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## ARCHAEOLOGY IN NEW ZEALAND



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ARCHAEOLOGY BEYOND THE REEF: KOPERU FISHING ON MA'UKE

Richard Walter  
 Department of Anthropology  
 University of Auckland

During the excavation I carried out at the Anai'o site on Ma'uке Island in the Southern Cook Islands in 1987 (Walter 1987) the local workers on the site showed a great deal of interest in the fishhook assemblage that we were accumulating. The assemblage consisted of both rotating and jabbing varieties of one-piece hook all of which were unbarbed (Walter 1988). The assemblage derived from layers 2 and 4 of the site which were both dated to around 1300 A.D. The hooks were all made of pearlshell which is a material that is not found in the waters of Ma'uке or adjacent islands of the Southern Cook Group.

Two aspects of the hook collection were of special interest to the workers and were the subject of much discussion. Firstly, why were the ancestors using pearlshell and where were they importing it from. Secondly, they were surprised at the strange shape of the hooks. There was considerable speculation about whether the unbarbed hooks would snag the fish and whether the shell was strong enough to land a fish if it had been hooked. It seemed that the fishing assemblage from Anai'o bore little relation to anything recognised as being useful fishing equipment to modern Ma'uке fishermen. When we finally uncovered two tiny jabbing hooks (Fig. 1) the workers were relieved to see an item that appeared to correspond to items found in modern Ma'uке fishing kits. It was soon explained to me that these small hooks were *koperu* hooks and that they were used in a type of fishing known as *titomo* fishing.

*Titomo* is a technique used to catch a variety of small fish and the term covers a number of variations each specific to particular fish and specific fishing areas. *Titomo* fishing is associated with short-line fishing and in particular it is associated with the catching of a species of mackerel known as *koperu*. With all forms of *titomo* the fish are jerked out of the water using a small hook on a short line. The fish are taken either from crevices in the reef or from schools feeding outside the reef. The fishermen are positioned either on the reef or they work while in the water themselves. It is this latter technique which is always associated with *titomo* fishing on Ma'uке nowadays but in the past, there is some evidence that it was used in the more wider sense. Buck (1944:237), for example, describes a specialised form of *titomo* that was practiced in the Southern Cook Islands in prehistoric and early historic times. It seems likely that the term *titomo* is derived from the verb *tomo*, to enter into in the sense of the hook being introduced into the crevices and into the schools of

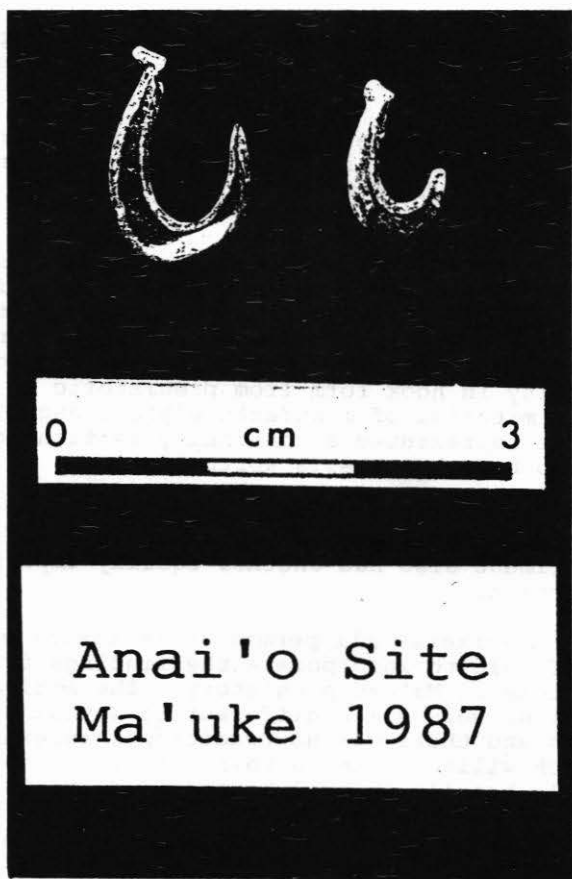


FIGURE 1. Small one piece "koperu" hooks from Anai'o, Ma'uke.

feeding fish.

