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Brief Interim Report for Excavations on Ahuahu Great Mercury Island, June 2014 to February 2017

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Ahuahu Great Mercury Island lies of the eastern coast of the Coromandel Peninsula and since 2012 has been the focus of intensive archaeological investigation. The Ahuahu Great Mercury Island Project is a partnership between the University of Auckland and the Auckland War Memorial Museum Tāmaki Paenga Hira, in collaboration with Nagti Hei of Wharekaho and Sir Michael Fay representing the landowners. Research aims focus on human-environment interrelationships, gardening, chronology of occupation, raw material use, and settlement pattern within an overall programme that is focused on a landscape geoarchaeology of Ahuahu. Rather than focus on single archaeological sites, this project involves the investigation of multiple locations with the aim of understanding how the archaeological record was both formed and transformed as a result of human environmental interaction. Interim reports for excavations from 2012 to 2014 have been published (Furey et al. 2013; Phillipps et al. 2014), which this report expands on.

Archaeological work has proceeded under HP authority 2013/277. Visits have continued to the island three times a year (February, June, and November) with the exception of June 2014, when a major rat eradication programme was carried out on Ahuahu and archaeological work was suspended while the island was made pest-free. Excavations since January 2015 have focused in Coralie Bay on the eastern side of the island, primarily around the Waitapu Stream area (T10/360, T10/361) although excavations have also continued at Te Mataku (T10/359) on the north side of the bay in response to ongoing damage to the site from storm surge, as well as in the central Tombolo area (T10/357) (Figure 1). Results from these investigations are briefly summarised here.

Recording Methods

The previous reports of this project have outlined the recording system practice. In short, each excavation area (EA - equivalent of a trench), which varies in size, is allocated a unique identification number with an EA prefix. Artefacts, fire cracked rocks, and samples are also allocated unique numbers which are recorded with a robotic total station to the nearest centimetre in three dimensions in UTM

coordinates. Additional information is recorded on a label that accompanies each artefact or sample recorded and this information is entered into a database, with the EA number, context number, any associated feature number and type of find. Each context (deposit or cut) is also allocated a unique number and descriptive details and measurements are entered into the database. Features are allocated a unique identification number, attributes are recorded, and these are associated with relevant deposits or cuts. This forms the principal standard recording system for the project. The end of project goal is to make the database publically available as a record of Ahuahu heritage. It is intended that the database will serve as a model for future landscape-based archaeological projects in New Zealand.

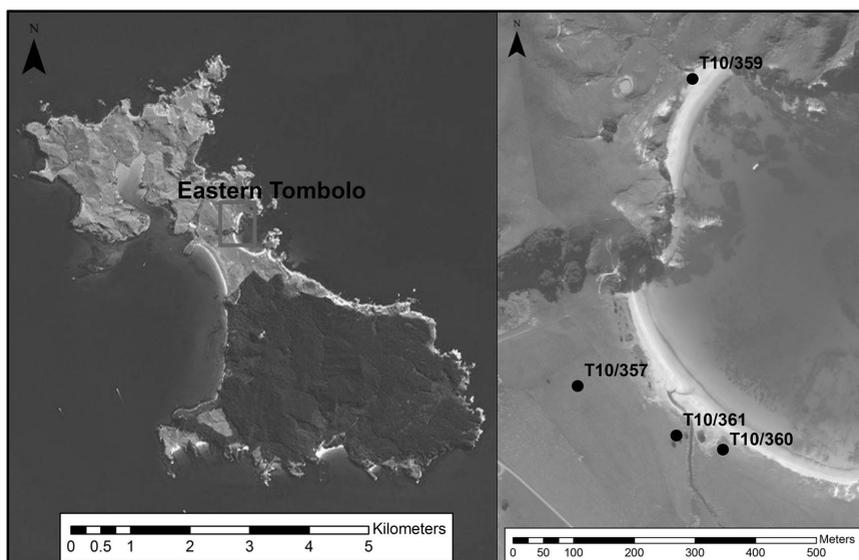


Figure 1. Great Mercury Island showing the eastern Tombolo (left) with locations of investigations during the 2014-2017 period (right).

Summary of Field Work 2014-2017

T10/359 Te Mataku

Further excavations at Te Mataku took place from 6-13 June 2015 and 12-19 November 2015 which extended the excavation area previously reported (Phillipps et al. 2014) (Figure 2). Regular monitoring of the site revealed storm surge was washing over the sand dune and exposing cultural material and that part of the area investigated in 2013 was scoured out during a storm event, highlighting the

urgency of recovering information from low-lying dune sites. During excavation an area of post-occupation wash was identified near the beach-dune transition that may be relatively recent, suggesting that the buried deposits are subject to ongoing processes of exposure and re-deposition.

The new excavations extended the previously excavated area EA51 to the west where it was thought more intact material could be found. The occupation on the western margin sits on the toe of a clay ridge into which two large and deep fire features were dug that contained intact large water-rolled stones. An adjacent row of postholes was on a NW-SE orientation, the purpose of which may become apparent through spatial analysis of the surrounding features and artefacts. Small fire features were present and the amount of midden material was noticeably less than that identified during the previous excavations.

