

VAITEHII: THE CRADLE OF THE BASALT ADZE-BLADES ON NUKU HIVA, MARQUESAS ISLANDS

VAITEHII: A BAZALT SZALUKAPA PENGÉK BÖLCSŐJE (NUKU HIVA, MARQUESAS SZIGETEK)*

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Abstract

Vaitehii, Terre Déserte, is a well-known district by the hunters of Nuku Hiva, as an adze-production site. In 1998 Judit Antoni and Alfred Falchetto visited the region: we wanted to collect objects for future studies. Taking the opportunity, we try to show a little overview on these objects (debris of production, flakes and half-products).

Kivonat

Vaitehii (Nuku Hiva, Terre Déserte) a helyi vadászok által jól ismert kőeszköz-készítő műhely lelőhelye. Antoni Judit és Alfred Falchetto 1998-ban keresték fel a területet annak érdekében, hogy a későbbi kutatásokhoz anyagot gyűjtsenek. Ezúttal csupán rövid áttekintést szeretnénk adni a gyűjtött tárgyairól (készítési hulladékok és félkész darabok).

KEYWORDS: POLYNESIA, BASALT, ADZE-PRODUCTION, HALF-PRODUCTS

KULCSSZAVAK: POLINÉZIA, BAZALT, KŐESZKÖZ-KÉSZÍTÉS, FÉLKÉSZ ESZKÖZÖK

Introduction

Nuku Hiva, like all the other members of the Marquesas group, is of volcanic origin. (Fig. 1.).

The island is formed from two volcanos: the outer and older one was active about 4 million years ago, while the inner one, in the middle of the first is about 3 million years old. The southern part of the two concentric calderas is eroded mainly by the sea. Taiohae, the Administrative center of the Marquesas lies in the inner caldera.

The western side of the older volcano - the arid region (Terre Déserte, Nuku Ataha) preserved the original shape of the volcano sloping downhill from the actual top of the mountain, the Tekao (1224 m a.s.l.). Between the two precipices or valleys - Matatekouaehi on the north and Tapueahu („the Grand Canyon”) on the south, not far from the valley of Haatuatua and about 1 km from the seashore we find Vaitehii, the quarry site. The name Vaitehii means in ancient Marquesan language „rows or layers of stone in abundance”. (Dordillon, 1904:138)

We visited the site in 1998 to collect samples from the basalt material for future research and tried to make a little field survey.

Description of the site

The little, oval hollow, about 200 m in diameter is surrounded by the slopes of the mountain (here, 453 m a.s.l.) in the form of several hills and hummocks, covered by the typical vegetation of the arid regions, e.g. *mini* (Basilic) and little pricking bushes or gramineae. There are two greater hills (cca. 10 m high) on the border of the hollow: on the north, there is Vaitehii I and the other, some 200 m far to the south from this is Vaitehii II, each having cca. 25-30 m in diameter. The names (numbering) for the individual sites was given by the authors (Figs. 2-3.). About 500 m from Vaitehii I there is a spring, nourishing a little stream which is running to the Matatekouaehi Bay.

Arriving to Vaitehii, we found some flakes and half-products in the bed of this stream. Moreover, traces of exploitation could be observed at Vaitehii I: a 2 m deep trench, generally about 60-70 cm large (inside) and 100 cm large (outside). It is 8 m long, with almost perpendicular walls (Fig. 4.)

The hill is covered everywhere with worked (chipped and flaked) pieces of raw material: half-products of basalt adzes or other artefacts, broken pieces and mainly flakes and production debris.

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Fig. 1.: Map of the study area . a) Marquesas-Islands; b) Nuku Hiva Island c) Vaitehii environs and Ha'ahinani Bay

1. ábra: A vizsgált terület térképe. a) Marquesas-szigetek; b) Nuku Hiva sziget; c) Vaitehii környéke és a Ha'ahinani öbök

On Vaitehii II the situation is similar: the debris, flakes, half-products and broken or fragmentary pieces are lying so densely that we can hardly see the soil between them (**Fig. 5a-b**).

We noticed hundreds of fragments, tons of flakes and many broken or unbroken half-products, even with remains of cortex on them. The presence of the small (up to 5 cm) pieces is especially interesting: they suggest that every phase in the production was executed in these workshops, from giving the shape

of the blade to the last, fine working before polishing.

The petroarchaeological study of the collected pieces will be presented in the second part of this paper.

The finishing (partial or total polishing of the surface) was made in or near the villages: on the *paepae* (stone house platform), normally there were adequate polishing stones and sand with water for this purpose.



Fig. 2.: Vaitehii I – location of the site

2. ábra: Vaitehii I – a lelőhely



Fig. 3.: Vaitehii II – location of the site

3. ábra: Vaitehii II – a lelőhely



Fig. 4.: Vaitehii I – exploitation trench

4. ábra: Vaitehii I – kitermelő árok



Fig. 5 a-b: Vaitehii I-II: chipping floor

5a-b ábra: Vaitehii I-II: pattintott félkész eszközökkel és szilánkokkal borított felszín



We collected several pieces at the workshop sites: from Vaitehii I we have photos and drawings (on the greater items, **Figs. 6-17.**) while from Vaitehii II we have only photos (**Figs. 18-25.**).

We have selected some examples from Vaitehii I to present this material in details.

All of the pieces were made of fine-grained, dark-grey basalt.

Debris of production –Vaitehii I.

We can rank the pieces into four categories by size and form:

Group 1. Six little splinters: their form is elongated or circular. Dimensions: length: 3.5-4 cm (for the circulars) and 4.8-5.2 (the elongated pieces), width: 2.1-4.2 cm, thickness: 0.4-1.2 cm, weight: 0.40-0.80 g (**Fig. 6.**).

Their colour is grey, with a little greenish shade. Every piece is covered with a slight patina and on the back side showing a conchoidal fracture, there is a clearly discernible bulbous.



Fig. 6.: Vaitehii I – debris of production, group 1.

6. ábra: Vaitehii I – készítési hulladékok, 1. csoport



Fig. 7.: Vaitehii I – debris of production, group 2.

