

PERIODIC REPORTING ON THE APPLICATION OF THE WORLD HERITAGE CONVENTION

II.1 INTRODUCTION

a. **State Party:** New Zealand

b. **Property Name:** Te Wāhipounamu/South West New Zealand

c. **Geographic Information**

Located in the south-west of the South Island, extending 40-90km inland from a 450km length of its western coast. The seaward boundary is generally the mean high water mark. 166°26'-170°40'E, 43°00'-46°30'S

(Map attached).

d. **Inscription Date**

The site was inscribed on the World Heritage list in 1990

e. **Reporting Organisation**

The reporting organisation is the Department of Conservation, www.doc.govt.nz

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f. **Signature On Behalf Of State Party**

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Map of Te Wahipounamu

II.2 STATEMENT OF SIGNIFICANCE

Fiordland National Park, Aoraki/Mount Cook National Park and Tai Poutini/Westland National Parks were initially inscribed on the World Heritage list in 1986 for their outstanding natural values. In 1990 the area was effectively doubled and consolidated as Te Wāhipounamu/South West New Zealand.

Te Wāhipounamu/South West New Zealand was inscribed on the World Heritage List in 1990 under natural criteria i, ii, iii, iv for its outstanding natural values.

The area has outstanding universal significance for its Gondwana taxa, and it contains great diversity of landforms, flora and fauna. The 2.6 million ha area of Te Wāhipounamu includes the national parks of Aoraki/Mount Cook, Westland /Tai Poutini, Mount Aspiring and Fiordland.

a World Heritage Committee Observations at the Time of Inscription

(i) 1986 inscription

Westland and Mount Cook National Parks (N (i) (ii) (iii))

The Committee expressed its satisfaction regarding the manner in which the management plans drawn up for the two national parks had addressed the question of aircraft use. The Committee requested the State Party to keep it informed of any changes in the legal status of the lands which had been recently added to Westland National Park (South Okarito and Waikukupa State Forests).

Fiordland National Park (N (i) (ii) (iii) (IV))

The Committee noted the importance of including the waters of the fiords as an integral part of this national park, and requested the New Zealand authorities to keep it informed of any reconsideration of the proposal to export fresh water from the area. The Committee welcomed the initiatives of the New Zealand authorities to bring the waters of the fiords under the control of the park, and endorsed the efforts of the New Zealand Wildlife Service to rehabilitate takahe habitat and restore population numbers. The Committee also noted that the Waitutu forest, if added to the park, would become an acceptable part of the World Heritage site, and it encouraged the State Party to implement the redevelopment plan for the Milford area.

(ii) 1990 inscription

The Committee made no observations on the Te Wāhipounamu nomination.

b Actions Taken to Further These Observations

A legal challenge to the addition of land to Westland National Park did not proceed. The fiords of Fiordland National Park are now managed under the Resource Management Act 1991 and the Proposed Southland Regional Coastal Plan. This plan's provisions for tourist aircraft activity over the fiords are the subject of appeals to the Environment Court. The department is also seeking the incorporation of rules in the Southland Coastal Plan that would require consent for increased tourist aircraft activity over the fiords adjacent to wilderness areas. The water export proposal which was under consideration in 1986 did not proceed. A new consent application, seeking approval for a freshwater export port in Doubtful Sound, has recently been declined and the decision is being appealed to the Environment Court. The department actively sought the decline of this consent and will continue to do so. The department is also advocating that the export of freshwater be a prohibited activity in the Southland Coastal Plan.

The redevelopment plan for Milford Sound was implemented in 1988.

The Crown has successfully negotiated the purchase of the forest cutting rights on all but two of the blocks within the Waitutu forest. The areas where the cutting rights have been purchased are now managed as if they were part of Fiordland National Park. The Crown will continue to attempt to secure the protection of the remaining forest blocks.

Species recovery programmes within Te Wāhipounamu, including takahe, are discussed in II.3.1 of this report.

c World Heritage Values of Te Wāhipounamu

Te Wāhipounamu is primarily one contiguous unit of some 2.6 million hectares.

This topographically diverse area has been shaped by successive glaciations into a landscape of fiords, rocky coasts, towering cliffs, mountains, glaciers, lakes, waterfalls and outwash surfaces. Distribution of plants and animals is strongly influenced by climate and altitude. An extensive alpine zone dominated by permanent snowfields and glaciers occurs above 1700 metres. Alpine herb fields blanket the mountain slopes above the timberline and two-thirds of the property are covered with temperate forest. The forest is a mixture of pure stands of southern beech or podocarps, some of which are over 800 years old.