The identification of the hooks as *koperu* hooks was independently confirmed by a number of visitors to the site.

At this point we were now all in agreement that the *koperu* hooks were probably the right shape for fishing but there was still some doubt about whether barbedless hooks would be capable of snagging the fish and whether the shell would snap under the weight. As a result of all our discussions we decided to set up a small experiment to test the hooks. A number of the workers had already suggested that we try out the

archaeological assemblage but I had put up some opposition to this suggestion. A two part experiment was eventually agreed on.

The first aim of the experiment was to manufacture our own hooks out of pearlshell using similar grinding, snapping and drilling techniques which we could observe on the discarded hook tabs.

The second aim was to use the hooks in the same way that small steel hooks are now used in *titomo* fishing for *koperu*. This would enable us to test the hypothesis that the ancestors of the modern Ma'uke fishermen may have used techniques that are regularly practiced today. The workers had identified a basic continuity in hook form from prehistoric to modern times (although the material of manufacture had changed) and they argued that it represented a continuity in fishing technique. This seemed to be a hypothesis worth testing.

Of course, it is only possible to argue that the *titomo* fishing practiced today might have been practiced in the past but the experiment also had another equally important, although unstated function.

The Anai'o workers, all permanent residents of Ma'uke, found it difficult to incorporate the findings from Anai'o into their own models of Ma'uke prehistory. The artifacts, with minor exception, were quite different to anything they were familiar with and there was no traditional reference to such a large and rich village site on this portion of the coast. Ma'ukeans rely heavily on oral history and the lack of traditional mention of the village site together with the unfamiliarity of the majority of the artifacts caused some initial confusion. The experiment with the fishing gear allowed us to establish a tangible link between the ancestors and the modern fishermen of Ma'uke.

I was able to acquire a dozen or so small Manihiki pearlshells that had been brought to Ma'uke for use as wall decorations. These shells were smaller (maximum hinge to lip diameter of 120 mm) than the artefactual shells found on the site but were big enough for our purposes. The technique of manufacture was simple and roughly followed the pattern observed from archaeological assemblages, including our own from Anai'o. A small tab of shell was removed from the flattest and thickest area. This is the area immediately above the hinge and slightly to one side of the centre of the shell. The tab was removed by using a small triangular file to grave the shell which was then snapped. We then ground off the grey backing layer of shell and using a hand held drill bit, a small hole was made in the centre of the tab. The hole was then extended using the small file and the shape of the hook

finished with the same instrument. It was easy enough to make the hooks as I had a reasonable idea of how East Polynesian hooks were made and what the manufacturing tools were like. However, it took a lot longer than expected at about  $\frac{1}{4}$  of an hour per hook and we broke 6 or 7 before we had two finished to our reasonable satisfaction.

A few days after the hooks were completed a cousin of one of the workers spotted a school of *koperu* in the mid afternoon and after work three of us set out to catch some. We launched an aluminium dingy through the Taunganui passage at Kimiangatau village and using an outboard travelled about 1.5 km south along the coast towards the area of Anai'o where we were working. We stayed about 60 m off shore being careful not to be carried too close to the reef by the rising waves. We anchored the boat close to the place where the *koperu* had been seen and prepared the bait. An unripe coconut (*nu*) was opened and the flesh (*kiko*) broken up and stored in a coconut shell cup. This was then spread into the water. We did this several times watching the bait slowly sink and disperse in the 15 m of clear water. After about 15 minutes the *koperu* arrived. A school of about 60 fish started to feed on the bait. After the short prayer which always precedes a fishing trip, two of us went into the water with goggles and snorkels (I also had flippers). We both had a rod (*matira*) made of bamboo and about 800 mm long. Attached to this was a 400 mm length of nylon line (*kati*) with a hook tied to the end. My friend was more interested in the fish than the experiment so he used a barked hook made of steel. I used a pearlshell hook.