7. ábra: Vaitehii I – készítési hulladékok, 2. csoport



Fig. 8.: Vaitehii I – debris of production, group 3.

8. ábra: Vaitehii I – készítési hulladékok, 3. csoport

Group 2. The second group (seven flakes) consists of somewhat larger pieces with the following dimensions: length: 5.3-7.5 cm, width: 4.0-6.4 cm, thickness: 1.0-2.0 cm, weight: 1.20-1.85 g (**Fig. 7.**). They have mainly elongated, leaf-like forms or a little bit rectangular shape: on the first item we can see the remains of the original, greenish-grey patinated rock surface (cortex), on two others there is a part of the cortex and they are covered with the local reddish-brown soil, too. The colour of the rock is dark grey, almost black: this is visible on the pieces which show relatively recent fractures, caused by the weather or by people who visited the site. The bulbs on their back side is every case an old one and the edge-lines of fractures is slightly worn.

Group 3. The three flakes of the third group are bigger than the others mentioned before, but their colour, shape and patina is similar to them (**Fig. 8.**). The crescent-shape piece looks somewhat younger, on its back and tip there are relatively recent fractures. Its surface is worn and not so patinated like the two rectangular fragments. On these latter ones the edge-lines of fractures on the face side are shining and one of them is well trimmed (retouched) all around as if they wanted to make a cutting implement.

Dimensions for the crescent-shape piece: length: 9.5 cm, width: 5.7 cm, thickness: 1.1 cm, weight: 2.45 g

The two others: length: 7.5 and 7.7 cm, width: 5.0 and 6.0 cm, thickness: 1.2 and 1.8 cm, weight: 1.95 and 2.65 g

Group 4. The next two flakes (**Fig. 9. and 10.**) are the largest ones in the debris collected at Vaitehii I.: probably they represent the earlier phase of the fabrication, when the primary shaping of the artefact was executed.

The first, elongated flake is covered by greenish-grey patina; its back side is a great conchoidal fracture with bulbus (**Fig. 9a-b**).

Dimensions: length: 9.5 cm, width: 4.5 cm, thickness: 1.8 cm, weight: 2.95 g

On the front side the edge-lines are worn and on the left edge it is retouched.

This flake would be very easy to use as a scraper or knife, even in this phase of production, or, with not too much effort it could be brought to perfection. We are sure, that between these tonnes of debris one can find more objects that were perfect for woodworking. In the existing collections of stone implements on the islands, however, there are almost exclusively finished stone adzes and no half-products as they were more attractive to collectors.



Fig. 9a-b:
Vaitehii I – debris of production, group 4.
(photo and drawing)

9a-b. ábra:
Vaitehii I - készítési hulladékok, 4. csoport
(fotó és rajz)

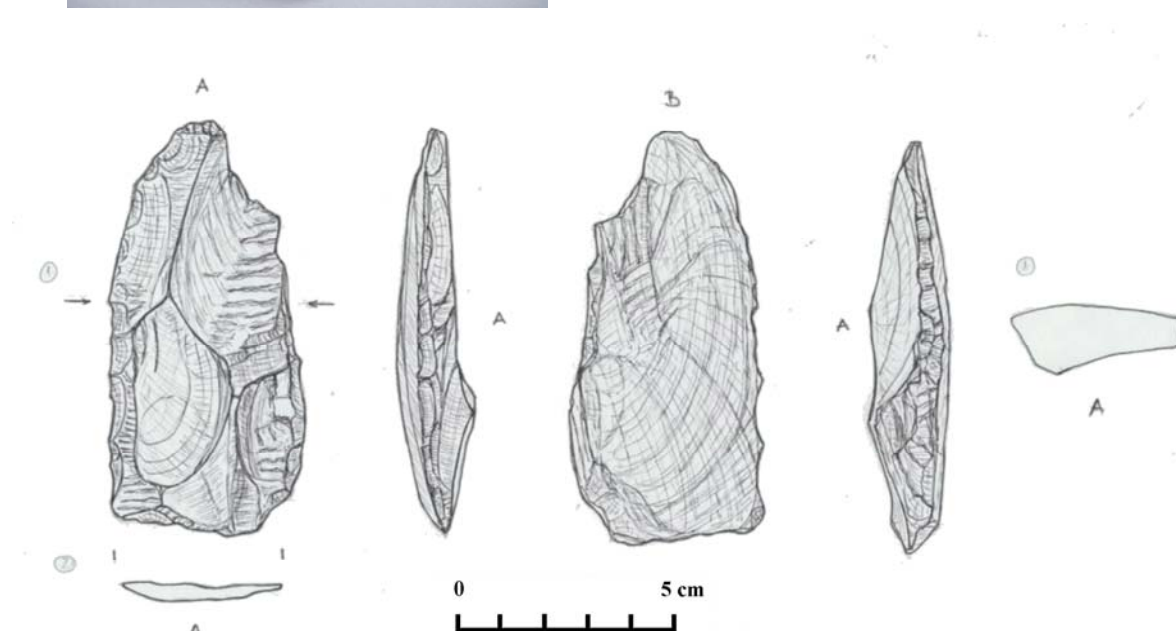
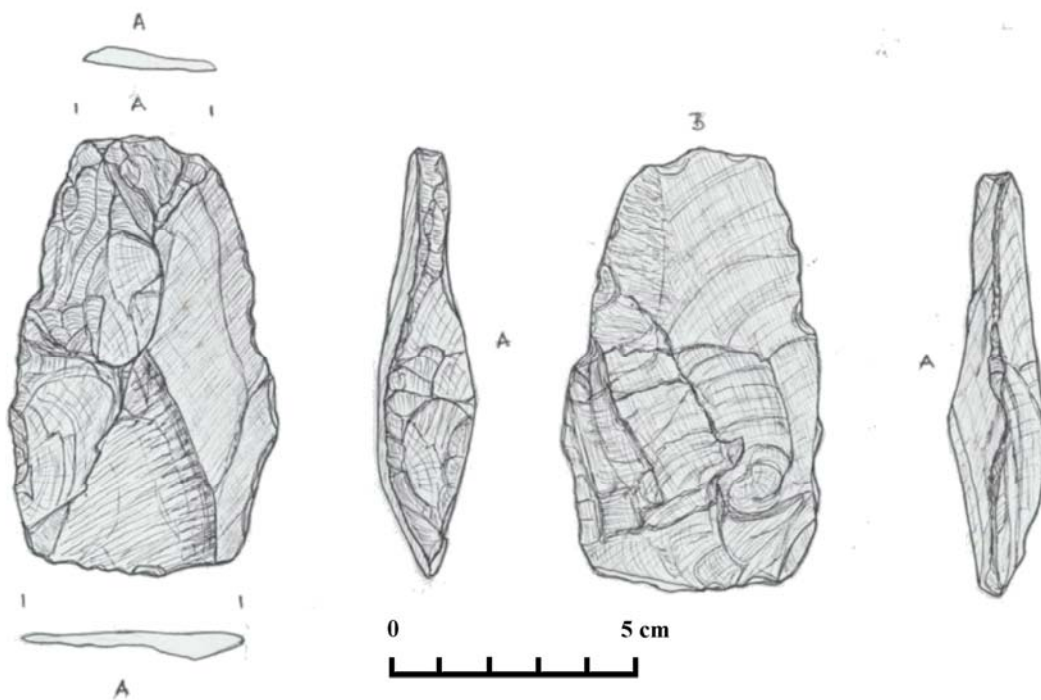




