

WAKATIPU

RECREATIONAL HUNTING AREA

**WILD ANIMAL CONTROL PLAN
1990**

CHISHOLM



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INTRODUCTION

The Wild Animal Control Act 1977 (Appendix 1) details the criteria for establishing land of various tenures as recreational hunting areas (RHAs) and the requirement for a wild animal control plan.

In October 1980 Southland Conservancy of the New Zealand Forest Service, supported by the New Zealand Deerstalkers' Association, recommended in a submission to the National Recreational Hunting Advisory Committee (under Part III section 27 of the Wild Animal Control Act 1977) that those areas of State Forest within the Greenstone and Caples catchments were suitable for RHA status.

The National Recreational Hunting Advisory Committee (NRHAC) at its fifteenth meeting (26 March 1981) considered the Wakatipu fallow herd met the criteria required for a RHA (see Appendix 2).

Ministerial approval was received at the 16th meeting of the NRHAC on 13 May 1981 and gazettal as a RHA followed once the State forest tenure was re-established.

This is the first five yearly update of the WAC plan since it was approved by the Minister of Forests in 1983.

The RHA will be managed under the prescriptions of this wild animal control plan issued by the Director General of Conservation (as described under Part III, section 28 of the Wild Animal Control Act 1977).

2 TOPOGRAPHY AND VEGETATION

2.1 LOCATION

The RHA lies entirely within Wakatipu stewardship area, encompassing both the Caples River catchment and Greenstone River catchment upstream as far as the Fiordland National Park boundary. Both valleys lie north-west of Lake Wakatipu and drain the slopes of the Livingstone, Ailsa and Humboldt mountains.

The Caples River joins the Greenstone River near its outlet on the western shore of Lake Wakatipu. The area is mountainous with peaks rising to 2350 m.

The total area of the RHA is 16,460 hectares.

Map 1 shows the location of the Wakatipu RHA in relation to major towns and main highways.

Map 2 shows huts, tracks, and bridges within the RHA as well as the distribution of forest. Large-scale maps showing access routes, huts, tracks, bridges and RHA boundaries will also be available to hunters.

2.2 DESCRIPTION OF RESOURCE

The topography of the area reflects the effects of successive Pleistocene glacial advances, with steeply cut valley walls, morainal deposits, high tributary cirques and generally strong relief (Rose, 1977).

The geographic and topographic details of the area are shown in NZMS1 sheets S122 and S133, and NZMS18 sheet 22.

Soils are predominantly upland and high country yellow-brown earths which occur beneath the forests on the valley sides. They are strongly leached, thin, free draining, and of low natural fertility. Much of the area is steep and highly susceptible to wind and water erosion, particularly when the vegetation is removed or damaged by animals, fire, wind or snow. The area also has extensive alluvial river flats and terraces.

Serpentine and associated minerals occur in a narrow belt running from the Sly Burn north through Big Slip (Slip Fault) and the Caples Valley to Scotts Basin. This area has been covered by prospecting licences in the past and may prove to be of commercial interest (for greenstone) in the future.

The climate of the area is not well documented although it is no doubt similar to that found in other areas of eastern beech forest. A marked precipitation gradient exists between valley heads (300 mm per annum). This gradient also increases with altitude.

2.3 VEGETATION

In the past the forests in both valleys extended unbroken from valley floor to timber line throughout its length. Today due to repeated burnings the lower valleys are covered by an irregular cover of manuka (*Leptospermum scoparium*) with residual pockets of forest largely confined to gullies.

The total 10 500 hectares of beech forest remaining (4000 ha in Caples Valley and 6500 ha in Greenstone Valley) is dominated by one or other of three beech species : red beech (*Nothofagus fusca*), silver beech (*N. menziesii*) or mountain beech (*N. solandri* var. *cliffortioides*) existing in pure or variable stands with secondary species of mountain toa toa (*Phyllocladus alpinus*), mountain totara (*Podocarpus hallii*) and broadleaf (*Griselinia littoralis*).

