

# Historic heritage of high-country pastoralism: South Island up to 1948

Roberta McIntyre

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Note on place names:

The place names mentioned in this publication are presented as they were reported in historical documents. Thus they are not necessarily the official place names as currently recognised by Land Information New Zealand.

Cover: Aerial oblique of Lake Guyon, which is a part of St James Station, one of the Amuri runs. View to the northwest. The homestead area is the open patch on the north side of the lake (see Fig. 8). Note pattern of repeatedly fired beech forest now reverting to bracken.

*Photo: Kevin L. Jones, Department of Conservation.*

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# Preface

This report was commissioned to assist in providing an historical overview for the assessment of historic heritage during high-country tenure reviews. Reviews occur when a pastoral leaseholder decides to enter the process. After an assessment, the pastoral leaseholder is offered some areas in freehold and the Crown designates those areas that were assessed as having conservation values as conservation land. There needs to be complete agreement for tenure review to proceed. An assessment is made of both ecological and historic heritage values. There has been no previous overview of the South Island high-country history that focuses on historic heritage from the earliest Polynesian impacts through to the effects of mid-20th century technology. Such a report cannot be comprehensive, covering all the high-country pastoral leases from Southland to Marlborough. Each tenure review needs a lease-specific survey. It is hoped that this overview will provide information that is useful for the process, particularly for staff newly engaged in the process.

## PROCESS

The Department of Conservation (DOC) has been making these assessments for some time and the process used has been robust. Many of the photographs and points raised in this report were included after discussion with conservancy staff. It is worth reinforcing that, on tangata whenua assessments involving Kai Tahu whanui, this report is simply an adjunct to the consultation processes already developed. The H.K. Taiaroa 1880–81 record of mahika kai sites is invaluable. It provides vital information on the high country and should be consulted. The details are available with the agreement of Kai Tahu through DOC's Pou Kura Taiao network.

## SPECIFICS: THE HISTORICAL OVERVIEW

Previous writings on the high country are uneven in quality but considerable. The intention here is not to reproduce or challenge those; rather, it is to provide some sort of synthesis that helps to explain the existence of current relict landscapes. The report divides high-country history into six periods, as follows:

1. Pre-1840: Polynesian migration and settlement
2. 1840s-1870s: Extraction and exploitation
3. 1870s-1880s: Development and degradation
4. 1891-1912: The Liberal era
5. 1912-1935: Science, technology and soil conservation
6. 1935-1948: High-country management and the soil conservation movement

The reference section reflects the main sources consulted in the study. Roberta McIntyre undertook this report on a part-time basis over 18 months in 2002-04. The project was initiated by Paul Dingwall, Kevin L. Jones and Tony Nightingale of the Science and Research Unit (now Research, Development & Improvement Division), DOC, Wellington.

# Historic heritage of high-country pastoralism: South Island up to 1948

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## ABSTRACT

This report examines changes in the South Island high country of New Zealand from the time of the arrival of Polynesians up to 1948. At first, much of the land was forest-covered; extensive grasslands existed only in the dry basins of Central Otago and the Mackenzie Country. With the exception of moa, grazing and browsing animals were absent. With the arrival of Polynesians, who hunted and gathered food and extracted stone from the high country, and later European graziers, forests were fired, and almost the entire high country was transformed into tussock grasslands and dry scrub. Maori ownership and association with the land gradually declined. Europeans introduced grazing and browsing animals and also, as the natural grasslands became depleted, exotic plant species to improve pasture. Wool was the main product. Animal pests, such as rabbits, pigs and goats, and unwanted plants, such as broom and sweet briar, invaded. Animal diseases, especially scab, spread rapidly. The pastoral industry was challenged for a brief period by the gold-mining industry. Land fertility and stock numbers declined, and from the late 19th century the State intervened increasingly, employing scientific methods in an effort to resolve these problems. By the early 20th century, the mining industry had waned and tourism and hydroelectricity production were becoming more important. Many high-country slopes had eroded and in the 1940s the soil conservation movement emerged as a force that diminished the political power of the runholders.

Keywords: Maori, moa, greenstone, tussock grasslands, Crown pastoral leasehold, burning off, wool, gold, pests, soil erosion

# 1. Introduction

The Department of Conservation (DOC) is currently involved in land tenure reviews of the high country of the South Island. In the process of converting Crown pastoral leasehold land to freehold land, lessees negotiate with the Crown to return full ownership of some areas to the Crown. Land returned includes sites of historical significance. In certain circumstances, specific assets on land that would otherwise be freeholded are retained by the Crown. As part of the process, DOC requires information about the relative priority to be accorded various historic sites/assets.

Present-day Crown pastoral leasehold lands are focussed in the South Island high country, but in the 1850s, when land was first taken up, leaseholds were initially concentrated on the eastern seaboard of the South Island. As population pressure on colonial lands grew, pastoralists began to penetrate the river valleys, hills and mountains inland. By the 1870s, agriculture was an increasingly dominant feature of the South Island lowlands and land managed under Crown pastoral leasehold retreated inexorably to the high country. Today, that leasehold land continues to shrink with the conversion of some of the Crown grazing land to freehold and some to conservation land. This study aims to define the South Island high country and to provide a contextual history of the human occupation and use of these lands.

The South Island high country can be defined in a variety of ways. Anthropologist Michèle Dominy described it as remote, high-altitude land, which is difficult to access, exposed to severe weather and liable to snowfalls. Sheep may be grazed there in the summer, but in autumn they are taken to lower land (Dominy 2001). Geographer Kenneth Cumberland (1944) defined the South Island high country as a 40-mile-wide strip of mountain land east of the Main Divide extending from Cook Strait to Te Anau. He stated that north of the Waitaki River, the greywacke mountains are jagged and steep; south of the Waitaki River, the schist 'plateau' section of this region is lower and rounder with shallower valleys, although angular greywacke occurs widely at higher elevations between Lakes Wakatipu and Te Anau (Cumberland 1944). Sheep stations in the various areas differ so markedly that in the 1940s the South Island High Country Committee limited its definition of a high-country run to two common factors: 'a property on which the production of wool and store stock was the main source of income and which might be liable to losses from snow' (see McLeod 1980: 9-10). It is not possible to define the high country as exclusively 'tussock land', since patches of forest, which once extended to around 900 m in altitude, still remain, and it includes barren areas and pockets of other vegetation such as matagouri and kanuka. Nor is actual altitude a useful means of defining high country. Often, the land is above 300 m, but there are numerous valleys that are below this level, such as the upper Clutha Basin of Central Otago and some parts of the Mackenzie Country. Aspect is vitally significant in the high country since the difference between

a sunny and a shady slope can be critically important for the growth of feed. Winter country for grazing stock is defined by low altitude and also by its steep slope facing to the north (Dominy 2001).

David McLeod, a previous runholder at Grasmere and Cora Lynn Stations on the upper Waimakariri River, concluded that the high country comprises a fairly narrow strip of land on the eastern side of the Southern Alps, reaching from Marlborough to Southland, and includes a wide variety of runs (McLeod 1980). It extends from the rugged, rocky peaks of the Seaward Kaikouras to the vast ranges and valleys of Molesworth and St Helens (now united in one huge cattle station); the forested valleys close to the Main Divide (including Lake Sumner, Esk Head and Lochinvar Stations); the deep gorges of the Canterbury rivers—Waimakariri, Rakaia and Rangitata; the vast, desert-like basin of the Mackenzie Country with its towering peaks (even here there is a great range of land types, from the dry warm ranges of the eastern boundary to the steep rocks of Mount Cook Station); the dry hills of Central Otago; and the southern lakes, Wanaka, Hawea and Wakatipu (McLeod 1980). For the purposes of this study, I will be using McLeod's inclusive definition.

