



NEW ZEALAND  
ARCHAEOLOGICAL  
ASSOCIATION

**NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION NEWSLETTER**



This document is made available by The New Zealand Archaeological Association under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

To view a copy of this license, visit  
<http://creativecommons.org/licenses/by-nc-sa/4.0/>.

A PREHISTORIC QUARRY ON COLYERS ISLAND,  
BLUFF HARBOUR, SOUTHLAND

Peter Bristow	Karl Gillies	and Warren Gumbley
Dunedin	Southland Museum &	Dunedin
	Art Galley	
	Invercargill	

Bluff Harbour is a large tidal inlet located on the southern margin of the Southland Plains, flanking the eastern side of Bluff Hill and the low range called Greenhills (Fig. 1). Colyers Island is situated within the northern reaches of this inlet and has large tidal mudflats and rock outcrops exposed on its shores at low tide (see Cover).

Colyers Island, previously known as 'Cow' or 'Jones' Island, was purchased by James Colyer in 1870 (Hall-Jones, 1946:134). Its subsequent ownership and use is documented in Bremer's booklet on Greenhills (1976:59-60). Suffice it to say that under Colyer and later owners, the island was extensively used for grazing and market gardening. The island was extensively used for grazing and market gardening. The island is presently under pasture with some large areas of gorse around the south-western end and along some of the perimeter between the high waterline and grass. *Macrocarpa* shelter belts are located at the northern end of the island, surrounding the site of the old homestead (date of construction unknown) which was still standing in 1976 but since has been demolished. Other vegetation on the island includes flax, broom and a few exotic pines.

Rock outcrops on Colyers Island are part of the Greenhills group and their lithologies include intrusive igneous dykes, fine- and coarse-rudite breccia and argillite (Watson, 1976). These outcrops were extensively quarried by the prehistoric people of the Foveaux Strait region and remain in a generally unaltered condition since those times. At the request of the New Zealand Historic Places Trust, a survey of archaeological sites on the island was recently carried out (Bristow *et al.*, 1985). The sites on the island all lie predominantly within the tidal zone, although some of the flaking floors extend above this.

Sites at Tiwai Point (S181-2/16) and Greenhills (S181-2/23) are of some significance in relation to the adjacent sites on Colyers Island (Fig. 2). Dark green 'argillite' (which some geologists refer to as microbreccia) occurs in the flaking floors of these two sites and has been sourced in hand specimen to the worked outcrops of Colyers Island (Russell Beck pers. comm.). We therefore assume that the

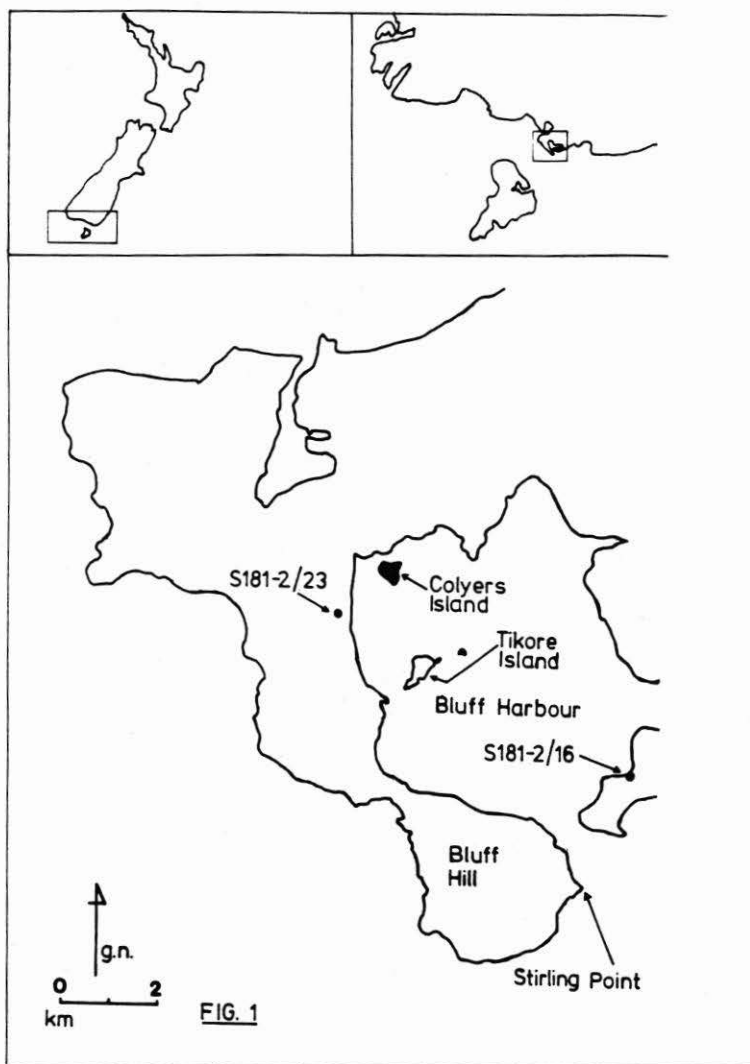


FIGURE 1. Sites mentioned in text. S181-2/23 is Greenhills and S181-2/16, Tiwai Point.

