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The Initial Investigation of Fatu-ma-Futi:
An Ancient Coastal Village Site, Tutuila Island, Territory of American Samoa

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ABSTRACT

Results of initial excavations at Fatu-ma-Futi Village are reported. Stratigraphy in two test pits was similar, with compacted surface layers of a car-parking lot underlain by a layer of clayey sand, fire-affected rock and ancient pebble-gravel paving, which slowly graded into the original beach surface. Post-moulds, shell midden, and basalt flakes were found in both units and human remains in one. Near-basal radiocarbon dates on charcoal suggest initial occupation of a newly formed littoral environment in the period of about 1600 to 1300 cal BP. Permanent habitation came later, with evidence of large-scale basalt tool manufacture towards the end of the sequence. This site is important for understanding current topics in Samoan prehistory, including settlement pattern and coastal geomorphology, marine exploitation and reef health, human lifestyle, health and burial practices, domestic architectural morphology; and the Tutuila basalt export industry.

Key words: SAMOA, TUTUILA, ARCHAEOLOGY, COASTAL VILLAGES, FATU-MA-FUTI, CHRONOLOGY, BASALT TOOL INDUSTRY.

INTRODUCTION

Coastal sites have been excavated on ‘Upolu (Green and Davidson 1969, 1974; Jennings and Holmer 1980; Jennings *et al*. 1976), Savai‘i (Ishimura and Inoue 2006), and Manu‘a (Kirch and Hunt 1993), but no comparable work on Tutuila has been published. Here we report the results of an initial excavation at Fatu-ma-Futi Village. Although the excavation was limited in scope, it suggests the rich potential of this site for addressing topics related to coastal villages in Samoa.

The results reported here suggest use (perhaps episodic) of a newly formed beach area beginning in the period of about 1600 to 1400 cal BP. Some time after about 1400 to 1200 cal BP, permanent habitation is indicated by large post-moulds, the accumulation of pebble-gravel paving material, burials, and abundant fire-affected rock. Later, the area was used for basalt tool manufacture.

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Marine faunal remains at Fatu-ma-Futi suggest the great potential of the site for addressing questions about Samoan subsistence strategies. The evidence for basalt tool working in a well stratified context can be used to investigate the Tutuila basalt export industry. Importantly, the site spans the so-called Samoan 'Dark Ages' and has the potential to inform on this crucial period in the development of Samoan culture and socio-political structures. Moreover, this is the period when East Polynesia, Tokelau, Tuvalu, and at least some of the Polynesian Outliers were first settled, presumably from a West Polynesian source such as Tutuila.

THE FATU-MA-FUTI ENVIRONMENT

Fatu-ma-Futi Village is situated at the southwest side of the entrance to Pago Pago Harbour (Fig. 1) on a near-flat area between the main road, which follows the coast, and the mountains behind. The village area extends approximately 260 m between Futi Rock and Niuloa point and varies in width to a maximum of 50 m inland at the mid-point. Behind the village, the land rises steeply to the eastern end of Sina Ridge. An intermittent watercourse runs perpendicular to the coast, approximately mid-way along the beach. Its flow reaches the sea through a culvert under the main road.

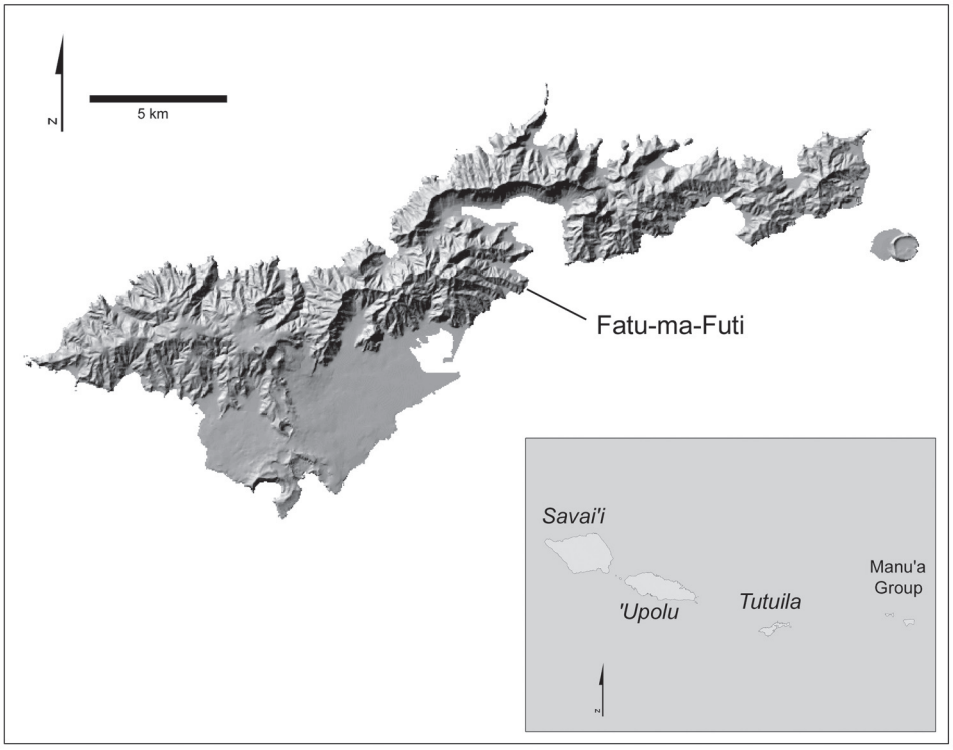

Figure 1: Tutuila Island, showing its position in the Samoan Islands and the location of Fatu-ma-Futi Village.

Sina Ridge is composed of Pago Volcanic Series intra-caldera volcanics consisting of massive andesitic and basaltic flows, with associated cones and dikes (Stearns 1944). The offshore islets of Fatu and Futi are volcanic plugs from this period of volcanism some 1.0–1.5 million years ago. Soils on the slopes surrounding the village are Aua very stony silty clay loam (Nakamura 1984). On the coastal flat where the village is located, the volcanics are overlain by a loose calcareous material along the coast, with talus at the foot of the slopes. In profile, terrigenous alluvial deposits interdigitate with the calcareous deposits as one moves inland (Walter and Addison 2005).