As the least modified large contiguous natural region on mainland New Zealand, the ecosystems within the site are the core habitat of many indigenous animals with distinct and primitive Gondwana origins. Many of these animals are at risk from the effects of introduced browsing and predatory animals. Considerable management attention is given to the conservation and recovery of indigenous animals and the integrity of forest and alpine ecosystems.

Landforms

Te Wāhipounamu lies across the boundary between the Pacific plate to the east and the Indo-Australian plate to the west, in a very seismically-active region. The mountainous character of the area results from tectonic movement over the last five million years. The uplifted mountains have been very deeply excavated by glaciers, resulting in high local relief. Glaciers are an important feature of the area, especially in Westland-Tai Poutini and Aoraki-Mount Cook National Parks, which contain 28 of the 29 New Zealand peaks above 3,000m.

The best-known vegetation chronosequences are those on glacial landforms where the ages of outwash, terrace and higher piedmont surfaces have been dated from historic and recent glacial periods. In southern Fiordland, marine terraces spanning an age range of 600,000 years are regarded as the region's most impressive landform chronosequence.

The site contains the most extensive and least modified natural freshwater wetlands in New Zealand. Sizeable open wetlands, including high fertility swamps and low fertility peat bogs, are a particular feature of the South Westland coastal plain.

Biodiversity

The diversity of natural vegetation is derived from a number of pronounced environmental gradients, including:

- altitudinal sequences from permanent ice in the high mountains to sea level or intermontane basins;
- rainfall/temperature gradients from west to east, resulting in a compressed transect from rainforest to grassland;
- a north-south gradient covering three degrees of latitude;
- pronounced ecotones between open wetlands, grasslands, shrublands and forest communities; and
- distinct sequences of vegetation and soils developed on landforms of different ages.

Te Wāhipounamu contains a floristically rich alpine vegetation of shrubs, tussocks and herbs that extends from about 1,000m in altitude above the tree line to the permanent snowline. A major biogeographic feature of New Zealand's vegetation occurs within the region, viz the so-called "beech gap", in which beech species are absent for a distance of some 160km along the western seaboard. The wetter, milder west is characterised by luxuriant rain forest and wetlands; the drier, more continental east (with colder winters and warmer summers) has more open forest (generally mountain beech), shrublands and short tussock grasslands.

The site is the core habitat for many indigenous animals, including a number of primitive taxa, and it contains the largest and most significant populations of forest birds in the country, most of which are endemic to New Zealand. The entire populations of two of New Zealand's six varieties of kiwi, Haast tokoeka (*Apteryx australis australis*) and Rowi/Okarito brown kiwi (*Apteryx "rowi"*), are found in the site, and one other variety, southern tokoeka, has part of its distribution in the site. The site is the stronghold for the endemic Fiordland crested penguin (*Eudyptes pachyrhynchus*).

It is also the stronghold of both members of an endemic genus of parrots. Kea (*Nestor notabilis*), the only alpine parrot in the world, is restricted to the South Island high country. Its forest relative the kaka (*N. meridionalis*) is found most abundantly in the beech/podocarp forests of southern South Westland and south-east Fiordland. A few mountain valleys in Fiordland harbour the total wild population of the rare and endangered takahe (*Porphyrio mantelli*), a large flightless rail believed extinct until "rediscovered" in 1948. Other birds with no close relatives beyond New Zealand which are found in the area include whio/blue duck (*Hymenolaimus malacorhynchus*), ngutuparore/wrybill (*Anarhynchus frontalis*), and western weka (*Gallirallus australis*).

Maori Heritage

Maori association with Te Wāhipounamu falls into three broad categories: spiritual, traditional history, and ethnological. All of these values are contained within the traditions of the Ngāi Tahu tribe. The Ngāi Tahu people settled the area over 900 years ago, and Te Wāhipounamu has great spiritual and cultural importance for them. Of particular significance to Ngāi Tahu is the presence of pounamu or nephrite in the site. Pounamu continues to have great mana (prestige) for Ngāi Tahu and in some forms is regarded as having spiritual force. Ownership of pounamu is now legally vested in Ngāi Tahu as a consequence of the Ngāi Tahu (Pounamu Vesting) Act 1997.

Ngāi Tahu has achieved a number of significant milestones in the period since the area was inscribed on the World Heritage list as a natural heritage site. In 1996 legislation was enacted to establish Te Rūnanga o Ngāi Tahu as the tribal authority, and subsequently the negotiated Ngāi Tahu Deed of Settlement led to the Ngāi Tahu Claims Settlement Act 1998. This legislation has given enhanced recognition to Ngāi Tahu associations with Te Wāhipounamu. The formal changes of name of two national parks (Westland to Westland-Tai Poutini; and Mt Cook to Aoraki-Mt Cook) also reflect this recognition.