McLeod wrote that:

'The high country is still unique; there is no other place in the world where the life is quite the same, where man, dog and sheep are united in a partnership to live on the very fringe of habitable land and defy the elements which threaten them at every turn. Snow and ice, fire, flood, avalanche and landslide - we meet them all.'

(McLeod 1980:10-11)

Even today mechanical things are secondary to sheep, dogs, horses and men and their boots and saddles. In 1980, according to McLeod, the most profitable high-country stations were those employing the simplest management techniques, where the ancient art of extensive pastoral grazing had been preserved alongside concentration on the welfare of the stock (McLeod 1980). Betty Dick of Lilybank Station near Lake Tekapo informed us that even in the 1960s the roads had varied very little from the days of the first bullock wagons and that runholders still had to ride into their remote high-country stations as their grandparents did 100 years before (Dick 1964).

Although the number of runs in the high country is small, the entire area is large. Holdings are vast, often extending to thousands of hectares, and fine wool has been the main product (Dominy 2001). Almost all of the New Zealand high country is Crown pastoral leasehold land with small patches of front country as freehold. DOC already has considerable holdings in the high country, and the tenure review process will convert a larger area into public conservation land. This overview attempts to bring together a variety of published and unpublished sources in order to give a starting point for assessing relict landscapes. It is hoped that the information contained in this paper and its illustrations will offer some understanding of the historical background to the Crown pastoral leasehold land and assist in the identification and interpretation of historic sites.

## 2. Pre-1840: Polynesian migration and settlement

### 2.1 LANDSCAPE MODIFICATION

#### 2.1.1 Arrival and settlement

The arrival date of the first East Polynesians to New Zealand, and the South Island high country, has been a source of controversy for more than 150 years. For example, in 1985 archaeologist Atholl Anderson stated that the first known occupation of southern New Zealand occurred in North Otago in the 10th century (Anderson 1985). However, in a more recent article published in 2002, he concluded that it seems that 'New Zealand and the outlying islands - was not reached by people until the twelfth or thirteenth century' (Anderson 2002: 24-25). He thought that a number of canoes containing probably several hundred people arrived, although not necessarily together.

Otago archaeologist Jill Hamel considered that 'most of the useful evidence suggests that Otago was settled by Polynesians at around the same time as the rest of the country' (Hamel 2001: 9), and that there are three differing hypotheses of New Zealand's settlement by Polynesians: early, orthodox and short prehistory. The early hypothesis suggests that the first people emigrated between AD 0 and 500, and that there was a flow of immigrants up until AD 1500. The orthodox hypothesis posits that colonisation must have happened at c. AD 800 to allow time for the population to increase, stone resources to be discovered and a trade network to be developed. However, because no sites have been securely dated to earlier than the 11th century, the orthodox hypothesis is no longer favoured, according to Hamel (2001). Rather, she argued (like Anderson 2002) that 'radiocarbon dating and environmental analyses support [the hypothesis of] a Short Prehistory starting about AD 1150, with the establishment of transient villages, especially along the southern coasts of the South Island' (Hamel 2001: 13).

Te Rapuwai people are generally thought to have been among the first to settle the entire South Island; another first migrant group is thought to have been the Kahui people. Anderson commented that Te Rapuwai 'are said to have fired the forests of Canterbury and Otago, to have hunted the moa and to have left behind many of the shell heaps scattered over the landscape' (Anderson 1985: 7). The same can be said for the next group to arrive, the Waitaha. They, too, hunted the moa and southern traditions attribute many drawings on the walls of rock shelters in the South Island to them (Anderson 1985).

Anderson (1985) remarked that it has been plausibly suggested that there were fairly frequent migrations into southern New Zealand, and that the people who arrived later tended to adopt the name of those amongst whom they settled. He argued that it is:

‘...likely that Te Rapuwai and Waitaha simply happened to be among many clan or family names, such as Katihawea [*sic*], Katiraka [*sic*] which the people who arrived from the 16th century onward, Ngatimamoe [*sic*] and Ngaitahu [*sic*], gave to all the people who had preceded them.’ (Anderson 1985: 7-8)

### **2.1.2 Food resources**

The colder climate of the South Island high country generally precluded the cultivation of the kumara, which Maori had brought with them from Polynesia. Consequently, land resources, generally known as ‘mahika [according to the southern pronunciation] kai’, and lake resources or ‘kai moana’ were gathered seasonally and traded between hapu and whanau. Fish, birds, plants and their fruits, stems and roots, and rats were harvested (Dacker 1994). For example, large quantities of kauru, made from the ti-kouka (cabbage tree) in large umu-ti (ovens), were processed at sites such as the Dart River Bridge in the high country and traded for titi (muttonbirds) from coastal areas (Dacker 1994).

When the Polynesians first arrived, parts of the South Island high country were inhabited by moa, flightless birds belonging to a group known as ‘ratites’. These birds have a flat breastbone, and some have small wings. Both moa and kiwi belong to this group, as do emus in Australia, ostriches in Africa and rheas in South America (Anderson 1985).

### **2.1.3 Landscape change and fire**

In addition to alpine and subalpine vegetation, the high country also supported forest, since most of the land below c. 900-1100 m was forest-covered. The only extensive grasslands below this height were in the dry basins of Central Otago and the Mackenzie Country. Parts of the Canterbury Plains may have been open kanuka country (Anderson 1985). Historical geographer K.B. Cumberland pointed out that ‘vegetation developed in complete isolation, and in the absence of man and, equally significant, of all grazing and browsing mammals, except the moa’ (Cumberland 1944: 152).

By the end of the pre-European period, fire had altered almost the entire South Island high country (Anderson 1985). Lightning strike and dryness had caused some fires in the southern New Zealand forests before the arrival of the Polynesians, and there is a band of lignites extending through Central Otago into northern Southland that supported natural fires for thousands of years. However, radiocarbon dating of charcoals,

fossil logs and the vegetation changes revealed through pollen preserved in peat swamps show that most deforestation happened from the 12th century onward and that most burning occurred between the 13th and 16th centuries (Anderson 1985). Maori oral tradition tells of Te Rapuwai and Waitaha starting the fires (Anderson 1985). Anderson concluded that pre-European Maori 'had been involved in the loss of 50% of both the primeval forest area and the late Holocene or postglacial suite of bird species' (Anderson 2002: 20). Botanist Alan Mark and others (Mark et al. 2003) noted that in the rainshadow region to the east of the Southern Alps, before the major influence of fire occurred during the period of Polynesian occupation, forest was widespread everywhere except for the driest parts of the intermontane valleys. By the time of European settlement (c. 1840), this region had become mainly indigenous tussock grassland (Mark et al. 2003).

The fires were much more devastating in the rainshadow region to the east of the Southern Alps than anywhere else in New Zealand. The dry climate and prevailing northwesterly winds during the summer meant that small fires could grow into large-scale conflagrations. Also, the rate of regeneration was slow. It could take 200 years for vigorous second-growth forest to become established in the south, compared with c. 50 years in the warmer and damper north (Anderson 1985).

Anderson (1985) believed that the early colonists maintained year-round settlements on the coast, preying continually on local moa populations, but that they probably hunted moa in the high country less often. Coastal moa populations probably became extinct by the late 14th century, and those in the high country by c. AD 1500. As the moa population waned, southern Maori began to abandon their ancestral high-country hunting grounds and to exploit more heavily the resources of the sea, coastal plains and hills (Anderson 1985).

