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AN ANALYSIS OF NEPHRITE ARTEFACTS FROM POUERUA,
BAY OF ISLANDS

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Five nephrite artefacts were uncovered during the first season of the Pouerua Project in central Northland. The landscape and sites were described by Sutton (1983). The nephrite artefacts are described here with comments on their probable sources and usage. The difficulties of sourcing New Zealand nephrites are manifold (Ritchie, 1976:252). The problems are compounded when, as in this case, the artefacts are of small size. However, an attempt has been made to source each artefact along with an indication of the presumed reliability of each inference.

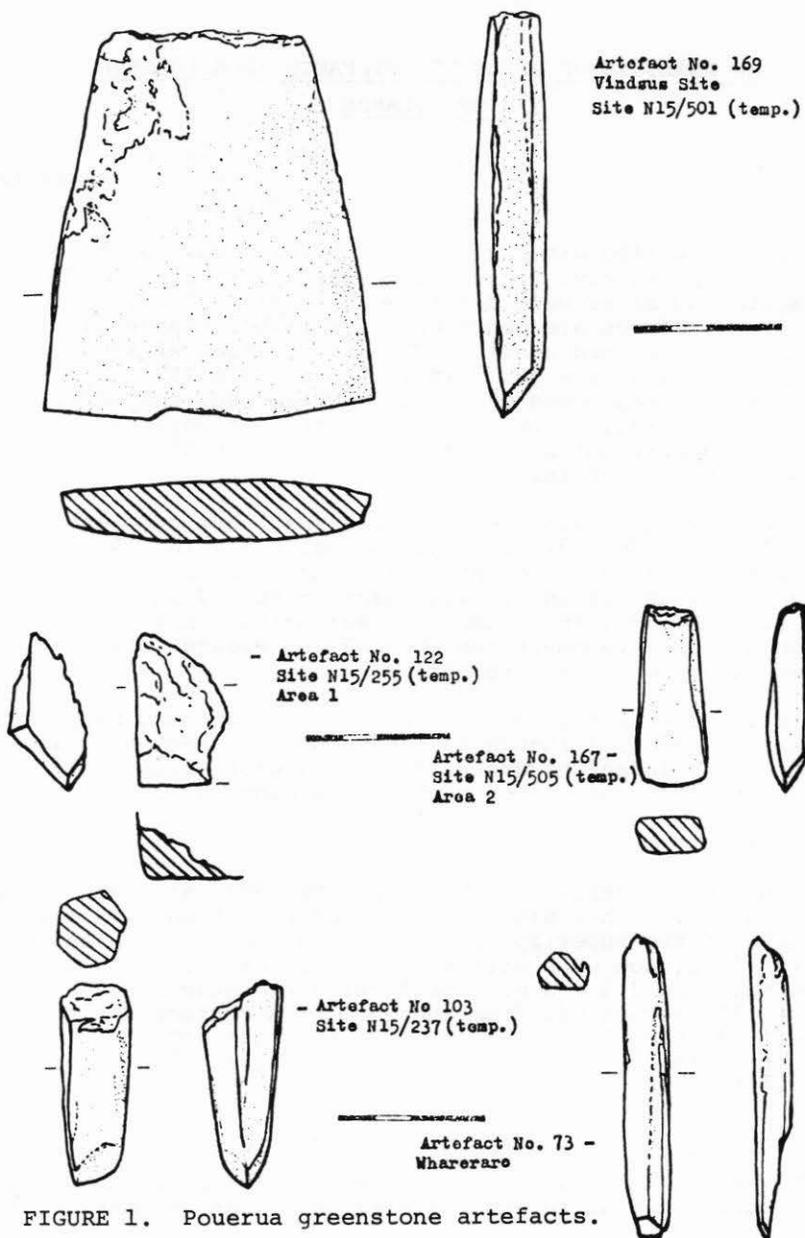
The five artefacts consist of a small but complete 2B adze (Artefact No 169), a broken chisel blade (No 103), a chip of a polished adze blade (No 122), a small chisel which bears a scarf mark indicating it was being converted into a needle-like tool (No 73), and a small linear hafted chisel blade broken at the attachment end (No 167). Please note that the quoted site numbers are temporary.

All the artefacts are composed of New Zealand nephrites (nephritic jade), although No 167 borders on semi-nephrite based on its lesser hardness (c.5). (Refer Ritchie, 1976: 41-46, for a discussion on nephrite terminology).