Te Wāhipounamu includes sites connected with Captain Cook's first visits to New Zealand and early European contact with Maori in New Zealand. It also contains areas closely associated with the development of conservation history in New Zealand. The debate surrounding the development of Lake Manapouri for hydro-electricity generation in the 1960s marked a turning point in New Zealand's conservation awareness. The additions of South Okarito and Waikukupa forests to Westland National Park in 1982 signalled a change from extractive industries in the region to sustainable use through activities such as nature tourism. The addition of the Red Hills to Mount Aspiring National Park in 1990 signalled an acceptance that protection was a valid land use.

Since then nearly all of the Crown's remaining indigenous forests have been formally protected.

Visitors and Visitor Facilities

Milford Sound, Mount Cook and Franz Josef and Fox Glaciers have been major visitor attractions from the earliest days of New Zealand's tourism industry. Today they are the nucleus of New Zealand's substantial nature based tourism industry. A great variety of private sector commercial tourist activities operates under concession agreements with the Department of Conservation throughout Te Wāhipounamu.

The Department of Conservation also provides recreational facilities and services, including visitor centres and a comprehensive range of front and backcountry amenities, many with interpretive messages and information about the World Heritage Area. The Haast visitor centre, which opened in 1991, was built specifically to interpret the wilderness character of that part of Te Wāhipounamu.

Seasonal visitor pressures occur at key sites within Te Wāhipounamu, specifically at the Franz Josef and Fox Glaciers, at Aoraki/Mount Cook, Milford Sound, and at a number of popular backcountry sites such as the Kepler Track and the Routeburn Track.

World Heritage Area Boundaries

The boundaries of Te Wāhipounamu have not been altered since the site was inscribed in 1990.

Since 1990 various Crown owned lands adjacent to Te Wāhipounamu have been reclassified and are now held for conservation purposes. These lands are additions to the site's buffer zones. Further additions to buffer zones will occur as circumstances dictate. The buffer zones are extensive and sufficient to ensure the protection and conservation of the site's values. In Canterbury and Otago a process of review of tenure of pastoral lease land is likely to lead to protection of substantial additional areas of land bordering the site, and these areas will also be part of the buffer zones.

II.3 STATEMENT OF AUTHENTICITY/INTEGRITY

World Heritage values of Te Wāhipounamu identified in the nomination and at the time of inscription have been maintained and, in several key instances, enhanced.

Conservation values that have been enhanced primarily relate to measures taken to understand and combat invasive animal and plant pests, restore biodiversity, add land to buffer zones, enhance the public understanding and appreciation of the property, and address visitor pressures.

Biodiversity recovery programmes for rare and endangered species such as Haast tokoeka kiwi and Rowi/Okarito brown kiwi, takahe, whio/blue duck, mohua/yellowhead (*Moboua ochrocephala*) and kaka have advanced significantly since the property was inscribed. Research has identified the impact of invasive animal pests on these and other species, and considerable attention is being given to integrated pest management and species and habitat recovery programmes.

Additions to buffer zones have also enhanced the World Heritage values of the site. In particular, indigenous podocarp forests adjacent to the western margin have been added to the buffer zone, as have short tussocklands adjacent to the eastern margin.

Within Te Wāhipounamu, the Olivine Wilderness Area (83 000 hectares) was gazetted in 1997, providing statutory protection to the wilderness values of this remote area of mountains, glaciers and wild rivers in Mount Aspiring National Park. At the northern boundary of the site a new wilderness area (Adams) has been notified for public comment. At the southern boundary a new wilderness area has also been proposed for public comment preceding the draft Fiordland National Park Management Plan. Further public comment will be sought in the draft plan.

Another level of protection has been given to sites significant to Ngāi Tahu. Five defined areas within the site have the status of Tōpuni under the Ngāi Tahu Claims Settlement Act. A Tōpuni places an overlay of Ngāi Tahu values on an area, the concept being derived from the traditional Ngāi Tahu custom of persons of rangatira (chiefly) status extending their mana (power and authority) over an area or person by placing their cloak over the area or person. It does not override or alter the existing status of the land, but ensures that the Ngāi Tahu values are recognised, acknowledged, and provided for.

A number of plant and animal species found in the site are taonga (treasure) species under the Ngāi Tahu Claims Settlement Act. This means that Te Rūnanga o Ngāi Tahu is consulted when policy decisions are made concerning taonga species, and Te Rūnanga is involved in various ways with recovery planning for the taonga species.

