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– ARTICLE –

Dwelling Among the Gods: A Late Pre-Contact Priest's House in Kahikinui, Maui, Hawaiian Islands

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ABSTRACT

We report on the excavation of an upland habitation site in Kahikinui, Maui, interpreted as the residence of a priest (*kahuna*) in the traditional Hawaiian religious system. The site, consisting of a large stone terrace and walled house foundation, lies within a ceremonial precinct incorporating several temple (*heiau*) structures. Six radiocarbon dates bracket the period of occupation between AD 1650 and 1820, although the duration of use was probably shorter. Lithic analysis indicates that the house occupants worked both local and imported basalt; retouching of fine-grained basalt adzes within the house suggests wood-working activities. Some of the fine-grained basalt has an off-island origin traced to Oʻahu Island. A cache of black and white pebbles may be either gaming pieces or stones used by a priest in divination and disease diagnosis. The faunal assemblage reveals access to a wide variety of status foods, including the prized black-foot limpet, a variety of fishes, wild birds, and domestic pigs, dogs, and chickens. Some of the birds may have been taken for their black or yellow feathers, these colours being associated with Hawaiian deities. In total, the cultural assemblage from site KIP-117 provides a window into the daily life of a Hawaiian priestly household.

Keywords: household archaeology, priests, Hawaiian religion, lithic analysis, zooarchaeology

INTRODUCTION

> In Hawaii, Tahiti, and the Marquesas, were priests attached to the more important temples, whose duties were exclusively ceremonial, known as kahuna pule, tahua pure, or tahuna pue. These priests performed the rites in the temples and the ceremonies of a purely religious nature which affected the whole community …
>
> E.S.C. Handy (1927:149)

Throughout the hierarchical societies of Eastern Polynesia, but especially in the Hawaiian Islands, priests (*kahuna*) held positions of great importance and were responsible for the annual round of temple rituals and other ceremonies through which the world was ordered, the fertility of the land assured, and the favour of the gods cultivated. Much is known, especially from the ethnohistoric record, about these temple ceremonies (e.g. Babadzan 1993; Valeri 1985) but the private world of the priests – in particular their quotidian lives – remains enigmatic.

An anonymously-authored account in the Native Hawaiian language newspaper *Nupepa Kūʻokoʻa* for February 9, 1884, offers a glimpse inside the dwelling (*hale*) of a high-ranked priest of Maui Island at a time of conflict over control of the island between the sons of the king Piʻilani, towards the end of the 16th century (Anon. 1994).[5] Summoned to his *hale* by the *kahuna*, the late king's sons Lono a Piʻilani and Kiha a Piʻilani came to hear the oracle of the gods pronounce on their respective fates. As the two royal brothers sat with their backs leaning against the house posts, the *kahuna* spoke:

> E you two *aliʻi* [chiefs], listen to me carefully; you will see your deity up inside the rafters (*kaupoku*); she will creep until positioned directly above the *piko* [umbilicus] of the *imu* [earth oven] – and from there release a web. Here you will see the rainbow displayed – and I repeat: he who flees will become impoverished in this land, but he who stays will inherit all of this island.

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5 I am indebted to Bernie Graham, daughter of the late Hawaiian kupuna Charles Pili Keau, for providing me with a translation of this little-known text, which she found among her late father's papers.

The story continues, recounting such significant details as the preparation of a sacred offering in the earth oven, the making of *ʻawa* (*Piper methysticum*), and at one point the temporary division of the house into two sectors by hanging up a barkcloth barrier so that the goddess could appear. The full story, too long to recount here, yields the sense of a Hawaiian priest's house as a special place, not only the abode of a powerful individual but a sacerdotal space in itself, where rituals of a more private nature were performed.

Although many precontact habitation sites have been excavated by archaeologists in Hawaiʻi, and some of these have been interpreted as elite residences (e.g., Weisler & Kirch 1985; Field *et al.* in press), to our knowledge no prior claim has been made that a particular archaeological structure could be associated with occupants of the priestly class. In this article, we make the case that a habitation site (KIP-117) in the uplands of Kahikinui district, southeast Maui, was the abode of a prominent priest who officiated at a complex of adjacent temples (*heiau*). We adduce several lines of evidence to support this interpretation, including the spatial association of the residence with this prominent temple complex, the nature of the site architecture, and the cultural contents revealed by excavation.

The excavation of site KIP-117 was carried out in April 1999 under the direction of Kirch, as part of the long-term Kahikinui archaeological research project which has been investigating traditional Hawaiian settlement in southeastern Maui since 1995 (Kirch 1997). Millerstrom supervised the excavation of the KIP-117 house interior; McCoy analyzed the lithic assemblage, and Jones identified and analyzed the faunal assemblage.

THE NAKAʻOHU RIDGE TEMPLE COMPLEX

The KIP-117 site is an integral part of an extensive complex of stone temple foundations and associated features situated on a prominent ridge of ʻaʻā lava in the land section of Nakaʻohu, roughly 3 km inland of the coast, at an elevation of about 400 m above sea level. The Nakaʻohu temple complex lies within the main upland agricultural and habitation zone of Kahikinui District, as described in Kirch *et al.* (2004). The ʻaʻā ridge slopes gently from northwest to southeast, and is bounded on the north by an intermittent stream gully which follows the boundary between two lava flows. The temple complex was constructed on the younger Nawini ʻaʻā lava flow, and overlooks the older Kahikinui basanite lava flow to the north and east. As Kirch *et al.* (2004, 2005) and Hartshorn *et al.* (2006) have demonstrated, this 53,000 year-old Kahikinui substrate was ideal for intensive agriculture, especially sweet potato and dryland taro farming. The individual *heiau* within the Nakaʻohu temple complex arguably include structures dedicated to the Hawaiian gods Kāne and Lono, based on their architectural styles and orientations (Kirch 2004).

Figure 1 is an overview plan map of the Nakaʻohu temple complex, showing the location of KIP-117 in relation to other structures, while Figure 2 is an aerial view of the central part of this complex. At the top of the complex is KIP-404, a *heiau* which occupies a prominent knoll with commanding views over the landscape, and which overlooks the lower temples. A stone-lined pathway, oriented east-west, runs from this knoll down to the intermittent watercourse. The main cluster of structures is bounded on the north and west by a low (ca. 40–60 cm high) wall of stacked ʻaʻā boulders. Site KIP-75 is a square enclosure *heiau* with raised platform in the southeast. KIP-76 is a smaller enclosure which excavation showed to be an oven house, probably for cooking sacrificial offerings. Site KIP-115 is a low *heiau* foundation which may not have been fully completed. Site KIP-77, which overlooks the watercourse prominently, is a classic 'notched' *heiau* with a northeasterly orientation which may indicate that it was dedicated to Lono, god of dryland cultivation (see Kirch 2004 on *heiau* orientations and associated deities). Below this is KIP-114, a small enclosure of uncertain function. It is likely that the close association of *heiau*, unique within the entire Kahikinui District, formed a sort of 'acropolis' with temples dedicated to a number of different gods and cults.

The subject of this article, site KIP-117, is situated about 25 m southeast of the square KIP-75 temple, and is part of a cluster of structures bounded by the low enclosing wall. Immediately south of KIP-117 are two large spaces, adjacent to each other and enclosed by low walls. KIP-119 has an artificially flat, levelled floor, with a concentration of coral pebbles in one area. Both KIP-118 and -119 appear to be assembly areas, perhaps where commoners gathered at certain times of the year to witness rituals carried out in the temple complex. The location of these putative assembly areas, immediately west of the temples, would be in keeping with Hawaiian spatial concepts in which east is associated with the gods, sacredness (*kapu*), and life (the rising sun, in particular, was associated with Kāne), whereas the west is associated with the afterworld, commonness (*noa*), and death (Valeri 1985).