The artefacts

The small intact nephrite adze (No 169) was found within Site N15/501. This site as described by Sutton (1983:112) consists of two superimposed rectangular houses located on an excavated terrace on a narrow hillock in Area 1. The earlier house measured 2.3 x 3 m. The later house measured 2.5 x 3 m, was set 15 degrees off from the earlier structure and had a four-sided stone lined hearth. Sutton (1983:113) concluded that the sites in Area 1 were principally single household open settlements of late prehistoric age.

The adze measures 5.0 cm long and is 4.25 cm wide at the blade. Its maximum thickness is 0.8 cm. The butt end clearly shows the scarf cut and break. The blade has been resharpened at a different angle either in an attempt to elim-



inate a small chipped portion in the centre of the cutting edge or to decrease the steep angle of the blade for a different cutting purpose. The blade-bevel is biased towards the front face of the adze. The tool would have been most effective for removing shallow slivers or chips of wood such as in finishing wooden bowls or timber surfaces.

The adze is composed of high quality dark green nephrite (hardness 5.5-6). On present knowledge of the known (and potential) sources of nephrite which were exploited during the prehistoric era, it can be confidently ascribed to the Hokitika greenstone field and more specifically the lower Taramakau catchment which includes Hohonu or Greenstone River.

N15/255, a complex open settlement site, contained two very different houses, a small whare (3.5 x 3 m), a large pit and two small terraces. All these features, which are clustered together on a small hillock, were excavated (Sutton, 1983:114). The higher house (7 x 5 m) was a substantial structure within which was found the nephrite (No 122) described here as well as a small amount of obsidian and siliceous rock types.

No 122 is a chipped fragment (2.2 cm long) of an adze blade. The stone is virtually identical in hardness, colour and quality to that of the adze previously described (No 169) and it can be confidently ascribed to the same source. However, the blade is more symmetrical and has a lower angle of bevel. This would facilitate its use for less sensitive wood chopping such as roughing out. The chip appears to have broken off along a zone of weakness running nearly parallel to the blade angle.

No 167 is a small and unusual nephrite tool found within the fill of a pit excavated into an open terrace (N15/505). Five house sites were defined on the terrace (Sutton, pers. comm). In form, the implement is like a miniature 2B style adze. It measures 2.35 cm long, is 0.8 cm wide at the cutting edge and has a maximum thickness of 0.3 cm.

In use it was probably bound in a split wooden haft and used in conjunction with a hammerstone, similar to the mode in which a modern woodworking chisel is used. The form of artefact and steep blade bevel biased to one face suggest it was probably used for relatively delicate and shallow wood cutting such as in carving. However, the relative softness of the stone (H = 5) would have limited its utility for cutting hardwoods. A small portion of the butt end appears to have been broken off, but certainly not enough to preclude

its usage. The artefact was probably lost rather than discarded and consequently dumped with fill material into the pit in which it was found.

Microscopic examination of the broken butt end revealed medium schistosity and black (iron?) inclusions as well as specks of red soil. It is not possible to state a source for this specimen with any degree of confidence.

Artefact No 103, a broken nephrite chisel point, was found amidst a concentration of chert flakes (predominantly) within a single square house located on a ridge-top. There was also a contiguous cooking and food preparation area (Sutton, 1983:112).

The remaining portion of the chisel measures 2.4 cm in length. The blade, as depicted, is angled to one side. It is composed of relatively soft nephrite ($H = 5-5.5$). It is the only artefact in the assemblage which appears to have been heat treated judged initially by its dull green-black colouration. Microscopic examination revealed some schistosity, the loss of mineral inclusions in the blade area and flaws in the break region. The latter are accentuated by heat treatment. The prehistoric use and efficacy of hardening softer nephrites by heating in open fires has been ably demonstrated by Beck (1981). A cursory examination of prehistoric nephrite artefacts in various New Zealand museums suggests that many appear to have been heat treated.

Although heating has dulled and obscured the nature of the stone in the artefact (No 103), it is most likely derived from the Hokitika field based on its colour, structure and hardness.

The source of this interesting artefact was a rectangular semi-subterranean house (N15/507) built within a 1 m deep notch excavated into a ridge. The structure and associated features have been described by Sutton (1983:112).

Artefact No 73 appears to have originally been a fine chisel measuring 4.1 cm long, 0.45 cm wide and 0.3 cm thick. At some stage a sliver has broken off the blade end. This is clearly depicted in the side profile diagram. The breakage probably limited its utility as a chisel, consequently an attempt has been made to scarf-cut the artefact along its length to produce a finer chisel or needle-like implement. The butt-end also appears broken or poorly finished.