Hayward (1971), recognises three forest types, one scrub type, and a grassland association in the Caples Valley. These types are typical of the RHA.

2.3.1 Red Beech/Silver Beech Forest

This association is found on 37 percent of total forest area and is the dominant forest type. It extends from the river terrace to the altitudinal limit of red beech at about 850 m. The forest varies from pure red beech to mixtures of silver and mountain beech. Mountain totara occurs at low densities. Broadleaf, Pepperwood and small-leaved coprosmas are typical of the shrub and small tree tiers, all occurring in low densities.

2.3.2 Silver Beech Forest

This forest type is found on 32 percent of total forest area and forms pure stands above the altitudinal limit of red beech in the lower valley. In the head of the valley it is the sole canopy species at all altitude levels. Silver beech forest has the highest density of scrub species of the three forest associations.

The most common species are *Coprosma pseudocuneata*, *Myrsine divaricata*, Mountain toatoa, Mountain totara and Pepperwood.

2.3.3 Mountain Beech Forest

This association is found on 31 percent of total forest area, usually on recently disturbed sites and on skeletal soils. There is little understorey except in canopy gaps where the shrub tier comprises mainly Mountain toatoa as the dominant species. Small-leaved coprosmas, *Dracophyllum uniflorum*, *Podocarpus nivalis*, *Hebe odora*, and *Cassinia vauvilliersii* form a dense understorey.

2.3.5 Fire Induced Scrubland

This is mainly confined to the lower Greenstone and the true right of the lower Caples. Most of these areas have a mosaic cover of manuka (*Leptospermum scoparium*), *Coprosma parviflora*, *C. rugosa*, and *Myrsine divaricata*. *Hebe subalpina*, *Cassinia vauvilliersii* and bracken (*Pteridium aquilinum*) become more prevalent as the manuka decreases.

2.3.6 Grassland

This occurs above the subalpine scrub where tussocks (*Chionochloa* species) are dominant.

Hayward (1971) found that in the lower forests and terraces there had been little regeneration for up to 20 years. The high altitude silver beech forests were the least modified but signs of depletion were becoming obvious. Soon after this survey, recreational hunters were given access to the area and the number of animals was reduced.

In 1976 both the Caples and Greenstone Valleys were assessed and described by Rose (1977). Forest condition was becoming healthy although regeneration densities of forest species were low and animal numbers were far in excess of that which the forest could support.

Subsequent surveys and field inspections have indicated a significant regeneration response of forest species to lower deer numbers.

Buckingham (1985) mapped the distribution of all bird species in the Caples and Greenstone Valleys. He found a number of rare and endangered species inhabiting the beech forests most notably the Yellowhead *Mohoua ochrocephala*. The ability of the beech forests to regenerate is seen as a high conservation priority, in order to maintain the habitat of these bird species.

3 ACCESS, TRACKS AND HUTS

3.1 ACCESS

3.1.1 Roads

There is no road access to the RHA boundary. The nearest roads are as follows (see map 2):

The Queenstown-Kinloch Road has now been extended and vehicle access is available as far as Greenstone (Birchdale) Station and to the Greenstone River via recreation reserve along the toe of the hill. A car park is provided for at the road end. This route has been metalled and is available for public access.

The Te Anau-Milford Highway No. 94 rises to a car park at The Divide. Entry to the RHA into the upper Greenstone Valley is via the Key Summit - Lake Howden - Lake McKellar foot track. This route is not used as frequently by hunters.

The Queenstown-Lakes District Council and the National Roads Board will be asked to maintain existing road access.

3.1.2 Water Transport Across Lake Wakatipu

To Greenstone wharf and along road to car park at Greenstone River. Access is available to both catchments through the recreation reserve around the toe of the hill.

To Elfin Bay wharf which gives direct access to the Greenstone Valley via Lake Rere by walking track through recreation reserve, scenic reserve and leased Crown land.