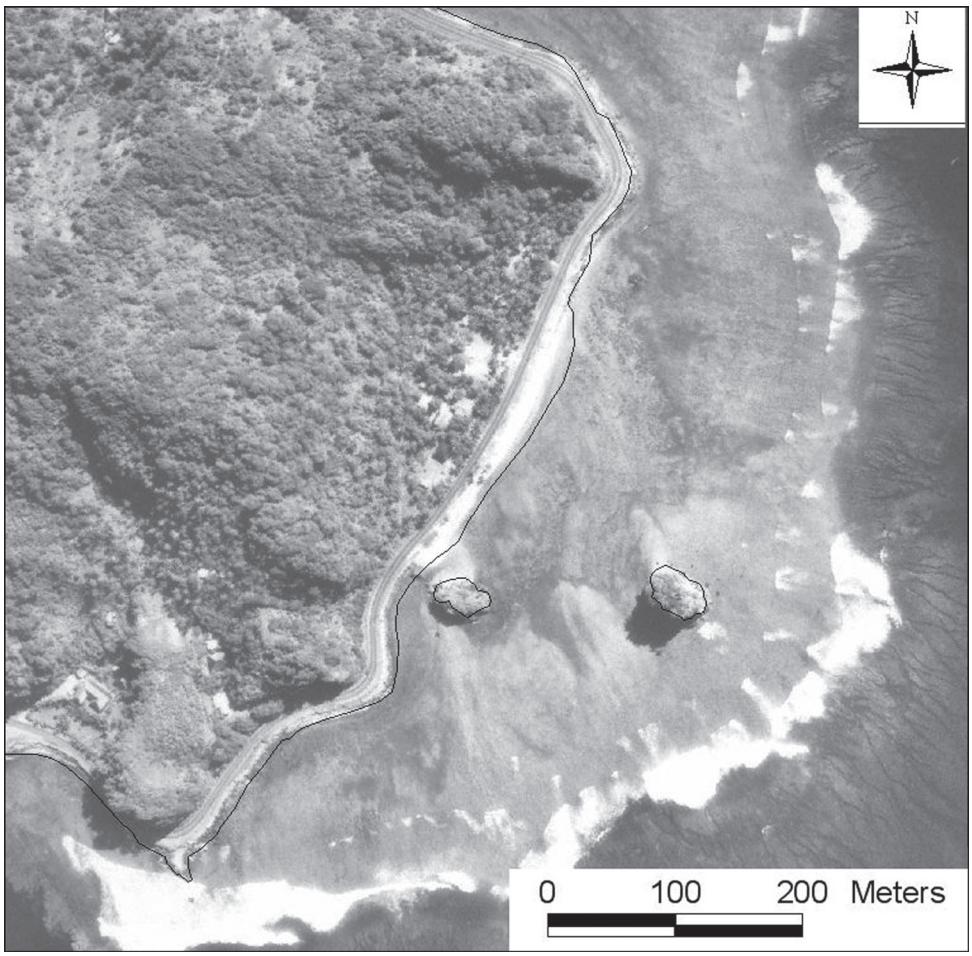

Figure 2: 1971 aerial photo showing Fatu-ma-Futi Village (centre).

Vegetation cover of the village shelf is largely modern anthropogenic with multistory vertically stratified gardens (Addison 2006, 2008) beginning behind the houses and continuing up the slopes. These gardens contain cultigens such as coconut (*Cocos nucifera*), breadfruit (*Artocarpus altilis*), bananas (*Musa* spp.), yams (*Dioscorea* sp.) and several aroid species. The reef and near-shore waters adjacent to the village offer rich marine resources.

Relative change in sea level has been important in understanding Samoan prehistory (Clark and Michlovic 1996; Dickinson and Green 1998; Hunt and Kirch 1997; Kirch and Hunt

1993). Increasingly, evidence suggests that there was a post-1600-cal-BP fall in relative sea level affecting Tutuila, resulting in newly formed coastal terraces, including Fatu-ma-Futi, being available for habitation (Addison and Asaua 2006). It is currently unclear whether this phenomenon is partially related to localised uplift associated with late Holocene volcanics (Addison *et al*. 2006) or possible regional fluctuations in climate (e.g., Allen 2006). Most probably, it is mainly a local response to final stabilisation following late-Holocene drawdown in regional sea level through equatorial ocean siphoning after the mid-Holocene high stand (Dickinson 2003; Mitrovica and Peltier 1991).