Analysis of the artefactual material is ongoing. In total 2,170 stone artefacts, 8,153 fire-cracked rock (FCR), and 1,912 individual pieces of bone were found during the excavation of EA51 (Figures 3-5). The faunal material consisted of fish, bird, moa, sea mammal, and dog bone. The presence of underlying clay on the western side of the excavation has affected bone survival, in contrast to the eastern side where bone preservation in the deep sand matrix is relatively good. Dog coprolites were recovered and are in the process of analyses including DNA extraction. The features such as an oval pit filled with faunal material, fire scoops, and postholes indicate a more widespread range of activities than was evident in previous excavations, and may suggest some differentiation in activity areas.

We are confident that the extent of the excavated area is sufficient to ensure storm events will cause little damage to the remaining parts of the site. Monitoring since the completion of the excavations has shown that the backfill protects the remaining material. However, we will continue to monitor the site on a regular basis and intervene if needed.

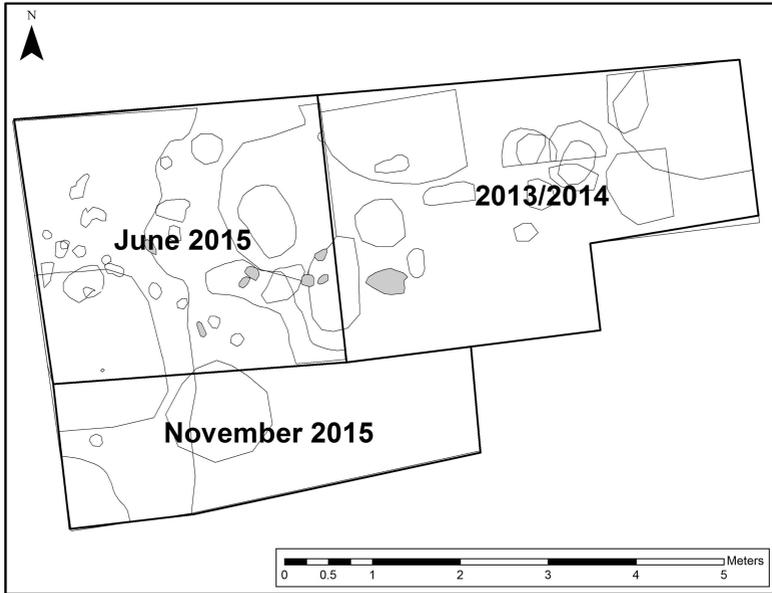


Figure 2. EA51 excavation by season.

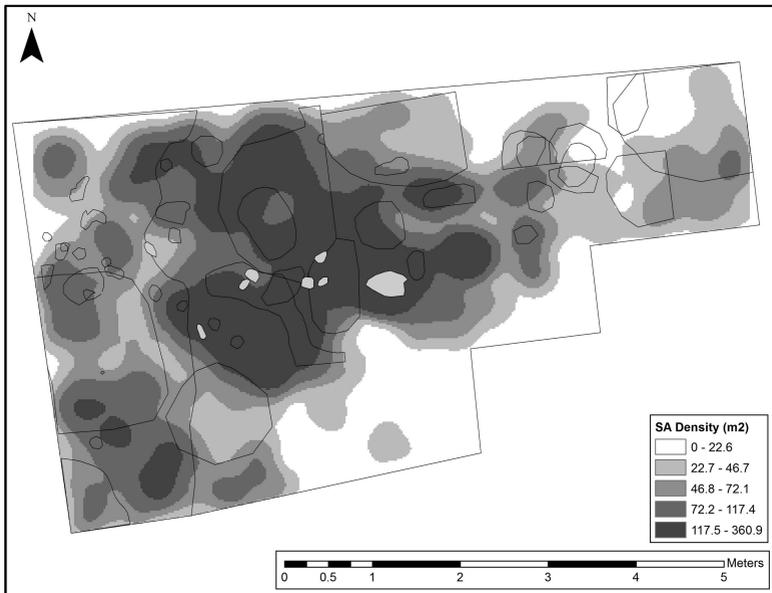


Figure 3. Stone artefact (SA) density of Te Matakau (m^2).

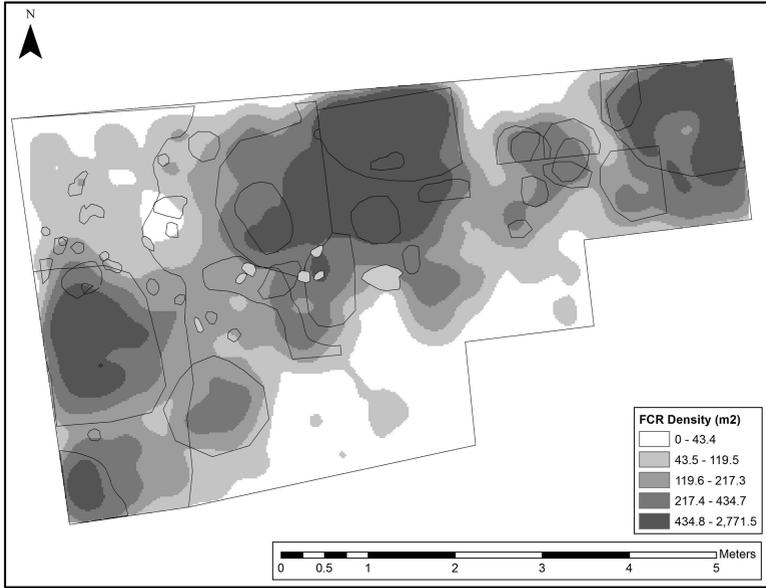


Figure 4. Fire cracked rock (FCR) density of Te Matakau (m²).

