A Re-examination of Stone Artefacts from the Weka Pass Rock Shelter

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The Weka Pass (or Timpendean) rock shelter in North Canterbury contains some of the more important Māori drawings in the South Island. Re-examination of the stone artefacts recovered from the shelter floor during excavations in 1968 revealed that the majority are composed of chert, originating mainly from the Kaikōura area and local sources. Wider connections can also be established, from other stone materials, with the North Island, Nelson-Marlborough area, West Coast, and probably mid Canterbury. Previous radiocarbon dating indicates the shelter was used at least until the sixteenth or seventeenth century.

Keywords: Māori artefacts, North Canterbury, rock shelter, stone materials, Weka Pass

Introduction

The Weka Pass rock shelter (site M33/11) near Waikari in North Canterbury, also known as the Timpendean shelter, is one of the more significant sites of its type in the South Island, and its extensive rock drawings became the subject of considerable controversy in the 1870s–1880s when Julius von Haast (1877) suggested that some of them may have been produced by Indians or Tamils (for a summary of the debate see Trotter and McCulloch 1971: 15–16). However, the site is also notable because it is one of the few shelters to have yielded a sizeable collection of artefacts, along with a wide variety of faunal material (Trotter 1972). A re-examination of the taonga (stone artefacts) was therefore undertaken to see if they could provide further insights into the activities undertaken at the site, and the wider connections of the people who occupied the shelter and created its impressive drawings.

Setting and Investigations

The rock shelter is located in the Weka Pass Historic Reserve, about 1.5 km southwest of the small settlement of Waikari (Fig. 1). It is situated on the northern side of an elongate, 100-metre-long outcrop of Amuri Limestone, oriented east-west (Fig. 2). There are at least 30 other shelters containing rock drawings that have been recorded in the Weka Pass area, though artefacts were found at only one of these (McCulloch 1968).

Julius von Haast visited the Weka Pass shelter in April or May 1876, and subsequently employed the artist T S Cousins to record some of the more obvious drawings preserved along the rear wall (Haast 1877). In February 1877, as Director of Canterbury Museum, he also instructed one of his staff, W Sparks Jnr, to undertake test excavations in the floor deposits. Five trenches were dug across the shelter at right angles to the wall. These exposed two distinct midden layers, overlain by leaf litter and pieces of rock. But Haast was disappointed in the few artefacts recovered, which consisted only of some "fragments of chert and flint", several pieces of dark sandstone from a polished implement and a large piece of sandstone chipped to a point (Haast 1877: 52–53).

During further excavations in 1968 (Trotter 1972), four trenches were dug across the floor also at right angles to the rock face. These revealed three distinct periods of use. At the lowest level there were some natural moa bones (*Euryapteryx geranoides*) (Worthy and Holdaway 1996), subsequently dated to 1525 ± 60 years BP. The main cultural layer was up to 25 cm thick and consisted of dark soil containing bone, shell, burnt stones, charcoal, ash, wood and artefacts. It was overlain by about 5 cm of loose limestone dust and sheep droppings with various European items.

Faunal material from the site, particularly the bird bone, has been documented and discussed by Trotter (1972) and Worthy and Holdaway (1996). Of the shell recovered, the most common species were pipi (*Paphies australis*), pāua (*Haliotis* sp.) and freshwater mussel (*Echyridella menziesii*).

Description of Stone Material

All of the stone artefacts recovered from the main occupation layer during the 1968 excavations were listed by Trotter (1972: 47) and amounted to 198 items. This included a sizeable collection (n = 127, 467 g) of "other silica materials", which were not differentiated further, and 24 pieces of "fired clay". There were also a few artefacts made from shell and bone, and seven pieces of pounamu (nephrite) from the upper layer. Most artefacts were recovered from Trenches 2 and 3. All items are held by Canterbury Museum, but those referred to by Haast (1877) have not been re-located.

The types of lithic materials identified in this study are listed in Table 1, along with those reported by Trotter (1972) for comparison. Altogether, 12 different rock types were recorded. These were identified with the aid of a binocular microscope. Canterbury Museum catalogue numbers are provided in the text (e.g. Canterbury Museum 2008.1150.5).

