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Evidence For Early - Yet Short-Lived - Use Of Toheroa (*Paphies ventricosa*) Shell In The Manufacture Of Trolling-Lure Shanks?

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Introduction

The first East Polynesians to reach the shores of Aotearoa would have arrived with hope – even expectation - there would be available to them shells as large and as robust as their familiar pearl oyster *Pinctada*. This genus (especially *P. radiata* and *P. margaritifera*) was the shell most-prized for the manufacture of fishing items in many parts of Polynesia, its use long surviving the arrival of European materials, even through to the present day. Tellingly, the only item definitively associated with the early East Polynesian waka arrivals in New Zealand is the pearl-oyster shank from Tairua (Green 1967).

So, were they pleased – or would they have been peeved?

There is no New Zealand shell with quite the same properties as pearl oyster. Pearl oyster grows to a large size (250-mm or more in height), robust and opalescent. It could be used for either one-piece or composite fishhooks, as well as in the manufacture of trolling-lure shanks (Allen 1992: 185-9). ‘In its colour and iridescence, pearl shell resembles the small fish that were prey for the large fish that [Hawaiian] fishermen sought.... Pearl shell was also valued for its mechanical properties: unlike bone, pearl shell is comprised of alternating laminations that lack planes of weakness...’ (Bayman 2014: 99). Paging through a recent illustrated New Zealand mollusc catalogue for common shells of sufficient bulk to be fashioned into a reasonable-sized fishhook or trolling-lure shank, you end up with a remarkably long list of both gastropods and bivalves (Appendices 1 and 2). But although these shellfish reach a large size, and some are handsomely opalescent (e.g., horse mussel *Atrina zelandica*), most are clearly not robust enough to have been used for fishing equipment. Indeed, so challenged were the early settlers that, throughout much of the country, ‘the ‘minnow’ shape of the pearl shell shank would be laboriously and carefully copied in stone’ (Duff 1956: 200). The few shell minnow shanks reported so far appear to have been of thick mussel (presumably *Perna canaliculus*) (e.g., Duff 1956: 205, 210).

In this contribution we describe three weathered (and presumably old) shell objects fashioned from toheroa (*Paphies ventricosa*) shell. One of them has been made into a fishing-lure shank; the other looks to be a shank in the making; and the last is possibly a blank to be later fashioned into a shank. The objects were recently identified within a collection of what appear to be mainly Early-Period (pre-1450, *sensu* Smith 2013, but - because none has an associated radiocarbon date – are referred to here as ‘early-style’) archaeological material found on the surface of deflated dunes in Tom Bowling Bay (34.42°S; 172.97°E; Figure 1) in the late 20th Century, together with items of Tahanga basalt and Mayor Island obsidian (Andrew McAlister, pers. comm.) which are probably the northern-most reporting of these rock-types.

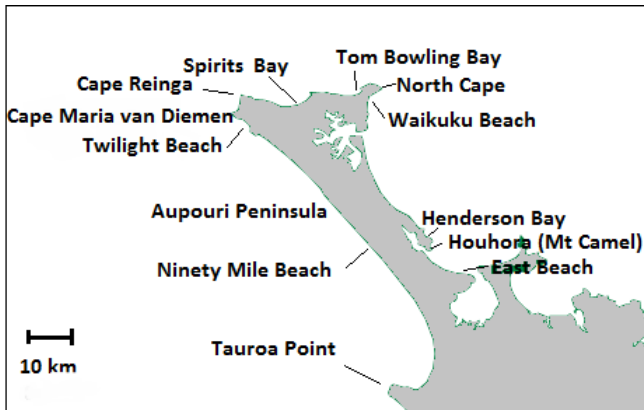


Figure 1. Far-north New Zealand showing Tom Bowling Bay and other places, including ones mentioned in the text.

The far north of the Northland peninsula has widespread evidence of very early human occupation. Although suggestion of first anthropogenic influence at Lake Taumatawhana, near Houhora, as early as AD 1050 (Elliot et al. 1995) appears not to have found currency, there is archaeological evidence for at least seasonal occupation in the region as early as the thirteenth century (Coster 1983: 187; 1989: 51; 1997: 7; Slocombe 1993: 41). Early sites include East Beach (Douglas & Fredericksen 1985), Houhora (Anderson & Wallace 1993; Petchey 2000; Furey 2002, 2004), Ninety Mile Beach (Coster 1989), Tauroa Point (Allen 2006), and Twilight Beach (Taylor 1984; Stevenson et al. 1996; Petchey 1998).