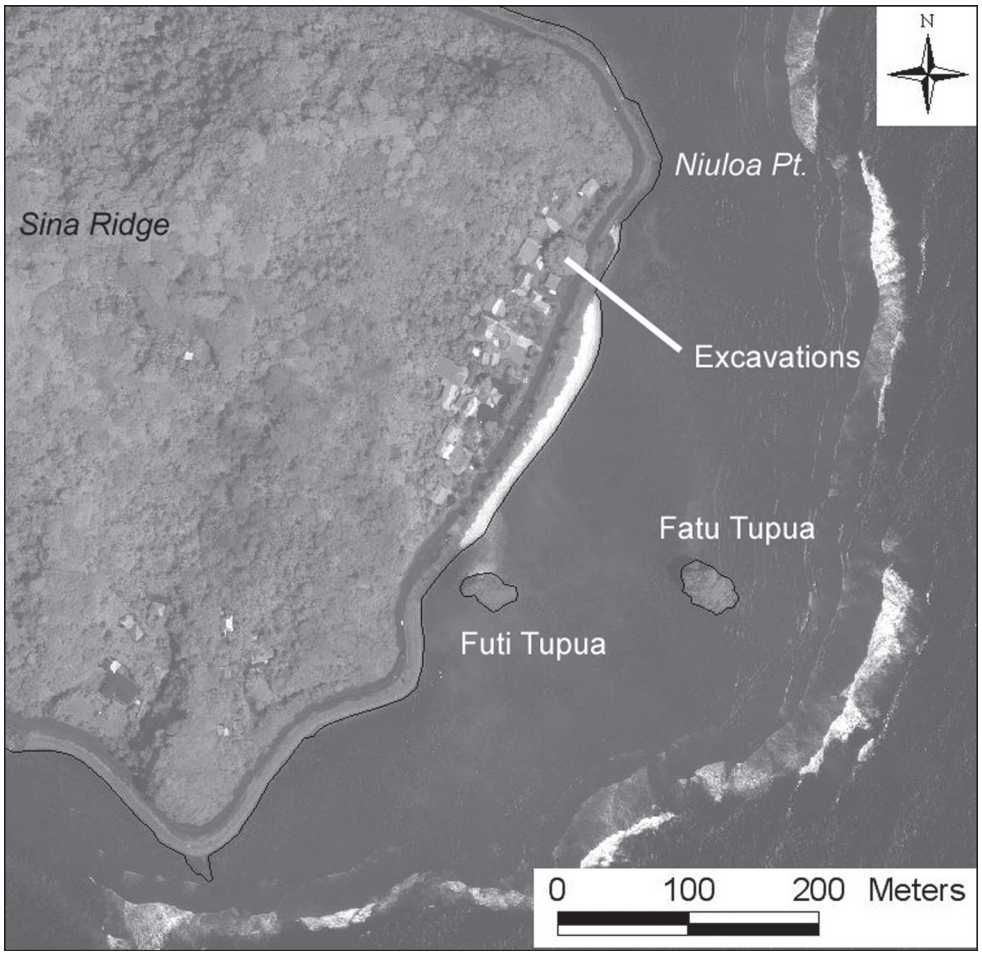

Figure 3: 2001 IKONOS satellite image showing 30 years of development at Fatu-ma-Futi Village (centre).

PREVIOUS ARCHAEOLOGY AT FATU-MA-FUTI

The village derives its name from two naturally-occurring basalt-tower islets directly fronting the village (Fig. 2). These islets are related to oral traditions about Fatu and Futi.

In one version, Futi Tupua (site number AS-25-003), the lower and more southern islet, represents a legendary female while Fatu Tupua (AS-25-004) represents a male (Clark 1980; Kikuchi 1963). Fatu-ma-Futi Village itself has been designated as site number AS-25-055 in accordance with the American Samoa Historic Preservation Office (ASHPO) policy of assigning discreet social units, such as villages, a single site number.

A surface reconnaissance survey of Fatu-ma-Futi found no archaeological features (Silva and Palama 1975:13). Comparison of 1971 aerial and 2001 satellite photographs of the area (Figs 2 and 3) shows that it has seen considerable residential development over the last 32 years. This has perhaps obliterated any surface archaeological features in the village proper missed by Silva and Palama. Addison was told by a local resident that there are numerous traditional house foundations on the ridge behind the village. This area was not visited, but ridge-top archaeological features are common on Tutuila (Clark and Herdrich 1993; sources summarised in Pearl 2004; Addison personal observation). The project reported here represents the first stratigraphic excavations at Fatu-ma-Futi.

EXCAVATION METHODOLOGY

Archaeological monitors noted probable cultural deposits in March 2003 when the American Samoa Power Authority (ASPA) installed a fire hydrant (FFH-2 on Fig. 4) on the landward

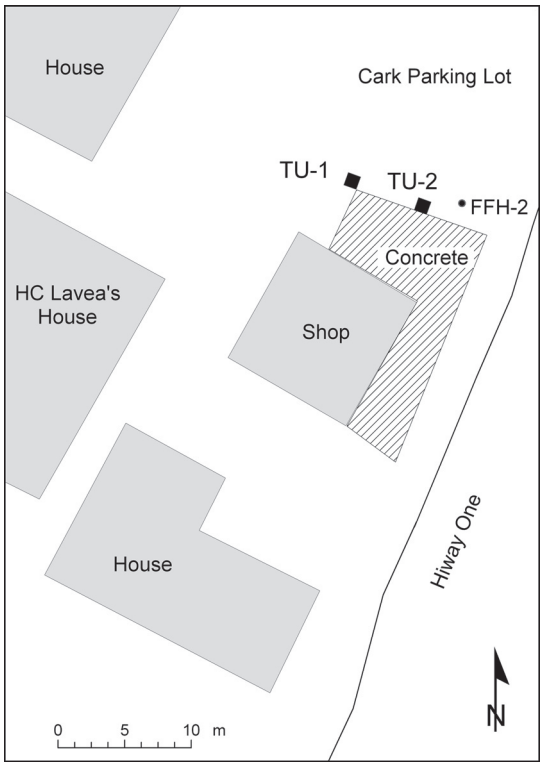

Figure 4: Fatu-ma-Futi Village site map showing the location of excavation units. FFH-2 indicates ASPA Fatu-ma-Futi Fire Hydrant No. Two. Hiway One is the main coastal road.

side of the coast road at Fatu-ma-Futi Village (Walter and Addison 2005). During April–May 2003, ASPA archaeologists excavated two 1 x 1 m units in order to assess the nature of the cultural deposits and their vertical/horizontal extent. The units were located on a transect running perpendicular to the road, along the edge of a concrete car-parking lot pad serving the adjacent shop, approximately 1.5 m south of the hydrant (see Fig. 4)).

Excavation followed natural or cultural strata. Where strata were thicker than 10 cm, they were divided into 10-cm spits. During excavation, layers were identified on the basis of general changes in the soil matrix; these are designated 'Excavation layers'. When excavation was complete, it was noted that the stratigraphy was more complex than had been recorded during excavation. Hence, deposits were re-designated as 'Stratigraphic layers'. The relationship between Excavation layers and Stratigraphic layers in TU-2 is presented in Table 1 and Figure 5.