SITE KIP-117

When site KIP-117 was first recorded it was not immediately evident that this was a residential feature. Based on architectural forms, as well as the presence of branch coral offerings (see Kirch & Sharp 2005), sites KIP-404, -75, -115, and -77 were clearly *heiau*. KIP-117, however, not only lacked branch coral offerings, but its open rather than enclosed architectural form did not conform to the patterns generally expected of Hawaiian *heiau* (Kirch 1985: 257–65). Our initial suspicion was that it might be an early post-contact house, as some *heiau* are known to have been occupied as residences after the overthrow of the *kapu* system (Kirch, forthcoming). As part of a programme of test

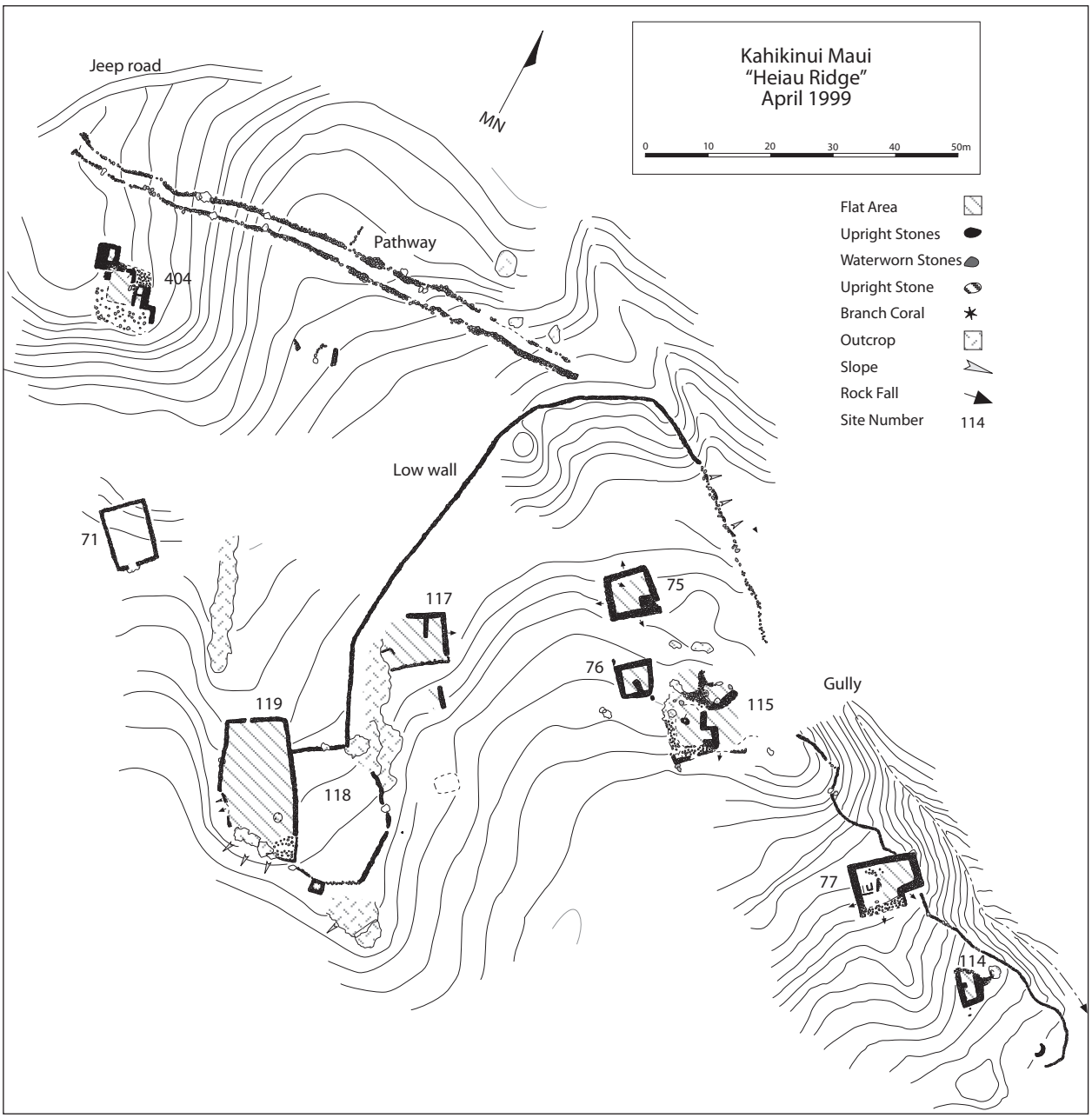

Figure 1. Map of the Nakaʻohu temple complex, based on plane table and alidade survey by P. V. Kirch.

excavations of each of the major *heiau* structures within the Nakaʻohu ridge complex, we decided to excavate also in KIP-117.

Surface Architecture. A detailed plan of KIP-117, based on a plane table and telescopic alidade survey by Kirch, is shown in Figure 3. Following the hierarchical classification of Hawaiian stone masonry architecture described in Kirch (1985: 38–39, fig. 20; see also Weisler & Kirch 1985), KIP-117 is a compound structure, composed of several conjoined architectural features, with multiple 'space cells' (architecturally defined areas). The underlying foundation is a massive stone-filled and levelled terrace, well-defined and faced with stacked boulders and cobbles on the south (facing height 0.8–1.2 m) and east, and blending into a low ridge of ʻaʻa lava on the northwest. This base foundation measures approximately 20 × 16 m, considerably larger than most Hawaiian residential sites although within the known range for chiefly or elite structures.

The north and east sides of the terrace have been built up with well constructed core-filled walls, faced with ʻaʻā boulders and cobbles, up to a height of 1.2 m, with thicknesses of 1–1.5 m. The construction style used in these walls differs from that typical in Hawaiian pre-contact

Figure 2. Aerial photograph of the central part of the Naka'ohu temple complex, with site KIP-117 in the foreground, looking east. Note the open grassy area beyond the line of temples, which was an intensively cultivated zone.

houses, but it is similar to that used in *heiau* structures. A spur wall running roughly north-south defines an area which we designate space cell A (Figure 3), and which excavation showed to be the main habitation area. Presumably, a thatched superstructure was originally supported by the three high stone walls defining this space. South of space cell A are two smaller cleared areas, defined by low (ca. 10–30 cm high) alignments of ʻaʻā cobbles, which we designate as space cells B and C. Whether or not these areas were covered with thatched superstructures is unclear, although the high wall adjoining them on the east could have helped to support a pole-and-thatch superstructure.

