

V. ARCHEOLOGICAL ASSESSMENT

The management of archeological resources at HAVO is a daunting task. HAVO is a large area with a rugged, dangerous landscape, one in which the archeological remains are under constant threat of natural destruction. HAVO is not categorized as a “historical park,” but it has a large number of archeological sites (recorded and unrecorded) and as the land of Pele, it is a setting of unique cultural value. Interviews with the cultural resource staff and review of the archeological program make it clear that the staff meet the challenge of the “daunting task” with enthusiasm and creativity, and as effectively as the limited resources allow. The following assessment reviews the status of the archeological resources in this framework.

ARCHEOLOGICAL INVENTORY AND POTENTIAL FOR AS-YET-UNIDENTIFIED ARCHEOLOGICAL RESOURCES

Figure 24 (see above) indicates the areas where archeological surveys have been carried out. The surveys, however, vary in intensity of coverage and detail of recording. Figure 28 shows areas where additional archeological inventory survey needs to be conducted to complete coverage at equivalent levels of recording, with a general assessment of the potential for unidentified archeological sites. Recommendations for continuing inventory survey are included in the Research Design (see Section VII).

ARCHEOLOGICAL SITES AND THE CONDITION THEIR CONDITION IS IN

At HAVO, the “condition of archeological sites” is an oxymoronic phrase that may seem like bureaucratic black humor. Over the past 20 years, a significant number of recorded sites have been buried under lava—they have no *condition*: they have become one with the landscape. Appendix A contains the entire list of recorded sites at HAVO; following an assessment by park staff, the final version of this list should have a category “destroyed.”

For recorded sites that have not been destroyed by lava, “site condition assessment” has been an on-going program at HAVO and the summary information is being prepared by park staff.

RESEARCH, ANALYSIS, AND REPORT PREPARATION

The majority of the archeological investigations at HAVO have been site survey and inventory and associated Section 106 actions. The inventory site records are maintained in paper form as well as in GIS and ASMIS. Inventory reports have also been produced for most projects. Early inventory efforts were conducted by the B.P. Bishop Museum (Emory, Cox et al. 1959; Smart et al. 1965), but over the last three or four decades, most of the work has been conducted in-house. The overall quality of the inventory reports from the early work of Ladd (e.g., 1972a) to the present has been good, but gradually improving with increased attention to analysis and in recent years, with advances in production methods and presentation quality (e.g., Moniz Nakamura 2003a).

The focus on analysis of the archeological remains (not simply site inventory) should be noted as an outstanding aspect of HAVO reports. Examples of excellent archeological research include Ladefoged

et al. (1987), Carter and Somers (1990), Moniz Nakamura (2003a), Durst and Moniz Nakamura (2003), and Glidden (2006). In fact, one of the exemplary analytical reports in Hawaiian archeology in general is the study of Waha'ula Heiau by Masse, Carter, and Somers (1990), which combines information from excavations, lava flow research, and Hawaiian traditions to formulate a remarkable model of site development and associated ritual behavior.

Not all inventory research has been published, nor all excavations analyzed and published, but there is an on-going program with the goal of completing these projects.

PUBLIC INTERPRETATION

The great majority of the public certainly comes to HAVO to see volcanoes and volcanic activity, and if they have any interest in the cultural aspect of the park, it takes the form of some bowdlerized version of Pele. The park itself has given little attention to cultural interpretation for the public, the main exceptions being access to and interpretation of Waha'ula Heiau (now destroyed) and the Pu'uloa Petroglyph Field (Site 23271). Recognizing that HAVO is not categorized as a historical park, this has nonetheless been a major deficiency, but one that park staff is working to improve. The park website now has a valuable cultural summary and there are several planned projects for public interpretation.

A MATTER OF PRIORITIES

In the non-experimental sciences like archeology, recording and description can never be complete. But unlike many other non-experimental sciences, archeology cannot count on its subject matter being indefinitely accessible for continuing study. For most national parks, this tends to be a long-range problem because site deterioration and destruction is a relatively slow process of natural deterioration, weathering, vandalism, and occasional natural disaster such as flooding. But for parks that have sites in dynamic environments, such as rapidly eroding coastlines or active fault lines, this is an immediate concern. For HAVO, with active volcanism and associated natural disasters, the question of recording site information is an urgent concern that can be expressed as a question of priorities. How can the limited effort be most effectively focused and most efficiently conducted? The comments on survey and related research address this, but the larger framework also involves balancing such things as Section 106 compliance versus Section 110 responsibilities, giving only the minimally necessary attention to minor ARPA matters, and carefully reviewing how the effort required to record and maintain site information can be conducted so that the usefulness of the information matches the cost of producing it. "Universal" recording forms for sites, features, and excavations that categorically demand highly detailed information represent the epitome of inefficiency and wasted effort. This is the altar of SELGEM, where sacrifices are made to the deities of spurious accuracy.



Figure 28. Areas of HAVO without survey or with limited survey, showing areas recommended for high priority survey based on site potential.

VI. CULTURAL RESOURCES AND ARCHEOLOGICAL “SITE” IDENTIFICATION AND INFORMATION MANAGEMENT

As discussed in Section I and summarized in Appendix G, the NPS categorizes archeological sites within a complex framework of cultural resources, and at the same time individual sites are included in several recording systems, including the LCS, the NRHP (under a number of possible categories: eligible, nominated, and listed), and ASMIS (which is used to list all “sites” for a park regardless of LCS or NRHP classification). The present section is a discussion and set of recommendations regarding archeological site definition and identification, and associated information management. (The subject addressed here does not include concerns about the physical management of sites.)