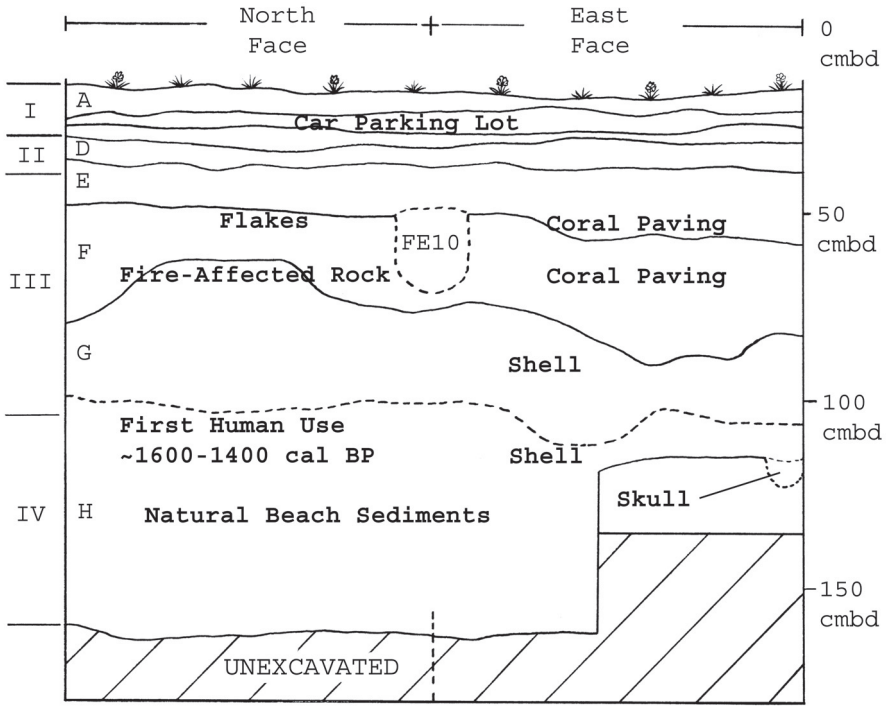

Figure 5: North and east baulk profiles of TU-2.

Sediment descriptions for TU-2 are given in Table 1. Stratigraphy and sediments in TU-1 were similar to TU-2 (see Walter and Addison 2005 for further details on TU-1). The volume of all excavated sediments was recorded. All excavated sediments were passed through a ¼-inch (3.2 mm) screen and the remnants visually inspected. All artefacts and midden were retained. In TU-2, in order to quantify the cultural inclusions, the volume of coral, fire-affected rock and water-worn basalt gravel was recorded for the first bucket from each spit (Fig. 6).

TABLE 1
STRATIGRAPHY AND SEDIMENT DESCRIPTIONS FOR TU-2

Excavation Layer	**Stratigraphic Layer**	**Stratigraphic Layer Depth cmbd**	**Munsell Colour Code**	**Description**
I	A	14 to 24	10YR 2/2	Very dark brown sandy loam, modern material
I	B	20 to 30	10YR 3/2	Very dark greyish brown sandy loam, modern material
I and II	C	26 to 34	10YR 4/3	Brown sand, water-worn basalt and coral gravel, modern material, in places underlain by an inconsistent layer of yellow sand up to 2 cm thick
II	D	30 to 40	7.5YR 2.5/2	Very dark brown clay loam, some fire-affected rock, basalt and coral gravel
III	E	34 to 60	7.5YR 2.5/2	Very dark brown clay loam, abundant fire-affected rock, abundant basalt and coral gravel, some basalt flakes, few modern material in the top of first spit
III	F	42 to 90	7.5YR 3.2	Dark brown clay loam, abundant coral gravel, few basalt gravel, abundant basalt flakes, some fire-affected rock
III	G	63 to 112	5yr 2.5/1	Black sandy clay loam, some fire-affected rock, basalt and coral gravel, inclusions diminishing with depth, few flakes in top spit
IV	H/120 cmbd	98 to 164	10YR 4/3	Brown sand, small amount of gravel, coral and fire-affected rock, colour becomes progressively lighter with depth, human remains found in spit two 115 to 125 cmbd, see other H samples below
IV	H/135 cmbd	98 to 164	7.5YR 6/4	Light brown sand, see H/120 cmbd
IV	H/155 cmbd	98 to 164	10YR 7/4	Very pale brown sand, see H/120 cmbd
Core A	Sample 1	165 to 185	7.5YR 6/4	Light brown sand, few small pieces of coral
Core A	Sample 2	185 to 205	10 YR 7/4	Very pale brown sand, few small pieces of coral
Core A	Sample 3	205 to 220	10YR 8/6	Yellow sand, few small pieces of coral and basalt gravel
Core B	Sample 1	165 to 185	10YR 6/4	Light yellowish brown sand, few small pieces of coral
Core B	Sample 2	185 to 205	10YR 7/4	Very pale brown sand, few small pieces of coral and basalt gravel
Core B	Sample 3	205 to 225	10YR 8/4	Very pale brown sand, few small pieces of coral and basalt gravel

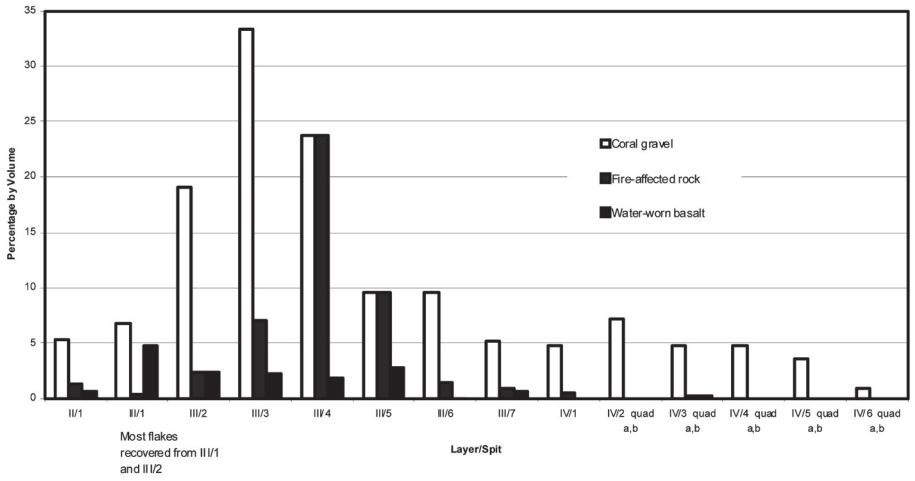

Figure 6: Relative quantities of paving material (water-worn coral and basalt gravel) and fire-affected rock in TU-2.

