginning in the early 1900s it has only been within the last 15 years that the diversity and types of archaeological sites present within the park has been identified. This paper will provide a summary of archaeological investigations beginning in the early 1900s through 1995.

**Archaeological Investigations at Kalaupapa National Historical Park, 2000**

*P.V. Kirch, UC Berkeley*

During August 2000, archaeological investigations were made in several portions of Kalaupapa National Historical Park, including the peninsula, Waikolu Valley, Wai‘ale‘ia Valley, and Nihoa landshelf. Reconnaissance survey was stratified by the different environmental zones in order to assess the range of variation in the archaeological landscapes to be found within the Park boundaries. More than 100 new sites were discovered and recorded. In addition, renewed fine-grained excavations were carried out at the Kaupikiawa Rockshelter (“Pearson’s Cave”), including new radiocarbon dating. Finally, a thorough analysis of the mid-19th century Mahele land records was made in connection with the archaeological survey.

**Ancient Communities and Agricultural Development on the Kalaupapa Peninsula, Moloka‘i Island, Hawai‘i**

*Mark D. McCoy, UC Berkeley*

Despite being home to the largest dryland agricultural field system in the Hawaiian Islands outside of West Hawai‘i Island, and nearly one hundred years of visits by archaeologists, the Kalaupapa Peninsula of Moloka‘i Island as a whole has remained remarkably unexamined. This paper describes recent surveys and test excavations conducted as part of ongoing dissertation research by the author that takes the peninsula’s three community territories (*ahupua‘a*) as the scope of research. Fieldwork has been built directly upon other work reported in the session and significantly aided by a National Park Service sponsored “overview and assessment” of previous research in the area. Future analysis – including Geographic Information Systems modeling –
will be centered on two main topics: (i) the formation and persistence of ancient communities and (ii) the development of the Kalaupapa Agricultural Field System.

**Ethnobotanical and Archaeobotanical Research at Kalaupapa National Historical Park, 2000**

*James Coil, UC Berkeley*

In this paper I report on two aspects of the UC Berkeley research conducted at Kalaupapa National Historical Park in the summer of 2002. First, during archaeological survey, observations were made regarding the distribution of still-living plans and trees associated with pre-contact and post-contact economic activities, and the relationship of these plants with sites of archaeological and historical interest. Second, taxonomic identification and radiocarbon dating of archaeological charcoal recovered from Kaupikiawa Rockshelter and from Waikolu Valley have been used to gain information about pre-contact vegetation in these areas.

**SYMPOSIUM 5: KAHOʻOLWE ARCHAEOLOGY**

**Integrating Historic Preservation and Ordnance Clearance: The Island of Kahoʻolawe, Hawaiʻi**

*Hallett Hammatt, Cultural Surveys Hawaiʻi*

The largest and most complex ordnance clearance project in the world has taken place over the past five years on the 45 square mile island of Kahoʻolawe, a military target range for 50 years following the onset of World War II. The intrusive activities associated with ordnance clearance pose great risk to the nearly 3,000 historic properties. Protection of these properties has been accomplished by a complex sequence of procedures, many foreign to general archaeological practices, but completely blended into the strictly regulated ordnance clearance activities. This project is a model for integrating site protection into future ordnance clearance operations.

**Mitigating Impacts to Archaeological Sites with Live Ordnance Kahoʻolawe Ordnance Clearance Project**

*Joseph Jiminez, Cultural Surveys Hawaiʻi*

Historic preservation activities have been an integral part of the Kahoʻolawe Island Ordnance Clearance Project and have been a major source of unique archaeological challenges and experiences. Historic preservation activities primarily focused on the discovery and documentation of historic properties and their subsequent protection during the clearance activities. Most of the clearance activities were related to the discovery of both unexploded ordnance (UXO) and the remains of exploded ordnance. UXO items deemed unsafe to move are “cleared” with a procedure called Blow In Place (BIP). The discovery of UXO items within or in close proximity to historic properties presents unique situations for the archaeologist responsible for their protection. The design and implementation of procedures to mitigate for potential or certain adverse effects to historic properties illustrate the challenges involved.

**Historic Kahoʻolawe Ranch and the Kahoʻolawe Island UXO Clearance Project**
Tanya Lee-Greig, Cultural Surveys Hawai‘i
Kaho‘olawe Ranch, after 83 years of operation, was abandoned in a single day following the attack on Pearl Harbor. What remains today, despite subsequent use of the island for military ground training and aerial bombardment from 1941 to 1990, is a near complete record of historic ranching virtually “frozen in time.” The center of operations for the Kaho‘olawe Ranch at Kūhea Bay, scheduled for sub-surface UXO clearance during the Kaho‘olawe Island UXO Clearance Project, presented the challenge of safe and efficient removal of all ordnance related materials while retaining the archaeological integrity of a historic ranch complex. This paper will look at the technology and methods used to mitigate the sub-surface clearance of ordnance related materials from the center of operations for Kaho‘olawe Ranch.

SYMPOSIUM 6: WAI‘ANAE ARCHAEOLOGY

Introduction
Ross Cordy, UH West O‘ahu
The aim of this session is to provide information to the public and to professional archaeologists on recent archaeological work and findings along the west coast of O‘ahu. Topography and land units (ahupua‘a) are briefly discussed. Mention is made of the three major archaeology survey projects covered in this session – in Nānākuli, Lualualei, and Wai‘anae – as well as smaller projects. Current and pending projects are also noted. Last, it will be emphasized that one of the striking patterns of this coastline is that immense archaeological landscapes still survive – the largest and most intact on O‘ahu.

Nānākuli’s Settlement: The State Historic Preservation Division’s Nānākuli Survey of the Early 1990s
Ross Cordy, UH West O‘ahu
From 1988-1991, the State Historic Preservation Division (SHPD) conducted an archaeological survey of undeveloped Hawaiian Homelands in Nānākuli Valley – directed at different times by Bruce Masse, Nathaniel Pak, Patrick McCoy, and myself. The survey covered the entire upper valley and sections of the colluvial slopes at the base of the ridges in the lower valley. Twenty-four radiocarbon dates were processed, along with charcoal species, pollen, and stone sourcing analyses. The detailed technical report of this work has been delayed for years and is being produced this school year. Preliminary findings on agricultural patterns were presented in the past, a short public summary of the project exists, and a brief report summarizes site types, patterns, and significance. This presentation looks at some of the detailed findings related to housing patterns and associated dryland fields, findings from the 1988-1991 work and from more recent work by Nanakuli High School summer classes. The findings’ context within the greater Wai‘anae region is briefly noted.

A Recent Find of A Large Adze Quarry Site in Nānākuli Valley
Moana Lee, UH Mānoa
The name Nānākuli is widely considered to refer to people looking at their knees or pretending to be deaf when weary travelers approached so that they did not have to offer the stranger food or
water. The notions existed that Nānākuli was sparsely inhabited and that a limited amount of archaeological sites were to be found in the valley. However, during the 1988-1991 SHPD survey of the valley, we found an unexpected amount and size of structures that attested to a larger population. At many of the sites, we found cores, flakes, and stone tools of high quality basalt. We finished that survey with unanswered questions such as: Where did the stone come from and what was valuable enough to be traded for the stone? What would account for the types and amount of structures found in the valley? The discovery of a sizable quarry may profoundly change the way we view Nānākuli Valley in the future.

Traditional Hawaiian Men’s Houses and Their Sociopolitical Context in Lualualei
Boyd Dixon (Pacific Consulting Services, Inc.), Dennis Gosser (Pacific Consulting Services, Inc.), and Scott Williams (State of Washington SHPO)
Recent archaeological survey and testing in the Naval Magazine Lualualei Headquarters Branch by AMEC Earth and Environmental has revealed several distinct clusters of pre-Contact sites at the base of the Wai‘anae mountain chain on leeward West O‘ahu. Each of these clusters contains at least one large residential complex or kauhale, often consisting of a walled habitation compound with a possible men’s house or hale mua nearby. Such complexes are here interpreted as residences of konohiki who were local managers of the surrounding farmlands or ‘ili ʻāina. Subsurface testing and radiocarbon dating of the men’s houses and surrounding structures indicates the earliest hale mua differs from the rest in size and shape, and dates to the 15th century AD. The remaining hale mua in Lualualei all date after AD 1650 and were elongated masonry terraces, often twice the size of nearby residential structures and of exceptional quality construction. K-means analysis of regional settlement pattern data demonstrates the existence of eight distinct site clusters or local residence groups, with Ulehawa and Halona containing two clusters separated by elevation. Rank-size analysis of permanent habitation and ritual structures in Lualualei demonstrates that each of these eight groups with their hale mua are commensurate in function, although the Ulehawa/Halona basin and Nioi‘ula Heiau appear to have had primacy over the remainder of the residence groups. The implementation of a standardized architectural style for hale mua in each site cluster by the late 17th century AD is hypothesized to parallel the formalization of non-local chiefly control over leeward labor and resources after cohesion of the O‘ahu island polity.

Houses and Intensive Cultivationi (Irrigated and Dryland): Archaeological Work in Wai‘anae Valley
Ross Cordy, UH West O‘ahu
Wai‘anae Valley was the demographic, economic, religious, and political center on the west coast of O‘ahu in pre-European times. The author conducted a detailed reconnaissance survey of the 870-acre Waianae Valley Ranch in 1998-2000, and for six years he has overseen survey work, mapping, and excavations done by Wai‘anae High School students under him and Moana Lee. He has also taught four short field classes in the valley sponsored by UH West O‘ahu. Work has now covered a sizable portion of the upper valley with its many small year-round tributaries and the upper end of the lower valley which is watered only by intermittent stream flow and rainfall.
The entire settlement pattern of this extremely important valley is virtually intact. Waiʻanae with its year-round stream flow to the sea at Pōkaʻi Bay and the coastal spring-fed marsh of Kamaile had vast irrigated kalo lands – the only such lands of any scale in leeward west Oʻahu. Our work in the upper valley shows these irrigated kalo lands covered even more acreage than once estimated. Additionally, the upper lower valley has an extremely unusual, intensive dryland terrace system covering perhaps 400 acres. These intensive agricultural fields are associated with dense permanent housing patterns in the upper valley, which was also the case in the lower and seaward portions of the valley. This supports population estimates for the valley of 2,000 – 2,500 people. This paper discusses the intensive agricultural feature and housing patterns, as well as wider concerns of population growth and intensified subsistence.

**Large Heiau and Power: Major Heiau in Waiʻanae Valley**

*Ross Cordy (UH West Oʻahu), Aki Sinoto (Aki Sinoto Consulting, Inc.), Deona Naboa (Northern Illinois University), and Margarita Ortega (Leeward Community College)*

The State Historic Preservation Division’s survey of Waiʻanae Valley Ranch found two new major heiau (over 650 square meters in area) at the interface of the upper and lower valleys in Waiʻanae, and smaller heiau and shrines have been identified by SHPD staff, Waiʻanae High School students, and UH West Oʻahu students. Clearing and detailed mapping of one major heiau (Site 5810) was done by A. Sinoto and M. Ortega and of Punanaʻula Heiau by R. Cordy and D. Naboa. This presentation looks at recent findings and briefly re-evaluates Green’s analysis of the district’s heiau done twenty years ago. Our work shows Waiʻanae Valley contained even more major heiau than previously thought – re-emphasizing its religious importance along the leeward Waiʻanae coast. Also, our work and archival work suggests several social levels of religious structures existed – family shrines, larger ʻili or multi-ʻili structures, and major heiau likely associated with the ruler and higher chiefs of the Oʻahu and later kingdoms.

**The Archaeology of the Mākua Military Reservation**

*Scott Williams, State of Washington SHPO*

A brief overview of the archaeology and history of military use in Mākua Valley is presented, and the presence of two large occupation complexes in the middle elevations of the valley and their significance are discussed. These mid-level occupation complexes, located today in the portion of the valley that lacks any permanent water sources, suggest that in the past there were additional water sources within the valley and that Mākua may have once supported a much larger population than early historical records and previous archaeological investigations would suggest.

**Preserving Sites Along the Waiʻanae Coast: The Hawaiian Community and Archaeologists Working Together**

*Ross Cordy, UH West Oʻahu*

Each of the valleys discussed here today have vast archaeological landscapes surviving, as well as important isolated sites. Preservation goals are to preserve sizeable parts of these landscapes as well as individual sites. These goals, in many cases, are being developed and implemented by
local Hawaiian community organizations in consultation with archaeologists. In Waiʻanae and Nānākuli, these plans involve educational components linked with the local schools, as well as long-range cultural concerns. Different Hawaiian groups are involved in different areas. A brief overview of some of these developing plans is presented.

**SYMPOSIUM 7: HAWAI‘I ISLAND ARCHAEOLOGY**

**Assessing Activity Areas on Pāhoehoe Surfaces in Kaloko-Honokūhau National Historical Park, Island of Hawai‘i**

*Stanley C. Bond, Jr., (Kaloko-Honokūhau National Historical Park) and Richard Gmirkin (Pacific Cooperative Studies Unit, UH Mānoa)*

Archaeological surveys and petroglyph recording projects in Kaloko-Honokūhau National Historical Park (KAHO) have noted a variety of activity areas on pahoehoe surfaces. They include battered areas, rough and smooth basins, large and small cupules, chipped cracks, quarry areas, and polished slicks. Perhaps due to the non-portable nature of these artifacts they have received limited attention from archaeologists. The purpose of this paper is to call for more detailed recording of these primary artifacts and point out the need to develop a classificatory scheme and typology for these activity areas. Examples of activity areas from KAHO will be used to illustrate this presentation.

**Post-Contact Rock Art as a Portal to the Past**

*Ed Stasack and Diane Stasack*

Several loci of petroglyphs from Kaloko-Honokūhau National Park and another group in North Kona support the contention that post-contact rock art can be a portal to improving the understanding of pre-contact rock art in Hawaiian culture.

Petroglyphs continued to be made for about one hundred and fifty years after contact. Names, words, dates, and western instruments of power such as cannon, muskets, and sailing ships were depicted, often side-by-side, with traditional images. Over time anthropoid figures increased in size but the earlier linear body figure remained statistically smaller than the later triangle body types.

**New Approaches in Preservation, Interpretation, and Dating of Petroglyph Sites in Hawai‘i**

*Robert B. Rechtman, David S. Whitley, Johannes H.N. Loubser, Joseph M. Simon, Devin Haugen, and Ronald I. Dorn*

Two concentrations of petroglyphs were recorded during a recent study in the mauka portion of Kaʻūpūlehu Ahupua‘a on Hawai‘i Island. Although recorded as distinct administrative sites, both appear to be temporarily and functionally interrelated. Slated for preservation, the sites were documented in detail and a condition assessment was completed. The condition assessment formed the basis for determining appropriate site protection measures, and established a comparative baseline for long-term monitoring, a program that includes tracking structural deterioration of the ground surface and photo-documenting degradation caused by natural weathering and animal and human agency. An analysis of the panels and images combined with ethnographic data, including information on the symbolic importance of rock art sites and the Hawaiian system of gestural symbolism, provides a foundation for interpreting the nature of the
sites and the meanings of the motifs. To place the sites within a temporal context, a direct dating technique is being refined that measures the development of a silica glaze deposited in subsurface micropores of the pāhoehoe in which the petroglyphs have been created. It has also been possible, using Accelerator Mass Spectrometry, to directly date carbon-containing material (oxalates) trapped under the silica glaze.

**Red Boulders: A New Feature Type?**
*Tom Dye, T.S. Dye & Colleagues, Archaeologists, Inc.*
Recent work in North Kona identified boulders that have been modified to expose an interior surface of red, ropy lava. This paper describes the geological formation of the boulders, reviews evidence for how they were modified, and explores their relationships to traditional Hawaiian settlements along the coast. Alternative hypotheses on their function in traditional Hawaiian culture are proposed.

**Hōnaunau: 19th Century Settlement and Changing Perspectives on a Place of Refuge**
*Myra Tomonari-Tuggle, International Archaeological Research Institute, Inc.*
The community of Hōnaunau was once the residence of high chiefs and priests, evidenced by a complex of heiau, hōlua slides, and most significantly, the puʻuhonua on the south side of Hōnaunau Bay. After western contact, the community lost its allure as a place of chiefly residence and gradually evolved into a quiet backwater of leeward Hawai‘i.

The puʻuhonua, while it lost its *raison d’être* with the collapse of the traditional religious system, maintained a certain stature. Initially, its main heiau remained relatively untouched, its contents still intact, its enclosing fence of carved idols still standing. But in 1829, Ka‘ahumanu made a statement for Christianity by ordering the structure dismantled. After that, walls were built for animal pens within the refuge, a school rose just outside the refuge walls, and the steeple of the Protestant Church loomed over the remains of interior temples.

By the end of the century, only cultural memory and impressive architecture spoke to the importance of the place. But these drew local residents and visitors from afar, who photographed their tourist images on refuge walls and temple platforms. Reconstruction was underway as the new century began, the start of a preservation movement that ultimately culminated in the creation of a national historical park in 1961.

**Did Extraterrestials Leave Crop-Marks in the Kona Field System?**
*Dave Tuggle, International Archaeological Research Institute, Inc.*
This paper is an exercise in escapist archaeology. It gathers indisputable facts concerning the habitation and agricultural sites of the Kekaha region of Kona, Island of Hawai‘i, and submits them to suspicious analytical autopsies. Comparative models are discussed that emphasize what we know, what we do not know, and what we may only dream.

**Battles on the Big Island: Round 1**
*Tom Wolforth, Scientific Consulting Services, Inc.*
Histories of Hawai‘i indicate that there were many battles on the island. The locations of only a few of these are currently identified. Battlefields, and their associated elements such as campl
and burial places, are underrepresented in the archaeological record. This paper introduces by ongoing research into determining archaeological manifestations of battle-related activity.

SYMPOSIUM 8: HAWAI‘I AND PACIFIC GENERAL SESSION

Austronesian Origins in Southeast China
Barry V. Rolett, UH Mānoa
Austronesian speakers emerged from a homeland in China or Island Southeast Asia around six thousand years ago. Their descendants effected an extraordinary series of migrations culminating in the systematic discovery and colonization of remote landfalls as farflung as Easter Island and Hawai‘i. Evidence suggests Austronesian origins coincided with the emergence of a southeast China interaction sphere spanning the Taiwan Strait. The geological sourcing of stone tools offers a new approach in this investigation.

A New Synthesis in Oceanic Domestication: The Symbiotic Development of Loko ia Aquaculture in Pre-Contact Oceania
Kekuewa S. Kikiloi, UH Mānoa
Oceania constitutes over one-third of the earth’s surface, and is the location of some of the world’s richest aquatic resources. Here, a combination of food-production technologies and strategies of domestication arose due to the limited amount of arable land and relatively impoverished terrestrial faunal resources. In its basic definition, domestication represents a symbiosis between humans and plant species. Likewise, in Oceania, traditional aquaculture can be conceptualized similarly as an evolutionary process that incorporates the domestication of aquatic plant and animals to produce a system which increases the carrying capacity of the environment for the aquatic plants and animals selected, and which in turn can support humans. This research examines aquaculture and a number of other traditional marine procurement strategies in the Oceanic world and adopts a broader definition of this biological process by outlining the various components that comprise this relationship. This paper looks at the development of this symbiotic relationship humans have as they acquire control and management of four different aspects of the production system: protection; growth; reproduction; and harvesting.

Introducing Nautical Insights from Ethnographic Voyaging into the Reconstruction of Marshall Island Prehistory
Joe Genz, UH Mānoa
Ethnographic and experimental voyaging have strengthened archaeological and linguistic inferences about Oceanic prehistory. Voyaging conditions, sailing technology, and methods of navigation are central to problems and issues of colonization and inter- and intra-archipelago interaction. In this paper, I draw from ethnographic studies of voyaging to introduce nautical insights into the reconstruction of Marshall Island prehistory. I suggest that the unique navigational system of the Marshall Islands, which depends on the ability to remotely sense land through the patterned ways islands disrupt ocean swells, offers clues to variations in the degree of prehistoric intra-archipelago voyaging.
Preliminary Results of Archaeological Fieldwork at Rurutu, Austral Islands, French Polynesia.
Robert Bollt, UH Mānoa
This discussion outlines the preliminary results of my field season during the summer of 2003 on Rurutu, Austral Islands, French Polynesia. Topics include the island environment, past archaeological work, the basic layout of the excavation, what was found, the significance of the excavation in relation to other East Polynesian archaeological research, and plans for future work on the island.

Contraction of the Southeast Polynesian Interaction Sphere and Resource Depression on Temoe Atoll
Marshall Weisler, University of Otago
The southeast Polynesian interaction sphere, including Mangareva and the Pitcairn group, was active for at least six centuries beginning about AD 1000. By western contact in the early 17th century all islands in the Pitcairn group were abandoned signalling a contraction of the sphere. Systematic survey and excavations were conducted on Temoe Atoll, the next closest island to the main Mangareva group, to determine the spatial and temporal boundaries of that contraction. Excavations in five late prehistoric habitation sites are described including a summary of the first subsistence remains from the atoll which consist of more than 21,000 bones of fish, bird, turtle, Pacific Rat, and humans as well as 25 kg of midden, mostly Turbo gastropods. Reconstructed weights of Parrotfish (Scaridae), by far the most common fish taxon, illustrate a decline in overall size during late prehistory pointing to the possibility of exploitation depression. The x-ray fluorescence analysis of volcanic artefacts document ties with the main Mangareva group suggesting that the reduced interaction sphere lasted until the early 19th century when Temoe was finally abandoned.

Applications of Three-dimensional Laser Imaging in Archaeology: Examples from Rapa Nui (Easter Island)
Terry Hunt and David Wellman, UH Mānoa
In this paper we outline the use of a Cyrax system for three-dimensional laser image analysis for multiple applications on Rapa Nui (Easter Island). Three-dimensional data are useful in recording precise details of form, associations, and volume in archaeological phenomena. On Rapa Nui we acquired images of rock art (at Orongo), statues (moai), and monumental architecture (Ahu Akahanga). Our work shows the value of laser image data for primary documentation, analysis of artifact/rock art degradation, and volumetric analysis. Similar applications will be an essential part of advances in Hawaiian archaeology.

Robin Connors, UH Mānoa

In June 2003, a field class consisting of four students, instructed by Theresa Donham, identified, flagged, and mapped a total of 423 component features in the area designated Feature 5 of Site 50-50-14-1029 at the Palauea Cultural Preserve in South Maui. The first recorded inventory survey of this site was conducted in 1969 when four features were identified. In 1988, the Feature 5 area, consisting of 26 component features, was added to the complex; in 1992, a “minimum of 248 component features” was recorded within this ca three-acre ‘a‘a field. Systematic survey of the Feature 5 area in 2003 permitted identification of an additional 175 features. A classification system was developed based on the various physical forms, and preliminary functional interpretations were hypothesized. This paper addresses some of the questions generated by our process and may suggest a reevaluation of some of the component features at this remarkable Cultural Preserve.

Measuring Prehistoric Shellfish Foraging: A Preliminary Analysis from Nuʻalolo Kai, Kauaʻi

Alexander E. Morrison, UH Mānoa

In this paper a shellfish assemblage from Nuʻalolo Kai, Kauaʻi is analyzed using models drawn from evolutionary ecology. Special emphasis is placed on measuring foraging efficiency, resource depression, and environmental variability. Preliminary results suggest that the large gastropod *Turbo sandwichensis* was utilized predominantly in the earliest occupation levels. At approximately half way through the site’s temporal sequence, *T. sandwichensis* declines dramatically and a variety of smaller, less profitable mollusk species begin to dominate the assemblage. Several alternative hypotheses concerning resource use and environmental change are critically evaluated in concert with the evolutionary ecology models. Finally, future research plans are discussed.

African American Reflections on the Archaeology of Race, Ethnicity, and Identity in Hawaiʻi

Fred L. McGhee, Fred L. McGhee & Associates

Hawaiʻi is an excellent place for the study of race and ethnicity, particularly in an early and contemporary “contact” context. On a more global level, and certainly within North America, in many ways the historical archaeology of minority populations has come of age over the past 30 years. It is, therefore, fair to ask why historical archaeology – and especially theoretically informed archaeology that is familiar with the latest thinking on race and ethnicity from social/cultural anthropology and ethnic studies – is not really practiced here. It is also worthwhile interrogating why archaeological sociopolitics in this area filled with truisms and long outdated “liberal” notions of what “race,” “ethnicity,” and “identity” are. This paper offers a modest introduction to the archaeology of race by using the African Diaspora as a test case and comparison. Using the pioneering racial formation approach developed by Omi and Winant in 1986 as well as portions of the postcolonial studies literature, this paper points out similarities and differences between the Black and Hawaiian cases, and offers an opinion as to where Hawaiian archaeology research in this area might go.
Visayan Landscapes: Archaeological Studies in Cebu in the Central Philippines
John A. Peterson, International Archaeological Research Institute, Inc. and Naga Research Group

Archaeological sites from Neolithic, Iron Age, “porcelain age,” and Spanish Visayan Contact periods have been reported and documented on the island of Cebu. Investigations by Carl Guthe, Rosa Tenazas, Karl Hutterer, and Masao Nishimura painted the broad strokes of Cebuan archaeology. This paper frames these studies and recent reconnaissance survey and excavation by the author in the context of Holocene landscape evolution. In contrast to previous models of Visayan residence as primarily coastal, analysis shows rather than settlement was dispersed throughout the highlands as well as the coast, does not appear to have been organized in central places, and was characterized by a low productivity, high diversity subsistence pattern. At Spanish contact, Visayans were reported to have been cultivating millet in upland swiddens as well as residing sporadically in coastal stilt villages. Areas suitable for rice were limited, and other high energy domesticates like taro were apparently never introduced. A highland/lowland, inland/coastal system seems to have prevailed throughout the known periods of settlement in Cebu. These settlement shifts are reflected in the shifting terrain of eustatic variation along the coast.

Bones, Stones, and Human Behavior: Integrative Approaches to Understanding the Archaeology of Human Origins
Chris Monahan, Scientific Consultant Services, Inc.

Homo erectus has long been recognized as an important player in the evolution of our species. Numerous biological and cultural shifts appear to distinguish H. erectus from other contemporaneous and ancestral species of extinct humans. In this paper, I compare and contrast archaeological data from Olduvai Gorge, Tanzania, and Koobi Fora, Kenya, that chronicle these shifts in the wider context of evolutionary biology and behavioral ecology. Detailed studies of the stone tools and fossilized animal bones from these Early Pleistocene sites located some 1,000 km apart document an impressive degree of behavioral variability. Citing supporting evidence from other published studies, I present a picture of early Homo erectus as a hyper-flexible species able to employ multiple foraging strategies depending upon changing circumstances. This reconstruction – in contrast with much of the debate on the archaeology of human origins – suggests that extreme behavioral flexibility, the hallmark of the human species, has its roots in the Early Pleistocene, if not earlier.

East Cambodia Archaeological Survey: Preliminary Results from the First Field Season
P. Bion Griffin, UH Mānoa & Naga Research Group
Bertell D. Davis & Michael Dega, Scientific Consultant Services, Inc. & Naga Research Group

During the 2002-2003 field season, the East Cambodia Archaeological Survey located, mapped, and conducted preliminary analysis of Neolithic, Iron Age, and Pre-Angkorian sites along the Mekong River from Stung Treng to Kampong Cham. In addition, the project involved training Cambodian archaeologists to assume senior researcher positions. The project also initiated the systematic inventory of archaeological resources in eastern Cambodia.
Excavations in Las Galeras and San Lorenzo: Two Early Formative Communities in the Olmec Heartland
Laura O’Rourke, Scientific Consultant Services, Inc.
In this paper I present the results of excavations in Las Galeras, a site in the southern Gulf Coast of Mexico. The earliest occupation in Las Galeras dates to the Early Formative Period (between BC 1200 – 900), during the height of the Olmec civilization, broadly considered to be the earliest and most complex society in Mesoamerica in this time period. The regional center was the site of San Lorenzo, the seat of political and religious power, represented most monumentally by the colossal stone portraits and impressive stone thrones for which the Olmec are famous. However, archaeological research has focused primarily on San Lorenzo while excavations in smaller hinterland sites has been minimal. Because of this gap in our knowledge, my research entailed the archaeological investigation of an Olmec hinterland site called Las Galeras with the primary objective of elucidating the nature of regional social organization during the height of power of San Lorenzo’s ruling elites at the end of the second millenium BC.

Preliminary Excavations at the Ille Rock Shelter, El Nido, Palawan, Philippines
Wilhelm G. Solheim II, University of the Philippines, Diliman & Naga Research Group
The Archaeological Studies Program, University of the Philippines Diliman and the National Museum of the Philippines have conducted four short excavations at Ille Rock Shelter. Found in a limestone karst remnant, the shelter provides a superb living space with flowing water and ready access to flora and both terrestrial and aquatic fauna. A series of excavations has recovered related ecofacts and artifacts, a late prehistoric massacre remembered in legend, and indications of deposits dating to at least the early Holocene. Potential for Pleistocene levels may exceed that of any other known site in the Philippines.
17th Annual SHA Conference, King Kamehameha Hotel, Kailua-Kona, November 12-14, 2004

Senses and Places: The Historical Parks of West Hawai‘i (keynote address)
David Tuggle
[abstract not available]

SYMPOSIUM 1: PANEL ON NATIVE HAWAIIAN ISSUES

Mikahala Roy, Chair, Kulana Huli Honua (Foundation for the Search of Wisdom)
This panel will express concerns and give insights on impacts to native Hawaiian cultural practices and sacred sites from a group of cultural practitioners composed of kūpuna and their adult children.

SYMPOSIUM 2: ARCHAEOLOGICAL CONTEXTS

Archaeoclimatology and the Pacific: What Do the Models Do?
Robert A. Varney, Paleo Research Institute
First, the basics of this type of modeling, which provides a specific model for the past 14,000 years for individual locations, are presented, to provide a platform for understanding this type of modeling. Temperature and precipitation are thought not to have varied much during the Holocene in much of the Pacific. Islands in the Pacific have experienced variations in climate, perhaps not sufficient to cover mountains with snow, but certainly sufficient to have been important to people living on and traveling between islands. Factors beyond temperature and precipitation are considered, such as storm frequency, wind direction, water balance, and distribution of precipitation throughout the year.

Comparison of Archaeoclimatic Models with Stratigraphic Pollen Records in Hawai‘i
Linda Scott Cummings, Paleo Research Institute
Archaeoclimatic models provide a testable hypothesis for evaluating past climatic conditions. Stratigraphic pollen records present evidence of variability in local vegetation in response to climatic conditions. Pairing examination of stratigraphic pollen records with archaeoclimatic models provides an opportunity to “ground truth” the models with evidence of the response of local vegetation, as well as to postulate additional hypotheses for testing with empirical pollen data. Stratigraphic pollen records from Punahō‘olapa Marsh and West Beach on O‘ahu are compared with archaeoclimatic models.

Refuge Caves of Kona
Myra J. Tomonari-Tuggle and David Tuggle, International Archaeological Research Institute, Inc.
Refuge caves of Kona are discussed in regard to distribution, chronology, and variation in morphological and functional types. Based on a data set from one area of Kona, it is argued that the number of refuge caves may be underrepresented in the archaeological literature. A model of refuge cave variation and associated surface structures is proposed for future field evaluation.
SYMPOSIUM 3: PANEL ON HAWAIIAN ARCHAEOLOGY

Michael Dega, Chair
The first installment of what hopefully will be a yearly series of panel discussions occurred during the 2003 SHA meeting on O‘ahu. Topics included dynamic panel and audience discussions on regulating professionalism in archaeology, a debate on Inventory Survey rules/regulations, the merits of outside peer review, a federal synopsis on whether money is well spent in historic preservation, and a discussion from the State’s perspective on standardizing the inadvertent burial discovery process. A cross-section of scholars presented their opinions on these issues and question/answer and debate session with the audience followed. The same format is to be utilized this year. The audience is encouraged to engage the panelists through comment or question in what is again being promoted as an exchange of ideas to both evaluate and foster increased professionalism in Hawaiian archaeology.

This year’s panelists again represent a cross-section of archaeologists working in the Hawaiian Islands in various capacities. The topics for 2004 have been selected by the panelists and include the relationship between CRM and academia, the role of applied archaeology in university settings, new directions in SHPD, and discussion points from the keynote. The panelists are: Dr. Michael Graves, Dr. Christopher Monahan, Dr. Sara Collins, and Dr. David Tuggle. Again, the resolve of these panel discussions is ordained under professionalism and ethics/standards issues in archaeological work both within the Hawaiian Islands and abroad.

Format: Each panel member will present from 10 to 15 minutes. There will be from 5 to 10 minutes of Q&A and discussion to follow each topic (with a maximum scheduled time for each topic of 20 minutes). There should be ten minutes at the end of the session for additional discussion on any of the presented topics.

Professionalism in Hawaiian Archaeology Panel: Introduction of Panelists and Objectives
Michael Dega, Scientific Consultant Services, Inc.

The New Directions for SHPD
Sara Collins, SHPD Branch Chief of Archaeology

A View from Both Sides of the Fence: Why a Graduate Degree Does Matter in CRM and Why CRM Should Matter in Academia
Christopher Monahan, Scientific Consultant Services, Inc.

Applied Archaeology Degrees at UH
Michael Graves, UH Mānoa

Discussion Points from the Keynote Address: What Would Don Quixote Do?
David Tuggle, International Archaeological Research Institute, Inc.

SYMPOSIUM 4: HUMAN ECODYNAMICS IN THE HAWAIIAN ECOSYSTEM: INITIAL RESULTS OF THE BIOCOMPLEXITY PROJECT

The Hawai‘i Biocomplexity Project: Goals and Research Design
Patrick V. Kirch, UC Berkeley
Since January 2002, a multi-disciplinary team representing the fields of archaeology, pedology, ecology, paleobotany, and demography has been investigating the dynamically coupled interactions between pre-contact Polynesians and the Hawaiian Islands ecosystem. Field investigations have focused on two study sites: Kahikinui, Maui Island, and leeward Kohala, Hawai‘i Island. This introductory paper reviews the specific objectives and research design for the project, as context for the specific presentations that follow in this symposium.

**Climate, Soil Fertility, and the Distribution of Dryland Agriculture**

*Peter Vitousek (Stanford University), Oliver Chadwick (UC Santa Barbara), Tony Hartshorn (UC Santa Barbara)*

We determined a wide range of soil properties within and surrounding long-abandoned dryland agricultural areas in leeward Kohala and Kahikinui. Agricultural areas were bounded on their lower margin by low rainfall; the boundary of the Kohala Field System follows the 750 mm rainfall isohyet from the coast up to >600 m elevation. On the upper margin, agricultural systems in both Kohala and Kahikinui were bounded by infertile soils; both base saturation and biologically available phosphorus dropped below thresholds at their upper margin. We conclude that Hawaiian cultivators located regions of fertile soils and adequate rainfall, and intensified agricultural production in those areas. This pathway of intensification may not have been available on the older islands; soil fertility declines systematically with substrate age, in Hawai‘i and elsewhere.

**Field-level Variability in Nutrient Availability, and Agricultural Production in Kohala, Hawai‘i**

*Thegn N. Ladefoged (University of Auckland), Michael W. Graves (UH Mānoa), Julie Stein (University of Washington), Tony Hartshorn (UCSB), Oliver Chadwick (UCSB), Chris Lockwood (University of Washington), and Peter Vitousek (Stanford University)*

The 60 km² leeward Kohala field system consists of hundreds of kilometers of walls and trails demarcating agricultural fields. While ethnohistorical accounts of the area suggest that a range of cultivars were grown, there are few specifics about how this was accomplished. By combining geoarchaeological and soil nutrient analyses a much clearer picture of cultivation in this area emerges. Geoarchaeological analysis documents variability in the construction of agricultural features. Analysis of sediment samples from within fields and under agricultural walls documents unevenness in nutrient availability. Patterning in nutrient distributions appear to be the result of inherited nutrient status as well as differential planting and mulching regimes within and between fields. There are also indications that nutrient differentials can be attributed to distinctive temporal agricultural developments. The analyses document how potential agricultural productivity levels varied within the larger regional setting of the leeward Kohala field system.

**Traditional Agriculture in Kohala, Hawai‘i Island: the Link between Leeward and Windward Environments**

*Michael W. Graves and Jesse W. Stephen, UH Mānoa*

North Kohala is distinctive in some ways by virtue of its inclusion of both leeward (dry) and windward (wet) environments. This paper summarizes the location and type of environments available in North Kohala that would have been suitable for agriculture. Drawing on recent work completed in the leeward dry land field system, the types of agricultural practices and associated
strategies known to exist in the windward areas of north Kohala will be described in terms of their potential antiquity, association with environmental variation and perturbation, the parameters of production, and developmental processes.

Human-Landscape Interactions in Kahikinui, Maui: A Spatial Analytic Perspective
Lisa Holm and Patrick V. Kirch, UC Berkeley
Ongoing work in the Kahikini District of southeast Maui has revealed the existence of 3,335 archaeological features within a ~12 km² survey area. Data on these features, collected over the course of three decades, have recently been integrated for the first time within a geographic information system (GIS) database as part of a larger study on human ecodynamics. Using a spatial analytic perspective, we examine both the cultural and natural landscape to reveal patterns of ancient Hawaiian social, ritual, and agricultural practices and their variability across this ʻāina maloʻo.

Fields of Fire?: Archaeobotanical investigations of Agricultural Adaptation and Development in Kahikinui, Maui and Kohala, Hawaiʻi
James Coil (UC Berkeley) and Marjeta Jeraj (U. Wisconsin)
We discuss our use of archaeobotanical approaches to address several research questions regarding pre-contact Hawaiian planting in Kahikinui and Kohala. Our data is derived from modern plant distributions and from the recovery and identification of pollen, phytoliths, wood charcoal, and carbonized seeds. How did dryland planting affect the study areas’ native vegetation, and how were the growing of particular crop plants or weeds distributed spatially on these landscapes? How, when, and where did fire occur in connection with crop cultivation, and how can such burning be distinguished from natural fires? We discuss our current results and future research directions.

The Origins of the Kalaupapa Field System: A Geographic Information Systems based study of the Kalaupapa Peninsula, Molokai Island, Hawaiʻi
Mark D. McCoy (UC Berkeley), Anthony S. Hartshorn (UC Santa Barbara), Oliver A. Chadwick (UC Santa Barbara)
In this paper we employ Geographic Information Systems to integrate new archaeological information from intensive surveys and test excavations with an extensive study of environmental conditions - including soil nutrients, rainfall, and wind - to better understand the origins of the Kalaupapa Field System. This study takes a multi-scalar approach beginning with an evaluation of the Kalaupapa Peninsula then comparing these findings to agricultural development and conditions in the nearby colluvial zone at the base of the island’s north shore cliffs. Finally these results are contrasted with the well-studied regions of Kahikinui and North Kohala. Overall, the origins of the field system followed a pattern found throughout the islands in which Hawaiians first targeted zones with higher rainfall and better soil nutrients for settlement and agricultural development, only in the late Expansion and Proto-Historic Periods turning to large scale, intensive dryland farming in areas with young soils rich in nutrients.

SYMPOSIUM 5: HISTORICAL ARCHAEOLOGY

Political History of the Royal Patents
Victoria S. Creed, Waihona ʻĀina Corp.
TheRoyalPatentsarethelegalinnstrumentthroughwhicheachsuccessivegovernmentchange
since1848isreflected. Therearetimeswhenonlyafewdocumentsayearwereprocessedandothertimeswhen100patentsweresprocessedinaday. NumbersofRoyalPatentswerenever
issuedandsomeoftheseshowtheappearanceofdeceithowandforwhomthesedocuments
wereregistered. Furtherresearchmaybenecessaryto dispelthisappearanceof deceit. Royal
Patents, called Land Patents, after the overthrow (and different from Land Grant Patents), are
still being executed today by DLNR on Land Commission Awards issued to the Ali‘iwitout
survey. Thispaperwillalsodocumentsomeofthemajorthingsthathaveoccurredunder
differentgovernmentleadership.

Historical Archaeology of Keanakolu
Peter R. Mills, UH Hilo
Anupdateisprovidedon UHHarchaeologicalfieldschoolsinthe Keanakoluregionof Mauna
Kea, North Hilo District, Hawai‘i Island. In the Summer of 2003, UH Hilo students returned to a
homestead site that had been identified in a 2001 field school, and conducted test excavations of
a house platform, associated lime-plastered cistern and privy. A koa tree nearly 3 meters indiameter growing out of the middle of the house platform had been used to infer an early to mid-
19thcentury date for the homestead. Nevertheless, steel square-cut nails and bitter bottles
retrieved from the site consistently suggest a date of occupation in the 1860s and 1870s. While
Ned Gurney, an infamous bullock hunter, had been known to live in the vicinity of the site in the
1830s, the material remains clearly identify the site as the product of a later occupant, and
corresponds to the time when the Waimea Grazing and Agricultural Company was beginning to
develop the area for ranching.

Sugar and Decay: An Archaeological and Ethnohistorical Inquiry into the Sugar Industry
in the District of Ka‘ū
Janet Six, UH Maui Community College and University of Pennsylvania
In the 1860s, following the abolition of slavery in the United States, the locus of sugar
production shifted to Hawai‘i. With this new industry came new forms of labor. Contract
laborers primarily from Asia - were imported to work on plantations in Hawai‘i. Despite being
sequestered in ethnically segregated worker’s camps, over time traditional cultural boundaries
blurred and the plantation villages gave rise to a new, creolized community. This paper will
outline the archaeological and ethnohistorical recovery methods used to identify and analyze the
ruins associated with the sugar industry in the District of Ka‘ū on the Big Island of Hawaiʻi.

Oregon Beeswax and Mexican Porcelain: New Keys to Hawaiian History
Captain Richard W. Rogers, Pilialoha
“Ancient” Hawaiian legends and myths, published throughout the 19th century, mention a
number of stories that can be cross-referenced with historically documented events. These
include tsunamis, shipwrecks and visitations by mariners. Whereas, these events are recorded, in
Hawaiian terms, as being specific to certain ruling chiefs and those chiefs are listed in a
consistent sequence, we can place them on a “Hawaiian Timetable.” When events occur that can
be referenced in Western terms as well, we can synchronize the timetables placing specific dates
on “ancient” Hawaiian events. Recent discoveries and examinations of shipwreck artifacts in
Baja, Mexico and Nehalem, Oregon have narrowed the field of possibilities for dating the two
shipwrecks chronicled in Hawaiian chant and legend. This paper will present a timeline model
that will date one “ancient” Hawaiian event to within a decade, another to the year and a third to
the very date of occurrence, thus giving scholars a more solid foundation from which to date
other Hawaiian events referenced to specific ruling chiefs.

Updates from the NOAA Maritime Heritage Program
Hans Van Tilburg, NOAA National Marine Sanctuaries Program
This presentation briefly describes some of the work that has been conducted recently by
NOAA Maritime Heritage Program including the potential for submerged maritime heritage sites
in the Northwestern Hawaiian Islands, the type of work being carried out and current results, and
the possibilities for future collaboration among managing agencies in this remote atoll setting.
NOAA has also been working with side scan sonar and manned submersibles to reveal details
about the Japanese midget submarine recently discovered off the entrance to Pearl Harbor. This
work also illuminates data on other ships, aircraft, and assorted debris related to World War II in
the Pacific. What else is down there, and how far do the boundaries of this apparent disposal area
stretch?

MAST 2004: Recent Fieldwork on Lānaʻi
Suzanne S. Finney, UH Mānoa
This is a brief overview of the fieldwork conducted during the summer Maritime Archaeology
Survey Techniques (MAST) course offered through the Department of Anthropology, UH
Mānoa. Six students participated in the class, listed as ANTH 381: Archaeological Field
Techniques. The survey location was the eastern section of Shipwreck Beach on the island of
Lānaʻi. Shipwreck Beach is the site of a number of documented shipwrecks from the 19th
century through to the present and was used as a dumping ground for outdated or worn-out
military and civilian ships. During the two weeks of the on-site survey the students mapped
nearly 4 miles (5.7 km) of coastline and over 170 features including large sections of wooden
wreckage, disarticulated timbers and machinery. This survey continues the findings from MAST
2001 and contributes to the small but growing corpus of information concerning maritime
activities in Hawaiian waters.

SYMPOSIUM 6: LITHIC STUDIES

An Archaic Adze Manufactory on Rurutu, Austral Islands, French Polynesia
Robert Bollt, UH Mānoa
In 2003, the author excavated an early East Polynesian habitation site on the Austral island of
Rurutu. Adze manufacturing was the primary activity, with material quarried from at least four
different sources on the island. The site dates from the Archaic period (ca. AD 1000 - 1400),
when a large amount of long-distance trade took place in the region. Neighboring archipelagoes
such as the Southern Cooks and the Tuamotus, where basalt is scarce or nonexistent, would have
needed convenient sources for this vital raw material. This paper discusses the local exploitation
strategy for basalt as well as the possibility that the Australs were an export center for stone
tools.
Energy Dispersive X-Ray Fluorescence (EDXRF) at UH Hilo

Peter R. Mills, UH Hilo

UH Hilo has recently acquired an EDXRF spectrometer which is capable of providing rapid and non-destructive geochemical analyses of basalt and volcanic glass artifacts. The spectrometer is equipped with a specialized sample chamber that accommodates large adzes and poi pounders for single sample runs, or up to 20 smaller samples on a single automated run. A discussion of the capabilities and limitations of the spectrometer is provided and the long-term research strategy for building a GIS geodatabase for Hawaiian artifact geochemistry is discussed.