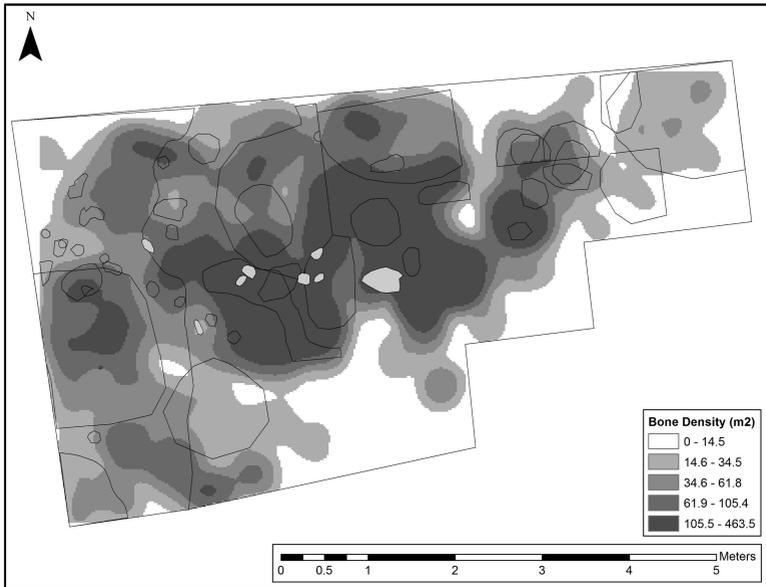


Figure 5. Bone density of Te Matakau (m²).

T10/357 Tombolo Survey

In November 2014 the geomorphological and archaeological composition of the tombolo was investigated by mapping the relationship of the dunes of different ages. This involved coring, or digging test pits, at 10 m intervals along two transects running east to west across the tombolo to establish the thickness of the recent Holocene sands and their depth from the surface until a reddish brown soil B horizon (subsoil) was encountered (Figure 6). We now have a better understanding of the structure of the tombolo, which has since been further refined by use of ground penetrating radar to look at the underlying geological formation. This research provides information on the geomorphic contexts in which the archaeological record is preserved and investigation will be continued under a new consent from Heritage New Zealand.

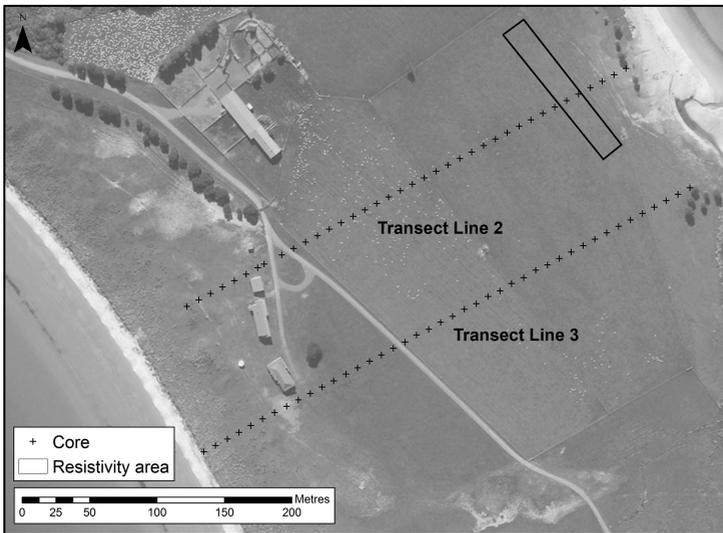


Figure 6. Distribution of cores on transect lines 2 and 3, and location of the resistivity survey.

In conjunction with the coring, a resistivity survey was conducted along the top on the eastern side of the tombolo (Figure 6). A 120 x 20 m area was surveyed using a Geoscan Research RM15 Resistance Meter using a twin probe array. Resistivity readings were taken every 0.5 m on 0.5 m transects. The survey revealed a number of anomalies, a sample of which that were investigated by 2 x 0.5 m test trenches (EA52-57, 59, 60). Investigation at EA52 and T2C5 exposed sub-surface disturbance characterised by linear features and contrasting soil matrices that were

interpreted as the edges of pit features. It is suspected storage pits might be widespread under the surface of the flat paddocks in this area particularly given another pit was intersected on the transect line in the centre of the tombolo. An existing site record for the tombolo area as a whole (T10/357) also suggests cultural material might be widespread under the pasture grass. The tombolo has been ploughed in the past but archaeological evidence survives beneath what is probably a relatively shallow horse-drawn plough horizon.

The southern transect (Transect Line 3) extended to the beach on Coralie Bay, in what is now a featureless grass covered dune face (Figure 6). A black organic-rich layer was found at 1.2 m depth in a core hole with wind-blown sand overlying it. Additional exploratory auger holes were dug on the slope facing Coralie Bay and revealed the approximate extent of the organic deposit. The location coincides with a site described by Steve Edson in the 1970s (T10/361) consisting of eroding cultural material on the north side of Waitapu Stream. This area became the focus of subsequent excavation, EA65, and is described below.

T10/360-T10/361 Waitapu

The Waitapu area was investigated over several seasons from 2015 to 2017 (Figure 7). Each excavation is examined in detail below.