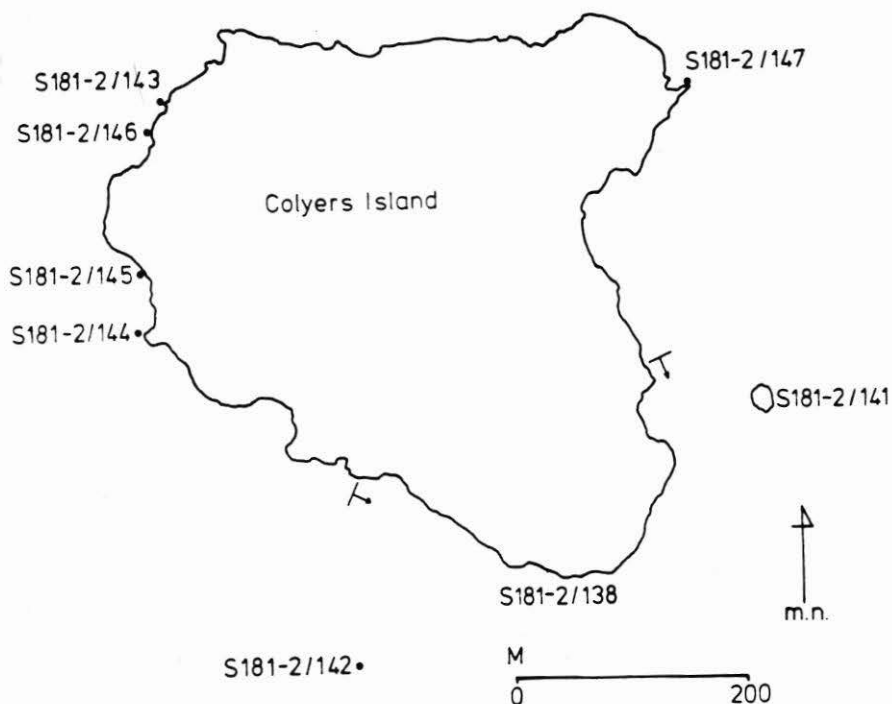


FIGURE 2. Colyers Island archaeological sites. The extent of the major quarry S181-2/138 is shown by arrows; other sites are worked outcrops or flaking floors.

large Colyers quarry (Figs 3 and 4) is contemporaneous with these two sites. Tiwai Point was excavated by the Otago Anthropological Society at the request of the Southland Museum and Art Gallery, as a salvage operation before smelter construction (Park, 1969). It is bracketed by radiocarbon dates from approximately 1100 to 1300 A.D. (Park, 1978).

The dark green argillite which was quarried on Colyers Island is less brittle than other varieties of Southland argillite. It is tougher and more suitable for the manufacture of the long, narrow variety of adze which typically occurs in many Southland archaeological sites. Hand specimen analysis of the majority of long adzes from local sites in the Southland Museum collection showed that they had been fabricated from Bluff Harbour argillite (possibly Colyers Island). Greenhills and Tiwai Point were industrial sites which specialised in the manufacture and export of stone adzes and were probably centres for the distribution of tools fabricated from Bluff Harbour stone.

#### Survey methods

An inspection of the island was carried out on foot to locate and ascertain the nature and extent of the sites. The principal quarry site (S181-2/138) in the southern quadrant of the island was extensively mapped using a telescopic alidade and plane table (see Fig. 3). These were used to record the positions of hammerstones and boulders or outcrops with evidence of working. Observable areal limits of flaking and other features were also recorded. For the preliminary survey report most of the major workings on the site were assigned numbers for a photographic record (which was also made of the minute adjacent island of S181-2/141). Other sites were recorded using aerial photographs. Approximate grid references were obtained from NZMS1 map S181-2 (third edition 1977).