In assessing modification of the New Zealand landscape by early Polynesians, Anderson observed that:

'The nature of the pre-European Maori environmental impact was, in its early stages, almost certainly one that is typical of colonisation everywhere and at all times. Migration into new environments releases a powerful instinct to expand as rapidly as possible, using the richest resources with pitiless energetic efficiency.' (Anderson 2002: 32)

The same would hold true for the next wave of colonists to arrive in New Zealand.

#### **2.1.4 Stone resources**

Barry Brailsford (1984) wrote that Maori discovered the toughest rock of all for tool-making along the coasts of Westland. They called it 'pounamu', and named the South Island after it. Next, the Maori explored the rivers to search for the source of the rock, which they found in the Arahura and Taramakau Rivers. He believed that 'the power and the beauty of pounamu drew the Maori into the alpine country' (Brailsford 1984: 1).

Although called 'pounamu' by Maori, in geological terms the stone is known as 'nephrite' or 'jade', and Pakeha call it 'greenstone'. 'To the Maori pounamu was the gift of the gods, a treasure of immense spiritual and material value', wrote Brailsford (1984: 1).

Nephrite is found only in the South Island of New Zealand. There are six main fields: Nelson, Westland, Jackson River on the southwest coast, Lake Wakatipu, Lake Wanaka and Milford Sound (Brailsford 1984). In their report on the Dart River Bridge site, upper Wakatipu region, Atholl Anderson and Neville Ritchie state that the remains at the Dart River appear to represent 'a small and probably temporary Archaic phase [roughly AD 1200-1500] settlement at which ti and moa cooking occurred and where, on a modest scale, there was manufacture of nephrite adzes and flake and blade implements of porcellanite and silcrete' (Anderson & Ritchie 1981:9). The Dart River site (Fig. 1) was probably selected by Maori because it was adjacent to ti-kouka trees, moa, pounamu and other stones, river transport, and a steep, sheltering mountain slope.

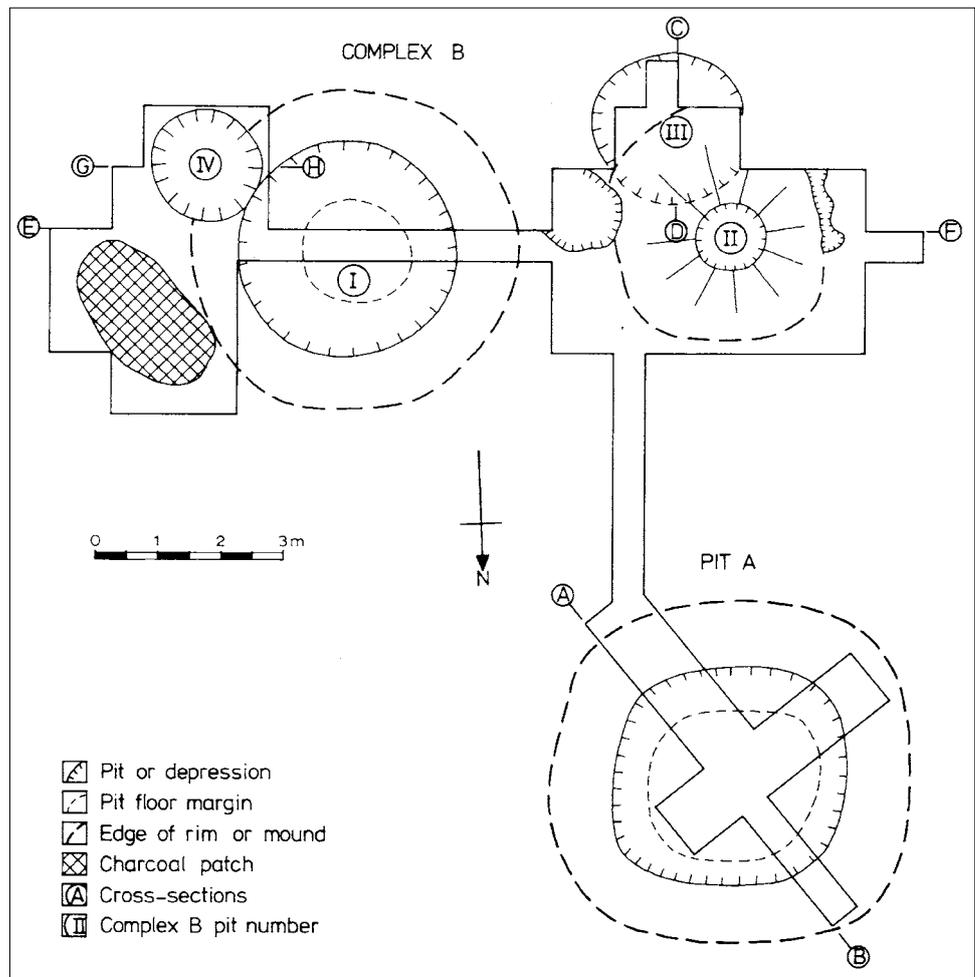
Greenstone found at the head of Lake Wakatipu is often of the creamy grey-green inaka (or inanga) type, and Brailsford commented that the expeditions of the West Coast (Te Tai Poutini) Maori into the high country and to the Wakatipu Field suggest a social trade rather than a shortage of greenstone. Historical records since Captain James Cook visited New Zealand in the late 18th century reveal that the Wakatipu Field was important to Maori (Brailsford 1984). For example, in the 19th century, the artist and surveyor Charles Heaphy noticed that Arahura Maori sometimes went down the coast and across the alps to Lake Wakatipu (Brailsford 1984). Canon James West Stack recalled that in the late 19th century, Maori from the east coast of the South Island travelled through the high country and across passes to the West Coast in small parties during autumn (Stack 1935, cited in Brailsford 1984).

### **2.1.5 Trails and routes**

Kai Tahu historian Te Maire Tau (2000) explained that mountains were places where people experienced a sense of clarity and purpose and were tapu (sacred). They were believed to be ancestors, and therefore allowed Maori, through their whakapapa, to claim kinship with the land. For example, he recorded that the 'Canterbury mountains such as Maungatere (Grey), Tawera (Oxford) and Kuratawhiti (Torlesse Range) were ancestors who came to New Zealand on the *Arai te Uru* canoe. After the canoe overturned in a storm, the crew struggled ashore and headed inland, and when the morning dawned they had turned to stone' (Tau 2000: 57). However, access to the mountains was not necessarily restricted, even though they were considered sacred. Kai Tahu gathered food from Mount Grey/Maukatere, fought nearby and performed a number of rituals there (Tau 2000).