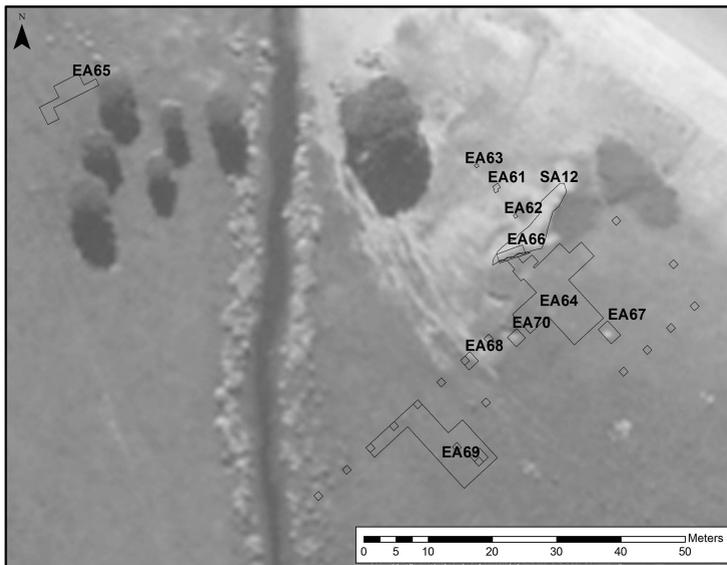


Figure 7. Association of the excavated areas (EAs) in the Waitapu area.

T10/360 EA64 and Associated Excavations

On the south side of the Waitapu Stream, a dune runs parallel to Coralie Bay merging into a ridge originating from higher elevation in the south with sand capping towards the lower northern extent. It is clear from the topography that the Holocene-age sand covering the northern toe of the dune has eroded in the recent past, and at the southern edge of this erosion a sheep scrape (SA12) exposed obsidian flakes and part of a stone alignment which extended back under the turf initially observed in November 2014. Midden was recorded 25 m north of a rectangular stone alignment in the site record form (T10/360), and one alignment is noted related to cleared modern agriculture. The midden is no longer present, presumably eroded since the site record was created in 1976. To mitigate the active erosion in 2014, a small excavation was placed next to the SA12 erosion and across the stone alignment. These excavations became EA64 and EA66 and were undertaken from 1-21 February 2015, incorporating the University of Auckland Archaeological Field School.

Several strategies were employed to investigate the area. An intensive survey was carried out on the deflated area adjacent to the erosion (SA12) to record the three dimensional position of every stone artefact, fire cracked rock, bone, and shell on the surface across approximately 39 m². In addition, three 50 x 50 cm test trenches (EA61, EA62, EA63) were placed northwards of SA12 to identify the presence and extent of subsurface cultural material. The results from the test trenches suggested this area was eroded and very little cultural material was present to the north of SA12.

EA 66 was a small 6.3 m² area immediately behind the eroding face (SA12) (Figure 7). A large fire feature was identified possibly related to other fire features in EA64 described below. Material within the feature included flakes of obsidian, fire cracked rocks, adze roughouts and sandstone files as well as bone. The fire feature was dug into an earlier occupation deposit and two postholes were identified beneath the feature.

A geophysical resistivity survey was undertaken on a 20 x 20 m grid across the dune surface north of SA12 using a Geoscan Research RM15 Resistance Meter with a twin probe array. Anomalous zones of sub-surface resistance in the north-eastern quadrant corresponded with a flat area of dune to the south of SA12. An initial 5 x 5 m excavation uncovered an alignment of stones more extensive than was visible on the surface, and fire features to the east of the stones which were sitting directly on natural reddish brown sand subsoil. The excavation area was extended to the south, west, and north with a total area of 47 m². Small postholes were encountered on both sides of the stone alignment and on the northwestern

side. On the western and southern side of the stone alignment, a lower layer of clean sand was encountered which contained stone artefacts to a depth of over 1 m. Excavations continued at EA64 from 2-21 February 2016, again incorporating the University of Auckland Archaeological Field School (Figure 8). Excavations were extended further to the east to investigate an anomaly showing on the geophysical survey and also fire features identified in previous excavations (Figure 9). The 2015 excavation area was also reopened and an extension of this area on the western slope of the dune was investigated to assess processes by which the dune was formed and the occupation layer accumulated. A further extension was added to the southern end of EA64. A total of 84 m² was investigated in 2016 bringing the excavated extent of EA64 to 130 m².



Figure 8. The February 2016 EA64 excavation, with the Tombolo area visible in the background.

A total of 6,889 stone artefacts (Figure 10) and 5,006 fire cracked rocks were recorded (Figure 11). Obsidian flakes were present over the entire excavation area, with chert and fine grained volcanic material found in very small quantities. Flecks of kokowai were also identified. At a depth of approximately 1 m, numerous large obsidian flakes in association with bone of dog and sea mammal were retrieved from the western side of the excavation area (Figure 9). These were in a confined area in the southwestern part of the trench, so the excavation area was extended. In this area charred and dressed timbers were encountered at the same level as the obsidian concentration together with sea mammal and dog bones.

The wood was identified as totara (*Podocarpus totara*), a species that is no longer present on the island. The planks appear to have been disposed of at this location.