Prior to the commencement of the survey, the representatives of the land owner, the Waihopai and Awarua Maori Committees, the Southland County Council and Southland Harbour Board, were shown the main quarry site (/138) and the small island (/141).

#### Catalogue of sites

S181-2/138 quarry/flaking floor (327838). The salient features of the main site were the large worked outcrops and boulders, all of which had been previously abraded by wind and sand to ventifact shapes. In some cases boulders had been lifted onto fulcrum or platform stones to reduce absorption of the hammerstone shock waves by the soft tidal bed: a good example of this is depicted in Figure 5.

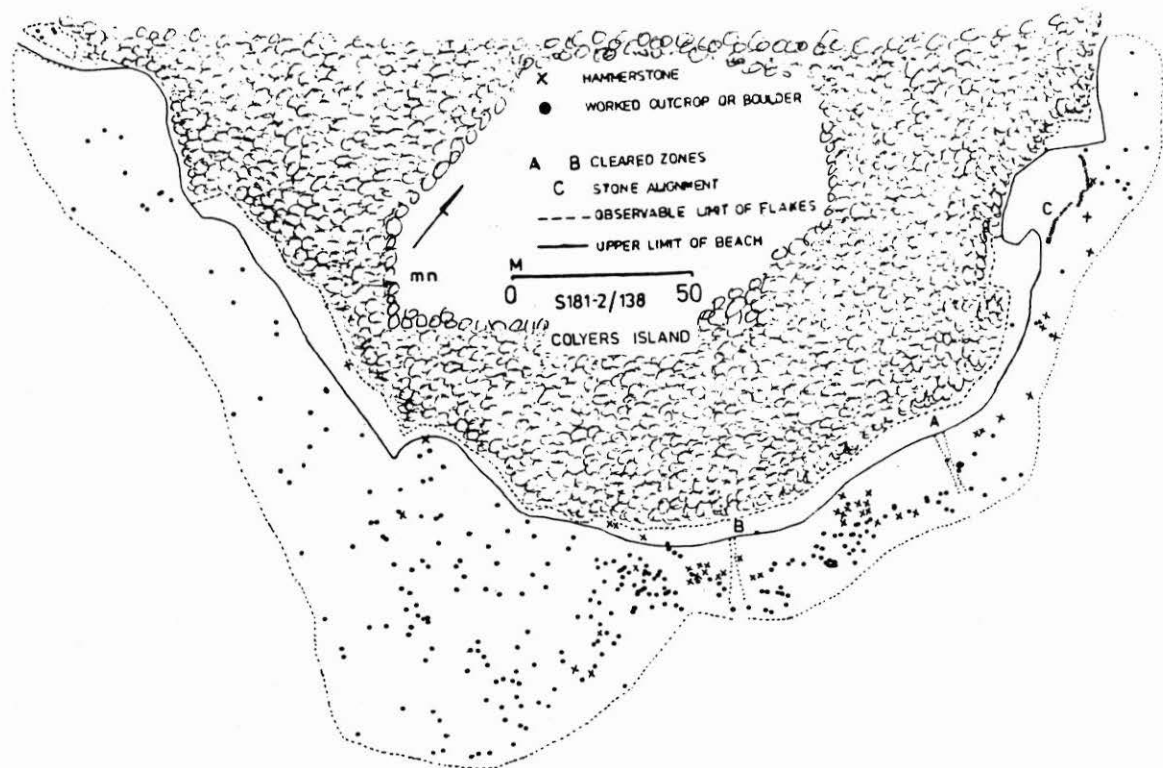


FIGURE 3. Plane table survey map of S181-2/138, Colyers Island.

Many boulders and outcrops showed evidence of bruising, cracking and flake scars. The smaller scars were approximately 20 cm in length with larger single scars up to 50 cm in length. Around these workings were wide scatters of flakes which varied in density but formed a continuous flaking floor. Above the high (storm) tide mark a discontinuous band of small flakes (less than 15 cm in length) suggested the further preparation of adze preforms in this zone, also supported by the occasional preform and smaller type of hammerstone. Rough preforms were occasionally found in other areas of the quarry zone. Large hammerstones were imported to this site as their material does not occur naturally on this island. We identified this material in hand specimen as gabbronorite and Bluff Hill is largely composed of this dense tough material (Service, 1937). Water-worn boulders of gabbronorite occur at Stirling Point and we consider this would have been the most likely source for the hammerstones on Colyers Island. At the quarry their diameters ranged from 15 to 60 cm, averaging at 30 cm, with some of the small ones made from local Colyers argillite. The size and weight of the large gabbronorite hammers would have made wielding them by hand a clumsy and laborious process (Fig. 6). Throwing them would have obtained some acceleration, but at the expense of accuracy. The evidence of accurately spaced hammer blows on some of the larger workings does not support this mode of operation. We suggest that these large hammerstones may have been used in a manner similar to that of a group of the 19th century Maori observed by Stack. They used a water-worn boulder of well-felted nephrite as a hammerstone:

"This they fixed to the end of a beam of wood, and having fastened three ropes to the hammer end of the beam end, they raised it to an angle of about eighty degrees; then, fastening one of the ropes, and leaving a man in charge, the rest of the party would return close to the rock, holding the two ropes in such a manner as to cause the hammer to fall on the exact spot they wanted."

(Stack, 1935:273)

The majority of large hammerstones were oblate spheroid and egg-shaped. Many of these had bruising (use-wear) on their steeply curved portions while others had been shattered. Such wear would be compatible with the above method of use.

On the south-eastern corner of the site were two areas which appeared to have been deliberately cleared of coarse flakes and rocks. They were accurately plotted and photographed as Features A and B (Fig. 3). A high concentration of hammerstones was also apparent in the area near these features which may have been canoe slipways. They would have been

usable at any tide level and still present close and unhindered access to the tidal waters of the inlet. Visits to the quarry may have involved intense activity over a relatively short time or repeated visits over a longer period. Whatever the case, the logistics of importing heavy hammerstones and exporting quarried material would have favoured canoe transport to other Bluff Harbour sites.

Feature C was located on the eastern side of the site, opposite the small island (S181-2/141). It was a stone alignment enclosing a tidal embayment (Fig. 3). As with the stone wall on the small island (see below), some stones in the alignment had flaking scars. It appeared as a discontinuous arc of stones of average visible height 20 cm. This structure may have been built by children as recreational activity, but it may also be interpreted as an enclosure constructed to trap fish on the receding tide. The area directly inland of this site is covered in gorse. It is probable that the flaking floor extended some distance into this area, but at the time of the survey the dense vegetation precluded any further investigation.

S181-2/141 quarry flaking floor (328840). Out on the mudflats is a small island standing about 2 m above high water, with an exposed portion approximately 15 x 30 m. The island has outcrops of fine-rudite breccia which were extensively quarried. The island is ringed by a continuous dense flaking floor, with occasional adze preform, over the tidal zone, with predominantly smaller flakes above the high water zone. Feature D was located on the island's summit and resembled a low wall flanking and enclosing an oval area. The wall was aligned towards the prevailing south-west wind. This may have been the result of children's activities or perhaps it was constructed as a windbreak. On the tidal mudflats of this small island, and facing the shore of Colyers Island, was Feature E, a flat rectangular arrangement of stones which measured 2 x 3 m and suggested purpose, but which remains an enigma.

S181-2/142 findspot (326838). An isolated worked boulder was found opposite the southern area of Colyers Island located on a small reef on tidal mudflats.

S181-2/143 flaking floor (323843). Six large worked boulders and associated large waste flakes occurred in the upper tidal zone in a small bay of the north-west side of Colyers Island. They covered an area approximately 20 x 10 m.

S181-2/144 flaking floor (324840). A small flaking floor around the edge of a tidal pool together with one worked boulder, is located on the west side of Colyers Island. The





FIGURE 4. General view of part of Sl81-2/138. Tiwai smelter stack on the horizon and Bluff Hill to the right. Most large boulders shown have been modified.  
horizon

flakes measured up to 15 cm in length and the site covered an approximate area of 10 x 10 m.

S181-2/145 flaking floor (324841). This is a small flaking floor of approximate area 2 x 3 m at the top of the tidal zone, with flakes of up to 15 cm in length. It is located in a small bay on the western side of Colyers Island, north of S181-2/144.

S181-2/146 flaking floors (323843). Two adjacent flaking floors are located on the edge of a small bay on the north west side of the main island, south of S181-2/143. One has 10 worked boulders and large waste flakes up to 30 cm in length. The other measures approximately 3 x 2 m, and is near the upper tidal zone; it has small flakes up to 15 cm in length.

S181-2/147 worked outcrop (328843). An isolated worked outcrop, 1.2 x 1.2 x 0.4 m, on a rocky promontory on the northern tip of the island lies within the tidal zone.

#### Further observations

Isolated flakes (not recorded) were occasionally found around the island's coastline. Extensive cultivation of the interior plus additional gorse cover has obliterated or obscured any related occupation sites. In the few undisturbed areas left we found no evidence of prehistoric exploitation of the surrounding tidal inlet's food resources, with the possible exception of the tidal 'fish trap' S181-2/138.