This appears to be the first time toheroa shell has been described in the manufacture of fishing gear – although by no means have our enquiries been exhaustive. Toheroa apparently once lived in Tom Bowling Bay (Redfearn 1974: 13), and were so abundant on nearby Ninety Mile Beach as to have later become the basis of a cannery. But it is not altogether clear if our items were made from large, recently living shells, or from among the subfossil toheroa shells (up to 150 mm or longer) frequently found in the north (John Coster, pers. comm.) at least as far south as Muriwai (Fergusson & Rafter 1959: 217, with one shell dated [in 1959] to 1030 ± 60 BP), but apparently nowhere else (Phil Ross pers. comm.). If of subfossil shell, then our objects may also be a first in the use of ancient - but once-living - material in fishing-gear manufacture. Either way, the use of toheroa shell for fishing equipment may have been short-lived as these are the only known confirmed examples.

The find-location

Tom Bowling Bay (Takapaukura) is, apparently, named for a young local chief Tom Bowline (Anon n.d.: 14; Slocombe 1993: 13). (Others, however, point to the tombolo formed by the juxtaposition of Tom Bowling Bay and Waikuku Beach; Figure 1.) It lies at the extreme north of the country, a region over which Davidson (1975) recorded more than 1000 mainly inland archaeological sites. In an archaeological survey of the region's dunes, deflated middens with heaps of hangi stones were common (Slocombe 1993: 15). 'A representative sample of such a site at Tom Bowling Bay contained innumerable small rounded stones, shell, fragments of fish, mammal and bird bones, firecracked cooking stones and stone impact fragments, the byproducts of tool manufacture', with suggestion of seasonal occupation 'over a long period of time' (Slocombe 1993: 41).

In spite of (or perhaps because of - Millar & Rough 1976: 28, 29) Tom Bowling Bay's (evocative) remoteness, the collecting of artefacts is known to have begun there and on nearby beaches more than a century ago. The earliest collections may be those of Captain John Bollons (made late 1800s to early 1900s, and now in Te Papa) and Cyril Blucher (1920s to 1960s, with his illustrated catalogue and items stored in Te Ahu in Kaitaia; Blucher n.d.). Other collections from or near Tom Bowling Bay include those of Vic Hensley (now at the Whangaroa County Museum, Kaeo; Coster & Billot n.d.); the Mrs D. Gleave Collection (whereabouts unknown; Gibbs n.d.); collections of the Hatch family (now in Kaeo); and that of the Forest Service, mainly from Ninety Mile Beach (Coster 1997: 24-25). Most of the collections are characterised by stone artefacts and moa- and marine-mammal-bone items, including one-piece moa-bone fishhooks, that closely resemble the

material associated with the early settlement at Houhora (Roe 1967; Furey 2002), in turn ‘a suite of artefacts which displays close affinities to early tropical East Polynesian assemblages’ (Anderson & Wallace 1993: 5). The Hensley, Hatch and Forest Service collections appeared not to contain any shell material the same as, or similar to, that reported here; nor, apparently, did the Bollons Collection (Law 1984). It has not, however, been possible to examine the extensive Blucher Collection, or the Gleave Collection.

Our objects

Our three objects are surface-finds from deflated dunes of Tom Bowling Bay and are part of the Booth Family Collection, most items of which are shortly to go to Te Kōngahu Museum of Waitangi in the Bay of Islands. The location detail was recorded shortly after each finding, in catalogues that are critical adjuncts to the collection. The three objects appear to be made of the one species of shell, identified by one of us (B.M.) to be toheroa. Although the shells could have been recently-harvested, we think they were more likely ‘subfossil’ (i.e., possibly thousands of years old) because of their appearance and dimensions (up to 10.5-mm thick, a chunkiness rarely if ever encountered in living toheroa today).