To the west of space cells A–C is a broad open area which probably never was roofed over, but rather functioned as an open-air activity zone. This area is divided into two discrete spaces by a change in elevation, as shown in Figure 3; we designate the upper space cell D and the lower terrace E. Nestled against the ʻaʻā ridge on the western side of the main terrace D is a slightly sunken area (ca. 3 × 4 m), defined on the north by a low facing of ʻaʻā cobbles, which we label space cell F. As described below, test excavation suggests that this area functioned as a cook house, and it may have had some kind of thatched shed or superstructure covering it. Finally, to the southeast of the main terrace is a separate feature, consisting of a low (ca. 0.3–0.4 m high) linear boulder and cobble wall with

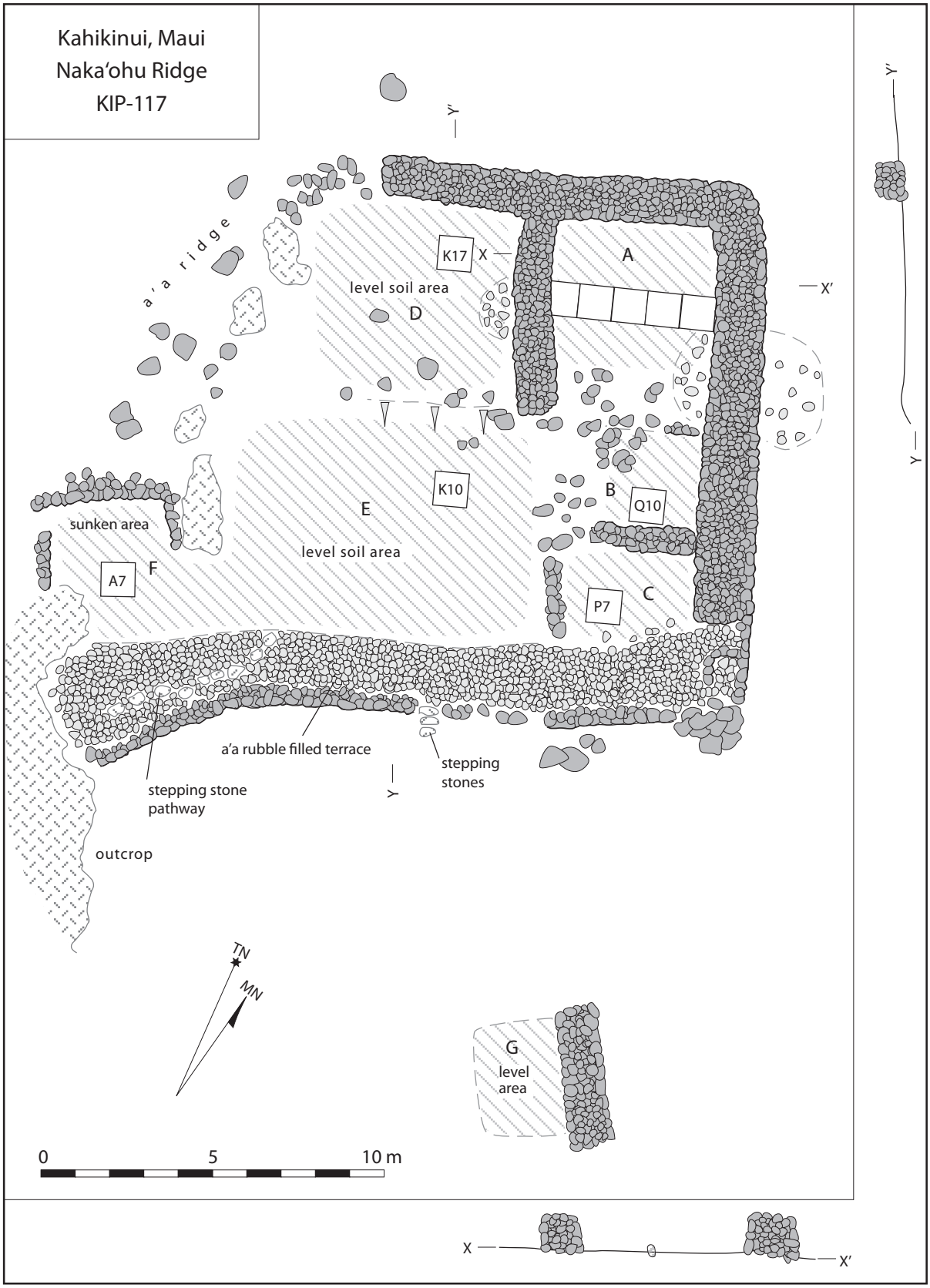

Figure 3. Plan of site KIP-117 based on plane table and alidade survey by P. V. Kirch. Letters indicate main space cells. The initial excavation trench across space cell A is indicated; excavation later covered the area between the trench and the north wall.

an artificially levelled area (ca. 3 × 2 m) to the west. This likely is the foundation for a small thatched superstructure which was linked to, but purposefully kept separate from, the main habitation complex.

Excavations: Stratigraphy and Features. Excavation at KIP-117 concentrated on the interior of space cell A, which by all indications would have been the main house structure, with additional test units to sample other space cells and activity areas. A metric grid was laid out over the site, with units designated by letters running east-west and numbers north-south. Excavation proceeded by natural stratigraphic layers, and all excavated sediment was screened through nested mesh sieves of ¼ and 1/8 inch. All bone, shell, and lithics were retained from all units for laboratory analysis.

Excavation of the main house area (space cell A) began with a 1-m wide trench (units N16 to R16) running east-west through the interior, as seen in Figure 3. Subsequently, an additional eight 1-m square units were opened up between this trench and the north (rear) wall of the house, so that most of the interior floor area was exposed over an area of 13 square meters. Space cells B, C, D, E, and F were subsequently each tested with a single 1-m square unit, as identified on Figure 3.

The stratigraphy was essentially uniform across the entire site, with minor differences only in depth of deposit. Layer I consisted of 2–3 cm of organic humus and aeolian silt overburden. Layer II, the single cultural deposit, was a very dark gray (Munsell color 5 YR 3/1) silty clay loam containing substantial quantities of finely dispersed charcoal, fire-cracked basalt rock (oven stones), and shell and bone faunal materials. This rested upon a culturally sterile base of dusky red (10 YR 3/2) subsoil. In the main house Layer II was 15–20 cm thick; in unit A7 the greatest depth of deposit was reached with Layer II ranging between 30–35 cm thick.

In the center of the main house (space cell A) excavation exposed a rectangular, slab-lined combustion feature, in units P16 and P17 (Figure 4). The feature, with an internal width of about 33 cm, was defined on three sides by upright ʻaʻā slabs. When sectioned, it had a depth of 18 cm of charcoal-rich fill, with 2–3 cm of whitish ash at the base. This seems to have been a small hearth probably used for light and warmth in the house interior. To the west of the hearth was a low, single-slab alignment of ʻaʻā cobbles, visible in Figure 4, marking a division within the house.

One of the most interesting features exposed during the excavation of the house interior was a small cache of 67

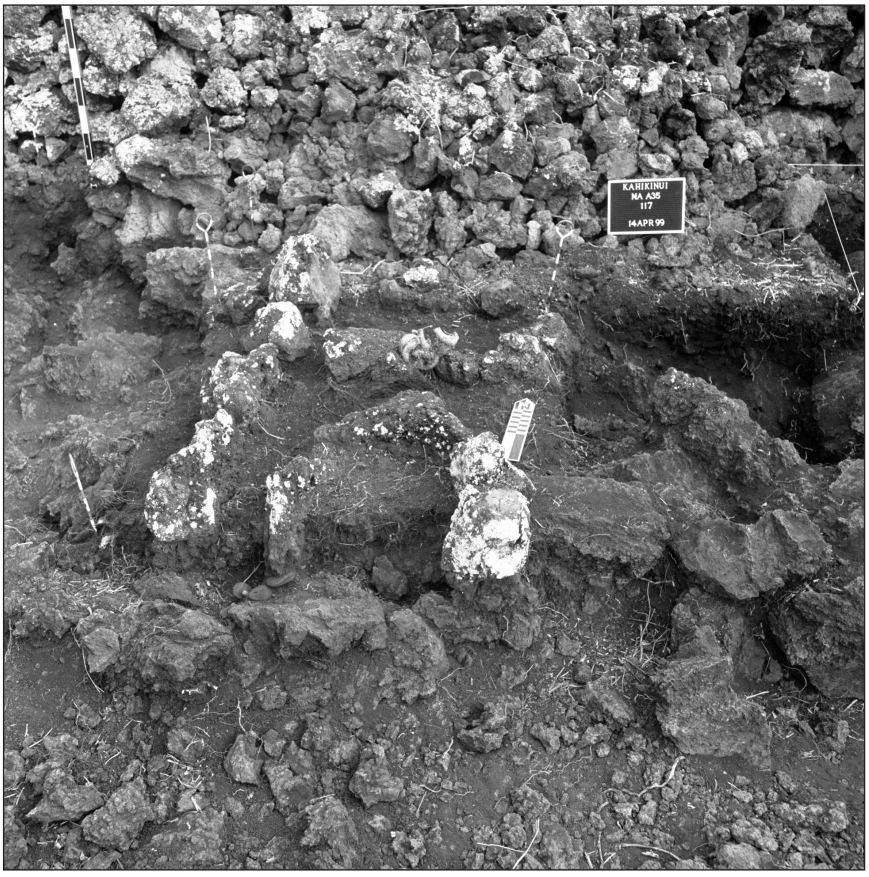

Figure 4. View of the interior of the main house (space cell A) from the south, after completion of excavations. Note the slab-lined hearth, and the low single-course stone curbing to the west of the hearth, making an internal division within the house.