Fig. 10a-b:
Vaitehii I – debris of production, group 4.
(photo and drawing)

10a-b. ábra:
Vaitehii I - készítési hulladékok, 4. csoport
(fotó és rajz)



A large number of stone “splinters” or flakes, lying everywhere on the surface, could serve for working various materials. With a micro-wear analysis it would be possible to determine their exact function: the only problem is that they should be systematically collected, creating an adequate base for the future research.

As we know from the work of H. Plisson, in Tahiti, at Vallée Papeno'o there were similar objects which were used for different purposes on wood and other vegetable materials. (Lavondes, 1990 pp. 22–24)

The shape of the second flake is similar, without a pointed tip. On its back, apart from the original,

large conchoidal fracture there is two more little fracture destructing the surface of the bulbus. The front side shows many little fractures. The dark-grey surface is worn by weather and is covered with some patina too: it looks younger than the first piece. (**Fig. 10a-b**)

Dimensions: length: 8.8 cm, width: 5 cm, thickness: 2 cm, weight: 3.35 g

Half-products – Vaitehii I., 7 pieces, (Figs. 11-17):

On the Marquesas Islands, as anywhere in Polynesia, there is no axe only adze and chisels. The difference relates to the hafting: by the axe the blade's edge is parallel with the handle while the adze's handle is perpendicular or in angle to the blade's edge.

When the hafted blade is held in one's hand, the back of the blade faces down ("inside", toward the user, on the design marked with "B") and the front side faces upwards ("outside", marked by "A").

Many authors tried to compile some typological classification of the finished adzes especially for the Marquesas Islands (von den Steinen 1928, Linton 1923, Suggs 1961). The classification is based on the shape, the existence of the tang for the hafting ("tanged adzes") or the lacking of this ("tangless adzes") and the cross-section of the implement.

The typology is sometimes very useful, but in most cases it is artificial, rigid and therefore misleading.

The half-products, which are abandoned in different phases of fabrication, fortunately had no typology, even if the shape can suggest the idea of the master.

Nevertheless, there are some types known from the typology of the finished tools which we can accept for our half-products, too. The tanged adze's shape even in this phase is very characteristic: Suggs (1961) classified this implement between the finished ones as "Koma type". The same is by Linton the "*toki kouma*": *toki* is the Marquesan name for stone adze.

As Linton relates, this type is also recognized by the natives as a distinct class, and this type is relatively common in these islands in all sizes. The people used for many purposes, including for fine carving and to hollow out canoes and containers. (Linton, 1923:323)

Our piece from Vaitehii I. is a very nice example of it (see photo and designs, **Fig. 11a-b**).

The fine-grained dark-grey tool-preform seems not to be too old: their patina is slight and the lines of the fracture-edges are not too worn. We can imagine that this piece was made in the time of the European contact (after 1790, or Historic period).

Suggs remarks, that the type appeared in the Expansion period (between 1100 and 1400) and remained in the Historic period (Suggs, 1961:111).

The neck or tang is formed on the upper part (butt) of its front ("A"), about 1.5-4.5 cm from the upper edge (poll). The neck's hollow is 0.5-0.6 cm deep by the edges and 0.2-0.3 cm in the middle. Its cross-section is truncated triangular.

Dimensions: length: 13.8 cm, width: 4.2 cm (butt), 5 cm ("cutting edge"), thickness: 2.9 cm, weight: 1115 g

This piece is really not too far from the finished tool: it would be enough (probably) to polish its cutting-edge.

The next two objects resembles to the "Mouaka type" of Suggs (Suggs, 1961: 108). Their surface is worn and they have greenish-grey patina.

The cross-section of the first of them (**Fig. 12a-b**) is low triangular, the cutting-edge's bevel is not yet shaped, neither the poll.

Dimensions: length: 11.3 cm, width: 3.5 cm (butt), 4.5 cm ("cutting edge"), thickness: 2.3 cm, weight: 730 g

The other pre-form (**Fig. 13a-b**) has a quadrangular cross-section and it is relatively flat. Its butt and its cutting-edge are at the beginning to shape, their bevel is almost parallel to each other. The lines of the fracture-edges are worn and shining.

Dimensions: length: 9.3 cm, width: 3.7 cm (butt), 5 cm ("cutting edge"), thickness: 2 cm, weight: 590 g

The fourth (**Fig. 14a-b**) dark-grey adze pre-form has a triangular shape with pointed butt and large cutting edge. Its cross-section is triangular also. On the front side we can find the remains of the cortex which is worn and covered with traces of friction.

The cutting-edge seems very large: after the Marquesan informants (incl. Alfred Falchetto) there are many of these forms in finished state, but, for example, in the Bishop's collection at Taiohae, Nuku Hiva, between more than 40 pieces, collected everywhere on the islands by local people, there is no one which is similar.