Te Maire Tau also wrote that 'the tracing of whakapapa through features of the landscape may be seen in the example of Hine Paaka, a tree in the Springburn area [Alford Forest, in the Canterbury high country] made

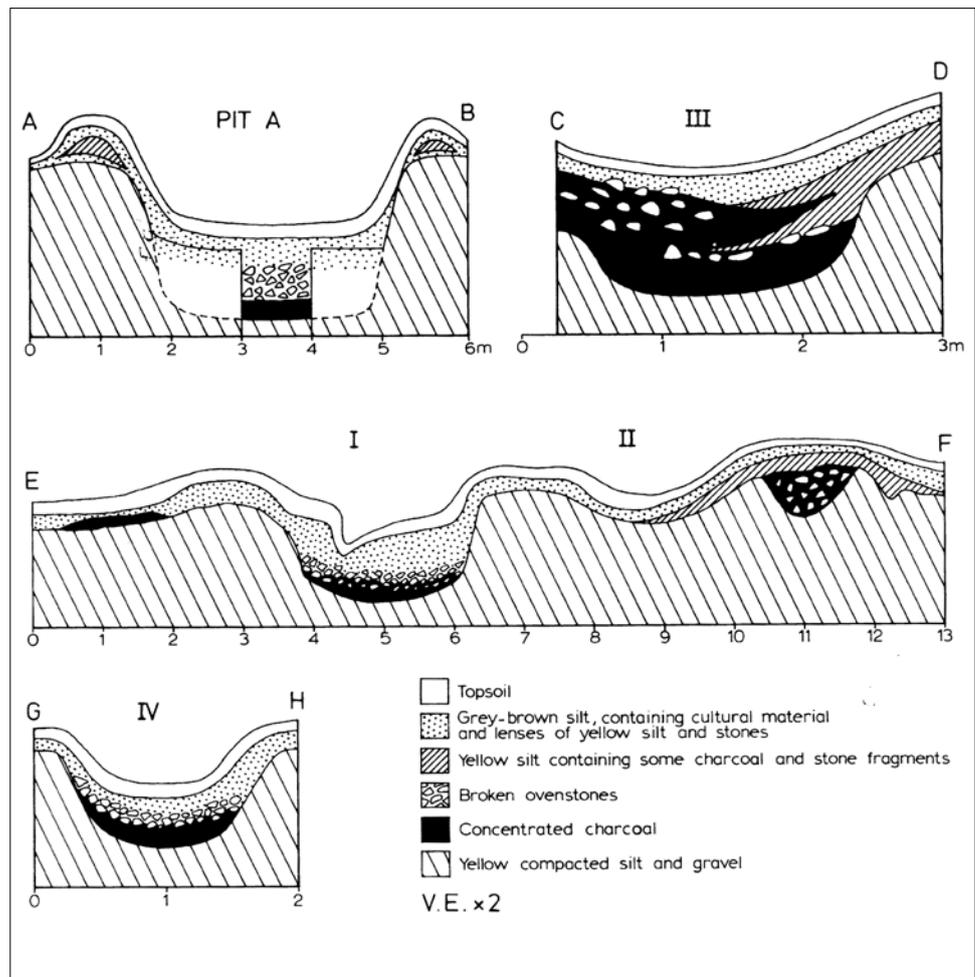
Figure 1A. Archaeological plan of umu-ti (ovens for baking the roots of cabbage trees) on the banks of the Dart River, about a day's travel from the greenstone sources. The excavation was carried out by Neville Ritchie and Atholl Anderson. The ovens have been radiocarbon dated to c. AD 1250-1350. From Anderson & Ritchie (1986). *Courtesy of New Zealand Journal of Archaeology.*



tapu by Turakautahi, the Ngai Tahu leader and founder of Kaiapoi Pa' (Tau 2000: 50). According to oral traditions, Hine Paaka, Turakautahi's aunt, owned the land from Tawera (Mount Oxford) to Te Umukaha (Te Muka). Her whakapapa stemmed from Kai Tuhaitara, the Kai Tahu hapu who took the Canterbury-Banks Peninsula area from Ngati Mamoe and Waitaha. She was also descended from Waitaha. Her ancestors once went up to Otarama (Kowai Bush) in the Canterbury high country to hunt pigeons, kaka and weka (Tau 2000).

Maori trails that traversed the South Island high country provided important economic and social links. The language is enriched by references to the huarahi, or ara—the trails—and the folklore of travel (Brailsford 1984). Mat Ellison, Pou Kura Taiao for DOC's Otago Conservancy office, explained, for example, that the natural bridge just north of Roaring Meg Creek in the Central Otago high country was called 'whata-to-rere' (meaning 'ladder-pull-fly'); the rocky outcrop in the Old Man Range now known as the 'Obelisk', a few miles to the southeast, was named 'kopu-wai' ('to swallow water') (M. Ellison, DOC, pers. comm. 17 July 2003).

Figure 1B. Archaeological sections of the umu-ti shown in Fig. 1A. From Anderson & Ritchie (1986). *Courtesy of New Zealand Journal of Archaeology.*



In the South Island, there appear to have been few ridge trails but many valley trails to and through the high country. Bracken fern was difficult to traverse, and fire—which sometimes became uncontrollable—was used to open up such country. In swamp country, trails had to be built up with layers of bracken or manuka brush. Chasms were bridged with poles or crude vine suspension bridges. Ladders, vines and ropes were used to climb cliffs and bluffs. Wooden pegs were driven into steep faces to provide hand and footholds, and steps were dug into slopes. Dangerous rivers were negotiated by swimming, or floating with flax-stalk rafts shaped like bulky canoes, or by using breast poles. In the forests, small clearings with a view were preferred as resting places.

Trails through forest and scrub were broken by leaders who marked the route for others by snapping, but not breaking, small branches along the way. If later groups consolidated an earlier trail by snapping new growth, the route became clearly marked, especially because Maori travellers walked in single file, putting heavy pressure on a narrow path of land. Early European observers, such as the missionary William Colenso, noticed that where Maori trails traversed moss, the vegetation was crushed and never sprang back into shape (Brailsford 1984).

Maori had a detailed knowledge of the trails. Guides could recite in accurate sequence the place names of a complex river system. For example, Maori knew the Rakaia River well, and this is shown in the Maori place names recorded for key geographical features. Otago historian Herries Beattie stated that:

‘The southern branch of the Rakaia was known to the Maori as Rakaia-wai-pakihi (Rakaia of the feeble flow), the middle branch or Mathias River as Ori-karoro (ori = bad weather; karoro = seagulls), and the northern branch or Wilberforce River as Rakaia-wai-ki (Rakaia of the full, strong flow).’ (Beattie 1945, cited in Brailsford 1984: 123)

Brailsford (1984) added that ‘Three passes led off from the three branches of the Rakaia. Each of these passes led from North Canterbury directly into the greenstone country and therefore was of value to Maori’ (Brailsford 1984: 124).

### **2.1.6 Trade**

According to Brailsford (1984), pounamu was central to the system of gift exchange. It is likely that whereas the first greenstone was transported up the coast by double-hulled canoe (waka unua), Poutini greenstone was taken over the alpine passes later, when the large colonising canoes that could handle the rough conditions of the western shore were no longer being built (Brailsford 1984). Greenstone was carried on the backs of male members of the tribe or slaves. The Kaiapoi or Kaiapohia Pa on the northern Canterbury coast became the pre-eminent centre of the pounamu trade north. Once taken to Golden Bay, the greenstone could be placed in canoes for the next stages of the journey to the north (Brailsford 1984). Figure 2 shows the greenstone trails of the South Island.

Essential provisions for alpine crossings were gathered at mountain lakes in the high country, and Maori moved in stages from lake to lake (Brailsford 1984). Eels, freshwater mussels, ducks and other birds such as pigeon or weka were caught. On the Mawhera-Moana alpine route, for instance, these stages appear to have been Lakes Moana (now Lake Brunner (Moana)), Poerua, Kaurapataka, Sumner, Katrine, Mason, Taylor and Sheppard (Brailsford 1984). At Lake Moana, Maori camped at Pah Point and on the Refuge Islands. Many acres of potatoes were cultivated there some time after their introduction by Europeans in the late 18th century. Greenstone flakes, heitiki and other Maori items have been found on the Refuge Islands. The Taramakau-Hurunui route from coast to coast, via Lake Moana, was about 350 km long and probably took between 15 and 20 days for family groups to complete (Brailsford 1984).