Water transport is available for hire at either Glenorchy or Queenstown.

Run homesteads and facilities, especially telephones, are not to be used except in emergency situations.

3.1.3 Air Transport to Within the RHA

Aircraft can land within the RHA by permit at selected sites. Fixed wing aircraft are restricted to one landing strip in the lower Caples Valley.

Should demand increase then sites for frequent use will be identified.

Aircraft landing on leasehold run land require permission of the occupier and a Recreation Permit from Landcorp.

3.2 TRACKS

A network of walking tracks exists both within and around the RHA (See map 2). These tracks are very popular with trampers.

The Southland District Walkways Committee has proposed that the Caples-Greenstone Valley tracks become a New Zealand walkway, linking with the Mararoa Walkway to the south. To this end, hunters will be requested not to discharge a firearm across or on or within 100 metres of the main valley tracks. Hunters are also required not to discharge a firearm on or over Crown pastoral leasehold land adjacent to the tracks in the main valleys.

3.2.1 Foot Access Tracks into RHA

An all weather track from the car park gives access to both valleys. It follows the true left bank, through a recreation reserve, to a bridge below the confluence of the Greenstone and Caples valley. When the Greenstone River is low it can be forded opposite the car park and the track followed along the true right to the confluence of the Greenstone and Caples Rivers. Following rain the all weather access on the true left should be used. See map 2.

- From Lake Wakatipu at Elfin Bay through existing recreation reserve, scenic reserve and Crown land to State Forest.
- To RHA from the Divide via Key Summit, Lake Howden and McKellar into the upper Greenstone. A separate hunting permit from Fiordland National Park headquarters, Te Anau, is also required to hunt and/or carry a rifle through this area.
- To RHA from Mararoa River via the Pass Burn into the lower Greenstone Valley. This route is part of the National Walkway network.

3.2.2 Foot Tracks Within RHA

- Track follows the Greenstone River to Lake McKellar where it joins the Lake Howden track and enters Fiordland National Park.
- The Caples Valley is linked to the Greenstone Valley by tracks up Steele Creek and another over McKellar Saddle.
- Track from McKellar Saddle follows the Caples River terraces down to the Greenstone Wharf, or road end car park.
- A track up Kay Creek is maintained as far as the first major fork in the river - the boundary of the stewardship area and the RHA.
- A track up Fraser Creek is marked up to the top clearing.

Existing tracks within the RHA will be maintained by the Department of Conservation. New tracks will only be established if shown to be necessary for RHA management.

3.3 HUTS AND ACCOMMODATION

There are four public huts within the RHA. Hut fees are payable for staying in the following huts:

- Lower Caples - 12 bunk
- Upper Caples - 20 bunk

- Upper Greenstone - 20 bunk
- mid Greenstone/Steele Creek - 12 bunk

A small bivvy exists on Steele Creek flats and an old hut still stands near Kays Creek. A bivvy (four man) at Slip Flat is also available to hunters. Hut fees are not payable for these bivvys.

There are also two large public huts at Lake Howden and Lake McKenzie in nearby Fiordland National Park. Several private huts exist on runhold land, but these are not available for public use without the runholder's permission. The current number of huts is considered suitable for the purposes of RHA management.

Camping shall be allowed at the discretion of the station Ranger - Glenorchy, and the Runholder if camping on leasehold land.

In general, camping shall be allowed for the duration of the permit for the purpose of recreational hunting, and all camps shall be completely removed at the termination of the permit, or as specified by the Station Ranger - Glenorchy. All users must ensure that while on Department of Conservation forest or other Crown land they do not disturb stock on adjacent leasehold land.

4 WILD ANIMALS IN THE RECREATIONAL HUNTING AREA

4.1 FALLOW DEER

Around 1900, fallow deer (*Dama dama*) from Australia and Tasmania were liberated in the Lake Wakatipu area by the local acclimatisation society (Wodzicki, 1950). The number of animals liberated is unknown. A herd became established in the Greenstone-Caples Valleys, with predominantly black colouring although a few white fallow still remain.