Dimensions: length: 12.3 cm, width: 2.5 cm (butt), 6 cm (cutting edge), thickness: 3.5 cm, weight: 965 g

The next, dark-grey coloured piece (**Fig. 15a-b**) has a rectangular shape with truncated triangular cross-section. Its butt and cutting edge are "flat" on the back side and oblique-angled on the front side. In the middle of the front side there are the remains of the cortex worn by weather. It is a very nice tool-preform with a massive trunk: when finished, it can be useful for working hard wood.



Fig. 11a-b:
Vaitehii I– half-products,
(photo and drawing)

11a-b ábra:
Vaitehii I - félkész eszköz
(fotó és rajz)

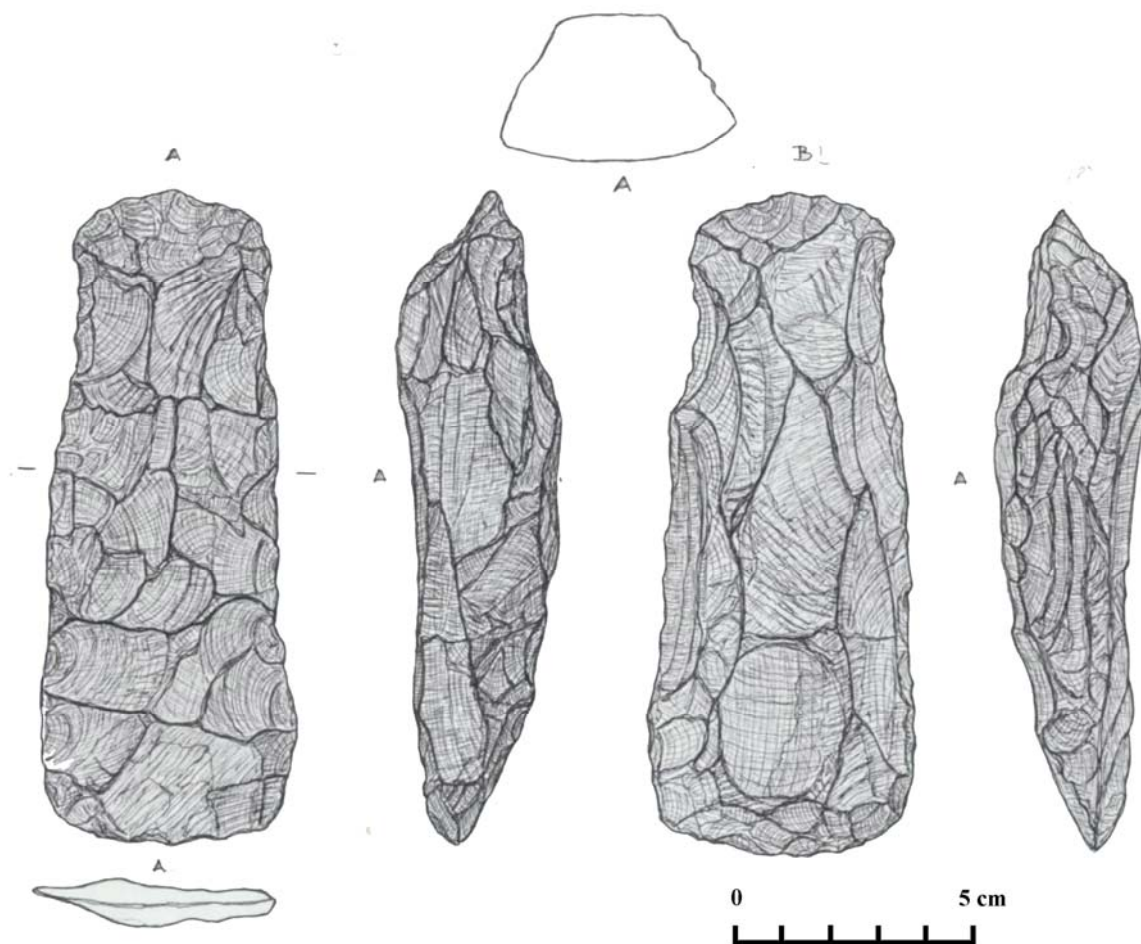




Fig. 12a-b:
Vaitehii I– half-products,
(photo and drawing)

12a-b ábra:
Vaitehii I - félkész eszköz
(fotó és rajz)