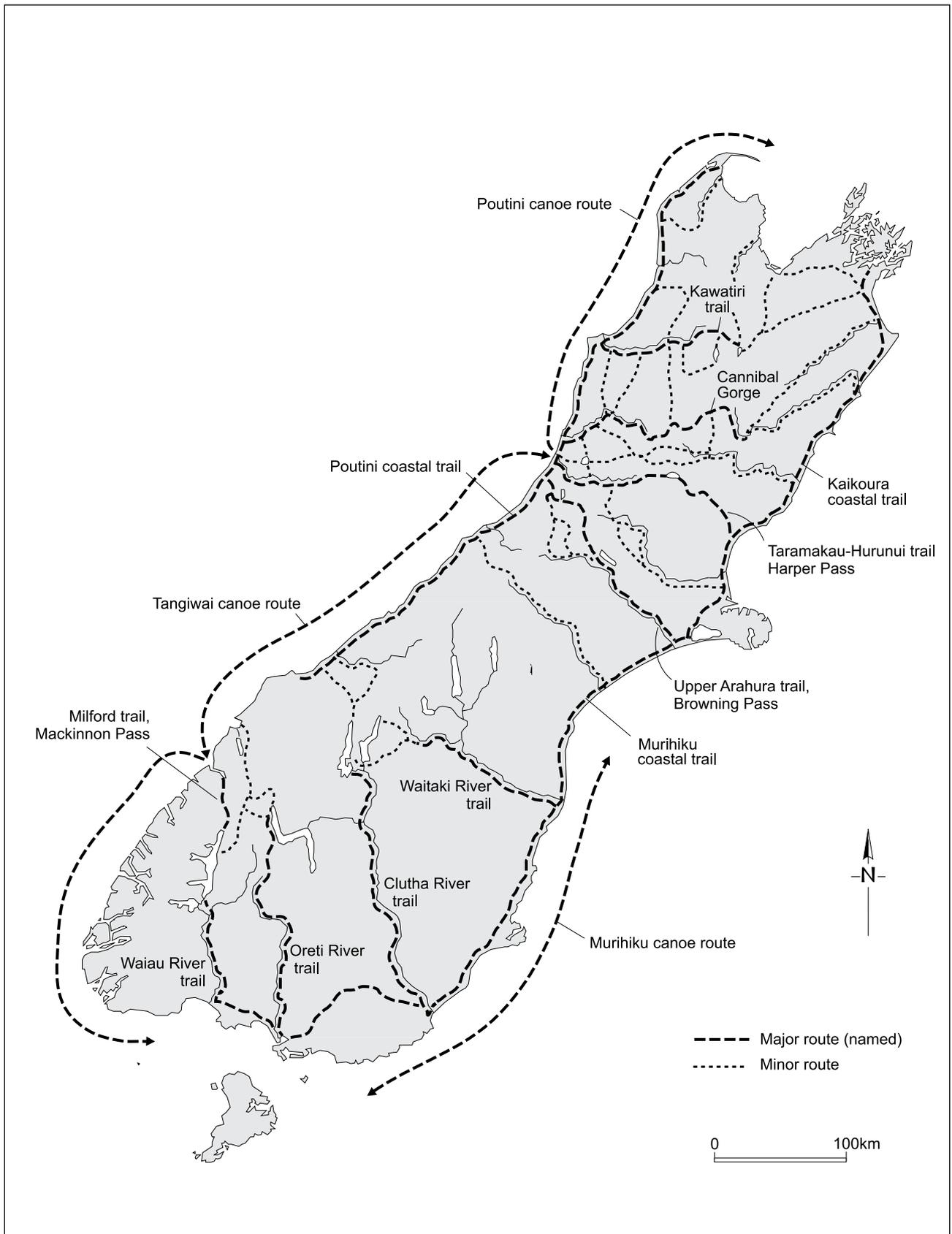


Figure 2. Greenstone trails of the South Island, after Brailsford (1984).

### 2.1.7 Domestic life

Maori were very skilled at building shelters. Captain James Cook observed the rapid construction of bush bivvies by visiting Maori in 1777 at Queen Charlotte Sound (Beaglehole 1967:60, cited in Brailsford 1984). Alpine parties may have carried building staves with them. These staves could have doubled as walking sticks or as breast poles for crossing rivers, helping Maori keep their balance when they were weighed down with large loads of greenstone and food (Brailsford 1984).

Fire-lighting skills were also very important on alpine crossings. Edward L. Kehoe, a Westland expert on Maori life, described how fire was made:

‘The seed of fire is forever in Kaikomako trees. Another fire child is the Mahoe tree sometimes known as whitywood, which is also common on the coast.

‘Maoris got a flat piece of Kaikomako and with a pointed piece of Mahoe wore a groove in the Kaikomako. Working swiftly and hard, dust gathered in the groove and then they added dry cabbage leaves, ti-tree, and after a time a flame came.’

(Kehoe, pers. comm. 1953 to Brailsford, cited in Brailsford 1984: 117)

As well as taking a fire plough (i.e. the stick of mahoe) and other materials to make fire for cooking and warmth, Maori often carried materials for a torch to light the darkness (Brailsford 1984). Fungus (also known as ‘morepork bread’) was dried and set alight from campfire embers, giving off a constant glow. Each piece could be used for many hours (Brailsford 1984).

## 2.2 PHYSICAL REMAINS

### 2.2.1 The early period: circa AD 1100–1350

#### *Moa hunting*

It is thought that by the 12th century there were already moa-hunting camps in the Waitaki Gorge, in particular at Woolshed Flat. Some studies of artefacts suggest that many moa-butchery sites were established between AD 1150 and 1300 (Anderson 1985). Settlement appears to have expanded most rapidly in the 13th century, when moa hunting was at its zenith at Hawksburn, the Dart River Bridge and Owen’s Ferry, and also at various rock shelter sites in the Cromwell and Waitaki Gorges (Anderson 1985).

The smallest moa were 15–30 kg, and the largest 125–230 kg, making the biggest more than twice the weight of a large man (Anderson 1985). Most moa preferred to live in mixed shrubland and forest on the coast and in the high country. Eastern South Island moa bone deposits are found mainly in areas that were covered in forest until well into the early Maori era. This was the case even in dry districts such as Central Otago, where moa bone deposits and moa-hunting camps are focussed around the lower hill slopes, which were forest- and shrub-clad (Anderson 1985). The contents of moa gizzards that have been preserved

among the bones in swamps show that forest food, especially twigs and leaves from shrubs growing along forest edges, were desired items of diet (Anderson 1985).

Archaeologist Atholl Anderson (1985) believed that the most likely ways that moa were hunted was by being ambushed and killed with spears thrown from close range, or with traps and snares, or through being baled up by dogs. Biologists Trevor Worthy and Richard Holdaway contended that the killing was 'done by snares and by simply walking up to the birds and clubbing them ... Large birds with necks outstretched forward as they moved through dense vegetation must have seemed pre-adapted to snaring' (Worthy & Holdaway 2002: 546). Very little evidence of traps and snares constructed for moa hunting has been found anywhere in New Zealand (Anderson 1985).