By 1930 deer numbers had increased to high levels. Forest Ranger D.D. Dunn reported:

"There is practically no living regeneration left, young beech trees and totara 2 inches in diameter having been barked by deer and are either dead or are dying off. All foliage on the broadleaf has been stripped as high as a deer can reach. Both red and fallow deer being present, the flats in the upper reaches of the valley were absolutely fouled and there is not a vestige of feed left" (Dunn 1930).

Surveys undertaken in 1971 and 1976 indicated that deer numbers were still very high, and control, including commercial helicopter recovery, continued in the Greenstone Valley. Inaccessibility has prevented commercial ground hunting in the upper valleys.

Rose (1977) found that deer numbers were significantly higher in the lower Greenstone Valley. In the Caples Valley deer appeared to be spread evenly throughout the valley. A re-survey in 1982 indicated animal densities had been reduced to levels consistent with grassland and forest regeneration (see Section 7).

In recent years fallow deer have disappeared from many areas formerly occupied, due largely to pressure from commercial helicopter hunters, particularly towards the south of their range in the Snowdon stewardship area. The herd is now generally confined to the Greenstone-Caples valleys area although a few animals may still remain along the northern boundary of the Snowdon stewardship area. The territorial habits of fallow deer indicate that they are not likely to regularly infiltrate into surrounding National Parks and other areas.

A further animal survey was carried out in 1987. This indicated a stabilising deer population (red and fallow), presumably as a result of RHA management. Results from the 1987 survey indicate low - moderate deer densities (138 groups/ha point - distance analysis, 10% pellet frequency presence - absence analysis).

Nugent (1987) has shown that fallow deer can be controlled by recreational hunting in the Blue Mountains RHA.

As the fallow herd has not extended its range greatly since its initial spread, and especially as it has not moved into neighbouring Fiordland National Park, it is considered appropriate to manage the herd under a RHA wild animal control plan.

4.2 RED DEER

Eight Red deer (a gift from the Duke of Bedford, Woburn Abbey, England) were liberated in the Lake Wakatipu area by the Government Tourist Department in 1903 Wodzicki (1950). No further liberations occurred but the herd quickly established and spread throughout the district.

Recently there have been only isolated sightings reported in the RHA - mostly in the heads of the Caples and Greenstone Valleys.

There is still a negligible number of Red deer in the Caples Valley. In the Greenstone more Red deer occur, mainly in the McKellar region, where they enter the RHA from nearby Fiordland and Mt Aspiring National Parks.

Red deer will be managed at population levels which are not detrimental to conservation objectives or the management of the Fallow deer herd. Recreational hunting restrictions (except seasons) will not apply to Red deer.

If deemed necessary and if monitoring surveys were to indicate that deer numbers were generally too high, then Red deer would be the first animal to be controlled.

4.3 CHAMOIS

Chamois (*Rupicapra rupicapra*) of Austrian stock were liberated in the Mt Cook region for sporting purposes in 1907 when the Austrian Emperor gave eight animals to the New Zealand government (Wodzicki 1950). Another two were released in 1914. Only one survived, so today's population descended from these nine animals. Chamois soon increased their range along the Main Divide both to the north and to the south. The present southern extent of their range is the northern sector of Fiordland National Park, although isolated individuals have been sighted further south.

For the purposes of the RHA, chamois are considered as an animal of secondary importance, which must be kept to low numbers to lessen any chance of excessive browsing of the alpine vegetation, and infiltration south and west into Fiordland National Park.

In an endeavour to restrict the range and spread of chamois into nearby Fiordland National Park, pursuant to its wild animal control plan, there may be periodic sweeps by Department of Conservation supervised helicopter hunters to eliminate where practical or keep this species at very low numbers. Recreational hunters will be encouraged to hunt chamois at every opportunity. Recreational hunting restrictions (except seasons) will not apply to chamois.