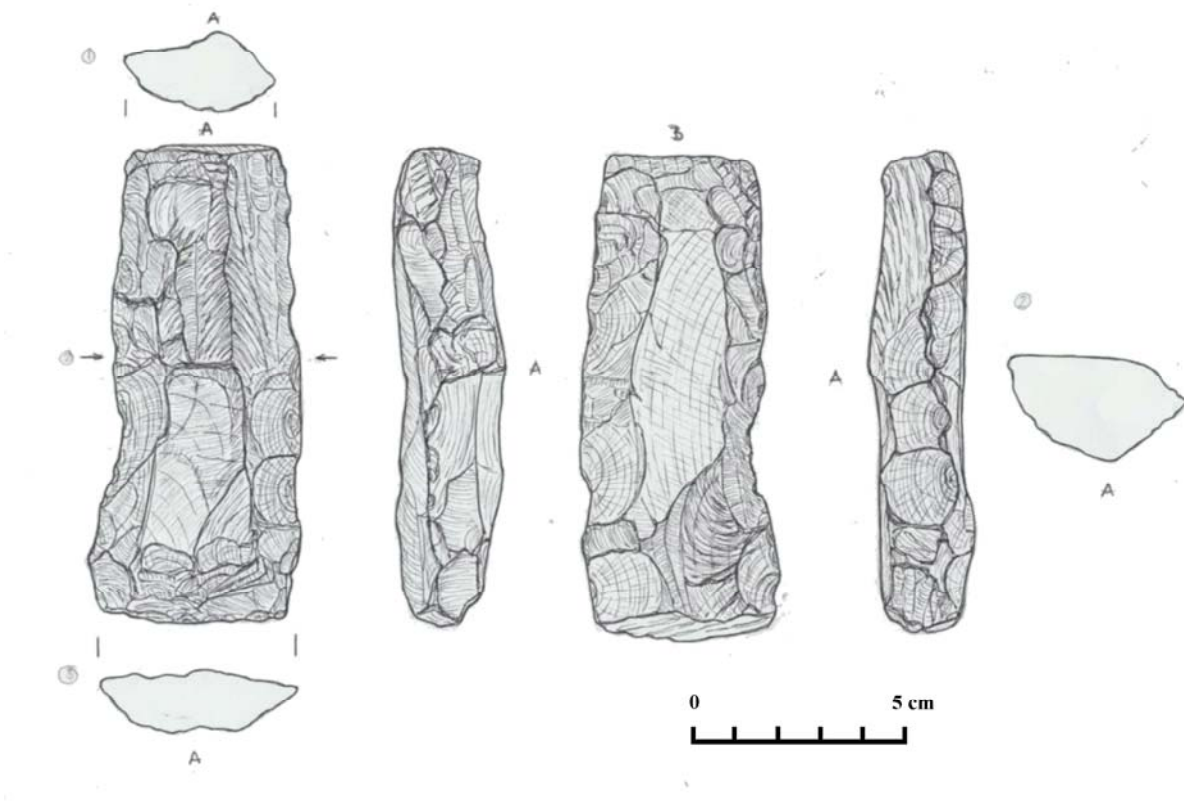




Fig. 13a-b:
Vaitehii I – half-products,
(photo and drawing)

13a-b ábra:
Vaitehii I - félkész eszköz
(fotó és rajz)

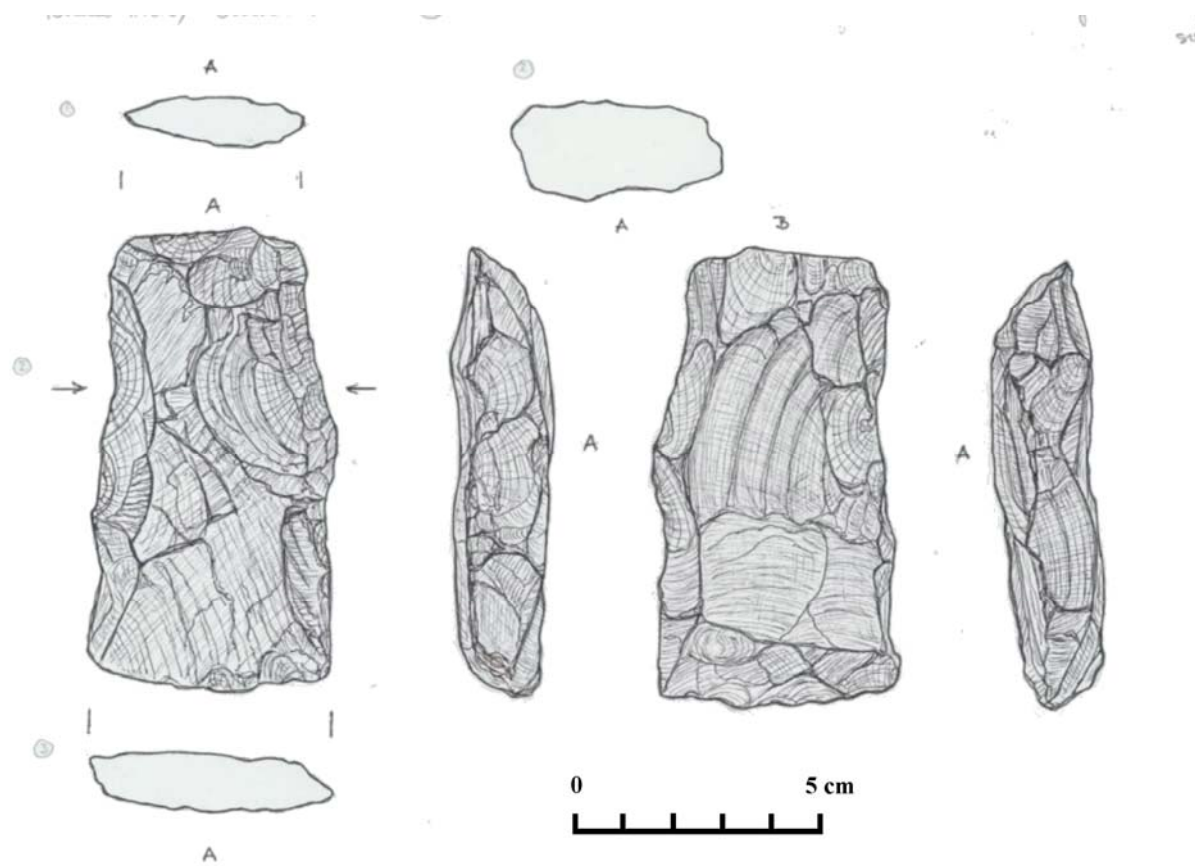




Fig. 14a-b:
Vaitehii I– half-products,
(photo and drawing)

14a-b ábra:
Vaitehii I - félkész eszköz
(fotó és rajz)

