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# Woods Used in One-Piece and Composite Adze Hafts

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## ABSTRACT

Prehistoric adze hafts from six collections were found to have been made predominantly from light-weight conifer wood. Tough, heavy broadleaf woods were selected for the sockets of composite adze hafts.

*Keywords:* NEW ZEALAND, MAORI, ADZE HAFTS, COMPOSITE ADZE HAFTS, WOODS.

## INTRODUCTION

Although stone adzes are very common prehistoric Maori artefacts, the wooden hafts they were lashed to when in use are rare. Prehistoric Maori wooden artefacts survive only in dry caves or in waterlogged sites. These sites are more common than is often realised, and a steady trickle of wooden artefacts has entered museum collections from these sources. The wood is often in poor or fragmentary condition, due either to having been found in that state, or to having dried out without the treatment required to prevent uncontrolled shrinkage or total collapse of the degraded wood. However, as long as the basic shape of the artefact is retained, its original form and function can usually be reconstructed. Furthermore, whatever the condition of the wood, it is usually possible to identify its type and species by thin section microscopy using a small fragment from the artefact.

The following is a report on a series of wood identifications performed on 44 one-piece adze hafts and the sockets of 12 composite adze hafts. This work was completed as part of a wider survey of prehistoric Maori wood utilisation in the course of a research project on the conservation of waterlogged wood in New Zealand.

## THE ARTEFACTS

The one-piece Maori adze haft (*kakau*) was made from a secondary branch which grew at an angle to the main limb. This branch was cut so as to include a section of the main limb, which was then worked into a "foot" to which the adze butt was attached (see Fig. 1). All the hafts referred to here are the functional *kakau-toki* rather than the ornate ceremonial *toki-poutangata* described, for example, by Best (1912). According to Mead (1969, 1971:490), Maori one-piece adze hafts were of a type found all over Polynesia.

Another type of hafted adze present in Polynesia was the "rotating" adze. This had an adze lashed into a short wooden sleeve which could be rotated axially on the "foot" of the haft to become either a conventionally hafted adze or a side hafted one (Buck 1949:190). Rotating adzes were found right across Oceania, occurring in Polynesia on Manihiki, Tahiti, Pitcairn, Samoa and the Ellice Islands (Mead 1969:411). This adze was apparently used for hollowing out the deep narrow hulls of Pacific canoes. Despite two false alarms (Duff 1950:190, Mead 1971:490), the rotating adze has never been recorded from New Zealand. What Duff mistakenly identified as the sleeve of a rotating adze haft was, in fact, a component of a completely different composite adze haft (Keyes 1971:92).

The New Zealand composite adze haft is not found elsewhere, and is apparently a strictly local development. It has been described in a series of articles by Keyes (1971, 1973, 1981). It consists of a short, open-topped socket with an elongated extension which has lashing grooves carved into it. The butt of the adze fits into the socket and the extension fits on to the foot of the haft. The haft differs from one-piece types in having little or no "toe", but a distinctive projecting "heel" instead (Keyes 1973). The critical aspect of this configuration is the contact between the socket and the haft, which consists of flat surfaces so that the socket is held rigid and cannot be rotated. The socket is merely an extension to the butt of the adze, providing both elaborate lashing grooves and shaped and fitted contacts between the socket and the foot of the haft (see Fig. 1).