SYMPOSIUM 7: NATIONAL PARK SERVICE ARCHAEOLOGY

Out of the Ashes

Jadelyn Moniz Nakamura, Summer Roper, Nicole Thompson and Tracy Laqua, Hawai‘i Volcanoes National Park

In the summer of 2000 a wild land fire swept across 1000 acres of dry ‘ōhi‘a woodland from the boundary fence line between the golf course subdivision and Hawai‘i Volcanoes National Park. The fire swept downwind all the way to Highway 11 where it was stopped and eventually contained. This fire was devastating to the native forest. However, through the ashes and newly cleared ground archeologists were able to identify 277 lithic quarry sites that had previously been hidden. Recent survey and excavation suggest these sites were activity areas where Hawaiians collected and worked material to make stone tools - primarily adze. This program will present the exciting results of our research which has helped shed new light on precontact Native Hawaiian activity in the Caldera area from late AD 1600s-1800.

“Giants of the Pacific”: Mauna Loa and the U.S. Exploring Expedition (1838-1842)

Dennis Dougherty, Pacific Cooperative Studies Unit, Research Corporation UH, and Hawai‘i Volcanoes National Park

In 1838, President Andrew Jackson dispatched a six ship armada to the Pacific to conduct detailed scientific observations and to provide detailed maps and charts of the region. Led by Lieutenant Charles Wilkes, the U.S. Exploring Expedition totaled 346 men, both naval personnel and civilians, named “Scientifics,” that comprised the first U.S. international scientific endeavor assigned with the task of expanding academic knowledge of the natural sciences. During the winter of 1840-41, Expedition members, led by Lt. Wilkes, spent a total of 20 days at Moku‘aweoweo, Mauna Loa’s summit caldera. Their remote summit campsite, situated on the eastern edge of the caldera, represents the only known physical remains in the Pacific of the Expedition’s four-year global voyage. This paper will discuss the preliminary results of archeological surveys conducted by cultural resource staff at Hawai‘i Volcanoes National Park to map the National Register listed Wilkes camp site and to retrace the steps of the summit expedition.

Heiau, Walls and Roads: Obliterating Common Archaeological Assumptions and Preconceptions at the Spencer Road in the Puʻukohola National Historic Site

Paul L. Cleghorn and William A Shapiro, Pacific Legacy

In 2002, the National Park Service conducted a project entitled “Obliterate Old Spencer Road and Reestablish the Historic Scene” at Pu‘ukoholā National Historic Site. The Old Spencer Road was constructed in 1936 or 1937 to provide access from the Waimea-Kawaihae Road to the
Spencer Beach Park. The road passed closely between the two major heiau of the area – Pu'ukoholā and Mailekini. Previous archaeological investigations suggested that there was the possibility that traditional dry stone masonry wall might be present within the fill of the roadway. Archaeological monitoring was conducted as a means of testing this hypothesis. The results of this work are briefly described in this paper.

**Cardinal Directional Marker Project**  
*Leslie Keola Awong, Hawai'i Volcanoes National Park*  
Hawai'i Volcanoes National Park and its Kūpuna Consultation Group have collaborated with the newest museum of the Smithsonian Institution, the National Museum of the American Indian (NMAI) on a Cardinal Directional Marker Project. The concept for this project came from the NMAI. The goal of this project was to acquire four stones from the far reaches of the hemisphere in collaboration with Native communities from those areas. These stones would then be placed on the grounds of the museum according to their cardinal directional orientation. In 2003 representatives from the NMAI came to meet with the National Parks Kūpuna Consultation Group to present the project and to ask for a rock. The Kūpuna Group agreed on one condition that the rock would be a loan and that after 20 years the rock would return to its original location and a new stone would be chosen by the Kūpuna of that time to replace the first stone and that this cycle would continue. I would like to share my experiences while working with this group of Kūpuna on this very special project. This project is a good example of how we can sometimes work together with living cultures to make a project happen.

**SYMPOSIUM 8: DIGGING DEEPER INTO HAWAIIAN ARCHAEOLOGY**

**Natives and Archaeologists: A Dissertation Review**  
*Kathy Kawelu, UC Berkeley*  
My dissertation explores the history of Hawaiian archaeology from a sociopolitical perspective. Specifically, I examine the relationships between Native Hawaiians and archaeologists through time. Most archaeologists would consider this a socio-cultural dissertation rather than an archaeological one. I argue that archaeologists encounter sociopolitical issues on a regular basis, and consideration of this history is a necessity when practicing archaeology in the islands today.

What if We Didn’t Know There was a Kapu System in Old Hawai‘i?  
*Boyd Dixon, PBS&J*  
This paper grew out of a small seed of doubt that has lain dormant in my mind since beginning archaeological research in Hawai‘i almost 15 years ago, after already pursuing a career in culture areas with an indigenous written record such as the Maya of Central America and in culture areas without one such as North and South America. The fundamental question this seed of doubt still poses to me is this: would we archaeologists really know that the kapu system ever existed in pre-contact Hawai‘i, if we only had the material record to interpret?

**Pigs as Proxy: Assessing Dryland Productivity through Landscape Geochemistry**  
*Chris Lockwood, University of Washington*  
Archaeologists typically have described productivity of pre-contact Hawaiian, dryland agricultural systems in qualitative, rather than quantitative, terms. One reason is a paucity of remains of agricultural products in the archaeological record. A landscape geochemistry
approach combining chemical residue and spatial analyses offers the potential to quantitatively track spatio-temporal variation in productivity. Identification of taxon-specific, fecal biomarkers from domesticated species, especially pigs, may permit functional interpretation of previously indeterminate structures in Kohala. Comparison of attributes and distribution of animal pens with other agricultural and residential structures can then provide insight into organization and change in production.

Functional Assessment in Hawaiian Archaeology
Mike T. Carson, International Archaeological Research Institute, Inc.
Functional assessment of archaeological resources appears to be executed with an increasing degree of perfunctory routine, especially at the level of the inventory surveys that generate almost all of the baseline archaeological data in the State of Hawai‘i as in most of the United States. By and large, inventory surveys follow a largely implicit orthodox functional typology that consists of habitation, cultivation, ritual, and perhaps occasional reference to a few other categories. This rudimentary assessment may be acceptable at the level of a reconnaissance or inventory survey, but sadly most archaeologists never move beyond it in data recovery or other research. As a result, archaeologists are blinded to many research opportunities. Another perspective recognizes the simultaneous functions of technology, economy, social organization, politics, ideology, aesthetics, and communication. Chronological change within these functions may be considered as the interaction of a) the diversity of ways to meet a function and b) the actual demands on that function. This alternative perspective is reviewed briefly within the time allowed, in hopes to encourage more productive research.

The Ghetto-ization of Hawaiian Sites
Maurice Major, Pacific Consulting Services, Inc.
Site preservation in Hawai‘i can satisfy cultural, political, scientific, and resource management objectives. Within the framework of the new administrative rules, the nature of site preserves varies widely, ranging from benign neglect to heavily interpreted nodes on the tourist routes. One unfortunate characteristic shared by most preserved sites is that they resemble ghettos. And not in a good, wellspring of urban culture, way. Archaeological sites that escape evaluations of insignificance or data recovery typically find themselves carved up, fenced in, and starved of investment and upkeep. They become isolated from their original context, treated as ruins, and often cared for only by the government or well-meaning volunteers. Using examples from this island, this paper examines the physical stages and resource management practices that foster the decline from a cultural landscape to site ghetto. To balance the tale of gloom, I survey some of the things that communities, archaeologists, and land managers can do to revitalize sites and prevent them from sinking into squalor.

Advancing Archaeological Classification of Fish Hooks from Hawai‘i: A Case Study from Nu‘alalo Kai, Kaua‘i
Michael W. Graves (UH) and Windy K. McElroy (UH and T.S. Dye & Colleagues Archaeologists, Inc.)
The study of traditional fish hooks from Hawai‘i has a long and respectable history. Yet, there remain analytical issues regarding how particular objects have been classified within different studies. One of those issues is inter-observer consistency in classification of head shank attributes. We attempt to remedy this by constructing a protocol for the paradigmatic
classification for fish hook head shanks. And we use digital photos and a computer-based
drawing system to identify the specific dimension and attributes that our classification is
intended to track. We illustrate this system with fish hooks from Nu'alolo Kai, identify its
advantages over alternative systems, and discuss some of the likely differences that will obtain.

**Holocene Landscape Studies at Bellows Field**
*John A. Peterson, Garcia & Associates*
Recent investigations at Bellows Field have provided data for late Holocene landscape
interpretations of Puha Stream channel history and settlement regimes in the Waimānalo Bay.
Archaeological testing in 2003 in the coastal plain of Waimānalo Bay led to the discovery of
relict channels of Waimānalo Stream. These remnant deposits of alluvium were found from near
surface to as deep as two meters below ground surface. The deposits are similar to others found
in previous investigations that were noted but seldom investigated. The radiocarbon age of a soil
sample from one of these deposits was determined to be 1603±44 (Wk-13432), and was
comparable to alluvium documented in the Hawaiʻi Air National Guard facility further inland.
The radiocarbon data, along with analyses of historical map and aerial photographic imagery, has
contributed to a partial reconstruction of the landscape history of Waimānalo Stream. The
analysis provides a baseline for interpreting previous archaeological findings at Bellows and for
development of a predictive model for settlement opportunities. Current data suggest that
residential occupation of Bellows was likely constrained to higher terrain at the base of the
Keolu Hills, and the coastal plain was relatively dynamic terrain not conducive to permanent
habitation.

**Manual for the Identification of Hawaiian Fish Remains**
*Thomas S. Dye (T.S. Dye & Colleagues, Archaeologists, Inc.) and Ken Longenecker (Bishop
Museum)*
Society for Hawaiian Archaeology Special Publication 1 will be distributed to members shortly.
This presentation gives an overview of the manual, which is based on Alan Ziegler’s fish
skeleton reference collection now held by Bishop Museum. Also included is a section on otoliths
(earstones), whose distinctive shapes permit species-level identifications in many instances.
Examples of high-resolution bone images and scanning electron microscope images of otoliths
are both displayed. The hypertext structure of the book’s portable document format is described
and demonstrated.
Cultural Connections to Cultural Treasures (keynote address)
E. Kalani Flores, Hawai‘i Community College, Chair of the Office of Hawaiian Affairs Native Hawaiian Historic Preservation Council
Cultural treasures (aka artifacts) are sometimes discovered through archaeological site investigations. What is the significance of these cultural objects from both Native Hawaiian and Western perspectives? The focus of the talk will be to engage in a discussion about the significance, cultural connections, and interpretation of these cultural treasures.

E. Kalani Flores holds a Bachelor of Arts in Hawaiian Studies from the College of Arts and Sciences from the University of Hawai‘i Hilo. Mr. Flores is a Native Hawaiian scholar who is a researcher, writer, consultant, and historian on Native Hawaiian language and culture. E. Kalani is also an educator and presently is a Hawaiian Studies instructor for the University of Hawai‘i, Community College System, Hawai‘i Community College, West Hawai‘i. Some of the courses he has taught include Native Hawaiian language, Native Hawaiian Beliefs and Practices, and Hawaiian Culture. Over the years has also served on numerous commissions, boards, and committees pertaining to the protection and perpetuation of Hawaiian cultural traditions and sites. He currently is Chair of the Office Hawaiian Affairs Native Hawaiian Historic Preservation Council.

Onward to the past: Historical perspectives on the future.
David A. Burney, Fordham University and Director of Conservation, National Tropical Botanical Garden, HI (featured speaker)
Thinking about the future of humanity and the biota from deeper time perspectives is an emerging theme in archaeology, ethnography, history, and paleoecology that deserves more serious consideration at all levels. Events here in the Hawaiian Islands and throughout the Pacific region as well as the entire globe point to the need for a better understanding of past events in order to prepare society for the growing challenges of the present and the massive uncertainties of the future. Examples from a variety of past-oriented disciplines will be provided concerning the actual and potential role of historical background in critical decision-making in such areas as 1) natural vs. human-caused environmental change; 2) the current extinction crisis; 3) cultural resources management and, 4) ecological restoration. A clearer focus on utilitarian aspects of information from the past can help in setting priorities for research, education, and technical applications.

SYMPOSIUM 1: SOCIETY FOR HAWAIIAN ARCHAEOLOGY ANNUAL SPONSORED SESSION FOR PROFESSIONAL STANDARDS AND ETHICS

Session chairs: Michael Dega (Scientific Consultant Services, Inc.) and James Bayman (UH Mānoa)
The goal of this annual session is to promote the open and constructive exchange of ideas and suggestions for advancing and improving the practice of archaeology in Hawai‘i. In part one, the
staff of the Hawai‘i State Historic Preservation Division (SHPD) report on recent activities and events. In part two, panelists represent a cross-section of archaeologists and others in the community who are involved in activities that concern archaeology in Hawai‘i. Members of the audience are encouraged to offer comments and ask questions of the panelists.

SYMPOSIUM 2: REPORTS FROM THE PACIFIC REGION OUTSIDE HAWAI‘I

Adze Quarries on Rurutu, Austral Islands, French Polynesia
Robert Bollt, UH Mānoa
This paper outlines the preliminary results of a field survey that the author undertook in July through August 2005 on the East Polynesian island of Rurutu in the Austral archipelago. Based on the geochemical sourcing results (utilizing X-ray fluorescence analysis) of stone tool debitage that was excavated in 2003, it was apparent that the early (ca. 13th century AD) inhabitants of Rurutu were already utilizing at least six separate sources of local basalt for tool manufacture. The current project is an effort to obtain further geochemical data directly from the sources and to pin down the precise locations of the quarries themselves.

Beachcombing, Magnetometers, and Hooka Diving: The 2005 Expeditions to a 16th Century Shipwreck Site in Baja California
Captain Rick Rogers, Pilialoha Consultants
Ming-era porcelain sherds on a beach in Mexico have led a team of archaeologists from the U.S. and Mexico to conclude that they have identified the shipwreck of a 16th-century “Manilla Galleon,” the highest probability being the San Felipe missing since 1576. In 2003, the site was further defined by identifying the location of artifacts that once had been attached to the hull of the vessel. Magnetometer surveys on land and the adjacent waters identified five distinct anomalies with an under-water dredging device. This paper will discuss the methodology, difficulties, and results of this endeavor.

SYMPOSIUM 3: GEOGRAPHIC INFORMATION SYSTEMS IN HAWAIIAN ARCHAEOLOGY

Session chair: Loren Zulick, U.S. Army Corps of Engineers
This session will focus on two aspects of Geographic Information Systems (GIS) in archaeology: 1) capabilities, and 2) data management. This session will be presenting two examples of the practical use of GIS in the mapping and modeling of cultural sites (capabilities). Additionally, the standards, requirements, and data classifications for the U.S. Army will be presented (data management). It is the intent of this GIS session to demonstrate the usefulness of GIS applications through practical, working models, and to raise awareness of the standards and classification systems that are being introduced by the Army.

Hawaiian Heiau and Agricultural Production in the Kohala Dryland Field System
Mara A. Mulrooney (International Archaeological Research Institute, Inc.) and Thegn N. Ladefoged (University of Auckland)
Religious activities during the late prehistoric period were central to agricultural production within the Kohala dryland field system. Relatively large temples, or heiau, are distributed throughout the upland agricultural zone. In the southern portion of the field system eight of these
structures are situated in commanding positions of five traditional community territories, or *ahupua’a*. Based on the morphology of these structures, there are four classes of heiau that reflect differential functionality and temporal associations. There is some indication that the temporal trend in heiau construction corresponds to the development of the traditional community territories. The distribution and form of the heiau suggest that ideological legitimization of agricultural production varied through time, with an increase in elite managerial control late in prehistory.

**Data Management of Geographic Information Systems**  
*Loren Zulick, U.S. Army Corps of Engineers*  
This presentation describes and explains U. S. Army requirements for Geographic Information Systems (GIS) deliverables. Several issues are discussed concerning the management of GIS data, providing examples of how the U. S. Army has responded to these issues.

**Experiments with Geographic Information System Capabilities**  
*Mike T. Carson, International Archaeological Research Institute, Inc.*  
Data from field survey, excavations, and other sources are compiled and manipulated to demonstrate some of the potential capabilities of geographic information systems (GIS) for archaeological investigations. Illustrative examples relate to recent work in the Kawaihae area of Hawai‘i Island.

**SYMPOSIUM 4: KAUA‘I FOCUS**

**Overview of Kaua‘i Archaeology**  
*Toni Han Palermo, Hawai‘i State Judiciary*  
This presentation offers a brief overview of the formal, functional, and chronological range of archaeological sites in Kaua‘i.

**Stars Shed Light on Hawaiian Settlement dates, Voyaging, Catastrophic or "Extreme" Events in the Hawaiian Islands and a California Connection**  
*Victoria S. Creed, Waihona ‘Āina Corporation*  
Hawaiians encoded not only a long history of astronomical events in their genealogies and literature. They also included catastrophic, or what are today being called “extreme events.” Many of these astronomical and extreme events are datable, and along with other fields of study, add more pieces to the puzzle of voyaging and early settlements. The genealogy of Kanalu tells of repeated catastrophes in the Hawaiian Islands with total or near decimation of early populations. An encoded description of the sky, a spectacular star event along the Northern limit of the Tropic of Cancer, the ensuing catastrophe and a Hawaiian connection with the American continent appear in S.M. Kamakau’s Kaua‘i/O‘ahu tale “No ke Ano Hoku” or Pupuhuluana. Hawaiian voyaging involved planning of every aspect of the venture --including catastrophes-- and it would appear that they also set up nurseries of food plants wherever they went, including on the west coast of the Americas, to return to for replenishment after catastrophes. This tale may be another tie of Hawaiians with the Chumash Indian site in Ventura County, California.
Traditional Hawaiian Engineering at an Upland Lo‘i in Waipa


The Waipa Foundation and T. S. Dye & Colleagues, Archaeologists Inc. cleared and mapped an upland taro lo‘i system in Waipa, Kaua‘i. The system is built in an unusual topographic situation in which the largest lo‘i are found on a rise between the base of the hill and the stream. Variations in lo‘i configuration through the system are responses to local terrain and the need to keep water high enough to feed the largest lo‘i. The lo‘i system is described and briefly contrasted with a structurally distinct system on the opposite side of the stream. Dates for the construction of the two systems might provide a test for a theory of irrigated pondfield development in Hawai‘i.

Uncovering the Mysteries if Nihoa Island: Preliminary Research in Understanding the Timing and Settlement of a Remote Island in the Northwestern Region of Hawai‘i

*Scott Kikiloi (UH Mānoa)*

Nihoa Island is a small, rugged island located more than 240 km northwest from the island of Kaua‘i. Though quite barren and seemingly inhospitable, it contains over 89 archaeological sites (including residential features, agricultural terraces, ceremonial structures, shelters, and cairns) that bear witness to a pre-Contact occupation of the island. While the island has seen previous archaeological research and this work has documented numerous cultural sites, there have been few contemporary studies focused on the timing of initial settlement, the duration and nature of occupation, and the movement of humans and cultural materials to and from this remote area of our archipelago. This presentation will focus on lessons learned from experiences doing Hawaiian language archival research in the Bishop Museum library and archives, to the deck of the double-hulled voyaging canoe Hōkūle‘a, and then to the island of Nihoa for archaeological research. Through this integration of knowledge, we can begin to understand why and how Nihoa Island came to be settled and occupied prior to European contact in the late 18th century AD.

Paleoecology, archaeology, ethnohistory, and restoration at Makawahi Cave, Māhā‘ulepū, Kaua‘i

*David A. Burney (National Tropical Botanical Garden) and Lida Pigott Burney (Makawahi Cave Reserve)*

Work began in the eolianite sinkhole and cave system in the Māhā‘ulepū/Pa‘a area of Kaua‘i’s south shore in 1992 with a program of sediment coring. This was followed in 1997 with the excavation, over the next four years, of sediments from three large subphreatic pits totaling more than 200 m³. This material was fine-screened with the help of >300 volunteers, yielding thousands of fossil bird bones, invertebrate shells, seeds, and other evidence for environments of the last ten millennia. The abundant human artifacts from the site feature many perishable materials, including cordage, wooden tools, and food items. Ethnographic and historical research has helped link the more remote past with the more recent developments at the site. This work has provided the basis not only for theoretical reconstructions of past environments, but also plans for ecological restoration on the surrounding property. Six management strategies are being applied to portions of a total of 17 acres that comprise the Makawahi Cave Reserve, a joint project of our research group, community volunteers, and Grove Farm Company. This unique configuration, with a richly fossiliferous cave system and unusual archaeological site as the centerpiece for surrounding ecological and cultural restorations, has provided thousands of
school children, college students, local visitors, and tourists with an unparalleled educational experience that links past evidence to aspirations for a better future for Hawai‘i’s people and environments.

**SYMPOSIUM 5: TECHNOLOGY APPLICATIONS IN ARCHAEOLOGY: RECENT PROJECTS IN HAWAI’I**

*Session organizer: John A. Peterson, Garcia and Associates*

Advances in remote sensing and prospection technology and especially in computer software applications for these technologies have made them highly effective for archaeological investigations. Ground-penetrating radar, especially in sandy terrain, has great promise for noninvasive subsurface survey; used in tandem with proton magnetometry, the complementary techniques provide good results. Remote sensing data from satellite sources is approaching photographic quality images, often at 1 meter or less resolution. Spectral imaging and comparative analyses make these very effective for remote survey for cultural resources as well as management of landscapes. On-site survey using sub-meter accuracy global position systems and three-dimensional laser scanning techniques provide accurate and manipulable data for landscape, site, and feature renditions and analysis. The papers in this session report on three applications recently conducted in the region.

**Identification of Burial Features in Vietnam Using Three Remote Sensing Techniques**

*Samuel V. Connell, Joint POW/MIA Accounting Command, Central Identification Lab (JPAC CIL)*

Identification and recovery of subsurface features with human remains that have been lost in tropical environs using geophysical techniques has been a frustrating enterprise. The mission of the Joint POW/MIA Accounting Command and the Central Identification Laboratory (JPAC CIL) is greatly enhanced by using three remote sensing techniques in conjunction with geographic information systems to identify subsurface anomalies that indicate the possible locations for burial of service members lost during the Southeast Asia conflict. These techniques can be used worldwide to augment investigations covering large surface areas, contributing data that pinpoints specific locations for further excavation.

**Eight Million Points Per Day: Archaeological Implications of Laser Scanning and Three Dimensional Modeling of Pu‘ukohola Heiau, Hawai‘i Island**

*Mara A. Mulrooney (International Archaeological Research Institute, Inc.), Thegn N. Ladefoged (University of Auckland), Russell Gibb (Geometria Heritage Management and Archaeological Services), and Daniel McCurdy (Geometria Heritage Management and Archaeological Services)*

Recent applications of three-dimensional modeling in archaeology have become more widespread in recent years for site-based and landscape approaches. The authors perform a three-dimensional analysis of Pu‘ukohola Heiau, using data collected with a Cyrax laser scanner. By examining the three-dimensional model, surface area and volumetric calculations are made. These calculations are used to estimate labor input, based on experimental data collected in a previous study of excavated Maui heiau and producing similar results without need for excavation.
**Geophysical Surveys at Bellows Air Force Station and Fort DeRussy: Effective Discovery from Ground Penetrating Radar and Proton Magnetometry in Tandem**

*Mark D. Willis and John A. Peterson, Garcia and Associates*

Geophysical survey was conducted prior to construction excavations for the replacement of a water main in northeastern Bellows Air Force Station and at Fort DeRussy in anticipation of construction of electrical service utilities. Ground-penetrating radar (GPR) investigations were conducted with a SIR-3000 radar with a 400 MHz antenna. A time-slice of each survey unit was created by averaging the radar signal strength at regular nanosecond intervals. The subsequent data were then entered into a surface-mapping program and plotted. Proton magnetometry (PM) is a very sensitive technique that utilizes a magnetometer to measure the magnetic field of an area. Buried objects can create small disturbances in the earth’s magnetic field. By carefully plotting the locations of these disturbances, patterns emerge of buried archaeological features such as walls, foundations, hearths, and even artifact concentrations. The location of each reading was tracked with a Differentially Corrected Trimble Pro XRS global positioning system. At Bellows, sixteen (16) buried anomalies were documented along Trench Sections 1 and 2 with the GPR and PM. Three of the anomalies appeared consistent with pit structures seen elsewhere, and they may be the best candidates for human burials. The remaining anomalies were consistent with known buried utilities identified in previous projects. These anomalies were avoided during the subsequent construction project. Anomaly number 5, located in GPR Area 2, Trench Section 2, was identified as a cattle humerus. The trench exposed the humerus and associated forelimb bones. No indications of butchering were noted. The cattle bone is most likely related to historic Waimānalo Ranch activities in the area. At Fort DeRussy, a number of anomalies from radar and magnetometer suggest potential subsurface features. There has been no ground truthing to date of these anomalies. In summary, the techniques demonstrate great potential for discovery in sandy terrain in Hawai‘i and for better management of development projects through avoidance or prior treatment of potential burial sites.

**SYMPOSIUM 6: ARCHAEOLOGISTS IN CAVES IN HAWAI‘I**

*Session Chairs: William Godby (U.S. Army Pōhakuloa Training Area) and Thomas Wolforth (Scientific Consultant Services, Inc.)*

Native Hawaiians used caves in a variety of ways. it is our responsibility to identify and properly record, investigate, evaluate and recommend treatment for the resources that we illuminate in these dark and sometimes difficult to reach places. Yet we do not approach caves in a systematic or thorough way. We are often not adequately aware of the unique and often rare biological resources that exist in subterranean environments. Nor are we adequately versed in identifying and describing cave morphology. In sum we have not been trained to work in cave situations.

The cave environment can be compared to the marine environment in many ways. Archaeological challenges are similar. Work is conducted in reduced visual conditions; is enhanced by using special equipment; demands following specific safety protocols; and requires mapping and data collection in different ways. But while marine archaeology has developed rigorous methods and training programs to meet these challenges, cave archaeology is conducted in basically the same way we conduct surface archaeology.

To fully identify, document and understand cultural resources within cave settings we need to have a comprehensive understanding of those settings, and a methodological framework to approach the challenges presented. The session is envisioned as a foundation for dialogue with
colleagues to advance our ability to perform in this subterranean environment. Papers in this session address methods for approaching caves and the resources within them. A poster presentation accompanies this session.

**Untapped Resources: Toward an Improved Dialogue with Cavers**
*Bill Godby (U.S. Army Pōhakuloa Training Area) and Don Coons (Cave Conservancy of Hawai‘i)*

In February of 2004, the U.S. Army Cultural Resource staff at Pōhakuloa Training Area (PTA) invited members of the Cave Conservancy of Hawai‘i (CCH) to participate in a joint effort to identify and map lava tube systems. CCH is committed to identifying, mapping, and preserving cave systems throughout the Hawaiian Islands. Cultural resource management efforts at PTA have been largely limited to identify and mapping the archaeological components of lava tubes, rather than mapping entire systems. Methods and techniques utilized by archaeologists versus cavers are notably different, yet clearly complementary. This paper presents an overview of the partnership with CCH and argues that an improved dialogue would benefit preservation and understanding of these unique resources.

**The Search for Water: Recent findings at the "D" System lava tube at Pōhakuloa Training Area**
*Bill Godby, U.S. Army Pōhakuloa Training Area*

Pōhakuloa Training Area (PTA) contains some of the most extensive and unique lava tube cave systems on the island of Hawai‘i. One cave system, located on the west side of PTA, has been the focus of an ongoing partnership between the Cave Conservancy of Hawai‘i (CCH) and the U.S. Army cultural resource staff. Over three miles of this tube system have been mapped since 2004. Water collection is the primary activity documented within this system. Additionally recent evidence suggests that Native Hawaiians explored lava tubes more extensively than previously thought. This paper discusses findings, as well presenting methods of data collection and mapping utilized, including three-dimensional modeling techniques.

**Below Ground Surface Survey**
*Tom Wolforth, Scientific Consultant Services, Inc.*

Archaeologists have spent a great deal of energy reflecting upon sampling techniques and strategies appropriate for maximizing the potential for identifying sites, and collecting the data they contain. When entering a cave, the results of those efforts fade into darkness. Cultural modifications can occur above, below, and around the investigator, and the natural setting provides opportunities for cultural modifications that cannot occur on the ground surface. In this presentation I articulate the need for a more methodical approach to cave investigations. There are many aspects to consider, but I emphasize one: the investigator must continue to advance through the cave until the chamber is either 30 cm (12 inches) wide or high. And even then there are instances when one should press on through smaller spaces. Examples are provided that illustrate the point.
Caves in Ancient Hawai‘i: A Cross-Cultural Comparison
H. David Tuggle and M.J. Tomonari-Tuggle, International Archaeological Research Institute, Inc.
At the 2004 meetings of the Society for Hawaiian Archaeology, we gave a paper on Hawaiian refuge caves in which we concluded that “refuge” may be an erroneous interpretation of many or most caves with constructed entrances. In the present paper, we expand this view by considering Hawaiian cave function and symbolism in cross-cultural perspective. Just as our archaeological methods for recording caves and their contents have been too limited, as indicated by other papers in this symposium, we suggest that our perception of caves as cultural things is also too limited.

SYMPOSIUM 7: HAWAI‘I ISLAND ARCHAEOLOGY

Energy Dispersive X-Ray Fluorescence (EDXRF) and the Mauna Kea Project: An Update
Peter R. Mills (UH Hilo), Ken Hon (UH Hilo), Steven P. Lundblad (UH Hilo), Patrick McCoy (Pacific Consulting Services, Inc.), and Sean Naleimaile (UH Hilo)
In the spring of 2005, regulatory approval was obtained in order to collect 50 geological samples of bedrock from basalt flows within the Mauna Kea Adze Quarry Complex so that we may better characterize the range of geochemical variability within the quarry. In addition to consulting with numerous members of the Native Hawaiian community, a permission chant was created specifically for the project by kumu hula Kekuhi Keali‘ikanakaʻoleheililani and performed by those involved in collecting samples. The geological samples are being analyzed on a QuanX Energy Dispersive X-Ray Fluorescence (EDXRF) spectrometer both as whole rock samples and as pressed-pellets. The latter are prepared from ground-rock powders in order to increase the homogeneity of the samples so that they may be more reliably be used as standards in the future. These analyses and standards pave the way for discriminating stone from the quarry from other closely related sources, particularly within the Mauna Kea series. The need for such fine discrimination is demonstrated in a case-study of EDXRF analyses from a lithic scatter recently located on the coast of North Hilo in the ahupua‘a of O‘okala (Site 50-10-9-24559).

Sticky Situation: Sugar, Archaeology, and the Ahupua‘a of Hīlea
Janet Six, University of Pennsylvania and Maui Community College
For me, the phrase “activist archaeology” conjures up notions of action, agency and intent - a whip-cracking, vine-swinging, leather-clad, action figure coming to the rescue of indigenous peoples everywhere. By focusing on plantation archaeology in Hawai‘i, I planned to steer clear of controversy. By sticking to modern sites, I hoped to dodge the stigma native Hawaiians often associate with archaeologists. Despite my best intention to “fly under the radar,” recent finds have cast archaeology center stage in a dramatic legal battle over the boyhood home of Paiʻea Kamehameha (Kamehameha the Great) - the ahupua‘a of Hīlea. A contested landscape for over a century, Hīlea has been the subject of a nine year power struggle involving several prominent Native Hawaiian families and one of the corporate heavyweights in the archipelago, C. Brewer and Company. The current dispute is a classic example of how different models of reality and differential participation in the development of those models generated contradictions within the overall population and how these differences, in turn, fueled the contest between members of the Kaʻu community.
An Archaeological Glimpse at the Beginnings of Commercial Ranching on Hawai‘i Island
Elizabeth Kahahane, Tanya Souza, and Peter R. Mills, UH Hilo
In the summer of 2005, the presenters participated in a U.H. Hilo archaeological field methods class as part of a multi-year study of the Keanakolu (“the three caves”) region of Humu‘ula in the North Hilo District of Hawai‘i Island. The remains of a large stone corral and associated outbuildings were first mapped in 2001 and added to the State Inventory of Historic Places (Site 50-10-15-24250). One of the outbuildings is a stone-walled cabin with an in-built fireplace and chimney (now collapsed). Five contiguous 1 by 1 m excavation units were placed inside the cabin in 2005. These revealed a multitude of 19th-century artifacts below the debris from the collapsed cabin walls. Bullock hunters James Castle and Miles G.A. Simmons lived and operated out of Keanakolu beginning in the 1830s, and the Waimea Grazing and Agricultural Company developed a commercial sheep station there by the 1870s. Preliminary examination of the archaeological assemblage suggests that occupation of the stone cabin occurred during both of these eras, and thus it corresponds with the transition from bullock-hunting to more intensive commercial ranching in the region.

SYMPOSIUM 8: UNIVERSITY OF HAWAI‘I STUDIES OF BISHOP MUSEUM COLLECTIONS FROM NU‘ALOLO KAI, KAU‘A‘I
For the past several years, the Department of Anthropology of the University of Hawai‘i at Mānoa has been analyzing the Bishop Museum collections of materials excavated at Nu‘alolo Kai, Kaua‘i. Some of those results are ready to be shared.

Archaeological Investigations of the Artifacts and Cultural Materials from Nu‘alolo Kai (Site 50-30-01-196), Kaua‘i
Michael W. Graves, Julie S. Field, Windy McElroy, and Maureen Boyle (UH Mānoa)
We have completed the inventory of cultural materials from the Bishop Museum excavations at Nu‘alolo Kai, Kaua‘i Island. More than 13,000 objects have now been identified, and nearly 7,000 of these are artifacts (i.e., shaped or modified materials). It is now possible to describe patterned variation in these materials between the two major features excavated and in terms of their stratigraphic relations. Our research documents a shift over time in the nature of the occupation at this location, from specialized to generalized habitation use.

Reanalysis of the 1/4-inch Fish Faunal Assemblage from Nu‘alolo Kai, Na Pali Coast, Kaua‘i
Owen O’Leary, UH Mānoa
Nu‘alolo Kai, located along Kaua‘i’s Nā Pali coastline, contains deep stratified archaeological deposits that span more than 700 years. This paper examines the fish faunal remains from house terrace K3 collected by Emory and Soehren between 1958 and 1964. Building upon earlier work by Elizabeth Gordon published in 1993, I seek to determine what changes in fishing strategy and/or prey populations took place with 500 to 700 years of human occupation. These data will demonstrate that the inhabitants of Nu‘alolo Kai practiced a nearshore fishing strategy that focused on reef fish. Analysis of the faunal data utilizing rank orders of abundance and fishhooks recovered from the site also suggest that there may have been an increase toward angling techniques during later periods for fishes that live on the reef margin.
Keynote Address
Patrick V. Kirch, UC Berkeley
[no abstract available]

Featured Presentation: University of Pennsylvania native Voices: Past and Present Program
Janet Monge (University of Pennsylvania) and Herbert Poepeoe (UH Hilo)
[no abstract available]

SYMPOSIUM 1: ARCHAEOLOGICAL RESEARCH AND OUTREACH AT UH MĀNOA

Archaeological Contributions to Conservation Biology: Prehistoric ‘Opihi Harvesting at Nu‘alolo Kai, Kaua‘i
Alex E. Morrison, UH Mānoa
Until fairly recently, most conservation efforts have focused largely on historic records as baselines for species restoration and management. However, new studies integrating archaeological studies with conservation biology are beginning to demonstrate that indigenous populations both impacted and successfully managed local flora and fauna. In this paper I compare approximately 700 years of prehistoric use of the endemic Hawaiian mollusk Cellana spp. known in Hawai‘i as ‘opīhi, with modern catch records from 1900 until the early 1970s. Data on size and abundance are used to assess human impacts on prey populations. Integrating zooarchaeological research with historic records offers habitat managers a better opportunity to evaluate conservation efforts by providing a more accurate baseline for restoration.

Bird Bone Tools: Changes in Resource Utilization at Nu‘alolo Kai, Kaua‘i
Kelly Esh, UH Mānoa
This paper will explore prehistoric resource utilization of seabirds at Nu‘alolo Kai, a coastal settlement on the Nā Pali coast of Kaua‘i. My analysis of the avifaunal collection from this site focuses on subsistence change and resource depression as well as temporal changes in associated material culture- primarily bird bone tools. Pacific seabirds were valued as a food item, for their feathers, as an indicator of land to voyagers; bird bones were also used to make tools, which are abundant in the Nu‘alolo Kai assemblage. I will discuss variation and change in these tools over time, and implications for relationships between the utilization of various natural resources.

Recent Investigations in the Gulches of Windward Kohala, Hawai‘i Island
Julie Field and Michael Graves, UH Mānoa
In the summer of 2006 UH Mānoa conducted a 6 week archaeological field school on the windward side of the Kohala district of Hawai‘i Island. This research focused on the agricultural complexes and habitations that are preserved within the undisturbed and isolated gulches of the region. Investigations focused on the gulches of Niuli‘i, Wainaia, and Halawa, which are known to have been associated with Kamehameha during the early decades of his life. Archaeological
features were mapped and tested with small subsurface excavations, and sediment samples were collected for later analyses of soil nutrients and quality. Current analyses seek to determine the chronology of agricultural features in the windward gulches, and compare their temporal expansion with geological and biological constraints, and the potential for agricultural development by Kamehameha’s supporters during the late 18th century. Distinct features and technological advancements that resulted from Kamehameha’s direct influence (e.g., the construction of irrigation tunnels at the higher elevations) will also be discussed.

**Dating the Human Occupation of Pololū Valley, North Kohala, Hawai‘i Island**

*Michael Graves (UH Mānoa), Julie K. Field (UH Mānoa), Tyler Vallante (Brown University), and Dana M. Isaac (Middlebury College)*

Several new radiocarbon dates and archival research based on previously excavated materials provide new evidence regarding both the antiquity and the early historic occupation of Pololū Valley. Radiocarbon dates on Polynesian introductions or short-lived taxa from the Pololū Dune Sites now indicate initial coastal occupation as early as AD 1200. Additional dates and previously reported dates now provide evidence for a continuous occupation of both the coastal and inland valley locations throughout the prehistoric period. Historic artifacts recovered from the dune sites, as well as a traditional site located farther inland, suggest human occupation continued through the early phase of European contact (AD 1778-1820), and thereafter throughout the 19th and early 20th centuries.

**Changing Aspects of Basalt Distribution and Agricultural Production in Pololū Valley: Results of Recent Research**

*Mark Oxley, Julie K Field, Jason Espiritu, and Michael W. Graves, UH Mānoa*

Food and lithic resources are unevenly represented in the archaeological record of Pololū Valley. An analysis of basalt materials from the Pololū Basalt Quarry site, along with a number of other features within the valley, provides a glimpse of changing patterns of basalt procurement. Materials from the earlier levels of archaeological sites are apparently not from the Quarry Site. Quarry materials only come to dominate assemblages during the late prehistoric period, and are represented preferentially by debitage rather than preforms or blanks. A GIS analysis of Complex B, one of the major agricultural and habitation complexes in Pololū, shows how later irrigated or terraced agricultural features were likely built upon a portion of the earlier constructed dryland fields. These features take advantage of higher elevations in the valley floor, and effectively mitigate the flood damage. Combined, these studies suggest that pre-contact inhabitants increasingly recognized and understood the geology and geomorphology of Pololū Valley, and drew upon this to increase local productivity.

**A Layered Landscape: Upland Heiau of Kohala, Hawai‘i**

*Jesse Stephen, UH Mānoa*

A systematic survey of the upland Kohala (Hawai‘i) field system, and the subsequent comparative analyses of architecture, recorded more than twenty heiau across nine ahupua‘a. This paper revisits classifications of heiau and explicitly reviews the materialist fundamentals that our archaeological fieldwork has been based upon. Further, heiau have often been studied in isolation, and we propose new methods to investigate these features in the greater cultural and environmental context of the Kohala landscape.
Report on Recent Excavations at Anakena Beach, Rapa Nui (Easter Island)
Terry Hunt and Kelley S. Esh, UH Mānoa
Excavations conducted by the University of Hawai‘i Rapa Nui Archaeological Field School in 2004, 2005 and 2006 have revealed a well-preserved cultural deposit at Anakena Beach. This paper will discuss the on-going work at Anakena, general findings, and implications for understanding prehistoric subsistence in Rapa Nui.

‘A Pō: The Rapa Nui Youth Involvement Program-2005 Field Report
Britton Shepardson, Susannah Rutherford, and Jesse Stephen, UH Mānoa
The Rapa Nui Youth Involvement Program (‘A Pō) began in 2003 as a joint effort between graduate students from the University of Hawai‘i and staff members of the Padre Sebastián Englert Anthropological Museum on Easter Island. The program is designed to engage Rapa Nui high school students in field and laboratory aspects of scientific research on their own island. In 2005, students participated in a project that combined photogrammetry and lichenometry at the archaeological site of Vinapu. The project established a comparative baseline for longitudinal studies of lichen growth and a potential dating method for archaeological investigations.

Persistence and Change in 19th Century Hawaiian Technology
James Bayman, UH Mānoa
Interpretations of European and American contact with Oceania often highlight the rapid changes that took place in the technologies and practices of traditional societies. In the Hawaiian Islands, for example, many scholars have assumed that stone adzes were quickly replaced with metal adzes, and that such change was an inevitable consequence of a more efficient western technology. The timing and pace of this particular change is put into a comparative perspective by reviewing information on the rate at which indigenous Hawaiians selectively modified their clothing and pole-and-thatch buildings in the context of Euro-American colonialism. This study reveals that although Hawaiian women quickly adopted western clothing styles, indigenous stone adze technology and vernacular architecture persisted about a century after contact in AD 1778. This paper concludes by considering the broader implications of these findings for the archaeology of contact and colonialism.

SYMPOSIUM 2: RESEARCH QUESTIONS AND METHODS IN HAWAIIAN ARCHAEOLOGY

Archaeological Cartography: Setting Boundaries on Archaeological Mapping and Surveying Realms as a Basis for Exploring Standards
MaryAnne Maigret
Early this year the State Historic Preservation Division directed reviewing staff to request that archaeologists 1) Use “sub-meter accuracy, differentially corrected GPS, 2) Discourage use of ‘antiquated tools,’ 3) Eliminate use of “painting and drawing programs” and 4) Request that all maps submitted be “GIS maps.” While these directives do not appear to have gained much traction, they did prompt rebuttal and stimulate discussion between archaeological cartographers. This episode should continue to enliven discussion and debate about how and why we make maps, and we should do this before proposing rule changes or drafting professional guidelines. I propose we define and set boundaries on “archaeological mapping and surveying realms.” These realms may include cadastral surveying, controlled surveying, non-controlled surveying, site
mapping and conceptual notebook sketching. As I define these realms in our discussion, I will elaborate on what may be at stake if we fail to articulate a position.

**Practical Archaeoastronomy**  
*David Tuggle (International Archaeological Research Institute) and Thomas S. Dye (TS Dye & Colleagues, Archaeologists, Inc.)*  
Given the importance of the celestial realm in traditional Hawaiian culture, the study of ethnoastronomy and archaeoastronomy in Hawai‘i can certainly provide important insights about the past. However, there have been very few studies in these areas. One reason for this may be that research questions, data collection, and analyses require knowledge of astronomy that extends somewhat beyond that commonly held. The goal of the present paper is to provide some basic information that will assist archaeologists to begin to explore this realm, and in particular to be able to make the on-site observations critical to archaeoastronomical analysis of sites. In most cases, data from these observations cannot be obtained by other means, and thus in the world of CRM. If a site is destroyed or the view planes lost, the potential for the astronomical significance of a site may never be realized.

**Testing the Limited Land Hypothesis**  
*Robert J. Hommon, National Park Service (Ret.)*  
The Limited Land Hypothesis states: “By AD 1550, the ancient Hawaiians ceased large-scale agricultural expansion as a result of having reached effective limits on cultivable land imposed by available technology, sociopolitical factors, and natural variables including rainfall and soil fertility.” Carefully designing and conducting archaeological tests of this hypothesis will shed light on late precontact dynamics of not only agricultural technology, intensification, expansion, risks, limits, overshoot, and shortages, but also population growth, stabilization, decline, and control; the invention, development, and economic basis of conquest warfare; and the emergence of competing Hawaiian archaic states.

**How Old is Traditional Hawaiian Surface Architecture?**  
The age of surface architecture is an important research question in the theory of the maka‘ainana transformation. Methods for determining the ages of structures and estimating their durations of use are presented. The methods are routinely applicable where surface architectural remains are associated with subsurface cultural deposits. Some results from Hawai‘i are presented and future prospects are canvassed.

**Dating Hawaiian Fishponds**  
*J. Stephen Athens, International Archaeological Research Institute, Inc.*  
During the past decade archaeological investigations have been conducted at approximately 30 fishponds. Most have been on O‘ahu, although other major islands (except Lāna‘i and Kaho‘olawe) are represented. One of the major thrusts of this work has been the dating of fishpond construction. This paper summarizes these efforts and discusses some of the challenges in obtaining valid dates.
Dating Maui’s Last Lava Flow: Preliminary Results of a Collaborative Study of Ahihi Kinaʻu Natural Area Reserve

Boyd Dixon (PBS & J) Mike Desilets (Garcia and Associates), Maria Orr; and Tanya Lee-Greig (Cultural Surveys Hawaiʻi Inc.)

Based on late eighteenth century explorer’s maps and second-hand ethnohistoric accounts, Cape Kinaʻu, Maui is currently thought to have resulted from a recent Kalua o Lapa lava flow dating to not long after AD 1786. Radiocarbon dating by scientists at the Hawaiian Volcano Observatory, however, suggests an emplacement date in the range of AD 1480-1600. This earlier date range correlates closely with Hawaiian traditional history, the results of recent archaeological survey, and Mahele-era ahupuaʻa boundaries. These lines of evidence suggest that discrepancies in coastline mapping between 1786 and 1793 reflect varying techniques in European naval mapping traditions and not the emplacement of a major new lava flow.