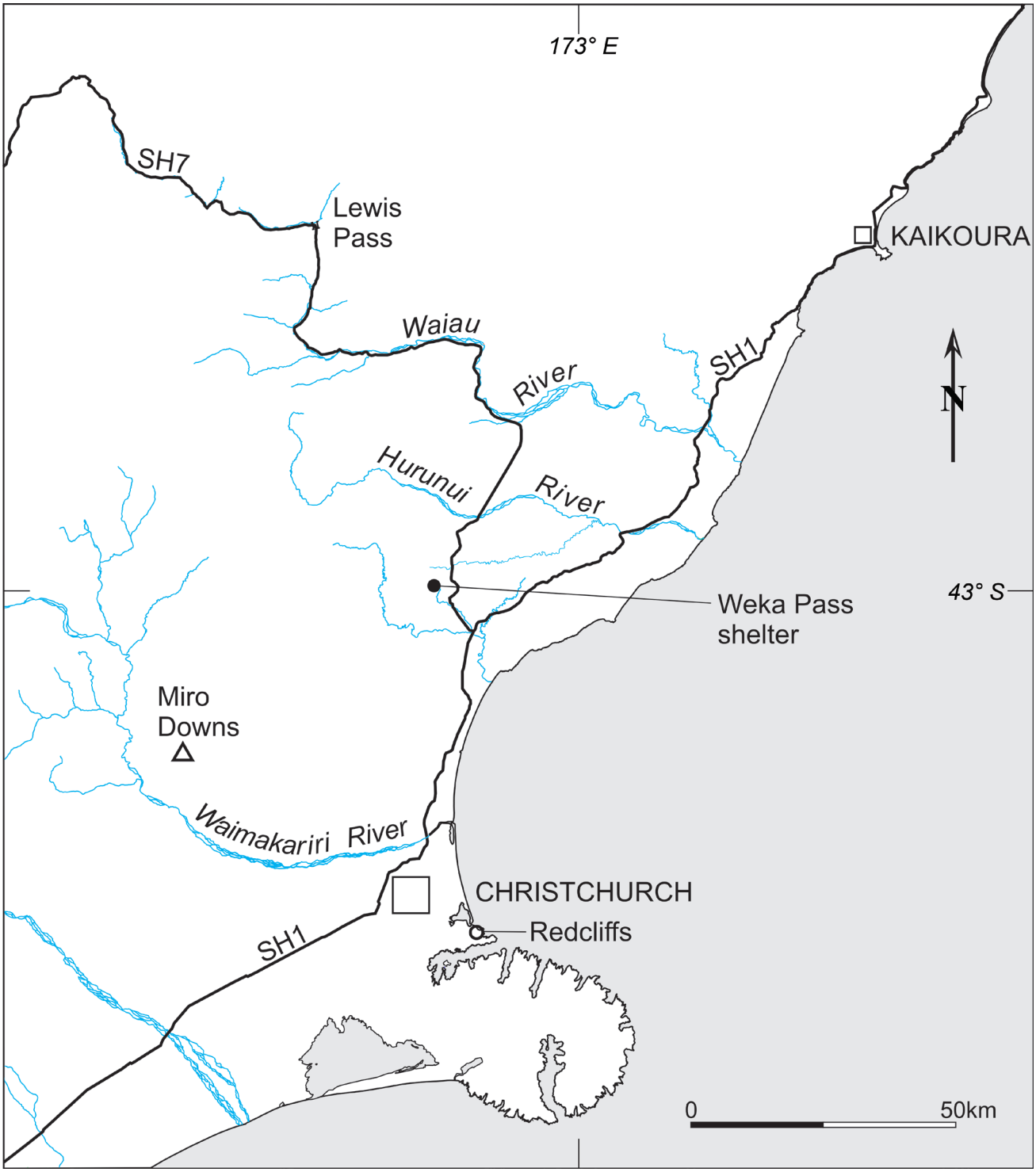

Figure 1. Location of the Weka Pass (Timpendean) rock shelter.

Chert

This is the most common stone material recovered from the site, and forms 69% of the assemblage (numerically). It includes five cores. Based on colour, quality and the presence of microfossils it is evident that the chert originated from at least three, and probably four, different sources, and an effort was made to establish the approximate quantity from each. The two main chert types are here referred to informally as Kaikōura and Torlesse (Fig. 3).

Kaikōura chert, considered to be derived from the Kaikōura coast (Moore 2021), forms at least 64% by count (or 57% by weight) of the total chert. Most of this is of moderate to good flake quality, and predominantly grey, though some is greenish grey, brownish grey or pale brown. Some poorer quality white chert is also likely to have come from the Kaikōura area, as similar material outcrops on the Kaikōura Peninsula (pers. obs.). A few flakes contain radiolaria and/or foraminifera, indicative of a marine origin. Only one flake had a water-worn cortex, which suggests that the chert was brought onto the site mainly in the form of pre-prepared cores. Although most of the flakes show no obvious sign of use, one with use wear on two edges may have been a drillpoint (Fig. 3).