The nephrite is notably translucent and of the milky-green colouration commonly known as 'inanga'. Microscopic examination of the artefact revealed faint lines reminiscent of the 'cross-hatching' marks which are typical of the Slip Stream nephrite source in the Wakatipu field. The nephrite is also relatively soft ($H = 5-5.5$) and contains some small pyrite inclusions. It is concluded that there is a reasonable likelihood that the specimen is derived from a Wakatipu area source.

Conclusions and discussion

The small assemblage examined in this analysis brings to the fore all the difficult problems which impede learning more about the prehistoric role of nephrite, notably defining its sources and determining the specific use of nephrite tools.

Looking at the question of use first. Evidence of the antiquity of nephrite exploitation, its nation-wide distribution, and the many explanations put forward to account for its increasing use in the late Classic period have been previously reviewed (Ritchie, 1976:52-67). Here it will suffice to say that nephrite artefacts have been found in many (generally post-1500 A.D.) sites in the North Island, although in very small numbers compared with artefacts of local rock types. Nephrite ornaments are seldom found archaeologically these days but small chisels and adzes continue to be uncovered in recent North Island excavations, e.g. Motutapu (Davidson, 1978), the Washpool (Prickett, 1979:170), Hamlins Hill (Nichols, 1980) and Westfield (Furey, 1982:142). Seen in this light the recovery of five nephrite artefacts is perhaps not surprising, particularly when other cultural factors suggest the sites date relatively late in the prehistoric era. However, until quantitative analyses of museum nephrite collections and excavated assemblages (including stylistic analyses) are undertaken, exchange routes or 'heavy users' of South Island nephrite in the North Island cannot be determined.

The Pouerua pa is one of several cone pa which dominate patches of friable silt loam within or near the Taiamai Plains. The area is covered by complex surface evidence of pre-European and early historic horticulture (Sutton, 1983:107). The close equation between the distribution of Classic period adzes and the distribution of kumara agriculture, storage pits and fortifications was noted by Davidson (1971:32). She observed that Classic style adzes were more likely developed as a tool for gardening and digging pits and trenches rather than woodworking tools. Although this hypothesis explains

the presence of many large 2B adzes of local stone at agricultural sites, the artefacts examined here are all small implements and would have been practically useless for any gardening or excavating purpose.

Four of the five artefacts were found within or around house sites, whilst No 167 was uncovered within the fill of a pit on an open terrace. Although some of the artefacts are broken, it is apparent that at least four quite different tools are represented. As such, the assemblage constitutes 'a set' of tools ranging from a fine chisel (No 33) to a solid little roughing-out adze (No 122).

Comments of their inferred uses based on study of their cutting edges and artefact morphology were made in the main text. Without recourse to the full site assemblages, it is suggested their primary role was for various woodworking tasks. The durability of nephrite is well attested, and as the stone would have been in limited supply, perhaps certain 'households' possessed a limited number of nephrite artefacts for specialised purposes. This suggestion will be tested against the evidence from future excavations (Sutton, pers. comm). The widespread distribution of the nephrite artefacts at various sub-sites within the Pouerua complex probably represents quite different woodworking activities at the various locations.

Turning now to the question of sources. The known and inferred sources of nephrite in New Zealand exist within six areas of the South Island - Nelson, Westland, South Westland, Otago (2) and Southland (Ritchie, 1976:112-173). There is well documented evidence that the Westland 'greenstone field' was the source of origin of many of the dark hard green nephrite artefacts, while the other localities (particularly Wakatipu in Otago) are better known for the paler colours of predominantly semi-nephrites. However, colour alone is an unreliable indicator of the source of New Zealand nephrite artefacts because considerable colour variations exist within the nephrites from the different areas.

The analysis indicate a definite 'trade-exchange' link with the Westland area (2, possibly 3 of the pieces studied) with a less reliable indication of stone from the Wakatipu field. Specimen No 167 cannot be reliably ascribed to any particular field, although its softness and colouration favour its origin from the Wakatipu area.

To conclude, the nephrite artefacts from Phase I of the Pouerua Project constitute a small but useful comparative

research assemblage. Despite the difficulties that have emerged with regard to machine-sourcing, the recognition of basic source characteristics aided by microscope study have enabled some reasonably reliable ascriptions as to the source of the artefacts, (within the present state of knowledge). Similarly, in the absence of residues on the cutting edges or work-induced edge damage, determining the specific uses of the implements is limited to inferences from the morphology of the artefacts or replication-experimentation (not attempted here). As stated earlier, it is concluded that the Pouerua nephrite artefacts are specialised timber working implements similar in function to individual tools in a modern chisel set.

Acknowledgements

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