CHRONOLOGY

Very little charcoal was recovered from either test unit. Only one small sample was recovered from TU-1. This sample and the deepest sample from TU-2 were dated[4].

We interpret these dates (Table 2 and Fig. 7) as representing the earliest human activity at Fatu-ma-Futi. The samples come from the same stratigraphic context, although the beach slope makes their relative depths different. We interpret the fact that the dates do not overlap at 2σ as indicating long-term episodic use of a stable beach surface. Recent work documents inbuilt age in tropical-Pacific littoral ^{14}C samples of as much as 300 years (Allen and Wallace 2007). If this is applicable to the Fatu-ma-Futi samples, it would mean that the two samples are interpretatively contemporaneous.

TU-2 STRATIGRAPHY

Stratigraphic Layers A, B, C are sand, volcanic cinder, and coral that were probably deposited in the creation of the car-parking lot. Stratigraphic Layer D is the beginning of the pre-modern deposits. Stratigraphic Layer E is transitional between Layers D and F. The greatest concentration of fire-affected rock occurs in Stratigraphic Layers E and F at 60–90 cmbd (cm below datum). Stratigraphic Layer F is very dark brown sandy clay loam and is the main basalt-flaking stratum. Stratigraphic Layer G is similar, but with few flakes and a high proportion of fire-affected rock and water-worn basalt and coral gravel paving

[4]Because the samples originated from strata below a car-parking lot, it was decided, in consultation with Fiona Petchey of the University of Waikato Radiocarbon Dating Laboratory, to pre-treat for potential petroleum distillate contamination. The protocol consisted of soxhlet extraction with xylene, toluene, ether, acetone, and distilled water (in an elutrope sequence) prior to standard acid-base-acid pretreatment (Petchey pers. comm.).

material (Fig. 8); the proportion of sand increases with depth. There is a gradational transition to Stratigraphic Layer H, a layer composed primarily of calcareous sand, with a small amount of pebble-sized fire-affected rock and water-worn basalt and coral gravel. Cultural material was confined to the top of Layer H and is interpreted as the original beach surface first used by humans.

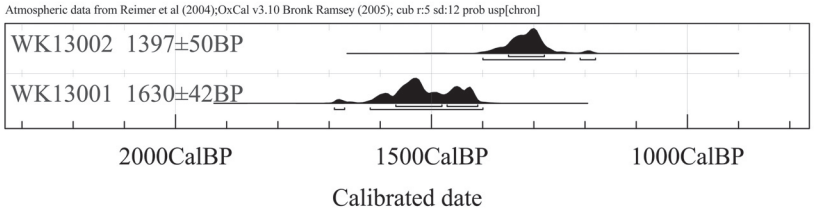

Figure 7: Graph of calibrated radiocarbon dates from Fatu-ma-Futi.

TABLE 2
AMS DATING SAMPLE DETAILS

Radiocarbon age determinations were made by the University of Waikato Radiocarbon Dating Laboratory; calibrations were done using OxCal v3.10 (Bronk Ramsey 2005) using atmospheric data from IntCal04 (Reimer *et al*. 2004). Conventional age as per Stuiver and Polach (1977) with correction for isotopic fractionation applied.

	Wk-13001	**Wk-13002**
Conventional age	1630 ± 42 BP	1397 ± 50 BP
Cal. 68.2% probability	(43%) 1570–1480 cal BP (25.2%) 1470–1410 cal BP	1350–1280 cal BP
Cal. 95.4% probability	(1%) 1690–1670 cal BP (94.4%) 1620–1400 cal BP	(93.2%) 1400–1240 cal BP (2.2%) 1210–1180 cal BP
$\delta^{13}C$	-25.6 ± 0.2 ‰	-29.2 ± 0.2 ‰
Sample description	Unidentified charcoal	Unidentified charcoal
Provenance	TU-1, Layer IV/1, 77 cmbd	TU-2, Layer IV/2, 125 cmbd

Cores were bored using a 75-mm hand auger at the bottom of each test unit. This failed to find a lower boundary for Layer H (Table 1). No human manufactured artefacts or features were apparent below 110 cmbd in TU-1 or 126 cmbd in TU-2.

Material from the cores was mainly calcareous sand with a few coral inclusions and the occasional volcanic pebble. We interpret these as natural beach deposits predating the human use of the area.

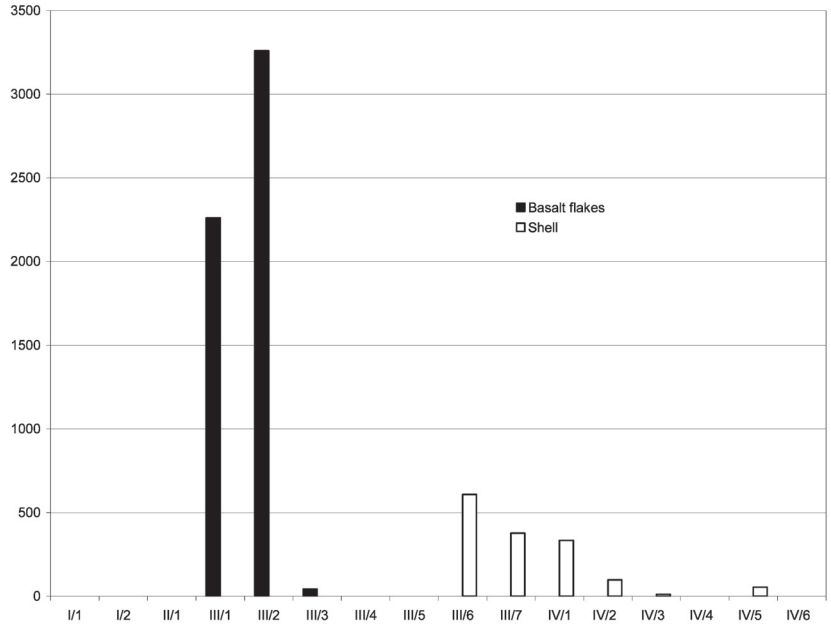

Figure 8: Quantities (g) of lithic flakes and molluscan midden in TU-2.