Cultural Resource Prioritization and DGPS-GIS integration at Ahihi-Kinaʻu Natural Area Reserve, Maui

Michael Desilets, Garcia and Associates, Inc.

A new method is presented for assessing archaeological features and prioritizing protection measures at Ahihi-Kinaʻu Natural Area Reserve, Maui. Our approach ranks cultural resources on four variables: 1) Scientific Value, 2) Cultural Value, 3) Site Condition, and 4) Site Location. The method integrates GPS data collection and GIS mapping to provide detailed yet intuitively understandable graphic results. If successfully designed and implemented, this new prioritization method will ensure that cultural resources receive the amount and degree of protection suitable to their susceptibility to future impacts and value to interested communities.

The Magnetometer Survey of the Ahihi-Kinaʻu Nature Area Reserve

Trisha Drennan, Captain Richard W. Rogers and the crew of the Research Vessel ‘Pilialoha,’ Pilialoha Consultants

In April of 2006 the Southeast Maui Maritime Project, aboard the Research Vessel Pilialoha, conducted a magnetometer and visual survey within the submerged portion of the Ahihi-Kinaʻu Nature Preserve and La Perouse Bay. The primary mission was to determine if remains of the steamship Bee were to be found within the boundaries of the nature reserve. Magnetic data was collected within the survey area and divers explored the one possible ‘hit’. Cultural remains were discovered but not those of the steamship Bee. Magnetic data, collected along the face to Maui’s most recent lava flow, may prove useful to geologists. The negative results of the search for the steamship Bee contributes to our growing database of where shipwrecks are not to be found.

Submerged Cultural Resource Survey of McGregor’s and Makena Landings

Captain Richard W. Rogers, Trisha Drennan and the crew of the Research Vessel Pilialoha, Pilialoha Consultants.

Goods flowing in and out of South Maui during the 19th century passed through two landings. McGregor’s Landing served shippers near the West Maui Mountain, while Makena Landing served those shipping from the southern flanks of Haleakala. In April of 2006 The “South Maui Maritime Expedition” set out on the research vessel Pilialoha to document the cultural remains at these two abandoned ports and other sites of interest. Divers were able to complete a site map...
of the collapsed pilings and stumps at McGregor’s Landing. A second survey was conducted at Makena Landing, a few miles to the east. This survey of the exposed bottom features revealed piles of ballast stones and the possible remains of a shipwreck in the anchorage area of the small bay. No excavation was conducted and no artifacts were removed from the survey areas during the 2006 season.

SYMPOSIUM 4: MOLOKA‘I

Teaching Applied Archaeology in the Community: The Moloka‘i Archaeological Training Program

Cy Calugay and Windy McElroy, UH Mānoa

Over the course of one academic year, 20 students enrolled in courses as part of the Moloka‘i Archaeological Training Program, sponsored by the University of Hawai‘i and the Moloka‘i Rural Development Project. The objective of this program was to teach basic archaeological methods to local and non-traditional students for possible future employment in applied archaeology. Classroom instruction consisted of lectures, lab work, and small group discussions and was followed by field experience in Kamala Ahupua‘a and Wailau Valley. Students learned basic archaeological methods and gained hands-on experience with archaeological resources in both windward and leeward settings. Due to the success of the Moloka‘i program, we recommend its continuance, possibly expanding to include other islands and offering a wider range of topics, such as collecting oral histories and preparing archaeological reports for publication.

Early Hawaiian Culture History Revisited: The Age of Halawa Dune Site (MO-A1-3), Moloka‘i Island

Mark D. McCoy (San Jose State University) and Patrick V. Kirch (UC Berkeley)

After over three decades of being considered one of the earliest archaeological sites excavated in the Hawaiian Islands, we present evidence the Halawa Dune Site (MO-A1-3) was in fact established no earlier than AD 1300 and primarily dates to the Late Expansion Period (AD 1400-1650). In addition, the results of recent archaeological and paleoenvironmental research are brought together to present a revised culture of Moloka‘i Island between AD 800-1650. Early in this revised chronology we find several significant patterns that seem to be best explained as a consequence of the island’s unique geography and environment, including varied timing for endemic forest decline, a generalized settlement pattern with respect to ecozone, and a remarkably long initial period of marine and endemic bird focused subsistence. There is also strong material evidence in the Late Expansion Period for the intensification of subsistence economies, population increase, and the structuring of the landscape through ritual.

Wetland Agriculture in a Remote Valley: Preliminary Results of the Wailau Archaeological Research Project, Wailau, Moloka‘i

Windy Keala McElroy, UH Mānoa

Hawai‘i’s agricultural past is increasingly buried beneath modern development, especially that part of the past pre-dating western contact. Isolated areas, however, exist where tangible aspects of this history might be found; the remote Wailau Valley on Moloka‘i provides a prime example. Wailau offers a pristine archaeological record within a sizeable valley that has not been previously studied. Wailau is unique for the range and condition of its archaeological sites, as
well as for the former presence of two ahupua‘a within a single valley. This paper summarizes the results of two seasons of fieldwork in Wailau, focusing on the extensive network of wetland terraces, or lo‘i found throughout the valley. Detailed mapping and excavation were conducted, and radiocarbon dates were obtained for wetland agricultural systems from varied environmental contexts. Preliminary results suggest that areas along the inland side drainages were cultivated prior to the flat, low-lying expanses along the major streams.

**Daily Life and Social Change in Prehistoric Hawai‘i: a Case Study from the Kalaupapa Peninsula, Moloka‘i**

*Mark D. McCoy, San Jose State University*

Traditional daily life in Hawai‘i is best reconstructed through the dual analysis of oral traditions and material remains collected from archaeological sites. Oral traditions, when viewed as an avenue for studying social memory, are a valuable record of culturally specific behavioral rules, or social structures, which have evolved over time. In contrast, much of the archaeological record is the by-product people’s regularized daily lives. In this paper, new research on Kalaupapa Peninsula, Moloka‘i is used to determine what aspects of people’s daily lives changed, or persisted unchanged, during a period of major social upheaval late in Hawaiian prehistory. In brief, there is good evidence of the elite’s power to influence settlement patterns however other evidence contradicts the expected and shows direct access to lithic resources across community boundaries and no clear signs of intra-community food sharing at domestic sites.

**Scratching the Surface: Initial Results from the Archaeology of the Recent Past at Kalawao**

*James L. Flexner, UC Berkeley*

For over two decades, settlement pattern studies have been a standard in Hawaiian archaeology (following Weisler and Kirch’s classic 1985 study of Kawela, Moloka‘i). An archaeological project initiated in summer of 2006 has followed the methodology of this type of approach to archaeology, mapping in detail surface remains and collecting surface artifacts in an area famous as the home of the Kingdom of Hawai‘i’s first leprosy exiles, from 1866-1900. This paper will present the results of this research, examining the utility of surface survey in a dynamic, rapidly abandoned settlement. It will also talk about the social realities of doing archaeological research in an area that is still home to people who could be considered disenfranchised, and how archaeology can be used to reach out to the modern community by making connections with the historic one.

**SYMPOSIUM 5: GENERAL SESSION**

**A New Artifact Collection from the Waimānalo Plain**


Excavations at site 50-80-15-4856, north of the Bellows Dune Site, yielded a collection of late traditional Hawaiian artifacts. One type, an abrader made from the spine of the wana, *Echinothrix diadema*, appears to be new to Hawaiian archaeology. The artifacts from site 50-80-15-4856 are described and placed in the context of other finds from the site.
**The Age of Sites on the Waimānalo Plain**
Radiocarbon dates on short-lived wood charcoal and pearl shell from site 50-80-15-4856 add to a growing body of evidence that traditional Hawaiian use of the Waimānalo Plain was a relatively late phenomenon. The design of the dating program is described and its results presented in the context of other radiocarbon dates from nearby sites.

**EDXRF analyses of basalt from Kahaluʻu Rockshelter, Hawaiʻi Island**
*Peter R. Mills and Steven P. Lundblad*
Results are presented from the EDXRF analyses of over 300 polished basalt flakes and adze fragments recovered from the stratified Kahaluʻu Rockshelter in Kona, Hawaiʻi Island. Three major provenance clusters are identified: one local (Hualalai sources), one from the Mauna Kea Adze Quarry, and one from an unidentified volcanic series with similarities to Kohala and Maui. Exploitation of the Mauna Kea Adze quarry and the other non-local source materials are associated with episodes of intense adze reworking relative to other strata found in the shelter. It is proposed that such a pattern may derive from large-scale projects such as the construction of voyaging canoes or heiau images, and thus may be connected with projects associated with chiefly support.

**A Use-wear Experiment on Hawaiian Volcanic Glass**
*Robert Bollt, Melanie Mintmier, Michelle Pammer, and Whitey Petry, UH Mānoa*
Volcanic glass flakes have been found in archaeological contexts all over Hawaiʻi. Some ideas that have been proposed include meat preparation (dog, fish, pork) and plant preparation, for eating or for material use. This study deals with the examination of edge damage through experimental use. A variety of tasks were performed with volcanic glass flakes, which were then examined microscopically and photographed to provide a database for future reference.

**Rendering Feature Drawings into 3-D in GIS**
*Joseph R. Arnold, Cal State Fullerton*
Visualization of 3D relationships can be extremely helpful when looking for patterns in archaeological deposits. This project demonstrates how simple, shaded drawings of archaeological features, such as rock clusters, can be projected into 3D objects using ArcGIS software, often with minimal alteration. These techniques are particularly useful when interpolating data that may be missing from archaeological collections such as height, and can also greatly aid in presenting what an entire archaeological site looks like to the public.

**Inventory and Outreach at the End of the Chain: Maritime Archaeology in the Northwestern Hawaiian Islands**
*Hans Van Tilburg, NOAA National Marine Sanctuary Program, Pacific Region*
There are over 130 shipwrecks and sunken aircraft in the remote Northwestern Hawaiian Islands. Many of these are historical or archaeological sites of interest. They are also protected resources under the newly designated NWHI Marine National Monument. This presentation will feature the results of the 2006 NOAA research expedition to Kure Atoll and Pearl and Hermes Atoll, examining a selection of maritime heritage resources currently being surveyed (*USS Saginaw, Dunnottar Castle, Parker, Pearl*). NOAA’s Maritime Heritage Program, initiated in 2002, focuses on underwater archaeology, resource protection, and public outreach and education. This
presentation will highlight the kinds of public maritime archaeology being conducted in the remote Pacific atolls, and what these efforts mean for State and US Fish and Wildlife partners.

**Burial as a Transnational Endeavor: the Japanese Cemetery at Pahala Plantation, Hawai‘i**  
*Chana Kraus-Friedberg, University of Pennsylvania*

In the late 19th and early 20th centuries, immigrant laborers who arrived on Hawai‘i’s sugar plantations were buffeted by a bewildering array of cultural pressures. In an effort to maintain ties to their homelands and, as time went on, to fit themselves into Hawaiian and plantation culture, workers developed a range of responses that grew to comprise the ‘local’ culture of present day Hawai‘i. This culture prizes both ethnic identity and birth in Hawai‘i, while taking practices and beliefs from many, although not all, of the immigrant groups which arrived during the sugar era. In this paper I will discuss the gravestones and epitaphs of the Japanese sugar-worker cemeteries associated with the Pahala Plantation on the Island of Hawai‘i, and explore the ways in which plantation workers used this mortuary space to negotiate ties between Hawai‘i and “home.”

**Kawai Nui Archaeology and Antiquity: A Public Expression**  
*Muriel B. Seto*

Since the 1960s, a series of public and private development issues threatened the natural and cultural values of Kawai Nui. Fortuitously, the Hawaiian Cultural Renaissance also began in the 60s. Under the aegis of Hawai‘i’s oldest environmental organization, their ad hoc Committee for Kawai Nui came into being. By 1975, when the wetlands received federal recognition as “The Kawai Nui Cultural, Historical and Archaeological District,” a small Kailua ad hoc Committee had become a statewide organization with Mainland supporters, it numbered more than fifty Kailua, Environmental, Hawaiian and other citizen groups, had gathered 30,000 state-wide signatures on a public petition, had assisted DPED in re-designating the state district for protection, and had educated thousands of people through tours of the area and public educational presentations throughout the state. In addition, several national and state agencies had gone out on a limb to support protection for this valuable settlement District. Without the active participation of archaeologists willing to give the “short course” to empower the several Publics, it is doubtful that beneficial state, national and international (in 2005) recognition would have occurred. This personal account is by one grateful citizen who has been intensively involved since 1968.

**The Outdoor Classroom: Helping Students Understand the Human Past and Conservation Biology in a Hawaiian Setting**  
*Kelila Jaffe, Waimea Valley Audubon Center*

Waimea Valley Audubon Center, located on the North Shore of O‘ahu, offers a variety of educational programs for various ages that integrate cultural and ecological components, including a new public archaeology program. Audubon’s philosophy of hands-on learning poses several challenges as archaeological course material has been added to the curriculum. Students must be able to engage in the archaeology lessons, participating in activities that allow them to absorb key concepts, while not damaging the archaeological record, Hawai‘i offers a unique assemblage of native fauna and introduced species whose detrimental effect on the Hawaiian ecosystem has been well-documented. These remains have become important educational tools that convey information about not only archaeology, but conservation biology as well.
Sticky Situation: Sugar, Archaeology and the Ahupua‘a of Hīlea
Janet Six, Jordan Pickrell, Jill Bennett-Gaieski, and Chana Kraus-Friedberg, University of Pennsylvania
Following the abolition of slavery, the locus of sugar production shifted to Hawai‘i. The “modern” Hutchinson Sugar Plantation village c. 1870 was built on top of the pre-contact Hawaiian village of Hīlea - the boyhood home of Kamehameha I. A contested landscape for over a century, Hīlea has been the subject of a ten year power struggle involving several prominent Native Hawaiian families and one of the corporate heavyweights in the archipelago, C. Brewer and Company. Recent finds have cast archaeology center stage in this dramatic legal battle. This paper explores what happens when “public archaeology” gets personal.

SYMPOSIUM 6: THE ARCHAEOLOGY OF NU‘U AND KAHIKINUI, MAUI ISLAND: A SYMPOSIUM IN HONOR OF CHARLES KEAU

The Archaeology and the ʻĀina of Mahamenui and Manawainui, Kahikinui, Maui Island
Lisa A. Holm, Pacific Legacy, Inc.
This paper summarizes three seasons of field research that were conducted within the ahupua‘a of Mahamenui and Manawainui in the Kahikinui District of Southeastern Maui. More than 700 previously unrecorded features were mapped and recorded during the course of intensive survey; thirty-two were test excavated and the 100,000+ pieces of fauna, lithic debitage, and other materials recovered were analyzed to explore aspects of status, ritual observance, gender, and daily life among the maka‘āinana of the Late Expansion Period. Comparisons were drawn between settlement distributions upon the geologically youthful substrates of central Kahikinui (Kipapa-Naka‘ohu) and those upon the more mature substrates of the eastern periphery (Mahamenui-Manawainui). Investigations at the level of the moku, ahupua‘a, and kauhale were thus used to better understand variability in daily practice at the level of the polity, community, and household in Kahikinui, and are presented as a part of larger ongoing research efforts on Maui Island.

An Overview of Four Seasons of Field Studies at Nu‘u Mauka Ranch, Maui
John Holson (Pacific Legacy, Inc.), Patrick V. Kirch (UC Berkeley)
This paper will present the preliminary results of archaeological survey within the ahupua‘a of Nu‘u undertaken by the Oceanic Archaeological Laboratory, UC Berkeley. The survey, on the leeward slopes of Haleakala, included a diversity of terrain, soil types and hydrologic regimes. One of the goals of the study was examine the range of variation in archaeological sites and site types in the coastal, mid-upland and upland zones to an elevation of about 3,000 ft. Study areas included a variety of landforms including the lava shelf on the coast, large and small valleys, ridges, and ‘a‘a and colluvial slopes encompassing different environmental zones. Over 150 sites were recorded during the survey effort representing short and long term use of the area. Notable was the recording of several large heiau with associated agricultural features, petroglyphs, and a basalt quarry.

The Nu‘u Petroglyphs Analyzed within a Polynesian Settlement Landscape
Sidsel Millerstrom, UC Berkeley
In this presentation I discuss the distribution, site context, and time period of petroglyphs that have been recorded at Nuʻu Mauka Ranch, southeastern Maui, since 2005. This work was carried out as part of a settlement pattern survey. Four sites were recorded within the survey area and some sampling was carried out at one site situated in the vicinity. More than 693 individual images were documented. While 19.3 percent of these images represent anthropomorphs, the majority, or 74.2 percent, depicts parallel and randomly placed lines many of which cover anthropomorphs. Do these overlapped lines suggest a change within the local social structure or are they just vandalism done in recent times?

**Monumental Architecture at Nuʻu, Maui: When is a Heiau a ‘Palace’?**

*Patrick V. Kirch, UC Berkeley*

Recent archaeological survey at Nuʻu Mauka Ranch has documented several large ("monumental") stone structures, some recorded by Winslow Walker in 1930, and others previously unknown. Drawing upon the variability exhibited by this sample of monumental architecture, the prevailing assumption in Hawaiian archaeology that most if not all such large-scale structures had religious functions (i.e., were heiau) is questioned. It is suggested that at least two of the structures at Nuʻu may have served as elite or chiefly residences. This study raises the larger question of why Hawaiian archaeology has paid so little attention to the possible role of elite residences (what in other parts of the world are routinely referred to as “palaces”) in island settlement patterns.

**Quarrying and Tool Production at Nuʻu, Maui**

*John Holson (Pacific Legacy Inc.), Lisa Holm (Pacific Legacy Inc.), Patrick V. Kirch, UC Berkeley*

Survey at Nuʻu Mauka Ranch has resulted in the discovery of a basalt quarry containing lithic reduction waste and several adze preforms. This is the second quarry recorded on Maui. The quarry, located on a weathered ridge of Kula Series volcanics, consists of several small outcrops of course to fine-grained basalts. Initial examination of the collection suggests that several reduction stages are present in the debitage assemblage. XRF analysis of debitage sample suggests the chemical signature of the basalt is similar to that of a previously documented quarry in Haleakala Crater. The variation in preforms indicates that users of this quarry were producing a diversity of adze types.

**POSTER**

**Sticky Situation: Sugar, Archaeology and the Ahupuaʻa of Hīlea**

*Janet Six, Jordan Pickrell, Jill Bennett-Gaieski, Chana Kraus-Friedberg, University of Pennsylvania*

Following the abolition of slavery, the locus of sugar production shifted to Hawaiʻi. The “modern” Hutchinson Sugar Plantation village c. 1870 was built on top of the pre-contact Hawaiian village of Hīlea - the boyhood home of Kamehameha. A contested landscape for over a century, Hīlea has been the subject of a ten year power struggle involving several prominent Native Hawaiian families and one of the corporate heavyweights in the archipelago, C. Brewer and Company. Recent finds have cast archaeology center stage in this dramatic legal battle. This poster explores what happens when “public archaeology” becomes personal.
VIDEO

Underwater Archaeology
Hans Van Tilburg, NOAA

Video Tribute to Keola Hanoa, Dee and Walt Fredricksen, and Helen Leideman
20th Annual SHA Conference, Outrigger Keauhou Beach Resort, Kailua-Kona, October 19-21, 2007

The Beauty of the Forest (keynote address)
Kekuhi Kealiʻikanakaʻolehililani, Hawaiʻi Community College
[no abstract available]

Hawaiian Archaeology in the Pacific Northwest: Kanakas, Metis, and the Archaeology of the Northwest Fur Trade
Scott Williams, Washington State Department of Archaeology and Historic Preservation
Few people stop to think that there is a class of archaeological sites in Washington State that are the result of Native Hawaiians living, working, and sometimes dying in the Pacific Northwest, far from their native land. And yet thousands of Kanaka Maoli left Hawaiʻi to seek employment and adventure among the fur trading companies of the Pacific Northwest. Many returned to Hawaiʻi after years away, some stayed and raised families, and some were buried on the mainland (the first recorded burial in the Pacific Northwest was of Hawaiian crewmember of the Tonquin). Native Hawaiians left behind a lasting imprint, both archaeologically and in other ways, of their impact on the early history of the Northwest. This paper explores some of the issues with identifying archaeological deposits associated with Native Hawaiians and preserving them under state and federal laws.

Beeswax Wreck of Nehalem Oregon
Scott S. Williams (Washington State Department of Archaeology and Historic Preservation) and Richard W. Rogers (Pilialoha Consultants)
Blocks of beeswax, planks of teak and shards of porcelain have been found along a stretch of oceanfront in Oregon for over three hundred years. Native American tradition, pioneer stories and 20th century imagination have transformed an historical event into local tradition. The identity of the “Beeswax Wreck” of Nehalem, Oregon has been a matter of speculation until now. The artifacts found in various collections indicate the shipwreck is of Spanish origin, dating to the late 17th or early 18th century. Interviews with knowledgeable locals backed by historical documents have narrowed the search area for the hull of the vessel in question.

In April 2007 the “Beeswax Wreck Project” conducted a series of remote sensing surveys over several areas suspected to contain deposits of cultural artifacts from the shipwreck. Data gathered during Phase One of the project has helped narrow the search area and offered tantalizing clues to the identity of the “Beeswax Wreck” of Nehalem. We can now say with confidence the vessel is one of two Spanish galleons, and with further research we are confident we will identify which one.

Reflections on Two Years of Archaeological Survey in Hawaiʻi’s First Hansen’s Disease Settlement, Kalawao, Molokaʻi
James L. Flexner, UC, Berkeley
Over the past two summers, a team of archaeologists from the UC, Berkeley and Molokaʻi locals has been conducting archaeological field research in the ahupua’a of Kalawao, which was the
site of a Hawaiian Hansen’s disease (more commonly known as leprosy) settlement from 1866-1900. The surface remains in Kalawao provide fascinating glimpses of daily life in Kalawao, for a group of people who are at best misunderstood in many historical accounts of the settlement. In addition, the research methodology has identified remnants of the traditional Hawaiian settlement pattern that developed during the centuries prior to the establishment of the quarantine settlement. This paper will provide an interim report about this ongoing research, with a focus on the theoretical and methodological developments that have arisen over the course of the project.

**Excavations at Laumai’a 2007**

*Carolyn L. White (University of Nevada, Reno) and Peter R. Mills (UH Hilo)*

In 2007 archaeologists from the University of Hawai‘i, Hilo and the University of Nevada, Reno, initiated a joint project at the site of Laumai’a, a site identified as a 19th century ranching settlement. The site is located near the border of the North Hilo District and Hāmākua District at an elevation of 6700 ft. Field school students spent five weeks surveying and excavating portions of this site in order to address research questions focusing on the use of material culture, domestic space, and landscape in the development of ʻIlando ʻolo ranching culture of Hawai‘i. This paper presents the preliminary results of the work of this field season.

**SYMPOSIUM 2: HAWAIIAN MATERIAL CULTURE STUDIES**

**The Bird Stones of Waimea: Post-Contact Survival of a Pre-Contact Artifact**

*Rowland B. Reeve, Pacific Legacy, Inc.*

Archaeologists surveying portions of the Waimea plain on the island of Hawai‘i in the early 1970s encountered several caches of water worn pebbles. Each of these pebbles had a shallow pecked or incised groove encircling its midsection. Although these stones were originally identified as net sinkers, ethnohistorical research undertaken in the 1980s by Leilani Pyle revealed them to be weights used in the snaring of ʻkōlea, the Pacific Golden Plover (*Pluvialis dominica*). Up through the close of the 19th century the migratory ʻkōlea flocked to the grasslands of Waimea each winter in vast numbers. Recent investigations undertaken by the author in the Waimea area have led to the discovery of numerous of these “bird catching stones,” several of which were recovered from within historic house enclosures. Among these stones were a few pebbles which appear to have been incised with an identifying mark such as an X, a V, and even a W. The location of these stones within historic period sites, the indication that iron tools were used to incise them, and the resemblance of their identifying marks to letters, all suggest that the snaring of ʻkōlea using traditional materials and techniques was carried on well into the post-contact period.

**History in a Button**

*Rowland B. Reeve, Pacific Legacy, Inc.*

A trio of small but evocative artifacts was found during recent archaeological investigations of historic house structures in the district of South Kohala on the island of Hawai‘i. The artifacts are three gold-plated brass uniform style buttons. One button, embossed with the name “TAMEHAMEHA”, a crown and the numeral “2”, appears to be connected to King Kamehameha II’s ill-fated visit to England in 1824. The second, bearing the Hawaiian royal coat of arms may date from the reign of a later monarch, perhaps Kalakaua or Liliʻuokalani. The third
button is engraved with what appears to be a native hibiscus, and may have adorned the vest of a Waimea *paniolo*. Each of these buttons evokes a different phase of Hawai‘i’s past. Together they serve as a reminder that even the simplest of artifacts has its own unique story to tell.

**Basalt Mata’a of Kualoa, O‘ahu**

*Scott S. Williams, Washington State Department of Archaeology and Historic Preservation*

The stone tools of Rapa Nui known as *mata‘a* are signature artifacts of that remote island. *Mata‘a* are sharp-edged flakes that are reworked in one spot to form a tang, allowing the flake to be hafted on a spear shaft. The *mata‘a* then serves as a cutting head, and the Rapa Nui *mata‘a* were made of obsidian and the naturally sharp, unworked edges formed fearsome cutting weapons. But *mata‘a-like* tools are not unique to Rapa Nui: they are present in the artifact collection from Kualoa Beach Park, on windward O‘ahu. At Kualoa, large flakes of basalt are found that have similar tanged hafting elements as the obsidian *mata‘a* of Rapa Nui, and they were presumably used for the same function. These Hawaiian *mata‘a* are described, and their probable use and significance at being found only at Kualoa, a known training ground for the ali‘i, is discussed.

**Awls and Coits: Two Uncommon Hawaiian Artifacts**

*Paul L. Cleghorn, Pacific Legacy, Inc.*

Kualoa Regional Park on the windward side of O‘ahu houses an extremely large well provenienced artifact collection that I have been fortunate enough to become very familiar with. Two types of artifacts--flaked stone awls and ground stone coits--are present in this collection. These two types of artifacts appear to be rare in other archaeological collection in Hawai‘i. The purpose of this brief presentation is to describe these uncommon artifacts. It is hoped that this presentation will alert other archaeologist to the existence of these types of artifacts.

**SYMPOSIUM 3: NORTH KOHALA ARCHAEOLOGY**

**Long-Term Social Dynamics in Kohala, Hawai‘i: Preliminary Results from the 2007 Field Season**

*Julie Field (Ohio State University), Thegn Ladefoged (University of Auckland), and Patrick V. Kirch (UC Berkeley)*

The Hawai‘i Biocomplexity Project, a continuing multidisciplinary collaboration involving researchers from the University of California (Berkeley and Santa Barbara), Stanford University, University of New Mexico, University of Auckland, and other institutions, entered a new three-year phase in 2007. The project’s current research focuses on the long-term dynamic linkages between population growth, agricultural intensification, and sociopolitical transformations, using the North Kohala district as a “model system.” Here we report on the project’s objectives and research methods, and on the preliminary results of the first year of archaeological field investigations. The 2007 fieldwork concentrated on the *ahupua‘a* of Makiloa and Kalala, where several household complexes were intensively studied.

**Ka I‘a Kinohinohi Pōhaku (The Fish That Adorn the Rocks): a Preliminary Report on Shellfish and Sea-urchin Analyses, North Kohala, Hawai‘i Island**

*Robin Connors, San Jose State University*
In leeward North Kohala, archaeologists primarily examine subsistence in terms of upland agricultural production in the Kohala Field System. Recent excavations at coastal habitation complexes reveal how coastal resources supplemented and stabilized subsistence for residents of leeward Kalala ahupua’a. In addition, while ethnographic records indicate that the primary gatherers of in-shore coastal resources were commoner women and children, archaeological evidence suggests shellfish and sea-urchin consumption traversed gender and status. Overall, preliminary results of this research suggest we must re-examine the place of waihine maka’āinana (commoner women) and their contribution to the subsistence and political economy of the larger community.

**Agricultural Variation in Windward North Kohala, Hawai‘i Island: Preliminary Results of the 2007 Hawai‘i Archaeological Research Project (HARP) Field School**

*Mark D. McCoy (San Jose State University), Michael W. Graves (University of New Mexico) and Julie Field (Ohio State University)*

This past summer marked the second year of an NSF-REU supported field school in windward North Kohala District, Hawai‘i Island that builds upon the long-term Hawai‘i Archaeological Research Project (HARP). Intensive survey and limited test excavations centered on sites within 8.14 hectares (20.79 acres) of gulch land primarily located in Halawa and Makapala ahupua’a. In total, 41 complexes and single features comprised of 378 total individual features were recorded. Most of these complexes were made up of irrigated agricultural terraces (lo‘i) although the size, construction, and manner of irrigation varied widely. Here we outline how these unique systems worked and present a preliminary chronology for agricultural development based on radiocarbon dates from features across the study area.

**Ritual Site Preservation in Hawai‘i: A Case Study from Windward North Kohala, Hawai‘i Island**

*Jesse W. Stephen (UH Mānoa) and Mark D. McCoy, (San Jose State University)*

Our record of the material remains of ritual sites in windward, or “inner,” North Kohala is remarkably poor given that oral traditions are rich with references to the area’s political and religious importance. This is perhaps unsurprising given the high impact of sugar cane farming over much of the landscape. However, recent surveys demonstrate that intact ritual sites can be found in areas left relatively undisturbed by industrial farming, specifically along the coastal edge of fields, hilltops, and gulches. Sites within these zones include major temples first recorded by Stokes at the turn of the century as well as smaller features. Overall, this pattern of site preservation allows us to study the social landscape and highlights the importance of saving these zones from the impacts of future development.

**The Development of Agricultural Complexes in Pololū Valley, Kohala, Hawai‘i Island**

*Michael W. Graves (University of New Mexico), Julie Field (Ohio State University), and Jason Espiritu (University of Chicago)*

The creation of a geographic information system database for Pololū Valley now makes it feasible to analyze several of its agricultural complexes distributed on the valley bottom and on the ridge lines above. Both dryland and wetland agricultural complexes occur in Pololū with three that have received the most attention. Near the mouth of the valley, there is a large wetland system that was apparently converted from taro to rice in the 19th century. Approximately 1 km upstream is a complex that includes both wetland and dryland features. To the east of this on the
top of the ridge is a smaller wetland complex. We now have radiocarbon dates from two of these complexes and have completed hydrological modeling of the middle complex.

Pre-Contact Basalt Utilization of Pololū Valley, Hawaiʻi: Results of Recent EDXRF Analyses
Mark W. Oxley, UH Mānoa
The distribution of artifacts in pre-contact Hawaiʻi has been investigated by many researchers over the past century in order to examine economic trade and contact among ahupua‘a, districts, islands within the Hawaiian archipelago, and between the other islands of Polynesia. Artifacts made from basalt have been the primary objects for analysis due to the material’s ability to survive a wide variety of conditions which would otherwise destroy or severely alter more permeable and fragile materials, such as wood, bone, and shell. One of the most important basalt tools used in pre and postcontact Hawaiʻi was the stone adze. Using EDXRF analysis, materials associated with the production and “re-utilization” of adze tools, within the geographic boundary of a traditional Hawaiian community, Pololū Valley, was sourced in order to gain a better understanding of how pre-contact Hawaiians utilized basalt sources for tool production and how this source utilization changed over time.

Mahele Land Claim Awards in North Kohala, Hawaiʻi Island: Results from Recent Research
Cyril Calugay (UH Mānoa), Lillian Richards (University of New Mexico), and Mark D. McCoy (San Jose State University)
As part of the Hawaiʻi Archaeological Research Project, we collaborated in the analysis of Land Commission Award (LCA) data for North Kohala, Hawaiʻi Island. This research inventoried and then studied the geographic distribution of LCA awards across the North Kohala landscape, and in relation to social transformations taking place in Hawaiʻi during the mid-19th century. Awards to individuals are concentrated in the north and east portion of Kohala, with leeward awards generally located away from the coast and windward awards clustered around the smaller drainages. Our analysis identifies some of the factors that conditioned these distributions, including the role that large landholdings assigned to aliʻi had on awards to makaʻāinana.

SYMPOSIUM 4: EDUCATION, PUBLICATION, AND PRACTICES IN ARCHAEOLOGY

A Whiter Shade of Gray: CRM Publishing in the 21st Century
Thomas S. Dye, President, Society for Hawaiian Archaeology
Internet distribution of archaeological reports and information has both advantages and disadvantages. A publication strategy for archaeological reports and its internet implementation are described. It is argued that the strategy is suited to creation of a digital library of Hawaiian archaeology, which would supplement and enhance existing hard-copy repositories.

A Social History of Archaeology in Hawaiʻi
Kathy Kawelu, UC Berkeley
My dissertation research was an ethnography of archaeology, an investigation of the practice of archaeology in the Hawaiian Islands. Through interviews with archaeologists and native Hawaiians, whose personal knowledge of and experiences with the discipline of archaeology extends back to the 1940s, I examined past and present relationships between people interested...
in the protection, perpetuation, and preservation of Hawaiian culture. While the colonial impact of United States policies underlie many of the personal accounts, one of the overarching narratives speaks of the varying levels of archaeological investment to the discipline, the field of Hawaiian archaeology, and to native Hawaiian descendant communities. The narratives of the native Hawaiians I spoke to express an appreciation for archaeologists respectful of contemporary native Hawaiian peoples, the living culture, in their pursuit of knowledge. Present day native Hawaiians seek a commitment from archaeologists to past and present societies, while archaeologists seek more of an appreciation from native Hawaiians for the legal parameters of historic preservation under which most archaeology is practiced today.

Hawaiian Cultural Resource Management: A New Program at Hawaiʻi Community College
Sean Nāleimaile, Hawaiʻi Community College
Current challenges facing the protection and care of Hawaiʻi’s unique cultural and natural environment underpins the purpose for initiating the new Hawaiian Cultural Resource Management track in the Hawaiian Life Styles AAS Degree program at Hawaiʻi Community College. The new track focuses on the careful intersection of Hawaiian cultural practice, natural resource conservation, and cultural resource management. Cultural resource management (CRM), as defined by the field, is a productive and integrative solution to current issues of effective and efficient land use on Hawaiʻi Island. The presentation will focus on this new track being developed and how it will prepare learners for careers in land stewardship from a culturally enabled perspective.

SYMPOSIUM 5: PACIFIC AGRICULTURE AND HORTICULTURE

Sweet Potatoes, Population Dynamics, and Political Evolution: New Light on Hawaiʻi’s Ancient History
Robert J. Hommon
A review of converging archaeological, archaeobotanical, archaeozoological, linguistic, ethnohistorical, genealogical, and climatological evidence, much of it recently published, sheds new light on Hawaiʻi’s ancient history, including the following:
- Interaction between Hawaiʻi and islands collectively known as Kahiki intensified significantly during the pan-East Polynesian Late Voyaging Period (Fornander’s “Migratory Period,” c. AD 1200-1400). The introduced sweet potato altered the agricultural, demographic, and political history of the islands.
- Disparate lines of evidence strongly support the Limited Land Hypothesis that states that by 1550 significant agricultural expansion had ended throughout Hawaiʻi.
- Significant population growth in ancient Hawaiʻi ended by 1550. A simple calculation demonstrates, counter-intuitively, that a doubling of sites following 1550 indicates not population doubling but rather zero growth.
- Depopulation data from post-contact Hawaiʻi, the Marquesas, and Tahiti indicate that Hawaiʻi’s maximum population was at least 500,000, double the conventional estimate.
The Development of Loʻi Agriculture: Risk, Effort, and Production Output in Wailau Valley, Molokaʻi

Windy McElroy, UH Mānoa

This research evaluates two models that could be generated for the development of loʻi, or wetland taro, agriculture and tests the models in the remote Wailau Valley on the windward coast of Molokaʻi. The models assign varying priority to risk, effort, and production output: in the first model locations for farming are chosen in relation to achieving maximum agricultural output; and in the second, farmers first selected low risk areas that required the least amount of work to cultivate and later moved to areas that would require a greater labor investment for farming.

Wailau Valley exhibited a pattern of agricultural development in which production output was a major consideration in initial field construction, and large amounts of effort were invested in agricultural systems that could produce high yields. This is consistent with the first model, as the earliest fields were placed in areas that could support extensive cultivation, regardless of maintenance costs and risks of flooding.

SYMPOSIUM 6: CONSERVATION AND RESTORATION OF ARCHAEOLOGICAL SITES

Landscape Design for Archaeological Sites

Maurice Major, Cultural Landscapes Hawaiʻi

Once construction is over and the orange fencing comes down, the best way to find a preservation area is often just to look for weed patches. Factors contributing to the state of preservation landscaping include archaeologists’ resistance to digging anything other than square holes, landholders’ reluctance to pour money into land that produces no income, and regulatory silence with regard to management once a site has been committed to preservation. To ignore landscaping is to contribute to a preserve’s demise-weedy preservation ghettos become havens for burrowing rodents and other nefarious types, maintenance headaches inviting radical (sometimes damaging) solutions, and eyesores whose loss becomes less and less objectionable as time goes by.

Landscaping can go beyond aesthetics to yield direct preservation benefits such as stabilization and buffering, as well as to enhance opportunities for cultural practices, interpretation, and scientific research. At the same time, the potential advantages of landscaping must be balanced with the need to protect sensitive archaeological features and sediments.

Literature for landscaping in archaeological preserves is not well known, or is more suited to temperate climates and well-funded park systems than to the types of preserves we generally encounter. An approach to landscape design based on lessons from ancient Hawaiian landscapes is proposed to enhance the value and viability of archaeological site preserves.

Perspectives on Archaeological Restoration in Nuʻalolo Kai

Alan Carpenter (Hawaiʻi Division of State Parks), Maurice Major (Cultural Landscapes Hawaiʻi), and Randy Wichman (Kauaʻi Historical Society)

For over a decade, State Parks staff have worked with Kauaʻi residents, archaeologists, and other scientists to document and map Nuʻalolo Kai, a place revered by Hawaiians and archaeologists alike. Besides offering an example of successful partnership between those two groups, this project has a track record of cooperation across disciplines, politics, ethnicities, and degrees of localness. As an archaeological project, Nuʻalolo Kai demonstrates the value of sustained presence and appropriate application of technology ranging from tape measures to laser scanners.
As an act of aloha ‘āina, Nu‘alolo Kai speaks to the value of a cadre of volunteers who mālama a place year after year.

The measured approach taken by Nā Pali Coast ‘Ohana, a non-profit group that has adopted the place under a curator agreement with the State, intentionally emphasizes careful study and long experience with a place as a precursor to restoration. The panelists will share perspectives on a test case done this summer, and what it teaches us about the future of restoration in Nu‘alolo Kai.

Poho, a Transcendental Reliquary?
Edward A. Stasack and Diane S. Stasack, Pōhaku Art

Poho is the Hawaiian word for hollow of the hand, container, receptacle and the like. Rock art recorders, anthropologists, and archaeologists have adopted the botanical term, cupule, “a cup-shaped involucre, consisting of indurated, cohering bracts,” (Webster) to mean cup-like hollow ... therefore, it follows that cupule =poho. In Hawai‘i poho generally have been ignored, disregarded, disrespected and, therefore, have been and continue to be the first to be sacrificed to the almighty dozer and the last to be set aside for preservation. AUWE! The fact is, that in a well-documented ritual performed tens of thousands of time, Hawaiians created poho and entrusted to it piko (the umbilical stump) of their newborn. Thereby, the humble poho is transmuted into a reliquary for the flesh of the mother and child, as well as the DNA of present, future, and past generations at places known to have great spiritual power. Hawaiian consultants fully support the fact that pule would perform be offered at the start and for closure of this ceremony intended to benefit the child, who could not pray for him or herself.

SYMPOSIUM 7: PACIFIC AND HAWAI‘I REGIONAL STUDIES

Towards a True Public Archaeology in Sāmoa
Shawn S. Barnes, UH, Mānoa

The practice of archaeology in Sāmoa has, historically, not been successful in reaching out to rural villages. Standard procedures have often led to little direct communication between the archaeologist and the village about the “what” and the “why” of archaeology. We are now in an era of archaeology when archaeologists’ responsibility to a local community must go beyond the hiring of local workmen. This talk reports on an attempt to work with and involve a local Samoan community in preparation for a planned 2008 archaeological survey of the island of Manono in Sāmoa.

Pre-European Māori Fishing at Tauroa Point, Far North Region, New Zealand
Victoria L. Wichman

Many archaeological studies in New Zealand have been conducted during recent years with regard to pre-European Māori history, yet few of these studies demonstrate extended early occupation periods accompanied by a significant time sequence. And, although several of these studies have been based on early pre-European Māori fishing practices, few have focused within the Far North region of the North Island. Tauroa Point (Te Tauroa), located within the Far North region (Muriwhenua), is an interesting example of an early period Maori tangata whenuna coastal fishing camp (AD 1220-1390) combined with evidence for a late period in New Zealand (AD post-1650). Three fish bone assemblages, from two Tauroa Point excavations (1992 and 2003), were analyzed in order to understand whether patterns of change could be identified
through time within an area that is represented by temporal depth. Several variables were measured such as taxonomic abundance and richness. These measures were quantified by identifying the fish bone assemblages by the number of identified specimens using the five paired diagnostic jaw bones, or jaw NISP. Fish taxa were also evaluated by assessing diet and habitat preferences as an aid in understanding fishing technologies. This study contributes to unresolved regional issues, particularly in the context of faunal analysis, as well as broadens our knowledge of pre-European Māori settlement and subsistence practices evidenced within early and late periods of New Zealand.

**Recent Midden Analyses of Kahaluʻu Habitation Cave (50-10-37-7702), Kona Hawaiʻi Island**

*Peter R. Mills, Ariana Drake-Raue, Jeffery L. Ernst, Lizabeth A. Hauanio, Chaslen Hauanio-Ahin, Paula Z. Helfrich, Kirsten B. Mertens, Wila J. Paiva, Charles Ransom, and Desiree C. Roberson (UH Hilo)*

In December of 1980 and January of 1981, a data recovery project at Kahaluʻu Habitation Cave (50-10-37-7702) resulted in the excavation of 49.75 square meters of dense archaeological midden from a near-shore rockshelter. Some areas of the rockshelter contained over eight cultural strata, and initial interpretations of dates from the site ranged between the AD 1400s through the early historical era. An extensive data recovery report was prepared by Paul H. Rosendahl, Inc. that included many specialized analyses, but hundreds of bags of well-provenienced residual midden have remained in collections at UH Hilo. In the Spring of 2007, UH Hilo students began processing samples from the residual midden, and each student focused on developing research questions involving different classes of ecofacts. A number of significant findings were made relating to pre-contact subsistence patterns, site function, chronology, and ecological change in Kona. An overview of the students’ projects and a discussion of significant research findings will be presented.

**Place, Time and Function: Archaeologists in the Sacred Lands of the ʻĀina Mauna**

*Julie M. E. Taomia,  Pōhakuloa Training Area*

One goal of archaeological research is to determine the past function of the physical remains that we find and record. This has a practical role in a compliance driven environment where part of the process of consultation is to determine past function. Archaeologists tend to base functional interpretations on the physical remains. Physical remains can and do allow archaeologists to discuss many aspects of the past in the areas that we study, but can also be limiting. In Hawaiʻi, and Polynesia generally, there is a rich corpus of historical literature that can often be related to past activities by the people who created the remains that archaeologists study. This paper will explore the possibilities of bringing together the physical archaeological evidence and historical sources to produce a richer discussion of the landscape in the Interior Plateau, or ʻĀina Mauna, of the Big Island.

**A Three Dimensional Representation of Kealia Sugar Mill: the Role of Archaeological Computing for Cultural Resources Management in Hawaiʻi**

*Trisha Drennan, Scientific Consulting Services Inc*

Recent advances and the availability of archeological computing models (including three-dimensional imaging programs (3-D) have enabled archaeologists to virtually recreate historic landscapes, helping us envision the past.
A thriving community that once existed in Kealia Ahupua'a was recorded through an Archaeological Inventory Survey conducted by Scientific Consultant Services during their 2006-2007 field season at Kealia. When the Makee Sugar Company moved the Kapa'a Mill to Kealia in 1885, a thriving plantation community was cultivated. The town of Kealia was built along the coast in the midst of plantation facilities and infrastructure (e.g. roadway system, intra-plantation rail transportation, reservoir, commercial boat landing). It included a post office, church, school, and theater. After the mill was moved to Līhu‘e in 1934, the remainder of the plantation camps were abandoned over time and dismantled in their entirety by the 1980s. Envisioning this once-thriving sugar plantation has been made possible by a 3-D presentation of Kealia town and Sugar Plantation, which is being presented to you today.
Defining Hawaiian Archaeology: A Hawaiian’s Perspective (Keynote address)
Sean Nāleimaile, M.A., Dept. of Anthropology, UH Mānoa
Perceptions and perspectives surrounding archaeology in Hawai‘i are slowly changing. The Native Hawaiian community is slowly realizing that there is a need to step up efforts to protect our iwi kūpuna, wahi kūpuna, all things Hawaiian in the face of continuing development. Dialogue is occurring now that is extremely hopeful for the Native Hawaiian community whereas the archaeological community and members in the Native Hawaiian community are willing to discuss the future of archaeology in Hawai‘i. The Native Hawaiian community needs to be proactive as well and move towards positioning ourselves in the professional and academic communities to further our active and participatory roles with regards to the natural and cultural resources of Hawai‘i. This talk will focus on some proactive ways from which the presenter has been involved in and developing to raise the awareness in the Native Hawaiian community, the archaeological community, and the academic community as to the growing need for more participation by the local and Native Hawaiian community members to take that proactive approach and not maintain a reactive stance.