black basalt and 97 white coral pebbles, in unit N16 (Figure 5). The pebbles were all found between 5–17 cm below surface in Layer II, close to the house wall of stacked ʻaʻā boulders. It is likely that they were contained originally within a basket or other perishable container which has not survived. We discuss the probable cultural significance of this pebble cache below.

The test units in space cells outside of the main house did not yield any special features, except in unit A7, where the 1-m unit hit the corner of a combustion feature 20–42 cm below the surface. This feature contained a charcoal-rich fill of black (10 YR 2/1) sediment with a greasy texture, similar to the fill of earth ovens we have exposed in other sites in Kahikinui. Time constraints did now allow us to expand the unit to determine the size or shape of this feature, but we are fairly confident that it is an earth oven (*imu*), and that space cell F was therefore a cook house area.

Radiocarbon Dating and Chronology. Six charcoal samples from KIP-117 were submitted to the University of Arizona radiocarbon dating laboratory for accelerator mass spectrometry radiocarbon dating, with results and sample details provided in Table 1. Prior to submission, all samples were examined by James Coil and five were able to be identified to taxon using the charcoal reference collection in the Oceanic Archaeology Laboratory at Berkeley. Of the five identified samples, one is of candlenut endocarp (*Aleurites moluccana*) while the others are of short-lived Hawaiian endemic dryland shrubs. These five samples are unlikely to have large in-built ages, whereas the single sample of wood charcoal of unidentified taxon (AA-38646) could potentially be of older wood which predates its cultural context substantially.

Perhaps unsurprisingly, the single sample of unidentified wood yielded the oldest radiocarbon date, whereas the other five samples from short-lived taxa yielded highly consistent age ranges, as is evident in the Oxcal plot (Figure 6). When calibrated on the IntCal04 atmospheric curve (Bronk Ramsey 2005), however, these dates all have multiple intercepts, a problem characteristic of late pre-contact radiocarbon dates in Hawaiʻi and elsewhere. However, the complete absence of any Euro-American artifacts at site KIP-117 is evidence that the site must have been abandoned before 1820, when such goods became common even in outlying districts in the islands. As indicated by the shaded band in Figure 6, KIP-117 was most likely occupied between about AD 1650 and 1820, the Proto-Historic Period of Hawaiian chronology (Kirch 1985). Of course, the duration of site use is likely to have been shorter than this time span, perhaps only a few decades.

Figure 5. Cache of black basalt and white coral pebbles found within the main house floor fill, next to the west wall.

Table 1. *Radiocarbon Age Determinations from Site* KIP-117

Sample No.	Provenience	Material	$\delta^{13}C$	Conventional ^{14}C Age	Calibrated Age Range 2σ
AA-38645	Unit K10, Level 2	Carbonized endocarp, *Aleurites moluccana*	–24.3	155 ± 34	1660–1890 1900–1960
AA-38646	Unit N16, Level 2	Wood charcoal, unknown taxon	–25.6	340 ± 35	1460–1650
AA-38647	Unit P7, Level 3	Charcoal, *Dubautia* sp.	–24.7	135 ± 34	1670–1780 1790–1960
AA-38648	Unit P16, Feature 2	Charcoal, *Chenopodium* sp.	–25.1	218 ± 35	1630–1700 1720–1820 1920–1960
AA-38649	Unit P16, Level 2	Charcoal, *Chenopodium* sp.	–23.4	163 ± 35	1660–1890 1910–1960
AA-38650	Unit R18, Level 2	Charcoal, *Sida* sp.	–25.9	196 ± 35	1640–1700 1720–1820 1830–1880 1910–1960

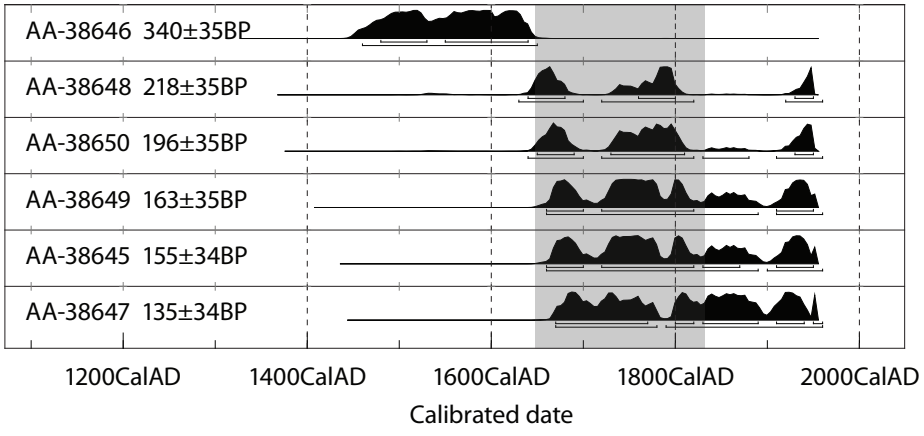

Figure 6. Oxcal plot of radiocarbon age determinations from site KIP-117. The shaded zone indicates the likely time span within which the site was occupied.

THE ARTIFACTUAL CONTENT OF KIP-117

Portable Artifacts

Experience in excavating at more than 20 upland residential sites in Kahikinui has shown that these typically do not yield many formal artifacts, although they can be quite rich in informal lithic assemblages. Site KIP-117, however, did yield several interesting portable artifacts in addition to extensive lithics which we analyze below.

A small, complete adz of fine-grained basalt was found on the surface in the interior of the main house. The adze has a quadrangular cross-section and slight tang, typical of late protohistoric Hawaiian adzes in general. The small size of this specimen suggests that it may have been used for fine carving work. Two abraders of *Porites* coral, recovered from Layer II in the main house, may also have been used to smooth or polish wooden objects, or for other craft activities such as bone or shell working. In addition to these tools, two pieces of worked bone were found, both from unit R16 in the main house floor. One is a small, rectangular bone tab which has been drilled and subsequently broken through the perforation; it may be a preform for a one-piece fishhook. The second piece is the distal end of a piece of worked pig bone, which has been ground down to a rounded end. It appears to be some kind of spatula, or possibly an awl-like object; the proximal end is broken. Finally, four small *Conus* shell spires with natural perforations were also found; these may have been strung as beads.

A particularly intriguing object recovered from unit R16 on the eastern side of the main house is a piece of a lava stalactite. Lava stalactites form in active lava tubes, as described by Macdonald and Abbott (1970: 29):

> The drips sometimes trickle down, one over another, and freeze to form stalactites hanging from the roof. Some stalactites are quite regular, slender, tapering cones, like icicles; others are masses of solidified roundish drops resembling bunches of grapes or strings of beads.