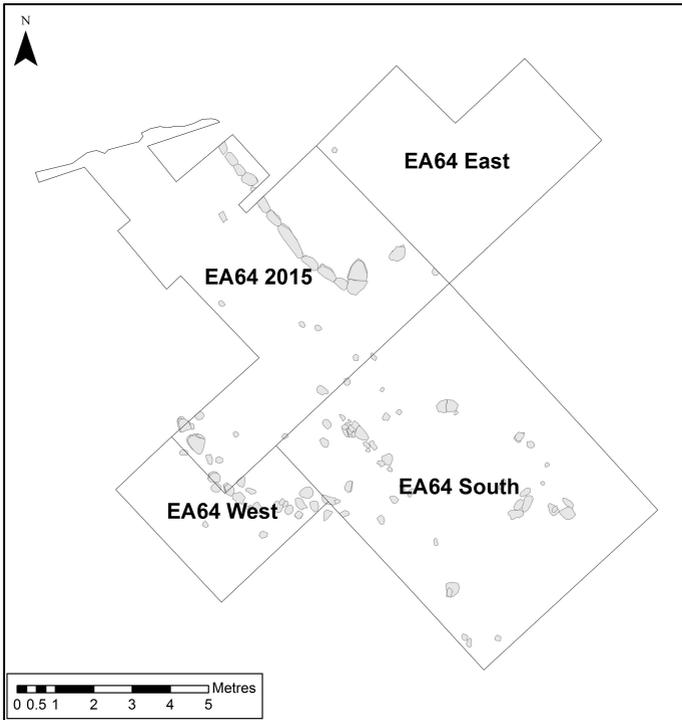


Figure 9. Plan of the 2016 excavation of EA64.

Excavations confirmed that fire activity of the later occupation did not extend over a large area, and that the lower occupation was confined to the south and west and therefore did not directly underlie the fire feature area (Figure 11). The lower deposits of sand were underlain in the south by a grey sand layer also containing large obsidian flakes and other objects such as adzes, hammer stones, hoanga, a sperm whale tooth, and sea mammal bone. In the vicinity of where the planks were located very large obsidian flakes were found together with shaped cylinders of processed kokowai. The layer associated with large quantities of obsidian is remarkable for its lack of charcoal or fire cracked rocks. The distribution of artefacts does not appear to be clustered in ways that would indicate activity areas. The sand matrix is not mixed with charcoal as might be expected if the obsidian was deposited in areas where activity was mixing material from contemporary fire

features. As well, the range of objects recovered, from kokowai to a sperm whale tooth, is very unusual among Coromandel sites.

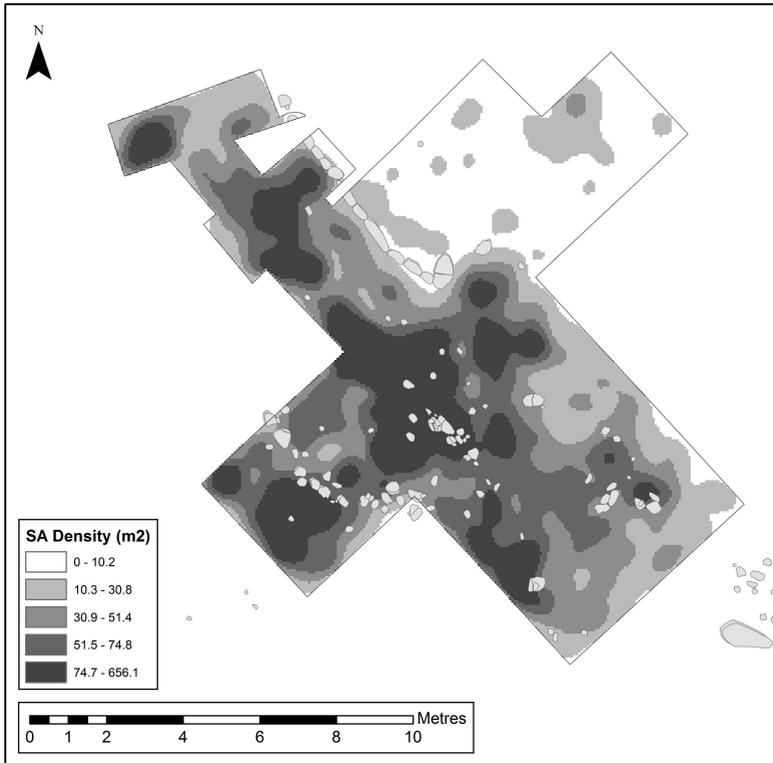


Figure 10. Distribution of stone artefacts (SA) from EA64 and EA66 from the 2015 and 2016 seasons.