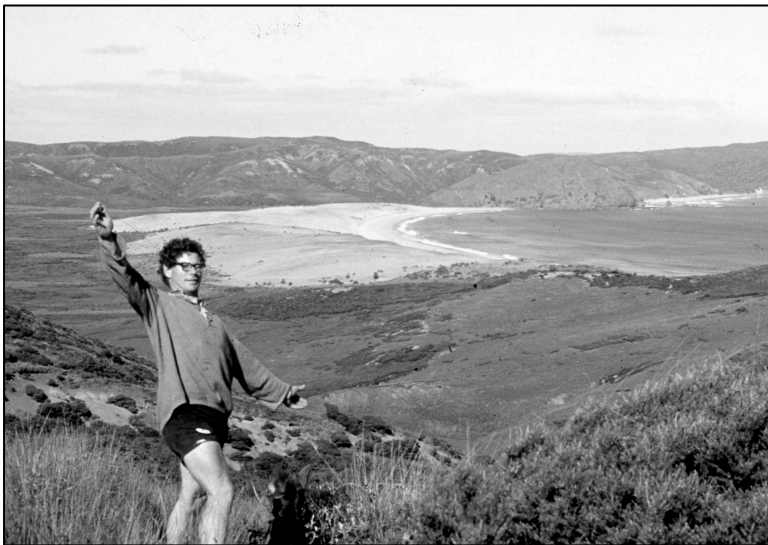


Figure 2. Tom Bowling Bay, October 1970, when Object 1 was found; one of the authors (R.B.) pinpoints the find-spot (Photograph J.B.).

Object 1. 72T39 (Figure 3). Shell trolling-lure shank, complete, found among ~100 mainly early-style artefacts. 48.3 mm long, up to 11.0 mm wide, and up to 6.2 mm thick. Slightly curved and as if acquired from a very large shell. Distinctive line-attachment knob; obvious reduction at distal end for hook binding.

Object 2. 72T228 (Figure 4). Shaped shell, broken, possibly in process of being made into a trolling-lure shank similar to Object 1, found among ~100 additional mainly early-style artefacts. 46.2 mm long, up to 13.1 mm wide, and up to 9.2 mm thick. Slightly curved and as if acquired from a very large shell.

Object 3. 72T229 (Figure 4). Shell, possibly in process of being fashioned into a trolling-lure shank similar to Object 1, and found on the same day as Object 2. 56.7 mm long, up to 19.6 mm wide, and up to 10.5 mm thick. Slightly curved and as if acquired from a very large shell.

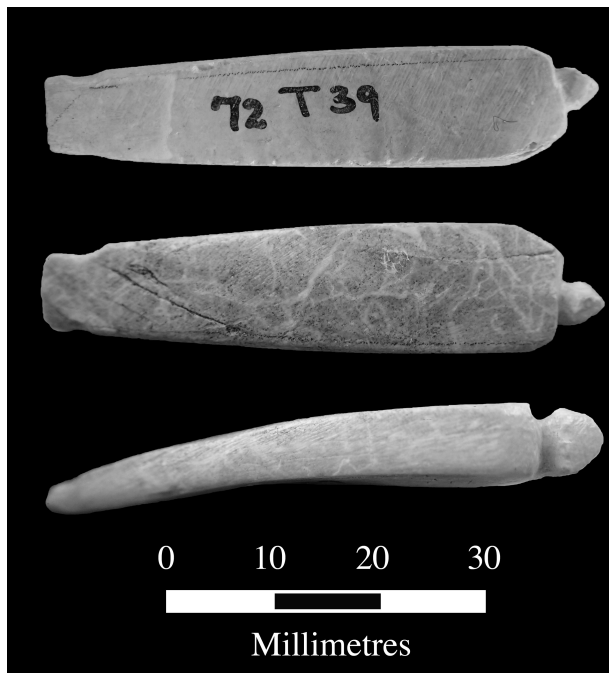


Figure 3. Dorsal, ventral and side views of Object 1 (Photographs J.B.).



Figure 4. Dorsal, ventral and side views of Object 2, and dorsal view of Object 3 (bottom right), compared with Object 1 (Photographs J.B.).

Other material in our collection

There are 243 items from Tom Bowling Bay in the Booth Family Collection, many of East-Polynesian style (*sensu* Davidson 1994; Furey 2004: 39, and in turn apparently Early-Period). Among them are parts of 16 (probably one-piece) moa-bone fishhooks; eight fishhook points; and nine whole or part trolling-lure shanks (seven of perforated bone; another of stone; and Object 1) (Figure 5). Object 1 and the (part) stone shank are unique in the collection in that all other shanks have a dorso-ventral hole at one end for line attachment (and appear similar in form to Figure 2.2, item b of Furey (2004: 39)). The line attachment knob on Object 1, and on the stone shank, appears different in form from all others of any sort, including the fishhooks, in this collection or among the Houhora material (Roe 1967: 31; Furey 2002: 65).