FEATURES

Ten features were identified during excavation. One post-mould (Feature 10) and human remains (Feature 9) were recorded in TU-2. The eight features in TU-1 are interpreted as post-moulds.

POST-MOULDS

Several of the post-moulds in TU-1 were intersecting, making excavation and interpretation difficult. They indicate a history of about 1500 years of building construction, beginning with small temporary structures, followed by substantial buildings later in the sequence. Their stratigraphic position and dimensions are summarised in Table 3.

Features 3, 4 and 5 were shallow, entirely within Layer IV/2 and marked only by being a darker shade than the surrounding sand. There were no inclusions in the fill. The sole charcoal sample for TU-1 was found within 10 cm of Feature 5 at the same depth (77 cmbd).

Features 2 and 7 were also completely within the calcareous beach sand layer that corresponds with Excavation Layer IV, originating at or near its surface. They were of similar depth and fill and it is likely that they were contemporaneous. Feature 7 was noticeably funnel-shaped, narrowing to the base. The fill was dark brown sand, coral gravel and shell, overlying brown sand with a few small coral and shell fragments.

TABLE 3
DIMENSIONS AND CONTEXT OF POST-MOULDS

No.	Layer (top)	Top (cmbd)	Bottom	Plan shape (cmbd)	Diam	Depth	Comment
FE-1	III/3	44	108	-	35	60	Similar fill to FE-6
FE-2	IV/2	75	103	-	35	25	Similar fill to FE-7
FE-3	IV/2	75	80	Oval	8	5	Similar fill to FE-4 and FE-5
FE-4	IV/2	75	85	Round	12	10	Similar fill to FE-3 and FE-5
FE-5	IV/2	75	85	Indistinct	15	11	Similar fill to FE-3 and
FE-6	III/2	36	102	-	40	66	Similar fill to FE-1
FE-7	IV/2	74	98	Round	20	24	Funnel-shaped, fill like FE-2
FE-8	III/4	60	78	Round	12	18	-
FE-9	IV/2	-	-	-	-	-	Human remains
FE-10	III/2	-	-	-	20	20	-

Feature 8 was relatively small, originating in Layer III but lying largely in Layer IV. The fill was a brown sandy matrix with small coral and basalt gravel and shell, overlying red-brown sand with coral and basalt gravel.

Feature 10, the only post-mould found in TU-2, was similar in depth to Feature 8 and in a somewhat similar context. However, its fill was completely different. It lay entirely within Excavation Layer F and was filled with the same material as Excavation Layer E, a very dark brown clay loam with some inclusions of rock and coral.

Features 1 and 6 were much deeper than the other post-moulds, had similar fills, and appear to represent a significant building. They originated at a higher point than Features 2, 7, and 8. They had a similar fill in three parts: dark brown sandy soil with abundant rock, coral and shell inclusions, overlying similar material with a reddish tint, overlying brown sand with a few water-worn basalt and coral gravel shell fragments.

Feature 1 was directly adjacent to Feature 2. It was clear that Feature 1 was dug from a higher level, and was therefore the more recent of the two. A slab of rock (approx 20 cm x 20 cm x 4 cm), standing on edge was situated where the two features touched. It was not possible to ascertain which feature it was related to.

It is likely that the two pairs of contemporaneous features represent two distinct building or occupation phases, with Features 2 and 7 predating Features 6 and 1 by an unknown amount of time. The single charcoal sample (Wk13001) from TU-1 comes from 77 cmbd and dates to about 1600–1400 cal BP (Table 2), suggesting long-term use of the area for buildings, with multiple rebuilding events. This date relates to the earliest use phase, represented by Features 2 and 7.

HUMAN REMAINS

A crushed skull and two long bones (Feature 9) were uncovered in Layer IV/2 of TU-2. In consultation with the family, it was decided to remove the disturbed bones only long enough to ascertain the extent of the skeleton, which was reburied before back-filling the test unit. This precluded an in-depth analysis of the bones. The bones were wrapped in siapo (Samoan bark-cloth), sealed in plastic bags, and returned as close as possible to the exact location where they were found. The remains are interpreted as the skull and lower arm of an

adolescent (see Walter and Addison 2005 for details). Residents stated that it is common to find human bone when digging in the calcareous deposits underlying the village.

TABLE 4
MOLLUSCAN SPECIES IN TU-1 (in grams)