SYMPOSIUM 1

Open SHPD panel discussion
Morgan Davis, moderator (SHPD, Hilo)
Coochie Cayan, History & Culture Branch Chief, "Basic Protocol for Burials, Burials sites and Sacred Places"
Jenny Pickett, "How to Mitigate Negative Impacts to Early Previously-Documented Sites"
Theresa Donham, Lead Archaeologist, Hawai‘i Island, "Regional Research Designs"
HinanoRodriquez, Cultural Historian, Maui, "Turnover of SHPD Files to Maui County"
Lauren Morawski, O‘ahu Archaeologist, "Consultation"
Nancy McMahon, Deputy SHPO, "State of SHPD"

SYMPOSIUM 2

Public Archaeology and Community Outreach at Lyon Arboretum
Adam Lauer, University of Hawai‘i at Mānoa
Public archaeology can provide opportunities for students and the public to experience archaeology, understand archaeological field methods, and interpret data from field work. The Archaeology at Lyon Arboretum program was started in 2007 by University of Hawai‘i at Mānoa Anthropology students and Lyon Arboretum; a University of Hawai‘i research arboretum located in the back of Mānoa Valley. This program allows University of Hawai‘i students and the public from Mānoa Valley and all over O‘ahu to experience first-hand what an archaeological, non-invasive survey is and what methods archaeologists use to find, record, and interpret archaeological sites. This presentation will examine student and public participation and reaction
to the survey. Discussion will also address the successes and failures of this program and how it can be improved. Preliminary findings of the survey will be used to discuss what types of future work are appropriate for cooperative learning projects in archaeology.

Native Hawaiian Stewardship of Cultural Sites at Kahalu‘u and Keauhou
Mahealani Pai, Kamehameha Investment Corporation
Stewardship is the best result of historic preservation efforts. Cultural sites are preserved and used to educate and enrich the community. This paper outlines the approach to stewardship developed by Kamehameha Investment Corporation at Keauhou and Kahalu‘u in Kona. The approach draws on the community for knowledge of the past and plays an active role in preparing for the future by educating children. Cultural sites can play an active role in modern Hawaiian cultural practices, from the exercise of religion to the strengthening of traditional cultural bonds.

Plane-table Mapping of Heiau at Keauhou and Kahalu‘u, Kona
Keone Kalawe
In support of preservation efforts at Hāpai-ali‘i and Ke‘ekū Heiau, T. S. Dye & Colleagues, Archaeologists, Inc. has completed plane-table maps of the two heiau. These detailed maps confirm the accuracy and precision of earlier maps made by John Stokes and Henry Kekahuna. New features of the heiau not recognized by Stokes or Kekahuna were also discovered during the mapping.

Culture, Science, and the Age of Hāpai-ali‘i Heiau
Tom Dye
Model-based approaches to calibrating radiocarbon dates often yield more satisfying results than ad hoc approaches commonly applied by archaeologists. At Hāpai-ali‘i Heiau a model that incorporates stratigraphic information from the archaeological deposits, the architectural building sequence, and Hawaiian tradition is used to calibrate two radiocarbon dates on identified charcoal from short-lived plants. The mixture of archaeological information and Hawaiian tradition yields a precise estimate. The results indicate that Hāpai-ali‘i Heiau was likely constructed in the fifteenth century AD between 1425 and 1485.

SYMPOSIUM 3

Collections in Jeopardy – The Gorilla in Our Midst.
Angela Neller, Wanapum Heritage Center; Beverly, Washington; Toni Han Palermo, King Kamehameha V Judiciary History Center, Honolulu
The curation of archaeological collections in Hawai‘i has always been an issue lurking in the background. What is the archaeological legacy that we leave for the future? We face issues of preservation, access, and scholarship in light of real dilemmas with the passing and retirement of several archaeologists in recent years and the disposition of collections accumulated by these fellow members. The need to care for, account for and provide access to collections derived from excavations and surveys is at a critical juncture for a number of CRM firms as well as other entities who hold collections in Hawai‘i. This session is the beginning of many to follow that will provide a forum by which discussions, ideas, and strategies can be obtained and put together into a long-range plan for better collections care and preservation of Hawai‘i’s unique cultural
resources. The panel will highlight the legal ramifications of mitigation, an assessment of collections statewide, and presentation of what other states are doing to deal with this critical issue. We hope to have an active discussion with audience participants. These presentations will be critical as we strategize as a collective entity to tackle the gorilla in our midst.

**Archaeological Data Recovery without Mandatory Curation and Archiving of Collections and Related Materials: Destroying the Village, Yet Failing to Save It?**

*Carl C. Christensen, William S. Richardson School of Law, University of Hawai‘i, Mānoa*

During the historic preservation review process under Chapter 6E, Hawai‘i Revised Statutes, a determination is made whether archaeological sites threatened by development are to be preserved in place or destroyed. Destruction is likely if it is believed that a site’s value lies in its information content and can be adequately preserved through archaeological data recovery. The information content of a site may not be fully reflected in a written report, however, and additional information resides in the artifacts, faunal remains, soil samples, and other physical materials recovered during archaeological excavations. Section 6E-6 requires SHPD to provide for preservation of such materials from projects reviewed under § 6E-8 (public projects), although no administrative rules govern fulfillment of this responsibility. Section 6E-42 (non-governmental projects) imposes no mandatory requirements at all for curation and archiving of such materials. Reviewers of proposed mitigation plans should recognize that data recovery without mandatory data *preservation* is logically, and perhaps legally, defective as a mitigation measure.

**SYMPOSIUM 4**

**Household and Demographic Archaeology in Leeward Kohala, Hawai‘i**

*Patrick V. Kirch, Julie Field, Kathleen Kawelu, and Thegn Ladefoged*

This paper summarizes the results of two field seasons of archaeological investigation of leeward pre-contact and early post-contact residential sites in the *ahu‘a* of Makiloa, Kalala, Kahiolena, and Makeanehu, Kohala District. The research has been carried out as part of a larger research project on agricultural intensification and demographic change in pre-contact Hawai‘i. The research team is particularly interested in residential sites as sources of information on pre-contact and early-postcontact Hawaiian households, including aspects of their demography, subsistence base and utilization of resources, and degree of differentiation (i.e., evidence for hierarchization). Results of field and laboratory analysis will be presented in the context of broader theoretical models being developed for the processes of demographic change and agricultural intensification in late precontact and early post-contact Hawai‘i.

**What Can Archaeology Tell Us About the Rise to Power of Kamehameha the Great? Preliminary Results of Recent Research in North Kohala District, Hawai‘i Island**

*Mark D. McCoy, San Jose State University; Michael W. Graves, University of New Mexico; Jesse W. Stephen, University of Hawai‘i, Mānoa*

What can archaeology tell us about Kamehameha the Great’s rise to power? This straightforward question challenges us to reflect on how archaeologists integrate material, traditional, and historical evidence; the role of historical contingency in explanation; and the place of archaeology in producing scientific and historical knowledge in Hawai‘i and beyond. In this paper we explore these issues and report on the results of two recent archaeological field schools
conducted in Kamehameha’s home district of North Kohala, Hawai‘i Island as part of the Hawai‘i Archaeological Research Project.

**Innovation and Expansion of Irrigated Agriculture in North Kohala District, Hawai‘i Island: A Study of Traditional Water Management in Waiapuka Ahupua‘a**  
*Perry Lown, University of New Mexico; Mark D. McCoy, San Jose State University; and, Michael W. Graves, University of New Mexico*  
In Hawai‘i, archaeologists commonly document water control features built to ensure a gentle, steady flow to pondfields (*lo‘i*) on alluvial flat land within a single valley. In such systems agricultural expansion appears to be limited by factors such as stream flow and the amount of bottom land within a given drainage. In this paper we present historical and material evidence for the use of barrage terraces and irrigation ditches (*‘auwai*) to draw water out of a natural drainage and irrigate the land immediately outside. This appears to be an innovative use of traditional irrigation methods to expand the total area available for farming.

**Production, Distribution, and Utilization of Hawaiian Basalt Tools: A Localized Geochemical Analysis of Pololū Valley**  
*Mark William Oxley, Michael W. Graves, Peter R. Mills, and Steve Lundblad*  
Over the last two decades, different techniques of trace element analysis have been applied to basalt artifacts collected from the various islands and atolls of Polynesia. The basaltic islands of Polynesia each have their own unique geochemical ‘fingerprint’, making it possible to match a basalt artifact to the raw material source whence it came. Artifacts matched to previously identified raw material sources provide the opportunity to detect possible long distance voyaging, contact, and trade as well as to trace local interaction. While much attention has been focused on long distance interaction, little is geochemically known on a local scale. The research presented here employs EDXRF analysis to identify the trace elements of local fine-grained basalt sources along with 500+ basalt artifacts from the *ahupua‘a* and delimited geographic boundary of Pololū Valley, Hawai‘i Island. The resulting analysis provides insight into the localized production, distribution, and utilization of basalt tools within a single traditional Hawaiian territory.

**Stone Adzes of the Waimea Plain**  
*Tanya Souza, University of Hawai‘i at Mānoa*  
Between 2003 and 2008 the U.S. Army Corps of Engineers (USACE) contracted American Technologies Inc. (ATI) to clear unexploded ordnance from the former Waikoloa Maneuver Area, in the South Kohala District of Hawai‘i Island. During the UXO clean-up, ATI subcontracted Pacific Legacy Inc. to provide the archaeological monitoring and mitigation services. Since the beginning of field work in January 2004, archaeologists have collected stone adzes that were thought to be in danger from the ordnance clearance activities or artifact hunters. All adzes have been catalogued, photographed, recorded and analyzed by the Energy-Dispersive X-Ray Fluorescence (EDXRF) Spectrometer. The adze assemblage of sixteen specimens, all collected within the plains of Waimea show considerable variation in shape and form. XRF analysis assists in determining the possible source and/or exchange patterns of the adzes and resulting in a possible correlation between form and origin. This presentation will describe the preliminary research of stone adzes collected during UXO clearance operations at the former Waikoloa Maneuver Area and provide XRF sourcing information in respect to shape and form.
Genealogical Chronology, Pig-Wealth, Tips from Tikopia, and the Rise of Hawaiian Primary States

Robert J. Hommon

An important goal of studying ancient Hawai‘i is to understand the emergence of the primary states in evidence at Western contact. A major element of this process was the transformation described by Sahlins by which “the concepts of lineage—of a classic Polynesian sort, organizing the relations of persons and tenure of land by seniority of descent—had latterly been eroded by the development of chiefship…[that] usurps the collective rights of land control and in the process reduces the lineage order in scale, function, and coherence” (Kirch and Sahlins 1992, 1:192). Considered here are three approaches to the questions of how and when the transformation took place: (1) Applying genealogically-based chronology to identify how and when the decoupling of the socio-economic classes took place; (2) Exploring the political significance of pig-wealth; and (3) Comparing Hawaiian archaeological data with examples from Tikopian ethnography.

SYMPOSIUM 5

The Beeswax Wreck of Nehalem Spit

Scott Williams and Richard W. Rogers

“Team Beeswax” returned to the Oregon coast in April 2008 to continue the investigation of 17th century artifacts that continue to wash ashore there. In addition to more beeswax, for which the site has been named, and some 300 more sherds of Chinese porcelain, wooden artifacts have been added to the collection. This season’s field work has conclusively eliminated two other shipwreck sites as possible remains of the vessel in question. Artifact distribution plotting has led the team to suspect a much different location for the source of artifacts than has been assumed. A new remote sensing strategy has been developed. Lessons have been learned about balancing community outreach and public media control.

Archaeological Data and NRHP Site boundaries: Mōkapu Burial Area

June Noelani Cleghorn

In 1974, the archaeological site known as the Mōkapu Burial Area (MBA) was listed in the National Register of Historic Places (NRHP) with a site boundary that was determined using scant archaeological data that was available at that time. Marine Corps Base Hawai‘i (formerly Marine Corps Air Station Kāne‘ohe Bay) has been and continues to manage this NRHP historic property as part of its Cultural Resources Management Program. Determining the NRHP site boundary for the MBA, was based partially on the known archaeological data recovered from the site without the use of much of the original field notes and data. Since 1974, this “missing” archaeological data, generated by Gordon Bowles during the original 1938-40 excavations conducted on the Mōkapu peninsula sand dunes, has been acquired from his surviving family members. This data was not available at the time the MBA was nominated for listing on the NRHP. A review of the Bowles data, including data from all previous archaeological work done at the MBA, will be compared with the data used to determine the original NRHP site boundary of the MBA when it was nominated for and listed on the Register in 1974.
The 2008 University of Hawai‘i-Mānoa and University of Guam Archaeological Field School in the Mariana Islands

James Bayman, John Peterson, Hiro Kurashina, Mike Carson

Students and faculty from the University of Guam and University of Hawai‘i-Mānoa conducted an archaeological field school at the Guam National Wildlife Refuge (Ritidan Unit). This field school was undertaken to conduct problem-oriented research on ancient Chamorro economy and society, provide students intensive training in excavation techniques, and assist the US Fish and Wildlife Service with its mandate to manage natural and cultural resources at the refuge. The field school was focused on investigating the spatial dimensions of household economic organization at a well-preserved latte habitation site. Although inter-site variation in latte structures has been relatively well-documented, there are many questions about the organization of domestic activities in their nearby extramural areas. This paper reviews the recent fieldwork, the ongoing analyses of excavated assemblages, and some of our preliminary hypotheses and interpretations.

Settlement Pattern Data and Site Construction Sequences for the Windward Society Islands (French Polynesia)

Jennifer Kahn, Bishop Museum

This paper describes new excavation and survey data for select temple sites (marae), house sites, and agricultural complexes in the Amehiti sector of the ‘Opunohu Valley, Mo‘orea. A newly established radiocarbon chronology illustrates five centuries of occupation and records a complex sequence of marae construction and elaboration through time. Household archaeology excavations uncovered complex patterns of sub-surface features. Most residential sites lacked elaborate surface architecture, a different pattern than that found in Tupauruuru, the other major ancient socio-political district in the ‘Opunohu Valley. Contrary to earlier interpretations, the new survey and excavation data demonstrate that the Amehiti zone was densely occupied from the 14th century onwards and used extensively for agricultural production, perhaps by social groups of somewhat lower status than those found in the Tupauruuru social-political district.

SYMPOSIUM 6

Determination of the Late Holocene $^{14}$C Marine Reservoir Ages in Hawai‘i Using U-Series Dated Coral: Spatial and Temporal Variation in $\Delta R$

Marshall Weisler, University of Queensland; Quan Hua, Australian Nuclear Science and Technology Organization, Menai, NSW; and, Jian-xin Zhao, Radiogenic Isotopes Facility, Centre for Microscopy and Microanalysis, University of Queensland

Accurate dating is fundamental to building culture-historical chronologies worldwide. $^{14}$C is the most common method used in the Pacific, while the applications of U-series dating of Polynesian archaeological materials were initiated just recently. One fundamental problem with radiocarbon chronologies built on charcoal dates is the possibility of inbuilt age of wood samples and therefore marine shell is also used for dating. However, a primary hindrance for using marine-derived materials for dating is the lack of adequate localized radiocarbon marine reservoir corrections ($\Delta R$). Paired samples of wood charcoal and marine shell from well-defined stratigraphic contexts have been used to derive a marine reservoir correction. However, the best method for determining the marine reservoir is to radiocarbon date coral samples that have been precisely dated by U-series assay. These two independent datasets provide an unprecedented
opportunity to refine the marine reservoir correction factor wherever appropriate coral samples are recovered from archaeological contexts. Importantly, a precise reservoir correction permits accurate calibration of other archaeological marine samples such as shellfish, fish and turtle bones. Our study area is the west third of Molokaʻi Island where archaeological surveys and excavations have been conducted over the 20,000 hectare region during the past 20 years. This leeward settlement pattern consists of prehistoric habitations clustered around embayments where many residential complexes contain a freestanding stone structure known ethnographically as a fishing shrine—a structure where fresh branch coral was placed as offerings and incorporated into subsurface deposits. We have obtained high-precision TIMS U-series dates (with uncertainty of only ±2-3 years) on more than 160 coral samples from well-provenanced stratigraphic contexts. Twelve U-series dated coral samples were selected for high precision (<0.5%) AMS dating at ANSTO. Two samples were dated from each of the three coastlines: (1) northern, windward, basalt boulder coast; (2) southern, leeward shoreline with limestone beachrock; and (3) a western coast with a basalt boulder shoreline punctuated by sandy embayments. Dating coral samples from different coastlines, with different offshore conditions such as upwelling, currents and wind patterns, provides insights into the variation of local conditions on the same island—something that has never been attempted. We also dated an additional six coral samples to span the entire culture-historical sequence for the Hawaiian Islands. The results can also be used with data from elsewhere to characterize ocean-atmosphere circulation and to understand climate change through time. The data will be added to the global database for improving regional 14C reservoir age correction scheme.

**Plant Microfossil Analysis of Archaeological Deposits from South Kona, Island of Hawai‘i**

*Robert B. Rechtman and Rechtman Consulting, LLC and Mark Horrocks, Microfossil Research Ltd., Auckland, New Zealand*

Plant microfossil analysis was carried out on twelve soil samples from a variety of precontact archaeological features in South Kona within a portion of what has been termed the Kona Field System, on the Island of Hawai‘i. The oldest radiocarbon ages of the sampled deposits are AD 1300-1625 and AD 1310-1470. Pollen and phytolith assemblages suggest a change from more to less trees and shrubs in the area as a result of human activity. We found phytoliths of banana (*Musa* sp.) leaves in most, and starch grains and xylem cells of tuberous roots of sweet potato (*Ipomoea batatas*) in all of the samples; suggesting that the sampled features were associated with these crops and that both crops were cultivated intensively within the study area. These data seem to support the model of crop specific resource zones identified in the ethnohistoric record. Higher concentrations (volumetric) of starch and xylem in samples from older deposits suggest that cultivation was more intensive then. The apparent absence of starch and xylem remains of other tuberous crops, namely taro species (*Colocasia esculenta; Alocasia macrorrhiza*) and yams (*Dioscorea alata, D. bulbifera* and *D. pentaphylla*), suggests that tuberous cropping within the study area was mono-specific.

**Sourcing Minute Marine Midden Shells from Site 7702, Kahaluʻu, Kona**

*Amy Dunne, Marine Science Dept., UH Hilo*

A change in abundance of small marine snail shells, *Planaxis labiosa* Linnaeus, was found in midden from the Kona Kahaluʻu Cave Site [7702] Area 1, Section G-13, with an increase from 0.1% in lower strata to 64% in Stratum II. Mōkapu are rare in their coastal habitat; however, night surveys within 300m of Site 7702 found *Planaxis* shells occupied by hermit crabs at a ratio
of 0.72:1 - 0.90:1 to other shells. An ordinal scale of abrasion was created to analyze *P. labiosa* shells from live snails, hermit crabs, and G-13 Stratum II. Discriminant analysis classified a significant percentage of shells used by crabs as archaeological shells and vice versa, implying that some shells were collected from hermit crabs. A control study with shells of *Nerita picea* Linnaeus is underway. Results to date demonstrate that refined screening and detailed sorting of ecofacts prevents exclusion of small diagnostic materials.

### The Art In Hawaiian Rock Art

*Edward and Diane Stasack*

Somehow, in an effort toward standardization, the term “rock art” evolved to encompass the range of visual expressions created on rock or land surfaces. Perhaps by invitation, or not, the discipline of rock art was thrust into the domain of archaeology. Art objects are not exactly the same as artifacts, hence the need for some explication about how they differ in nature, function, and qualities. The existence of this dichotomy is an exciting opportunity for rock art researchers, archaeologists, and Hawaiian scholars to come together toward identifying a common solution to “the problem of Hawaiian petroglyphs.”

### SYMPOSIUM 7

### Houses of the Exiles: A Mid-Season Excavation Report from Kalaupapa

*James L. Flexner, UC Berkeley*

In 2006 and 2007, archaeologists carried out intensive surface surveys in portions of Kalaupapa National Historical Park, with a focus on the *ahu*pu’a of Kalawao. Kalawao was the site of the earliest settlements during the period of Hansen’s disease exile in Hawai‘i, beginning in 1866, when the first exiles arrived on Kalaupapa Peninsula, through the early 20th century, when settlement in Kalawao was abandoned for the other side of the peninsula. One of the goals of surface survey was to identify house sites likely to date to this early period of Kalaupapa’s history as a leper colony. Houses, as places where Kalawao’s exiles carried out their day-to-day lives, provide key material traces for constructing an understanding of the creation, maintenance, and transformation of social structures within the settlement during its early years. This presentation will provide an initial glimpse at the results of household archaeology in Kalawao, from fieldwork carried out in summer and fall 2008. Grounding the discussion in material culture recovered through archaeological fieldwork, the paper will reflect upon ideas about dwelling, place, and the home, and the role that these concepts play in interpreting the archaeology of the recent past in Kalawao on a more general level. The paper will also touch upon the role that household archaeology in Kalawao can play in interpreting historical demography in the settlement.

### Early Western Diminishment of the Hawaiian Women’s Rights

*Victoria S. Creed*

Where Hawaiian women had formerly enjoyed a social status and freedom unknown by their Euro-American counterparts, diminishment was almost immediately instituted by the missionaries on their arrival. Evidence of this can be found in the land documents and also as a result of the encounters between Hawaiian women and foreign sailors. This diminishment is built into Hawai‘i’s first constitution in 1840. Reverend William Richards started changing the social order beginning with Leo‘iki, an alii‘i women whose descendants live right here in Hilo. Leo‘iki
left Hawai‘i with a British captain, William Buckle for South America to have her son born under the British flag before the law was published. Reverend William Richards started changing the social order beginning with Leo‘iki, even while he kow-towed to two notable ruling women, Ka‘ahumanu and Keōpūolani, who held sway over all when Richards arrived in the islands. To make his point, Richards slandered Leo‘iki and Captain Buckle in the mainland missionary press, and although Richards recanted later to his Mission directors, this recanting has never been published since.

**The Civilian Conservation Corps in Hawai‘i Volcanoes National Park**

*Summer Roper, Hawai‘i Volcanoes National Park*

The Civilian Conservation Corps (CCC) was a successful federal job program initiated by President Franklin Roosevelt after the Great Depression to help create work opportunities in a time of high unemployment. From 1933-1942, the young men of the CCC built much of the valuable infrastructure seen today in national and state parks across the country, including Hawai‘i Volcanoes National Park. Seventy-five years after the program began, archeological surveys in the Ka‘ū Desert have revealed the extensive erosion control features built by the CCC in a flood-prone area within the Park.

**SYMPOSIUM 8**

**An Overview of Kahuku Inventories, Hawai‘i Volcanoes National Park**

*Jadelyn Moniz Nakamura and Christopher Quiseng*

A brief overview of the archeological resources at the Kahuku Management Unit (KMU) provides a context for further investigations on the southwestern slopes of Mauna Loa. Since the National Park Service acquired the 116,000 acres of the former Kahuku Ranch in 2003, several archeological surveys have been completed. While many of these surveys have been at the reconnaissance level, they nonetheless have provided a glimpse of the kinds of resources that lie out there awaiting to be rediscovered and highlighted some important research issues that should be addressed.

**Ma Uka: The Environment of the Interior of Hawai‘i Island during the Hawaiian Period**

*Julie M. E. Taomia, Ph.D, U.S. Army Pōhakuloa Training Area, Pacific Cooperative Studies Unit, Research Corporation of the University of Hawai‘i*

Radiocarbon dates indicate that Hawaiians were entering the interior of Hawai‘i Island from around AD 1000. Over the course of the ensuing several hundred years before Europeans began arriving in the islands, this part of the island was subject to various changes. Volcanic eruptions that changed the physical landscape took place during this period, and the world experienced shifts in global climate that could have affected the use of locales subject to extreme weather conditions. This paper will consolidate information from historical and scientific sources to evaluate the effects of these forces on the accessibility of the Interior Plateau to Hawaiians and implications for the use of the area. This information can provide an environmental context in which to evaluate the archaeological sites that are located in the region.

**The Westside Story: A Trail Reconnaissance Survey at Pōhakuloa Training Area**

*Kelly Leialohua Luscomb, B.A., Pacific Cooperative Studies Unit, Pōhakuloa Training Area*
The Trail Reconnaissance Survey was designed to generate archival and inventory/survey level recordation for known and previously unknown cultural resources along the remote westside boundary of the Pōhakuloa Training Area (PTA). The reconnaissance survey was initiated under Section 106 in compliance to the proposed construction of a large scale fence unit and firebreak network. The PTA cultural resource staff was asked to prepare a cultural resource overview for the proposed perimeter of a 23,000 acre fence unit and firebreak construction project. These projects were designed to control feral ungulates and establish better fire fighting initiatives, respectively. The westside reconnaissance provided much needed baseline information and antiquity data required to plan for future projects, to protect sensitive areas, and to provide interpretive information to PTA staff and the community. The survey successfully identified new site locations and expanded our knowledge of previously known sites through field investigations and archival research. This presentation discusses the newly documented trail sections and their contribution to our growing understanding of the land usage patterns and the trail system that was once critical to traversing the Pōhakuloa area and surrounding ‘āina mauna.

Seven Miles and Counting: The Ongoing Recordation of the “D” System Lava Tube at Pōhakuloa Training Area
William C. Godby M.A., U.S. Army Pōhakuloa Training Area and Don Coons, Cave Conservancy of Hawai‘i

Pōhakuloa Training Area (PTA) is home to at least seven large lava tube systems. The existence of these lava tube systems has been well known since the 1980s with various levels of documentation occurring since that time. In 2004 detailed station to station survey recordation began for the Delta or D-System lava tube located on the west side of PTA. Over 7.8 miles of this system have been recorded since that time. This paper will discuss recent archaeological findings and dating results as well as present efforts at large scale map illustration and GIS integration of data collection.

The Geochemistry of Lithic Artifacts from Nuʻalolo Kai, Kaua‘i
Peter R. Mills, Steven P. Lundblad, Alan Carpenter, Julie Field, Michael W. Graves, Scott Kikiloi, Nancy. A. McMahon, Windy K. McElroy, Charles Ransom, and Pua Rossi

Energy-dispersive X-ray fluorescence (EDXRF) analyses of 879 basalt artifacts and geological samples from Nuʻalolo Kai are presented and compared with geochemical analyses of the Kaua‘i Museum’s Conant Collection, artifacts from Russian Fort Elisabeth State Historical Park, samples from the Northwest Hawaiian Islands, and the Mauna Kea Adze Quarry. No basalt samples from Kaua‘i or the Northwest Hawaiian Islands matched the Mauna Kea Adze Quarry, but there is a major tholeiitic source used for adze production on Kaua‘i that dominates both the Nuʻalolo collection and the Kaua‘i Museum Conant collection, suggesting that the pattern observed at Nuʻalolo might apply to the whole island. Other adzes were made from a range of more evolved lavas that appear to be from multiple sources. Two basalt mirrors from Nuʻalolo Kai display markedly different geochemistry from all the other artifacts. Mirrors are an understudied artifact class, and their potential longevity of curation relative to files, chisels, and adzes opens up an interesting and rare opportunity to use mirrors to examine population movements connected to ancestral founding populations.
POSTERS
Human caused Stratigraphic Mixing of a Coastal Hawaiian Midden during Prehistory: Implications for Interpreting Cultural Deposits.
Sasiphan Khaweerat, School of Social Science, University of Queensland; Marshall Weisler, Archaeology Program, University of Queensland; Jian-xin Zhao, Radiogenic Isotopes Facilities, Centre for Microscopy and Microanalysis University of Queensland; and Yue-Xing Feng, Radiogenic Isotopes Facilities, Centre for Microscopy and Microanalysis, University of Queensland

The spatial position of artifacts, faunal remains and ecofacts is fundamental for making archaeological interpretations based on presence-absence occurrence and frequency distributions throughout stratified contexts. However, it was only during the past few decades that archaeologists realized the potential effects of site formation processes and post-depositional disturbances on the archaeological record. In the Hawaiian coastal setting—where many of the earliest sites are located—storm surge, wind erosion, burrowing seabirds and modern developments have all been implicated in the disturbance of cultural deposits. Here, we identify human caused stratigraphic mixing of a coastal Hawaiian midden during prehistory. That human occupants disturbed cultural layer content by excavating holes for posts, ovens, trash pits and the like during prehistory is not unusual. What was unexpected, however, is that the stratigraphy appeared intact. That is, based on typical sediment characteristics that are routinely used to define layers (such as color, texture, consistence, layer boundary, etc); one would not expect that the contents of all the cultural layers were well mixed.

Using high-precision U-series dating of 22 samples of Pocillopora sp. branch coral from throughout three distinct cultural layers, we document the extent of stratigraphic mixing between these silty-sand cultural layers of a regionally early coastal midden along the north shore of leeward Moloka‘i. For purposes of archaeological interpretation, all three cultural layers were considered as one analytical unit with any temporal change obscured by mixing. These results suggest that similar coastal archaeological deposits may evidence a similar situation.

Ritual Use of Fish in Ancient Hawai‘i
Helene Tomkins and Marshall Weisler, Archaeology Program, University of Queensland

The leeward side of Moloka‘i is known for its abundant coastal fishing grounds and numerous fine-grained basalt adze sources or quarries. The majority of prehistoric settlements ring the embayments that punctuate the rocky coastlines. These residential complexes consist of dry laid stone foundations in a range of shapes and sizes. Most complexes contained a ritual structure known ethnographically as a fishing shrine (ko‘a), a men’s house (hale mua) or household shrine where offerings of fresh branch coral, shellfish, urchins and fish were presented at stone god images, well-defined altars, or placed on other portions of the shrine. Classic ethnohistoric sources mention specific ritual items and the gods they are associated with. We conducted excavations at four ritual sites: two on the rocky west coast and two along the soft south shoreline. These sites were well dated by U-series determinations of ritual corals with assays assigned to the Expansion Period of late Hawaiian prehistory (in this case, after AD 1300). We examined 46,558 fish bones weighing 1.96kg from all four sites to determine subsistence practices, ecological constraints of the offshore fishery and, importantly, the kinds of fish that were used in ritual, thus augmenting the ethnohistories.
Identifying to Species Fragmented Mammal Bone and Bone Artifacts from Hawaiian Archaeological Sites with Scanning Electron Microscopy

Linda McCarthy and Marshall Weisler, Archaeology Program, University of Queensland

A significant percentage of mammal bones from Hawaiian archaeological middens are fragments with few, if any, diagnostic features that permit identification to the species level. In Hawai‘i, bones of humans, pigs and dogs were also fashioned into fishhooks, thus obscuring macroscopic landmarks required for species-level taxonomic assignment. We use microscopic landmarks of mammal bones of known taxa to identify fragmentary bones and fishhooks to species. Using faunal assemblages from four religious sites recently excavated on West Molokai, we demonstrate the significant contribution of high-powered scanning electron microscopy for identifying “unidentified” mammal bones and bone artifacts to species, thus increasing our understanding of subsistence practices, ritual behavior and selection of raw material for artifact manufacture.

What Four Years Can Do for a Geochemical Database: A Review of EDXRF Results from the UH Hilo Geoarchaeology Lab

Peter R. Mills, Steven P. Lundblad, Alan Carpenter, Paul Cleghorn, Kevin Dalton, Arian Drakerau, Julie Field, Laura Gilda, Elizabeth Gordon, Michael W. Graves, Lisa Kahahane, Jennifer Kahn, S. Kekuwea Kikiloi, Patrick V. Kirch, Windy K. McElroy, Nancy McMahon, Melanie Mintmier, Jadelyn Moniz-Nakamura, Mark W. Oxley, Tim Rieth, Jacob Smith and Tanya Souza

Over the last four years, several thousand archaeological and geological samples from Hawai‘i Island, Maui, Moloka‘i, O‘ahu, Kaua‘i, and the Northwest Hawaiian Islands have been analyzed in the UH Hilo Geoarchaeology Laboratory using Energy-Dispersive X-Ray Fluorescence (EDXRF). We summarize what has been learned regarding the distribution of different sources of adze debitage through time and space. Both Kaua‘i and Hawai‘i Island show strong reliance on centralized quarries through much of the late prehistoric era. Heavy reliance on centralized quarries on Maui, O‘ahu, and Moloka‘i is less evident. Furthermore, while the Mauna Kea Adze Quarry is often the dominant source in late-period assemblages on Hawai‘i Island, dates from stratified rockshelter deposits in Kona suggest that it was only a minor contributor to adze production economies in the AD 1400s and 1500s. Furthermore, very little Mauna Kea material appears in the lithic assemblages analyzed to date on other islands.

Repairing Earthquake Damage at Pu‘u-koholā Heiau National Historic Site

Adam Johnson, National Park Service

On the morning of October 15, 2006, two mighty earthquakes (magnitude 6.7 and 6.0) struck the west coast of Hawai‘i Island. Within minutes, nearby Pu‘u-koholā Heiau and other historic structures sustained severe to moderate damage. An overview of the damage done by the October 15, 2006 earthquakes to Pu‘u-koholā Heiau, Maile-kini Heiau, and the John Young Homestead will be presented. The National Park Service – Pu‘u-koholā Heiau National Historic Site is currently working with consultant Francis Sinenci and volunteer members of cultural groups associated with the Park to repair and rehabilitate damage to the park’s namesake and primary feature, Pu‘u-koholā Heiau as well as other impaired structures. The strategies and techniques used to generate new maps of the sites and gather baseline data of the damage to Pu‘u-koholā Heiau, Maile-kini Heiau and the John Young Homestead will be illustrated.
Additionally, the methods of stabilizing and supporting the damaged sections of the temple sites using a traditional Hawaiian ladder system (ʻōlokeʻa) to allow for their repair will be highlighted.

**The Maritime Cultural Landscape of Hilo Bay during the Pacific War**
*Trisha Drennan*

Cultural evidence of the Pacific War can be found in the near shore environs of Hawaiian waters as remnants of staging areas utilized in the Pacific Theater of Military Operations of World War II. The coastal landscape, altered by these military constructs, can still be vividly recalled by some of our nation’s elderly, who experienced the war and its effect on coastal lands. Oral histories give story to the military debris that once functioned as landing craft or barges in the Pacific War’s military efforts. Many of those vessels were disassembled and deposited in now forgotten locations known only to local fisher folk. Archaeologists and cultural historians must piece together material culture with oral history while the story can still be told. The material presented speaks of such an archaeological site in Hilo Bay, located offshore of Baker’s Beach, at the former location of officers’ quarters on the Big Island of Hawaiʻi.
Polynesian Diaspora: The Chumash Connection and Beyond (keynote address)
Terry L. Jones, California Polytechnic State University
Four years ago Kathryn Klar and I suggested, on the basis of material similarities (sewn-plank boat construction, compound bone fishhooks) and complimentary linguistic evidence that there was at least one contact event between the Chumash and Gabrielino of southern California and Polynesian voyageurs. Since then, the long-dormant case for contact in South America has been renewed based on mtDNA and radiocarbon findings that indicate a pre-contact presence of Polynesian chickens on the coast of Chile. In this talk, I’ll review the evidence for Polynesian cultural contact with the Americas in the northern and southern hemispheres and ponder the question of why American (and some Pacific) scholars continue to dismiss the possibility of such contacts even though the passages involved were well within the capabilities of Polynesian seafarers.

SYMPOSIUM 1: GENERAL SESSION

The Hale Pili Site A Century Later: Investigations at Miloliʻi Valley, Kauaʻi
Jennifer Kahn (Bishop Museum), Victoria Wichman (Nā Pali Coast ʻŌhana), Alan Carpenter (Hawaiʻi State Parks), MaryAnne Maigret (Hawaiʻi State Parks), and K[']. Dye (T. S. Dye & Colleagues, Archaeologists, Inc.)
We present results of a collaborative research project focused on the site where the hale pili, now housed in the Bishop Museum, was originally collected in the early 1900s. Data from the test excavations highlight that sub-surface features are well-preserved and that the site holds a rich and diverse artifact assemblage with an early historic component. We end with a brief discussion of site function and site chronology.

A Very Long Way from Home: A Hawaiian-style Petroglyph Site at Houmaleʻeia in the Kingdom of Tonga
David V. Burley (Simon Fraser University) and Shane Egan (Kanokupolu, Tongatapu)
In December of 2008, the authors recorded a Hawaiian-like petroglyph site at Houmaleʻeia on the northern end of Foa Island in the Haʻapai group of Tonga. Open based triangular bodied anthropomorphs, human feet, dogs, turtles and a variety of other images provide an artistic tapestry comparable only to Hawaiian rock art sites of the period AD 1400-1600. Aspects of the imagery further suggest Hawaiian cultural knowledge. The implications of Houmaleʻeia as evidence for long distance voyaging, East/West Polynesian interactions and cultural exchange, as well as Tongan/Hawaiian traditional histories are briefly addressed.

Petroglyphs of Ships on the Big-Island of Hawaiʻi
Richard W. Rogers, Pilialoha Consultants
There are seven sites that hold petroglyphs of ships on the Big Island of Hawaiʻi. Some sixty-seven individual western vessels are depicted on the island with at least six more at other locations in the Pacific. A study of this particular theme of rock-art provides an entertaining look
at Hawai`i’s cross cultural maritime heritage. A closer look at the images and their locations seems to reveal art-styles and techniques that may offer an insight to the reasoning, experiences and even names of some of these local rock-artists.

SYMPOSIUM 2: ARCHAEOLOGY AND HERITAGE MANAGEMENT AT UH MĀNOA

Archaeology and Heritage Management at UH Mānoa: the Storied Past and Upcoming Future in the Pacific and Asia
James Bayman and Miriam Stark, UH Mānoa

This two-part panel commemorates the 75th Anniversary of the Archaeology program in the UH Mānoa Anthropology Department. Panelists include a mix of practicing professionals who obtained their training at UH Mānoa, as well as current students in our graduate program. Following the introductory presentations, panel facilitators will engage the participants and the audience in discussion of possible futures for archaeology in Hawai`i and beyond. Discussion will also focus on the kinds of roles that UH Mānoa might play in helping descendant communities achieve their desired futures.

Part I. Hawai`i and Pacific
“A Storied Past” (power Point: Jim Bayman)
“Looking Ahead”: Panel Co-facilitators: Dr. Kehaunani C. Abad (Kamehameha Schools) and Dr. Jadelyn Moniz (Hawai`i Volcanoes National Park)
Dr. Windy McElroy (Garcia & Associates)
Kekuewa Kikiloi (Kamehameha Schools)
Tim Rieth (International Archaeological Research Institute, Inc.)
Melissa Ka`akau (Aki Sinoto Consulting)

Part II. Southeast and East Asia
“A Storied Past” (power Point: Miriam Stark)
“Looking Ahead”: Facilitated by Dr. Michael Dega (SCS Archaeology)
Shawn Fehrenbach (UH Mānoa)
Stephen Acabado (UH Mānoa)
Heng Piphal (UH Mānoa)
Rachel Hoerman (UH Mānoa)

SYMPOSIUM 3: ARCHAEOLOGICAL ETHICS IN HAWAI`I: A PANEL DISCUSSION

Mark W. Oxley, University of New Mexico (facilitator) with panel members Sara Collins, Thomas S. Dye, Kathleen L. Kawelu, and Holly McEldowney

Prior to the late 18th century, professional ethics was a concept that was associated with an individual’s character, honor and dishonor, virtue and vice. It was not until 1794 that the first "code of ethics" was drafted for physicians and surgeons. By this time it was recognized that trained professionals in a variety of disciplines held a special power and authority and with this privilege, came the likelihood of increased influence and possible exploitation of the layman. The acknowledgement of professional ethics was a means to protect not only the general public, but the integrity of the profession. Throughout its history, archaeologists have long been exposed
to moral and ethical dilemmas. Nonetheless, it was not until the late-1980s to mid-1990s with controversies surrounding the professional use of archaeological materials obtained through illegal activities (i.e. looting) as well as the advent of legislation protecting Indigenous religious rights (including human remains) that various professional archaeological organizations sought to draft “principles” or “codes” which outlined the ethics/morals in which that group subscribed to. The Society for American Archaeology, the largest archaeological organization in the world, adopted the SAA Principles of Archaeological Ethics in 1996. Given its large size and established history in the US, the SAA ethics have had a significant influence on archaeological perspectives throughout the world. Despite its size and reputation however, the SAA has been the last major archaeological organization to explore its relationship with Indigenous peoples. The intent of this panel is to discuss how ethics in Hawaiian archaeology relate to the established SAA Principles of Archaeological Ethics and if the Society for Hawaiian Archaeology should consider adopting their own set of ethics. In addition, the relationship between archaeologists and Native Hawaiians will be viewed and discussed from a professional ethic standpoint.

### SYMPOSIUM 4: HOUSEHOLDS AND AGRICULTURE IN ANCIENT KOHALA

**The 2007-2009 Kohala Human Social Dynamics Project: Goals, Methods, and Overview**  
*Patrick V. Kirch, UC Berkeley*

The Kohala Human Social Dynamics project, funded by the Agents of Social Change program of the National Science Foundation, is a continuation of the Hawai‘i Biocomplexity Project initiated in 2001. The focus of the latest phase of our research (2007-2009) has been on the dynamic interactions between human populations, agricultural intensification, and household social units. This paper describes the goals, objectives, and methods applied in this project, and situates the project in the broader framework of Hawaiian and Polynesian historical anthropology.

**Variation in Kohala Households Over Time and Space, Hawai‘i Island**  
*Julie S. Field (Ohio State University), Patrick V. Kirch (UC Berkeley), and Thegn N. Ladefoged (University of Auckland)*

As part of a collaborative HSD-NSF research program, we have examined the chronology and cultural remains from eighteen residential features from the Kohala Field System. We examine the morphology and contents of these residences, and their context within the agricultural features and trails of the field system. We also present a sequence of AMS dates that associate the occupation of residences with sequential construction phases of the field system.

**Elite Households in Makiloa and Kalala Ahupua‘a**  
*Jennifer Kahn, Bishop Museum*

This paper presents results from excavations at two major elite residential complexes in Leeward coastal Kohala, MKI-56 and KAL-46. The excavations yielded rich artifact assemblages and sub-surface features suggestive of multiple phases of site occupation. Preliminary artifact analyses are discussed in relation to elite access to marine and terrestrial resources, craft specialization, and labor allocation.

**Agricultural Development in Windward Kohala**  
*Mark D. McCoy (Otago University) and Michael W. Graves (University of New Mexico)*
Hawai‘i Island stands out from other Pacific Islands due to massive rain fed agricultural fields built in late prehistory. But, what role did irrigated agriculture play in the development of the island’s subsistence and political economies? In this paper, we present a developmental sequence in Windward Kohala that begins with the earliest direct evidence of irrigated agriculture on the island and documents innovative use of the landscape. This research is aided by new geophysical surveys, remote sensing LIDAR data, and excavations.

Variable Agricultural Development throughout the Leeward Kohala Field System
Thegn Ladefoged (University of Auckland), Peter Vitousek (Stanford University), Patrick V. Kirch (UC Berkeley), B. Falk (University of Auckland), T. Kennedy-Bowdoin (Carnegie Institution), and G. Asner (Carnegie Institution)

Previous attempts to document the expansion and intensification of agriculture in leeward Kohala have relied on aerial photography or limited GPS surveying. In the former, analysis is limited by the resolution of the data and the necessity to digitize archaeological features based on color differentials in the photographs. In the latter, GPS surveying creates fine-grained data sets, but due to the time-consuming nature of fieldwork, these are restricted in spatial extent and sampling across the landscape is required. To overcome these problems we have analyzed a high resolution LiDAR data set consisting of ca. 150 million points with precise elevational measurements every 1.12 meters over a 170 km² area. An algorithm identifying object orientations was used to define linear archaeological features in the LiDAR DEM. Further processing based on length to width ratios and area criteria separated out agricultural walls from other architectural features. The walls and trails defined in the LiDAR data were classified according to relationships of intersection and abutment. The analysis suggests that agricultural development throughout the leeward Kohala field system was variable, with differential levels of feature construction and partitioning occurring in mauka and makai zones, as well as in the northern and southern sections of the field system.

Reverse Engineering in the Kohala Field System
A. Kagawa, Peter Vitousek, and Mahina Patterson, Stanford University

We have established four fenced gardens within the Kohala Field System, three crossing the rainfall gradient from the mauka to the makai boundary of the system in the ahupua‘a of Puanui. There, we are growing multiple Hawaiian varieties of ‘uala, dryland kalo, and ko - and getting very good yields of ‘uala in three of the four gardens. Our goals are to add agricultural experimentation to the medley of techniques being used to understand the dynamics of pre-contact rainfed agriculture, and to provide a focus for cultural and educational involvement in these systems and thereby to draw upon traditional knowledge of how they were farmed.

Life on the Land: Space, Food and Population Pressure in pre-European-contact Hawai‘i
C. Puleston and S. Tuljapurkar, Stanford University

We provide a non-technical account of a powerful and flexible approach to modeling early human agricultural populations. Our methods incorporate historical population and social characteristics as well as ecological context. We describe our application of the method to the pre-contact growth and expansion of the Hawaiian population.
Symposium 5: How Can Evolution and Ecology Expand Our Understanding of the Hawaiian and Pacific Island Past?

Evolutionary Perspectives on the Rapid Colonization of East Polynesia
Terry L. Hunt, UH Mānoa
Recent archaeological and paleoenvironmental studies from multiple islands in East Polynesia now reveal a remarkable pattern: several of these distant and widely-dispersed islands were colonized rapidly around AD 1000. The late, rapid, and nearly simultaneous colonization of East Polynesia (e.g., Cook Islands, Societies, Marquesas, Hawai‘i) suggests sophisticated navigation, potential environmental “push” and “pull” factors, and extraordinary growth of founding populations. In this paper, I consider evolutionary dynamics for this episode of Polynesian prehistory.