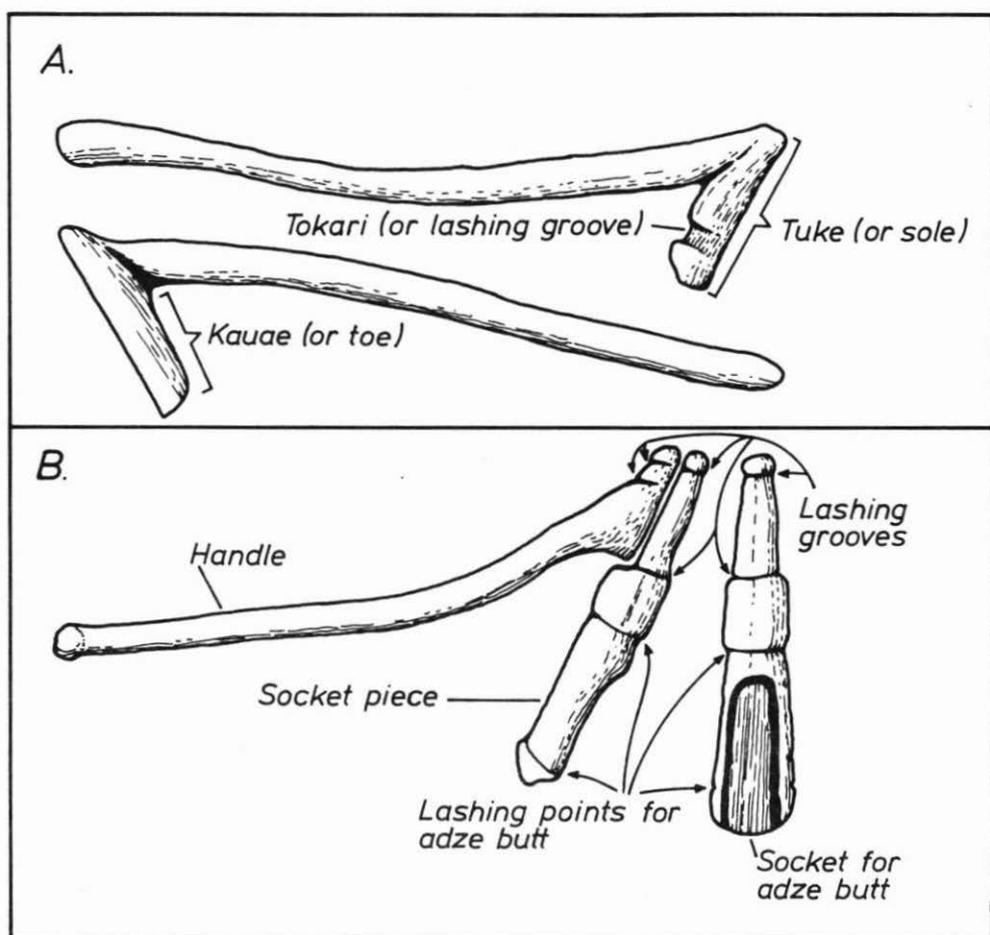


Figure 1: A. One-piece adze haft.  
 B. Composite adze haft.  
 (After Keyes 1973:117, Fig. 2)

The existence of this hafting system was postulated by Shawcross (1970:311) on the basis that many "Classic" 2B adzes were so short that they could not have been used without extensions to their butts. Keyes has suggested that the New Zealand composite hafted adze replaced the "Archaic" side hafted adze and, in part, the Pacific rotating adze (Keyes 1971:92). Alternatively, it could have allowed the replacement of the complex "Archaic" adze forms with the simpler 2B ones by attaching sockets to the latter, thus providing the variety of "butt" shapes and lashing points needed.

Keyes (1971:94, 1973:126-7, 1981:28-9) records composite adze hafts from the west coast of the North Island from Manukau Harbour to Horowhenua. He comments that this haft type may have had a limited distribution in prehistoric New Zealand. Recently, however, I have examined a socket from Whangarei Harbour, Northland, and another has been reported to me from Chalky Inlet in Fiordland (Lynn Williams, pers. comm.). Given these new records, it is very tempting to suggest that this haft type was common to the whole of the country, and that its rarity is simply a result of the perishable material from which it is made. Furthermore, I suspect that if a thorough examination was made of museum and private collections, a great many more would be discovered lying unrecognised alongside more familiar objects.

The hafts examined in this survey were from Otago Museum, Taranaki Museum, Te Awamutu Museum, Waikato Art Museum, and Auckland Museum. The hafts were provenanced to the Taieri Plains, Taranaki, Waikato, Coromandel Peninsula, the Hauraki Plains, Auckland and Northland. The composite adze haft sockets were from Taranaki, Waikato and Auckland regions, with another from Whangarei Harbour. The latter is in Barry Keene's private collection, Whangarei.

Many of the hafts in this sample were rough, rather casually made objects. This fits well with the description of their use given to Elsdon Best by one of his Tuhoi informants, Te Tuhī. He stated that while adzes were removed from their bindings and carefully stored when not in use, the hafts were simply hung up in trees until needed again, indicating that little value was attached to them (Best 1912:112). Other hafts, however, had carved ornamentation, especially composite haft handles (Keyes 1973), which suggests they were held in higher regard by their owners. Unfortunately, when the artefacts were sampled for this survey, I was not aware that hafts to which sockets were attached were distinctive. However, my records show that several of the special hafts that were illustrated by Keyes (1973) were, in fact, included in the present survey.

### THE WOODS USED

Best records the use of tawhero (*Weinmannia silvicola*) for heavy hafts, and tawa (*Beilschmiedia tawa*) and matai (*Podocarpus spicatus*) for lighter ones (Best 1912:101). These records are probably from the Urewera area, where he did much of his fieldwork. Colenso, who spent much of his time in the East Coast-Hawkes Bay region, records the use of kowhai (*Sophora microphylla* and *S. tetraptera*) for heavy hafts and titoki (*Alectryon excelsus*) for lighter ones (Colenso 1868:240). Many casual references have been made to the woods used in adze hafts (eg. Best 1912, Keyes 1971:94, 1973:118). These have been based on the appearance of museum specimens and usually quote manuka (*Leptospermum scoparium*) as the wood involved. The only reference to the woods used in sockets is a similar comment by Keyes (1971:86-91) that those he examined were made from a light wood, probably totara (*Podocarpus totara*).