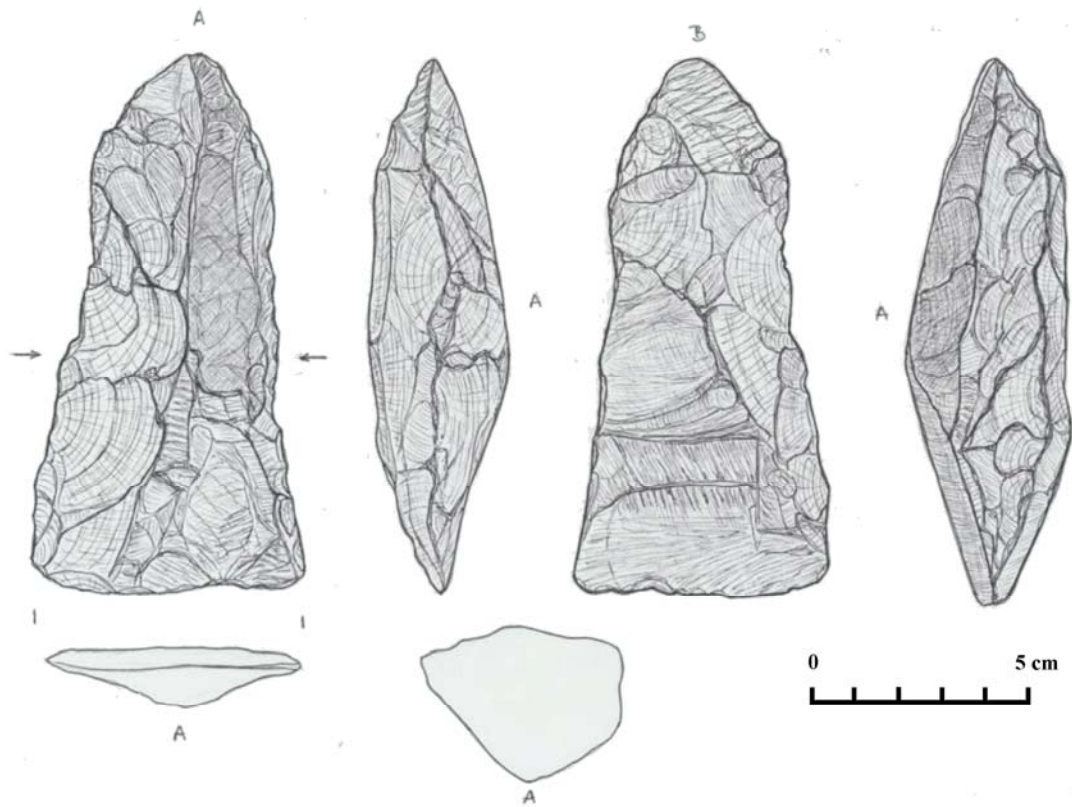




Fig. 15a-b:
Vaitehii I– half-products,
(photo and drawing)

15a-b ábra:
Vaitehii I - félkész eszköz
(fotó és rajz)

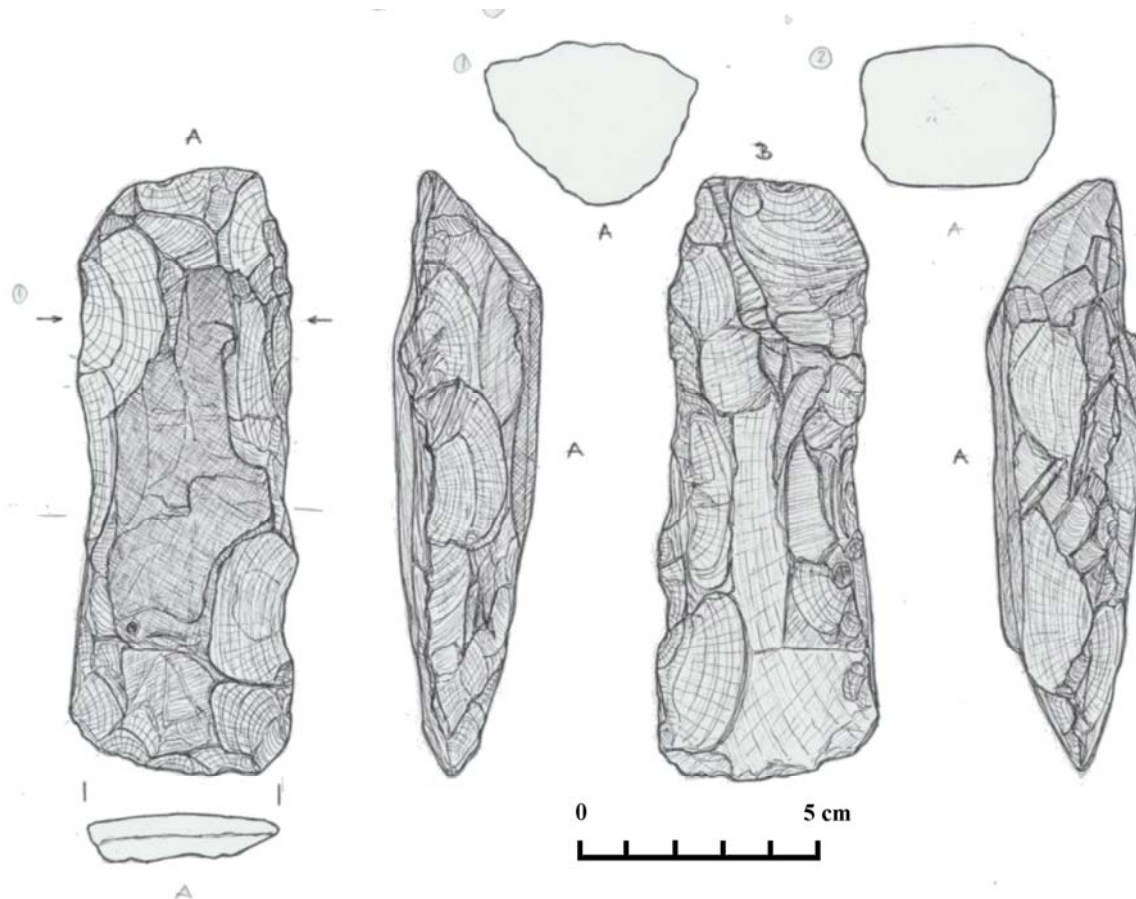




Fig. 16a-b:
Vaitehii I– half-products,
(photo and drawing)

16a-b ábra:
Vaitehii I - félkész eszköz
(fotó és rajz)