ARCHEOLOGICAL “SITE”: CONCEPTUAL AND PRACTICAL CONCERNS

Archeologists do not find sites. Archeologists find material remains of human activity and then segregate these into spatial units called “sites.” There are two different goals or purposes that drive site identification. The traditional purpose that guides analytical site identification is scientific analysis and interpretation. A more recent purpose that guides site identification is the pragmatics of cultural resource management, that is, how to partition the material remains on the landscape in some way that is practical for the actions of historic preservation compliance.

Within the framework of scientific research, the archeologist uses a set of criteria to segregate the physical remains as constructs (that is to “create sites”) related to patterns of human behavior.⁷⁰ To “create a site” in an analytical manner is to identify a pattern of material remains and deposits on the landscape, delineate that pattern with a physical boundary, and then assign some form of discrete identification (a site name, or more commonly today a site number). Thus, an *archeological site* is a *construct* that refers to the location of the physical remains of identifiable human behavior. However, even given a similar set of criteria for relating behavior and remains, archeological identification (creation) of sites will vary depending on the criteria of scale for site definition. Scale, and thus site definition and identification, can vary, ranging from recognition of (1) the material results of a single human activity or event, to (2) material results of an integrated set of related human activities, to (3) material results of an integrated cultural system. Site identification and bounding thus reflects an understanding of the coherence and patterning of behavior that produced the material remains, and/or an understanding of the research potential of the material remains.

Archeological “site” creation or definition for purposes of cultural resource management is commonly framed in terms appropriate for NRHP eligibility review, with concern for how Section 106 will be addressed. This is discussed in detail below.

⁷⁰ Casual site identification may be based solely on clustering of physical remains without reference to behavior, usually based on prevailing convention of what a site is.

In Hawai'i, a common set of precepts by which sites are "created" has never developed and there is seldom a recognition of the purposes, analytical or managerial, for site definition. There are many consequences of this, including inconsistency, sometimes meaningless groupings of features, and residual areas of cultural remains that are not included as or within sites. This complicates the scientific and the management goals. Further, for the national parks in Hawai'i, each park has a unique history of how archeological sites have been recorded and numbered, but common to these histories is a confusion of multiple recording and numbering (for HAVO, this is discussed in Section IV; also see, e.g., Tomonari-Tuggle and Tuggle 2006a). The problems of site numbering and recording in Hawai'i (and elsewhere) derive in part from the evolution of what is recorded as a site. There has been increasingly detailed recording (based on concepts such as settlement pattern, site catchment systems, and landscape archeology) that has not been accompanied by a complementary evolution of the means to define sites.

In sum, it can be argued that "site" is the basic unit of archeology and historic preservation. It should be carefully "created" for analytical purposes and its significance carefully described for management purposes.

"SITES" AT HAVO

Review of HAVO archeological reports and ASMIS files indicates that (in addition to numbering problems) there is no prevailing concept or standard for "site definition," which has resulted in a great deal of variation in what is called a site and in determining boundaries of sites.

Recording of information about sites in ASMIS files is also inconsistent and involves questions of source of information, dates of site inventory, and NRHP status. A review of reports and site files also indicates uncertainty regarding the NRHP status of many sites. Some reports describe a site as "eligible" for the NRHP, but it is unclear if this is a recommendation or if it based on a formal determination of eligibility, and statements in some reports regarding site eligibility to the NRHP indicate a lack of familiarity with the NRHP process. Further, for the NRHP, what constitutes a site involves more than archeological sites (see NRHP discussion below), which emphasizes the need for clear conceptualization of "site."

The review of site matters also involves specific practical matters at HAVO, such as how destroyed sites are to be categorized, how to deal with the re-recording of sites and recognition of unrecorded features and potential boundary change, how to many historic features (such as those on the LCS but not in ASMIS), and how to recognize traditional places. Recommendations regarding these matters are proposed below.

NATIONAL REGISTER OF HISTORIC PLACES

For federal agencies, managements of historic properties (including archeological sites) is mandated by the NHPA and supporting regulation. The core of this management is the identification of "significant" sites, that is sites listed on or eligible for listing on the NRHP.

NRHP AND THE DEFINITION OF SITE

The property categories for the NRHP are as “districts, sites, buildings, structures, and objects” which are defined in 36 CFR Part 60 (*National Register of Historic Places*) and in National Register Bulletin 15 (*How to Apply the National Register Criteria for Evaluation*).

- A **district** “possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development” (NR Bulletin 15:5).
- A **building** is a constructed facility intended to shelter human activity. However, “If a building has lost its basic structural elements, it is usually considered a ‘ruin’ and is categorized as a site” (NR Bulletin 15:4), specifically an archeological site (see below).
- A **structure** is a constructed facility that is not a building or an object, including such things as bridges, dams, roads, and fences. This category also includes aircraft and ships, although these are often mistakenly called objects. Like a deteriorated building, a deteriorated structure is categorized as an archeological site (NR Bulletin 15:4).
- An **object** is a constructed feature that is “primarily artistic in nature or ...relatively small in scale and simply constructed” (NR Bulletin 15:5). It is designed and set in a specific locale, such as a monument or a fountain.
- A **site** is “the *location* of a significant event, a prehistoric or historic occupation or activity, or a building or structure, *whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archeological value regardless of the value of any existing structure*” (NR Bulletin 15:5, emphasis added).