Early Maori killed moa in vast quantities: 100 000–500 000 during the early period according to Anderson (1985). While Worthy and Holdaway concluded that estimates of catch rates and archaeological evidence reveal that 'moa were rare or nonexistent in the diet of former moa hunters less than a century after human settlement began' (Worthy & Holdaway 2002: 546), Anderson stated that they were the staple of the South Canterbury and Otago Maori diet for 200–300 years, and were also eaten a great deal in Southland (Anderson 1985). By the early 1980s, over 120 moa-hunting sites were recorded for southern New Zealand, in three main areas: on the north Otago coast, on the Catlins coast and along the margins of the basins in the Mackenzie Country and Central Otago (Anderson 1985). It is in the Mackenzie Country and Central Otago districts that the nature of moa butchery and its associated artefacts can be seen. Anderson observed that 'Typically, interior butchery sites comprise rows of ovens situated along the banks of streams, with large quantities of bone, moa eggshell and artefacts scattered near and among them' (Anderson 1985: 11). The Hawksburn site is a case in point, where the remains of more than 400 moa have been found. Moa butchers used four key types of stone tools: small sharp knives for skinning, heavy cleavers for jointing, long saw-toothed knives for cutting flesh and sinew, and scrapers for many tasks such as removing fat from skins. Very few moa were brought to the camp intact. Usually, the head, neck and feet had already been discarded. Two-thirds of the birds also had the rib cage, breast (which on ratites has little meat) and backbone removed. Most moa were brought back to camp as leg joints (Anderson 1985).

Those few that were brought back whole had the head, neck and feet removed, and these bits were thrown onto the rubbish heap. Then the ribs, breastbones and vertebrae were thrown onto the butchery floor and the legs put in the ovens (Anderson 1985). After being cooked, the leg bones were smashed, possibly so that fat or marrow could be extracted to eat or to preserve flesh.

Sites at Nevis and Akatarewa (Waitaki Gorge) may have been up to five times as large as the one at Hawksburn, and around 2000 moa could have been butchered at each. Woolshed Flat, Puketoi and Millers Flat were about the same size as Hawksburn (Anderson 1985). Anderson

(1985) figured that they all probably operated as central bases from which hunters searched for their quarry in the surrounding high-country hills. Overnight shelter was usually provided by rocks, where campfire remains, fragments of moa bones and eggshells, or stone knives have been found (Anderson 1985). Shelter during longer hunting trips was provided by smaller but similar sites to the main bases. For example, Anderson noted that one of these, high on the plateau below the Garvie Mountains in northern Southland, contains the remains of two huts around which are scattered butchery tools and 34 piles of moa gizzard stones. There is almost no bone on this site and very little evidence of cooking (Anderson 1985). Hawksburn, most of the small rockshelter sites and other moa-hunting camps were occupied 600–800 years ago. Anderson observed that although earlier scholars argued that moa hunting began in the high country only when the coastal moa populations were becoming depleted, more recent findings show that early Maori foraged throughout the inland ranges from earliest times (Anderson 1985).

It is likely that Maori brought the many moa remains at the Waitaki River mouth from the foothills and high country on reed rafts (mohiki) (Anderson 1985). The journey from the gorge above Kurow could be completed in less than a day. Relatively long hours of sunshine and regular warm, dry winds suitable for preserving moa meat by drying gave the Waitaki River mouth and its associated inland sites an advantage (Anderson 1985). Sometimes the drying was preceded by smoking (Anderson 1985).

### ***Stoneworking***

Soon after settling in southern New Zealand, Maori searched for different types of stone that they could use for making implements and ornaments, regardless of how remote the sources were. Hard quartzitic rock known as ‘silcrete’ or ‘quartzite’ was used for making large cleavers and knives; porcellanite was used for smaller knives (Anderson 1985). These two types of rock were found mainly in the high country between the Mackenzie Country and northern Southland. Greenstone was mostly hammered and polished where it was found and made into weapons, tools and ornaments.

### ***Rock drawings***

The high country of southern New Zealand has remarkable sets of rock drawings, artefacts that are rare in the north. The sites are located in the limestone shelters of North Otago and the South Canterbury downlands. Others are at Weka Pass, Pyramid Valley and Kura Tawhiti (Castle Hill and Cave Stream) in Canterbury; in the Waitaki Gorge; in the Mackenzie Country; near Clifden in Southland; and west of Lake Te Anau (Anderson 1985; Ian Hill, DOC, pers. comm.).

Maori artists used mainly charcoal and red ochre, sometimes mixed with oil to make soft crayons. Mostly they drew people, birds and dogs. Moa were hardly ever drawn, although moa drawings have been found at Weka Pass and at Moa Valley in South Canterbury. There were some birdman

figures. Although meanings are obscure, the drawings give clues as to the way territory was carved up among different iwi. Those in various areas of Otago and Canterbury are stylistically distinct: in North Otago the birds are nearly all in natural forms, whereas in South Canterbury they are more stylised and mythical; North Otago has all the drawings of people shown in profile and the dogs are shown with rounded hindquarters, whereas most South Canterbury dogs have upraised tails. Anderson (1985) argued that although there may be some chronological variation shown in these stylistic differences, on the whole they indicate that the Waitaki River acted as a sort of cultural boundary.

### ***Settlements***

The population of southern New Zealand probably reached c. 3000 in the 13th century (Anderson 1985). A number of sites became permanent. These seem to have been sites where several hundred people lived during part of the year and 20–30 elderly or ill inhabitants remained at other times. Shag Mouth is a leading example.

Known village sites had three geographical features (Anderson 1985):

1. They were in districts where moa and seals were easily available
2. Inhabitants had access to high-country moa-hunting grounds, from which preserved meat was probably carried down rivers such as the Mataura, Clutha, Taieri and Waitaki, as well as along routes like Dansey Pass and Pigroot Creek
3. They had rocky shore and estuarine resources

At these southern latitudes before the arrival of Europeans, Maori lacked the economic security afforded by gardening, and consequently had to find food by hunting, fishing and gathering (Anderson 1985). The harvesting and preparation of food and other resources in the South Island were based at kaika nohoanga among the rivers, inland plains and lakes, some 96 km or more from the home settlement. These camps were generally deserted during winter, but in summer they were inhabited by eeling and birding parties (Evison 1993).

## **2.2.2 The middle period: circa AD 1350–1550**

### ***Settlements***

By the late 14th century, the number of people in Maori settlements in southern New Zealand had begun to decline (Anderson 1985). Sites inhabited during the 14th to early 16th centuries were small and quite specialised (Anderson 1985). For example, Anderson found evidence of moa-hunting camps at Wyuna-Koch, Boltons Gully and Hampden, a fowling camp at Ototara, and a camp at the Dart River Bridge at which cabbage tree roots (ti) were cooked and greenstone worked (Anderson 1985).

### ***Food resources***

The decline in population can be linked to the decline in moa and seals (Anderson 1985). It is not clear exactly when moa became extinct. Hunting was probably a key reason for their decline and extinction (Anderson

1985). In addition, Maori collected moa eggs, and moa seem to have been very slow breeders, with only one or two eggs in each nest (Anderson 1985). Another contributing factor was the retreat of the forest, which meant reduced habitat for moa (Anderson 1985). Worthy & Holdaway (2002) contended that much of the natural vegetation of the South Island was probably destroyed by fires within the first century of settlement. They stated that radiocarbon dates for both coastal and inland sites 'all point to a brief, early period of firing' and that loss of habitat 'was a major additional cause of extinction of the large moa populations in the east and south of the South Island' (Worthy & Holdaway 2002: 546).