The specimen from KIP-117 is of the latter type, with an overlapping series of globular drips. We are not aware of any lava tubes with such stalactites in the Kahikinui area, but there are recent lava flows in Honuaʻula district (to the west), or in the crater of Haleakalā, where this stalactite might have been obtained. Given that this object had to have been obtained by someone who ventured underground, into one of these lava tube chambers, one could speculate on the possible symbolic importance of the stalactite. We would merely comment that the presence of this unique geological object adds an additional element to our interpretation of this house as the dwelling of a priest, someone likely to have been attuned to objects that could have represented the power of the volcano goddess Pele.

As noted earlier, a cache of 67 basalt (black) and 97 coral (white) waterworn pebbles was excavated in the floor of the main house (see Figure 5). These pebbles are quite similar in size range, although the basalt pebbles were slightly larger on average: mean length for the basalt pebbles is 21.3 mm while that for the coral pebbles is 18.7 mm. These were undoubtedly collected from one of the high-energy beaches in the Kahikinui area. The most obvious interpretation for such a cache of pebbles would be that they were gaming pieces for *kōnane*, a game that resembles checkers and was played on a wooden board or on a prepared lava surface (called a *papamū*). The game was first observed on Cook's voyage, and is well described in the literature (Ellis 1839: 213; Hiroa 1957: 369–70; Emory 1924). However, this is not the only possible function of these basalt and coral pieces, for it is also documented that such pebbles were used by Hawaiian priests in diagnosis and treatment of sick people (Malo 1951: 207–208; Kamakau 1964: 95). Kamakau refers to a class of priests, *kahuna hāhā*, who used a 'table of pebbles' (*papa ʻiliʻili*) in diagnosis.

Lithic Analysis

The lithic assemblage from KIP-117 (N = 624, total weight ca. 4 kg) was analyzed following the 'mass analysis' approach of Ahler (1989). Mass analysis stratifies the entire assemblage by size and compares the relative frequencies of debitage in each size category (see Andrefsky 1998). Based on the observations that stone knapping is inherently a reductive technology, and the process of reduction produces different size and shaped flakes (Ahler 1989: 89), mass analysis is appealing in its simplicity. Compared to other techniques, mass analysis 'is highly reliable, consistent, and replicable' (Shott 1994: 87). Analytical terms are used as defined by Andrefsky (1998), or as employed in Kahn's (1996) study of debitage from the Marquesas Islands. Other recent applications of mass analysis in Polynesian lithic studies include Kahn *et al.* (1998), Turner (2005), and Mintmier (2007). Our analysis focused on the following questions: (1) What stages of reduction are represented in the assemblages? (2) With reduction stages defined, what sorts of technologies are implied (i.e., informal, formal)? (3) How were stone working activities spatially distributed at KIP-117? The analysis itself was conducted in two stages: (1) complete flakes from the entire collection (N = 251) were size-sorted and weighed and, (2) all debitage from five selected excavation units (K10, N16, P7, P16, and P18) were size-sorted, weighed, and examined for the presence of cortex and dorsal scars.

In terms of raw materials available, two formal quarries for fine-grained basalt are known on southeast Maui Island, one in Nuʻu to the east (Kahn *et al.* 2008), and one within the volcanic crater of Haleakalā (Kirch 1985; Mintmier 2007). Coarse-grained basalt is readily available over the entire landscape of Kahikinui. Volcanic glass is more restricted in its distribution, but it seems to occur sporadically within certain lava flows of southeast Maui (Lichens 1997). Preliminary analysis of the fine-grained basalt by X-Ray fluorescence indicates that some of the flakes from KIP-117 were obtained from a non-Maui source, probably on O'ahu Island (J. Sinton, University of Hawai'i, pers. comm., 2010).

Analytical Stage 1. In this stage complete flakes were size-sorted using nested screens of 1-inch (G1), ½-inch (G2), ¼-inch (G3), and 1/8-inch (G4). Complete flakes were distinguished from other categories of debitage based on the methods of Sullivan & Rozen (1985). A total of 251 complete flakes were identified, size-sorted, and weighed, with results summarized in Table 2. The results show a higher than expected number of basalt flakes in the largest size grades (G1 and G2) for a non-quarry site (Cleghorn 1982, 1986; Williams 1989; Dixon *et al.* 1994; Kahn 1996). This contrasts with our expectation that much of the chipped stone at this site would indicate later-stage production and retouch. If we consider basalt flakes in the G1 and G2 size grades as indicating early stage reduction, there was a much higher than expected representation of such early stage reduction. Nonetheless, late stage reduction is also indicated in the data. During the first stage of analysis, it also became evident that the basalt flakes included materials of two distinct raw material classes: (1) a fine-grained, lighter coloured, gray basalt (FGB); and (2) a coarse-to-medium grained basalt (C-MGB). A small, but significant number of pieces of FGB debitage (N = 18) showed ground or polished surfaces indicating that they were derived from larger polished tools, probably adzes. These flakes could have derived from use or from re-sharpening or reworking of adzes.

All volcanic glass flakes are very small, all in the G3 or

Table 2. *Results of analytical stage 1 for complete flakes from site KIP-117.*

Size Classes	Basalt Flakes (N = 222)				Volcanic Glass Flakes (N = 29)			
	N	%	grams	%	N	%	grams	%
G1	22	9.9	7058.5	74.9	0	0	0	0
G2	77	34.7	1948	20.7	0	0	0	0
G3	90	40.5	391.5	4.2	6	20.7	9	38.3
G4	33	14.9	29	0.3	26	79.3	14.5	61.7

G4 size grade, and most in the later (79.3% by frequency; 61.7% by weight). The most clear-cut finding at this stage of analysis was the unambiguous identification of bipolar reduction of volcanic glass.

Analytical Stage 2. In the second stage, all debitage recovered from 5 excavation units (K10, N16, P7, P16, and P18) was size-sorted, weighed, and examined for presence of cortex and dorsal scars. This sample of debitage accounts for 15.7% (by frequency), or 5.3% (by weight), of the total debitage recovered from site KIP-117. Cortex and dorsal scars were recorded following Andrefsky (1998), with presence or absence of cortex, and number of dorsal scars recorded. Results of the stage 2 analysis are presented in Tables 3 and 4.

In general, C-MGB debitage exhibits a greater diversity in size range than FGB and volcanic glass debitage; C-MGB is the only material type with debitage in the largest size grade (G1). This suggests that the majority of large flakes (G1) in the stage 1 analysis are of C-MGB material. When broken down by weight, C-MGB and volcanic glass group together with each size category being generally half of the next higher. FGB, however, differs in the weight of debitage in the G2 grade by more than 6 times that of the debitage in the G3 grade. Ahler (1989) notes the longer a piece of debitage, the more it will weigh compared to others in the same size grade (i.e., within the same width range). The average occurrence of cortex on debitage ranges from 2% (FGB) to 25% (volcanic glass) to 50% (C-MGB) (Table 3). This again suggests that the C-MGB material was being reduced on site whereas the FGB flakes are largely the product of reworking or retouching of finished tools. The frequency of dorsal scars in the assemblage is highest in the G2 size grade of the FGB. Scars occur across size grades for all basalt, but on average are about twice as likely to occur on FGB debitage. On the tiny volcanic glass debitage scars are very rare. In sum, mass analysis demonstrates at least three distinct patterns present in the assemblage. C-MGB debitage tends to be more diverse in terms of size range; is more likely to have cortex present, especially in

Table 3. *Results of analytical stage 2 for selected excavation units in KIP-117.*