Public awareness and understanding of the site has been enhanced by the implementation of a visitor information strategy and the development of a number of visitor sites and “gateways”. Visitor centres at Haast and Makarora and the associated visitor activity sites along the Fox Glacier/Haast and Haast/Wanaka highways are examples of this.

Educational materials and programmes have been developed for the site. In particular students and educators from Greymouth High School participated in the first World Heritage Youth Forum in Bergen, Norway, and subsequently in the development of the World Heritage Education Kit. A web based World Heritage education programme known as LEARNZ was initiated locally for Fiordland National Park.

Visitor pressure has been addressed in the management planning processes for the respective national parks and in the conservation management strategies.

II.4 MANAGEMENT

Te Wāhipounamu is managed by the New Zealand Department of Conservation. The department is funded by an annual appropriation from Parliament. The New Zealand Conservation Authority and conservation boards represent the public interest, and they provide advice and approve management plans and strategies. The authority and boards are statutory bodies appointed by the Minister of Conservation on the basis of public nomination under the provisions of the Conservation Act. The site also comes within the jurisdiction of various district councils and regional councils in respect of planning and consents under the Resource Management Act 1991. Under the Ngāi Tahu Claims Settlement Act 1998, Te Rūnanga o Ngāi Tahu is a statutory advisor to the Minister of Conservation when the Minister is considering any draft management plans or strategies in respect of specified sites, some of which are in Te Wāhipounamu. When approving or considering any general policy, conservation management strategy or management plan in respect of a Tōpuni (see II.3), the New Zealand Conservation Authority and any conservation board must have particular regard to the Ngāi Tahu values of the Tōpuni.

The site is protected under the Conservation Act 1987, the National Parks Act 1980 and the Reserves Act 1977. The Conservation Act establishes the Department of Conservation, the New Zealand Conservation Authority and the conservation boards, and sets out processes for managing conservation areas. The National Parks Act establishes principles for national parks. The Reserves Act establishes the purposes of reserves and management principles for them. In combination, this legislation provides a very high level of protection and management integration.

Operational management of the site is shared between the Department of Conservation’s West Coast, Canterbury, Otago and Southland Conservancies (see map). The Regional General Manager (Southern Region) delegates accountabilities for World Heritage Area matters to a co-ordinating panel of conservancy representatives.

Conservancy representatives ensure that particular World Heritage Area objectives are included in the department’s strategic directions and business planning process. Delivery of these objectives occurs at seven area offices and four field bases, where rangers undertake conservation management projects and programmes.

Community participation in the management of the site is achieved through conservation boards and the New Zealand Conservation Authority, which represent the community interest in conservation management. Other relationships include local forums of the Department of Conservation and the tangata whenua Ngāi Tahu community and a formal partnership with Te Rūnanga o Ngāi Tahu arising from agreements reached between Ngāi Tahu and the Crown set out in the Ngāi Tahu Claims Settlement Act 1998. The department maintains links with a wide range of associates and groups with an interest in conservation and Te Wāhipounamu.

Key management actions that have been taken to enhance the World Heritage values of the site include:

II.4.1. Statutory Planning

Mention has been previously made of two principal statutory planning processes that relate to the site: national park management plans and conservation management strategies.

There are operative management plans for the four national parks in the site. All the plans are currently being reviewed in accordance with the procedures set out in the National Parks Act. In addition, each conservancy has a Conservation Management Strategy, which is prepared under procedures set out in the Conservation Act and which establishes objectives for the integrated management of natural and historic resources. These strategies, which are approved by the New Zealand Conservation Authority, cover all the land within the site. National park management plans must meet the conservation management strategy provisions in respect of the national parks. The West Coast Conservation Management Strategy is still to be approved. The conservation management strategies of the four conservancies that manage Te Wāhipounamu have the same general objectives for Te Wāhipounamu:

- (a) *To maintain the ecological integrity of the Te Wāhipounamu World Heritage Area.*
- (b) *To join with [other conservancies] in developing a co-ordinated approach to the management and servicing of visitors to the World Heritage Area.*

Further direction is provided by the General Policy for National Parks (1983), which is a statutory policy under the National Parks Act, and by the department's internal planning, operating and performance reporting framework. The General Policy for National Parks is currently being reviewed, and the department and the New Zealand Conservation Authority are in the early stages of developing a General Policy for Conservation under the Conservation Act.

II.4.2. Species Recovery

Significant resources are being invested in a variety of species recovery programmes within or adjacent to the site. Scientific research has made substantial progress in helping to understand and mitigate the threats posed to both species and habitats by invasive introduced animal and plant pests. On-going work that is of particular note is associated with five important threatened species that are taonga (treasured) species under the Ngāi Tahu Claims Settlement Act (see II.3 above).