Artefacts were sampled for this survey by the removal of a small chip of wood

which was later used to prepare thin sections for microscopic examination. Although this is usually a very effective method of wood identification, it is sometimes not possible to identify the wood to species level because of the similarity of the cell anatomy within some groups. This is particularly the case with the group of conifers consisting of rimu (*Dacrydium cupressinum*), totara, kahikatea (*Podocarpus dacrydioides*), miro (*P. ferrugineus*) and Hall's totara (*P. hallii*). For this group, large, good quality, thin sections taken from sound wood are necessary for easy recognition of each species. In this survey much of the wood was in a highly degraded state, and distinguishing rimu from totara was often not possible. In some other groups, the cell anatomy is identical within genera, and identifications can only be given at this level.

TABLE 1  
WOOD IDENTIFICATION TOTALS

(A) Adze Hafts

Species Name	Common Name	Total
— —	rimu or totara	16
<i>Podocarpus totara</i>	totara	5
<i>Podocarpus hallii</i>	Hall's totara	5
<i>Podocarpus spicatus</i>	matai	4
<i>Dacrydium cupressinum</i>	rimu	2
<i>Dacrydium kirkii</i>	monoao	2
<i>Phyllocladus trichomanoides</i>	tanekaha	2
<i>Phyllocladus glaucus</i>	toatoa	1
<i>Dacrydium</i> sp. ( <i>kirkii</i> or <i>biforme</i> )	— —	1
Unidentifiable gymnosperm	— —	1
<i>Lophomyrtus bullata</i>	ramarama	2
<i>Beilschmiedia tawa</i>	tawa	1
<i>Vitex lucens</i>	puriri	1
<i>Myrsine</i> sp. (prob. <i>M. australis</i> )	mapou	1
	Total	44

(B) Sockets

<i>Myrsine</i> sp. (prob. <i>M. australis</i> )	mapou	8
<i>Schefflera digitata</i>	pate	1
<i>Leptospermum ericoides</i>	kanuka	1
<i>Lophomyrtus bullata</i>	ramarama	1
<i>Vitex lucens</i>	puriri	1
	Total	12

The results of this survey are shown in Table 1. Of the 44 hafts, 39 were made of wood from the native conifers, 22 of these being either rimu or totara. A total of 12 species are represented, eight being conifers. Only five hafts were made from wood of broadleaf trees, none of them manuka. Some minor geographical patterns are present, caused by local availability of certain species, eg. monoao (*Dacrydium kirkii*), which is only found in Northland, and Hall's totara which replaces totara in Otago, where the latter is rare. Eight of the 12 sockets of the composite adze hafts were made of *Myrsine* sp. (probably *M. australis*, the commonest species). Seven of these sockets were from Taranaki, where the use of this wood for a variety of smaller artefact types was common (R. T. Wallace, unpublished data). There are five species of wood represented in a sample of 12, indicating that quite a number of woods were judged suitable for this purpose, though only from broadleaf species. In this context, it is interesting to note that all the sockets illustrated by Keyes (1971), except one, have the radial cracking characteristic of broadleaf woods that have

been removed from swamps and dried out without treatment to prevent drastic shrinkage. The species of broadleaf woods used for composite adze sockets have, in contrast to conifer woods, broad medullary rays which allow these cracks to develop in such a dramatic manner. The only socket illustrated by Keyes which did not show this cracking was included in this survey and was made from pate (*Schefflera digitata*), another broadleaf species.

All the artefacts in this survey, both hafts and sockets, were made from the branches of trees rather than wood from the trunk. Branch wood differs in its properties from the more familiar trunk wood of the same species. As a rule, however, conifers produce light to medium weight woods. Their use in adze hafts can be usefully contrasted to the use of hickory for the handles of modern tools. Hickory is much harder and heavier than almost any of the woods listed for hafts in Table 1. In general, the prehistoric Maori preferred light, flexible woods for their hafts.

The sockets were made from some of New Zealand's hardest and heaviest woods. This is perhaps to be expected, as the socket functioned as part of the adze, being an extension to the butt, and heavy woods would add weight without adding excessive bulk as well as being extremely tough and durable.

## DISCUSSION

The ethnographic records do not seem to fit very well with the results of the identifications of the woods of actual hafts. Matai and tawa are the only woods the two lists have in common. These two, along with the other woods mentioned by Best and Colenso, are much harder and heavier than those actually used for the hafts sampled in this survey. Although the ethnographic records were made in areas other than those from which this sample came, the pattern of wood use uncovered in this survey is so constant right across the country that it is possible the ethnographic records are inaccurate. The only way to resolve this question is for the survey to be extended to include hafts from all regions in the country, especially from the East Coast-Hawkes Bay area.

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