Size Classes	Fine-Grained Basalt		Medium-to-Coarse Grained Basalt		Volcanic Glass	
	grams	%	grams	%	grams	%
G1	0	0	845.5	58.5	0	0
G2	556	85.2	476	32.9	11	68.6
G3	88.4	13.5	119	8.2	4.5	28.1
G4	8.5	1.3	5	0.3	5	31.3

Table 4. *Cortex and dorsal scars on basalt and volcanic glass flakes from KIP-117.*

Size Classes	Fine-Grained Basalt			Coarse-to-Medium Grained Basalt			Volcanic Glass		
	Total N	Presence of Cortex	Total N Dorsal Scars	Total N	Presence of Cortex	Total N Dorsal Scars	Total N	Presence of Cortex	Total N Dorsal Scars
G1	0		0	5	×	4	0		0
G2	14	×	29	17	×	15	1	×	0
G3	23		8	21	×	5	2	×	1
G4	10		1	4		0	1		0

the larger size grades; and, is less likely to show dorsal scaring. FGB debitage is less diverse by size grade; shows a clustering of debitage by weight in the G2 size grade (possibly reflecting greater-than-average length of debitage); is unlikely to have cortex present; is most likely to show dorsal scaring (focused again in the G2 size grade); and, shows signs of adze surface ground polish. Volcanic glass debitage is found in low frequency; it is only found in the smallest size grades (G3 and G4); both cortex and dorsal scaring are present; and, there is clear evidence for bipolar reduction.

Interpretations. Both the C-MGB and volcanic glass debitage from the site probably represent expedient, informal technology, and their characteristics are consistent with working of locally available materials. The lack of formal tools, or fragments of formal tools, made from these materials supports this interpretation. For both materials, the debitage recovered probably corresponds in size-grade range to the size range of the parent rock. For C-MGB, this would mean local cobble-size stones were reduced on site, and for volcanic glass, pebble-sized stones. The presence of cortex across the C-MGB debitage size grade range, and especially in the larger, more likely to be primary debitage, and a low frequency of dorsal scars, all point to on-site reduction with little retouch. The identification of bipolar reduction on a flake with cortex also suggests a scenario of local reduction–or possibly pebble testing.

The first analytical stage showed a higher than expected frequency of basalt flakes in the largest size grades (G1 and G2) for a non-quarry site (Cleghorn 1982, 1986; Williams 1989; Dixon *et al.* 1994; Kahn 1996). Given an informal, expedient technology and a dispersed pattern of parent rock we might expect stones from the immediate area to be collected, transported, stored, reduced, used, and discarded in one or many locations. However, where stone is persistently worked should show all stages of reduction. Thus, the over-representation of large flakes is not indicative of a quarry, but it is evidence of primary reduction occurring on site.

The FGB debitage at KIP-117 is consistent with the reworking of formal tools, specifically adzes. As with the other materials, the size range of debitage (G2–G4) is consistent with reworking of finished or nearly finished adzes. The interpretation of late stage reduction or reworking is also supported by the diminished presence of cortex and the higher frequency of dorsal scars.

The final question of interest in our lithic analysis concerned spatial differences between difference space cells within the site. Table 5 presents data on the density of lithic debitage (n/m³) for each of the excavation units for which a stage 2 analysis was carried out. As is evident from the data presented in the table, working of fine-grained basalt was heavily concentrated within the main house (space cell A), especially in the vicinity of the slab-lined hearth. The expedient knapping of coarse-to-medium grained basalt was carried out within the house (and especially in the NE corner), but also to a large degree on the outer terrace south of the house (space cell C). There was a highly localized concentration of volcanic glass flakes next to the western wall of the main house, but flakes were noticeably absent elsewhere in the house. The main outdoor activity area represented by unit K10 had relatively low densities of all three kinds of lithics.

Table 5. *Spatial differences in lithic density at site KIP-117.*

Grid Unit	Spatial Context	FGB (n/m³)	C-MGB (n/m³)	VG (n/m³)
K10	Terrace	9	39	9
N16	Inside house (A), near wall	50	0	25
P7	Space cell C	43	261	5
P16	Inside house (A), next to hearth	468	120	0
R18	NE corner inside house (A)	337	400	0

ZOOARCHAEOLOGICAL ANALYSIS OF FAUNAL REMAINS FROM KIP-117

Faunal identification methods for KIP-117 followed procedures described in detail by O'Day (2001). The shellfish, bony fish, mammal, and bird bones were identified by Jones, while Helen James (National Museum of Natural History, Smithsonian Institution) identified the diagnostic bird bones. The category 'medium mammal' refers to remains of pigs and dogs. Bone that could not be positively identified as either pig or dog, due to its highly fragmentary nature, but is clearly one of these taxa is included in the 'medium mammal' category. Mammal bones were aged by examining epiphyseal fusion, tooth development and wear, the presence of highly porous compact bone (also noted for bird bones), and by comparison to specimens of known age in the zooarchaeological collection at the Florida Museum of Natural History.

A total of 162 mollusc shells and 596 bones were recovered from KIP-117 (Tables 6 and 7). Most of the material did not show signs of extreme taphonomic disturbance or weathering. Roughly 50% of the invertebrates have a chalky texture (possibly due to chemical weathering as a result of the higher rainfall and fog drip at this upland site), but none exhibit signs of burning. The majority of the invertebrate remains were identifiable to the level of species and, or, genus. Approximately 20% of the bones are burned, appearing black, blue, or white in color. All of the bones were identifiable to order (fish, bird, or mammal) and generally to a more specific level including family, genus, and species.

Invertebrates

Invertebrates comprise a relatively small proportion of the faunal assemblage by NISP (21%). By MNI and weight (g), however, invertebrates contribute 50–52% to the overall assemblage. Five families of molluscs, in addition to echinoids (sea urchins), are represented. Identified mollusc families include, in order of abundance by MNI and weight: Cypraeidae (cowries); Patellidae (limpets); Conidae (cones); Thaididae (rock snails); and Littorinidae (periwinkles) (Table 6). Echinoids contribute little to the invertebrate assemblage (7% of the NISP, 0 MNI, and <1% of the weight), being represented by only a few test fragments. All identified invertebrates are common along Kahikinui's rugged littoral zone and in its archaeological sites, with the exceptions of the black-foot limpet (or *ʻopihi*, *Cellana exarata*) and cones.

Table 6. *NISP, MNI and weight (g) for invertebrate taxa identified from site KIP-117, Kahikinui, Maui.*

Taxon	NISP	MNI	Weight (g)
Cellana exarata	9	3	9.7
Cellana sp.	28	8	16.6
Littorina sp.	1	1	0.0
Cypraea caputserpentis	4	3	7.5
Cypraea sp.	84	11	55.2
Thaididae	4	0	1.1
Drupa sp.	3	1	0.7
Morula granulata	1	1	0.3
Purpura aperta	4	1	2.7
Conus sp.	7	7	4.3
Echinoidea	11	0	0.5
Unidentified shell	6	0	1.0
Total	**162**	**36**	**99.5**

Unbroken, complete shells of cowries and limpets were measured to determine the average size ranges of these taxa. In general, the measured shells (N = 36) are larger than those from other archaeological sites in Kahikinui; total lengths fall within the range of 25 to 65 mm. The average length of the shells is approximately 32 mm.

Fish

Fish bones comprise 54% of the vertebrate assemblage by NISP, 34% by MNI, and 18% by weight (Table 7). Eight fish taxa were identified, including in order of abundance: *Scarus* sp. (parrotfishes); Acanthuridae (surgeonfishes); Labridae (wrasses); *Monotaxis grandoculis* (bigeye emperors); *Carcharhinus* sp. (requiem sharks); Epinephelinae (groupers); Balistidae (triggerfishes); and *Lutjanus* sp. (snappers). Non-identifiable fish bones were classified as 'Osteichthyes,' a category that contributes 76% of the fish assemblage by NISP.