Homology, Analogy and the Evolution of Polynesian Chiefdoms
David J. Addison, American Sāmoa Community College
Similarities in Polynesian socio-political systems were noted early in the European exploration of the Pacific. An explicitly evolutionary framework, pioneered by Kirch’s The Evolution of Polynesian Chiefdoms, has served as a basis for much research on how these systems developed and were organized. This presentation explores the evidence for convergent evolution (analogy) and cultural relatedness (homology) in Polynesian socio-political systems. Data on the spatial and temporal distribution of stratification suggest that key aspects of Polynesian systems appeared relatively late and spread within Polynesia. These data point to interaction and homology as an explanation for Polynesian socio-political similarities.

Cultural Relatedness of Polynesian Monumental Architecture
Ethan E. Cochrane, University College of London
Heiau are abundantly placed across the Hawaiian landscape and vary from simple shrines of upright stones to massive multi-platform temples. Seen as part of a pan-Polynesian tradition of monumental stone architecture, major variation between heiau has been attributed to extra-archipelago interaction and building traditions shared between populations. This paper presents a cladistic and network analysis based on construction features of heiau and other Polynesian monumental architecture. The results suggest that variation in monumental architecture is a product of multiple cultural traditions encompassing different populations including Hawaiian and Tahitian, but also Hawaiian and Marquesan, and other central East Polynesian groups.

Marine Foraging and the Transport of Marine Foods into the Kohala Field System, Leeward Kohala, Hawai‘i
Julie Field (Ohio State University), Natalie Schuster, Patrick V. Kirch (UC Berkeley), and Thegn N. Ladefoged (University of Auckland)
As part of a collaborative HSD-NSF research program, we have examined the chronology and cultural remains from over 25 residential features from the leeward Kohala coast, and from the Kohala Field System. Analysis of marine shell debris from both the coastal and field system residences of the ahupua‘a of Makiloa and Makeanehu reveals aspects of the economics of these ahupua‘a at different points in prehistory, in particular the extent of foraging on the coast and the transport of marine foods into the field system. Quantitative analyses indicate differences in the
marine shell assemblages that may be related to local abundances, foraging time, and shell preservation.

**Sources of Innovation in Traditional Hawaiian Fishing**
*Thomas S. Dye (T. S. Dye & Colleagues, Archaeologists, Inc.) and Ken Longenecker (Bishop Museum)*

Innovation is the mechanism by which human populations generate the behavioral variability upon which selection acts. Fisheries conservation strategies, which violate the optimal foraging principle of greatest return for least effort, are likely innovative behavior. Hawaiian tradition records several kapu that can be interpreted as fishery conservation strategies, all of them established by aliʻi. Recently, various principles of community-based fishery management in Hawaiʻi have been interpreted as conservation strategies. This paper explores the plausibility of the hypothesis that traditional communities of makaʻainana practiced fishery conservation. Fish remains collected from archaeological excavations at Bellows Air Force Station indicate that 1) the typical catch consisted of small fish, 2) most of the fish in the catch were juveniles, and 3) it is possible to estimate predation pressure with archaeological fish bone collections from Hawaiʻi. The results of these analyses are contrasted with modern fishery management records to evaluate the plausibility of the hypothesis.

**The Same, Only Different: Historical Ecology and Differential Dryland Production in Kaupō, Maui and Kohala, Hawaiʻi**
*Alex Baer, UC Berkeley*

Prior to contact with European explorers in the late 18th century, the islands of Maui and Hawaiʻi had become the dominant political and military powers of the Hawaiian archipelago. To support their growing polities both relied on agricultural systems with a significant emphasis on dryland production of sweet potato. While much work has been conducted on the dryland systems of Hawaiʻi, new research will describe the first such documented system for the island of Maui. Using models from historical ecology, I compare a suite of ecological factors from the two regions to understand the ways in which non-irrigated agriculture from Kaupō, Maui, differs in subtle, but significant ways from the ecologically similar productive zone in Kohala, Hawaiʻi.

**Evidence for Time, Space and Subsistence Strategy Recovered from Dental Chemistry and Dental Residues in Rapa Nui**
*John Dudgeon and Monica Tromp, Idaho State University*

Human teeth from late prehistoric/protoprohistoric sites on Rapa Nui were analyzed for microskeletons and dietary trace elements to possibly determine subsistence activities. Microskeletons represent dietary and occupational artifacts embedded in dental calculus during life, creating a direct relationship between life history and environment. Phytolith and diatom microskeletons were extracted from digested calculus samples removed from teeth and photographed, described and counted using SEM. Trace elements thought to be indicators of dietary preference were collected by LA-ICP-MS, yielding some broad generalizations about marine versus terrestrial food procurement. These observations are compared to the microskeletal evidence to create a more complete picture of human subsistence ecology.
Building evolutionary explanations for agricultural architecture on the island of Rapa Nui
Alex E. Morrison, UH Mānoa
Archaeological features associated with agricultural practices are ubiquitous on the surface of Rapa Nui. Two common recorded feature classes are walled garden structures (manavai) and stone mulch gardens. Archaeologists have recognized that the architectural attributes present on these structures impart performance enhancements on specific agricultural crops. However, building an evolutionary explanation requires documenting variability in specific architectural attributes and then demonstrating that these performance differences can be linked to the biological requirements of the organisms being grown as well as characteristics of the local environment. Relevant variables include variance reduction in temperature, soil moisture retention, and hydrology. Methods used in the presentation include analysis of temperature data, 3D landscape imagery, and multi-spectral satellite images.

Resilience and Vulnerability in Island Socio-Ecosystems
Patrick V. Kirch, UC Berkeley
This paper considers the potential of applying a well-developed body of theory known as resilience theory or panarchy theory in island archaeology. A number of archaeologists have pointed to the relevance of resilience theory for understanding long-term human ecodynamics, and to the value that archaeological data bring to resilience theory. Here I explore the application of this body of theory to long-term development of socio-natural systems on oceanic islands. A research program currently being developed for the comparative study of resilience and vulnerability in contrastive island ecosystems is also described.

SYMPOSIUM 6: GENERAL SESSION

The Age of the O18 Site
Nine new 14C dates on suitable dating materials, including short-lived shrubs and marine shells, from layers II and III of the Bellows Dune Site support the antiquity of the site proposed by Dave Tuggle and Matt Spriggs. Bayesian calibration estimates a relatively recent age for the boundary between the two layers. The chronology of the site is compared and contrasted with nearby sites, and elements of a regional prehistory are proposed.

The "Beeswax Wreck" of Nehalem, Oregon, Remotely Sensed
Scott Williams, Washington State Department of Transportation
The spring tides of April, 2009 provided low water to explore rarely exposed sea-caves along the Oregon Coast. This allowed the collection of more sherds of Qing Dynasty porcelain to add to the collection of artifacts once belonging to the Manila Galleon believed to be the Santo Cristo de Burgos, lost in 1693. A Ground Penetrating Radar survey of the Nehalem Sand Spit has exposed cobbles deposited from the tsunamis of AD 1700 as well as an earlier one of 1100 YBP. This was followed up by systematic augering to determine the present water-table in areas known to have offered up shipwreck artifacts in the past. An expedition into the off-shore waters to investigate magnetic anomalies located in previous surveys was conducted in August. Recon missions to the generally inaccessible beaches were conducted as well as limited diving and a sonar survey of magnetic ‘hits’ helped team leaders plan for next season’s more intensive underwater program.
A Glimpse under the Gorse: Test Excavations at the Laumai‘a Ranching Station, Humu‘ula District, Hawai‘i Island

Peter R. Mills (UH Hilo), Carolyn L. White (U. Nevada Reno), Ben Barna (U Nevada Reno), Charles Feely (UH Hilo), Isabella Melo (UH Hilo), Kelene Pfennig (UH Hilo), and D. Jet Stoner (UH Hilo)

A joint UH Hilo and University of Nevada at Reno archaeological field school in June of 2009 investigated two separate loci at the Laumai‘a ranching station--occupied from the mid 19th century through the 1950s--on the eastern flanks of Mauna Kea near 6,500 ft. in elevation. The station first appears on an 1862 map associated with the Waimea Grazing and Agricultural Company, but the Parker Ranch maintained operations in the same general locality through the 1950s. Field examinations at the Parker Ranch station at Laumai‘a (50-10-24-26825) in 2007 and in 2009, in combination with historical documentation, demonstrate that it was in use before the beginning of the 20th Century. Earlier deposits dating to the mid-19th century were identified in a separate locality under a heavy infestation of gorse (5010-24-26826), and included Cornaline d’Aleppo trade beads, percussion caps, clay pipe fragments, and other materials that have not been identified in the later occupation at the other locus. The physical separation of these two closely related stations facilitates our ability to examine changing material patterns in the daily lives of commercial ranchers throughout most of the periods associated with the development of the Paniolo ranching tradition.

The Contribution of Non-Destructive Geochemical Analysis to Museum Collections: an Example from the Lyman Museum Collections

Charles Feeley, University of Hawai‘i at Hilo

Eighty-two stone artifacts were selected from the Lyman Museum collections for non-destructive geochemical characterization. These included 58 sling stones, 12 luhe‘e sinkers, 3 bread loaf sinkers, 2 stone figurines, and 7 miscellaneous artifacts. This project was conducted as a joint internship with the Lyman Museum and the UHH Geoarchaeology Lab. This study demonstrates how non-destructive EDXRF can be used on museum collections to provide more detailed information on artifacts that lack provenance.

The Archaeology, Preservation and Ho‘omau of Kaunapueo at Nu‘alolo Kai

Victoria Wichman (Nā Pali Coast ‘Ohana), Alan Carpenter (Hawai‘i Division of State Parks), and Maurice Major (Cultural Landscapes Hawai‘i)

This paper presents a synopsis of the archaeology and restoration of Nu‘alolo Kai Site 50-30-01-197, Feature B, which has culturally been renamed Kaunapueo – “landing place of the owl.” The recently restored feature has been interpreted as a hale wa‘a (canoe shed) and habitation site. Excavation has shown that the surface feature was constructed in the historic period, but it represents merely the latest expression of a continuum of use extending back to the 15th Century. Analysis of cultural strata and materials recovered indicate an initial period of temporary habitation, followed by a longer, stable period of occupation. Items excavated range from abundant marine midden throughout, traditional fishing gear and stone tools, as well as later historic items such as glass trade beads and square nails. Several subsurface features were also present, such as postholes and firepits. Multi-disciplinary forms of project documentation were experimented with, ranging from standard mapping techniques to laser scanning technology. This on-going effort represents Nā Pali Coast ‘Ohana’s and Hawai‘i State Parks’s “measured”
The approach of *hoʻomau*, which Pukui defines as “to continue, persist, renew, and to make fast as an anchor in the sand.” The many schools of knowledge exchanged throughout the project support this concept and furthers our community’s goal of proactive cultural heritage preservation and restoration.

**Heiau on the Cloak of Kū: Ritual Site Distribution from Kaupō, Maui**

*Alex Baer, UC Berkeley*

Flowing downward from the crater atop Haleakalā to the coastal cliffs below is a fan of ancient lava and mud known as Naholoku. Literally translated as “the Cloak of Kū,” this area of nutrient-rich soils closely bounds the district of Kaupō, one of Maui’s most productive agricultural centers and home to such paramount chiefs as Kekaulike. Within this region lie a series of heiau, many of known name and substantial construction. Through extensive survey and the relocation of heiau recorded in the early 20th Century, a pattern has emerged in which these ritual sites not only demarcate the boundaries of the district, but distinctly enclosed an area of great political, social, and productive importance.
When Did the Polynesians Discover Hawai‘i? (keynote address)
Patrick V. Kirch, UC Berkeley
The question of when Polynesians first discovered the Hawaiian Islands—the most remote archipelago in the world—has engaged scholars for two centuries. Fornander, Brigham, Stokes, Handy, Hiroa, Emory, Sinoto, Green and others have weighed in with their theories and projected dates of first settlement. Until recently, orthodox opinion had initial Polynesian discovery of Hawai‘i between ca. AD 300-750. Recent evidence—both from Hawai‘i and elsewhere in Eastern Polynesia—now suggests that this time frame may be too early. This keynote address will review the history of research on early Hawaiian settlement, and synthesize the emerging picture from Eastern Polynesia which is increasingly converging on a settlement date around the close of the first millennium AD.

SYMPOSIUM 1
Pre-Contact To Polo Matches: A Brief History of a Parcel in Waipouli, Eastern Kaua‘i
Michael Dega and Jim Powell, Scientific Consultant Services, Inc.
The de rigueur of archaeological thought in Hawai‘i has been, appropriately, directed toward settlement pattern models. That is, the spatial relationship of human activities across the natural and cultural landscape. Often though, due to the unevenness of CRM project locations, we are left with “shreds and patches” to weave regional historical patterns. In that vein, the current paper discusses the history of a single parcel, from its use in pre-Contact times through the 1940s. While contributing to settlement pattern studies as a whole, the history of singular parcels is often deep and quite interesting for archaeologists and the community at large.

Southern Affinities of a Ki‘i Poho Pōhaku Effigy Bowl from East Kaua‘i
David Shideler, Cultural Surveys Hawai‘i
Excavations at a coastal cultural deposit in the Puna District of East Kaua‘i encountered an unusual artifact assemblage (including a shell grater, a number of tattoo needles, a cache of sling stones, high-status ornaments and an effigy bowl. The faunal assemblage included several extinct (and locally extinct) bird species, fish taxa indicative of organized fishing forays, and medium snake. The discussion of these finds notes that the traditions of the ruling chief Mō‘ī-keha of Kahiki are particularly associated with this location and concludes: “it is tempting to see some affinity...”. Emory and Sinoto proposed a dual settlement sequence for Hawai‘i. In their view the available evidence (fishhooks, adzes, quoits, lunar calendar, etc.) supported a hypothesis of initial colonization of Hawai‘i from the Marquesas, followed by a later, influential contact from the Society Islands. Southern affinities of the Kaua‘i assemblages are explored along with a consideration of pitfalls, and directions for future investigations.

The Koloa Field System Revisited
Hallett Hammatt and Mindy Simonson, Cultural Surveys Hawai‘i
Documenting the modification of an extensive barren lava plain adjacent to Waikomo stream on the south shore of Kaua‘i into an a profoundly altered cultural landscape, covering over 800
acres, started in 1976 and is ongoing. The origins of this system go back to the 1400s. Stone lined ‘auwai were constructed outward from both the east and west sides of Waikomo Stream following pāhoehoe ridges in a dendritic pattern of secondary and tertiary branches. These ‘auwai - some aqueducted- feed into well defined terraced lo‘i and, in turn, into less formal growing areas and finally into fields of stone mounds. C shape shelters abound and habitation platforms occur adjacent to and some directly over ‘auwai. This complex is a unique contrast to the ubiquitous wet valley irrigated systems and its development was motivated by well conceived environmental and risk management considerations.

Stratigraphy and Chronology of a Ha‘ena Dune Site, North Shore Kaua‘i
Douglas Thurman and Hallett Hammatt, Cultural Surveys Hawai‘i
Preliminary results from data recovery investigations at a one-acre shoreline Ha‘ena dune site shows three discreet superimposed cultural layers underlying modern dune deposits. Immediately mauka of the dune is a buried pre-contact ‘auwai associated with an adjacent mauka terraced lo‘i complex. Documentation of stratigraphic relationships as well as 14C dates obtained from identified species in well controlled contexts shows the chronological sequence of multiple events spanning 500 plus years: 1) deposition of the death assemblage of Carelia snails pre 1482; 2) construction and filling of the ‘auwai; 3) two phases of pre-contact habitation the earliest 1482 +/- followed by 4) post contact use. This may be the only documented site on the north shore of Kaua‘i that shows a stratigraphic relationship of lo‘i agriculture with shoreline dune habitation.

Ancient Kaua‘i Mapping Project
Erik Burton
GIS tools are used to develop a predictive model for identifying the primary agricultural complexes on Kaua‘i and to conduct a systematic aerial survey for transported landscapes. Comparisons were made to historical records and place names were matched to elements of the ancient agricultural landscape. Results are recorded in a series of layers enabling spatial analysis and 3D visualization of the data in its environment. The resulting GIS layers and master model allows custom data views to be created by enabling selected layers so that desired aspects of the agricultural landscape can be visualized. The resulting layers are discussed as individuals and also how they interact to provide a view of the ancient integrated agricultural landscape. Conclusions about the predictive model for agricultural complexes, the ethnobotanical surveys and the historical records are discussed.

SYMPOSIUM 2

The Onemea Site in Mangareva and its Implications for East Polynesian Settlement
Patrick V. Kirch (UC Berkeley) and Eric Conte (Université de la Polynésie Française and Université Paris I (Sorbonne-Panthéon)
The Onemea site on Taravai Island has yielded the earliest evidence for Polynesian occupation of the Mangareva (Gambier) Islands. A suite of AMS radiocarbon dates places human utilization and occupation of this sand dune site between AD 950-1250. An initial phase of site use was intermittent, primarily for exploitation of nesting or roosting populations of seabirds. This was followed by a period of habitation in which earth ovens were used and fishing gear
manufactured. The chronology of the Onomea site adds further evidence for rapid Polynesian expansion into marginal Eastern Polynesia around the close of the first millennium AD.

**Ideology and Ritual Centers: Archaeology of the ScMo-124-125 Complex, ʻOpunohu Valley, Society Islands**

*Jennifer Kahn, Bishop Museum*

Renewed archaeological investigations at the -124/-125 complex, the largest aggregate marae complex in the Tuapaururu sector of the ʻOpunohu Valley, included excavations at nineteen structures - eight marae, four house sites, and seven terraces. The excavation data and spatial layout of the complex are discussed in relation to its inferred use as a major ritual center for elite activities. Marae excavations delineated episodes of site construction and use suggesting that these structures were ritually maintained during seasonal rejuvenation rituals. Cultural deposits at the house sites and most of the terrace sites were remarkably clean, in most cases lacking any evidence for cooking, equally suggestive of a ritual zone deliberately isolated from potentially polluting activities. A single house site had remains indicative of a permanent residence, perhaps for the high priest responsible for the ritual complex as a whole and/or his retainers.

**High-Precision U-series Dating of Moʻorea Marae**

*Patrick V. Kirch (UC Berkeley), Warren Sharp (Berkeley Geochronology Center) and Jennifer Kahn (Bishop Museum)*

Radiocarbon dating of temples (marae) in the Society Islands is hindered by problems of large uncertainties, calibration, and related issues. We applied high-precision U-series dating of coral architectural elements from marae on Moʻorea Island to develop a chronology for temple development. Our U-series dates typically have error ranges of less than 10 years (at two standard deviations). The resulting chronology demonstrates a rapid evolution of ritual architecture over a span of about 140 years prior to European contact.

**Obsidian Hydration Dating in Rapa Nui and Potential Applications in Hawaiʻi**

*Christopher M. Stevenson (Richard Bland College), Peter R. Mills, (UH Hilo), and Thegn Ladefoged (University of Auckland)*

Carefully executed laboratory hydration experiments on Easter Island obsidian have made possible large scale regional dating of Rapa Nui archaeological deposits on a century by century basis. As a result, age estimates for site settlement and abandonment are possible and prehistoric regional patterns of landscape use can be discerned. New induced hydration experiments with Puʻuwaʻawaʻa trachytic glass indicate that the hydration behavior is like that of obsidian and that similar large scale dating of the landscape is possible on Hawaiʻi. Year-long isothermal hydration runs at 90°C show that molecular water diffusion follows a 1/2 time dependence and that the rate of hydration is sensitive to the quantity of structural water within the glass matrix. Additional laboratory experiments have the potential of developing artifact specific rates for Puʻuwaʻawaʻa glass that will result in good age estimates.
O ke Kahua Mamua, Mahope ke Kūkulu - The Foundation First, Then the Structure:
Building a Strong Foundation of Native Hawaiian & Kamaʻāina Archaeologists
Kelley Lehuakeaopuna Uyeoka, UH-HIP CRM Internship Coordinator
This summer, the first cultural resource management internship program targeting Native Hawaiian and kamaʻāina undergraduate students was developed and piloted by the project coordinators at the University of Hawaiʻi Hawaiian Internship Program (UH-HIP). The purpose for creating this type of experiential internship program arose from the need to increase the number of Native Hawaiian and kamaʻāina in CRM. To accomplish this goal, the internship set out to mentor and train the interns in both academia and archaeological field and lab techniques; provide them with networking opportunities with professionals and practitioners in CRM; teach them how to bridge Western science with cultural values, practices and moʻolelo; and develop a structured, successful, and sustainable internship model within Hawaiʻi’s CRM field.

Incorporating Student Training in the Cultural Resource Management Industry: An Example from Ahu aʻUmi
Windy McElroy, Garcia and Associates and Keala Pono Archaeological Consulting, LLC
This summer, Garcia and Associates conducted an investigation of the area surrounding Ahu aʻUmi Heiau, located at 5,200 ft. elevation on Hawaiʻi Island. More than 200 surface features were recorded within the 140-acre project area, selected structures were mapped in detail, several features were excavated, and seven radiocarbon dates were obtained. An important part of this work was the incorporation of student interns to be trained as archaeological field technicians. In addition to participating in the fieldwork, each intern was responsible for completing their own research project, on which they will be presenting today.

Spatial Analysis of the Distribution of Outlying Features in the Vicinity of Ahu aʻUmi
Iolani Kauhane UH-HIP Intern
The focus of my project is on the outlying features of Ahu aʻUmi Heiau, which include c-shapes, a u-shape, alignments, artifact scatters, cairns, caves, enclosures, hearths, a modified outcrop, mounds, pāhoehoe pits, platforms, quarries, shrines, a trail, uprights, walls, and extraction stones. GIS maps aid in determining settlement patterns of the outlying features and can help address question such as 1) What features are found in the area?; 2) What is the spatial distribution of different kinds of features?; and 3) Is there zoning patterning of working activities in the area surrounding Ahu aʻUmi?

Analysis of Ahu aʻUmi’s Structural Design: Construction Techniques and Architectural Details
Aoloa Santos, UH-HIP Intern
I will focus on change through time in the structural design of Ahu aʻUmi with an emphasis on its architectural details and the engineering choices apparent in its construction. The maps and photographs from our fieldwork help establish the current state of the structure and the variations in construction techniques in different parts of the heiau. I will also compare the architectural
details with early historical representations of Ahu a ‘Umi, as drawn by Wilkes (1871) and Baker (1917). We can identify changes to the heiau from these early maps, one of which was drawn before the structure was altered for use as a goat pen in the late 19th/early 20th Century.

Analysis of C-Shaped Structures Associated with Ahu a ‘Umi
Ka‘imi Wilson, UH-HIP Intern
My project focuses on the analysis of c-shaped structures in the vicinity of Ahu a ‘Umi Heiau and how they relate to the heiau. C-shapes are the predominant archaeological feature within our 140-acre survey area. A total of 263 features were found, with 50 features being classified as c-shapes.

Geochemical Analysis of Ahu a ‘Umi Basalt and Volcanic Glass
U‘ilani Macabio, UH-HIP Intern
Ahu a ‘Umi is a place of sacredness and royalty built by ‘Umi a Līloa and his people of Hawai‘i Island, in the plateau of Hualalai, Mauna Loa, and Mauna Kea. My project analyzes the geochemical composition of basalt and volcanic glass of Ahu a ‘Umi and the surrounding area, so that we can better understand mo‘olelo about where the construction stones are from and to identify where nā po‘e kahiko procured their resources. The gathering and analyzing of the pōhaku was conducted using Hawaiian and modern knowledge, tools, and technology. One of the modern technologies that I used for this analysis is EDXRF, Energy Dispersive X-Ray Fluorescence, a non-destructive and fast method of determining the geochemical composition of pōhaku. I gathered 32 pōhaku, and two came from different volcanics that had no relation to the others.

The Calculus of Ground-based LiDAR, GIS and Archaeology: A Case Study from Ahu a ‘Umi
Wetherbee Bryan Dorshow, Earth Analytic, Inc.
This paper summarizes methods employed and results obtained from recent geospatial investigations collection at Ahu a ‘Umi, a 16th century heiau located between Mauna Loa and Hualalai on the island of Hawai‘i. The primary focus is on the collection, processing, analysis and visualization of ground-based LiDAR data at this important site. A variety of additional GIS datasets, including kite-based aerial photography, GPS and total station data, will also be presented, providing an integrated framework for characterizing the physical and geospatial contexts of Ahu a ‘Umi and its surroundings.

Opening Remarks, Part 2
Kelley Lehuakeaopuna Uyeoka, UH-HIP CRM Internship Coordinator

Fresh Eyes, Fresh Minds, Fresh Perspectives: A New Look at Collections Management
Naupaka Gouveia, UH Hilo Intern
[no abstract available]
More than Dig Kits: Utilizing an Interactive and Multigenerational Approach to Educational Outreach in Our Own Backyard
A. Rowan Gard, Bishop Museum
The dissemination of archaeological knowledge for both the public and professional sectors is a primary goal of the Bishop Museum, as well as providing access to our extensive archaeological collections. To that end, the Department of Anthropology has recently designed a suite of educational programming which examines the Austronesian expansion and the chronology of habitation in Polynesia. These programs offer Hawai‘i school children, their families and the general public further insight into the colonization of the Pacific and the ancestral connections Polynesia has with Southeast Asia. Further, these educational programs meet Hawai‘i state educational benchmarks, foster a greater appreciation for discipline of archaeology and a community ethic of conservation and preservation.

SYMPOSIUM 4

Recent Developments in Hawai‘i’s Burial Laws
Carl Christensen, William S. Richardson School of Law, UH Mānoa
Hawai‘i’s courts have recently issued two opinions clarifying the responsibilities under Chapter 6E, H.R.S., of agencies approving actions that may disturb Native Hawaiian burials. In Kaleikini v. Thiehen (Aug. 18, 2010), the Hawai‘i Supreme Court held that one contesting the disinterment of a burial has the right to participate in a “contested case hearing” (administrative trial-type hearing) and, ultimately, to seek judicial review of an unfavorable decision. In Hui Malama I Nā Kupuna o Hawai‘i Nei v. Wal-Mart (Dec. 19, 2009), the Hawai‘i Intermediate Court of Appeals held that an agency approving a development project need not consult with the State Historic Preservation Division if “there is no evidence that the [agency] knew of or should have known that a burial and/or archaeologically significant site was, or could be, on the Property.”

Na Wai E Ho‘ōla i Nā Iwi: Who Shall Remember the Bones
Jeannin-Melissa Kapuakawekiu Russo, William S. Richardson School of Law, UH Mānoa
This note will examine whether the decision of Brown v. Hawai‘i, stating that the Hawai‘i State Historic Preservation Division (SHPD) is a museum under the Native American Graves Protection and Repatriation Act (NAGPRA), will further aid Native Hawaiian efforts in protecting iwi kūpuna (ancestral bones). Under the Brown decision, SHPD is required to follow the museum provisions of NAGPRA. NAGPRA protects discovery of human remains on tribal and federal lands, and remains and cultural objects held by federal agencies and museums. However, because of SHPD’s responsibility as a “museum” under NAGPRA, even remains discovered on state or private land will fall within NAGPRA’s protection.

SYMPOSIUM 5

Using GIS and LiDAR to Discern Ditches: A Case Study in Waiapuka (Island of Hawai‘i)
Jana Morehouse, University of New Mexico
The Waiapuka ahupua‘a, in Northern Kohala on the Island of Hawai‘i, is home to approximately 500 prehistoric archaeological agricultural features and complexes. Rich flora and physiographic characteristics have made the area difficult to map with traditional methods. This project is the first to incorporate LiDAR data and GIS mapping to the known archaeological features and
hydrology of the landscape. The mapping demonstrated that Hawaiians were using the natural water flow to pull water from the gulches onto the tablelands, into a catchment system, and even further downstream, connecting complexes, which has not been previously documented in Kohala.

New Archaeological and Experimental Data on Functional Interpretations of Excavated Pits at Pōhakuloa Training Area, Hawai‘i Island

Christopher Monahan, Cultural Surveys Hawai‘i

Cultural Surveys Hawai‘i is conducting a functional study of excavated-pit features at Pōhakuloa Training Area. This paper presents preliminary results of analyses of 130 pits in seven sample areas. Multiple working hypotheses regarding pit function are being investigated by intensive feature documentation, limited testing and bulk sampling within and near pits, ʻuala (sweet potato) pit-planting experiments, and actualistic study of confirmed ʻuaʻu (Hawaiian petrel) nests. Preliminary results strongly suggest Hawaiians were intensively prospecting for voids under pāhoehoe in order to expand sea-bird nesting habitat. Observations on the superposition of modified flows suggest, these features date from relatively late pre-Contact times.

The Geometry and Cultural Significance of the Kiholo Fishpond, Puʻuwaʻawauleda Ahupuaʻa, Hawai‘i Island

Timothy Scheffler (UH Hilo), John Lockwood (Geohazards Consultants International, Inc.) and James Kauahikaua (USGS, Hawaiian Volcano Observatory)

Major fishponds represent a traditional form of monumental architecture in Hawai‘i. The Kiholo fishpond was (re?)constructed in c.1810 at the behest of Kamehameha. This royal fishpond was inundated by a Mauna Loa lava flow in the summer of 1859. Attempts to locate the extent of the original loko kuapā using geophysical techniques have proved ambiguous. However, an investigation of geological features on the lava surface identified the buried kuapā and allows for a reconstruction of the pond geometry. Burial of sites by thin pāhoehoe lavas may not rule out the identification of major subsurface archaeological features.

Archaeology Along the Ane Keohokālole Highway: Balancing Construction and Preservation in North Kona

Paul Cleghorn and Roland Reeve, Pacific Legacy, Inc.

The construction of the new Ane Keohokālole Highway in North Kona is destroying several archaeological sites, both habitation structures and agricultural features that formed part of the vast Kona Field System. In addition to undertaking normal mitigation measures, including data recovery excavations and analysis, Pacific Legacy has been and continues to work with Hawai‘i County, State, and Federal agencies, the land owner (Queen Liliʻuokalani Trust), and the community to use information gathered during investigations of the Highway sites to help develop an adjacent 25 acre property into an interpretive preserve that will serve as an educational resource for the community.

Variable Production throughout the Leeward Kohala Field System

Thegn Ladefoged (University of Auckland); Mark McCoy (University of Otago), Cedric Puleston (Stanford University), Peter Vitousek (Stanford University), Oliver Chadwick (University California Santa Barbara), Greg Asner (Stanford University), and Patrick V. Kirch (UC Berkeley)
Agricultural productivity in leeward Kohala varied in response to cultural activities and environmental parameters such as rainfall, temperature, and soil nutrients. Analysis of LiDAR, archaeological, and geochemical data documents differential development. Some regions of the field system underwent high levels of agricultural intensification whereas others were developed through various forms of expansion. A series of agent-based models indicate theoretical productivity levels. Patterning in the data is compared to the modeled productivity levels, with coincidence and discrepancies providing insights into how the area was developed over a 400 year period.

The Exploitation of Pu‘u Wa‘awa‘a Volcanic Glass in Pre-contact Hawai‘i
Mark McCoy (University of Otago), Peter R. Mills (UH Hilo), Jennifer Kahn and Rowan Gard (Bishop Museum)
Pu‘u Wa‘awa‘a is a geologically young volcanic cone (Hualalai, Hawai‘i Island) and natural source of trachyte volcanic glass. While we know this source was exploited by Hawaiians prior to European contact, at present we know little about how, and over what geographic range, it was used. We present a new geochemical volcanic glass database (EDXRF), that includes Pu‘u Wa‘awa‘a and other natural sources, which we have used evaluate +1,000 artifacts from sites across the archipelago. The resulting spatial database of Pu‘u Wa‘awa‘a volcanic glass gives us an unprecedented look at interaction spheres on the community, district, and inter-island scales.

Overview of Ongoing UH Hilo/ Bishop Museum Collaborative Stone Tool Sourcing Study using EDXRF
Steven P. Lundblad and Peter R. Mills, UH Hilo
A collaborative two-year NSF-funded study of stone tool provenance between the UH Hilo Geoarchaeology Laboratory and the Bishop Museum is focusing on exchange patterns of lithic material. On the leeward side of Hawai‘i Island we have identified several geochemical clusters which can be reasonably attributed to certain source groups including the Mauna Kea Adze Quarry. The pattern of resource acquisition along the coast is predicted to vary with location and proximity to and availability of source material. Preliminary results show a higher proportion of material from Kohala in northern sites, and a higher proportion of Mauna Loa and Kīlauea material in sites to the south. We plan to test this observation by comprehensive analysis of lithic material and new radiocarbon dates to identify temporal and spatial patterns of resource exploitation.

Considering the Relationships between Adze Production Technology and Geochemical Sampling of Basalt Debitage
Peter R. Mills and Steven P. Lundblad, UH Hilo
In order to make meaningful inferences about the degree of reliance on different adze basalt sources from geochemical profiles, one must control for a number of sampling variables. The reduction stages being analyzed and the misclassification of hammerstone spalls and fire-cracked rock as adze debitage are among the factors that must be controlled for. Strategies for developing a consistent and accurate classification of debitage are discussed.
**Ko‘i: Can Stones Have Mana?**  
Paul L. Cleghorn, Pacific Legacy, Inc.

*Ko‘i* or stone adzes were arguably one of the most important components of the traditional Hawaiian tool kit. With the *ko‘i*, the traditional Hawaiians felled trees, cut shrubs, and carved canoes, house posts, bowls, and images. *Mana* is that supernatural, divine, or spiritual power often associated with important personages. This paper offers brief insights, based on decades of examining stone adzes, regarding the notion that *ko‘i* were heirloom pieces passed from one generation to another and that there are indications that *mana* from the various “owners” is present in the *ko‘i*.

**Niho Ornaments: Symbols of Rank and Status**  
Paul L. Cleghorn, Pacific Legacy, Inc.

*Niho* or tooth-shaped ornaments have long been considered as symbols of chiefly rank and status. Ethnohistoric information suggests that an ivory bud-shaped ornament or ‘*opu‘u* was restricted to the ruling chiefs of O‘ahu, while the tongue-shaped ornaments or *lei niho palaoa* were worn by Hawai‘i Island chiefs. To date no written references have been found suggesting that these status symbols had gender specific associations. A limited review of archaeological research and ethnohistoric artwork offers some tantalizing insights into this class of ornamentation.

**SYMPOSIUM 6**

**Traditional Hawaiian Occupation of the Līhu‘e Uplands, O‘ahu: Lō Ali‘i Social Organization and Historic Context**  
Michael Desilets, Garcia and Associates

This paper examines a unique traditional Hawaiian historic context encompassing large portions of Central O‘ahu, with special emphasis on the Līhu‘e Uplands. Ethno-historic literature indicates that between ca. AD 1100 and 1778 the Central Plateau and surrounding uplands were dominated by a distinctive and regionally discrete variant of the traditional Hawaiian social system, referred to here as Lō Ali‘i Social Organization. Lō Ali‘i Social Organization is expected to have had a significant influence on settlement patterns in the central O‘ahu uplands, particularly Līhu‘e, and is crucial to interpreting the highly impacted archaeological record extant on U.S. Army training ranges at Schofield Barracks Military Reservation. Lō Ali‘i social organization is a prime example of a regional-scale historic context, an under-utilized scale in Hawaiian cultural resource management.

**Traditional Hawaiian Occupation of the Līhu‘e Uplands, O‘ahu: Elite Residence and the Archaeological Record**  
Joshua R. Toney, Garcia and Associates

Over a decade of archaeological investigation in the upland reaches of Līhu‘e, O‘ahu has resulted in the documentation of numerous traditional Hawaiian sites and artifacts. The distribution of these sites and artifacts are examined within the unique regional historic context of elite lō ali‘i residence in this area. Distributions of artifact types based on function are evaluated to assess overall settlement and activity patterns. Taken together, these data suggests a unique pattern of intense and specialized activity over a broad period of time.
Integrating GPR and LiDAR data in the development of Landscape Change Modeling: An Example from Mokapu Peninsula, O‘ahu, Hawaiian Islands
Alex Morrison (UH Mānoa, International Archaeological Research Institute Inc.) and Coral Rasmussen (Marine Corps Base, Hawai‘i)
Archaeologists concerned with heritage resource management are often tasked with answering a difficult question. What are the most efficient and reliable ways to learn about the locations of archaeological features without destroying them in the process? With the advent of new noninvasive archaeological prospection methods comes the ability to acquire information about the archaeological record while minimizing ground disturbance. In this paper we highlight the integration of two non-invasive archaeological prospection techniques, Ground Penetrating Radar (GPR) and Light Detection and Ranging (LiDAR). Based on the use of these new methods we present a 3 dimensional geospatial model of historic landscape change for a portion of Marine Corps Base Hawai‘i, Kane‘ohe and discuss the model’s implications for future cultural resource management and preservation in Hawai‘i.

Archaeological Investigations at the Royal Hawaiian Hotel
Rosanna Runyon, Cultural Surveys Hawai‘i
Archaeological investigations were conducted from 2008-2010 associated with renovations at the Royal Hawaiian and Sheraton Waikīkī hotels in Waikīkī on O‘ahu. These focused on documenting the distribution and content of intact cultural deposits within the heavily commercialized sands of Waikīkī. In spite of over 100 years of continuous ground disturbance related to tourism development, intact cultural deposits survived below modem fill layers and between modem intrusions. Early accounts of the use of this area speak of gaming, fishing, surfing, warfare, and beach activities associated with resident ali‘i and early development of Hawai‘i tourism. Pre-contact artifact assemblages substantiate these former activities particularly gaming, fishing, traditional tool making, and casual eating. A diverse post-contact artifact assemblage reflects the character of early Waikīkī tourism as an activity confined to the very wealthy. This project vindicates CRM work, particularly monitoring, as an essential means of gathering important data on the former use of heavily commercialized urban environments.

Ylig Bay Archaeological Site, Yona, Guam
Sandy Yee, International Archaeological Resource Institute, Inc., Guam
The Ylig Bay Archaeological Site is located on the east coast of the island of Guam in the village of Yona. Although previous surveys had identified early Chamorro habitation sites in Ylig Bay, it was not anticipated that roadwork on a steep man-made slope backing the bay would impact cultural materials. However, when road construction exposed and impacted multiple early human burials, the Guam Historic Preservation Office stopped work until proper archaeological salvage operations could be undertaken. Archaeological data recovery investigations located over 55 burials and more than 2m deep cultural deposits. Recovered were 25+ bodies that would have been destroyed by construction of the retaining wall. Occupation of Ylig Bay began by at least 1620±40 BP and continued through the Latte Period.

Was the Latte Period Community in the Marianas Islands a “House Society”?
Boyd Dixon, TEC, Inc., Guam
This paper explores the symbolic role that some Latte Period houses may have played in unifying local communities and their inhabitants within native Chamorro society between roughly AD 1000 and Spanish settlement in the late 1600s. Ethnographic observations of traditional “House Societies” from the Pacific and beyond are compared to historic accounts and archaeological data previously gathered in the Marianas archipelago. Anthropologist Claude Levi-Strauss proposed the House as a construct to analytically bridge the theoretical divide between simple and complex societies. Chamorro society at the time of Spanish contact appears to lie squarely on this theoretical divide. Hence, the applicability of the House Society concept to the Latte Period community is evaluated with an archaeological data set from Tinian.

Spanish Colonialism and Latte Household Organization in Chamorro Society
James M. Bayman (UH Mānoa), Hiro Kurashina (Micronesian Area Research Center, Guam), Mike T. Carson (Micronesian Area Research Center, Guam), John A. Peterson (Micronesian Area Research Center, Guam), Jane Drengson (UH Mānoa), and David Doig (UH Mānoa)

The University of Hawai‘i-Mānoa and University of Guam recently completed three field school seasons at a Spanish-period village at the Guam National Wildlife Refuge. Our research indicates that economic practices varied among different latte buildings within the contact-period village, indicating some degree of activity specialization. Moreover, it appears that certain domestic activities were spatially segregated. Based on this pattern we offer the following hypotheses: 1) traditional household organization in the Mariana Islands shared some similarities with Ancestral Polynesian society, and 2) traditional Chamorro economic organization persisted initially after Spanish contact.

A Ceramic Perspective on Traditional Household Organization in the Mariana Islands
Jay Hopfensperger, Crystal Morton, and James Bayman, UH, Mānoa
A preliminary analysis of excavated pottery from two adjacent latte sets located at Ritidian Point on the western side of the Guam National Wildlife Refuge has revealed significant differences in total quantity of ceramic sherds, in type of temper used, and in the proportion of rim sherds to body sherds. These differences, along with other attributes of the ceramic assemblage, indicate that differing activities occurred at the adjacent latte sets, with food related activities performed at one latte set while the other was used more for craft activities. This type of building specialization mirrors the practices of Polynesian cultures.

Latte Period Occupation of Pagan and Sarigan in the Northern Mariana Islands
J. Steven Athens, International Archaeological Resource Institute, Inc.
This paper presents archaeological survey findings related to traditional occupations on Pagan and Sarigan in the Northern Mariana Islands. Despite the environmental challenges of these locations, including low/uncertain rainfall and active volcanism, Latte Period occupations proved to be abundant. On Pagan, 127 Latte Period features were identified, while on Sarigan, 59 Latte Period features were recorded. Limited excavations on Pagan suggest that many Latte Period features likely post-date Spanish contact in the Marianas. These remains are stratigraphically located above (post-date) a thick volcanic ash layer that possibly pertains to a major eruption recorded in AD 1669. With Chamorro resettlement to the southern Mariana Islands in AD
1698-1699 due to the Spanish *reducción* policy, this final Late Latte Period occupation in the Northern Mariana Islands came to an abrupt end.

**Oral History and Ethnography Considerations in Cultural Resource Management: Palau**

*Obis er a Ibetel a Cherechar*

*Kelly G. Marsh, Charles Stuart University, Australia, and Bureau of Arts & Culture, Republic of Palau*

The *Orekuul er a Ibetel me a Ngesechel a Cherechar* (Oral History and Ethnography Section) of Palau’s Bureau of Arts and Culture (BAC; Historic Preservation Office) offers a strong model in the effort to apply indigenous-defined CRM goals in a culturally appropriate manner. Through the BAC’s many stages of existence—from a Trust Territory district committee, to a Republic of Palau division, to its present state as a bureau within the national government—the Palauan community has actively engaged and/or led the conversation in the entity’s development and establishment of goals. This presentation captures a moment in time along the Section’s journey to accurately and responsibly reflect Palauan aspirations and meet community needs. The primary consideration being to realize these goals in a way that is uniquely Palauan, something that in itself is much deliberated and continually refined.

**Archaeological Ground Penetrating Radar in Palau: a Feasibility Study for Investigation of Large Archaeological Landscapes**

*Mike Desilets (Garcia and Associates), and Jolie Liston (the Australian National University)*

Ground Penetrating Radar was used as a subsurface characterization technique at the earthwork complexes of Sisngebang, Ngermelkii, and Ngermedangeb on Babeldaob Island, Republic of Palau. Radar penetration testing indicates an average clear profile depth of 2.5 m in all Palauan soil types. Survey of terraces show that archaeologically significant solum-saprolite boundaries are clearly visible in radar profiles. Point-source reflections, likely indicative of culturally deposited material, are also present. The survey demonstrates that ground penetrating radar is an effective technique for focusing archaeological investigations of Palau’s extensive earthwork landscapes.

**POSTERS**

**Hawaiian Cultural Astronomy at Kūkaniloko**

*Martha Noyes*

This presentation shows that landscape features in the Kūkaniloko viewscape served to mark the positions of the setting sun at the solar nadir and at the heliacal rise of the Pleiades, Antares, Sirius, and Regulus, and that arrangements of stones within the site suggest the builders created intentional alignments to both the June and December solstice sunrises and sunsets, as well as to stars that herald the zeniths and nadirs.

**Ka ‘īna‘i a nā ali‘i; - Food accompaniments of the chiefs; Ritual and Household Faunal Resources: Preliminary Results from Miloli‘i, Nā Pali, Kaua‘i, Hawai‘i**

*Victoria Wichman (Nā Pali Coast ‘Ohana and International Archaeological Resource Institute, Inc.), Jennifer Kahn (Bishop Museum), and Alan Carpenter (DLNR, Division of State Parks)*

A recent collaborative archaeological project between Bishop Museum, Hawai‘i State Parks, and cultural stewards Nā Pali Coast ‘Ohana focused on the coastal valley of Miloli‘i, on the island of
Kaua‘i. Miloli‘i is one of several relatively isolated valleys of the steep leeward coast, or Nā Pali (the cliffs). This resource rich ahupua‘a is remarkably well preserved and hosts abundant traditional ritual, agricultural, and residential stone architecture. Recent radiocarbon samples from excavations on the Miloli‘i beach flat date to the 13th century. The project’s first phase focused on a prominent bluff overlooking the coast near the entrance to the valley, where a hale pili, the Native Hawaiian traditional pili-grass house which is resting in Hawaiian Hall at Bishop Museum, once stood in the 1800s. Initial project test excavations, including radiocarbon dating, indicate evidence of ritual and household activity during the early 1800s, considered a period of major cultural change in the Hawaiian post-European era. Signs of a possible earlier occupation were noted. Preliminary results from the faunal analysis reveal a richness of diversified marine resources, as well as possible pig husbandry. Several identified species suggest traditional high status faunal remains.
Loʻiʻaloa Restoration (keynote address)
Kawewehi Pundyke
Kawewehi Pundyke is the point man and visionary behind the hugely successful revitalization effort at the sacred site of Loʻiʻaloa in Maui’s ʻIao Valley. The primary goal at Loʻiʻaloa is education, with a secondary, though equally important goal of reconnecting adults and youth to the ʻāina by engaging them in hands-on cultural experiences. The “reawakening” of Loʻiʻaloa began four years ago by harnessing the efforts of: local, regional and national educational institutions; Maui-based youth and community groups; concerned community members; and other cultural practitioners. These volunteers worked to peel back the dense overgrowth blanketing numerous, important archaeological features. These coordinated efforts allowed for the complete restoration and planting of five (of over 40) loʻi kalo presently associated with the site. Through his ongoing efforts, Kawewehi continues to illustrate how archeology can be used in an appropriate way to train the next generation of home-grown archaeologists by blending scientific disciplines and skill sets with traditional knowledge and practices.