NRHP is a listing of historic properties, not just archeological sites and in fact the definition of site includes much more than the archeological. By the NRHP definition, a site is a *place* of cultural value and significance. Although this may confound an “archeological” inventory of sites, this is a definition ideally suited to the landscape of Hawai‘i and its cultural resource management in that the traditions provide a remarkably detailed cultural overlay of *places*, by means of culturally defined space (from the smallest cultivation plot to the kingdom), by means of the naming of an innumerable number of places, and by means of the traditions and histories associated with those places. Archeological remains are part of the landscape that has this cultural overlay.

Analytically, there are three sub-categories of site as employed in the HAVO AOA:

- an *archeological site*: physical remains of human activity, such as old villages, rock shelters, abandoned gardens, artifact scatters, and petroglyphs (and including deteriorated buildings, structures, and objects, that is categories of property that have become ruins)

- an *historic event site*: the geographic location of an historically important event or events, regardless of whether there are any physical remains (archeological sites are also historic event sites)⁷¹
- a *traditional place*: a legendary place or a place with a traditional place name. Such a place may be a natural feature and it may or may not have any archeological remains. If this is identified as a “significant site” to an ethnic group, particularly a native population, it has come to be called a TCP (traditional cultural place or property) as coined by Parker and King (1990).⁷²

For the purposes of the NRHP, a site is a physical space and thus has to have a boundary. However, this does not constrain the potential boundaries of the “effect” in a Section 106 review. That is determined by how the significance and value of the site are described, and carelessness regarding this is a major failing of most site descriptions for Section 106 purposes. An action is evaluated for effect on *significance*, not on the site per se. Thus regarding boundaries, if a site is significant, for example, as a traditional place for observing sunrise, then any action that results in blocking that view plane may be a negative effect, even though the action is outside the boundary of the site itself.

NRHP SITES AT HAVO

Eight historic properties (sites, structures, and buildings) and one historic district are listed on the NRHP (Table 15, Fig. 29). The Puna-Ka‘ū Historic District includes eleven site complexes and one general category for eligible sites within the district. This district was created for HAVO in the early years of compliance with the NHPA, but because of the limitations of survey at the time, it did not include the whole area of HAVO. Sites identified with the district may be added to the district as contributing features. A number of sites in the HAVO ASMIS files are identified as “listed/documentated” on the NRHP as contributing members to the district, but it is not clear if these have been formally recognized. There is no clear record of eligibility evaluations for other sites at HAVO.

⁷¹ The term “historic event site” is not commonly used, but is employed here to distinguish it from other types of sites.

⁷² The Parker and King definition of a TCP is idiosyncratic (for example, the reference to “continuous” use in their definition) and despite the fact that their definition is frequently quoted, it should not be used as a guide to the listing of traditional places as NRHP sites. As King has later clarified, a TCP is not a NRHP category, it is simply a kind of site, equivalent to house site or rockshelter.

Table 15. HAVO Properties Listed on the National Register of Historic Places.*

State Site Number	NRHP Name	NRHP Property Type	NRHP Criteria
05501	‘Āinapō Trail (aka Menzies Trail)	Structure	Information Potential, Architecture/Engineering, Event
05502	Kīlauea Crater (aka Ka Lua o Pele)	Site	Information Potential, Event
05503	Puna-Ka‘ū Historic District **	District	Information potential, Event
05504	Mauna Loa Trail	Site	[no information]
05505	1790 Footprints	Site	Information Potential, Event
05506	Whitney Seismograph Vault No. 29	Building	Event
05507	Wilkes Campsite	Site	Person, Information Potential, Event
05508	Old Volcano House No. 42 (aka 1877 Volcano House)	Building	Event, Architecture/Engineering
19429	Ainahou Ranch	Building	Architecture/Engineering, Person

* NRHP Name, Property Type, and Criteria are taken from the records of the NRHP.

** Formally recognized contributing sites are Poupou-Kauka Village (HV-250+), Waha‘ula Heiau (HV-276+); Ka‘ili‘ili Village (HV-288+); Fisherman’s Cave (Site 22726); Kamoamoā Village (HV-300+); Lae‘apuki Village (HV-323+); Pu‘uloa Petroglyph Field (Site 23271); Puna-Ka‘ū Coastal Trail (Site 21316); Keauhō Landing (Site 19447); Kūē‘ē Ruins (Site 25938); Pulu Factory (Site 21215).

“SITES” AND SPATIAL INFORMATION AND MANAGEMENT

A common element of all of the definitions of site (in archeological terms and in NRHP terms) is *place*, physical, map-able space in the real world.⁷³ Thus the solution to problems of site delineation and data management may be found in the management of space and spatial information.

⁷³ For analytically defined archeological sites this involves more than simply drawing a line around archeological features, the identification of boundary is part of the analytical problem. Identifying a site boundary as an analytical process is even more obvious for historic event sites and for traditional sites.