Species	**IV/2**	**IV/3**	**IV/4**	**IV/5**	**IV/6**	**IV/7**	**IV/8**	**Total**
Turbo setosus	-	79.1	-	-	-	140.8	135.0	354.9
Tridacna maxima	-	-	-	45.1	3.2	139.5	74.5	262.3
Cowrie species	0.1	2.4	6.2	5.1	3.1	46.7	42.6	106.2
Strombus sp.	-	4.7	8.0	1.9	-	43.5	19.6	77.7
Haliotis sp.	-	0.1	-	-	-	60.1	8.7	68.9
Periglypta sp.	-	-	-	-	-	63.2	-	63.2
Turbo crassus	-	-	-	-	-	52.0	-	52.0
Conus spp.	-	-	-	-	-	5.4	43.8	49.2
Lunella cinerea	-	11.8	-	-	-	21.7	-	33.5
Nerita spp.	0.1	-	0.1	2.5	4.2	10.7	9.7	27.3
Tectus pyramis	-	-	-	-	-	11.9	6.8	18.7
Cymatium sp.	-	-	-	-	-	7.0	7.0	14.0
Atactodea striata	0.1	-	-	-	1.2	5.2	3.1	9.6
Drupa sp.	-	-	-	-	-	-	5.8	5.8
Patellidae	-	-	-	-	-	3.7	0.1	3.8
Nerita polita	2.6	-	-	-	-	-	-	2.6
Trochus maculatus	-	-	-	-	-	-	2.5	2.5
Cerithium columna	-	-	-	1.8	-	-	-	1.8
Arca avellana	-	-	0.1	0.1	0.1	-	-	0.3
Littorina sp.	-	0.1	-	-	-	0.1	-	0.2
Olivella sp.	-	-	0.1	-	-	-	0.1	0.2
Tellina sp.	-	-	-	-	-	-	0.1	0.1
Unidentified shell	-	-	7.8	18.5	15.5	150.9	75.5	268.2
Total	**2.9**	**98.2**	**22.3**	**75.0**	**27.3**	**762.4**	**434.9**	**1423.0**

SHELLFISH EXPLOITATION

Only a small amount of molluscan remains were recovered from the test excavation units (Tables 4 and 5). Although the small sample sizes do not allow for meaningful temporal comparisons, it is clear that foragers relied heavily on molluscs of the genera *Turbo*, *Tridacna*, and *Cypraea*. These three genera make up the majority of the assemblages in both excavation units and constitute over 50% of the excavated shell by weight. Excluding the large bivalve *Tridacna maxima*, marine gastropods inhabiting coral reef environments dominate in abundance, with soft-sediment bivalves and shoreline taxa present only in small numbers. The abundance of coral-dwelling gastropods attests to the productive inshore fringing-reef environment and lack of well-developed lagoon in the vicinity of Fatu-ma-Futi.[5]

[5] Further investigations at Fatu-ma-Futi recovered a much larger sample of molluscan remains, confirming the importance of the site in this respect (Morrison and Addison 2008).

TABLE 5
MOLLUSCAN SPECIES IN TU-2 (in grams)

Species	**III/6**	**III/7**	**IV/1**	**IV/2**	**IV/3**	**IV/5**	**IV/6**	**Total**
Turbo setosus	244.8	48.5	48.2	66.3	0.1	13.3	-	421.2
Turbo crassus	-	175.2	64.6	-	-	-	-	239.8
Tridacna maxima	35.9	-	82.9	11.2	11.1	3.5	-	144.6
Cowrie species	26.5	30.8	17.7	1.8	0.1	5.7	-	82.6
Nerita sp.	14.5	18.8	38.7	6.0	0.1	2.6	0.1	81.0
Cymatium muricium	65.1	-	-	-	-	-	-	65.1
Trochus maculatus	20.1	26.4	10.8	-	-	-	-	57.3
Periglypta sp.	44.9	6.3	0.1	-	-	-	-	51.3
Atactodea striata	6.9	10.7	23.9	5.3	0.1	2.6	0.1	49.6
Conus spp.	28.1	14.0	4.0	-	-	-	-	46.1
Strombus sp.	22.9	3.4	3.1	3.0	-	5.0	-	37.4
Drupa sp.	14.0	6.5	15.4	0.1	-	-	-	36.0
Asaphis violascens	-	-	9.4	3.6	-	-	-	13.0
Tectus pyramis	-	2.7	6.0	-	-	-	-	8.7
Haliotis sp.	-	-	-	-	-	8.7	-	8.7
Lunella cinerea	-	-	-	-	-	7.3	-	7.3
Cymatium sp.	-	-	7.1	-	-	-	-	7.1
Cerithium columna	-	1.7	1.4	-	-	-	-	3.1
Arca avellana	-	-	-	0.1	0.1	-	-	0.2
Patellidae	-	-	0.1	-	-	-	-	0.1
Unidentified shell	84.8	32.1	-	-	-	5.3	-	122.2
Total	**608.5**	**377.1**	**333.4**	**97.4**	**11.6**	**54.0**	**0.2**	**1482.4**

ARTEFACTS

Artefacts and provenance are summarised in Tables 6 and 7. A full list of artefacts and corresponding accession (bag) numbers appears in Walter and Addison (2005). The artefacts can be placed in two categories: those that are obviously of modern origin, such as glass and metal, and those objects likely to be of traditional origin such as basalt flakes and tools.

Modern artefacts (nails, beverage can tear-tabs, bottle glass, modern ceramics) were largely confined to the top-most previously disturbed layers in both units (Excavation Layers I and II). TU-1 produced an adze preform and a possible adze fragment, and basalt flakes. TU-2 produced basalt flakes and a fragment of mammalian long bone.

Layer III/1 of both units produced a mixture of modern artefacts and flakes. This is the deepest layer, in either unit, that shows any evidence of modern artefacts. Basalt flakes were in evidence from the first spit of Excavation Layer III in both test units. Of note are high concentrations of flakes in the two uppermost flake bearing spits, III/1 and III/2, of TU-2, probably the debitage from basalt tool manufacture.[6] Few flakes were found in the next two

[6] Lithic analysis has not done been on the flakes from these excavations, but some informal observations support the tool manufacture interpretation; these include a large amount of flakes in the 4-6 cm range, the presence of flakes with cortex, and the rarity of polished flakes.

spits (III/3 and III/4), and none thereafter in TU-2. Similarly, greater concentrations of flakes (although not to the same extent) were found in the upper flake bearing spits of TU-1 (III/1 and III/2) than in the deeper layers (Layers III/3 and IV/1). No artefacts were found deeper than Layer IV/1 in TU-1. The depth of these flake-bearing layers corresponds between the two units when beach slope is taken into account.