We floated close to the boat and baited our hooks with small pieces of *kiko* we carried in our mouths. I couldn't get the bait to stay on my hook but it turned out that this was not a problem. We dropped our hooks amongst the feeding fish and when the fish took the hooks we flicked them up into the boat with the *matira* and hook still attached. The boatmen would then pass out a new *matira*. The fish were fairly easy to hook but with the unbarbed hook they had to be jerked out of the water and into the boat in a single motion as any slack would allow the fish to slither away. I caught about 6 fish and 20 or so were caught with the barbed hook. The fish fed for about 10 minutes and we couldn't attract them back or find another school. We dived for *pa'ua* (*Tridacna* clams) for half an hour or so and then headed back to Kimiangatau before it got too dark. We arrived back with about 30 fish and a dozen or so *pa'ua*. The trip took about 2 hours and it turned out to have been an expensive exercise. The petrol we used had cost us considerably more than an equivalent quantity of canned fish for example. This canned fish (*punu 'ika*) is a major component of the Ma'uke diet and is an almost identical species to the *koperu*.

## Discussion

The two small jabbing hooks we recovered from archaeological deposits at Anai'o were identified by Ma'uке residents as being specifically designed for *titomo* fishing for the *koperu* species of mackerel. This was a deduction based on the size and form of the hooks but there was some doubt in the minds of the Ma'uке people that the shell of which they were manufactured was a suitable material for catching fish and whether it was possible to catch fish with a barbedless hook. We set out to test these problems using homemade pearlshell hooks.

We assumed that the hooks had been manufactured using a similar series of techniques to those we could observe had been used on the discarded hook tabs also collected at Anai'o. Following the steps listed above we manufactured several fishhooks to dimensions corresponding to our archaeological *koperu* hooks. The manufacture of these hooks was not difficult and it is highly probable that *koperu* hooks are the easiest form of hook to produce. I have tried making rotating hooks out of *Glycymeris* shell in New Zealand and found the pearlshell to be a more easily worked and less brittle shell to work with.

After testing the hooks in the manner described by the local fishermen we concluded that it was certainly possible to use these hooks successfully in precisely the way people use similar shaped and similar sized hooks today.

The small hooks we worked with were unbarbed and consequently it was difficult to keep the bait attached. However, the colour and shine of the pearlshell seemed to compensate for this loss and there was no apparent tendency for the fish to prefer the baited hooks over the white pearlshell ones. The lack of a barb however, did require a great deal more skill in the landing of hooked fish and the steel barbed hooks are certainly a more efficient tool, at least for fishermen unused to shell *koperu* hooks.

*Titomo* fishing as carried out on Ma'uке today is a highly specialised form of fishing but is actually a simple technique requiring minimal skills. The two most important skills involve manning the craft while the fishermen are in the water and locating the school of *koperu* in the first place.

It appears that the fish are usually spotted from the reef or by fishermen returning from other types of offshore fishing expedition. When this happens the news travels fast. We passed three fishermen in outrigger canoes on our way out who were looking for the *koperu* school we had been pursuing.

*Koperu* are a pelagic fish and travel in small schools in

the offshore zones. *Titomo* fishing is a specialist adaptation aimed specifically for the catching of these fish and possibly a small range of other small pelagic fish. It is a fishing technique especially useful on raised coral reef islands like Ma'uke where reef angling is only infrequently possible due to the lack of sheltered channels and passages and where there is no lagoon.

In respect of its applicability to Ma'uke conditions and the presence of what we have shown to be efficient *koperu* hooks in the archaeological assemblage it seems very likely that *titomo* fishing is an ancient practice on Ma'uke. The skill of the *titomo* fishermen of today may well have been inherited from their ancestors through many generations of Ma'uke fishermen.

*Koperu* are usually eaten as raw fish or 'ika mata. They are cleaned and dipped into seawater or the juice of a lime or lemon and eaten as soon as possible after being caught. Sometimes they are eaten after being barbecued on hot rocks. This is known as *tunutunu* and the fish prepared this way are usually eaten with coconut sauce.

#### References

- Buck, Peter H. 1944. Arts and Crafts of the Cook Islands. B.P. Bishop Museum Bulletin 179. Honolulu, Hawaii.
- Walter, R.K. 1987. Preliminary excavation report, Anai'o Ma'uke, Cook Islands 1987. N.Z.A.A. Newsletter 30 (4239-250).
- 1988. An archaeological fishing assemblage from the Southern Cook Islands. In press Man and Culture in Oceania.