In the past, the accuracy and precision⁷⁴ of archeological spatial data have been of a low order because of the complexity and cost of acquiring such data—in practical terms, high quality spatial data had to be obtained by professional engineering surveys. Further, manipulation of spatial data has been difficult, relying largely on drafted maps and photographs. The development of GPS and GIS has now changed these conditions and archeological spatial data of high quality can now be obtained and analyzed as a routine part of archeological investigation and site management, although the level of use of these methods remains relatively low as the discipline experiments with the best ways to employ them for archeological purposes.

HAVO has GIS and GPS technology and thus is in a position to be able to make major advances in spatial management of archeological information.⁷⁵ Archaeological and cultural data can now be mapped in great detail and with high accuracy against landscape imagery (high-resolution aerial/satellite photographs, as well as detailed flow maps). These data can be controlled by a combination of GPS-based coordinates and a spatial referencing system (such as a grid, lava flows, or a combination of the two⁷⁶). Initial efforts in the use of GIS for management, display, and manipulation of spatial data are contained in the existing HAVO GIS system, and these are reflected in the recent HAVO reports, and this can be taken in a direction of spatial management that allows archeologists to have control of their spatial data equivalent to that of astronomers, for example.

GIS-managed archeological data provides the opportunity for archeological analysis that has previously been difficult or impossible, but it also provides the means to “create” sites for specific purposes, with one of the important purposes being the bureaucratic management of archeological information (such as ASMIS recording and Section 106 reviews). In other words, the problem of the conflict between the analytically-defined “site” and the bureaucratically-defined “site” can be eliminated because “site” does not have to be the primary unit of archeological recording and investigation. The primary unit can be geographic space.

⁷⁴ These terms are used here in their scientific sense, accuracy referring to the reliability of data, precision to the scale within which measurement error is calculated.

⁷⁵ This of course requires the resources (human and technological) to do so, and these should be a HAVO priority.

⁷⁶ In the 1960s and 1970s, NPS archeologist Ed Ladd employed a grid system for archeological mapping within the parks, and Stell Newman expanded this system in the research design for investigations at Lapakahi, Hawai‘i. These efforts were limited and never completely developed because of the limitations of ground control of spatial data and graphic management at the time, as discussed in the main text above. Currently, archeologists at PUHO are experimenting with using spatial management areas, but to what extent this is GIS-based is not known to us.