Table 7. *NISP, MNI, Weight (g), and age classes for vertebrate taxa identified from site KIP-117, Kahikinui, Maui.*

Taxon	NISP	MNI	Weight (g)
FISH			
Carcharhinus sp.	6	1	1.4
Epinephelinae	5	1	0.6
Lutjanus spp.	2	1	0.1
Monotaxis grandoculis	10	2	0.6
Labridae	12	1	1.2
Scarus spp.	19	3	1.2
Acanthuridae	19	2	1.2
Balistidae	3	1	0.0
Osteichthyes	247	0	10.7
BIRDS			
Anatidae	1	1	0.1
Gallus gallus			11.0
adult	53	2	
sub-adult	2	1	
Passeriformes (*Moho* size)			0.2
adult	5	2	
sub-adult	3	1	
cf. *Chaetoptila* sp.	1	1	0.1
Drepanidinae	1	1	0.0
UID bird	25	2	1.5
MAMMALS			
Canis familiaris			8.7
adult	11	1	
sub-adult	3	1	
Sus scrofa			35.3
adult	20	2	
sub-adult (<1year)	38	2	
Medium mammal	52	1	16.3
Rattus exulans	58	5	2.2
Total	**596**	**35**	**92.4**

Twenty-eight complete fish vertebrae were recovered, including identified and unidentified bones. The anterior widths of the vertebral centrum were measured with the assumption that the vertebrae come from a cross section of the fish species present; thus, centrum widths are indicative of the mean size of fish in the assemblage. Site KIP-117's centrum measurements indicate that small-medium sized individuals were exploited. Widths range from 2.3 mm to 7.4 mm, with a mean of 3.7 mm and a standard deviation of 1.2 mm.

All of the fishes identified are common today in inshore areas along the coast of Kahikinui except for the bigeye emperor. Without exception, all of these fish taxa have been identified in other archaeological sites in Kahikinui (Kirch & O'Day 2003; O'Day 2001). Fifty-eight percent of the identified fish individuals are carnivorous and were likely caught with a hook and line. The remainder, including the parrotfishes and surgeonfishes, feed on algae and may have been caught with nets and, or, traps. Titcomb

(1972) describes these methods in association with parrotfishes and surgeonfishes, but also describes instances when hooks were used. Bigeye emperors are nocturnal, feeding at night on molluscs (Randall 1996). Snappers are also generally nocturnal, and all species are carnivorous. Conversely, parrotfishes, surgeonfishes, and wrasses are active during the day, and rest at night in holes and crevices; these fishes may be collected at night with a spear or similar technology.

Birds

A total of 91 bird bones, making up 15% of the vertebrate assemblage, were recovered from site KIP-117 excavations. Five distinct taxa were identified, including, *Gallus gallus* (chickens); Passeriformes (perching birds) of *Moho* sp. size (moho honeyeaters); Anatidae (duck); *Chaetoptila* sp. (*kioea* honeyeaters); and Drepanidinae (Hawaiian honeycreepers). Twenty-seven percent of the bird bones were too fragmentary to identify to a specific level. The material referred to *Moho* sp., *Chaetoptila* sp., and Anatidae is based on tentative identifications of fragmentary post-cranial bones. With the exception of the duck, these remains come from taxa that today are either extinct or endangered on Maui (Helen James, personal communication 2001; see Pratt *et al.* 1987).

Chicken bones, the main component of the bird assemblage (by count, MNI and weight), are primarily wing elements with few leg bones and portions of the axial skeleton. None of the chicken bone is burned. The Passeriformes material is entirely of post-cranial limb elements, only one fragment of which is burned. Three of the unidentified bird bones are burned.

The non-chicken bird bones from KIP-117 are primarily from immature individuals (see Table 7). The size and morphology of the bones indicate capture at near-adult size, before the birds displayed the prized yellow and red plumage of adults (H. James, personal communication). The *moho* and *kioea* honeyeaters are both nectar-feeders that inhabited the forest canopy. The honeycreeper family includes a variety of nectar and insect feeders (Pratt *et al.* 1987).

Mammals

Mammal bones make up a substantial 30.5% of the vertebrate assemblage. Medium mammals, including *Canis familiaris* (dogs), *Sus scrofa* (pigs), and remains classified to this general level, form the majority of the mammal material (NISP: 68%; MNI: 58%; weight: 97%). *Rattus exulans* (Polynesian rat) bones formed a smaller portion of the assemblage (31% NISP; 41% MNI; 3% weight). Whether these were commensal species or food is unclear. Less than 2% of the rat bones were fragmentary and burned; a high incidence of fracture and evidence of burning is thought to be indicative of their use as food (O'Day 2001).

When rats are excluded from the sample, sub-adult or immature dog and pig bones comprise 33% of the mammal NISP and 43% of the MNI. All of the sub-adult pig bone is from individuals less than one year of age, and one incisor represents an individual aged less than six months old. In terms of body parts, dog elements include teeth, crania, metapodials, and vertebrae, while pig remains consist of teeth, crania, and scapula.

THE FAUNAL ASSEMBLAGE IN COMPARATIVE PERSPECTIVE.

Site KIP-117's faunal assemblage is informative in terms of species composition, relative frequencies of taxa, age makeup, and characteristics potentially associated with certain animals as they relate to the Hawaiian gods. Invertebrates contribute a relatively small portion of the total faunal NISP (21%) from the site, and approximately 50% to both the MNI and weight. This pattern is unusual for Kahikinui, where bone generally contributes a much smaller portion of the NISP, MNI, and weight than does shell to the overall assemblage (Kirch & O'Day 2003; O'Day 2001).

The overall composition of the invertebrate assemblage is distinguished by the small range of taxa present (five families and echinoids). Previous excavations in Kahikinui have established that commoner residential sites frequently contain an abundance of shellfish remains; these sites exhibit a broad based pattern of invertebrate exploitation (O'Day 2001). For example, 19 more varieties of shellfish were identified in non-elite assemblages than in elite contexts (Kirch & O'Day 2003). The most frequently identified invertebrate species from site KIP-117 are cowries and limpets, which is a significant finding. Conversely, non-elite households contain a high concentration of nerites (*Nerita* spp.), periwinkles, and rocksnails (Kirch & O'Day 2003; O'Day 2001). Site KIP-117's invertebrate pattern is consistent with previous findings, indicating that elite sites emphasize a select group of shellfish, especially the culturally prized *ʻopihi* (*Cellana exarata*), and certain species of large cowry and cones. That the black-foot *ʻopihi* is the second most common component of site KIP-117's invertebrate assemblage is particularly noteworthy. Of all *ʻopihi*, the black-foot lives highest on the rocks and is most easily gathered, it also grows larger than other limpet species common to Kahikinui archaeological sites (Kay 1979; Kay & Magruder 1977). The relatively large size of the measured invertebrate specimens supports oral traditions that tell of elites, including priests, receiving preferential access to both terrestrial and marine resources (Buck 1957; Handy *et al.* 1972; Titcomb 1972).

Vertebral centrum widths from site KIP-117's fish are larger than those on fish recovered from non-elite household contexts in Kahikinui. For example, the mean width of KIP-117's vertebrae (3.7 mm) is larger than vertebrae from a commoner household associated with the Kipapa Rockshelter (mean 2.8 mm), and exhibits a range of

sizes (2.3–7.4 mm) from larger fishes (vs. 1.0–5.8 mm in the Rockshelter). These differences demonstrate that the inhabitants of site 117 consumed comparatively larger fish than did non-elites.