4.4 POSSUMS

The brush-tailed possum (*Trichosurus vulpecula*) was liberated in the Otago region in 1891 in three separate localities by the Otago Acclimatisation Society. Unfortunately few precise records of importations are to be found in the annual reports of Acclimatisation Societies but it appears that those in Otago were imported from Gippsland, Victoria, and Tasmania. Through natural spread and illegal liberations by trappers the possum soon became widespread and within 25 years was abundant enough to warrant trapping.

Possum numbers and fur prices have been sufficiently high at times to attract skin operators. The Department of Conservation administers commercial trapping and poisoning activities in the RHA under a block and permit system.

Recent surveys show some increase in possum populations over the last ten years to moderate-high densities in some areas. Should current possum densities threaten conservation objectives, or should animal diseases such as bovine TB arise, the Department of Conservation will introduce additional control methods. (See section 8.)

Possums are not considered a game animal for the purpose of the RHA. Their numbers will be monitored by the Department of Conservation and controlled as necessary. Commercial operators will be encouraged to work in all areas where their activities do not conflict with conservation management operations or with other forest users.

5

OBJECTIVES OF THE WAC PLAN

The Wild Animal Control Act 1977 and Department of Conservation policy specifies that the primary objectives of management will be the maintenance of conservation, soil and water values in a satisfactory state. The objective of managing a wild game herd within a RHA specifically for recreational hunting is secondary to this.

However, recreational hunting has been shown to exert a significant level of control over fallow deer in the Blue Mountains RHA (Nugent 1987). Therefore, recreational hunting will be used as the primary means of controlling fallow deer to meet the area's conservation objectives.

Vegetation and wildlife surveys of the Caples and Greenstone Valleys show that the forested and alpine areas harbour a number of native bird and insect species. The RHA also covers nearly a third of the Dart Ecological District, including most of its southern sector. Therefore, it is essential that the indigenous beech forests and alpine grassland habitats retain the capability to regenerate themselves after environmental disturbance (eg, fire, windthrow, insect attack, etc). Past evidence (see section 4.1) indicates that an uncontrolled deer population will prevent forest and grassland regeneration. Deer control, with an emphasis on trophy hunting, will maintain a healthy herd of animals at low densities. This low population level is most likely to be consistent with grassland and forest regeneration.

The conservation objectives for land management for the Wakatipu RHA are therefore (in order of priority):

- 1 Maintenance of the ability of the alpine grasslands and beech forest to regenerate naturally after environmental disturbance.
- 2 Maintenance of indigenous wildlife populations within the area, particularly for the following species:

New Zealand Falcon	<i>Falco novaeseelandiae</i>
Kaka	<i>Nestor meridionalis</i>
Kea	<i>Nestor notabilis</i>
Yellowhead	<i>Mohoua ochrocephala</i>
Rock Wren	<i>Xenicus gilviventris</i>
Bush Robin	<i>Petroica australis</i>
Parakeet	<i>Cyanorhamphus auriceps</i>
- 3 To maintain existing soil and water values.
- 4 To manage the wild animals present within the RHA and to maintain adequate control of the population by recreational hunting to meet objectives 1, 2 and 3.
- 5 To ensure continuing public access.
- 6 To provide appropriate recreational facilities in the area for recreational hunting and other activities such as tramping and fishing.

Past surveys have indicated that an ungulate density of $15\% \pm 4\%$ pellet frequency is consistent with the above conservation objectives (see section 7), and can be used as a guide for achieving them. Assessment of wild animal abundance, using pellet frequencies, are explained in Baddeley (1985).

Regular monitoring of wild animal densities, vegetation condition and indigenous wildlife will be required to ensure that the recommended ungulate density is suitable for the maintenance of the conservation objectives. The $15\% \pm 4\%$ recommended ungulate density will be reviewed annually.