Haast Tokoeka and Rowi/Okarito Brown Kiwi

These two varieties of kiwi are ranked as nationally critical, and they are confined to two distinct locations on the West Coast. Rowi is almost exclusively confined to the area between the Okarito and Waiho Rivers, and Haast tokoeka is mostly found between the Arawhata and Waitototo Rivers. Both populations number in the low hundreds, and the greatest threat to them is the predation of chicks and juveniles by stoats (*Mustela erminea*).

Both species benefit from intensive recovery programmes, which have included survey, monitoring, the artificial incubation of eggs, the raising of chicks in captivity, and the temporary transfer of juveniles to an offshore island refuge before being returned to the wild when they are large enough to resist stoat predation. They are also being protected by *in situ* stoat control over several thousand hectares to improve chick and juvenile survival. Te Rūnanga o Ngāi Tahu has been involved through participation on the recovery group, and Te Rūnanga o Makawhio has participated in releases back to the wild.

Community support for these programmes is generally strong. The Bank of New Zealand has been a corporate sponsor of kiwi recovery since 1991 and, through the Threatened Species Trust, has been a major contributor to kiwi conservation on the West Coast. Much of the kiwi habitat is being protected through the control of possums (see II.4.3).

Takahe (*Porphyrio mantelli*)

Takahe, ranked as a nationally critical species, are confined to the Murchison Mountains of Fiordland and five offshore islands. The Murchison Mountains cover 51 800ha of mountainous country between South and Middle Arms of Lake Te Anau. The area has the status of Specially Protected Area under the National Parks Act. The total population of takahe is about 220, with about 130 in the Murchison Mountains, 60 on islands and the remainder spread between captive institutions at Mt Bruce, Te Anau Wildlife Park and Burwood Bush rearing unit. Management of takahe nests includes collection of eggs from the wild for artificial incubation and captive rearing, with birds being released into the Murchison Mountains the following spring.

Control of deer and stoats also assists the survival of takahe within the Murchison Mountains. Vegetation monitoring has been established to monitor the effectiveness of pest control.

Te Rūnanga o Ngāi Tahu

Te Rūnanga o Ngāi Tahu has been involved through participation on the recovery group and local Ngāi Tahu Rūnanga are also involved. The Maori community strongly supports the programme, and promotes island transfers. Sponsorship for the research programme is provided by Flight Centre. A new updated recovery plan provides clear direction for the future management of takahe.

Whio (*Hymenolaimus malacorhynchos*)

Whio or blue duck are declining in many populations. They are found in fast-flowing and turbulent rivers and streams in forested hill country and mountains. Research in the Clinton Valley has identified stoats as a major predator of whio, with incubating females more vulnerable to predation. The department is directing significant resources toward stoat control and research. A recovery plan is in place, and work is under way to respond to the predation threat.

Mohua (*Mohoua ochrocephala*)

Mohua are in serious decline throughout large areas of their habitat. They are present in low numbers in many valleys in Te Wāhipounamu, including the Murchison and Kepler Mountains, the Landsborough Valley on the West Coast, and the Dart Valley in Mount Aspiring National Park. Mohua are susceptible to predation by stoats and rats, and this impact is increased during rodent and stoat plagues following beech masting.

Management has in the past concentrated on stoat control, which has been effective in protecting mohua. Rats have recently been identified as a more significant predator of mohua, and techniques to control them in mohua areas are yet to be trialed.

Transfers of mohua to Breaksea Island in Fiordland National Park have been highly successful, with a population estimated at 400 now established. A transfer of mohua from Breaksea Island to Te Kakahu o Tamatea (Chalky Island) earlier this year aims to increase the security of the species. Te Rūnanga O Ngāi Tahu has been involved through participation on the recovery group and has been consulted on all transfer proposals.

II.4.3 Pest Management

New Zealand's indigenous flora and fauna evolved in isolation, free from mammalian and marsupial browsers and predators, and consequently have little defence against them. Invasive introduced animal and plant pests absorb much of the management resource within Te Wāhipounamu.

Of all the invasive animal pests, the omnivorous Australian brushtail possum (*Vulpes trichosaurus*) causes the most severe impacts on both habitat and individual species. Introduced mustelids and rodents continue to have a significant impact on indigenous bird life, and most bird populations have been affected to some extent. The combined impact of these three pests in forested ecosystems is substantial. Nevertheless, management has improved the situation since the site was inscribed on the World Heritage list.