SYMPOSIUM 1: HAWAIʻI GENERAL SESSION

A Tale of Two Heiau: Maui and Hawaiʻi Island
Michael Dega, Scientific Consultant Services, Inc.
A small archaeological site of arranged cobbles and boulders in the “barren zone” of southeastern Maui may represent an important slice of history for two islands. This presentation discusses investigations of a small heiau found near Kihei and its possible connection to a larger, much more famous heiau on Hawaiʻi Island. More than just radiocarbon dates link these two sites, their histories potentially intertwined through conquest and island unification.

Resource Use in the Mountain Lands of Hawaiʻi Island
Julie Taomia, Pōhakuloa Training Area
One of the tools of the US federal historic preservation program is historic contexts, intended to provide a mechanism for evaluating the eligibility of features for nomination to the National Register of Historic Places. Evaluation is a step in both the development driven Section 106 reviews of federal agencies and the Section 110 management of potential historic properties. Historic contexts are intended to provide a framework within which to evaluate features, their uniqueness, their representativeness of a site type, the information they contain. Several efforts have been made to develop historic contexts within which to evaluate potential historic properties, mostly archaeological sites, at the US Army’s Pōhakuloa Training Area on Hawaiʻi Island. None of these have fully developed the historic context to the point of identifying property types that would be associated with the contexts, the characteristics that make them eligible, and their ability to convey their significance, or integrity and condition. In this paper I will discuss some proposed historic contexts for this unique part of Hawaiʻi Island, some of which may be applicable to other parts of the island and the archipelago, and develop one of these historic contexts.

More on Guns and Roses: The Historical Archaeology of Early Ranching Enterprises on
Mauna Kea

Peter R. Mills (U Hilo), Carolyn L. White, and Benjamin T. Barna (U Nevada, Reno)

In the summer of 2010, UH Hilo and the University of Nevada at Reno continued their joint field-school program by excavating eighteen 1m x 1m units at the “Old Laumaiʻa Site” (50-10-24-26826), which was discovered, cleared of gorse, and minimally tested between 2007 and 2009. The more extensive excavations support an interpretation of the site as one of the first commercial ranching stations established on Mauna Kea, circa 1856. The site was then abandoned by the late 1860s or early 1870s. The brief period of occupation and the broad variety of recovered material remains combine to provide an uncommonly rich glimpse into the daily lives of early ranch laborers in Hawaiʻi. An overview of the summer 2011 findings will be presented in the context of the overall project, and related to our understanding of changing labor practices, cultural identity, and the ethnogenesis of paniolo folk traditions in Hawaiʻi.

Recent Research on Irrigated Agriculture in North Kohala, Hawaiʻi Island: Results from the 2011 HARP Program

Michael W. Graves, Jana Morehouse, Mark Oxley, Kyle Spurgeon, and Kevin Brown (University of New Mexico)

Archaeological fieldwork in 2011 by HARP, in the easternmost gulches of North Kohala (including Niuli, Waiaapuka, and Makanikahio) has documented new features and complexes associated with irrigated agriculture in this area. The field season consisted of both surveying and excavations, and we documented 15 new sites, the majority of which are agricultural related. These included three new sets of barrage terraces, one of which was located in a gully with active springs and running water. We also documented new terraced loʻi fields, both in areas formerly cultivated by sugarcane on the tablelands and in the upper forests and along streams. We also found gullies with active springs where stream banks had been cut back to increase areas for cultivation. Our work also documented new areas where traditional irrigation ditches had been dug, some excavated on both sides through bedrock, and which moved water from one drainage system to another. Excavations, which included backhoe trenching, yielded evidence for buried pondfield agricultural soils in terraces that had been previously graded or disturbed by road building.

SYMPOSIUM 2: HUI KAHA PŌHAKU

Darlene Keone Kalawe, Dr. Darlene Martin, Ezra Witsman, Alex Miller, Leila Kealoha, Ryan McCormack, Cedar Wentworth, Kaimana Liberty Hui Kaha Pōhaku (Group That Draws the Placement of Stones)

Since 2007, high and middle school students and their teachers have learned how to conduct plane table mapping and help produce professional maps of select cultural sites in Kahaluʻu, Kona, Hawaiʻi. Under the tutelage of Keone Kalawe and Tom Dye, these maps add to those previously done by John Stokes in 1906 and Henry Kekahuna in 1952-1953. Plane table maps completed to date captures for us the current footprints of Kāneaka Kahuaholua Phase 1, Papakoholua, Mākoleʻā, Lonoikamakahiki, Petroglyphs at the Shoreline Near Keʻekū, Poʻo Hawaiʻi Pond, and Kapuanoni. Explanations of why, how, and what were done in this mapping effort within this wahi pana (storied place) and wahi kapu (sacred place) will be shared in the hopes of furthering interest of similar efforts in other communities. Student mappers this year in
2011-2012 will complete the top half of Kāneaka, the famous royal holua slide in Keauhou, Kona. Completed maps are gifted to UHH Moʻokini Library, Hawaiian Collection and the libraries of participating schools, and will be submitted to State regulatory agencies once funds are available to begin the restoration efforts. Schools participating in Hui Kaha Pōhaku have been: Kealakehe High, Ke Kula o Ehunuikaimalino, Kua o ka Lā, and Hawaiʻi Academy of Arts & Sciences.

SYMPOSIUM 3: RECENT STUDIES IN HAWAIIAN ARCHAEOLOGY

A Model-based Age Estimate for Polynesian Colonization of Hawaiʻi
Tom Dye, Tom Dye and Associates, Honolulu

A model-based Bayesian calibration using $^{14}$C data from paleoenvironmental cores and materials introduced to the islands by Polynesian colonists estimates that the islands were likely colonized sometime late in the first millennium AD. Two calibrations, one using $^{14}$C dates on floral materials and the other using $^{14}$C dates on floral and faunal materials, indicate that archaeological materials yield relatively imprecise estimates of the colonization event with 95% highest posterior density regions 3-5 centuries long. Materials introduced to the islands by Polynesians date to two periods, one that coincides with the colonization event, and another some 3-6 centuries later. A disparity between colonization and the first reliably dated archaeological evidence of human activity is identified and estimated to be 1-4 centuries long.

The Prehistoric Translocation of Nonmarine Mollusks to the Hawaiian Islands
Carl C. Christensen, Research Associate, Bishop Museum

It is well-known that the Polynesian colonizers of the Hawaiian Islands carried with them various useful plants as well as such vertebrate animals. Less well known is the fact that these same voyaging canoes transported several species of small to minute nonmarine mollusks as stowaways, hidden unobtrusively in the roots and foliage of the taro and other plants or in the soil that accompanied them. This report will summarize the current status of our knowledge of these land and freshwater snails and identify gaps in our knowledge in the hope that future collaboration between archaeologists working in Hawaiʻi and malacologists will resolve existing uncertainties as to the identity of these species and the chronology of their introduction to the Hawaiian Islands.

At least two species of land snails, Lamellidea oblonga (Family Achatinellidae) and Allopeas gracile (Family Subulinidae) are known to have been introduced to the Hawaiian Islands prehistorically. An additional two species, Gastrocopta pediculus (Family Vertiginidae) and Pupisoma orcyla (Superfamily Pupilloidea), probably also reached the Islands prior to AD 1778, but although both species have been found in pre-Contact contexts elsewhere in Polynesia neither has as yet been recovered from Hawaiian sites of known pre-Contact age.

In addition to these four species of land snails, it has been suggested that several species inhabiting fresh or brackish waters may also have been introduced to the Hawaiian Islands prehistorically. One of these, Tryonia porrecta (Family Hydrobiidae), instead appears to be native to the Hawaiian Islands. Two other species, Melanoides tuberculata and Thiara granifera (Family Thiaridae), were undoubtedly introduced to the Hawaiian Islands as a result of human activities, but the chronology of their arrival (prehistoric vs. historic) remains uncertain. On the other hand, the suggestion that certain freshwater clams (Family Sphaeriidae) were introduced to
the Hawaiian Islands prehistorically lacks archaeological support and is almost certainly incorrect.

**Examining Impacts of Marine Foraging Strategies in Prehistoric Hawai‘i**
*Jacki Lipphart, University of Ohio*

Archaeological research in Leeward Kohala has documented human population growth and an intensification of food production during AD 1400-1850. Excavations of residential structures from five ahupua’a-Kālala, Kaiholena, Makiloa, Makeanehu and Pahinahina produced large fish assemblages. The assemblages were analyzed for evidence of resource depression. The results show no evidence for resource depression occurring in Kohalan ichthyofaunal assemblages. There is significant change in time and space with regards to general faunal exploitation. Through time, more marine resources were being used and the importance of certain food types in the diet was changing. The assemblages provide evidence for change and differences in foraging strategies through time and space within Leeward Kohala, Hawai‘i.

**Kaʻānaniʻau of Kūkaniloko: An Expansive View of the Cultural Landscape on Oʻahu**
*Joseph Genz, Ph.D., Cultural Surveys Hawaiʻi*

The site of Kūkaniloko in the central plateau of Oʻahu is well known for its sanctity as a regal birthing place. Less well known are the kaʻānaniʻau of Kūkaniloko, a concentric alignment of rock pilings that demarcates a much broader region than the current State of Hawaiʻi five-acre Kūkaniloko Birthstones State Monument and that pre-dates the moku and ahupua’a territorial system. Interviews with a steward of this site (conducted for Cultural Impact Assessments) detail how these kaʻānaniʻau are connected to the creation of land and people, land divisions, ceremonial practices, and chiefly traditions. Salient for archaeologists working in cultural resource management, this paper reveals an expansive view of the cultural landscape on Oʻahu that highlights the connectivity among cultural sites.

**SYMPOSIUM 4: CULTURAL MONITORS**

**Cultural Monitoring and Archaeology: New Voices in Cultural Resource Management**
*Micahel Desilets, Garcia and Associates, Panel Session Moderator*

Cultural Monitoring remains one of the least understood elements of Cultural Resource Management and an object of skepticism by many professional archaeologists. This panel will attempt to clarify the role of Cultural Monitors in Section 106 and Chapter 6E compliance, drawing on experience gained over the last decade. The unique contributions of Cultural Monitors are discussed, as well as potential conflict points with an archaeological perspective.

**SYMPOSIUM 5: E HO‘OHANOHANO ‘ANA I KA WA MA MUA, A E HO‘OLAKO ‘ANA I KA MUA AKU, HONORING THE PAST AND ENRICHING THE FUTURE**

**Introduction**
*Jason Jeremiah, Kamehameha Schools Land Assets Division, Wahi Kupuna Program*

Kamehameha Schools manages approximately 365,000 acres of land across five islands. These lands include healthy vibrant cultural landscapes which have been passed down from Princess Bernice Pauahi Bishop and continue to provide stewardship opportunities for Native Hawaiians. The Land Assets Division through its Wahi Kupuna Program has implemented an internship
program to help develop field opportunities for Hawaiian students focused on careers in cultural resource management and stewardship.

**Naue Ka ‘Ale I Kapele: The Next Wave of Cultural Resource Stewards in Hawai‘i, Results of the 2nd Annual Cultural Resource Stewardship Internship Program, Kahuwai, Puna, Hawai‘i Island**

*Kelley Lehuakeaopuna Uyeoka, Program Coordinator*

With the second wave of undergraduate college students successfully completing the 2011 Cultural Resource Stewardship Internship program, the vision of training and empowering Native Hawaiians and kama‘aina to appropriately malama the cultural resources of Hawai‘i is coming into fruition.

**E Hō Mai I Ka ‘Ike: Grant us knowledge**

*Lokelani Brandt, Intern*

If you plan for a year, plant kalo.
If you plan for ten years, plant koa.
If you plan for one-hundred years, teach the children.

My project focuses on developing E Hō Mai I Ka ‘Ike, a place-based educational curriculum that promotes stewardship of cultural resources by immersing students in the cultural landscape, Hawaiian traditions, lore, values and introducing students to the field of anthropology at Kahuwai. Kahuwai is the name of the pre-contact Hawaiian village and the name of the ahupua‘a in which the village is located. This remote village, located in the moku (district) of Puna on Hawai‘i Island, is an ideal location to provide a strong foundation for the study of social sciences, natural sciences, language arts, mathematics and many other disciplines. The main objective of E Hō Mai I Ka ‘Ike is the dissemination, promotion and intergenerational transmission of place-based knowledge specific to Kahuwai.

**Kahuwai or Kahu‘ai? Tending to the Stories of the Past Through Place Names**

*Halena Kapuni-Reynolds, Intern*

Hawaiian place names are valued tools that have preserved the histories and unique identities of many areas throughout the Hawaiian Islands. The ahupua‘a of Kahuwai provides us with two names that communicate two different stories of this place. By dropping the “w” and adding a glottal stop, we are left with the second place name, Kahu‘ai. The name Kahuwai speaks of a freshwater spring found near the coast that was the water source for the village, whereas the name Kahu‘ai refers to the abundance of food that was stored and produced there. Through research and translations of 19th century Hawaiian language newspapers (1830-1860) and oral accounts of Kahuwai, both names are consecutively referenced. By focusing on native Hawaiian resources, I have concluded that both names are valid and therefore should be perpetuated and honored for future generations.

**Nā Laʻau Kuhikuhina: Utilizing the knowledge of our Environment**

*Darcy E. Perez*

My research project focuses on the growing, planting, and agricultural techniques of the poʻe (people) of Kahuwai Ahupua‘a. As part of my research, I examined how they cultivated food crops in the bare pāhoehoe lava fields to sustain their village. I have further investigated the
many types of native and invasive plant species in the village and documented their effects on the archaeological structures still standing today. As a result of my findings, I have developed a flash card booklet about the plants of Kahuwai and their traditional uses, which can be used to teach keiki and visitors alike to learn about the important relationships between Kahuwai’s natural and cultural resources. By documenting the plants that still thrive in the village today, visitors can have a better understanding of how the people of Kahuwai lived and flourished in their unique environment. My project themes address the importance of research, documentation, and comprehension of the natural environment when conducting cultural resource management projects.

E Nihi Ka Helena I Ke Ala: Tred Lightly on the Pathways of our Ancestors
Maka Valdez, Intern
Proper cultural protocol not only takes place at a cultural site as a matter of a simple gesture, it is an ongoing process. For my internship project I took a more in depth look at what protocol is to Hawaiians when visiting and working at wahi pana. In particular, I focused my project on our internship site, Kahuwai, and looked at themes such as what is cultural protocol and when should it take place; the importance of wahi pana today; and how protocol should be incorporated into CRM work. My end product, in the form of a video, is not intended to be the "Final Say" in all things culturally relevant with regards to Hawaiian protocol, but rather a beginning of a much needed conversation. A conversation about ethics and lawena, or behavior, when anyone (anthropologist, archaeologist, or kanaka) visits a wahi pana.

SYMPOSIUM 6: RECENT STUDIES IN HAWAIIAN ARCHAEOLOGY

Impacts of Shoreline Erosion on Historic Sites
Mike Vitousek, DLNR, Hawai‘i State Historic Preservation Division
An overwhelming majority of impacts to archaeological sites in the State of Hawai‘i are the result of development activities. The next largest area of impact to historic sites results from shoreline erosion. Because the shoreline is considered State land, the State Historic Preservation Division (SHPD) is responsible for recording and mitigating the impacts of shoreline erosion. There are both predictable and unpredictable elements contributing to overall shoreline erosion. The predictable elements are seasonal and chronic erosion and sea-level rise, whereas the unpredictable elements include various extreme events such as tsunamis, hurricanes, long return-period swell events, climate phenomena such as El Niño, and possible climate change. As with impacts on historic sites from development, SHPD seeks to explore alternatives to avoid, minimize and mitigate the impacts of shoreline erosion on coastal historic sites.

Soil Analysis and Research Design, Statewide
Morgan Davis, DLNR, Hawai‘i State Historic Preservation Division
[no abstract available]

The State Inventory of Historic Places: Current Status and Future Directions
Theresa Donham, DLNR, Hawai‘i State Historic Preservation Division
The maintenance of a state inventory is one of the most important duties of the Historic Preservation Division. The quality and accessibility of the inventory directly affects the ability for consultants to function, for researchers to compile information and for the state to manage
significant historic properties. This discussion will briefly examine the development of the S1HP and provide an overview of archaeological site data collected since 2008. A consideration of the quality of these data will provide the backdrop for proposed improvements that address research and preservation management needs.

Farming and Adapting to an Inhosiptible Environment: an Overview of Recent Archaeological Investigations in Auwahi, Maui
Paul L. Cleghorn, William Shapiro, Lisa Holm, and John Holson, Pacific Legacy, Inc.

Pacific legacy has been conducting surface survey and test excavations in the ahupuaʻa of Auwahi since 2007. These investigations have been undertaken as part of environmental studies associated with the proposed wind farm being developed by Auwahi Wind Farm, LLC. The project area is located on ʻUlupalakua Ranch land between the 550 and 1600 foot elevation on the lee side of Haleakala. The area is arid, rocky, steep, and extremely windy — to the western eye this land appears to be inhospitable. Over 260 archaeological sites have been recorded. Of these, 161 sites composed of more than 638 features are within the APE of the wind farm. The archaeological landscape that is emerging from these investigations is dominated by agricultural features, with habitation and religious sites interspersed. This paper summarizes what is known about this landscape, the activities that took place here and the dates of occupation. The true ingenuity of the traditional Hawaiians who settled this land is becoming apparent.

SYMPOSIUM 7: MOKUʻULA, REPORTS FROM THE FIELD

Uncovering Mokuʻula: An Overview of an Ongoing Research
Janet Six, UH Maui College
This paper will provide an overview of the often political process of conducting public archaeology over the past two years at one of the most important and, therefore, highly controversial, cultural sites in Hawaiʻi.

Searching for 1993: Relocating the Bishop Museum Grid
Curtis Robinson, UH Hilo
How do you find a buried, 17-year old grid when both the Primary Datum and Benchmark have been destroyed? This paper outlines the process used to relocate the Phase I excavation grid at Mokuʻula last seen in 1993.

Out-of-Site: New Stratigraphic Sequence on the filling of Mokuʻula and Loko Mokuhinia
Rose Runyon, UH Mānoa
By sifting every bucket, and analyzing cultural materials in the UH MC archaeology lab class, we discovered important information overlooked in previous excavations. With new firm dates came additional insights into the initial filling of Mokuhinia Pond in 1914 and provided information on a misunderstood fill event sometime after 1955 - prior to the construction of the modern baseball field!

Sacred Spaces and GIS: Mapping the Waiola (Waineʻe) Church Cemetery
Janet Bostick and Janet Six, UH Maui College
In 1826, the first Christian Church on Maui was built immediately adjacent to the traditional sacred space of Mokuʻula. Important aliʻi formerly interred on Mokuʻula were moved to the
Christian cemetery by Ka‘ahumanu. Using GPS and GIS technologies a modern map is being created to better understand this sacred space.

**SYMPOSIUM 8: APPLICATIONS OF XRF TO OCEANIC ARCHAEOLOGY**

**An EDXRF Analysis of Marquesan Basalt Quarries from Eiao Island, and their Comparison to Hawaiian Basalts**

*Peter R. Mills (UH Hilo), Steven P. Lundblad (UH Hilo), and Michel Charleux (Laboratoire d’Ethno-archéologie Préhistorique, Paris)*

Eiao Island in the Marquesas is a major source of basalt adzes in Central Polynesia. It is also one of the last islands before the long voyage to the north to reach Hawai‘i, and it is often used as a waypoint by modern traditional navigators. Using non-destructive Energy-Dispersive X-Ray Fluorescence (EDXRF), this study presents a characterization of 68 basalt samples from Eiao, and compares the results to the growing database on Hawaiian adze sources and archaeological samples. While the geochemistry of the Eiao basalt is somewhat similar to the Mauna Kea Adze Quarry basalt, the two sources can be distinguished with EDXRF, and in fact, Eiao basalts can be differentiated from most Hawaiian basalts. These findings demonstrate how EDXRF can be a highly useful tool in isolating potential cases of interarchipelago voyaging.

**Preliminary Report on Geochemical Analysis of Lithics from the Interstate H-3 Project, O‘ahu using EDXRF**

*Steven P. Lundblad (UH Hilo), Peter R. Mills (UH Hilo), Jennifer Kahn (Bishop Museum), Katherine Mulliken, Christina Cowley, and Dane Kaylor (UH Hilo)*

We are analyzing lithic artifacts (basalt and volcanic glass) recovered from the windward part of the H-3 highway project, O‘ahu using EDXRF. Preliminary analysis of the data from over 500 volcanic glass fragments identifies two main geochemical groups for the volcanic glass. Neither group is consistent with the composition of the well-documented source at Pu‘u Wa‘awa‘a on Hawai‘i Island or any other source there.

Composition of the basaltic debitage is indicative of adze production strategies that seem to differ from those on Hawai‘i Island and Kaua‘i. Preliminary interpretation of the basaltic material identifies its source as being consistent with previously documented lithic workshops at Waiahole, as well as lower quality local sources derived from Ko‘olau volcanic series rocks.

**Energy Dispersive X-ray Fluorescence (EDXRF) Analysis of Basaltic Abraders from Leeward Hawai‘i Island**

*Katherine Mulliken (UH Hilo), Alexis Manning (UH Hilo), Steven P. Lundblad (UH Hilo), Tom Dye (Tom Dye and Associates), and Peter R. Mills (UH Hilo)*

Numerous studies have attempted to pin-point the geological source of Hawaiian adzes in relation to their distribution. However, vesicular basalt abraders, which were essential to the production of many artifacts including fishhooks, gourd containers and polished wood surfaces, have remained relatively unstudied. The significance of identifying abrader sources and their spatial distribution is as important as identifying the distribution of adzes and volcanic glass in developing models of exchange and social integration. Using EDXRF, this study attempts to determine whether abraders from sites in leeward Hawai‘i are geochemically distinguishable from one another.
Lithic Technology and Sourcing on Kalaupapa Peninsula, Molokaʻi
Mark D. McCoy, University of Otago
As archaeological databases of lithic material matched to geological source grow, we are closer than ever to being able determine how much inter-island travel occurred between the western kingdoms of Oʻahu and Kauaʻi and the eastern kingdoms of Maui and Hawaiʻi, in the era before European contact. In this paper, I report on lithic technology and the relative volume of material found in assemblages discovered on the Kalaupapa Peninsula. Situated on Molokaʻi Island’s north shore, the Kalaupapa Peninsula occupies a central location in the main Hawaiian Islands chain and is therefore uniquely placed to help resolve this issue.

SYMPOSIUM 9: TOPICS IN OCEANIC ARCHAEOLOGY AND CULTURE

Mapmaking and the Global Digital Divide: Accessible Geospatial Visualization in Palau
Nick Belluzzo, Institute of Archaeology, University College London
As the world increasingly digitizes, there is a growing global digital divide that threatens to marginalize regions of the globe without access to the appropriate software, hardware, internet access or training. While this phenomenon impinges upon most aspects of society, it also impacts trends in managing cultural heritage resources. Recently emergent digital technologies have advanced cultural resource management aims, yet, simultaneously, have unintentionally excluded those unable to fully implement or utilize these new techniques. In the Republic of Palau, there is already evidence of negative tourist impact, such as looting activities and damage to both prehistoric and historic resources, including human remains. Even without inscription of the Rock Islands Southern Lagoon, it is likely that cultural tourism will increase along with its concomitant threat to heritage resources. Those responsible for on-the-ground monitoring, as well as those in charge of regional cultural resource management need methods to visualize geospatial data in order to protect their tangible heritage. In reviewing Palau’s World Heritage List nomination of the Rock Islands Southern Lagoon, it was found that heritage data, particularly geospatial information, was heavily fragmented, spread across many offices. Additionally, much of that information was inaccessible without the proper technology or training. To combat this, an accessible visual geospatial database was developed with a focus on usability and implementability. While this database only addresses one particular facet of the global digital divide, it is hoped that this theoretical approach, with its focus on open-source solutions and intuitive user-interface, will guide future projects.

Some Preliminary Thoughts on Landscape in Hawaiian Cultural Astronomy at Kūkaniloko
Martha H. Noyes, Honolulu
Landscape features within the viewscape of the Hawaiian sacred site, Kūkaniloko, have astronomical and calendric associations, showing that astronomical considerations were important in the layout and symbolism embedded into the design of the site.

E Holomua Kākou: Employing the Hawaiian Language in Hawaiian Archaeology
Regina K. Hilo, Garcia and Associates
The renaissance of Hawaiian culture and language has been so important for the preservation and perpetuation of moʻo ʻōlelo, stories, history, and traditions; and ka nohona, way of living, relationships, and existence. As we holomua (move forward) through the 21st century and
Beyond, the Hawaiian language continues to evolve through the formulation and dissemination of modern words. Generating Hawaiian words that accurately convey archaeology, archaeological field techniques, equipment, methodology, data collection, and data analysis is a complicated process, but absolutely necessary to the Hawaiian language community and all professionals within the Hawaiian archaeology field. Over one hundred modern Hawaiian words will be proposed and presented, with explanations and examples of correct usage.

**Royal Patents and Land Grants: a Brief Review of the entire Mahele Process**
*Victoria S. Creed, Waihona ʻĀina Corp.*

Our company, Waihona ʻĀina, completed the transcriptions for the 14,517 records of the Land Commission Claims (1847 to 1859) some time ago. In order to save the kingdom from foreign takeover, in 1845, King Kamehameha appointed a Land Commission to hear and decide upon the claims of all people living in the Hawaiian Islands at that time. Anyone not filing a claim within 3 years forfeited his land. This timing was extended only for the chiefly class. These land commission documents paint the Hawaiian landscape and waters across the islands, revealing that all parcels of land had names, whether for a home or cultivation. Each ridge, valley, hill, pond, large stones, mountain name revealed events of their lives, or more often, the lives of the Hawaiian ancestors. There are family and communal histories, mention of burials, and depending where the claims are, and the konohiki present, a bare description of each plot of land or long-involved explanations, some even poetic with locations, neighbors and what that plot contained.

Five hundred seventy seven records of the Boundary Commission (1863-1935) define a portion of those lands awarded in the Mahele by name only (largely of the aliʻi). Not all Boundary reviews settled the boundary and many have no certification number. The Hawaiʻi Island Commission reports, whether or not they are certified, contain marvelous stories of canoes, shoes, upland gathering practices. In one case, two different families of feather gatherers show that one ahupuaʻa was formerly separated into two parts. As sugar companies, agricultural companies and others with large lands within undefined boundaries became part of the Boundary Commission proceedings. When boundaries are certified by the Commissioners there are surveys. Waihona ʻĀina has just completed the transcription of the Royal Patents, the final step in the Mahele process. The owners of land from the claims or the Boundary Commission certified lands apply for Royal Patents so their land becomes Fee Simple, and the government signs off any stake in the land, except for any mines that might exist. However, there are only Royal Patents for 8665 before 2002 and there may be a few more since then, and, shamefully, these 8665 contain several hundred duplicates. Hawaiian and English are both used and there are surveys, except in a few cases.

**POSTERS**

**Kaloko Kuapā Rehabilitation Project**
*Hawaiian Legacy Program*

Kaloko-Honōkohau National Historical Park was created through the efforts of the Native Hawaiian community in 1978 to preserve, interpret, and perpetuate traditional Hawaiian activities and culture. Kaloko Fishpond is one of the three fishponds within the Park and the Kaloko Kuapā has been described as the widest and most massive fishpond [kuapā] in Hawai‘i (Kikuchi 1973:57). The initial study plan for the Park recommends "the fishponds and their immediate surrounding should be restored, as nearly as possible, to the conditions that existed
before the introduction of foreign influences" (Honokōhau Study Advisory Commission 1976:28) and the Park’s General Management Plan calls for restoring Kaloko Fishpond to “functioning aquaculture condition and maintaining it as such (NPS 1994:41).”

On October 10, 1998, the National Park Service began the physical task of rehabilitating Kaloko Fishpond Kuapā. The purpose of the Kaloko Fishpond Kuapā Project is to rebuild and maintain the kuapā to its original size, shape and condition so the pond can eventually be maintained, managed and operated as a functioning traditional Hawaiian fishpond. In September 2011, the rehabilitation of the Kaloko Kuapā was completed. During this 13 year project, the Park Service recognized the need to foster and perpetuate traditional skills such as dry-stack masonry. The Hawaiian Legacy Program developed out of discussions addressing this need. The Hawaiian Legacy Program is a team of National Park Service preservation specialists who practice traditional Hawaiian skills and trades to perpetuate cultural knowledge and environmental understanding passed on by our kūpuna and to mālama the unique resources in Hawai‘i.
25th Annual SHA Conference, Keauhou Beach Resort, Hawai‘i Island, Oct 19-21, 2012

Writing Indigenous Peoples Back Into the Present: Indigenous Archaeology and the Narratives of History (keynote address)
Michael Wilcox, Dept. of Cultural and Social Anthropology, Stanford University

Indigenous Archaeology can be broadly defined as an emergent set of practices that consciously attempt to connect (or reconnect) indigenous peoples with landscape, material culture, ancestors and narratives of the past- with the understanding that these links are vital to the health of Indigenous peoples. Indigenous Archaeology has been both celebrated as the future of the discipline and vilified as exclusive, anti-scientific or “intellectually unviable”. What factors have led to the development of this approach? How might the involvement of Indigenous Peoples transform the discipline? This talk uses research on the Pueblo Revolt of 1680 “The Pueblo Revolt and the Mythology of Conquest: an Indigenous Archaeology of Contact” to demonstrate the emerging influence, benefits and limitations of Indigenous Archaeology in the 21st century.

SYMPOSIUM 1

Landscape, Sun and Stars: Hawaiian Cultural Astronomy at Kūkaniloko in Līhue on O‘ahu (Writing the Heavens on the Earth)
Martha H. Noyes, University of Wales Trinity Saint David

Ongoing research on cultural astronomy at Kūkaniloko shows that the landscape was named and used for calendrical, astronomical observation, and cosmological purposes. The research also provides evidence that astronomical and cosmological knowledge was recorded by naming the landscape with Kūkaniloko as the piko, or center, of the island.

Investigation of a Possible Makahiki Ceremonial Enclosure at Pālehua, Honouliuli, O‘ahu
Timothy Gill & Patrick V. Kirch, UC Berkeley

Situated in the uplands of Honouliuli ahupua‘a on the slopes of the Wai‘anae Mountains, a unique stone enclosure and associated features may have served as a ceremonial or aggregation site during annual Makahiki rites. This paper presents the results of detailed mapping and limited subsurface investigation of the enclosure during May 2012. The square enclosure, well constructed of large boulders and measuring approximately 40 meters on each side, has its axes oriented with both the rising position of the star cluster Pleiades (Makali‘i) and with the winter solstice. A large boulder situated near the enclosure (with a row of upright slabs adjacent) marks the position of the summer solstice when viewed from the center point of the enclosure. Subsurface testing revealed the stratigraphy associated with enclosure construction, and allowed for the recovery of in situ charcoal samples which are currently being radiocarbon dated.

SYMPOSIUM 2

Analysis of Two Assemblages from a Rockshelter Site, Miloli‘i, Nā Pali, Kaua‘i
Victoria Wichman, Nā Pali Coast ‘Ohana, Jennifer Kahn, College of William and Mary, Alan Carpenter, Hawai‘i State Parks
Assemblages of two excavation units were examined from Site 50-30-01-7202, at Miloliʻi, Nāpali, Kauaʻi. One of the assemblages includes several small dog, or puppy bones. Each assemblage includes fishbone, shell, and artifacts such as gourd fragments, wood debitage and braided coconut sennit. All items were identified within a pre-European context. Site 7202 consists of a prominent rock shelter providing exceptional preservation. The site was excavated jointly by the University of Hawaiʻi and the Division of State Parks in 1990 and recently re-evaluated as part of our on-going Miloliʻi and overall Nāpali project.

Changing Patterns of Firewood Use on the Waimānalo Plains


Wood charcoal identification from 35 dated traditional Hawaiian firepits on the Waimānalo Plain are analyzed for evidence of change over time and difference across space. Plant taxa identified in the firewood are classified according to habit, origin, and elevational distribution. Early in traditional Hawaiian times, firewood was commonly brought to the plain from inland forests and fires were made primarily with native plants. Later, firewood was more likely to be collected locally, and it typically included both Polynesian-introduced and native plants. This change in behavior appears to have taken place in the fifteenth century. It was likely associated with a vegetational change in which the native lowland forest was replaced with a variety of useful plants, especially near Puhā Stream.

Archaeological Investigations at a Traditional Hawaiian Site Complex: Systematic Documentation and Community Involvement at Maunawila Heiau

Rosanna Runyon, Dept. of Anthropology, UH Mānoa

The presentation will discuss on-going archaeological work being conducted within a 9-acre land parcel in Haʻula Ahupuaʻa, Koʻolauloa District, on the island of Oʻahu. The investigation includes surface survey, vegetation clearing, mapping, subsurface testing, and detailed analysis. The purpose of the study is to gather evidence to evaluate the extent, condition, function, time period, and method of construction of a traditional Hawaiian place of worship, Maunawila Heiau. The site will be assessed for nomination eligibility to the State and National Register of Historic Places. The project is sponsored by the UH Mānoa Applied Archaeology Program and the landowner in coordination with the Haʻula Community Association, Koʻolauloa Civic Club, Hawaiian Islands Land Trust, State Historic Preservation Division, and community members, UH students, and volunteers who participate in work days, site visits, and community meetings.

SYMPOSIUM 3

HULIAU – Recalling the Past in This Time of Transformation

Kelley L. Uyeoka, Kumupaʻa Cultural Resource Consultants, LLC

Opening and Moderating Session

Analysis of Trade and Exchange Throughout the Ahupuaʻa of Kaʻūpūlehu

Keely Kauʻilani Rivera, Wahi Kūpuna Program Intern & UH Hilo archaeology student

My paper focuses on exchange relationships in Kona ‘Ākau, specifically Kaʻūpūlehu, Kekaha. Previously collected basalt flakes and scoria abraders were sourced through energy dispersive x-ray fluorescence (EDXRF), a non-destructive method of determining the composition of rock(s), and oral histories were referenced in order to better understand the trade and exchange practices
that occurred in this wahi pana. Sixty-nine flakes and nine abraders were examined from five different projects conducted by Paul H. Rosendahl, Inc. between the years 1986 and 2006.

Cultural Anthropology of Kaʻūpūlehu Dryland Forest: a Study of Natural and Cultural Resource Interrelationships

Nolita Motu, Wahi Kāpuna Program Intern & UH Hilo Archaeology student

Not all artifacts are dead and buried, and not all stories are kept in memories. This paper focuses on a belief that plants are natural grown landmarks and archaeological artifacts; a natural storyteller of time. In the discipline of archaeology, scholars stress the importance of artifact (an object made by a human being for example, a tool or ornament, especially one that has archaeological or cultural interest). This research highlights the idea that native plants as artifacts, not made by human beings, but altered by their activity. In this paper, I hope to promote the understanding that cultural and natural resources are interrelated. The focus area of the research is on the ahupua’a of Kaʻūpūlehu (Kaʻulupūlehu), specifically the dryland forest.

A Model for Collection Management Internship Opportunities: KS Collections Management Practicum

Halena Kapuni-Reynolds, UH Hilo Archaeology student

In October 2008, Kamehameha Schools acquired over 400 boxes of archaeological and cultural materials collected during the 1980s by Paul H. Rosendahl, Inc (PHRI). The collection comprises primarily of artifacts and midden excavated from KS lands in the district of Kona. In collaboration with T. S. Dye & Colleagues, Archaeologists Inc., Kamehameha Schools started the KS Collections Management Practicum in the fall of 2009 as a year long internship for undergraduate students interested in experiencing the scope of work involved with managing archaeological collections. After the year passed, however, it became apparent the magnitude of work required for this project was far greater than initially anticipated. This presentation will cover the progress and challenges interns have faced while working with this archaeological collection, and will present the practicum as a model for further collection management internship opportunities.

Lawa Pono ʻo Hālawa (Hālawa is adequately supplied): the Ahupuaʻa Model Demonstrated through Stone Tool Economies of East Molokaʻi, Hawaiʻi

Lokelani Brandt (UH Hilo student), Pulama Lima (UH Mānoa student), Peter R. Mills, Steven P. Lundblad and Windy McElroy

We report an investigation of stone tool economies of East Molokaʻi. Basalt, and volcanic glass artifacts, recovered from Molokaʻi’s Hālawa Valley Dune Site (MO-A1-3 and MO-A1-4), between 1969-1970 by Patrick Kirch and Marion Kelly were analyzed for technological characteristics, and geochemically sourced using the non-destructive EDXRF method. The data from the Hālawa Valley Dune Site analyses are also compared with EDXRF analyses of basalt lithics from Wailau, Molokaʻi, as well as published geochemical data for other known Molokaʻi basalts from West, Molokaʻi. These findings support the Hawaiian ahupuaʻa model and suggest the idea that stone tool economies of East Molokaʻi regularly utilized local resources for the production of stone tools.
SYMPOSIUM 4

Huliau No Nā Wahi Kupuna: a Hawaiian Perspective of Cultural Resources Stewardship
Jason Jeremiah, Kamehameha Schools- Land Assets Division

Wahi kupuna (ancestral places) are the reminding presence and essence of our kupuna and serve as the repositories of ancestral knowledge for us to learn from and strengthen our own identify in today’s world. The foundation of the Kamehameha Schools’ 2011 Cultural Resources Management Plan is “I Hawai‘i no nā Hawai‘i i ka ʻāina.” Hawaiians are Hawaiian because of the land. With holdings of over 363,000 acres on five islands, the land legacy of Kamehameha Schools provides for our people a link to a chiefly lineage and the special relationship our ancestors had to these lands. Our plan, informed both by ancestral wisdom and contemporary practice, looks back on past accomplishment and forward to establish strategies, actions, and measureable goals for management and stewardship of wahi kupuna and broader cultural landscapes on Kamehameha Schools’ lands.

Mokumanamana: an Island Temple for the Inception of Hawaiian Ritual Power
Kekuewa Kikiloi, University of Hawai‘i at Mānoa

This research examines a period in the late expansion phase (AD 1400-1650) of pre-contact Hawaiian society when formidable changes in ritual and social organization were underway that ultimately led to the emergence of Hawai‘i as a powerful complex chiefdom in East Polynesia. It will be demonstrated that over a four hundred year period from approximately c. AD 1400-1800, Mokumanamana became the central focus of chiefly elites in establishing this island as a ritual center of power for the Hawaiian system of heiau (temples). The ideological beliefs that were developed revolved around the concept of the cord (ʻaha) as a symbolic connection between ancestors and descendants and came to be a widespread organizing dimension of Hawaiian social life. Through commemorative rituals, the west was acknowledged and reaffirmed as a primary pathway of power where elite status, authority, and spiritual power originated and was continually legitimized.

Soil Nutrient Dynamics of Rain-fed Gardening in Polynesia: Hawai‘i, Rapa Nui, and Aotearoa New Zealand
Ladefoged, T.N., University of Auckland, Chadwick, O.A., Vitousek, P., Stevenson, C., Graves, M. and McCoy, M.

A range of rain-fed gardening practices were used throughout Polynesia. In leeward Kohala, Hawaiians developed an intensive and extensive network of field boundary embankments and trails. In Rapa Nui, infrastructural intensification focused on extensive rock gardens with lithic mulching. On Urupukapuka and Ahuahu islands in Aotearoa New Zealand drainage ditches and alignments were constructed. The morphology and function of these horticultural features are considered in relation to the soil nutrient dynamics associated with past gardening activities. Analyses suggest that Polynesians utilized naturally occurring nutrient rich zones on both large and small scales, and created horticultural features that further enhanced the nutrients available to crops. Gardening activities both depleted and enhanced soil nutrient status, leading people to differentially experience social and environmental constraints.
Exploring Diachronic Settlement and Land Use in Hanga Hoʻonu, Rapa Nui (Easter Island)
Mara A. Mulrooney, Dept. of Anthropology, University of Auckland, Thegn N. Ladefoged School of World Studies, Virginia Commonwealth University, Christopher M. Stevenson School of World Studies, Virginia Commonwealth University, and Sonia Haoa Cardinali Consejo de Patrimonio, Rapa Nui

The landscape on Rapa Nui contains a palimpsest of surface archaeological features reflecting centuries of cultural activities on the landscape. The island is often portrayed as the locale of a dramatic societal collapse, triggered by overpopulation and environmental degradation. Although this scenario has increasingly been called into question, many researchers still suggest that Rapa Nui society collapsed before European contact (in 1722) and cite major settlement shifts as evidence for cultural change. This paper assesses the temporal and spatial components of settlement and land use in the Hanga Hoʻonu Project Area on the north coast. The analysis includes a GIS-based spatial analysis of surface archaeological features and the chronometric dating of selected areas of the landscape using obsidian hydration dating and radiocarbon dating. The results suggest that Rapa Nui settlement and land use in this area is marked by continuity rather than punctuated, detrimental change during late prehistory.

SYMPOSIUM 5

National Historic Preservation Act (NHPA) consultation with Native Hawaiian Organizations (NHO)
Panel: Facilitated by the Office of Hawaiian Affairs.

Section 106 of the NHPA requires federal agencies to consider the affect of their undertakings on historic properties (“undertakings” and “historic properties” as defined by the NHPA will be referenced). The Advisory Council on Historic Preservation (ACHP) has promulgated implementing regulations (36 CFR Part 800) that in part, detail the consultation requirements of Federal agencies with NHPA responsibilities. Efforts to identify and consult with NHO are required. (a reference to NHO as defined by Statute and 36 CFR Part 800 will be provided). An overview of these consultations with NHO requirements from the initiation to the conclusion of the NHPA process will be provided. Panel discussion and larger group/open discussion (as time allows) to follow.

SYMPOSIUM 6

A Functional and Temporal Interpretation of Excavated Pits in the Mauna ʻĀina (Pōhakuloa Training Area) and their Significance in Hawaiian Prehistory
Chris Monahan, Cultural Surveys Hawaiʻi Inc

At the 2010 SHA conference, I presented a paper describing preliminary results of a study of 131 excavated pits from seven (7) different sample areas at Pōhakuloa Training Area. The final results are now available. I will present an overview of the study and its conclusions, which are consistent with the hypothesis that the vast majority of excavated pits at PTA can be explained as a byproduct of human efforts to enhance and expand sea-bird nesting habitats in certain types of
pāhoehoe flows. Multiple lines of evidence—including two phases of planting experiments and palynological analysis of soil-sediments from archaeological features—suggest there is no support for the “sweet potato” hypothesis. Organic residue analysis (Fourier Transform Infrared Spectroscopy) of soil-sediments from excavated pits—including control samples from known, contemporary petrel-nesting sites on Mauna Loa—indicate an avian signature within and near all excavated pits included in the current study.

The Development of Complex Arrays of Irrigated Agricultural Features in Windward Kohala, Hawai‘i Island
Michael W. Graves, Jana Morehouse, Mark Oxley, and Joseph Birkmann, Dept. of Anthropology, University of New Mexico
Archaeological field research since 2006 has now revealed a number of agricultural features or complexes that are spatially linked to one another in northeastern Kohala, Hawai‘i Island. Here we report on several of these linked complexes. Among them, we note the transport of water for irrigation from higher elevation locations to lower elevations, on occasion with dramatic vertical drops of more than 1000 feet in elevation. Individual irrigation ditches associated with these complexes may extend more than 500 m and cross drainages, ultimately transporting water from one drainage system to another. Sets of ditches that link separate agricultural terraces or features are now documented and extend up to 1 km in total distance. The technology involved in these complexes included bedrock cut ditches (to a depth of more than 1 m in some instances), nascent tunneling through bedrock, excavation of ditches into steep slope gradients, and the incorporation of multiple forms of irrigated and/or wetland agriculture in a single system. Chronometric dating is still underway but we surmise that most of these systems are consistent with other traditional Hawaiian irrigation practices and likely date to the late prehistoric (post 18th Century) or proto-historic (early 19th Century).

A Walk in the Park: Rediscovering Peter Lee and his Road
Martha Hoverson
Peter Lee was a Norwegian who built a hotel in Punalu‘u, and then a road from Ka‘ū to the summit of Kīlauea. The road was completed in 1888, and portions of it are still in use as ranch roads. The upper 4 -5 miles of the road is the subject of my talk. By 1912 this part of the road had been replaced by a new, straighter, alignment. Walking the old roadbed, one finds an almost unchanged landscape, complete with the detritus of 19th century travelers. Of particular interest are the many beverage glass fragments, which date the road and provide insight into the drinking habits of the times. My presentation includes a brief history of Peter Lee’s activities as a road builder and popular host, and photos of road features and some of the artifacts we found.