The wild animal control plan, while conforming to the above conservation objectives, also has as its specific objective the management of the fallow deer herd to maximise recreational hunting opportunities.

The objectives for herd management in the RHA are therefore (in order of priority):

- 1 To ensure that the fallow deer population remains stable at a level of $15\% \pm 4\%$ pellet frequency by encouraging recreational hunting, and maximising recreational hunting opportunities.
- 2 To improve herd viability and trophy potential by improving habitat quality, and selective culling of inferior animals (see section 8).
- 3 To have the RHA regulations apply to the Wakatipu fallow deer herd on occupied lands of other tenure adjacent to the RHA (see section 6.5).
- 4 To ensure strict law enforcement against RHA offenders.

Management shall conform to the criteria and guidelines appended to this plan and part III of the Wild Animal Control Act 1977 (Appendices 1 and 2).

6

RHA MANAGEMENT

In considering management options for this RHA hunting must be manipulated to ensure adequate coverage of available area, access limitations must be recognised and impact of recreational hunting monitored. The means of effective deployment of recreational hunting for wild animal control, the resources available to service hunting activity and permit allocation also require consideration. To this end, a RHA management committee will be formed, and consulted annually on matters relating to recreational hunting in the area.

The requirement of the Department of Conservation to meet its conservation objectives must, however, remain primary considerations.

As animal populations and seasonal distribution patterns may change, prescriptions must be flexible to enable hunters to be deployed effectively.

This section not only provides options for management but also prescribes the course of action considered most appropriate bearing in mind the conservation objectives.

6.1

PERMIT SYSTEMS

A block system will be implemented in the RHA. Hunting will be by permit only. Block boundaries may change between seasons at the discretion of the regional conservator.

Should demand for permits increase, eg, during the roar, to a level where public safety may be endangered, then it may be necessary to introduce some controls on issuing permits.

Hunter numbers or movement may be restricted for reasons of public safety. The number of rifles per block is at present limited to six but this may be increased at the discretion of the regional conservator dependent on demand and distribution of hunters.

Information for hunters and other users will be provided by Department of Conservation staff.

At present separate permits are issued for each block for a maximum seven consecutive day period. As this practice appears to work well it will be continued in the RHA.

Permits will therefore be issued for a maximum of a seven day period for each block.

To ensure that conflicts with forest management and other users are minimised, numbers of permitted hunters may be controlled by limited permit issues or by manipulating the term of permit to suit demand.

All permit conditions will be reviewed annually after consultation with RHA management committee.

6.2

PERMIT ISSUE

To maintain efficient management of the recreational hunting area it is desirable to have all permits issued from one office.

This will be done from Department of Conservation Ranger Station, Glenorchy and can be booked by phone, letter, or in person, up to six months in advance with confirmation not less than two weeks prior to the entry date.

Following confirmation, permits may, by arrangement from the Ranger Station Glenorchy, be posted out, or collected in person from there.

The Government at present has a cost-recovery policy of "user pays". It may therefore be necessary in the future to charge an administration fee for the issuing of permits within the RHA.

The permit fee may be reviewed annually.

All permits for hunting will therefore be issued from Department of Conservation Ranger Station Glenorchy and may be booked in advance, but must be confirmed two weeks prior to hunting.

Permits may be balloted for, or issued on a first come first served basis depending on demand.

6.3 CONDITIONS OF USE

The Wild Animal Control Act 1977 defines "recreation" in relation to hunting as : "a pastime with the object of obtaining relaxation without gaining pecuniary reward or gain from hunting or from the sale of any wild animals or part thereof".

The Act also defines "commercial" in relation to hunting or killing or capturing or holding any wild animal as : "so doing for personal gain or pecuniary reward from the sale, barter, exchange or giving of the animal or part thereof, whether or not the commercial activity of the means of livelihood of the commercial operator".

Recreational hunters shall not remove from the recreational hunting area any carcass that is in a saleable condition under the Game Regulations 1975 (see Appendix III), or any deer antler velvet or any live deer.