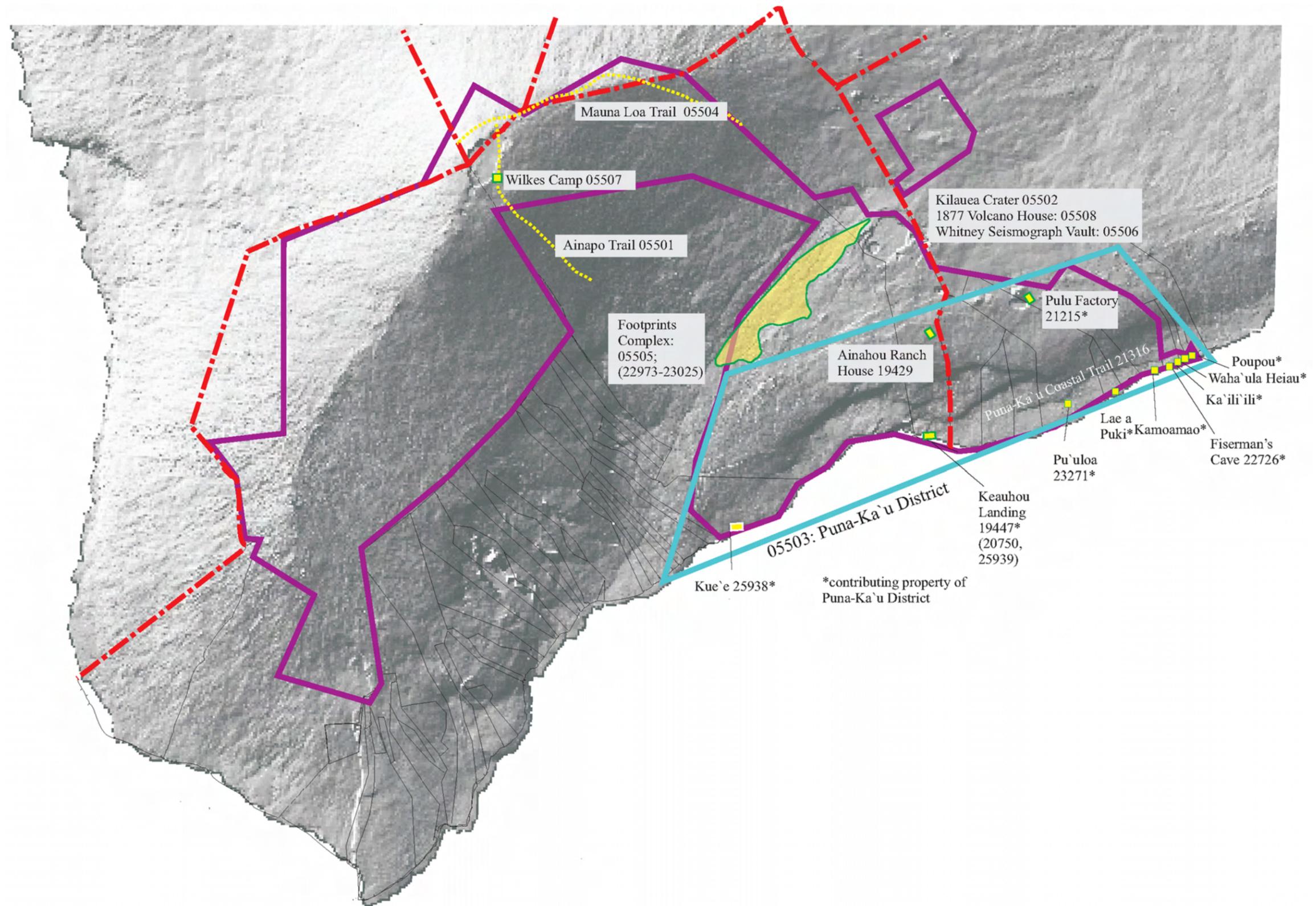


Figure 29. Historic properties in HAVO that are listed on the National Register of Historic Places.

RECOMMENDATIONS REGARDING SITE INFORMATION MANAGEMENT

RECORDING AND NUMBERING OF HISTORIC PROPERTY

- Consider revising the boundary of the Puna-Ka‘ū Historic District to include all of HAVO. Review the historic preservation process to determine if such a revision will facilitate the determination of eligibility by recording historic properties as contributing elements to the District.
- For purposes of Section 106 and Section 110, complete the integration of recorded and known historic properties into the state numbering system, employing NRHP definition of historic property and NRHP criteria for eligibility. As noted above in the discussion of the NRHP, one of the main purposes of the NRHP is identification of historic places for management, with special attention to the question of “effects” and thus site listing should have clear statements about why a site is “significant,” which established the baseline for what may be affected. Also note that, per the NRHP, historic properties represent a range of categories. This completion of recorded and known properties should include:
 - All “historic” (post-Contact) features including roads and trails. Properties that are listed in the LCS, but not assigned state site numbers, should be evaluated by NRHP standards and property categories, and included if they meet these standards.
 - All HV sites. If “sites” are created for bureaucratic management purposes, as discussed above, the re-numbered HV sites should also have redefined boundaries to include all related features, but this can be done by defining a “site” as an area—a space—incorporating all cultural elements within that space.
 - All traditional places. These places should be identified through a cultural place inventory (as recommended in the Research Design) and evaluated for recognition as numbered “sites” per the NRHP criteria.
 - Destroyed sites. Sites whose locations should be re-established and re-marked after their destruction include those that are significant under eligibility Criteria A and/or B, when the integrity of location is not substantially affected (e.g., village sites and temple sites). The location of Waha‘ula Heiau is a primary example: the significance of the location, the place, can still be appreciated if one stands on the lava flow that covered the heiau, with the view of the general landscape, the skyline, and the sky that existed prior to the destruction of the physical structures. (For comparable examples of such places that are on the NRHP, see Parker and King 1990; also note the definition of “site” per the NRHP, quoted above).

DATA ENTRY

- Develop a set of guidelines that will allow consistent data entry into the various databases, including ASMIS. This should include standardized abbreviations, descriptive terms, and citation format. Information should include a reference to source (e.g., quotation or summary from an existing report, or derivation from field inspection); reports should be cited by bibliographic reference (not by project), which may be standard from (authors and date) or a unique HAVO report coding system (see below). Guidelines should also include instructions on NRHP-related categories; reviews of ASMIS forms suggest that some of these categories may be misunderstood, and are not consistently completed.
- Review the entries for NRHP status and correct any errors or inconsistencies.

INFORMATION RESOURCE MANAGEMENT

- Consider developing systematic resource inventories for all basic reference materials such as reports and manuscripts (see Appendix D). This may be an unnecessary duplication of the existing library and map inventory systems. However, dedicated inventories for internal use may make research and citation much more efficient. (For example, a dedicated coding system for all HAVO reports and manuscripts would allow easy tracking, management, and citation.)

GIS INFORMATION MANAGEMENT

- Review the structure and content of the GIS and conduct a methodological study or studies in how the information can be manipulated for purposes of archeological “site” management and archeological research.⁷⁷ For the long-term, this is considered to be the most important of the data information management recommendations.

⁷⁷ This is a complex task and might be considered for a specific, funded research project (see Research Design) or for a volunteer research project. One of the problems that may need to be resolved is integration of ASMIS with GIS.

VII. RESEARCH DESIGN

The Research Design is organized by questions regarding substantive information, cultural-historical and behavioral patterns, and methodological problems—with the recognition that there are questions that crosscut these categories.

SUBSTANTIVE CONCERNS: BASELINE DATA

Substantive problems are those that deal with largely factual matters, usually data collection and analysis related to basic patterns of information; what is also called baseline data. This are not posed in a theoretical vacuum, but reflect either the consensus concerning data that are significant for prevailing problems and conventional data classification, or categories of data created for theoretical and methodological problems.

SITE INVENTORY

There are areas of HAVO that have had little or no site inventory (see Fig. 28). Considering the always imminent threat of site destruction from lava flows and earthquakes, execution of site inventory has been and should continue to be an extremely high priority in the archeological program. The following recommendations include a distinction between reconnaissance survey and intensive survey. Although sometimes defined by intensity of coverage, the distinguishing difference used here is intensity of recording. An important aspect of this recommendation is how the concept of “site” is approached.