Site KIP-117 yielded a higher frequency of parrotfish bones than any other fish taxa. Despite the Western conception of parrotfishes as an undesirable food fish (their flesh can be soft), these fish were, in fact, prized by ancient Hawaiians (Malo 1951; Titcomb 1972), just as parrotfishes are across the Pacific Islands today (Johannes 1981; Halapua 1982; Veitayaki 1995; Malm 1999). In particular, the liver of parrotfishes is high in fat and was sought after by Hawaiians, who typically ate this fish raw (Titcomb 1972). The high frequency of parrotfish remains at KIP-117 is therefore indicative of a *cultural* preference rather than a result of preferential preservation in archaeological middens (as archaeologists have often argued). It is also noteworthy that during certain sex and/or age phases some species of parrotfish appear red and/or pink; the colour red is known to have been important to the native Hawaiians and to be associated with high rank and preferred foods (Buck 1957; Malo 1951; Valeri 1985). Further, during *luakini* temple rituals, the sacrificial offerings including red fish (*iʻa ʻula*) according to Valeri (1985: 264, citing Malo). At this time a *ʻōhiʻa* tree, progenitor of red flowers, is selected for carving a sacred image.

The immature passerine birds from KIP-117 may have been exploited strictly for consumption and, or, ritual purposes rather than for their feathers. Likewise, the single duck bone is from a young individual, '…probably still forming in the egg when it died' (H. James, personal communication). In marked contrast to the avian fauna from site KIP-117, no immature bird bones, except chicken, have been recovered from any of the commoner households excavated in Kahikinui.

The *kioea* honeyeater, known only by archaeological and fossil remains outside Oʻahu, is presumed extinct (Pratt *et al.* 1987). Site KIP-117 contained one mature tibiotarsus fragment of this species. The *kioea*'s plumage was colored with olive and white streaks and a black ear patch. Due to the tentative nature of the passerine identifications, we hesitate to place too much emphasis on the characteristics of the passerines that might have influenced their selection and subsequent association with this assemblage. However, the species of *moho* that is known to have occurred on Maui, Bishop's ʻōʻō (*Moho bishopi*), is a black-brown colored bird with yellow feathers at maturity. The god Kū is said to have been associated with mature *moho* that gave yellow feathers to decorate the gods and *aliʻi* (Valeri 1985: 15, citing Fornander 1916–20, 5: 150–51). Immature *moho* are entirely black in color. Bishop's ʻōʻō is known to have occurred on the dense rain forests of the northeast slopes of Haleakalā (*Pratt et al.* 1987: 281). It is possible that the young *moho*'s association with rain, birth, and fertility, and its black colour, combined to make this a religiously significant bird (even or especially in its sub-adult form) associated with Lono and, perhaps, the transition from Kū to Lono. Valeri (1985: 15, 45) notes the importance of an animal's colour in determining the association between an appropriate offering and a specific deity (also see Kamakau 1964); he states that black offerings, for example were sacrificed to Lono, Kāne, Kanaloa, and to thunder deities (also forms of Lono).

Dogs and pigs were preferred sacrifices and food items of the native Hawaiians (Buck 1957; Handy *et al.* 1972; Malo 1951; Valeri 1985). These two species may have been used as relatively equal substitutes for ritual occasions (Valeri 1985). Sub-adult bones of dog and pig form a significant portion of the vertebrate assemblage. These remains come from individuals less than one year of age, and are primarily from the head and forequarter region for pigs and the head and foot regions for dogs. The significance of this pattern may be better understood in terms of rites involving priests and animals intended for sacrifice.

Valeri (1985: 308) reviews oral and historical traditions discussing the 'rites for the final transformation of the God' during the *luakini* ritual. At this time, the *aliʻi* present hogs for sacrifice; 'when the pigs are cooked (*moʻa*), the priests are given one of the forequarters of each animal. This part is called *hainaki*' (Valeri 1985: 309). *Hainaki*, as a portion that was often given to priests, are also described by Handy *et al.* (1972: 355) and Pukui and Elbert (1986: 48). Importantly, three left pig scapula (from three different individuals, two mature and one sub-adult) were identified in the KIP-117 assemblage. Both the element and the side from which it comes may be indicative of the rite described by Valeri incorporating *hainaki*. Dogs also are said to be associated with Kū and thus *luakini* temples and numerous forms of sacrifice (Valeri 1985). Not surprisingly, teeth and cranial elements of dogs and pigs formed a large component of the mammal remains. According to Hawaiian (and Polynesian) religion, the head is the most sacred part of all animals as well as humans, thus forming an appropriate sacrifice (Handy 1927; Malo 1951).

DISCUSSION AND CONCLUSIONS

Several lines of evidence presented above support the interpretation that site KIP-117 was the residence of a member of the *kahuna*, or priestly class. First and foremost, the unique spatial association of this house with a complex of temples, set apart on a prominent ridge, and with no other dwelling sites in the vicinity, is powerful evidence that the occupant enjoyed a special status. In ancient Hawai'i as elsewhere in Polynesia, temples and their immediate vicinity were sacred (*kapu*) places where commoners dared not trespass except on special occasions when they were required to witness particular ceremonies. Priests, however, are known to have lived in proximity to the *heiau* where they officiated, and whose upkeep was their responsibility. Second, the large scale and elaborate architecture with elevated terrace and high, well-constructed stone

walls are consistent with elite occupations in Kahikinui and elsewhere in Hawai'i. In contrast, commoner houses were typically smaller and have only low windbreak walls.

The cultural content of KIP-117 is also consistent with aspects of the ethnohistoric record regarding *kahuna*. The cache of black and white pebbles found in the house interior is likely to have been part of the paraphernalia of a priest who was also a medical practitioner or healer. The lava stalactite found in the house floor is another unusual object, obtained somewhere beyond Kahikinui and suggestive of someone who made visits to lava tube chambers underground, possibly in private rituals that invoked the volcano goddess Pele. The individual who occupied KIP-117 also had access to a wide range of status foods, including not only pig and dog, but choice fish and shellfish, especially the black-footed *ʻopihi*. The pig remains especially are consistent with a cut of meat known to have been given to priests. Also unusual is the range of forest birds represented in the faunal assemblage–these may have had more to do with acquiring the bird's colorful plumage (the colours having particular associations with various deities in the Hawaiian pantheon) than as food items.

The lithic assemblage from KIP-117 is also of interest, as this indicates two kinds of stone working: the expedient and informal knapping of local basalt, probably to obtain flakes used in food preparation or other daily activities, but also the retouching and reworking of fine-grained basalt adzes. One small adz was found in the site, along with a number of polished adz flakes. Preliminary X-ray fluorescence analysis of the fine-grained basalt indicates that these artifacts were being imported from outside the Kahikinui district, and in one case from as far away as O'ahu. This too speaks to the importance of the individual occupying this site, with a broad network of social connections. It is plausible that the *kahuna* who lived at KIP-117 used these fine-grained basalt adzes to carve and sculpt wooden images (*kiʻi*) used in the adjacent temples.

The excavation of site KIP-117 provides a window into the daily life of a priest in protohistoric Hawaiʻi. He was someone who dwelt apart from the rest of the community, high on the Nakaʻohu ridge, in close proximity to the temples where he officiated in rites most likely directed to the agricultural gods Kāne and Lono. (We say this because the adjacent temples at Nakaʻohu are consistent with the cults of these deities; see Kirch 2004.) This *kahuna*, like many Hawaiian priests, is also likely to have been a respected medical practitioner, a *kahuna lapaʻau*. He might have been an accomplished sculptor as well, carving the images that were the physical embodiment of his gods. The name of this *kahuna*, along with his genealogical identity, has vanished forever. But in the material residue of his everyday life, we can glimpse something of the world of the priestly class in ancient Hawaiʻi.

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