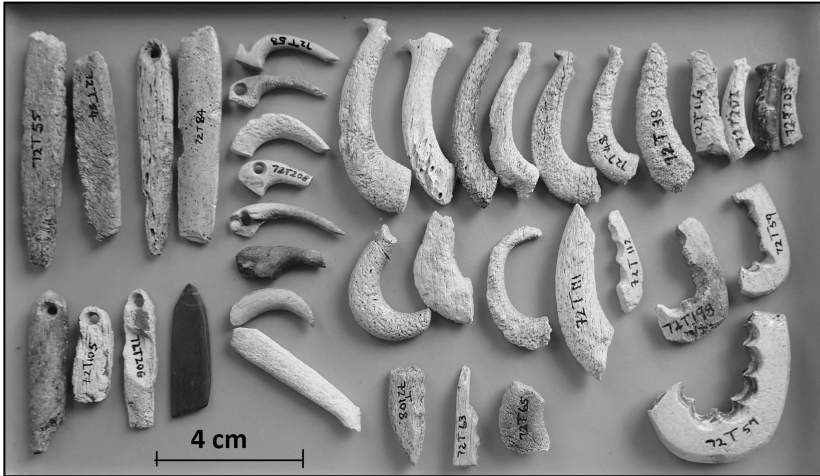


Figure 5. Some of the 243 mainly early-style artefacts, many of moa bone, from Tom Bowling Bay in the Booth Family Collection. The seven bone (presumed) shanks are on the left, with the broken stone shank fourth from left in the lower row (Photograph J.B.).

Discussion

Three shell objects of toheroa, seemingly old, two of them clearly shaped, were found in Tom Bowling Bay in the late 20th Century among what appear to be Early-Period artefacts. Examination of other archaeological material from the Far North, particularly Tom Bowling Bay, did not reveal any further items made of this material; and John Coster (pers. comm.) did not encounter any clearly-old fishing- or worked-items of toheroa shell during his extensive archaeological surveys of Aupouri Peninsula in the 1980s. (Other apparently Early-Period material from Tom Bowling known to exist remains unstudied for various reasons.) Object 1 has an attachment knob not seen - as far as we know - in any other early archaeological shell or bone objects from northern New Zealand.

Although no stratigraphic context for our three shell items exists beyond their being surface dune-finds, they were among many moa-bone fishing items. We cannot, however, discount – although we very much doubt – our objects are relatively recent, fashioned later and not directly associated with the early-style material.

The few early shell trolling-lure shanks reported from Houhora by Roe (1967: 38-41) and Furey (2002: 77-78) were made of mussel (probably *Perna canaliculus*), Cook's turban *Cookia sulcata*, and rock oyster *Saccostrea glomerata*, most of them similar in form to that of Furey's (2004) item b. The shell fishhooks Law (1984) examined from the Far North (including Tom Bowling Bay) in museum collections (including that of John Bollons) were mostly of Cook's turban, but there were also mussel and gastropod items. The one shell minnow shank from Wairau Bar was made of 'thick-walled mussel' (Duff 1956: 210), but Louise Furey (pers. comm.) draws our attention to what appear to be items of toheroa shell (including Canterbury Museum #E199.785; Eyles Catalogue 1166, which resembles our Object 3 and could be a blank for later working) from Wairau Bar, as well as a trolling lure shank from the east-Coromandel region that could also be of toheroa.

We have not exhaustively reviewed shell fishing-gear from around the entire country, and toheroa are widespread, but we are not aware of any later use, in pre-Contact times, of toheroa shell in the manufacture of fishing gear. (The 'unknown shell' items reported from various sites might be re-examined with the possibility of the shell being toheroa; such examination should include any 'blanks'.) Toheroa shell lacks the opalescence of either pearl oyster or *Tectus* (previously the commercial trochus *Trochus*), or the New Zealand-endemic paua (*Haliotis iris*) or Cook's turban, so we argue that early trials of toheroa in the construction of lure shanks would have been – in the absence of pearl oyster – for reasons of shell size and strength. However, the archaeological record shows that the shellfish species to continue to be used in the construction of fishing gear, even into historic times, were mainly paua and Cook's turban, but also mussel and rock oyster, and – less commonly – robust portions of certain gastropods (Appendices 1 and 2). If it turns out that toheroa shell fishing items are indeed confined to early sites, then presumably it was a shell that did not, in the end, cut the mustard – rather than being set aside for stylistic reasons (*sensu* Allen 1996).