By the 15th century, offshore fishing provided by far the main source of food (Anderson 1985). Open country and coastal birds provided other sources of food for Maori there, and cabbage tree roots had become a staple of Maori diets by the European period (Anderson 1985). There are hundreds of umu-ti in southern New Zealand, mostly in the downlands of South Canterbury and North Otago (Anderson 1985). Umu-ti at the Dart River Bridge have been radiocarbon dated to AD 1227, 1363, 1508 and 1613 (Anderson 1985). Although ti-kouka cooking took place throughout the pre-European era, Maori probably became more reliant on it as other resources declined (Anderson 1985). Maori teeth showed an increased incidence of heavy use through the chewing of gritty and fibrous food from the late 15th century (Anderson 1985). Anderson (1985) suggested that a combination of fishing and ti-kouka gathering in Otago and South Canterbury, and of fishing and ti-kouka and fern root gathering in Southland, were the main food sources.

### ***Material culture***

The changing economy also affected the material culture (Anderson 1985). Now that moa were scarce, there was less reason to go inland to the high country. Consequently, the use of silcrete and porcellanite diminished, and the use of coastal materials such as chalcedonic and chert-like rocks increased (Anderson 1985). Also, because there were fewer seals and moa to butcher, there was a decline in the size of flake and blade butchery implements (Anderson 1985). Sharks' teeth and tusk shell were used for necklaces rather than bone reels (Anderson 1985).

Conflict became more frequent after the 1400s (Brailsford 1984). Brailsford (1984) suggested that increased geographical mobility prompted by declining food sources led to tribal fights as food-gathering areas overlapped. Greenstone that was obtained from specific locations in the high country and then precision cut gave Maori who possessed it a technological advantage. The finely crafted shapes of adzes, gouges, chisels and weapons were achieved with various grindstones (Brailsford 1984).

Brailsford (1984) contended that before AD 1400 or 1500, greenstone did not feature prominently in the Maori work kit, but after AD 1500 the cutting edge of the superior greenstone adzes was probably used to construct the high timbered palisades of Maori pa. When precision cutting was employed to make stone tools, they were manufactured in other territories, away from the stone deposits (Brailsford 1984). Brailsford

(1984) suggested that the development of a network of trails out of the greenstone country was possibly the key to this Maori technological revolution. He wrote that:

‘After 1500 A.D. pounamu was the pivot of power in the land and a principal medium of exchange.

‘Archaeological sites such as Murdering Beach [Whareakeake] in Otago and Pa Bay on Banks Peninsula were greenstone factory areas that were power bases built on the production of finished artefacts using pounamu obtained from Wakatipu and the Poutini Coast.’

(Brailsford 1984: 30)

### **2.2.3 The late period: circa AD 1550–1800**

Although most archaeological evidence from the late period, AD 1550–1800, is centred on the mid-Otago coast (Anderson 1985), there is also evidence of occupation of inland areas in the Manapouri–Te Anau District (rock shelters have been found on islands in Lake Te Anau) and the upper Wakatipu District, especially Glenorchy and Camp Hill (Anderson 1985). Artefacts have also been found at Strath Taieri and Maniototo (Anderson 1985).

Archaeological interpretation of sites is difficult and controversial, and becomes confused with traditional history, which records the arrival of the Kati Mamoe people towards the end of the 16th century, and that of the Kai Tahu c. 100 years later (Anderson 1985).

As for previous periods, the Maori had no metals and relied on stone for making adzes, chisels, saw-edges, and cutting and grinding implements. Kai Tahu historian Harry Evison (1993) noted that while the pounamu of Arahura was the best stone for strong and lasting adzes, pounamu tangiwai, whalebone and other bone were used for ornaments, fish-hooks, needles and weapons.

Historian James Cowan (James Cowan transcript, National Archives, cited in Brailsford 1984: 95) wrote that the hot mineral springs in the upper Maruia River valley, and the route over the Lewis Saddle to the Waiau River and into South Marlborough and North Canterbury, were used by swag-carrying parties of greenstone-fetchers and warriors. He argued that the wars for pounamu first made this trail known to other southern Maori and would lead to the subjugation of the original owners of Te Tai Poutini (the West Coast), Ngati Wairangi (James Cowan transcript, National Archives, cited in Brailsford 1984: 95). Kai Tahu were far too numerous and warlike for this small tribe. Soon after the wars broke out, other routes to the coast were discovered: one over the Hurunui Saddle and another across the downs and plains to Hanmer and over into the Maruia and on to the Mawhera (Grey) and Kawatiri (Buller) River valleys. Many relics have been found along the Maruia Valley: adzes and ear drops of greenstone, pieces of paua shell used in fish hooks, remains of eel baskets, and other items (Brailsford 1984).

Before the pounamu wars, greenstone pieces that had been worked into finished shape on the West Coast were often taken over the mountains

during summer to iwi in the east (Brailsford 1984). It is probable that parties of 6-12 Maori consisting of men, women, children and slaves made the trip. Two passes especially were preferred for these journeys: Okura in the south and Harper Pass at the headwaters of the Hurunui and Taramakau Rivers in the north (Brailsford 1984). Only those Maori who were physically powerful and agile attempted other routes such as Browning Pass/Noti Raureka and Arthur's Pass (later, war parties would travel swiftly through these hazardous routes to take Te Tai Poutini Maori by surprise). Family groups were loaded up with finished greenstone artefacts, unworked pieces and food. These were placed in flax kete and strapped to their backs in special packs (kauka). Maori made sandals of flax, ti-kouka or mountain grass; socks and leggings of tussock grass or native grass; rain capes of flax; and other garments of finely woven flax, paper mulberry or lace bark beaten into a cloth, or weka or moa skins. Extremely strong ropes were made from scraped flax that was then plaited (Brailsford 1984). Some of the foods taken were preserved: dried whitebait, eels, shark and prepared fern root; and birds were preserved in fat and carried in rimu or seaweed bags. The kuri (Maori dog) may have been taken across the mountains (Brailsford 1984). Canoes and mohiki were used for river transport.

### ***Land tenure***

By the 17th century, tribes were driving down from the north more frequently and settling in the south, placing increasing pressure on resources (Evison 1993). Pa were built at strategic points by some tribes for protection (Evison 1993). From the Kaikoura coast southward, much of the island now came under the control of chiefs of Kati Mamoe tribe from Ahuriri (Napier), who had vanquished Waitaha. Ngati Wairangi, the workers of pounamu, continued to occupy Te Tai Poutini (Evison 1993). Kai Tahu arrived in the late 17th century, having been pressured to migrate from the north by feuding with Ngati Ira and attracted by pounamu and other abundant South Island resources (Evison 1993). They shared a common ancestry with Ngati Porou and Ngati Kahungunu. First one section of Kai Tahu, called 'Ngati Kuri', had success in a number of conflicts with Kati Mamoe and eventually took control of the Kaikoura District (Evison 1993). Then other sections of Kai Tahu, including Kai Tuhaitara and Kai Te Ruahikihiki, went further south, taking control of the eastern South Island down to Waihora (Lake Ellesmere (Te Waihora)) and Tawera (Torlesse Range) (Evison 1993). To secure their possession, a pa was built at Kaiapoi, near the coast and the confluence of overland trails from the north, west and south. Later, a section of Kai Tuahuriri went through the high country to the West Coast, taking control of the pounamu resources there from Ngati Wairangi and becoming known as 'Poutini Kai Tahu' (Evison 1993). Kaiapoi then became a great pounamu trading centre.

By the 18th century, pounamu had become a major resource (Dacker 1994). Some hapu moved to the West Coast and trade routes developed

between east and west (Dacker 1994). The Waitaki River was a major trade route inland and to the West Coast (Dacker 1994).