No commercial hunting of deer shall be undertaken within the RHA except under the conditions set down by section 27(3) (a) of the Wild Animal Control Act, 1977.

Possum hunters are excluded from the prescriptions of this plan, and commercial hunting of possums under permit will be encouraged.

Commercial possum hunting shall continue by permit but no firearms will be allowed except under a separate RHA permit. Commercial possum hunting shall be administered by the Glenorchy Ranger Station and shall not restrict recreational hunting in the RHA. An administration fee of \$6.00 per permit (including GST) is payable on application to the Glenorchy Ranger Station for a commercial possum hunting permit.

6.4 KILL RETURNS

All hunters using the Wakatipu RHA will be required to submit a kill return. Nil returns and nil permit use information must also be submitted. Returns will include details of species kills, sexes, condition of animals killed and time spent hunting.

This information as well as additional sampling prescribed in sections 7 and 9.1 will assist the management of the RHA by providing information on hunter effort and success as well as sex and approximate age of animals killed.

All permit holders for the RHA shall at the expiry of the permit complete a kill return and submit it to the DOC Ranger Station, Glenorchy. Additional data shall be supplied by hunters as required.

6.5 GENERAL PERMIT CONDITIONS

The Department of Conservation, in consultation with the RHA management committee, will design permit conditions specially for the RHA. These conditions will cover aspects of hunting relating to use of campfires, types and calibre of rifle, specifications for hunting bows, use of dogs, hunting seasons, block boundaries, bag limits and any other hunting restrictions.

It should be noted that conditions controlling hunting may be changed as experience is gained in management of RHAs.

In the interests of safety of other users there will be no hunting along main valley tracks or within 100 metres either side, nor on leasehold land or land of other tenure or status under Department of Conservation permit.

The Department of Conservation will continue to encourage pastoral lessees participation in applying appropriate management principles to hunting fallow deer on adjacent freehold and leasehold land.

7 ASSESSMENT AND MONITORING OF ANIMAL DENSITIES AND VEGETATION CONDITION

A reconnaissance survey of the forests and scrublands of the Caples Valley was conducted by the Forest Research Institute in 1971. The survey report (Hayward 1971) described the distribution and composition of main vegetation associations. In the lower forest there was a severe lack of canopy species regeneration, the understory shrubs were depleted, and fallow deer densities were very high. At higher altitudes deer densities were lower and the silver beech forest appeared healthy. Although some heavy understory browsing was evident, adequate saplings for canopy replacement still remained.

A survey conducted in 1976 by Southland Conservancy (Rose 1977) covered State Forest in both the Greenstone and Caples valleys. It described the distribution, composition and structure of forests, assessed forest condition, established permanent vegetation plots to monitor long term trends, and sampled animal densities and distributions. The report found that, apart from low regeneration densities, the forest canopy condition was satisfactory when compared with other comparable dry beech forests. Deer numbers were, however, still considered very high, and needed to be reduced by at least 50% to maintain forest health.

Animal surveys have since been conducted in the area in 1982 and 1987. Overall mean pellet frequencies for surveys from 1976 are:

	DEER	POSSUM
1976	27.0%	11.0%
1982	18.6%	8.0%
1987	10.0%	14.5%

The data indicate that there has been a steady reduction in deer pellet frequencies since 1976, although mean possum pellet frequencies have risen slightly. The 1987 survey shows pellet frequencies to be lowest in alpine grassland areas, and areas greater than 600 m above the valley floor.

Deer pellet frequencies are correspondingly highest in forested areas below 600 m from the valley floor.

Vegetation plots and pellet densities are usually assessed on the same sample lines. Forty nine permanent 20x20 m vegetation plots and 35 animal pellet transects have been established since 1976. The vegetation plots were established to measure changes and trends in regenerating plant species. These data, together with indices of site stability, animal usage and general descriptions, assist with the analysis of plant/animal interactions.