Two groups of damaged outcrops were also observed either side of an old decayed footbridge which once linked the island with the mainland. The majority of these did not display the typical characteristics of prehistoric activity found on the other sites of Colyers Island. One large boulder in this group had definite radial cracking and a shatter cone concurrent with the use of explosives. Our interpretation of this area (not recorded) is that it was modified by European activities.

#### Conclusions

Considerable labour was expended in exploiting the stone resources of Colyers Island. This included the importation of large and heavy hammer-stones of Bluff gabbonorite, probably by canoe. There is evidence to suggest that these hammerstones were hafted in some way that permitted accurate and efficient use. Some subsequent working of adze preforms occurred on the island and material was removed to at least two adjacent adze workshops at Greenhills (S181-2/23) and Tiwai Point (S181-2/16). Adzes fabricated from Bluff Harbour stone were



FIGURE 5. A large boulder at S181-2/138. Note large flake scars and deliberate positioning of boulder on platform stone. (1 m scale).

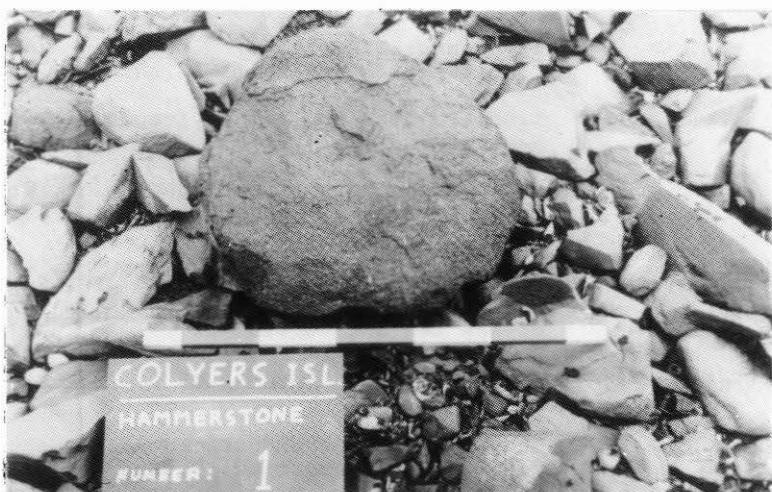


FIGURE 6. Large hammerstone at S181-2/138. The material is gabbro-norite, probably from the Bluff Hill area.

widely distributed throughout the southern regions of the South Island. We infer from the radiocarbon dating of Tiwai Point that this was as early as 1200 A.D. The integrity and unique features of the island's quarry secure it a prominent place in the industrial and exchange networks of Southland's prehistoric Maori.

#### Acknowledgements

We gratefully acknowledge assistance from the following: Mr N.J. Neilson (current landowner of Colyers Island) and Mr Neilson senior, Mrs N.K. Russell of the Waihopai Maori Committee, Messrs G. Ryan and P. Gilroy of the Awarua Maori Committee, Southland Harbour Board, Southland County Council and Mr W. Mooney, Geography Department, University of Otago. Southland Museum staff, Messrs R.J. Beck and R.M. Forrest, assisted with the survey, L.C. Hazley processed and printed the photographs, and Mrs S.M. Barson and Mrs E.J. Black typed the manuscript.

#### References

- Bremer, J.E. 1976 The History of Greenhills. Craig Printing Co., Invercargill.
- Bristow, P., 1985 Archaeological Sites on Colyers Island  
K.Gillies and (Bluff Harbour), Southland. Report to  
W. Gumbley New Zealand Historic Places Trust.
- Hall-Jones, 1946 Invercargill Pioneers. Southland Historical  
F.G. Committee, Invercargill.
- Park, G.S. 1969 Tiwai Point - preliminary report. N.Z.A.A.  
Newsletter, 12:143-146.
- 1978 Radiocarbon dates from Tiwai Point, South-  
land. N.Z.A.A. Newsletter, 21:143-145.
- Service, H. 1937 An intrusion of norite and its accompany-  
ing contact metamorphism at Bluff, New  
Zealand. Transactions of the Royal Society  
of New Zealand, 67:185-217.
- Stack, J.W. 1935 Early Maoriland Adventures of J.W. Stack.  
Reed, Dunedin.
- Watson, M. 1976 The geology of the northern Bluff Harbour,  
Southland. Manuscript, Department of  
Geology, University of Otago, Dunedin.