Toheroa today have a wide but extremely and unusually patchy distribution throughout New Zealand (although common only in a few places on the west coast of the North Island and the south coast of the South Island, diminished numbers probably the result of heavy harvesting pressure in combination with other anthropogenic impacts as well as adverse environmental and biological factors – Redfearn 1974; Williams et al. 2013). Recent research raises the possibility that the tupuna of living toheroa widely found south of Aupouri Peninsula (including Foveaux Strait) today were transplanted there from the far-north by early Māori (Ross et al. 2016). If this proves to be correct, then the finding of clearly-old items made of toheroa shell in ancient

and significant sites such as Wairau Bar could mean toheroa was 1) an item of resource-material (recently living or subfossil) transported great distances – perhaps akin to fossil *Dentalium* shell (Duff 1956: 97), or even Mayor Island obsidian, Tahanga basalt and Nelson argillite; and 2) a living shell for transplantation.

Conclusions

We have described from Tom Bowling Bay three clearly timeworn objects made of toheroa shell, a species which, at the time of first colonisation, possibly lived only in northern New Zealand waters. One is a complete trolling shank; the other probably a shank in the making; and the last possibly a blank. They were found among early-style artefacts, including what are probably the northern-most find-spots for both Mayor Island obsidian and Tahanga basalt. The objects appear to be made of subfossil toheroa shell, which as far as we know has not been reported in quantity outside of Northland.

The finding of an object identified as toheroa shell in the Canterbury Museum collections from Wairau Bar could point to the very early settlers emerging from the north (or visiting there), taking south with them not only Mayor Island obsidian and Tahanga basalt – but also, from several hundred kilometres even further north, toheroa shell for construction (in the absence of pearl oyster) of fishing lure shanks. The apparent absence of toheroa shell in later pre-Contact sites – even though the shell both living and subfossil remains reasonably common in at least the Far North even to this day – suggests that use of this shell quite soon fell out of favour, probably through not being resilient enough.

We know these conclusions are speculative, particularly given our small sample size, but we are reminded by Roger Green (1963: 11) that ‘Wrong theories and erroneous speculations, if they are reasonably presented and carefully related to the prevailing interpretations of prehistory, are usually not long in attracting facts which serve to contradict them and open new avenues for investigation, but *we must have such theories if we are ever to determine those facts*’ (italics ours).

These three items may be anthropologically significant, yet there is every chance they would not have survived on the surface of the eroding dune environment of Tom Bowling Bay - their story untold - had they not been picked up decades ago. There was no loss of stratigraphic provenance - because there was no stratigraphic provenance. Early surface-collections of

known origin such as this will, no doubt, continue to yield invaluable information about our past.

Acknowledgments

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References

- Allen, M.S. (1992) Temporal variation in Polynesian fishing strategies: the southern Cook Islands in regional perspective. *Asian Perspectives*, 31: 183-204.
- Allen, M.S. (1996) Style and function in East Polynesian fish-hooks. *Antiquity*, 70 (267): 97-116.
- Allen, M.S. (2006) Periodicity, duration, and function of occupation at Tauroa Point, Northland, New Zealand. *New Zealand Journal of Archaeology*, 27: 19-62.
- Anderson, A. & Wallace, R. (1993) The chronology of Mount Camel Archaic site, Northland, New Zealand. *New Zealand Journal of Archaeology*, 15: 5-16.
- Anon (n.d.) Archaeological site management in the Te Paki Farm Park. New Zealand Lands and Survey. Te Ahu, Kaitaia.
- Bayman, J.M. (2014) Fishhooks and adzes: the pointed and edgy nexus of culture, technology, and early capitalism in Hawai'i. *Journal of Pacific Archaeology*, 5: 98-108.
- Blucher, C.V. (n.d.) A complete record of only collection of Maori artifacts found between the years 1923 to 1959 and 1968. Te Ahu, Kaitaia.
- Coster, J. (1983) The Aupouri Sand Dunes Archaeological Study: an interim report. *New Zealand Archaeological Association Newsletter*, 26: 174-191.
- Coster, J. (1989) Dates from the dunes: a sequence for the Aupouri Peninsula, Northland, New Zealand. *New Zealand Journal of Archaeology*, 11: 51-75.
- Coster, J. (1997) Evidence of John Coster, 1991. Te Oneroa a Tohe – the archaeology of Ninety Mile Beach. WAI-45 Document C7.
- Coster, J. & Billot, K. (n.d.) Catalogue of Hensley Collection, Pukenui. Ms card catalogue, Department of Conservation, Auckland. (in Coster 1997, but not seen)