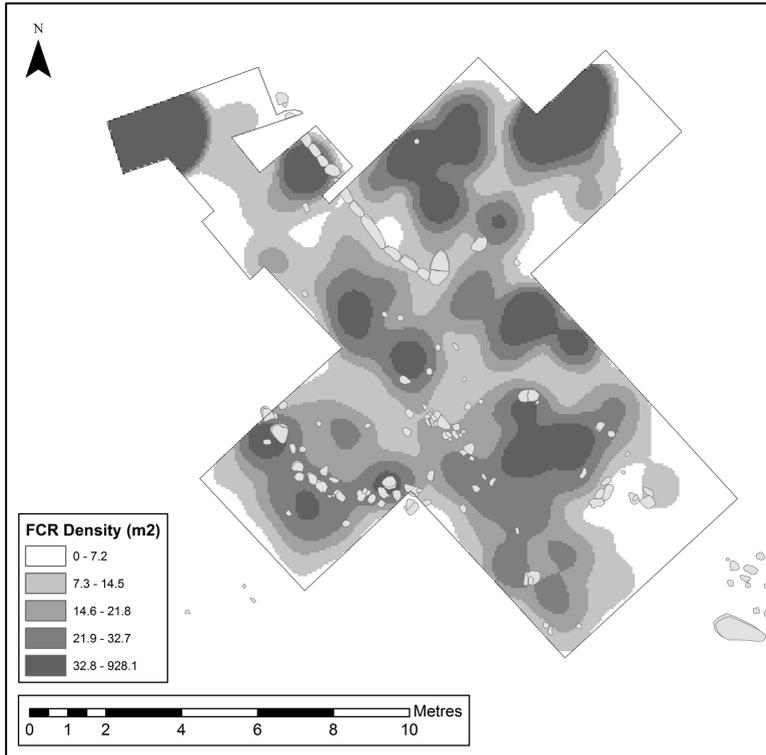


Figure 11. Distribution of fire cracked rocks (FCR) in the upper occupation from EA64 and EA66, 2015 and 2016 seasons.

T10/361 EA65

The organic rich layer previously identified as T10/361 during the Tombolo survey was investigated by placing a trench down the slope in an east-west direction. Initially an 8 x 1 m trench excavation designated EA65 was opened and the black layer was found to originate from a fire feature 1.2 m below the surface. The EA65 trench was extended to 29.7 m² (Figure 12) to investigate features uncovered, including a possible terrace more than 50 cm below the surface. Three possible storage pits, three postholes (outside of the pit features) and two fire features were present as well as depressions interpreted as bin pits and part of a rectangular storage pit. The excavation area was expanded to the south to further define this feature and the charcoal from a fire feature dug into pit fill was identified as conifer species.

The artefacts were mainly within the soil build-up over the infilled pits and in the pit fill. Unusually, these pits were dug into the slope, with no drains above to divert water from entering the pit although it is possible that excavation was not extensive enough to identify such drainage features. A total of 1,599 stone artefacts and 1,817 FCR were recorded.

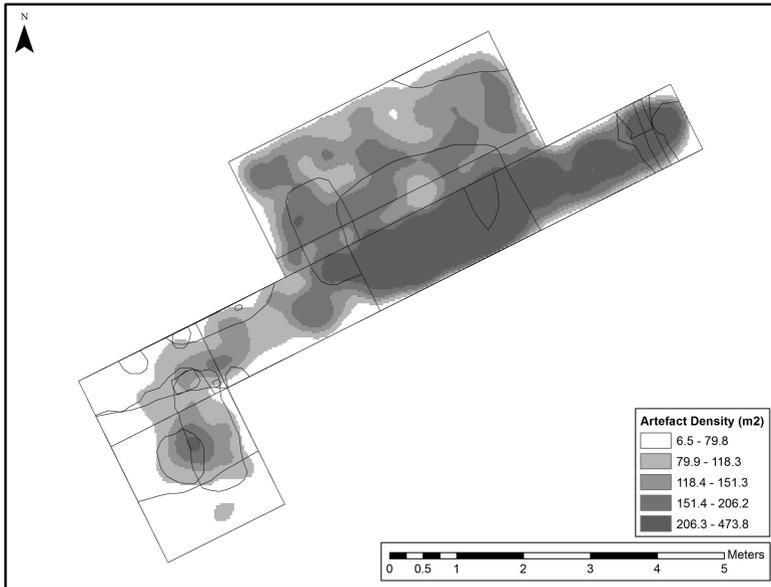


Figure 12. Plan of EA65 showing deposits and artefact density in m².

T10/360 GI Test Trenches

Field work from 7-14 June 2016 was conducted in the vicinity of EA 64 in Coralie Bay. Eight 1 x 1 m test pits were excavated at 5 m intervals down the slope from EA64 to the stream margins in the west (Figure 7). The lack of cooking evidence in EA64, and the absence of lag surface material in the eroded area to the north of the site, indicated the need to look elsewhere for the associated occupation evidence. Each of the 1 m x 1 m test pits contained stone artefacts but no obvious occupation surface, and no features were present. The two westernmost squares near the Waitapu Stream did have numerous fire cracked rocks and dark soil suggesting there was a cooking area in the immediate vicinity. Three test pits of the same size were placed further south on the stream flat, and two postholes dug into the surface of the natural underlying sediment were found.

In addition, test pits were placed upslope to the south and east from the EA64 excavations to determine the southern extent of cultural material (Figure 7). The white sand layer, present at the northern end of EA64, was not present in these test pits but the matrix was similar to that present in EA64 South although with less depth. Two additional test pits were placed closer to the seaward eastern edge of the dune and occupation evidence was found but considerably deeper below the surface.

Apart from the SA12 erosion, and the now eroded material recorded by Edson in the T10/360 record form, there are very few surface indications (the stones alignment excepted) of cultural activity on the dune. Excavations show that the lower occupation material extends up the ridge to the south for some 10 m from the stone alignment. This example illustrates how archaeological evidence may be hard to find when natural processes alter the shape of the landscape. Using a geoarchaeological landscape approach to understanding the nature and extent of the archaeological record provides a better understanding of the heritage record than that obtained by considering only surface evidence.