TABLE 6

ARTEFACTS FROM TU-1
Few = < 200 g, some = 200 g to 1 kg

Layer/spit	Depth (cmbd)	Charcoal	Flakes	Metal	Glass	Other
I/1	10 to 14	-	-	Y	-	-
II/1	14 to 17	-	-	Y	Y	-
III/1	17 to 29	-	Some	Y	Y	adze preform possible adze fragment
III/2	29 to 41	-	Some	-	-	-
III/3	41 to 52	-	Some	-	-	-
III/4	52 to 64	-	-	-	-	-
IV/1	64 to 75	Wk13001	Few	-	-	-
IV/2	75 to 86	-	-	-	-	-
IV/3	86 to 95	-	-	-	-	-
IV/4	95 to 105	-	-	-	-	-
IV/5	105 to 115	-	-	-	-	-
IV/6	115 to 130	-	-	-	-	-
IV/7	130 to 165	-	-	-	-	-
IV/8	165 to 200	-	-	-	-	-
Coring	200 to 230	-	-	-	-	-

SITE INTERPRETATION AND CONCLUSIONS

Although excavation was limited, the relative richness of the Fatu-ma-Futi deposit in the Samoan context allows some general interpretations of the prehistoric use of the area. The site was probably initially used in the period of about 1600 to 1400 cal BP although, given the possibility of inbuilt age, it could be as late as about 1200 cal BP. This initial use was probably episodic, involving marine procurement or other activities (top of Layer IV). A long period of temporary use is suggested by the two non-overlapping dates from Layer IV (although, as noted earlier, inbuilt age could mean that these samples are from contemporaneous fires). The light colour and relative paucity of cultural material in this stratum also suggest episodic use. Disparate dates from fire features in the same stratum (also a light-sand matrix with little cultural material) in near-shore excavations at To‘aga, Ofu Island, suggest a similar use pattern (Addison 2005). Features 2 and 7, interpreted as small post-moulds, are entirely within Layer IV and suggest the existence of insubstantial and probably temporary shelters during the early use of Fatu-ma-Futi.

TABLE 7

ARTEFACTS AND BONE FROM TU-2
Few = < 200 gm, Some = 200 gm to 1 kilo, Abundant = > 1kg

Layer /spit	**Depth cmbd**	**Charcoal**	**Flakes**	**Metal**	**Glass**	**Other**
I/1	15 to 25	-	-	Y	Y	-
I/2	25 to 30	-	-	Y	Y	-
II/1	30 to 40	Y	-	Y	Y	-
III/1	40 to 50	-	Abundant	Y	-	-
III/2	50 to 60	-	Abundant	-	-	-
III/3	60 to 70	-	Few	-	-	-
III/4	70 to 80	Y	Few	-	-	1 fragment, probably long bone
III/5	80 to 90	-	-	-	-	-
III/6	90 to 100	Y	-	-	-	-
III/7	100 to 105	Y	-	-	-	-
IV/1	105 to 115	Y	-	-	-	-
IV/2	115 to 125	Wk13002	-	-	-	Human skeletal remains
IV/3	125 to 135	-	-	-	-	-
IV/4	135 to 145	-	-	-	-	-
IV/5	145 to 155	-	-	-	-	-
IV/6	155 to 165	-	-	-	-	-
Coring	165 to 225	-	-	-	-	-

If Addison and Asaua (2006) are correct in suggesting that some narrow coastal terraces on Tutuila's southern shore were not formed until this period, the Fatu-ma-Futi area may not have been either large enough or stable enough initially for permanent habitation. It is interesting that significant amounts of molluscan remains had only limited vertical distribution and were confined to the top of Layer IV and the bottom of Layer III. We interpret this as probably indicating changing disposal patterns rather than the absence of molluscan procurement during the last 1000 years of the site's occupation. Although this is an intriguing pattern, we recognise that a larger sample is needed for a better understanding of prehistoric exploitation of the Fatu-ma-Futi reef.

The burial in Layer IV may relate to this stratum, or it may be intrusive from Layer III. This represents the first well-preserved human skeletal remains found on Tutuila. With no pit identifiable and only a small portion of the burial exposed, it is difficult to interpret. However, the good preservation of the bones and the indication by local residents of numerous burials in the vicinity suggest the possibility that this site may be able to address a range of questions about burial practices, diet, genetic affiliations, health and lifestyle, and demography.

Layer III is interpreted as the result of more intensive use of the site. Increasing density of coral-gravel paving material and fire-affected rock in the middle of Layer III suggests permanent habitation. Features 1 and 6 are interpreted as large post-moulds indicating substantial structures built of posts with diameters in the range of ethnographically documented large Samoan houses. Large-scale basalt flaking is evident in the upper portion of this stratum and may date to the Tutuila basalt export industry at around 700 to 600 cal BP (Addison n.d.a, n.d.b; Addison and Asaua 2006). Otherwise, the only absolute

chronological information on this stratum is that it is more recent than the date of about 1400 to 1200 cal BP for Layer IV (Wk-13002). Given the amount of lithic material recovered during excavation, it is possible that there are tool-quality basalt deposits near the village. Alternatively, the raw material may have been imported from elsewhere on Tutuila and the site may inform on lithic procurement strategies and the economic and political aspects of the Tutuila basalt export industry. Recent geochemical research suggests that the different volcanic series on Tutuila can be distinguished (Johnson *et al*. 2007; see also Winterhoff 2003); geochemical characterisation of the basalt from Fatu-ma-Futi will help clarify its origin.

In summary, Fatu-ma-Futi has a rich archaeological deposit dating back to at least ~1200 cal BP. The site shows great potential for understanding important topics in Tutuila prehistory. These include initial settlement of the island's many narrow coastal terraces and related questions of coastal geomorphology and relative sea-level change and general settlement pattern; marine resource procurement and reef health; burial practices, health and lifestyle; architectural morphology; and lithic manufacture. Moreover, the site spans the 'Samoan Dark Ages', a period about which little is known (Davidson 1979; Rieth 2007; Rieth and Addison n.d.).

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