Figure 2. View to the southwest of the Timpendean rock shelter (at far end of the limestone bluff). Photo by Michael Trotter, 1967

Figure 3. Artefacts of chert from the Timpendean shelter. From left: small core of red-brown Torlesse chert; possible drillpoint of grey Kaikōura chert; flake of white chert. Canterbury Museum 2008.1150.30. Photo by author

Table 1. List of rock types identified from the Weka Pass shelter.

Rock type	Number	Weight	Trotter (1972)†
Chert	128	519 g	13 (flint, 36 g)
Silcrete	11	173 g	5 (35 g)
Obsidian	14	17 g	11 (14 g)
Chalcedony	3		not identified
Sandstone	5		5
Meta-argillite	4		5
Pounamu	5		(7)*
Basalt	1		not identified
Quartzite	1		not identified
Kokowai	1		1
Phyllite	6		5
Schist	2		2
Greywacke?	1		not identified
Gizzard stones	3		not identified

†Differences in numbers between Trotter and this study can be largely attributed to differences in the identification of lithic materials

*All from the upper layer

Approximately 16% (42% by weight) of the chert was classified as Torlesse chert, and this is considered to originate from bands of volcanic rocks, red mudstone and chert within the Jurassic–Early Cretaceous greywacke sequence (Torlesse composite terrane) forming the main ranges (Rattenbury et al. 2006). In contrast to the Kaikōura chert, this material is predominantly red-brown, greyish red or chocolate brown in colour, and generally of poorer quality. One of the three cores recorded (Canterbury Museum 2008.1150.5) was formed from a water-worn cobble and it is likely that most of the Torlesse chert was procured from local rivers.

Chert that could not be confidently placed in the two main categories was classified as Other, and makes up about 20% of the total. It includes some material (at least 12 pieces), which is mostly red-brown or yellow-brown in colour, and appears to have a volcanic origin. This may be derived from the Mt Somers Volcanics in Mid Canterbury (Moore 2022).

There is also one small core (Canterbury Museum 2008.1150.5, weighing 10.7 g) which has a very different appearance. It is medium grey, has a distinctive speckled texture, and contains abundant sponge spicules. This chert is remarkably similar to the Pahautane chert found near Punakaiki on the West Coast (pers. obs.), although the same type of chert also occurs in South Canterbury (Moore 2019).

Sandstone

One of the more significant artefacts collected from the site, which was found in the paddock outside the shelter, is a cobble-sized hōanga (grinding stone) of quartzose, shelly, micaceous fine sandstone containing rare glauconite (Fig. 4). It weighs 365 g, and has a wedge-shaped cross-section. Both sides of the stone have been smoothed.

Four other pieces of sandstone were recovered from Trench 4. One is a large piece off a water-worn cobble, and another smaller piece may have been used as an abrader. It seems likely, considering the geology of the area (Rattenbury et al. 2006), that all of the sandstone, including the hōanga, was obtained locally, probably from a nearby river or stream.

Meta-argillite

Four items of metasomatised argillite were identified (one indefinite), three of which appear to have been derived from polished adzes. Two of these are dark grey, and conceivably might be from the same adze. Another is a portion of a polished adze (Canterbury Museum 2008.1150.30, consisting of two pieces glued back together) with a narrow sub-triangular cross-section, probably a Type 3 or Type 4 form (Duff 1956). It is composed of medium grey meta-argillite with black veins. All of this material probably originates from the Nelson-Marlborough region.

Silcrete

One core and 10 flakes of silcrete were identified. The core (Canterbury Museum 2008.1150.24), which consists of yellowish-grey silcrete, has a remnant of water-worn cortex and therefore was probably obtained from a river or stream. The nearest known silcrete source is at Miro Downs, near Oxford (Moore and Davis 2020, Fig. 1). Most of the flakes show no obvious sign of use.

Pounamu (nephrite)

There are five flakes and pieces of pounamu in the collection (cf. Trotter 1972), all from the upper layer. Notably, one of the flakes has a sawn edge, while another has a partly polished surface. Thus at least two of the flakes may have been derived from finished artefacts, possibly adzes.

Figure 4. Hōanga of sandstone. Canterbury Museum 2008.1150.7. Photo by author

Obsidian

The 13 flakes and one core of obsidian recovered from the site are all small (<30 mm). They are all olive green in transmitted light and on this basis are considered to originate from Mayor Island. The core (25.5 mm in length) and one of the flakes (27 mm length) were previously analysed by Seelenfreund and Bollong (1989) using non-destructive energy-dispersive XRF spectroscopy, and both were attributed to Mayor Island. No grey obsidian was identified (cf. Trotter 1972).