T10/360 EA67

A 3 x 1 m excavation was opened to the south of EA64 (Figure 7). This trench was adjacent to a large stone which was predominantly on the surface (Figure 13). The deposit of this trench was very shallow but contained similar concentrations of obsidian artefacts as EA64. Concentrations of charcoal were also present, although not associated with definable features, and the general sand matrix was similar to EA64. In November 2016, EA67 was extended to the east by 1 m. This excavation revealed a continuation of material, although the density of stone artefacts diminished and the overall depth of deposit was shallow. A triangular-sectioned trolling lure shank (object number 174914), fashioned from serpentine, was found in the same deposit as large obsidian flakes (Figure 14). The intact shank measures 217 mm in length.

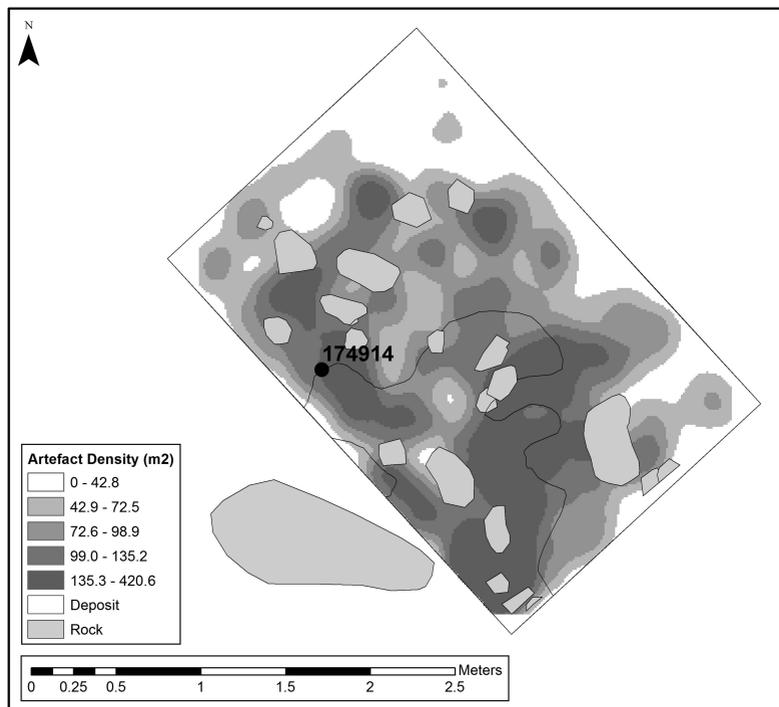


Figure 13. Plan of EA67 showing artefact density. The location of the lure (174914) is marked.

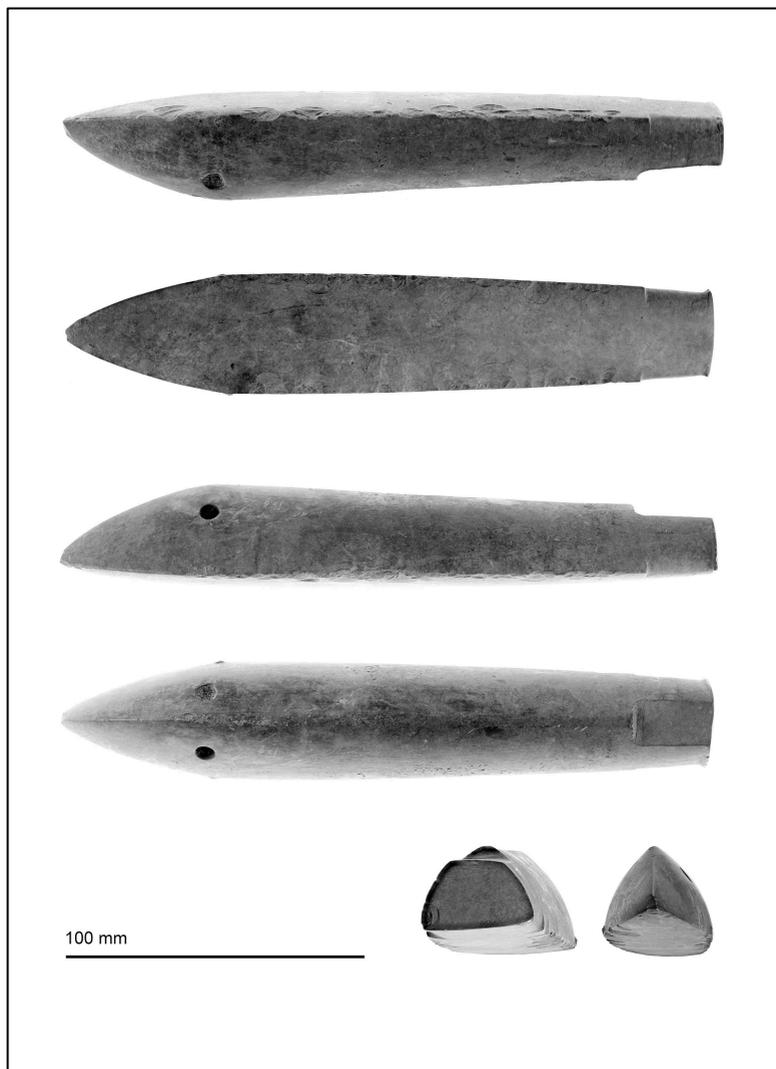


Figure 14. Serpentine lure (174914) found in EA67.