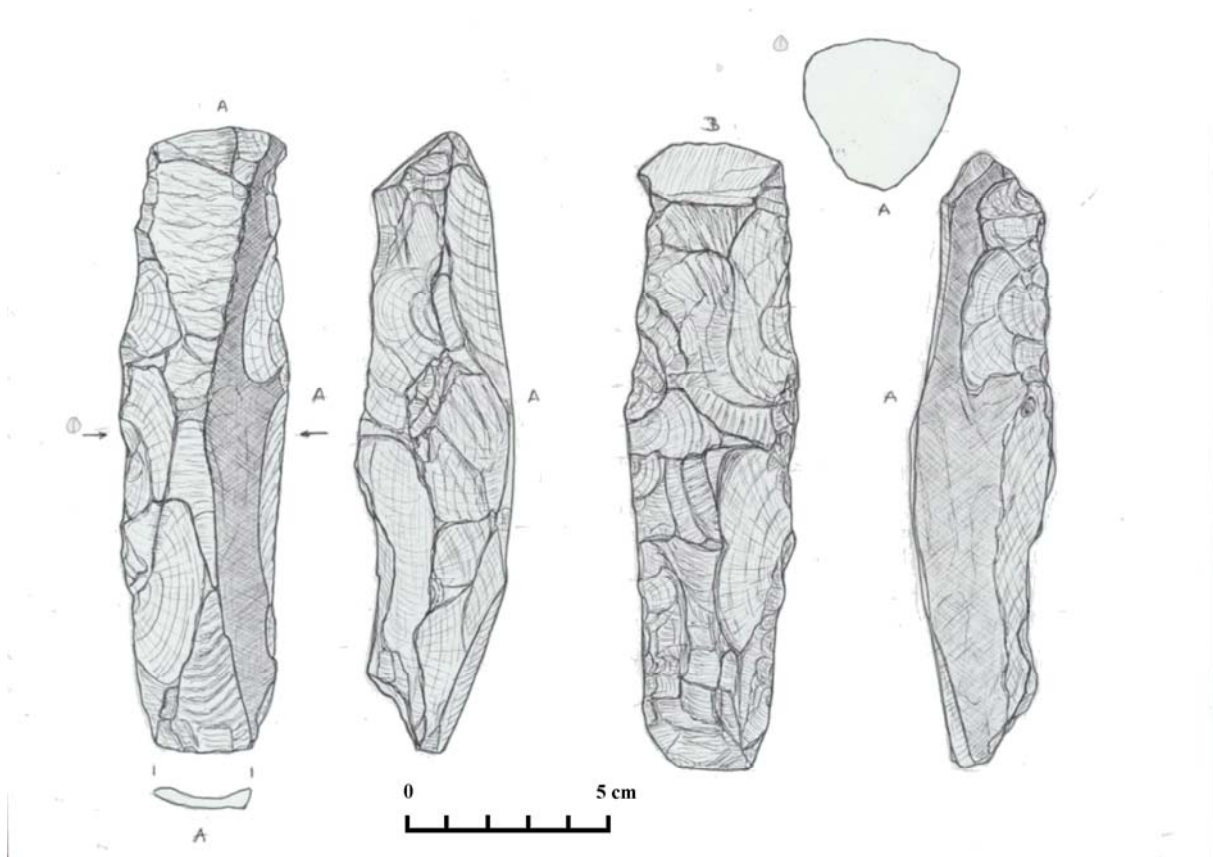
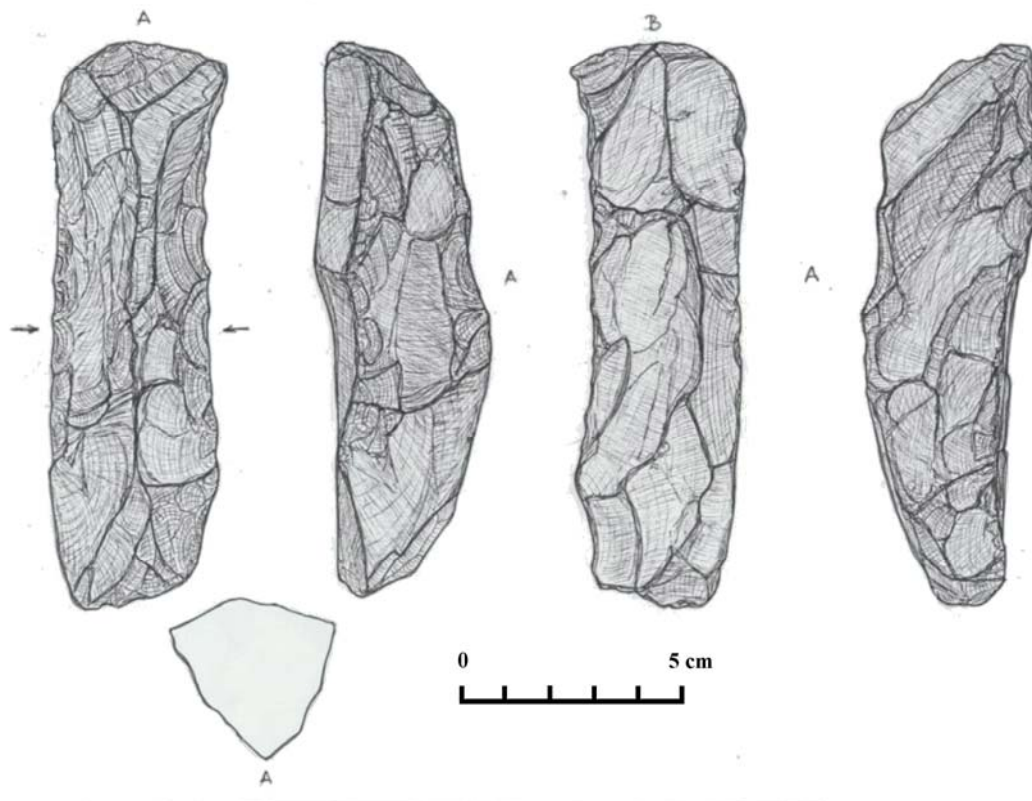




Fig. 17a-b:
Vaitehii I – half-products,
(photo and drawing)

17a-b ábra:
Vaitehii I - félkész eszköz
(fotó és rajz)



There is no considerable patina on its surface so it can be relatively modern (Historic period?).

Dimensions: length: 12.6 cm, width: 4-4.5 cm, thickness: 3.1 cm, weight: 1020 g

The last two objects collected at Vaitehii I were visibly intended to confect chisels: their narrowness is advantageous for some special woodworking, as for example making holes or grooves.