Brailsford concluded that:

‘...as the onward rush of Pakeha technology replaced greenstone with iron, Maori knowledge of the pounamu trails was leached from tribal memory. However, there is sufficient evidence remaining to indicate that Maori understanding of the alpine passes of the South Island was remarkably comprehensive.’ (Brailsford 1984: 180)

Although the population had declined when the moa became extinct, it rose again when the potato arrived with the Europeans in the late 18th century (Dacker 1994). The potato gave a great boost to South Island Maori since it could be grown in places where kumara could not. Cabbages, carrots, turnips and wheat obtained from Europeans were also cultivated (Evison 1993). Geographer Alex Wearing (1998) concluded, for instance, that by the time Europeans arrived in the Central Otago and Upper Waitaki River districts, Maori impact had become most evident on a few valley floors, riparian and wetland sites, and along the network of trails in the high country. He noted that wild potatoes discovered near Lake Wanaka in 1860 probably originated in former Maori gardens, and that ‘Captain Cook’s cabbage’ grew luxuriantly on the more open spaces of the Cromwell Gorge and upper Clutha riverbed in 1872 (Wearing 1998: 184–185). Potatoes and fish were traded with Pakeha for spike nails, axes, knives and other iron and steel tools (Evison 1993), which were tougher and more durable than stone implements.

‘Whanui’ describes a closely related people, relatively few in number, who moved seasonally across a vast and geographically diverse area exploiting resources and competing for mana (prestige, power). Hapu would exploit mahika kai and kai moana to which they had established a proprietary right through their ancestors and continued working of the resource (Dacker 1994). This principle was known as ‘ahi ka roa’ (keeping the fires of occupation burning). Early Europeans noticed the seasonal movement of Maori about the South Island. Geographer Eric Pawson wrote that:

‘The naturalist Walter Mantell observed how his guide Te Wharekorari could recite a long list of important sites, such as wetlands, up the Waitaki Valley. The surveyor John Barnicoat recorded that the Maori of Foveaux Strait “sometimes make excursions to the Snowy mountains and catch 300 woodhens per night”. Ngai Tuahuriri went birding and trapping native rats in the ranges behind Kaiapoi, especially from April to July when prey had overfed on the tawai fruit. The rat was the most prized food, with rat runs being strictly controlled by family groups against poaching.’ (Pawson 2002: 138)

The fighting season tended to be in late summer or early autumn between mahika kai rounds (Dacker 1994). Kai Tahu whanui were often moving about on a heke (migration) for mahika kai, kaihaukai (returning a present made by one tribe to another), pounamu or utu (revenge) (Dacker 1994). Mana was defended by attacking or migrating to avoid assault. Groups

on the move were frequently small and the distances covered great (Dacker 1994).

By 1830, intermarriage between the main streams of whakapapa meant that the hapu of Kai Tahu whanui had become closely related (Dacker 1994). The last of the fights between hapu around 1827 was known as 'Kai Huaka' (eat relation) feud (Dacker 1994). In 1829, an alliance of northern tribes struck the south (Dacker 1994). Led by Te Rauparaha of Ngati Toa, they attacked and overwhelmed Omihi on the Kaikoura coast. In 1831, Te Rauparaha also destroyed the two principal pa of Kaiapoi and Onawe. Kai Tahu's first signed land deal with Europeans in the south in 1832 (Dacker 1994)—an area of land between Dusky Sound and Preservation Inlet was sold to the whaler Peter Williams for 60 muskets—was probably driven by its need to acquire modern weapons. Te Rauparaha's return visits between 1836 and 1840 and measles epidemics in 1835 and 1838 left Kai Tahu in a weakened state (Dacker 1994).

In 1839, Te Rauparaha and Te Rangihaeata 'sold' huge chunks of the lower North Island and upper South Island to the New Zealand Company and claimed the right by conquest to sell the South Island down to Kaiapoi (Dacker 1994). Around 1843, peace was restored and slaves who had been taken by both sides were returned (Dacker 1994). Christianity was said to have played a part in resolving the conflict (Dacker 1994).

In 1891, Judge Alexander Mackay, Commissioner on 'Middle Island Native Land Purchases', reported that:

'The settlement of the country by the Europeans in the early days was looked on with considerable satisfaction by the Natives in the South Island, as it relieved them from the constant dread of hostile attack from the northern Natives; but long experience has proved to them that the colonization of the country is not an unmixed blessing, as it has deprived them of all their privileges and forced them to adopt a mode of life unsuited to their former habits, and under circumstances that keep them in a chronic state of poverty. Formerly they could obtain readily all the food and clothing they required; now they are obliged on scanty means to eke out a precarious livelihood; while the Europeans, who have possessed themselves of the territory that was once theirs, are living in affluent circumstances as compared with themselves.'

(Mackay 1891: 5)

## 2.3 SUMMARY

### 2.3.1 General historical features

Before the arrival of Polynesians:

- Luxuriant forests covered much of the South Island
- Extensive grasslands were found only in the dry basins of Central Otago and the Mackenzie Country
- Parts of the Canterbury Plains were likely to have been open kanuka country
- Moa were plentiful
- Grazing and browsing animals, except for moa, were absent
- A band of lignites extending from Central Otago into northern Southland supported natural fires for thousands of years

After Polynesians arrived:

- Forests were fired
- Almost the entire high country was transformed into tussock grasslands and dry scrub
- Most deforestation is thought to have occurred from the 12th century onward, and most burning between the 13th and 16th centuries
- Fires on the eastern side of the South Island were more devastating than on the west
- Moa were hunted
- As the forests and the moa disappeared, southern Maori departed from their ancestral inland hunting grounds and exploited the sea, coastal plains and hills more intensively
- In the interior, rock deposits for tool making were discovered—of silcrete, quartzite, porcellanite, basalt and argillite
- Pounamu (nephrite or greenstone) was found at Nelson, the West Coast, Lake Wakatipu, Lake Wanaka and Milford Sound
- Greenstone was carried across high-country passes from the west and south to the east and north of the South Island
- Villages were unfortified until around the 15th century, but as conflict became more frequent, Maori pa (fortified villages) began to appear
- Precision-cut weapons and tools were made from highly prized greenstone

After Europeans began to arrive in the late 18th century:

- Grazing and browsing animals were introduced
- Pigs, potatoes and wheat were produced by Maori for the European market, as well as melons, cabbages and other European vegetables
- Much Maori land was alienated
- Reserves for Maori were established
- Mahika (or mahinga) kai (places where food was gathered or produced) and kaika (or kainga) nohoanga (permanent or seasonal camps) diminished in scale, production and use

- Maori worked seasonally for European landholders
- Some Maori built European-style houses

### 2.3.2 Key physical resources

- Landscape features of significance to early Maori
- Shell heaps
- Drawings in rock shelters
- Rock shelters with moa bone and shell fragments, and stone knives
- Burnt logs
- Moa bone deposits
- Greenstone trails: heavy pressure on narrow paths of land and many valley trails; steps in slopes; wooden pegs in steep bluffs, and staves for walking and crossing rivers
- Fire ploughs
- Moa-hunting/moa-butchery camps
- Interior moa-butchery sites: rows of ovens situated along the banks of streams with large amounts of bone, moa eggshell and artefacts scattered nearby; examples are Hawksburn, Nevis, Woolshed Flat, Puketoi and Millers Flat
- Stone blade-making quarries
- Stone tools
- Remains of huts
- Fish hooks
- Rock deposits for tool making
- Stone (including greenstone) and bone implements and ornaments (almost none of wood or fibre have survived in the South Island from *in situ* sites)
- Mahika kai and kaika nohoanga sites
- Umu-ti (ovens for cooking cabbage tree roots); for example, at the Dart River Bridge
- Kaika (village) sites
- Pa sites
- Greenstone factories
- Urupa (burial places)
- Waahi tapu