Other lithics

Several other rock types were identified, including quartzite, kokowai, basalt, phyllite and schist. The quartzite is red to yellowish-brown, and represents part of a water-worn cobble which may have been used as a hammerstone. The single piece of kokowai is composed of hematite-rich sandstone, and was presumably used for some of the rock drawings. The basalt is a flake off a polished adze. There is no indication of use of either the phyllite or schist, although the former was commonly used for slate knives (ulu), and schist as an abrasive material.

The presence of gizzard stones is not surprising, considering the occurrence of moa bone at the site. Whether these stones originated from the natural death of moa in the shelter, prior to human occupation, or later butchering of the birds by Māori, is unknown.

Age

Three radiocarbon dates were obtained from the 1968 investigation – one on moa bone (NZ 918, mentioned above), and another two on shell, both from the main occupation layer. One of the latter consisted of a mixture of pipi and *Mytilus* shell (NZ 892, NZ 3655) and yielded a conventional age of 436 ± 53 years BP (recalculated to 744 ± 58 BP, Challis 1995). This was recalibrated using Calib version 8.2 (Stuiver and Reimer 1993) and the most recent calibration curve Marine20, with a regional Delta R offset of -154 ± 38 14C years (Anderson and Petchey 2020; Heaton et al. 2020), giving an age of AD 1438–1792 at 95% confidence, and AD 1500–1670 at 68% confidence. This indicates the shelter was occupied on at least one occasion, in the sixteenth or seventeenth century.

The other dated sample (NZ 893) consisted of freshwater mussel shell (*Echyridella menziesii*), and had a conventional age of 704 ± 41 years BP (later recalculated to 811 ± 61 BP, Challis 1995). Although this species is regarded as being unreliable for dating because of its propensity to absorb old carbon into the shell (particularly in limestone country), it should nevertheless be considered. This provided a re-calibrated age (using Calib v.8.2 and Marine20) of AD 1280–1394 (median AD 1340) at 95% confidence, which may be too old.

These dates do not provide a clear indication of when the shelter was first used, or for how long, though we can reasonably assume from the overlap of some rock drawings and the use of different drawing materials (Haast 1877) that it was occupied on multiple occasions. The stone artefacts were therefore probably deposited over a period of time, and the presence of part of a Duff Type 3 or 4 adze would tend to suggest the shelter was initially used during the Early period, prior to about AD 1500. While silcrete was also used at Late period sites in Canterbury (e.g. Houhoupounamu, Challis 1995), it is much less common than in the Early period (Moore 2022).

Discussion

The range of lithic materials recovered from the Weka Pass shelter tells us that those who used it, in pre-European times, had either a direct or indirect connection with areas to the north (Nelson-Marlborough meta-argillite, Kaikōura chert, and Mayor Island obsidian) and south (silcrete and volcanic chert?). A probable link with the West Coast of the South Island can also be established from the small core of Pahautane-type chert. While this is also indicated from the pounamu, Trotter (1972: 45) noted that the small pieces of nephrite were found in the upper layer, overlying the main occupational deposit and associated with European items (e.g. pieces of clay pipe, glass), and thus apparently deposited much later.

It is clear that a significant proportion of the stone material was brought to the site from beyond the Weka Pass area in the form of finished tools (adzes) and pre-prepared cores (chert, silcrete, obsidian), presumably from one or more semi-permanent settlements somewhere along the Canterbury coast. Although this material does not provide any obvious indication of where such settlements might have been, the presence of pipi shell (*Paphies australis*), which could only be from an estuarine environment, suggests that some visitors to the shelter likely travelled from near present-day Christchurch, possibly Banks Peninsula. Interestingly, the only other place that Pahautane-type chert has so far been identified in Canterbury is at Redcliffs, a site which was occupied in the fourteenth century (Moore 2022).

The types of stone artefacts and range of bird bone found at the shelter suggest that while it was almost certainly used for hunting purposes, other activities were also undertaken. For example, adzes of at least two different materials were used on site (two of meta-argillite, one of basalt), and the hōanga and other pieces of sandstone would indicate that they were either being re-sharpened or re-fashioned at the shelter. These adzes may have been employed in cutting down trees and/or splitting logs and thus the shelter was perhaps occupied, at times, for longer periods (weeks?) than has been suggested previously.

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