High quality research into pest biology and control methods has assisted the department to secure considerable additional resources and to target particular pests with good effect. Pests that are subject to sustained control because they are a critical threat to ecosystem decline are discussed here. There are other pests which are mainly outside the boundaries of Te Wāhipounamu, and management is directed at keeping them out. For example, goats are controlled to low levels in the Shotover catchment adjoining Mount Aspiring National Park in order to prevent their invading the park.

II.4.3.1 Australian brushtail possum

This animal is a major pest in Te Wāhipounamu. It browses native vegetation and preys on native birds and insects to such an extent that it is a significant threat to biodiversity within the site. The site is characterised by relatively intact forest ecosystems with good populations of several nationally threatened and vulnerable native species. Possums threaten the integrity of the site by selectively removing vulnerable plant and animal species through browse, predation or competition and by disrupting key forest ecosystem processes such as fruiting, seed dispersal and pollination.

Approximately 215 000 ha of Te Wāhipounamu is subject to sustained control of possums. Most control occurs in the western region of the site, where control targets are designed to block the invasion of possums into areas that are lightly populated by this pest, or to protect priority places where forest ecosystems are most intact and/or where high numbers of nationally threatened species are present.

Long term monitoring of some of these species has been established at a number of possum control sites to measure the benefits of possum control within the area. Preliminary results indicate that management is succeeding in reducing the impacts of possums on some species, such as mistletoe and fuchsia, at some sites.

Possums must be controlled to protect the forests, to maintain habitat, and to protect fauna. Poisoning by 1080 (*sodium monofluoroacetate*) in cereal bait or gel form is the most used control method, because 1080 can be closely targeted at possums and breaks down rapidly in the environment into non toxic substances. It is the most effective method available for the consistent reduction and sustained control of possum populations in rugged terrain. Other toxins are available but they are less effective than 1080 or pose residue problems for the environment. The primary method of applying 1080 over such extensive, rugged terrain is by aerial sowing of impregnated cereal baits. Baits are typically 8 or 12 grams with a low 1080 toxic loading of 0.15%, dispersed at a rate of 3kg per ha. Aerial sowing is subject to consents issued under the Resource Management Act 1991, and is GPS controlled to ensure accurate dispersal and compliance with conditions.

There is some public opposition to the use of 1080, particularly to the aerial application of cereal baits. The department has referred all matters surrounding the use of 1080 to the Environmental Risk Management Authority for review under the Hazardous Substances and New Organisms Act 1996.

II.4.3.2 Red Deer

Red deer (*Cervus elaphus*) are the most widespread of four deer species occurring in the site. Red deer occupy all forested ecosystems within Te Wāhipounamu and its buffer zones, but they are most numerous in the rugged western regions. Control is affected primarily by the game recovery industry and by recreational hunters, and together they remove approximately 12,000 animals per year.

Red deer are considerably less numerous than was the case in the 1960s and 70s prior to the advent of the game recovery industry. The department monitors deer impacts at 8 sites in order to evaluate deer population trends. Monitoring of vegetation in Mount Aspiring National Park over 30 years demonstrates a very substantial recovery of the vegetation. However, deer remain a significant pest in Te Wāhipounamu. Control measures will continue to use recreational hunters and the game recovery industry.

II.4.3.3 Stoats

Stoats (*Mustela erminea*) occur throughout Te Wāhipounamu in all terrestrial communities from the coast to the sub alpine zone. They have been implicated in the extinction of several species in New Zealand, and continue to be a major cause of decline in the fauna of Te Wāhipounamu, especially birds, although they also eat invertebrates and bats. Most at risk from stoats are the eggs, chicks and juveniles of the ground dwelling and ground and hole nesting species.

Currently the department carries out stoat control only at sites where there are highly threatened species such as mohua, blue duck and kiwi. So far, the control has been successful over small areas (hundreds of hectares) for flighted species, and it is being trialed over thousands of hectares for kiwi.

II.4.3.4 Rats

Three species of rat are present within Te Wāhipounamu, and they occupy different niches. Norway rats (*Rattus norvegicus*) are generally found in the wetter areas and near settlements, the ship rat (*Rattus rattus*) is found throughout the forest, and kiore (*Rattus exulans*) is usually found in habitats not occupied by the other species.

All three species are omnivorous and will eat the eggs and young of birds and in some instances adult birds. They also prey upon invertebrates, reptiles and bats. Rat populations increase rapidly during beech mast years and reach plague proportions. Control is only practicable at key sites to protect highly vulnerable fauna such as mohua.