Reconnaissance Inventory

The recommended first phase of reconnaissance inventory is a program that establishes the broad distribution and boundaries of complexes, notably those for agriculture, habitation, and resource utilization. At the same time, features with more restricted boundaries (such as trails, caves, petroglyphs, and religious structures) may be noted. It is recognized that conditions of HAVO (difficult access, rough terrain, dense vegetation) do not allow field inventory to be easily conducted, but a comprehensive program should be considered a necessity under the always imminent threat of destruction.

The essence of an effective reconnaissance program is a sense of the level of detail to be recorded and the manner in which generalized statements about sites/features are to be made. The position argued here is that in site/feature recording there is often too much emphasis on detail and too little on generalization (this is also true of excavation)—a case of “not seeing the forest for the trees.” The problem is that generalizing requires more experience than does recording detail, and thus crew training and leadership are critical for such a program. The minimal level of recording for reconnaissance may simply be “presence/absence” and can be done in the form of “siteless” survey (a process of continuous recording during field sweeps with information transmitted verbally to a field recorder). Combined with modern GPS recording, this allows rapid and effective survey in difficult field circumstances, including dense vegetation.

The second phase of reconnaissance inventory may entail either one or both of two strategies. Depending on field conditions, selected individual sites/features may be recorded in detail after the first phase, or an area or areas may be selected as sample areas for detailed recording as a means of characterizing the survey area.

Intensive Inventory

An overview of the archeological landscape of HAVO suggests four areas that should have the highest priority for intensive survey—areas that contain cultural remains fundamental to the understanding of the HAVO region. These areas are the ‘ili‘āina of Keauhou, the summit of Mauna Loa, the pali bluff areas (primarily Hōlei and Hilina), and a possible habitation area in the ahupua‘a of Kahuku (in the southeastern corner of the KMU).

Intensive inventory often includes some amount of archeological “testing.” Often this testing is intended to accomplish such things as determining site age and “function” (a peculiar concept when considered in historical-analytical terms). The perspective taken here is that such testing is often useless and counter-productive. Rather, it is argued that testing is appropriate to determine the *potential* for future intensive excavation and the types of questions that might be answered by such excavation. This involves such things as the depth, extent, and nature of deposits (that is, stratified or not, disturbed or not, conditions of preservation, datable materials, and so on). In this context site or feature “function” is replaced by an analysis of events and history of activity.

‘Ili‘Āina of Keauhou

Because of the general nature of the Ka‘ū-Puna landscape, as well as the changing conditions resulting from volcanic activity, many of the ahupua‘a are unique, not archetypal “sea-to mountain resource units.” This is certainly true of the ‘ili‘āina of Keauhou, which has (and had) very poor resources for subsistence living, but has two important features: Kīlauea Crater and a coastal landing. A survey of the entire area of Keauhou should be conducted; research should focus on the land area as a means of access to the crater and on the entire land unit (‘ili‘āina) as a possible ritual zone. Several possible ritual sites have been recorded (see Fig. 18), and a substantial amount of background information has been compiled (e.g., Maly 2005; Durst and Moniz Nakamura 2005). The evaluation of this land area as a possible ritual zone moves the detailed survey inventory into the theoretical problem field (as noted below). An important part of such a survey would also include research on the problem of identification of ahupua‘a boundaries and possible changes to those boundaries.

Mauna Loa Summit

An intensive survey of the summit of Mauna Loa also involves the question of ritual zones. The Mauna Loa summit may have been a ritual zone, perhaps one involving astronomical observations or celestial-related ritual, and is perhaps one of the most important such places in Hawai‘i.

Pali Bluffs

The focus of pali bluff survey should be on the nature of upland community, age, and settlement structure.

Kahuku

Regarding Kahuku, the seaward portion of the KMU should be considered for survey to identify any settlement associated with the historically documented intensive habitation areas, including the area of royal residence, above Pali o Māmalu near the present Belt Road. In addition, a temple named Haleopōhāhā was recorded by Stokes somewhere in the vicinity of the seaward border of the Kahuku Management Unit west of the 1887 flow; this should be investigated.

EXCAVATION AND EXCAVATION DATA ANALYSIS

As a continuing effort for obtaining basic information on occupational history, excavation of a sample of sites and associated analyses is an important part of the research program. This involves two general aspects: completion of analysis of existing materials and a strategy for conducting the additional sampling. Excavation related to other research questions is considered under the section on theoretical problems.

Analysis of Archived Excavated Materials

A review of archeological investigations at HAVO from 1987 to 1989 (Carter and Somers 1990) indicates that substantial quantities of materials collected from excavations have yet to be analyzed; there are materials from other excavations that are also unanalyzed. There is a continuing program to complete this work. As a part of this effort, XRF element determinations are being conducted on worked lithics for sourcing, and additional charcoal samples are being analyzed for wood species identification and will be submitted for radiocarbon dating.

The detailed analysis of collections (artifacts and food remains) from individual excavations is a necessary first step in post-field research, but ultimately a regional comparative review is needed so that the larger patterns of occupational history and resource use can be developed. As a part of this, it is also critical to have the methodological means of making these comparisons, an aspect of Hawaiian archeology that is poorly developed and is discussed in the methodological section below.

These materials also contain significant potential for paleoenvironmental research (see below).