Dryland Farming and Irrigation at Hoku Kano Flat, Maui Island
Patrick V. Kirch, Ph.D. (UC Berkeley), John Holson, M.A. (Pacific Legacy Inc), Paul Cleghorn, Ph.D. (Pacific Legacy Inc.), and Oliver Chadwick, Ph.D. (UC Santa Barbara)
Excavations were undertaken at a Hawaiian dryland cultivation site at Hoku Kano Flat, Auwahi ahupua‘a, Kahikinui District. Survey for the Auwahi Wind Farm Project identified several agricultures features, in particular remnant portions of an intensive field system with regularly spaced embankments and water diversion features. The site encompasses a depositional basin of approximately 3 hectares situated mauka of the Pu‘u Hoku Kano cinder cone. This is the largest formal field system thus far recorded in Kahikinui. Six trenches totalling 195 m were
mechanically excavated through field embankments, irrigation features, and a possible ʻauwai channel. This paper discusses the stratigraphy of the trenches, construction techniques of the water diversion features, nutrient availability of cultivated soils, and changing landscape induced by Hawaiian cultivation and land use practices. We also present the results of the radiocarbon dating of the various strata and recovery of introduced and extinct fauna present in several layers.

SYMPOSIUM 7

How Commonplace was Inter-island Travel in the Hawaiian Islands? Results from new volcanic glass sourcing research

Mark D. McCoy, University of Otago and Maria Codlin, University of Otago

Oral histories leave little doubt that the political and social history of the archipelago involved a web of relationships between high ranked families on different islands, often bound by marriage and military alliance. Recent geochemical sourcing of basalt adzes suggests these same elite households were more likely to have had in their possession adzes imported from off-island. But, while it is important that archaeologists continue to study this material reflection of inter-island exchange, we must remember that the adzes themselves were long-lived, formally manufactured tools, with the highest quality examples expertly made from select quarried raw material. In contrast, volcanic glass, ubiquitous to many pre-contact era sites, was used in an informal fashion, for a range of daily tasks, and was likely collected in raw form from hundreds locations, and therefore a better indicator of how commonplace interisland travel was in the past. In this paper, we present the results of geochemical and lithic technology studies on a collection of +1,000 volcanic glass artifacts from sites on Kauaʻi, Oʻahu, Molokaʻi, Maui and Hawaiʻi Islands. This dataset gives us a rare pan-archipelago look at inter-island travel and represents a critical context for interpreting the exchange of formal basalt tools.

Eight years and counting: a review of the EDXRF Geochemical Database from the UH Hilo Geoarchaeology Lab

Peter R. Mills and Steven P. Lundblad, UH Hilo

Over the last eight years, over 21,000 archaeological and geological rock samples from Oceania have been analyzed in the UH Hilo Geoarchaeology Laboratory using Energy-Dispersive X-Ray Fluorescence (EDXRF). We discuss the strengths and current weaknesses of the database in terms of sample types and regional coverage, and evaluate past and potential contributions of the database to our understanding of regional economic models, interisland voyaging, and the evolution of Hawaiian archaic states.

Energy Dispersive X-ray Fluorescence (EDXRF) analysis of Volcanic Glass from Hawaiʻi Volcanoes National Park, Hawaiʻi Island

Katherine Mulliken, Steven P. Lundblad, and Peter R. Mills, UH Hilo

EDXRF has been used to identify the geological sources of many Hawaiian basaltic tools. This strategy can also be used in the analysis of volcanic glass artifacts. Several volcanic glass quarries, such as Puʻu Waʻawaʻa and the Pōhakuloa Training Area chilled glass sources, have been extensively studied, but it is expected that many smaller volcanic glass extraction areas exist, including ones on Kīlauea Volcano. This study will examine volcanic glass samples collected from within Hawaiʻi Volcanoes National Park in an attempt to determine their geochemical and economic relationships to established Hawaiʻi Island volcanic glass sources.
Geospatial Modeling of Pre-contact Hawaiian Production Systems on Molokaʻi
Natalie Kurashima, UC Berkeley and Kamehameha Schools Land Assets Division

The geographic distribution and relative importance of traditional agricultural systems in Hawaiʻi, based on ethnohistoric and archeological data, is only partially understood. Knowledge of the size and distribution of these systems is critical in estimating island populations, production, and surplus, as well as for assessing societal dynamics and the sustainability of indigenous agricultural systems. We employ geospatial modeling using rainfall, elevation, soil type, streamflow, slope, and substrate age, to create a geographic information system (GIS) model for the distribution of four major production systems on Molokaʻi Island—intensive pondfield irrigation, intensive dryland cropping, extensive colluvial slope agriculture, and fishpond aquaculture. Model results were checked against archaeological data sets for known areas, testing for goodness of fit between model predictions and empirical field evidence. We calculated productive area, yield, labor input, caloric efficiency, carrying capacity, and discussed population dynamics.

In 2012, I expanded the GIS model and analysis to the seven other major Hawaiian Islands. At Kamehameha Schools, the model can be used to supplement ethnohistoric and archaeological studies that lack sufficient data, direct projects more efficiently, as well as inform land managers which areas are environmentally suitable to grow traditional Hawaiian crops. The statewide model is still in working form.

Geochemical Analysis of Lithic Collections from Lānaʻi Island, Hawaiʻi using EDXRF: Evidence for Inter-island exchange of Lithic Material in Maui County, Hawaiʻi
Steven P. Lundblad, Peter R. Mills, Dane Kaylor, and Katherine Mulliken, UH Hilo

Non-destructive Energy Dispersive X-ray Fluorescence (EDXRF) is an ideal technique to gather geochemical data from museum collections as they can be returned intact post-analysis. Lānaʻi is a small, centrally located island in the Hawaiian archipelago, with one well-documented adze quarry (Kapōhaku), a potential local source for artifacts. Working in cooperation with the Lānaʻi Cultural & Heritage Center (CHC) to further their mission of inspiring people to be informed, thoughtful, and active stewards of the island’s heritage, we collected geologic samples from the island, which were returned to their original locations after analysis, and analyzed a number of stone tool artifacts from the CHC. Based on the documented geochemistry of the island, we have identified a number of artifacts of local origin, and a significantly smaller number of objects from off-island, notably Molokaʻi and Maui. No artifacts have thus far been attributed to the large Hawaiʻi Island quarry at Mauna Kea.

Digitizing Archaeology Collections at the Bishop Museum: an Update on the Progress of the Hawaiian Archaeological Survey (HAS)
Summer Moore, Bishop Museum

The Hawaiian Archaeological Survey (HAS) is an online database envisioned as a means for consolidating archaeological data collected within the Hawaiian Islands since formal archaeological investigations began in the early 20th century. Currently, the database contains 12,800 entries for archaeological sites investigated by the Bishop Museum in Hawaiʻi. Over the past two years, a partnership between Bishop Museum’s Anthropology Department and the Office of Hawaiian Affairs has allowed the Museum to begin a massive digitization effort to recreate the HAS database into a portal for digital information, including archaeological records, manuscripts, and photographs of artifacts in our collections. Significant progress has been made,
but we continue to have much work ahead of us. This paper offers a summary of the progress that has been made by the Anthropology Department toward inventorying and digitizing its collections, as well as a vision of what we hope to accomplish through these efforts.

POSTER

An Archaeological Perspective on Gender and the Division of Labor in Traditional Chamorro Households

James M. Bayman, Hiro Kurashima, Mike T. Carson, and John A. Peterson

Students and faculty from the University of Hawai‘i and the University of Guam conducted a three year field school at the Guam National Wildlife Refuge (GNWR). Our study compared ethnohistorical accounts of household organization with the archaeological patterns at the 17th century village of Ritidian. We investigated archaeological assemblages from two latte buildings to document their respective economic activities. Unexpected differences in their artifact assemblages revealed the following: 1) economic activities varied between the two latte buildings, 2) they were domiciles of a single economically integrated household, and 3) their disparate functions signaled a gendered division of labor. In brief, one latte building was used by females to make and use pottery for the preparation and storage of food. In contrast, the other latte building was used by males to make and repair canoes and fishing gear. This archaeological study reveals aspects of traditional Chamorro practices that documentary accounts do not fully describe.
Nā Pua Noʻeau 2013 Summer Institute, Cultural Resource Management Course for Hawai‘i High School Students

Lokelani Brandt and U‘ilani Macabio, UH Hilo

The effort to inspire and train the next generation of Native Hawaiian cultural resource stewards has percolated to the high school level. This past June, ten Native Hawaiian high school students from various islands were selected by the Nā Pua Noʻeau Center for Gifted and Talented Native Hawaiian Children program to spend two weeks immersed in a variety of CRM-related activities and projects on Hawai‘i Island. The course, titled ‘Uncovering the Past,’ focused on introducing high school-aged students to the field of CRM from a Hawaiian cultural foundation. The course emphasized cultural preservation through the building of sustainable and meaningful community relations, expanding the students’ academic and professional foundation, and exercising their knowledge of Hawaiian traditions and practices.

Hoʻopakele Heiau: A Community-Based Approach to Heritage Management

Kathy Kawelu, UH Hilo

Consultation has been a part of archaeology for nearly a half-century, but in recent decades, a growing number of archaeologists are working toward a more engaged practice, striving for collaboration with descendant communities and other stakeholders. To this end, archaeologists have partnered with descendant communities and other supporters who also seek to care for the cultural landscape in our ever developing island home. The mission of Hoʻopakele Heiau, a group formed through the partnership of community members, archaeologists, and college students, is to protect a heiau adjacent to the Hilo Harbor. By raising awareness of the site, the group seeks to limit the impact of the proposed harbor expansion currently in the planning stages. This paper provides an update on the community-based work taking place along the Hilo coast.

Wahi Ola: Partnerships for a Vibrant Living Landscape

Sean Nāleimaile, Nākiʻikeaho/ DLNR, Hawaiʻi State Historic Preservation Division

The future of our wahi kūpuna (ancestral landscapes) depends upon a collaborative management approach to ensure that the appropriate stewardship of these places is maintained for future generations. These stewardship efforts need to ensure that there is a respect for the land; that reciprocity is developed with the land, its descendants, and its current and future users; and that these efforts culminate in a relationship that is reinforced and maintained for the benefit of all things related to and connected to the place. The Wahi Ola Project aims to facilitate a process of learning through collaborative relationships between public, private, and governmental agencies to put into action a process to educate, engage, and enable communities to increase the awareness of these places of cultural and spiritual value and how they are impacted by our modern world.
The Phases of Malama: Transforming Research to Reinvigorating Life
Victoria Wichman, Bishop Museum, and Keao NeSmith, UH Mānoa
Nā Pali Coast ‘Ohana, cultural stewards of Nu‘alolo Kai, Kaua‘i, are continuing with restoration objectives based within the concept of a traditional Hawaiian “Malama” or moon-phased philosophy, combined with “Mālama,” which means ‘to take care of.’ This is reflected by the many schools of knowledge shared throughout this project that support our stewardship’s goals of proactive research, restoration, and cultural heritage revitalization. This paper will examine the cultural and archaeological methodology in restoring the “Mālama Wall.”

Panel Presentation: Community and Cultural Resource Planning from a Hawaiian Perspective: Challenges and Opportunities for Hawaiians in the Private Sector
Hinaleimoana Wong-Kalu, Matt Sproat, Elmer Kaai, Regina Hilo, Jamaica Osorio, and Trisha Kehaulani Watson, Honua Consulting, Inc.
Lawsuit decisions like the Kalekini decision illustrate the on-going challenges with planning and managing cultural resources in Hawai‘i. This panel will discuss the challenges and opportunities of being Hawaiian and working in the private sector. Hawaiian archaeologists and cultural resource specialists have long called for new methods in researching traditional cultural properties and resources. The resurgence of Hawaiian language use and cultural fluency offers Hawai‘i’s private sector an exciting opportunity to evolve research and planning that impacts cultural resources. This opportunity has potential benefits not only for Hawai‘i, but for all indigenous communities who strive to find ways to plan for the future use of their traditional resources in culturally appropriate ways. Yet, this effort is not without its challenges. Hawaiians working in the private sector are constantly challenged by their close relationships and ties to their community, and this panel will also discuss innovative ways of addressing and resolving community conflict. Drawing from their experiences across Hawai‘i and the greater Pacific, this panel will offer an exciting and dynamic discussion on the status of cultural resource planning in Hawai‘i and the amazing potential for its future.

SYMPOSIUM 2

Traditional Hawaiian Cultural Materials Recovered Beneath 1,500-Year-Old Lava Flow
Jeffrey L. Putzi, T. S. Dye & Colleagues, Archaeologists, Inc.
Renovation of Kona Village Resort following the tsunami of March 11, 2011 required that utilities be placed underground in accordance with Hawai‘i County’s building code. Excavation with a hoe ran through a pāhoehoe flow dated by geologists to 1,500-3,000 years ago exposed a poorly sorted beach sand deposit with traditional Hawaiian artifacts, including broken fishhooks, adze fragments, lava and coral abraders, worked mammal bone, and volcanic glass flakes. This paper describes the traditional Hawaiian cultural materials and explores the age of the deposit.

He Kōkō Puʻupuʻu? (A Chiefly Gourd Net?): An Analysis of Recovered Fiber Arts from Makauwahi Cave, Kaua‘i
Damion Sailors
In the summer of 2011, several well-preserved pieces of a rare Hawaiian carrying net were recovered from Makauwahi Cave during an archaeological field school hosted by the University of Hawai‘i and the National Tropical Botanical Gardens on the south end of Kaua‘i. The complexity and decorative aspects of the type of knot used for this net’s construction suggest that
this item may be a kōkō puʻupuʻu, or chiefly gourd net. Because of the perishable nature of both floral and faunal components used in customary cordage manufacture, Pacific Island rope work generally has poor representation in the archaeological record, making this uncommon find appealing for detailed investigation. This paper addresses what can be learned from examining and comparing the physical characteristics of this antiquated example of Polynesian netting and proposes further research that may show promise regarding Pacific Island fiber arts. A focus on the stylistic analyses of rope construction and knot work as it is demonstrated between and within Pacific Island communities is emphasized in this study.

The Archaeology of Halawa Cave, North Halawa Valley, Oʻahu, Hawaiʻi
Paul E. Langenwalter II and Liana K. Meeker, Biola University
Halawa Cave (50-Oa-B01-020) was one of two sites excavated by a University of Hawaiʻi Archaeological Field School under the direction of William Wallace during the spring of 1966. The site was selected for excavation based on surface finds which had been recently reported to the Bishop Museum by a local collector. Several attempts to produce a site report for excavations at Halawa Cave were unsuccessful. A recent move to complete the study of the small but diverse vertebrate assemblage facilitated a broader study of the site to provide environmental, cultural, and temporal contexts for the vertebrate analysis. The present study is based on a synthesis of the collections and archival materials from the 1966 excavation held by multiple institutions. The site consists of an approximately 50 cm-deep midden, located inside of a 6x8 m² rockshelter about 5km inland of Pearl Harbor in the North Halawa Valley, Oʻahu, Hawaiʻi. The prehistoric assemblage includes gourd cups and a fire plough, along with a variety of shell, bone, and stone artifacts. Also present are ecofacts that include shellfish, bone, and plant materials. Features associated with the site are a rock wall, hearths and concentrations of ash, charcoal, and food wastes. The artifacts and ecofacts provide evidence of occasional Native Hawaiian occupation by the 15th century that extended into the 19th century. Halawa Cave was used for intermittent habitation by individuals apparently engaged in wood cutting and local food procurement.

Continuity and Change at a Puʻuone Fishpond: New Archaeological Data from Loko Ea, Kawaiolau, Oʻahu
Chris Monahan and Doug Thurman, TCP Hawaiʻi, LLC
We discuss the results of a recent archaeological survey at Loko Ea Fishpond in the seaward portion of Kawaiolau Ahupuaʻa. This puʻuone-type fishpond represents the south end of the “long house” of Laniwahine, the guardian moʻo of ‘Ukoʻa. Excavation into Loko Ea’s oldest, constituent features demonstrates a complex depositional history of construction, modification, and repair. In the deepest portion of Loko Ea’s largest wall, just above the water table, we recovered a carved wooden artifact made of a large piece of Douglas fir (Pseudotsuga menziesii), from which a conventional (AMS) radiocarbon date of 160 ± 30 BP was obtained. We explore the implications of this and other new findings.

SYMPOSIUM 3

How Structures Become Archaeological Deposits
Thomas Dye, T. S. Dye & Colleagues, Archaeologists, Inc.
Cathy Cameron’s work on the abandonment of settlements and regions provides a framework for
identifying and describing the different ways that dry stone masonry structures enter the archaeological record in Hawai‘i. Recent excavations at nineteenth century structures at Manele, Lāna‘i illustrate two different, but common, ways that structures become archaeological deposits. The excavations document the dynamic nature of the Hawaiian settlement landscape well into the historic era.

Spatiotemporal Rainfall Variation on Hawai‘i Island: Implications for Prehistoric Hawaiian Agriculture

Robert DiNapoli, UH Mānoa, and Alex Morrison, University of Auckland

Pacific Island agricultural research has focused predominately on measuring the degree of uncertainty in dryland subsistence practices. Environmental risk and uncertainty have been especially important topics in the Hawaiian Archipelago, specifically in relation to the large dryland agricultural systems of Maui and Hawai‘i Island. Unlike most windward agricultural systems, leeward dryland agriculture was almost completely dependent on rainfall. It is generally assumed that dryland field systems were highly susceptible to droughts, potentially resulting in food shortages with various societal consequences, such as conflict and the emergence of social complexity. The recent publication of the Rainfall Atlas of Hawai‘i enables us to build more fine-grained models of spatiotemporal rainfall variation in the Hawaiian Islands. Using this newly published rainfall archive, we investigate spatiotemporal rainfall patterns on Hawai‘i Island, with particular emphasis on the Leeward Kohala Field System (LKFS). We employ geostatistical modeling techniques and time series analyses to quantify the amplitude and periodicity of droughts in the LKFS, and discuss the implications of our results for Hawaiian agriculture and emerging sociocultural patterns.

Features Across Space: A Spatial Analysis of Traditional Hawaiian Archaeological Features at Kalaemanō, Hawai‘i Island

Carl E. Sholin, T. S. Dye & Colleagues, Archaeologists, Inc.

Detailed archaeological mapping was conducted for a coastal strip approximately 0.5 km wide and 1 km long at Kalaemanō, Ka‘ūpulehu Ahupua‘a, North Kona District, Hawai‘i Island during preservation planning for the Ka‘ūpulehu Interpretive Center. Locations of the identified archaeological features were incorporated into a geographic information system (GIS) and classified based on architectural characteristics. The spatial analysis reported here was aimed toward two research goals: (1) to explore how distance from the coast influenced the distribution of feature classes, and (2) to identify and characterize clusters of features.

Stars and Stones at Kūkaniloko

Martha H. Noyes

The piko stone at Kūkaniloko, sometimes called the compass stone or canoe stone, has attracted attention and curiosity. It is clearly about something, but what? Celestial events marked on the landscape to the east and west of Kūkaniloko provide clues. This paper offers some reasoned speculation on the purpose of the piko stone based on the meanings and functions of landscape markers for stars and celestial events.

Preliminary Thoughts on Lo‘i Agricultural Systems in Miloli‘i Valley, Kaua‘i

Jennifer G. Kahn, College of William and Mary, and Alan Carpenter, Hawai‘i State Parks
Site 50-30-01-7179 is an extensive stepped agricultural complex fronting the mouth of Miloli‘i Valley. The complex is just adjacent to the hale pili site (50-30-01-7206) where the Bishop Museum removed the grass house that is now on display in Hawaiian Hall. We discuss data collected during the detailed mapping and inventory survey of the 50-30-01-7179 site, including data on the wetland field system and residential complexes. Surface remains suggest that portions of the lo‘i were segmented through time and/or transformed into house platforms. Other residential sites are found along the cliff faces along the sides of the valley, where dense midden concentrations are found. Test excavations at the Mil-10 complex provide data on the chronology of site construction and subsistence intensification along the Nā Pali Coast. We end with a brief presentation of artistic reconstructions of the site, based on archaeological data, which will be used in developing community educational materials to foster site preservation and local knowledge.

**Adze Procurement and Production Strategies on the Eastern Flanks of Mauna Kea**

*Peter R. Mills and Stephen P. Lundblad, UH Hilo*

The geochemistry of adze debitage from a range of sites in North Hilo and Hāmākua is presented, including sites in Laupāhoehoe, lowland Humu‘ula, Niupea/Kealakaha, Āhualoa, Pa‘ako, Waipiʻo, and Laupāhoehoe Nui. Much of the debitage is geochemically consistent with the Mauna Kea Adze Quarry, but coarse-grained, locally available post-shield volcanics are also present. Another geochemical group of fine-grained shield-building volcanic material is also present that does not match well with Mauna Kea sources or the Pololū Adze Quarry in North Kohala. The nearest documented quarry sources with similar geochemical signatures include Kīlauea, Kapōhaku, Lānaʻi, Waiahole, Oʻahu, and the newly reported Nānākuli, Oʻahu source. Technological and contextual information is presented to suggest that at least some of the shield-building debitage in East Hawaiʻi derives from yet another source, most likely from early shield-building stages of the Kohala Mountains, which could be exposed in Waipiʻo Valley and other portions of Hāmākua and Kohala.

**SYMPOSIUM 4**

**Recent Excavations in the Marquesas: Evidence for the East Polynesian Archaic**

*Barry Rolett, UH Mānoa*

The Hanamiai Dune is among a number of Marquesan archaeological sites with cultural deposits representing the East Polynesian Archaic era. These Archaic deposits, dated to the time period AD 1000-1450, are typically documented by chronologically diagnostic artifacts such as untanged adzes and rotating one-piece pearl shell fishhooks. The currently known Hanamiai Archaic deposits were discovered in the 1980s, but early in the following decade they were inadvertently destroyed by sand mining operations to support road construction. Later excavations at Hanamiai (1997-2010) failed to reveal evidence of the Archaic. A breakthrough occurred during the 2012 and 2013 field seasons when rich Archaic deposits were found at depths of 2-3 m below the modern ground surface. The diagnostic artifacts include rotating pearl shell fishhooks, a whale tooth pendant, and a bone tattooing needle. Our preliminary results are discussed here in the context of other early East Polynesian sites including Hane, Hanatekua, and Faʻahia, excavated by Yosihiko Sinoto as part of his pioneering research in French Polynesia.
Hoʻomaka Hou: A Second Look at the Waiʻahukini Shelter (H8) Faunal Remains
*Kelley Esh, UH Mānoa, Scott Belluomini, and Mara Mulrooney, Bishop Museum*

The Waiʻahukini Shelter (H8) was excavated from 1954 to 1958 by archaeologists from Bishop Museum and the University of Hawaiʻi (Emory, Bonk, and Sinoto 1969), with the lower layer of the cave deposit believed to represent early occupation of the Hawaiian Islands. Unlike many early excavations, the bulk sample collection strategy apparently utilized at Waiʻahukini Shelter is conducive to a detailed examination of the animal remains. However, outside of a few studies that focused on the South Point area in general, an analysis of the faunal material from this famous site has not been conducted since the initial publication in the 1960s. Almost sixty years after the original excavations, we have initiated comprehensive faunal analysis for this collection. Our paper discusses the preliminary findings and future collaborative projects for this important archaeological collection.

Before the Fold: Excavations at a Shepherd’s Midden on Lānaʻi
*Nathan DiVito, T. S. Dye & Colleagues, Archaeologists, Inc.*

Controlled excavation at a nineteenth century shepherd’s midden at Manele, Lānaʻi revealed a deeply buried traditional Hawaiian cultural deposit with artifacts and food remains. Two fire-pit features, one stratigraphically superior to the other, were identified in the traditional Hawaiian deposit. Suitable dating materials were collected from each of the features. AMS dates on identified short-lived plant charcoal establish the time depth of the traditional Hawaiian deposit.

The Zooarchaeology of Vertebrate Animal Use, Extinction and Extirpation at Halawa Cave, North Halawa Valley, Oʻahu, Hawaiʻi
*Paul E. Langenwalter II, Biola University, and Helen F. James, Smithsonian Institution*

Halawa Cave (50-Oa-B01-020) is a rockshelter located about 5 km inland of Pearl Harbor in the North Halawa Valley, Oʻahu, Hawaiʻi. Evidence of Native Hawaiian occupation is found in an approximately 50cm-deep midden, inside of the 6x8 m² shelter. The assemblage includes vegetal, stone, bone and shell artifacts, along with shell, bone and plant ecofacts. The site appears to have been intermittently occupied as a base for local resource procurement. Occupation of the site began by the fifteenth century and continued into the nineteenth century, with the heaviest use of the site during the nineteenth century. The presence of adzes in the assemblage suggests that wood-cutting was an important activity associated with the site. A sample of 68 fish, bird, and mammal specimens was recovered during the excavation. This assemblage provides evidence of limited vertebrate use, butchering practices, resource procurement areas, and information about the local paleoenvironment. Fish species dominate the assemblage. Two of three avian species are indigenous and extinct or extirpated. Remains of the extinct Oʻahu Flightless Goose (*Thambetochen xanion*) and the Dark-rumped Petrel (*Pteroderma phaeopypia*) occur in sediments from the terminal occupation of the site. Introduced species of red jungle fowl, dog, and pig were a significant food source consumed at the site. The assemblage reflects a focus on fishing, although the mammals were significant contributors of biomass. Steel tool marks occur on some pig specimens from the terminal occupation.
Remote Sensing Vegetation Classification for Restoration of the Kahaluʻu Dryland Field System

Natalie Kurashima, Kamehameha Schools/UH Mānoa

Kamehameha Schools is seeking to restore and revitalize the Kahaluʻu Field system in Kahaluʻu Ahupuaʻa, North Kona District, Hawaiʻi Island. At 350 acres, the Kahaluʻu Field system is one of the largest intact remnants of the Kona field system, a complex system of rainfed agricultural fields spanning about 140 km² across about 30 ahupuaʻa. There are over 3,500 documented archaeological features within the Kahaluʻu field system, which are almost all (98.7%) categorized as pre-contact agricultural features. Though the archaeological features have been thoroughly documented, no botanical or ecological study has been undertaken in the site. Restoration and revitalization activities will include clearing of invasive vegetation for planting of traditional Hawaiian agricultural crops for cultural, community, and commercial uses; thus, an understanding of the current matrix of vegetation is important for restoration planning, as well as for obtaining baseline data before restoration in the area begins. Remote sensing provides an opportunity to analyze the canopy vegetation of the entire 355-acre project area at the species-specific level. Using a Worldview 2 satellite image, I classified the canopy vegetation of the project area into four major classes: ʻōhiʻa lehua (*Metrosideros polymorpha*), christmas berry (*Schinus terebinthifolius*), strawberry guava (*Psidium cattelianum*), and a shadow class. I performed a series of supervised classification methods in ENVI 4.8, the most accurate being the Maximum Likelihood Classification (MLC), with an 85.5% overall accuracy. The classification indicated 49% non-native canopy cover and 33% native canopy cover, with the remaining proportion represented as shadow. The resulting classification was also compared with soil and archaeological features within the system in order to reveal trends and variation across the site. The MLC method provides a sufficient basic vegetation map that can be easily utilized in restoration planning and future research within the field system.

Update on Administrative Rule Changes Affecting Archaeology

Theresa K. Donham, DLNR, Hawaiʻi State Historic Preservation Division

SHPD announced at last year’s SHA conference that changes were being contemplated in Hawaiʻi Administrative Rules (HAR) §13-275 through 284, with a goal of updating requirements to be more in line with today’s technology and scientific standards. The passage of S.B. 1171 has resulted in a need to provide conditions under which phased review of projects would be allowed. The justification of this bill was a need for greater consistency between federal and state historic preservation regulations, which is also considered in the revision process. Proposed changes to HAR §13-275 and 284, which detail the historic preservation review process, will be discussed, along with proposed changes to the regulations addressing inventory survey (§13-276), archaeological site preservation (§13-277), data recovery studies (§13-278) and permits for archaeological work (§13-282). Also discussed are options for input from the professional community and other stakeholders.

Towards a Statewide Cultural Resources GIS for Hawaiʻi

Nick Belluzzo, DLNR, Hawaiʻi State Historic Preservation Division

The development of a comprehensive, accessible statewide cultural resources GIS is vital to increasing our understanding of the archaeological record, as well as executing our responsibilities as stewards of these cultural resources. The State Historic Preservation Division (SHPD) has developed a standardized GIS database with the intent of aggregating known and
newly generated locational information for cultural resources throughout Hawai‘i. SHPD has already begun populating the database with legacy data from SHPD’s own data collections. Strategies have been developed for both contending with legacy data and incorporating newly generated geospatial information. Additionally, the Cultural Resources Geodatabase will link to other pertinent datasets still under development, such as tabular site information, library reports, and correspondence history. The intent is an accessible repository of geospatial data which has been tempered with an understanding of the sensitive nature of the data.

Video Presentation: The Archaeology of Kekaulike, O‘ahu

Michael Dega, Scientific Consulting Services, Inc. (on behalf of Dennis Callahan)

Between 1992 and 1994, a complex Archaeological Data Recovery program was undertaken in downtown Honolulu, O‘ahu. The Kekaulike Project, occurring on the Ewa Block bordered by Hotel Street and King Street, was a large-scale excavation undertaken by Archaeological Consultants of Hawai‘i which was headed by the now-deceased Joseph Kennedy. Recently, one of Kennedy’s longtime friends presented a 1993 video he took of an interview with Mr. Kennedy at the site. The 15-minute video not only encapsulates the complex history of the site but shows the work environment at the site. With his typical flair, Kennedy walks us through the site showing his knowledge and passion for the past in a video suitable for beginning archaeology students, old field hands, long-time scholars of the discipline, and those interested in seeing what a large-scale excavation in downtown Honolulu entails.

SYMPOSIUM 5

Kohala I Ka Unupa‘a – Kohala of the Solid Stone

Session Organizer: Kelley L. Uyeoka, Kumupa‘a Cultural Resource Consultants, LLC

2013 Wahi Kūpuna Internship Program Introduction

Kelley L. Uyeoka, Kumupa‘a Cultural Resource Consultants, LLC

Kukui ʻā‘a kū i ka ʻĀpa'apa‘a

Ikaika Kapu, Heather Bailey, Isaac Pang, Aloha Kapono, and Makana Tavares, Wahi Kūpuna Internship Program

Our presentation focuses on the research we conducted in the ahupua‘a of Puanui as part of the 2013 Wahi Kūpuna Internship Program. In addition to surveying and mapping portions of the Leeward Kohala Field System within Puanui and Kehena, we also carried out individual research projects that centered on themes such as ahupua‘a systems, mauka-makai connections, land use and change, and resource sharing and trade. Through our cultural, historical, ethnographic, and archaeological research, we learned that Puanui was a thriving ahupua‘a and that the resources that are still preserved there today can teach us so much about resource management, self-sufficiency, and sustainability.

2013 Hawai‘i Historical and Archaeological Research Project Introduction

Michael Graves, University of New Mexico, and Kekuewa Kikiloi, UH Mānoa
An Irrigated Agricultural System Linking Makanikahio and Pololū Ahupua‘a, Hawai‘i Island
Joseph Birkmann, Mark W. Oxley, Michael W. Graves, University of New Mexico, Kekuēwā Kikiloi, UH Mānoa, and Kelley Uyeoka, Kumupa‘a Cultural Resource Consultants, LLC
Field research in windward Kohala since 2011 has allowed us to reconstruct an irrigated agricultural system that originates in Waikalae Stream in upper Makanikahio 1, Windward Kohala. Stream water is diverted first by a ditch that redirects the flow through a cut bedrock and traditional ʻauwai that is more than 250 m long and extended to the north and west into a separate drainage. At the top of this secondary drainage is a small lo‘i complex that is located on ridge lands and excess irrigation water would flow into the gully adjacent to the west. This gully is known as Kauhaikulepe and extends down the ridge lands to the north more than 1 km. Pond field and barrage agricultural terraces, as well as a variety of tree crops, once lined its bottom lands throughout. Towards the bottom of the gully, Kauhaikulepe extends eastward across Makanikahio 2 and flows down a ravine into Pololū Valley. There the irrigation water feeds the large marsh lo‘i complex about 150 m from its north, upper end.

Inoa ʻĀina o Waiʻāpuka
Kauʻilani Rivera, Hawaiʻi Historical and Archaeological Research Project
Place names play an important role in understanding how Hawaiians viewed the traditional Hawaiian landscape. This study looks at the wide range of meaning interpretations from place names gathered for the ahupua‘a of Waiʻāpuka in Windward Kohala. It pulls from historical maps, land commission awards, testimonies, moʻolelo in newspapers, and oral interviews recorded in various sources of information in both English and Hawaiian language. Through careful analysis, I translate, interpret, and cross-reference these names across historical accounts and link them to traditional land units and locations in the overall landscape. Each word’s etymology is broken down and all probable translations and interpretations are looked at to infer Hawaiians’ past relationships to Waiʻāpuka’s landscape and its resources.

SYMPOSIUM 6

Hoʻopiliwaiola: Water and Relationship in Waiʻāpuka
Kamuela Plunkett, Hawaiʻi Historical and Archaeological Research Project
In Waiʻāpuka, Kohala and its adjacent territories we see the inverse of a valley landscape in that gullies bookend table lands. In the case of Waiʻāpuka, its archaeological irrigation record is anomalous not just in comparison to leeward areas where the availability of water was relatively scarce, but also with valley irrigation systems, in that irrigated water does not always return to its source and may not always remain in its own territory. In effect, water movements in these ahupua‘a display regional irrigation practices that diverge from the classical imagery of valley ahupua‘a water and resource management. It is the goal of this paper to discuss the way I have documented the existence of these four agricultural complexes followed with a hypothesis of their connection via irrigational innovation and intentional utilization of “ridge slope” landscape. The connectivity of these individual complexes into an agricultural system could thus provide insight into table/kula land water movement and inter-community cooperation.
Challenging Our Understanding of Konohiki: A Case Study for Waiʻāpuka, Kohala
Tara Manaee del Fierro, Hawaiʻi Historical and Archaeological Research Project

This study challenges our current understanding of the role of konohiki in pre-contact times through the analysis of the archaeological records and historical Land Commission Award (LCA) documents gathered for the ahupuaʻa of Waiʻāpuka, in Windward Kohala. Examination of LCA documents (awards, native and foreign registers, and testimonies) within this discrete area of the ahupuaʻa and in the context of its ancient resources suggests that at least five konohiki, or land stewards, shifted roles and enacted different strategies of management within a short period of time in the mid 1800s. Thus, this prompts one to question our current understanding of the traditional concept of Hawaiian konohiki. It also provides insight as to what additional questions might be asked in future research of the ethno-historical and archaeological records in Hawaiʻi.

An Analysis of Poi Pounders from the Bishop Museum’s Ethnographic Collection: Examining Morphological Variability Across the Hawaiian Archipelago
Mark W. Oxley, University of New Mexico

The Bernice Pauahi Bishop Museum houses the largest collection of Hawaiian poi pounders in existence, including the approximately 600 specimens in the museum’s ethnographic collection. While the majority of the poi pounders in the ethnographic collection do not have any known provenience, at least 255 artifacts are known or believed to have originated from a specific island. This preliminary research explores the morphological variability of poi pounders across space, utilizing the artifacts with known provenience. While previous work has focused primarily on Kauaʻi Island pounders, this research will examine variability among the main Hawaiian Islands (with the exceptions of Lānaʻi and Ka hoʻolawe). This preliminary work will be expanded into a dissertation study that will analyze the variability and change of poi pounder technology through the examination of stylistic transmission and technological/functional innovations.

What’s in a Name? The Transformation of ‘Polynesian Hall’ to ‘Pacific Hall’ at Bishop Museum
Mara Mulrooney, Bishop Museum

Since the pioneering research of archaeologists Kenneth P. Emory and Yoshihiko H. Sinoto in the early 1950s, the Bishop Museum’s Anthropology Department has played a central role in the field of Pacific Island archaeology. The department’s prominent role in the field, however, has not typically been showcased in permanent exhibition spaces at the museum. In the newly renovated Pacific Hall, the field of archaeology has taken center stage in the 2nd floor of the exhibition space. In this paper, I present a brief historical outline of the significant transformations that Pacific Hall has undergone since it was built and dubbed ‘Polynesian Hall,’ and assess the ways in which artifacts from the Archaeology Collections are currently incorporated into the exhibition space.

Mark D. McCoy (University of Otago) and Patrick V. Kirch (UC Berkeley)

As the first book-length treatment of the topic of archaeology across the Hawaiian Islands, Feathered Gods and Fishhooks broke new ground when it was first published in 1985. Now nearly 30 years on, one of the challenges for the planned second edition is to provide the reader
with a useful synthesis of advances in regional archaeology. Given the massive body of research that has been produced since the first edition, the chapter titled, ‘Patterns in Time and Space: Regional Archaeology of the Hawaiian Islands,’ will become several expanded and revised chapters focusing on individual islands. The purpose of this presentation is to reflect on how the field has evolved in terms of the spatial and temporal scales that we emphasize in our work, as well as to give members of the Society for Hawaiian Archaeology an opportunity to comment on the format and content of the new island chapters.

POSTERS

Climate Change, Sea Level Rise, and Cultural Resources in Hawai‘i
Denise DeJoseph, Nā Moku Consulting Group
Sea level rise resulting from climate change is occurring. Rising seas will lead to accelerated erosion in coastal areas and to the likely inundation of some shorelines. Many of Hawai‘i’s coastal areas contain pre and post-contact cultural sites, landscapes, and features. Recent legislation in Hawai‘i, such as Act 286, compels state agencies to address climate change impacts to natural and cultural resources. There are currently no historic preservation protocols to deal with threats to cultural resources from coastal erosion. A first step must be identifying and ranking those resources that are most at risk. This poster explores how erosion hazard zone mapping developed by University of Hawai‘i researchers can be used to identify cultural resources that are most vulnerable to short-term (i.e., within 50 years or less) erosion threats based on the significance and timing of shoreline change. Using Maui as an example, we combined erosion hazard zone mapping with GIS data provided by the State Historic Preservation Division to demonstrate how a collaborative mapping approach can be useful in developing a strategy for prioritizing the preservation and/or recovery of scientific and cultural values embodied in Hawai‘i’s coastal cultural resources.

Applied Archaeology at UH Mānoa: Building Capacity in Hawai‘i and the Greater Pacific
James Bayman, Christian Peterson, Barry Rolett, Miriam Stark, and T. Kawika Tengan, UH Mānoa
The MA track in Applied Archaeology at UH Mānoa is designed to train the next generation of professional non-academic archaeologists who seek to be effective advocates for the study and preservation of historic sites in Hawai‘i and elsewhere in the Greater Pacific and Asia. Although institutions throughout the continental United States offer graduate training in applied archaeology, our program at UH Mānoa is unique in its geographic and cultural focus. We recognize the increasing importance of archaeological employment opportunities in our state through public and private sectors of cultural resource management (CRM) and historic preservation. In fact, compliance with state and federal legislation that pertain to archaeology and historic preservation underlies most public and private funding for professional archaeology today. Consequently, many private firms, governmental agencies, and non-profit institutions employ MA level archaeologists to conduct CRM investigations, manage archaeological collections, and/or engage in community outreach and public education. These growing areas of professional archaeology now far surpass the demand for academic archaeologists. This poster features various dimensions of the Applied Archaeology Program at UH Mānoa.
The Nuʻalolo Kai Kapa: A Preliminary Look at Chronology and Context
Summer Moore, College of William and Mary

Of the extremely broad and diverse collection of perishable artifacts recovered from the cliffside habitation terraces excavated at Nuʻalolo Kai, the kapa collection is one of the most unique. Although Hawaiian kapa specimens are present in museum ethnographic collections worldwide, such specimens often lack specific contextual information, i.e., information about chronology and location of collection. With over 20 fragments represented, the assemblage of archaeological kapa curated by Bishop Museum’s Anthropology Department provides a unique opportunity to anchor an examination of kapa use in time and space. On this poster, information from Bishop Museum’s artifact catalogs, unpublished excavation report manuscripts, and recent radiocarbon dating analysis by other researchers is summarized to provide an introductory view of kapa use at Nuʻalolo Kai. Because the majority of this kapa appears to be roughly associated with the late pre-contact and early post-contact periods, it is hoped that this study will provide a springboard for a more comprehensive examination of the subject, in which the role played by kapa in household life and beyond during the 18th and 19th centuries can be considered.

ADDITIONAL POSTER ABSTRACTS
(not listed in original program but disseminated after the conference)

Investigating the Potential for Arboriculture in Waiʻāpuka
Ruth Aloua, B.A., Hawai‘i Historical and Archaeological Research Project
The study of arboriculture – the cultivation and management of trees, shrubs, and vines – is a topic that has received varied levels of attention by researchers throughout Oceania. Such studies conducted thus far have focused on investigating broad topics that focus on understanding the development of subsistence system models in Southeast Asia and the Pacific, to more specific topics, that attempt to identify evidence for cultivation and translocation of cultigens in specific areas. Within Hawai‘i, in the districts of North and South Kohala, there has been little research that has focused on understanding arboricultural practices that may have once existed in the area. Although a considerable amount of research has focused on investigating the dry- and wet-land agricultural systems for the past fifteen years, thus far, the investigations in these areas have not yet studied the potential for arboriculture practices in Waiʻāpuka. In this presentation, I investigate the potential for arboriculture in Waiʻāpuka.

Waiʻāpuka Tunnel
Kahealani Walker, B.A., Hawai‘i Historical and Archaeological Research Project
The Waiʻāpuka Tunnel, known locally as the “Kamehameha Tunnel”, is located in the ahupua’a of Waiʻāpuka, Kohala, and provides a model example of engineered irrigation. It is unique in its construction and is the only tunnel of its size and magnitude, however, there has been only limited research and documentation on it. The first documentation was a sketch-map in 1888 by L. Cabot and it was later reported on in 1988 by Tomonari-Tuggle. After researching available resources that reference the Waiʻāpuka Tunnel, there is recognition of speculation on the tunnel’s existence - when was it built and by who? In seeking to understand these questions, this project focuses on learning more about the tunnel’s construction using ethnohistorical, archival and archaeological data.
Ahupuaʻa Resource Distribution Variances and Cooperative Potential in North Kohala  
*Nicholas Ferriola, B.A., Hawai‘i Historical and Archaeological Research Project*

This research utilizes a combination of archaeological, and historical data to examine the distribution of natural resources among several ahupuaʻa in North Kohala, Hawaiʻi, including Pololū, Makanikahio 1 and 2, and Waiʻāpuka. Because these ahupuaʻa have major geographical and resource variances from each other despite close proximity they provide an opportunity to look at how the various local land divisions may have interacted, and we see signs of those interactions in the features that exist today.

This research will be assisted by the use of GIS analyses to help inform the model. By examining this data I will be able to formulate a much stronger picture of the resources and cooperative potential of the ahupuaʻa in the North Kohala region. Because of the way in which these features are constructed, and the wide-reaching irrigation systems crossing boundaries I view it as likely that a strong cooperative bond was formed between these ahupuaʻa in order to overcome resource deficiencies, and create a more prosperous circumstance for all.

The Last Family in Pololū  
*Paul A. Duran, B.A., Hawai‘i Historical and Archaeological Research Project*

Throughout history, agricultural practices in Hawaiʻi have evolved in a variety of landscapes including slopes, valleys, gulches, gullies, and ridges to provide food for the people. Different types of cultivation practices have been engineered to best suit the circumstances of the landscape’s weather and terrain, including soils and water availability. Pololū Valley, in windward Kohala, illustrates the variety of cultivation practices across the landscape that generated food for the local community. Pololū Valley is one of the richest areas on the island in terms of resource availability and different ways Hawaiians practiced extensive and intensified agriculture. The precise engineering and location of irrigation features such as terraces and ditches (and possibly tunneling) gives us an idea of the importance of being able to understand and modify the landscape to achieve agricultural production. During the 19th century there were several multi-ethnic families living and practicing agriculture in Pololū Valley. Among these families was the Ramon family who were given lands in lower Pololū by Kamehameha III at the time of the Mahele. The family’s lands included a fresh water spring, loʻi plots, barrage terraces, and other resources that supported their needs. By the 1920s, everyone had left Pololū Valley except the Ramon family, whose members were able to adapt innovative ways to live there. By using historical and genealogical records, and the recorded archaeological remains associated with the Ramon family, I’ve been able to examine the family’s residence in the valley up until the 1950s.

Mana is our Legacy, Mauli Ola is our Destiny (keynote address)
Kamana’opono M. Crabbe, CEO, Office of Hawaiian Affairs
[no abstract available]

SYMPOSIUM 1: HAWAI‘I ISLAND

An Overview of the New M.A. Program in Heritage Management at UH Hilo
Peter R. Mills, Kathleen L. Kawelu, and Joseph H. Genz, Dept. of Anthropology, UH Hilo
In the Fall of 2015, the UH Hilo Anthropology Department will initiate a master’s degree program in Heritage Management. Approximately nine students will be admitted in cohorts each Fall semester. Each applicant should complete standard GREs and should describe a proposed thesis project in his or her application materials. Upon completion of the program, M.A. recipients will have prepared a thesis with a strong community-based component, and will combine their academic training in anthropological method and theory with applied aspects of community-based archaeology and/or ethnography. An overview of the M.A. curriculum, participating faculty (including 2 new tenure-track positions), and community collaborators will be presented.