- Davidson, J. (1975) Index to archaeological sites. Te Pahi, Mokaikai, North Cape, Murimotu, Ohao, Te Hapua. Department of Lands and Survey, Auckland.
- Davidson, J. (1994) The eastern Polynesian origins of the New Zealand Archaic. In: Sutton, D.G. (ed.) *The origins of the first New Zealanders*. Auckland University Press. Pp 208-219.
- Douglas, P. & Fredericksen, C. (1985) East Beach Archaeological Survey. Stage 1 February 1985. New Zealand Historic Places Trust Auckland 1985/3.
- Duff, R. (1956) The Moa-hunter period of Maori culture. Canterbury Museum Bulletin No. 1.
- Elliot, M.B., Striewski, B., Flenley, J.R., & Sutton, D.G. (1995) Palynological and sedimentological evidence for a radiocarbon chronology of environmental change and Polynesian deforestation from Lake Taumatawhana, Northland, New Zealand. *Radiocarbon*, 37: 899-916.
- Fergusson, G.J. & Rafter, T.A. (1959) New Zealand ¹⁴C age measurements – 4. *New Zealand Journal of Geology and Geophysics*, 2: 208-241.
- Furey, L. (2002) Houhora. A fourteenth century Maori village in Northland. *Bulletin of the Auckland Museum* 19.
- Furey, L. (2004) Material culture. In: Furey, L. & Holdaway, S. (eds) *Change through time. 50 years of New Zealand archaeology*. New Zealand Archaeological Association Monograph 26. Pp 29-54.
- Gibbs, W. (n.d.) Catalogue of the Gleave Collection, Kaitaia. Ms card catalogue, Department of Conservation, Auckland. (in Coster 1997, but not seen)
- Green, R.C. (1963) A review of the prehistoric sequence in the Auckland Province. Auckland Archaeological Society Publication No. 1 and New Zealand Archaeological Association Monograph 2. Auckland: University Bindery Press.
- Green, R.C. (1967) Sources of New Zealand's East Polynesian culture: the evidence of a pearl shell lure shank. *Archaeology & Physical Anthropology in Oceania*, 2: 81-90.
- Law, G. (1984) Shell points of Maori two-piece fishhooks from northern New Zealand. *New Zealand Journal of Archaeology*, 6: 5-21.
- Millar, D.D. & Rough, P. (1976) Land use proposals for the North Cape region. Department of Lands and Survey Auckland.
- Petchey, F. (1998) Radiocarbon analysis of a novel bone sample type: snapper and barracouta bone from New Zealand archaeological sites. Thesis for Doctor of Philosophy, University of Waikato.
- Petchey, F. (2000) Radiocarbon dating fish bone from the Houhora archaeological site, New Zealand. *Archaeology in Oceania*, 35: 104-115.

- Redfearn, P. (1974) Biology and distribution of the toheroa, *Paphies (Mesodesma) ventricosa* (Gray). Fisheries Research Bulletin No. 11.
- Roe, N. (1967) Archaeological investigations at Houhora. Thesis for Master of Arts in Anthropology, University of Auckland.
- Ross, P.M., McFadgen, B., & Smith, H. (2016) Ahumoana tawhito (ancient aquaculture) and the influence of early-Māori on the distribution and dynamics of toheroa. In *New Zealand Archaeological Association Conference*.
<http://www.waikato.ac.nz/php/research.php?mode=show&author=ross>
- Slocombe, A. (1993) An archaeological survey of the far north, encompassing the dunelands from Ninety Mile Beach to Parengarenga Harbour. Department of Conservation Northland Conservancy, Whangarei.
- Smith, I. (2013) Pre-European Maori exploitation of marine resources in two New Zealand case study areas: species range and temporal change. *Journal of the Royal Society of New Zealand*, 43: 1-37.
- Stevenson, C., Sheppard, P., Sutton, D. & Ambrose, W. (1996) Advances in the hydration dating of New Zealand obsidian. *Journal of Archaeological Science*, 23: 233-242.
- Taylor, M. (1984) Bone refuse from Twilight Beach. Thesis for Master of Arts in Anthropology, University of Auckland.
- Williams, J.R., Sim-Smith, C. & Paterson, C. (2013) Review of factors affecting the abundance of toheroa (*Paphies ventricosa*). New Zealand Aquatic Environment and Biodiversity Report No. 114.