The longer one (**Fig. 16a-b**) has triangular cross-section, its surface is covered with greenish-grey patina and on the front side there are remains of cortex. The butt-end and the cutting edge are oblique angled on each side, this latter is very narrow. The lines of the fracture-edges are worn and shining.

Dimensions: length: 15.4 cm, width: 4.3 cm, thickness: 3.7 cm, weight: 1055 g

The other piece (**Fig. 17a-b**) has a fine greenish-grey patina, its cross-section is triangular. The butt and the cutting edge are oblique-angled on the front side. The lines of the fracture-edges are shining and on the front side there are the remains of the reddish local soil.

Dimensions: length: 12.6 cm, width: 3.5 cm, thickness: 2.7 cm, weight: 840 g

Vaitehii II. 8 pieces (see Figs. 18-25, only photos)

All of the collected pieces were half-products.

The first one is rectangular shaped, relatively flat, dark greyish preform (**Fig. 18.**), on both sides (A and B) with remains of reddish-brown coloured cortex.

Dimensions: length: 9.8 cm, width: 4 cm, thickness: 2.5-3.5 cm.

The next (**Fig. 19.**) is elongated, leaf-like, green coloured. Side "A" is flat, side "B" and one of the profiles is more worked by knapping. Its cross-section is almost quadrangular.

Measures: length: 20.2 cm, width: 6 cm, thickness: cca. 4 cm

The third one is greenish-grey coloured, fine-grained tanged adze-preform (**Fig. 20.**), with elongated shape and quadrangular cross-section.

Dimensions: length: 11.8 cm, width: 2.5 - 4.3 cm, thickness: 2.5 cm (by the neck)

The next one is semi-circular shaped, dark grey with greenish shade (**Fig. 21.**) with some remains of the cortex on its back side.

Dimensions: length: 12.2 cm, width: 6.1 cm, thickness: 4.5 cm.

Our next piece (**Fig. 22.**) is trapezoidal in shape, greenish-grey, with large cutting-edge and a tang on its butt. Its cross-section is rectangular.

Measures: length: 9.2 cm, width: 4.2 - 6.2 cm, thickness: 3.5 cm.

The sixth from Vaitehii II (**Fig. 23.**) is a fine-grained greyish-green preform with triangular cross-section.

Dimensions: length: 12.5 cm, width: 4 cm, thickness: 3 - 3.8 cm.

The last two pieces (**Figs. 24. and 25.**) are elongated, fine-grained, greenish grey coloured.

One (**Fig. 24.**) has some remains of the cortex on side "A" and its cross-section is triangular.

Its dimensions: length: 10.9 cm, width: 3.2- 4 cm, thickness: 2.7-3.2 cm.

The other one (**Fig. 25.**) Dimensions: length: 12.8 cm, width: 3.9 cm, thickness: 2.9 - 3.5 cm.

As all objects from Vaitehii II are deposited at Nuku Hiva and we had no chance to go there again recently, there are no drawings made and no measurement of weight on the pieces.



Fig. 18.: Vaitehii II– half-products (only photo)

18. ábra: Vaitehii II - félkész darabok (csak fotó)



Fig. 19.: Vaitehii II– half-products (only photo)

19. ábra: Vaitehii II - félkész darabok (csak fotó)



Fig. 20.: Vaitehii II– half-products (only photo)

20. ábra: Vaitehii II - félkész darabok (csak fotó)



Fig. 21.: Vaitehii II– half-products (only photo)

21. ábra: Vaitehii II - félkész darabok (csak fotó)



Fig. 22.: Vaitehii II– half-products (only photo)

22. ábra: Vaitehii II - félkész darabok (csak fotó)



Fig. 23.: Vaitehii II– half-products (only photo)

23. ábra: Vaitehii II - félkész darabok (csak fotó)



Fig. 24.: Vaitehii II– half-products (only photo)

24. ábra: Vaitehii II - félkész darabok (csak fotó)



Fig. 25.: Vaitehii II– half-products (only photo)

25. ábra: Vaitehii II - félkész darabok (csak fotó)

Discussion

Although the southern islands of the Marquesas group were “discovered” by the Europeans in 1595, the northern islands, among them Nuku Hiva were contacted only by 1791. After this date, the islands were regularly visited by European sailors, and the appearance of metal woodworking tools pushed out the traditional stone adzes in relatively short time. Their production at the great quarries, like these on Eiao Island or at Nuku Hiva in about 10-20 years gradually ceased and the quarries were abandoned.

The other cause for this process was the decreasing number of local people, including the specialists in stone tool working techniques. The total population number of the six inhabited islands was estimated by different visitors in the time of the first contact: it seems to be about 50 thousands people or somewhat more. (Bailleul, 2001:21) This number changed in 1860 to 11 thousand, and in 1925 to only 2000 people (Bailleul, 2001:7)

Eiao, which lies 90 km to northwest from Nuku Hiva and was well known in ancient times for its basalt quarries and famous adze-makers, the members of the Tuametaki tribe, was for long time uninhabited. It is a desert island now, and only the abandoned settlements, quarries and workshops with their debris and half-products are the witnesses of the “Stone Age” on the islands.

Conclusion

The above polished stone artefact preforms and half-products prove the existence of workshop for adzes at Vaitehii. We supposed that Vaitehii supplied the surrounding archaeological sites with suitable raw material. We have initiated petroarchaeological investigation of some selected samples collected here and the neighbouring archaeological site Ha’ahinani Bay, presented by Szakmány et al. (2021) in the same volume. The petrographical analysis performed so far, however, did not prove this hypothesis. The presence of the worked flake from Ha’ahinani Bay, the raw material for which originated from Ua Pou was a little surprise for us. Ha’ahinani is a small bay with some rests of houses in its valley, probably used as temporary camp site by local people (fishers and hunters) several hundred years ago. Ua Pou, the second largest island after Nuku Hiva in the northern Marquesas lies about 40 km south of Nuku Hiva. Basing on only one piece from Ua Pou we can imagine many possibilities, for example this object was brought with some fishermen from Ua Pou.

We need more archaeometrical investigations on more pieces from Ha’ahinani to see if it was only accidental, or people from Ua Pou had the chance to visit this bay on more occasions.

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