From Highway to Trails: The Evolution of the Keahuolū Historic Preserve
Rowland B. Reeve and Ruth-Rebecca Lynne T. L. Aloua, Pacific Legacy, Inc.
It is not often that the construction of a highway leads to the preservation of cultural sites, but that is exactly what is taking place within the ahupua’a of Keahuolū, in the moku (district) of North Kona on the Island of Hawai‘i. Through the cooperative efforts of the Queen Lili‘uokalani Trust, the County of Hawai‘i, the Federal Highway Administration and Pacific Legacy, Inc., work is presently underway to ensure the preservation of a portion of the area’s rich cultural and archaeological landscape. The Queen Lili‘uokalani Trust, who are the stewards of Keahuolū, have set aside twenty-five acres of land in perpetuity for the establishment of a Historic Preserve located adjacent to the newly constructed Ane Keohokalole Highway. The Federal Highway Administration and the County of Hawai‘i have in turn agreed to dedicate a portion of the funding for the highway to be used to help develop the Preserve. This funding serves as part of the mitigation program associated with the construction of the Ane Keohokalole Highway. It is being used to provide infrastructure for the Preserve and to build an Interpretive Center, which will serve as an entryway for educational groups visiting the Preserve and a repository and display area for artifacts recovered during archaeological excavations within the highway corridor. The Queen Lili‘uokalani Trust will act as long term caretaker for the Preserve. Pacific Legacy has provided archaeological support throughout this process, conducting data recovery excavations within the highway corridor, identifying and documenting the cultural sites within
the Preserve, and assisting in the preparation of preservation plans. A system of interpretive trails is presently being constructed to allow access to the various cultural sites located within the Preserve. The Historic Preserve Area and its associated Interpretive Center are intended to serve as places of learning where Trust beneficiaries, school groups and other visitors can gain a better understanding of the lives of the traditional residents of Keahuolū. It is hoped that this innovative paradigm can serve as a model for future cooperative efforts to balance the needs of the present with the celebration, interpretation, and preservation of our Islands’ fragile past.

Structure and Growth of the Leeward Kohala Field System
Thomas S. Dye, T.S. Dye & Colleagues, Archaeologists, Inc.
The leeward Kohala field system presents an unparalleled opportunity to investigate relative chronology. Results of recent research indicate that it is now possible to study the structure and growth of the entire field system remnant using computer software implementations of graph theoretic concepts applied to observations of agricultural wall and trail intersections made on aerial imagery and/or during fieldwork. A relative chronology of field system development with a resolution of one generation is a possible result.

The Evolutionary Ecology of Social Hierarchy in Leeward Kohala, Island of Hawai‘i
Robert J. DiNapoli, University of Oregon
At the time of European contact, Hawaiian society was organized into a complex hierarchical system with several ranked classes. Over the last several decades, anthropologists and archaeologists have explained the development of this complexity using a variety of explanatory frameworks, and Hawaiian social complexity continues to be an important topic today. Yet, on the whole, evolutionary ecological models have been given limited attention and when used, have not fully assessed the fit between model predictions and the empirical record. This paper is an attempt to compliment previous research by exploring the evolution of social hierarchy in Hawai‘i using a suite of theoretical models derived from evolutionary ecology and evolutionary game theory, in particular, the Ideal-Free and Ideal-Despotic Distribution models, economic defendability, and models of cooperation. The predictions of these theoretical models are evaluated using the archaeological record of the Leeward Kohala region on the Island of Hawai‘i.

Buried Landscapes and Misplaced Geography: The Fishponds of Wainanali‘i and Kīholo
Bobby Camara
On Hawai‘i Island, many fishponds and anchialine pools are situated along the shore of the North Kona district. That area has also been the site of active lava flows from Mauna Loa and Hualālai volcanoes that have buried numerous archeological sites, and during the last 200 years filled in several large fishponds. Among these are the ponds at Wainanali‘i and Kīholo, both buried in 1859 by lava flows erupted near the summit of Mauna Loa.

Since then, there has been confusion and debate regarding the locations and names of those ponds. Archival sources, fieldwork, and personal knowledge of the behavior of active lava flows were all used to resolve these issues.
SYMPOSIUM 2

Ancient DNA from Avifaunal Remains Reveal New Patterns of Pre-Historic Resource Use in an Arid Hawaiian Sub Alpine Region
Kealohanuiopuna Kinney (Dept of Ecology and Evolutionary Biology, Brown U.), Michael Bunce (Dept. of Environment and Agriculture, Trace and Environmental DNA Laboratory, Curin U. Perth, Australia), Duncan Menge (Dept. of Ecology, Evolution and Environmental Biology, Columbia U.), Andreanna Welch (School of Biological and Biomedical Sciences, Durham University), Helen James (Center for Conservation and Evolutionary Genetics, Smithsonian Institution), Jim Kellner (Dept. of Ecology and Evolutionary Biology, Brown U.), & Julie Taomia (US Army Garrison Pohakuloa, Cultural Resources Office)
Sub-fossil bone fragments too small to identify using morphological techniques are common in Hawaiian archaeological and paleontological deposits. We used high throughput DNA methodologies to examine the preservation of ancient DNA (aDNA) in thousands of unidentified avifaunal bone fragments from Hawaiian sub-alpine archaeological sites. Bone fragment material was organized into bulk samples by site and/or stratigraphic layer. A planetary ball mill was used to pulverize sub samples from the bulk into a fine homogeneous powder. We extracted aDNA from the powder using aDNA protocols in a dedicated aDNA lab. Preliminary analysis of aDNA sequences from the samples reveal a diverse range of taxa including endemic and extirpated taxa across sites dating back to 1000 years BP. These data offer new insights and questions about the mode and tempo of pre-historic resource use in the sub-alpine regions of Hawai‘i. How shelter sites were used in these regions is not well understood. This research contributes to both practical and theoretical understandings about the prehistoric dynamics coupling people, resource availability and the landscape.

LIDAR Imaging at Hawai‘i Volcanoes National Park: A New Tool for Documentation, Management and Interpretation
Caleb Houck, Dusten Robins and Summer Roper, Hawai‘i Volcanoes National Park
This Presentation will highlight how the Cultural Resource Management Division (CRM) of Hawai‘i Volcanoes National Park is using LIDAR technology to digitize archaeological resources including petroglyph fields, agricultural systems, historic structures and museum objects. In the summer of 2011, the CRM Divisions of Hawai‘i Island National Parks began using LIDAR to create detailed three dimensional models with sub-millimeter accuracy. There are many applications for this technology in the field of Cultural Resource Management. Precise spatial recording is useful for the documentation, preservation, management, research and interpretation of cultural resources. This talk will provide a look at the ongoing LIDAR projects in Hawai‘i Volcanoes National Park and will explore future uses of this exciting technology.

New Information from Old Samples: Another Look at the Wai‘ahukini Rockshelter (H8) Assemblage
Mara A. Mulrooney (Bishop Museum), Kelley S. Esh (UH Mānoa), Mark D. McCoy (Southern Methodist University), Simon H. Bickler (Bickler Consultants, Ltd.), and Yosihiko H. Sinoto (Bishop Museum)
Several sites in the Ka‘ū District of Hawaii‘i Island were investigated by Bishop Museum and University of Hawaii‘i archaeologists during the 1950s and 1960s. Some of these, including the Wai‘ahukini Rockshelter Site (Site H8, Bishop Museum Site No. 50-Ha-B21-006), were noted
by previous researchers as a possible location of initial settlement by Ancient Hawaiians. These sites also played a fundamental role in exploring changes in material culture through time in Old Hawai‘i. This paper presents preliminary results of a collaborative research program that includes the re-dating of Wai‘ahukini Rockshelter as well as the analysis of portions of the assemblage recovered from this site. Newly acquired radiocarbon dates, along with new analyses of materials curated in the collections of Bishop Museum and UH Hilo give us the opportunity to investigate not only when people arrived, but also how cultural practices changed through time.

**Kohala i ka Unupa‘a: Nurturing Resiliency in Hawaiian Socio-Ecological Systems**

Kekuewa Kikiloi, Kelley Uyeoka, Michael Graves, Joe Birkmann, Kamuela Plunkett, No ‘eau Peralto, Li‘i Bitler, Deandra Castro, Jesse Kaho‘onei, Kepo‘o Keli‘ipaka‘aua, Lilia Merrin, Pua Pinto, Kamakakūokalani Center for Hawaiian Studies, Hawai‘i‘nuiākea School of Hawaiian Knowledge, University of Hawai‘i at Mānoa

Archaeology has focused on understanding the nature of food production systems in the district of Kohala, Hawai‘i Island through extensive fieldwork and publications over the past decade. In the rainy windward ahupua‘a of Kohala i loko (interior Kohala) widely dispersed networks of ancient irrigated pond fields have been documented that represent the nexus where pre-contact Hawaiian society and natural ecological systems influenced each other and evolved together over time. Through this process, the term “Kohala i ka Unupa‘a,” or “Kohala of the hard stone,” was coined referring to the resiliency of the people and place. This past summer, Kamakakūokalani Center for Hawaiian Studies with the support of Kamehameha Schools, implemented a field methods program in mālama ʻāina resource management that investigated the role these systems can play in re-establishing eco-cultural health today. Through a month long training program we exposed students to interdisciplinary approaches to studying ʻāina and participating in community engagement. A restoration plan was developed for selected ancient agricultural sites that helped to properly frame archaeology in the context of existing Hawaiian community needs. It shifted the focus away from strictly archaeological goals to one that took into consideration the people and helping them come closer in reaching their future aspirations of sustainability, food sovereignty, and independence.

**SYMPOSIUM 3**

**Integrating Partnerships and Technology into Public Outreach at Pōhakuloa Training Area**

Brian Tucker, RCUH Pacific Cooperative Studies Unit (PCSU) in cooperation with U.S. Army Garrison-Pōhakuloa’s Cultural Resources Office

“A picture is worth a thousand words.” This old adage refers to the ability of images to capture attention and convey complex ideas or large amounts of data efficiently and effectively. As a Geographic Information Systems (GIS) Specialist working with Hawaiian archaeology, I find this especially important. Given the limited oral tradition that permeated through colonialism, the lack of pre-contact written historical record, and limited access to the wealth of post-contact Hawaiian language literature; images and spatial correlations provide definitive truths we can assess context and develop hypotheses from.

At Pōhakuloa Training Area (PTA) in Hawai‘i Island’s Saddle region, one of our work tasks is to support cultural resources outreach through the preparation of maps, posters, brochures and briefings in order to educate soldiers and civilian visitors on the management of
cultural resources. This supports the goal of the U.S. Army’s ecosystem cultural resources management program to conserve, protect and enhance the cultural resources, and comply with applicable Federal and state laws and regulations while improving the Army’s ability to conduct and maintain military readiness.

To best support outreach at PTA, we strive to create visually stimulating presentations. Integrating partnerships with various groups allows us to enhance this community outreach. Most notable for GIS is our University of Hawai‘i affiliation and the resources and research that we have access to. This presentation shares how the PTA Cultural Resources Program uses technology to maximize effectiveness in capturing audience attention and inspiring interest in archaeology.

**Documenting the Purdy House Site**
*Adam Johnson (Pu‘uhonua o Honaunau NHP) and Peter Mills (UH Hilo)*

Hawaiian cowboys (Paniolo) occupy a unique place in Hawaiian history. Jack Purdy was one of Hawai‘i’s most famous bullock hunters and a pioneer in the development of the ranching industry on Hawai‘i Island in the 19th century. His descendants have also played important roles in Hawai‘i’s ranching industry and include some of the most famous Paniolo such as Ikua Purdy. His homestead can be seen standing in Parker Ranch pasture land from Mana Road.

Members of the Purdy family, interested in seeing their ancestral homestead documented, engaged in discussions Dr. Peter Mills of UH Hilo, and the management of Parker Ranch to pursue detailed documentation of the site. These discussions led to National Park Service involvement to map the site using Light Detection and Ranging (LiDAR) technology. This paper will discuss the mapping techniques used to document this important site, what we have learned about the site to date, and the digital products we are producing for Parker Ranch and the Purdy family.

**Characterizing lava tube archaeological sites in the Mountain Lands**
*Julie M. E. Taomia, USAG-Pōhakuloa*

More than 200 lava tubes and other subterranean voids with archaeological materials have been identified at Pōhakuloa Training Area in the center of Hawai‘i Island. The lava tubes themselves and the archaeological remains within them vary considerably, and therefore summaries often result in a simple listing of sites lumped by type (lava tube site) rather than any real synthesis and analysis. Variability in the documentation by archaeological projects depending on the scope of the projects has also made comparison difficult. In this paper I propose a method for comparing lava tube archaeological sites that limits the impact of the nature of projects on analysis and allows for comparison between sites even when the material remains found within them are unique. This will allow for a richer characterization of the lava tube archaeological sites found in the Mountain Lands.

**Pa‘akai: The Kaena Point Salt Drying Area: An Archeological Perspective of the Traditional and Post-contact Hawaiian Salt Economy**
*Summer Roper, Hawai‘i Volcanoes National Park*

In the past salt was an extremely important and valued resource all over the world. It was and continues to be a biologically necessary item for human survival. Due to its extreme worth, salt was a politically powerful and profitable. Salt’s high value assisted in building alliances, securing empires, and even causing revolutions. There is archeological evidence of ancient salt
collection worldwide and many studies have taken place in various countries. These sites offer archaeological research opportunities to learn about past events and cultures and have led to a more thorough understanding of the role salt has played in shaping human history. In the Hawaiian Islands, salt procurement was also an important subsistence and commercial activity and the remnants of salt collection sites exist on the archaeological landscape. The survey and documentation in 2009 of the Kaena Point Salt Drying Area located along the coast of Hawai‘i Volcanoes National Park has provided an opportunity to learn about traditional Hawaiian salt collection. This project takes a close look at the unique archaeological resources found at Keana Point, discusses pre and post contact Hawaiian salt economy, and reveals the ways in which the archeological site represents broader patterns of Hawaiian history. This study adds Hawai‘i to the worldwide record of archaeological studies of salt procurement and aims to bring awareness back to the historical significance of this resource.

Reauthorizing Kānaka ‘Ōiwi Heritage Discourse at Kaloko-Honokōhau National Historical Park, Hawai‘i

Ruth-Rebeccalynne T. L. Aloua, Pacific Legacy, Inc.

This case study examines how the management practices of Kaloko-Honokōhau National Historical Park affects Kānaka ‘Ōiwi and communities the park was created to serve. This national park was established in 1978 to provide a center for Kānaka ‘Ōiwi to rejuvenate their culture by rehabilitating the landscape for traditional use. However, as of 2014, the Park Service has yet to achieve the goals set out by the United States Congress in 1978. The National Park staff continues to struggle to rehabilitate the cultural resources in the park’s legislative boundaries for traditional use that is, as deemed appropriate and desired by Kānaka ‘Ōiwi. I use documentary data and information from interviews to understand Kaloko-Honokōhau management history, policy, and practice. I give particular attention to the management of ancestral structures and places and to how management decisions are affecting rehabilitating them for use. I describe the shared goals of the interviewees and the Park Service personnel and provide recommendations to re-align National Park Service management practices with policy, to better fulfill the Congressional intentions.

European Influences on Ancient Hawai‘i

Captain Richard W. Rogers, Pacific Exploration Research Group

The Island of Hawai‘i stands as a volcanic beacon in the center of the longest distance, longest running trade route in the history of western commerce, that of the huge “Manila Galleons”. Cartographical documents indicate numerous “discoveries” of volcanic islands in the Mid-Pacific, prior to that of Captain Cook in 1779. Spaniards, Dutchmen, Englishmen and their ethnically mixed crews were known to have visited islands in 16 degrees north. Hawaiian oral traditions, compiled by 19th century Hawaiian historians, are rife with tales of foreigners visiting and even “governing” the Island of Hawai‘i. One popular legend tells of a shipwreck and details the location where survivors reached shore. Artifacts, once held by the Bishop Museum, establish the cultural significance given to this story in “pre-contact” times. This paper will examine this profoundly under-explored segment of Hawaiian History.
The Chronology of Heiau Building in Southeast Maui: Integrating High-Precision Coral Dating with Hawaiian Oral Traditions
Patrick V. Kirch (UC Berkeley) and Warren D. Sharp (Berkeley Geochronology Center)
Based on a limited sample of precise $^{230}$Th dates from coral offerings on Maui Island temples it had been hypothesized that the island's temple system rapidly expanded during the period from AD 1580-1640. We tested this hypothesis by obtaining an expanded sample of 46 new $^{230}$Th coral dates from 26 temples in Kahikinui District. Dates from both surface offerings and corals in architecturally integral contexts (placed in situ during temple construction) strongly agree in documenting a major phase of heiau construction in Kahikinui beginning ca. AD 1550 and continuing until ca. AD 1700. The precise chronology afforded by $^{230}$Th coral dating clearly resolves the timing and tempo of temple construction, shows that it corresponded closely with the reigns of Maui rulers credited in Hawaiian traditions with establishing and strengthening the first island-wide polity, and underscores the importance of monumental ritual architecture in the emergence of archaic states in ancient Hawai‘i.

Weaving Household Knowledge through Time
Kirsten Vacca, UC, Berkeley
This paper discusses the integration of moʻolelo and indigenous knowledge with Hawaiian archaeological research on pre-European contact households and gendered interaction. Similar archaeological studies center on the hale mua while the lives of women and commoners are less explored. The utilization of important oral traditions as a tool in archaeological investigation of social interaction and space use in the household promises an increasingly well-rounded understanding of the lives of all early Hawaiians. Recorded Hawaiian traditions relay the importance of the construction of space in the household (particularly with regards to gender), yet the static implementation of these records in the analytical process by archaeologists prohibits a nuanced understanding of the diversity of practice across regional and class boundaries. This research explores recorded moʻolelo and ancestral knowledge as an illustration of the inherent fluidity and complexity of the Hawaiian culture. The analysis weaves together traditions of space use and gendered interaction within the household with current scientific research methods in an effort to understand variability across the Nuʻu ahupuaʻa in Kaupō, Maui.

Research Design: Identifying Historic Properties Due to Be Damaged By Climate Change
Morgan E. Davis, SHPD Lead Archaeologist, Maui Section
Historic properties throughout Hawai‘i are subject to increasing pressures due to climate change, projected to be the most severe effects of any of the United States. These pressures include impacts from increasing effects of climate change. For Maui Island I am beginning a new analysis of those specific historic properties likely to be negatively affected by rising sea levels and associated shoreline retreats. Based on predications by the University of Hawai‘i, Mānoa’s Coastal Geology Group of a geological one-meter sea-level rise by the end of this century, I will describe the methods we will use to identify and record data for high-risk sites before predicted sea level rise causes damage.
SYMPOSIUM 5: LĀNAʻI

E hoʻohanohano ʻana i ka wā ma mua, a e hoʻolako ʻana i ka mua aku: Honoring the past, enriching the future
Regina Keʻala Hilo and Simon Seisho Tajiri, Honua Consulting

The E ʻIke Hou Iā Lānaʻi field school and cultural literacy program is currently in its second year. Admission to the program is competitive; students must currently be attending Lānaʻi High School or Elementary School, or be a resident of Lānaʻi. Place-based curriculum is used to inform students about historical, cultural, and/or archaeologically significant landscape features. Introduction to the Hawaiian language through cultural protocol, traditional Hawaiian stories, songs, and chants reinforce the relationship between kanaka, ʻāina, aloha, and mālama. Historical documentation provides a temporal context that informs students’ present-day observations in the scientific rigorous fields of marine biology, geology, and archaeology. Data gathered from this summer’s fieldwork include tape-and-compass mapping of kuleana terraces in Maunalei; pond interior profiling, wall profiling, and biodiversity survey of Waiaʻōpae Fishpond; Hulopoʻe tidepool biodiversity survey; and soil coring collection and analysis from Wiliwiliʻōpūhau, Maunalei and Waiaʻōpae. E ʻIke Hou Iā Lānaʻi encourages students to learn more about Lānaʻi’s rich cultural heritage and build the analytical skills to be tomorrow’s environmental stewards.

SYMPOSIUM 6: OʻAHU

Redating of the Kuliʻouʻou Rockshelter, Oʻahu, Hawaiʻi and Changing Resource Use through Time
Jennifer G. Kahn (College of Willim & Mary), Timothy M. Rieth (International Archaeological Research Institute, Inc.), Patrick V. Kirch (UC Berkeley), J. Stephen Athens, Teresa Ingalls, and Gail Murakami (International Archaeological Research Institute, Inc.)

Kuliʻouʻou rockshelter (O1) has a certain status as the first archaeological site in the Pacific Islands to be directly dated via the then newly introduced radiocarbon method. The original 946 ± 180 before 1950 date from the base of the rockshelter’s cultural deposit greatly influenced archaeologists’ views of regional cultural sequences in East Polynesia. We present the results of six new AMS 14C dates run on Kuliʻouʻou rockshelter wood charcoal identified to short-lived and medium-lived species. We utilize these data, along with a re-evaluation of the two dates obtained by Emory and Sinoto, to present a revised chronology for the Kuliʻouʻou rockshelter. In addition, we discuss new wood charcoal identifications from the two lower deposits at the O1 rockshelter for illuminating general vegetation patterns in the Expansion to Proto-Historic periods. Renewed analysis of the rockshelter’s faunal remains illustrates shifts in subsistence regimes through time. We end with a discussion of the broader implications of our revised chronology for the prehistoric sequence of Oʻahu Island and the settlement sequence for the Hawaiian archipelago.

World War II Prisoner of War Camp at Schofield Barracks’ East Range
Jaime Raduenzel, Jennifer Bellville-Marrion, and Sean Newsome, Oʻahu Army Cultural Resources Program

Archaeologists at the Research Corporation of the University of Hawaiʻi (RCUH) are conducting archival research and archaeological survey and mapping of a former World War II prisoner of war (POW) camp located at Schofield Barracks’ East Range on Oʻahu. The camp housed Italian
POWs from 1944 to 1946 after their surrender in North Africa in 1943. Ongoing research at the camp has the potential to yield new information about Hawai‘i’s role in World War II and the lives of the POWs and the U.S. servicemen who ran the camp. This presentation offers an overview of the history of the East Range POW camp, its potential for place-based education, and the preliminary results of RCUH’s ongoing research for the U.S. Army.

**Designing Archaeological Projects to Incorporate the Community: An Overview of Grant Projects Conducted in Hau‘ula Ahupua‘a, O‘ahu Island**

*Rosanna Thurman, Oceanic Archaeological Science and Educational Services (OASES)*

A series of grant projects sponsored by the Hau‘ula Community Association have utilized archaeology to enhance community outreach throughout the Koʻolauloa District of O‘ahu. This approach has required a dedicated archaeologist to conduct fieldwork, provide tours and presentations, teach school kids in outdoor environments, assist with the development of curriculum, and reciprocate learned knowledge with community residents. The continued archaeological and educational support supplied through the grant projects has provided an avenue to continue the discussion of Hau‘ula’s history and support knowledgeable local residents in providing sustainable management and care for cultural resources in their communities. An overview will be given on how each archaeological study has incorporated community events, school groups, and interested residents with projects being conducted within Koʻolauloa.

**Reflectance Transformation Imaging: Enhancing Petroglyph Management**

*Anthony Casciano and Torie Robinson, O‘ahu Army Cultural Resources Program*

Archaeologists encounter many challenges when documenting petroglyphs, especially in the varied environments of Hawai‘i. The time of day, amount of shadow/sunlight, and the extent of erosion can prevent viewers from successfully seeing the true characteristics of a petroglyph. These pieces of rock art are decaying and proper documentation and careful monitoring of these works is essential for future academic research and for the communities that maintain an active interest in archaeological and cultural sites.

Reflectance Transformation Imaging (RTI) is a photographic method capable of preserving the artistic information in petroglyphs across the Hawaiian Islands. RTI and its associated cutting-edge software, provided by Cultural Heritage Imaging, can reveal minute details about an individual rock surface impossible to pick up with the naked eye or record with conventional photography. Staff with the Research Corporation of the University of Hawai‘i (RCUH) and the U.S. Army have begun implementing RTI to better document and preserve the integrity of the petroglyph sites on O‘ahu’s Army installations.

Performing RTI outdoors in O‘ahu’s varying environmental conditions has presented several obstacles for the team. Persistent trial and error, however, have led to rewarding outcomes. RCUH and Army archaeologists are now able to record known and newly discovered petroglyphs in a way that better identifies individual features, from curved arms and running legs to even possible puppies. RTI can help determine the particular construction technique the artist used. Anthropomorphic figures that previously seemed blurred appear more distinct. Conversely, RTI can also show that some previously thought to be petroglyphs were in fact naturally formed. Archaeologists can also use RTI to identify human and environmental damages to these rocks. Monitoring a single petroglyph over a long period of time with RTI can show where, how, and if it is degrading.
While implementation of RTI on Hawaiian petroglyphs is still experimental, continued use of this innovative technology enhances the opportunity for pioneering this academic field and for improving its ability to fulfill Cultural Resource Management.

Kolekole, La‘amaikahiki, and Kūkaniloko: The solar nadir, landscape, and moʻolelo meet at Kūkaniloko

*Martha H. Noyes, University of Wales Trinity Saint David*

The solar nadir is one of the least studied of Polynesia’s celestial phenomena. Research centered on astronomical associations with Kūkaniloko provides data that ties together the solar nadir, landscape and star markers for the nadir, and the effort of Kila to bring La‘amaikahiki home to Hawai‘i. [presentation cancelled]

Training the Next Generation of Hawaiian Archaeologists: A View from the North Shore Archaeological Field School

*Pūlama Lima, Windy McElroy, James Bayman, and Ty Kāwika Tengan, UH Mānoa*

This presentation examines the mission, goals, and accomplishments of the North Shore Archaeological Field School. The geographic and cultural nexus of the field school is Kūpopolo Heiau, in Kailua, Waialua, O‘ahu, near Waimea Bay. The field school program is part of an ongoing collaboration between Kamehameha Schools and UH Mānoa Anthropology. The field school program is focused on: 1) providing Native Hawaiian and kama‘āina students with technical training in field archaeology, 2) involving North Shore residents and other stakeholders in the field school, and 3) integrating Hawaiian cultural protocol into the practice of local archaeology. Thus far, more than 40 students have completed the field school course, several students have initiated their professional careers in archaeology, and numerous community volunteers have participated in – and gained an appreciation for – the vitality of Hawaiian archaeology.

Kaka‘ako Stratigraphy: Hoʻopapa Lepo Likeʻole o Kaka‘ako

*Dr. Hallett Hammatt and Ena Sroat, Cultural Surveys Hawai‘i, Inc.*

Stratigraphic recording and interpretation of the complex stratigraphy within the urban environment of Kaka‘ako has been ongoing and had its onset with the archaeological monitoring of the first Hawai‘i Community Development Authority (HCDA) Improvement District 1 in the early 1980s during which there was massive excavation for utility upgrades and installations. Recently the pace of archaeological work, including stratigraphic recording and interpretation, has been associated with a large number inventory surveys of developments in private lots. As would be expected, there is a general sequence represented by stratigraphic units which occur over broad geographic areas and represent time stratigraphic marker horizons and have specific origins and minimal variation in sedimentary characteristics and cultural content. As more areas are documented, variations emerge representing specific localized former natural environments - marsh - small sand dunes and specific land modifications - fishponds, lo‘i, saltpans. This buried topography can best be described as the Kaka‘ako mosaic.

Recent projects in the ‘ili of Kukuluʻae‘o have led to specific identification of sediments which can be directly associated with the major late nineteenth century and early twentieth century salt making industry of the district. The linings of these former salt pans show intricate alternating layers of vegetation matter and marine clay. Overlying layers include the widespread varied deposits associated with dredging of the Ala Wai Canal in the 1920s, distributed as a
marine clay slurry over low-lying areas. General recognition of the nature and origin of the commonly occurring Kaka'ako stratigraphic units will hopefully result in agreement in use of standard labeling.

**SYMPOSIUM 7: KAUA‘I**

**Provenance and distribution of lithic material in the Hawaiian archipelago as inferred from non-destructive EDXRF and isotope geochemistry**  
*Steven P. Lundblad (UH Hilo Geology) and Peter R. Mills (UH Hilo Anthropology)*  
We identify a significant source of adze related material in archaeological sites throughout the Hawaiian archipelago originating from the Koloa volcanic series in east Kaua‘i. Trace element geochemistry, as measured by non-destructive EDXRF, is consistent with the “Keāhua I” source, previously identified as an adze workshop in the Wailua River Valley. We find material from this geochemical group in varying proportions in Hawai‘i. To confirm a Kaua‘i source, we analyzed two samples from leeward Hawai‘i Island and one from Kaua‘i for their Sr and Pb isotopic composition. These analyses confirm the flakes from this geochemical group found at the Kahalu‘u Rockshelter on Hawai‘i Island originated on Kaua‘i. Material from this geochemical group is present in many sites in the archipelago, implying that this relatively unknown adze workshop could rival that of the much larger, more visible, and well-known Mauna Kea quarry in its extent of interisland distribution.

**Kaneiolouma, Kaua‘i - A Renaissance**  
*Randy Wichman, Keao NeSmith and Dave Wellman, PLS*  
Kaneiolouma is the southern royal complex of the Kingdom of Kaua‘i. Having been protected from development the site is now, once again, coming alive. This three member panel presentation will provide a brief overview of the recent activities on the site, developments, progress and future plans. The presentation will consist of three parts as pertain to the Renaissance. The main topics of history of the site, cultural significance and revival, and applied science and technology are intended to whet the appetite for upcoming focused presentations during the proposed 2015 Kaua‘i Society of Hawaiian Archaeology conference.

**SYMPOSIUM 8: PAE ‘ĀINA O HAWAI‘I**

**State Historic Preservation Division: Where We’re Headed 2014-2015**  
*Dr. Alan S. Downer (SHPD Administrator) Theresa K. Donham (SHPD Archaeology Branch Chief)*  
During 2013-2014 SHPD addressed three of the four most pressing issues facing the Division. The overwhelming majority of the required actions and products in the Corrective Action Plan have been submitted, approved and accepted by the National Park Service. The back log in residential permit reviews has been eliminated; and most of the long vacant positions have been filled. The fourth issue – review and compliance backlog – has not been eliminated but has been addressed on various fronts, which will be discussed here, along with the other accomplishments during the past year.

The Division’s priority activities for the coming year will be presented and discussed, including our plans for digitizing paper reports and files, revising pertinent regulations and
listing Iolani Palace as a World Heritage Site. We will also touch on some of the intangible outcomes and recommendations made by staff to improve internal communication and SHPD’s public profile.

**Curating Ali‘i Heritage: Responsibility and Sensibility in Museums and Archaeology**
*Halena Kapuni-Reynolds, University of Denver*

The procurement and preservation of artifacts lay at the foundation of the museological and archaeological professions. What then, of the individuals who care for such collections? Framed using a comparative museological framework with an emphasis on indigenous curation, I focus on how ali‘i objects are cared for and interpreted by Native Hawaiian and Local curators and collections managers in Hawai‘i-based museums. Two institutions are explored; the Bernice Pauahi Bishop Museum (O‘ahu Island) and the Lyman House Memorial Museum (Hawai‘i Island). This research centers on museums and the ali‘i objects in their collections. However, I further reflect on the applicability of such research within archaeology, especially in the care of archaeological collections and sites associated with ali‘i. Understanding the tangible and intangible forms of Hawaiian heritage preservation is resourceful in enhancing the care of museum (and archaeological) collections.

**Recent Approaches to Digitizing Hawaiian Archaeological Collections at Bishop Museum**
*Charmaine Wong (Bishop Museum), Mara Mulrooney (Bishop Museum), and Summer Moore, (College of William & Mary)*

The growing demand for digitizing collections, including archaeological assemblages, has driven many institutions to initiate programs that utilize current technologies to facilitate both curation efforts and access. Bishop Museum’s Anthropology Department began digitizing its Hawaiian collections in 2008 through the Hawaiian Archaeological Survey (HAS) project. This project is currently being conducted in collaboration with the Office of Hawaiian Affairs (OHA) and through the continued efforts of interns, volunteers, researchers, and staff members. To date, more than 80,000 items have been inventoried, rehoused, and digitized. This paper outlines recent efforts by the Anthropology Department at Bishop Museum to digitize large and unique collections of related artifacts, field documents and maps, photographs and negatives, and project reports and department publications.

**The Lineages of Hawaiian Archaeology from Dr. William T. Brigham to Today**
*Jeff Yamauchi, RCUH/Pacific Cooperative Studies Unit*

Since Charles Reed Bishop appointed William Tuffs Brigham to be the first director and later curator of Bernice Pauahi Bishop Museum from 1898 to 1918, Hawaiian archaeology has dramatically changed, especially with the development of cultural resources management in the private sector playing a major role during the 1960s to the present day. The history of Hawaiian archaeology can be perceived as a lineage since the early development can be traced by lineal descent beginning with majority of archaeologists starting their careers at Bishop Museum. An overview of the lineages of Hawaiian archaeology within the cultural and social context of Hawai‘i over time presents the forces and personalities that shaped the profession. By understanding our Hawaiian archaeology heritage, we can better understand the present circumstances and move forward to a more inclusive and comprehensive manner.
Kaiāulu: Community Archaeology: Making Room For Community Concern In Academic Archaeological Instruction
Kamuela Plunket, UH Mānoa
As a student in the North Shore Field School (UH Mānoa 2013, 2014) and the Hawai‘i Historic Archaeological Research Program (University of New Mexico 2013), I report ways in which community concern has been given space to interact with archaeological instruction. Community concern here is represented by Hawaiian cultural values, sustainability, and giving voice to those who live in or share connections to the geographical region in which archaeological research and instruction is being done. By reviewing scholarly dialogue on the topic of ethics in anthropology this presentation proposes that this trend of incorporating community concern in archaeological instruction is not just innovative it is pono.

SYMPOSIUM 9

A Case of Experiential Learning and Archaeology: The Voyage of the Charles W. Morgan
Suzanne S. Finney, UH West O‘ahu
Finding experiential learning opportunities to use as teaching tools for archaeology classes can be understandably challenging. This paper offers one example of experiential learning from the 38th voyage of the Charles W. Morgan which took place this past summer, and what can be transmitted to classes from the experience about topics including archaeology, whaling, and 19th century sailing.

The Charles W. Morgan is the last 19th century American whaling vessel still afloat. Built in 1841, the whaler completed 37 voyages in 80 years. In the 20th century the Charles W. Morgan was moved to Mystic, Connecticut and is now a primary attraction of Mystic Seaport. Recently restored for sailing, the 38th voyage of the Charles W. Morgan took place this past summer. The voyage was an opportunity for scholars, artists, writers and researchers to glimpse the world of whaling by sailing on the vessel during its voyage around southern New England.

The ‘Value’ in a List: a statistical analysis of National and State Register listings in Hawai‘i
Nick Belluzzo and Regina Hilo
The National and State Registers of Historic Places are intended and designed to list and, by extension, protect places worthy of preservation. Ostensibly, the Registers function to reflect those places valued by the society within which they are situated. However, the listings can become populated by a preponderance of resources of a single type, or they can fail to directly highlight those cultural heritage values esteemed by society, such as intangible cultural heritage (ICH). While ICH can be indirectly tied to a listed place, assessing adverse effect to an intangible feature can be convoluted. The consequence is that a bias in preservation can become inscribed.

This paper will present a statistical analysis of properties in Hawai‘i listed on the National and State Registers to better understand the type and distribution of listed properties. The results will assess the balance of resource types as a reflection of various stakeholder values. Finally, discussion will consider how effective the National and State Registers are at addressing and ensuring community preservation priorities, as well as providing suggested considerations and alternatives.
I hea lā ‘o Kahiki? Where is Kahiki? A comparative analysis on various archaeological sites throughout Hawai‘i and a single, yet well-known, archaeological site in Sāmoa.

Kaulani Rivera, Dept. of Anthropology, UH Mānoa

One of the more debated topics within Hawaiian Archaeology is the discussion of our ancestral origins. Various sub-disciplines within anthropology have made connections between Hawai‘i and the rest of the Pacific and continue to do so in attempt to display the inter-connectedness of our people with our supposed predecessors. This study compares various archaeological sites of Hawai‘i (Ka‘ūpūlehu, Kohala i loko, and Kalaupapa to be specific) to the Saua Site in Sāmoa as observed through Ethnohistoric data and field survey in attempt to add to this anthropological discussion. I draw from previously conducted archaeological surveys for the specific areas mentioned as well as my own personal field surveys to complete this study.

Starch Grain Analysis on Sediment Core UC-SH1 from Ulong Island, Palau

Gina Farley, Australian National University

Representing the first starch grain analysis undertaken in Palau, this study analyzed 20 samples from a sediment core extracted from a sinkhole on Ulong Island. The main research aim was to identify native and introduced plant species at varying depths in order to establish the date of human colonization in the ‘Rock Islands,’ as well as identifying phases of occupation at the site before the region’s eventual abandonment. Starch grains were examined with a combination of brightfield and cross-polarized light microscopy and were identified to species whenever possible using a combination of linear discriminant analysis and visual inspection. Although limitations associated with the statistical analysis and the reference collection presented significant challenges to the identification process, the recognition of morphological types and over-arching trends in starch quantities and proportions yielded potentially useful information with regards to human occupation at the site.

New Insights from Stable Isotope Analysis of Polynesian Archaeofauna: A Case Study from Mangareva

Jillian A. Swift, Oceanic Archaeology Laboratory, Dept. of Anthropology, UC Berkeley

Carbon and Nitrogen stable isotope analysis of tooth and bone collagen has proven an effective tool for investigating foodwebs and paleo diets in the Pacific. This talk will highlight current applications of archaeofaunal stable isotope analysis to the study of Polynesian landscape transformation and human-animal interaction. Dietary reconstruction of Pacific rat (Rattus exulans) remains from recent excavations on Mangareva (Gambier Islands) show significant changes in δ¹³C and δ¹⁵N values through time. In particular, rat diet at all three excavated sites demonstrate steep declines in δ¹⁵N, coincident with the disappearance of most avifaunal species from the Mangarevan zooarchaeological record. Temporal dietary variability demonstrates the potential for this commensal omnivore to provide a new line of evidence for understanding changing Polynesian environmental conditions on a localized scale.
POSTERS

What Rock Walls Say: Wall Documentation at Keʻāmuku Sheep Station
Jesse Gunnels, Kira Mullen, David Doig, and ‘Iolani Ka‘uhane, RCUH)/Pacific Cooperative Studies Unit (PCSU) in cooperation with U.S. Army Garrison- Pōhakuloa’s Cultural Resources Office

With rolling green hills and sloping gullies, Hawai‘i Island supported a thriving ranching industry. Ranching transformed the physical landscape, systems of land tenure, and economics of the Saddle Region. In 1793, Captain George Vancouver presented King Kamehameha I with sheep and cattle. In the next several decades, they roamed the slopes of Mauna Kea, Mauna Loa, and Hualalai, causing permanent alterations to the landscape. Nestled between Mauna Kea and Hualalai, the Keʻāmuku Sheep Station holds a testament to the rich legacy of ranching in the uplands of Hawai‘i Island. Rock walls make up a large portion of the ranch sites yet few systematic studies have focused on the walls themselves.

In order to monitor the condition of a rock corral feature at Keʻāmuku Sheep Station, the RCUH team implemented a baseline study. This poster discusses the methodology and preliminary results of this pilot study, focusing on what the data reveals about past ranching practices and individual actors on the landscape reflected in corral wall construction. We recorded the construction methods, wall dimensions, wall condition, site formation processes, and took representative photographs and will disclose patterns discovered. Wall characteristics show broader patterns of landscape change over time as Hawai‘i transitioned out of the sheep and cattle ranching enterprises of the mid to late-20th century and warrant further investigation.

Nā Wai o Waiʻōhinu
Polani Kahakalau, Hawai‘i Community College Student, Wahi Kūpuna Internship Program

Since ancient times till today the source of freshwater plays an important role in Hawai‘i. Water is the source of life to all things. The source of freshwater is very precious especially in the ʻāina, or land, of Kaʻū. The focus of this research project was to identify and compile the historical information regarding the waters of Waiʻōhinu Ahupua‘a in the moku of Kaʻū. The goals were to gather information through historical research, various moʻolelo, archaeological surveys and ethnographic interviews in order to compile a comprehensive and holistic understanding of this very precious resources in an area that is not usually associated with the wealth of water.

Nā Wahi Pana o Hīlea
Lyle Auld, Hawai‘i Community College Student, Wahi Kūpuna Internship Program

In July 2014, the 2014 Wahi Kūpuna Internship Program cohort, He Lua ‘Ole Mauna Loa, had the opportunity to tour the ahupua‘a of Hīlea Iki and Hīlea Nui with kamaʻāina from Kaʻū. My kuleana for this huaka‘i was to document the time we shared with the kamaʻāina and to gather as much information on Kaʻū, in particular, the wahi pana of Hīlea, Kauwā, Kaʻiholena, Kūmauna, Pāneʻeneʻe, Makanau, Kohaʻikalani, and Imakakaloa Heiau. Visiting these cultural sites with our hosts, and being at these wahi pana to see them with my own eyes was priceless. These experiences have given me more understanding and respect about our Hawaiian ancestors and have strengthened my piko to this ʻāina of Kaʻū.

Ulu Pono Punaluʻu
Lesley Kehau Puou, UH West Oʻahu Student, Wahi Kūpuna Internship Program
Punaluʻu is a well known wahi pana amongst the kamaʻāina who reside on Hawai‘i Island and by tourists who travel from around the world. However, it holds a much deeper sense of place to the people of Kaʻū. Situated between Wailau and Mohokea ahupuaʻa, Punaluʻu is known for its black sand landscape against pāhoehoe and aʻā lava flows. The name Punaluʻu means “coral dived for” which depicts the history of this place as an ancient fishing ground as well as a place known for collecting fresh water. Punaluʻu’s shoreline naturally blends with Wailau and Ninole ahupuaʻa forming a complete cultural landscape that should be noted and acknowledged in this context. This shoreline functioned as a thriving community, which provided its people with rich food sources to sustain them physically and religious structures to sustain them spiritually.

Land-Use History of Kaʻaluʻalu Bay, Kaʻū
Hattie Gerrish, UH Hilo Student, Wahi Kūpuna Internship Program
To the casual observer today, little remains at Kaʻaluʻalu Bay to indicate the former importance of this rare natural harbor that was in continuous use from prehistoric times up until recent years. The story of Kaʻaluʻalu - fishing village, landing, and cattle exporter - lies scattered throughout the historical and archaeological records, oral history, and the recollections of families with connections to the site. This paper attempts to gather these fragments into a synthesized history of the site with a focus on land use. The results of this effort suggest that the site’s history could be viewed as four approximate stages, with overlap between them, and some continuity, particularly between the first and second stages. During the first stage, Kaʻaluʻalu was a fishing village and canoe landing. Transition to the second stage, in which the bay served as a stopping place for sailing ships and steamships, began with Captain Cook in 1779, and was complete by the mid 19th century when the bay became a part of regular steamship routes. The third stage is marked by the beginnings of cattle ranching near Kaʻaluʻalu in the 1870s, and ends when the bay was no longer used to export cattle. During the fourth stage, which extends to the present, the site was gradually abandoned with the exception of fishing and recreation. This synthesis has benefited from ethnographic research and the methods of historical archaeology, but it is certain that additional information on Kaʻaluʻalu’s history remains hidden in the physical remnants of the past that have largely gone unstudied at this site.

Applied Archaeology at UH-Mānoa: Building Capacity in Hawai‘i and the Greater Pacific
James, Bayman, Dept. of Anthropology, UH Mānoa
The MA track in Applied Archaeology at the UH-Mānoa is designed to train the next generation of professional non-academic archaeologists who seek to be effective advocates for the study and preservation of historic sites in Hawai‘i and elsewhere in the Greater Pacific and Asia. Although institutions throughout the continental United States offer graduate training in applied archaeology, our program at UH-Mānoa is unique in its geographic and cultural focus. We recognize the increasing importance of archaeological employment opportunities in our state through public and private sectors of cultural resource management (CRM) and historic preservation. In fact, compliance with state and federal legislation that pertain to archaeology and historic preservation underlies most public and private funding for professional archaeology today. Consequently, many private firms, governmental agencies, and non-profit institutions employ MA level archaeologists to conduct CRM investigations, manage archaeological collections, and/or engage in community outreach and public education. These growing areas of
professional archaeology now far surpass the demand for academic archaeologists. This poster features various dimensions of the Applied Archaeology Program at UH-Mānoa.

Archaeological Collections Status at the UH Mānoa Department of Anthropology
Mark W. Oxley (UHM Dept. of Anthropology) and Jo Lynn Gunness, (UHM Dept. of Anthropology [retired])
Over its 80-year history, the Department of Anthropology at the University of Hawai‘i at Mānoa has curated numerous archaeological collections from a variety of research projects in Hawai‘i and throughout the Pacific including UHM sponsored archaeological field schools, faculty and graduate research as well as State Projects. Temporary solutions have been implemented over the years to address a critical shortage of space for the collections, but no long term solutions have come to fruition. In 2010, the department began to transfer many of its collections to other facilities. To date, more than 700 boxes have been transferred to other locations including the Bishop Museum, UH Hilo, Hawai‘i State Parks and several international institutions. This poster presentation will provide a status update on the remaining collections at UHM as well as provide locational information for the materials that have since been removed.

The Timeline of Hawaiian Archaeology from Dr. William T. Brigham to Today
Jeff Yamauchi, RCUH/Pacific Cooperative Studies Unit
Since Charles Reed Bishop appointed William Tuffs Brigham to be the first director and later curator of Bernice Pauahi Bishop Museum from 1898 to 1918, Hawaiian archaeology has dramatically changed, especially with the development of cultural resources management in the private sector playing a major role during the 1960s to the present day. The history of Hawaiian archaeology can be perceived as a lineage since the early development can be traced by lineal descent beginning with majority of archaeologists starting their careers at Bishop Museum. An overview of the lineages of Hawaiian archaeology within the cultural and social context of Hawai‘i over time presents the forces and personalities that shaped the profession. This poster will be a graphic timeline of Hawaiian archaeology from late 19th century to the present, contextualized within the social and cultural highlights of that given period.