T10/360 EA69

As the test pits dug in June 2016 indicated cultural material a larger area was opened between 1-20 February 2017 on the flat area between the dune and

Waitapu Stream. This incorporated several of the test pits previously excavated. Over 90 m² was excavated and a 2 x 2 m excavation placed on the slope (EA70) provided a continuation of the 2016 EA64 West profile (Figure 7). This small excavation clarified questions about the formation of the EA64 deposits.

The larger excavation area (EA69) produced many stone artefacts (n = 2734) and FCR (n = 1363) and features began appearing towards the end of the excavation dug into the underlying natural silty sand (Figure 15, 16). Two fire features (without stones), three pit features, over 90 postholes of varying size and depth, and a ditch/drain feature over 9.5 m long (and continuing into the south baulk) were excavated (Figure 16). The ditch was approximately 0.5 m deep, no more than 0.3 m wide with inward sloping sides, a flat base, and a curve at the northern end which finished with a vertical wall. It had been dug across the contour of the slight slope and intersected postholes and a shallow pit. As is often the case, the postholes make no particular patterns and it is hoped the artefact distribution may help to define individual structures. Artefacts recovered occurred in higher density towards the lower (western) end of the trench, or around features (Figure 16).

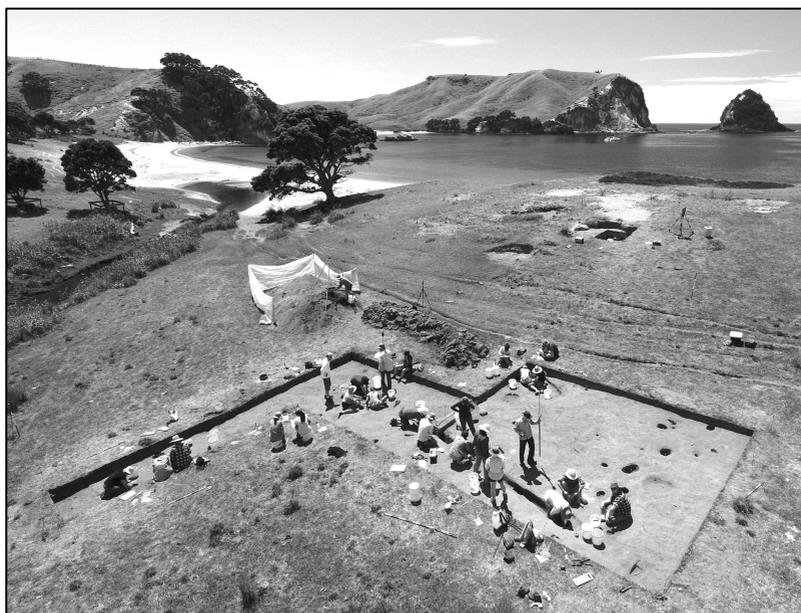


Figure 15. The EA69 excavation, with the Waitapu stream visible on the left of the image and Coralie Bay in the background. The area of the EA64 excavation can be seen on top of the ridge.

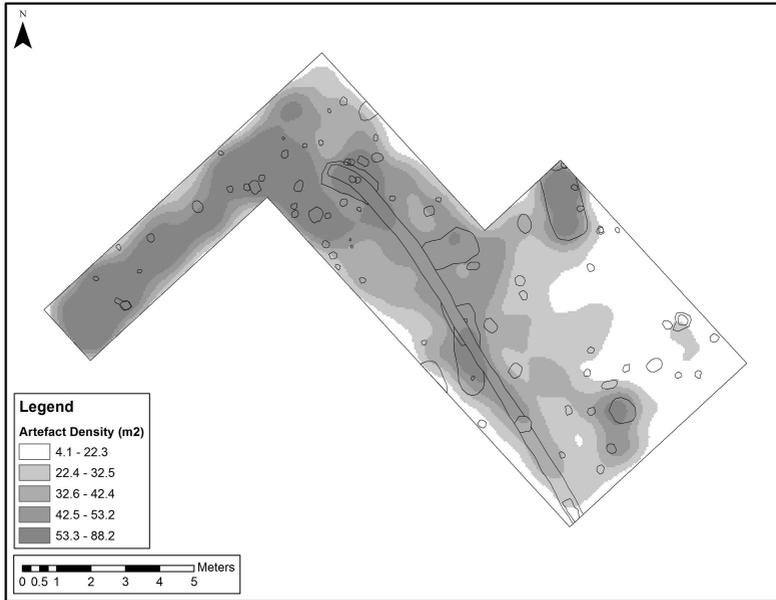


Figure 16. Distribution of overall stone artefacts and fire cracked rock in EA69.

Summary

When combined with results from our excavations of 2012-2014, the work reported here has expanded our understanding of the past occupation of Ahuahu Great Mercury Island and provided more insights into the nature of the archaeological record. We have 30 radiocarbon determinations from sites in the tombolo area, an understanding of the geomorphology and its influence on site characteristics, information about vegetation change from forest conifer species to shrubs, and a longer contextual vegetation history from cores taken from swamps and analysed by Dr Matthew Prebble. Most importantly, we have a significant sample of obsidian, chert, and basalt from sites of different ages to investigate technology and the movement of stone materials to the island from widely diverse sources.

Acknowledgements

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