Radiocarbon Re-analysis

The existing set of HAVO radiocarbon dates is a disparate collection of data (see Table 13). The dates were obtained by runs from several different laboratories, and processed by differing sets of standards (such as calibration curves, one or two sigma, carbon ratios, and type of material). All of these dates should be re-processed in a standardized manner. This should also include an evaluation of the processing laboratory (some of which are known to have generated unreliable dates), as well as a review and evaluation of the provenience.

The question should also be asked as to whether or not the large number of radiocarbon determinations obtained from the extensive geological dating program of lava flows might be profitably reviewed by archeologists. Further, the archived charcoal from the geological dating program should also be submitted for wood identification; a cooperative arrangement with the volcano geologists might be considered for this. Based on the dates obtained, and if the charcoal comes from pre-Polynesian and Hawaiian eras, the wood identification would contribute to the reconstruction of vegetation history.

Excavation Sampling for Chronological Information

Establishing the settlement history of regions in Hawai'i is a complex problem because of the nature of Hawaiian remains and the inadequacy of present chronometric methods. The substantive question in this regard is the geographic location of the site components of various ages. The methodological question is the appropriate strategy for excavation.

Given the environmental circumstances at HAVO, there may be no surviving early coastal occupations, except possibly coastal cave deposits. However, cave deposits have to be evaluated carefully regarding the information they provide on local settlement because of the possibility of short-term or specialized activity within such features. The occupational history of the region may come primarily from research in the inland settlements. Such research should involve a deductive review of the most probable areas for early inland settlement and a sampling of these areas. This may be conducted as part of the larger inventory program.

PALEOENVIRONMENTAL INVESTIGATIONS

In Hawai'i, paleoenvironmental research based on wetland coring has proved to be one of the most valuable means of obtaining information about long-term regional patterns of human occupation (see e.g., Athens 1997). This type of research also has the potential to reveal unexpected aspects of change after human occupation, such as the role of the introduction of the Pacific rat to Hawai'i (Athens et al. 2002). It is not known if there is any potential for wetland coring in the HAVO area, but the possibility should be investigated and research carried out if it appears feasible. There are a few "lakes" identified in the Ka'ū-Puna region, but it is not known if any fall within the park. Paleoenvironmental research in the HAVO area would have special problems because the charcoal from natural fires would compromise the charcoal evidence for human activity; however, the information from pollen profiles and depositional data would nonetheless provide critical data on environmental change.

As indicated above in the section on Radiocarbon Re-analysis, the wood identification of charcoal archived in the geological program of flow dating could also make a substantial contribution to paleoenvironmental reconstruction. Further, the organic materials from archeological excavations (archived and future) hold great potential for paleoenvironmental reconstruction, landscape change, and human modification of the landscape, and such materials should be included in any general paleoenvironmental research program.

PLACE NAME AND CULTURAL PLACE INVENTORY

Place name research is an absolutely necessary component of archeological investigation in Hawai'i, and it is recommended that the HAVO archeological research program incorporate a focus on a detailed place name inventory. There are several hundred place names that can probably be compiled from existing archival data (maps, land documents, Boundary Commission testimonies, travel accounts, ethnographic collections, and so on) and many more that can certainly be obtained from discussions with cultural consultants today (see Langlas 2003a, 2003b for an example of modern ethnographic research).⁷⁸

⁷⁸ The park had an opportunity in the 1930s to obtain such information from an earlier generation, but unfortunately chose not to take advantage of that (Emory, Cox et al. 1959).

Such an inventory should include a “history” of each place name, including when and how it was first documented, subsequent appearances or uses, variations in spellings, any interpretations, and occurrence in traditions (see Tables 3, 4, and 5).

In addition, as a part of the place name research, an inventory of cultural places should also be carried out. Such places should be included as sites in the on-going development of an NRHP site inventory (see discussion in Section VI).

PATTERNS OF CULTURE, HISTORY, AND BEHAVIOR

The term “theoretical” is employed here in a general sense to refer to problems of interpretation of site patterning, analysis of behavior, and study of cultural change. These problems may be approached as individual research questions or as questions integrated into a larger research program (including site inventory).

SUBSISTENCE

Subsistence at HAVO has had significant attention due to the success in identifying horticultural field areas, but much more research should be conducted, including detailed reviews of subsistence remains from excavations, such as marine shell, bone, and pollen. Detailed artifact analysis is also a contributing study for this subject. Further, subsistence studies need to be carried much further than they usually are. They commonly end at simple quantification and perhaps a comparison of subsistence remains with known available resources. However, questions of variability, occupation events and duration, discard patterns, social patterns, catchment, distribution, social control of items, and many more dimensions of subsistence need to be addressed.

DEFINING TEMPORAL PERIODS

Segregating temporal periods of the archeological landscape needs to address patterns of change, not just the shift from pre-Contact to post-Contact periods. Patterns of change include change involving population increase; adaptation to lava flows; change associated with political dynamics and power centers; comparative architecture (early, pre-Contact, and post-Contact); changes due to post-Contact population decline; effects of changing economies (e.g., introduction of sweet potato; sandalwood and pulu collection, and goat herding).