II.4.3.5 Himalayan Thar

Himalayan thar (*Hemitragus jemlabicus*) occur in varying densities over an area of about 200 000 ha within Te Wāhipounamu. This introduced animal is subject to sustained control within the site and its buffer zones. The Himalayan Thar Control Policy and statutory control plan require thar control to be undertaken so as to achieve an ecologically acceptable vegetation and estate condition over the entire feral range of this animal pest.

The plan establishes priority areas for control and provides measures which require that the population and spread of thar within Te Wāhipounamu be reduced and restricted so as to safeguard its particular conservation values.

The department has pioneered the use of radio collars on thar for control purposes. The radio collared thar (a “Judas” thar) joins groups of thar and betrays their location by radio signals. This has proved to be a very effective control technique.

Within Westland-Tai Poutini National Park and Aoraki-Mount Cook National Park there are now fewer than 500 thar. A zone of approximately 100 000 ha is established at the southern breeding limit of these animals to inhibit extension of their range further south. In this zone there are fewer than 100 thar.

II.4.3.6 Weeds

Several species of hawkweed (*Hieracium* species) present the most serious weed problem in Te Wāhipounamu. Mouse-eared hawkweed (*H. pilosella*) invades and displaces the inter-tussock vegetation, potentially forming up to 80% cover. More recently tussock hawkweed (*H. lepidulum*) has been found invading beech forests and sub-alpine areas, where it replaces native herbs and shrubs. Biological control is the only feasible control method, and several biological control agents have recently been introduced for the management of *H. pilosella*. These control agents include a rust and several insect species. Research is about to begin to determine the impacts of *H. lepidulum* in beech forests and sub-alpine areas and to investigate possible control options.

Many other weed species occur around the margins of Te Wāhipounamu. Some of these, such as gorse (*Ulex europaeus*), have the potential for further expansion. Much of the current weed control effort is directed at preventing the expansion of such species, e.g. surveillance

for gorse and broom (*Cytisus scoparius*) in the Haast Valley. Elsewhere around the periphery of the site, weed pests include wilding pines, Russell lupin and cherry. A particular effort has been made to remove wilding pine trees from the Buchanan Peaks, a part of Te Wāhipounamu which adjoins Mount Aspiring National Park.

II. 5 FACTORS AFFECTING THE SITE

Introduction

The most significant factors affecting the site are those related to visitor use and invasive pests. Planning processes identify the principle impacts of these factors and the department has various operational plans to address them. Examples include the National Possum Control Plan, the South Island Wilding Tree Control Strategy and the Visitor Strategy.

II.5.1 Visitors

Increasing pressure from visitors generates some problems for the management of Te Wāhipounamu. In the New Zealand context, the principle issue is about the maintenance of natural character. Visitor pressures are therefore not so much about volume as quality of experience. Increasing pressure from visitors does create some problems at a few places such as Franz Josef and Fox Glaciers, Aoraki/Mount Cook and Milford Sound, where natural character is held in high regard but also attracts many visitors. At these places issues are frequently associated with aircraft access, over-flying and perceptions of crowding. The effects tend to be on the visitors rather than the site.

Aircraft use of airspace above the site causes concern among some user groups because of the perceived loss of quietness on the natural character of Te Wāhipounamu. The management plans for the four national parks all deal with aircraft access, as do the conservation management strategies for other categories of land within the site.

At some places, such as Milford Sound and Aoraki/Mount Cook, there have been extensive developments to cater for the greater number of visitors. For example, at Milford Sound, the boat terminal and visitor reception facilities have been upgraded and, at Aoraki/Mount Cook, a new village development has been undertaken and the hotel extended and upgraded to facilitate the handling of greater number of tourists.

II.5.2 Concessions

A concession is required to carry out a trade, business or occupation on land managed by the Department of Conservation. Concession applications are dealt with in terms of the Conservation Act 1987 and the National Parks Act 1980.

The majority of concessions are for small scale, low key activities such as guided walks. At the other end of the scale are concessions for large scale tourism operations with a high level of capital investment. Concessions also include other land uses such as grazing and aircraft landings.

Concessions are regarded by some interest groups as having adverse effects on the site. Concession users make up a small proportion of overall users of the site, but the department is addressing the issue of cumulative effects through strategic and planning processes plus the development of monitoring tools.