Appendix 1. Native gastropods ≥ 50 mm in maximum dimension that are common in the North Island and South Island. (Table assembled by B.M.) Large gastropods such as *Charonia lampas*, although perhaps yielding material suitable for fishing gear, does not appear in this list for it is uncommon. The last column is by no means exhaustive.

Species	Common name	Maximum dimension (mm)	Distribution	Known use?
<i>Cellana denticulata</i>	Cook Strait limpet	84	Centred on Cook Strait	X
<i>Cellana flava</i>	Golden limpet	72	Centred on Cook Strait	X
<i>Scutus breviculus</i>	Shield shell	103	Widespread	X
<i>Haliotis australis</i>	Yellow-foot paua	110	Widespread	X
<i>Haliotis iris</i>	Black-foot paua	198	Widespread	Law (1984)
<i>Haliotis virginea virginea</i>	Virgin paua	71	Widespread	?
<i>Cookia sulcata</i>	Cook's turban shell	124	Widespread	Law (1984)
<i>Lunella smaragda</i>	Cats eye	91	Widespread	X
<i>Modelia granosa</i>	Southern cats eye	92	Widespread	X
<i>Struthiolaria papulosa</i>	Large ostrich foot	106	Widespread	Law (1984)
<i>Semicassis pyrum</i>	Helmet shell	118	Widespread	X
<i>Dicathais orbita</i>	White rock shell	120	Widespread	X
<i>Austrofuscus glans</i>	Knobbed whelk	87	Widespread	?
<i>Penion sulcatus</i>	Siphon whelk	164	Widespread	X
<i>Alcithoe arabica</i>	Arabic volute	235	Widespread	X
<i>Siphonaria obliquata</i>	Large siphon limpet	66	Widespread	X

Appendix 2. Native bivalves ≥ 75 mm length that are common in the North Island (NI) and South Island. (Table assembled by B.M.) Not all have widely-used common names; the last column is by no means exhaustive.

Species	Common name	Length (mm)	Distribution	Known use?
<i>Tucetona laticostata</i>	Large dog cockle	123	Widespread	X
<i>Aulacomya maoriana</i>	Ribbed mussel	80	Widespread S of East Cape	X
<i>Modiolus areolatus</i>	Hairy mussel	115	Widespread	X
<i>Mytilus galloprovincialis</i>	Blue mussel	149	Widespread but patchy in NI	X
<i>Perna canaliculus</i>	Green-lipped mussel	240	Widespread	Roe (1967); Furey (2002)
<i>Atrina zelandica</i>	Horse mussel	447	Widespread	X
<i>Ostrea chilensis</i>	Dredge oyster	126	Widespread	√ (?)
<i>Saccostrea glomerata</i>	Rock oyster	120	Northern NI	Roe (1967); Furey (2002)
<i>Pecten novaezelandiae</i>	Scallop	177	Widespread	X
<i>Crassula aequilatera</i>	Triangular trough shell	77	Widespread	X
<i>Cyclomactra ovata</i>	Oval trough shell	103	Widespread	X
<i>Spisula discors</i>	Large trough shell	81	Widespread	X
<i>Spisula murchisoni</i>	Surf clam	98	Widespread	X
<i>Resania lanceolata</i>	Lance mactra	120	Widespread	X
<i>Zenatia acinaces</i>	Scimitar shell	117	Widespread	X
<i>Paphies australis</i>	Pipi	94	Widespread	X
<i>Paphies donacina</i>	Southern tuatua	98	Widespread	X
<i>Paphies subtriangulata</i>	Northern tuatua	98	Widespread	X
<i>Paphies ventricosa</i>	Toheroa	169	Widespread	This paper
<i>Gari convexa</i>		85	Widespread	X
<i>Dosinia anus</i>	Coarse dosinia	82	Widespread	X
<i>Panopea smithae</i>	Geoduck	119	Widespread	X
<i>Panopea zelandica</i>	Geoduck	149	Widespread	X
<i>Barnea similis</i>	Large rock borer	102	Widespread	X