VILLAGE AND HOUSEHOLD PATTERNING

Despite the ethnographic models, as well as some excavation that has focused on this research question, village and household patterning remains a poorly understood aspect of the archeological record. For example, one of the peculiarities of Hawaiian archeology is the lack of information about the location of imu (*ovens*) in village organization, despite the fact that this was a central feature of Hawaiian habitation and an essential component of Polynesian household organization in general. (In Ellis’ early 19th century description of life in this region, ovens are mentioned numerous times—see e.g., Fig. 21b). Village patterning analysis can be addressed through extensive areal excavations to determine subsurface feature distribution.

BOUNDARIES

A question related to village patterning is one of boundaries in settlement; that is, the nature of the social and functional boundaries in settlements. This in part is a question of how a site is defined; when the effort is made to identify such boundaries in structure complexes, it is distance between structures, rather than function, that is more often than not used as the primary variable (see for example, Ladefoged et al. 1987).

The history of walls as barriers and as boundary markers is a boundary-related question that relates to the post-Contact period. The development of the pattern of wall construction needs to be investigated archeologically and by archival-historical records. The use of enclosing walls around individual houselots is mirrored in enclosing walls around whole village; how this pattern of wall-building diffused and on what time-line are important research questions.

The question of boundaries also needs to be addressed at higher levels of organization, including the identification of ahupua‘a (and ‘ili) boundaries. Most of the time, archeologists work with the assumption of static ahupua‘a boundaries (practically speaking, those recorded on USGS maps, or on occasion recorded in Boundary Certificates and related testimony or other archival sources), but they seldom do anything to verify those boundaries or to consider the possibility of boundary creation and change. For the HAVO area, the question of changing district and ahupua‘a boundaries has been raised, and this needs to be a significant research question.

PETROGLYPHS

Petroglyphs are a major feature of the lands of HAVO, and are associated with trails, ahupua‘a boundaries, and ritual (see Appendix C, and section on Pu‘uloa; also Glidden 1995, Lee 1998, Stasack and Stasack 2007). Completion of the inventory survey and recording of all petroglyph areas is recommended as the highest priority for future research. In many respects, the detailed information about these archeological remains might be more important for understanding the overall cultural history, ritual, and behavioral pattern of the HAVO region than nearly any other type of site.

This research should also include a continuing study of the detailed distribution patterns, not only of complexes, but of individual types of petroglyphs, including figure variation, pecked areas, and kōnane boards. Kōnane boards, for example, are often casually recorded as “recreation,” but although these were gameboards, they also served other functions, as has been pointed out in Stasack and Stasack (2007). One function is noted in traditional references for augury and divining (Fornander 1916-20:VI:86; Nāmakaokeahi 2004: E 63). Further, their distribution is not coterminous with petroglyph fields in general. For example, there are no kōnane boards among the thousands of carved images at the Pu‘uloa Petroglyph Field (Stasack and Stasack 2007).

THE ARCHEOLOGY OF PELE AND PĀ‘AO

Hawaiian traditions tell of two major cultural changes, the coming of Pele and the coming of Pā‘ao. The archeological question is how did these two events affect the archeological landscape. How and when did the temples for Pele develop and how did they change what existed before? Are there “archeological signatures” of attention to Pele or of local Pele cults in any of the settlements? Where did the priests and priestesses of Pele live?

The study of caves with the hypothesis of their use as ritual sites is related to the question of the influence of Pele cults on the archeology of the region.

For Pā‘ao, there is the archeological record of Waha‘ula Heiau (complex though it is; it may also tell about Pele as well), but this is only one point in space and time. In what other ways, if any, did the arrival of Pā‘ao change the archeological landscape—other temples and forms of temples, new rituals and related material culture, and of course, the great question, new DNA (i.e., the replacement of an older population with a new one that is archeologically identifiable in their physical remains)?⁷⁹

THE ARCHEOLOGY OF MAUNA LOA

Finally, it can be argued that Mauna Loa is one of the most important cultural places in all of Hawai‘i (as suggested above), and the fact that there are probable ritual sites on the mountain emphasizes the need for a detailed study of the upper region. Such a study should consider all the possible ranges of activities, from ritual and possible astronomical components, to that of the bird hunting (and possible relationships between these things). There is also the question of the features that relate to survival on the upper reaches of the mountain.

METHODOLOGICAL PROBLEMS

Methodological problems focus on chronological methods, diversity analysis (midden and artifacts), excavation sampling, and archeological “signatures” of behavior. In general, this is a poorly developed aspect of Hawaiian archeology, and any research conducted should include methodological questions.

Regarding problems of innovative dating methods, collaboration with volcano research scientists might be productive. Such collaboration might also be helpful in methodological questions related to site formation processes (including, for example, identification of earthquake and tsunami effects on sites).

Experimental archeological efforts should also be considered. Examples include studies of acid rain on exposed midden and experimental cultivation of sweet potato and other plants in the agricultural sites.

Finally, perhaps the methodological problem that might be considered of most immediate importance is the investigation of GIS to develop the best methods for the organization, structure, and manipulation of archeological data for purposes of archeological “site” management and archeological research. (The framework for this recommendation is discussed in Section VI.)

⁷⁹ Archeologists are often uncertain about how to interpret Pā‘ao in historical terms, but there are Hawaiian historians who have no difficulty reading the tradition of Pā‘ao as a literal replacement of the earlier Hawaiian population, the menehune, by the conquerors from Kahiki (see e.g., Kane 1998, 2005).