II.5.3 Recreation Management

Many people visit the site in order to experience its natural character and to participate in recreational activities. Some activities are operated by concessionaires but many are provided by the department. During the peak visitor season, overcrowding at some popular sites is an issue. Booking systems have been introduced for the most popular of the walking tracks. In Fiordland National Park a new track, the Kepler Track, was developed with substantial financial support from the tourism sector in order to relieve pressure on existing tracks. A new multi-day track has been constructed by the Tuatapere community along the Hump Ridge and southern Fiordland Coast. Tourism facilities and short walks have been developed along the highways within the site. This includes a large new visitor centre at Haast, which provides a focus on interpretation of the wilderness character of Te Wāhipounamu and its Gondwana taxa. Increased visitor numbers in back country huts have caused the department to invest in more sophisticated sewage disposal systems, both to meet visitor expectations and to maintain water quality.

II.5.4 Other Development Issues

From time to time, a road is proposed, linking South Westland to the Hollyford Valley and Milford Sound and traversing a wild and remote part of Te Wāhipounamu. It is unlikely ever to be economic and could not proceed without legislative changes to remove land from Mount Aspiring and Fiordland National Parks, since a highway cannot be built on national park land. From time to time, proposals are also floated for more direct access routes from Queenstown to Milford Sound. Currently, commercial interests are assessing the viability of a gondola link between the Caples Valley and the Eglinton Valley. This would cross a small portion of the eastern boundary of Te Wāhipounamu. No application has yet been received but, if one were, it would be handled in terms of the concessions procedures of the National Parks and Conservation Acts, and with due regard to the land's World Heritage status.

II.5.5 Animal and Plant Pests

The animal and plant pests present in the site were referred to at the time of the inscription. Resources continue to be directed at sustained control of the key pests discussed in section II.4.3 but none has yet been completely eradicated.

II.6 MONITORING

A considerable amount of monitoring is carried out in Te Wāhipounamu. Some examples follow:

II.6.1 Biodiversity monitoring occurs in conjunction with specific management programmes to anticipate management that will be required and to determine whether it has been successful. Examples include:

- Monitoring of seed rain to monitor the beech mast cycle;
- Pest monitoring to provide an index of stoat, rat and mice abundance;
- Bird counts to determine the success of stoat trapping in protecting the endangered mohua;
- Permanent plots in tussock grassland to determine the impacts of thar at different densities;
- Permanent plots in forests to determine the impacts of deer abundance on vegetation condition; and

- Monitoring of foliage condition on indicator tree species to determine the success of possum control operations.

II.6.2 Visitor monitoring occurs at high use visitor sites to determine the extent of visitor satisfaction with facilities or with commercial tourist activities such as aircraft use of airspace above the site or landings within it. Particular visitor-related monitoring undertaken on a programmed basis includes studies of aircraft overflight at sites in Aoraki-Mount Cook and Westland/Tai Poutini National Park, and visitor/concessionaire interactions in the Franz Josef valley, within Westland/Tai Poutini National Park. Visitor numbers are monitored routinely through hut books and visitor intentions forms. Aircraft overflight monitoring is undertaken seasonally in Fiordland National Park, and in the Hooker and Tasman Valleys and at Mueller Hut in Aoraki-Mount Cook National Park.

II.6.3 Dart Glacier is monitored by scientists in order to document changes in the thickness and extent of glacial ice.

II.6.4 A national network of permanent plots on an 8 x 8 km grid in forest and scrub is currently being established by Ministry for the Environment (MfE) to determine carbon balances and to obtain information on biodiversity. Many of these plots are within Te Wāhipounamu, and will form the backbone of a permanent plot network, providing valuable information on biodiversity condition.

II.6.5 A research programme, which is in its third year in the Waitutu forest, aims to develop a comprehensive understanding of the processes that drive ecosystem change. It assesses the impacts of introduced mammals on forest dynamics. The resulting understanding of forest processes and forest-pest interactions will guide future pest control to manage forest structures. Its aim is to enhance our achievement of biodiversity goals for indigenous forests by improving our ability to predict the outcome of our forest management decisions.

II.6.6 Recently the department committed itself to reporting on the pressure on natural heritage and its condition at a range of scales relevant to management. To meet this commitment the department is currently in the early development phase of design, testing and costing an inventory and monitoring system that will meet its reporting requirements.

The objectives of the proposed monitoring programme are to:

- Detect changes in biodiversity that exceed the range of natural variation, across a range of spatial and temporal scales;
- Provide an early warning of potential irreversible changes;
- Provide reports on changes in pressure and the status of biodiversity condition; and
- Meet New Zealand national and international commitments for monitoring biodiversity.

The development project is expected to result in identification of the preferred approach to a national multi-scaled biodiversity assessment-sampling programme that will enable the department to meet a range of reporting requirements. An assessment of the options and requirements for implementation will follow. One option may include supplementing the Ministry for the Environment network with additional plots to enable reporting at a more local scale.