Remeasurement of all these plots at regular intervals in order to monitor animal and vegetation trends is an expensive and logistically difficult task. However, as regular monitoring is essential for proper land and game management in the RHA, a system of regular "walk-through" assessments will be used in conjunction with other data gathering techniques to ensure an up-to-date database.

"Walk-through" surveys will use a range of monitoring techniques, which will include:

- (i) remeasurement of seedling and sapling densities on some permanent 20x20 m plots situated in sites sensitive to change;
- (ii) recording deer and possum densities along existing animal survey transects located in selected sites. Plots are at 20 m intervals;
- (iii) recording animal browsing on preferred plant species using a standardised assessment procedure (see Allan and MacLennan 1983) along the animal transect lines. Browse records will be taken at 100 m intervals;
- (iv) assessing trends in chamois numbers by field inspection and observations by experienced field officers.
- (v) recording bird species presence/absence.
- (vi) alpine and lowland grassland monitoring.

The 49 vegetation plots established in the area have not been remeasured since 1982. This baseline in vegetation condition needs to be updated in order to assess changes in the vegetation as a result of RHA management since 1981. Plots which may be situated in sensitive sites for "walk-through" assessment also need to be identified.

The 49 permanent vegetation sample plots established in 1982 shall be reassessed in the summer of 1989/90.

Further animal pellet and/or vegetation plot surveys could be carried out after 10-15 years, to provide an oversight of the walk-through system, update the baseline information, and to more accurately monitor any overall changes in trends.

Severe depletion of palatable shrub and small tree species, especially beech regeneration, was recorded by Rose (1977). Four animal exclosures already erected in the Caples valley indicate the potential of these forests to regenerate.

In order to assist monitoring of the effects of animals on regeneration, existing animal exclosures shall be assessed using paired permanent 20x20 m sample plots inside and outside. Reassessment of exclosures shall be done in conjunction with permanent plot remeasurements.

As stable forests often show little change in the short term the frequency of reassessment of permanent plots and exclosures shall be subject to periodic review.

Other monitoring procedures are available to assist game management in the RHA. These include:

- (i) movement patterns and distribution (telemetry);
- (ii) monitoring herd dynamics through autopsy data and jawbone age/condition analysis (see section 9.2);
- (iii) stomach contents analysis.

- (iv) spotlight counts in predetermined areas on an annual basis.
- (v) Kill return. jawbone and other data from recreational hunters.

Additional methods of monitoring trends for RHA management will be used from time to time where deemed necessary.

8 WILD ANIMAL CONTROL

The objective will be the maintenance of the fallow deer population at a population density measured below $15\% \pm 4\%$ pellet frequency, through recreational hunting, to ensure that primary conservation objectives are met.

Red deer and chamois populations will be maintained at low levels by private hunting and if necessary by periodic Department of Conservation hunting. A total ban on hunting white fallow deer is in force, as they are a great source of interest to all forest users and can be used as an indicator of other dark fallow in the immediate area.

Possums will be controlled primarily by commercial operators using traps or poison under authority of Department of Conservation permit.

Assessment of wild animal population densities and their impact on the regenerative potential of forests will be carried out at regular intervals as outlined in section 7 (Assessment and Monitoring). Should populations of deer, chamois or possums reach levels that are detrimental to forest or alpine grassland regeneration, the regional conservator will determine the control priorities and the means of achieving the desired reduction in population levels. Recreational hunting will be encouraged as the primary means of deer control.

The Department of Conservation recognises an obligation to maintain animal densities at levels consistent with conservation objectives on land adjacent to the two national parks.

Regular patrols and surveys of the RHA will be undertaken to monitor numbers.

There may be a need in the future, if animal numbers increase, to introduce a culling programme. This programme would be managed by the RHA management committee, and overseen by Department of Conservation staff. It would firstly remove animals considered undesirable, through selective culling. Selective culling of poor animal types would be introduced as the first measure for containing numbers, rather than random shooting of all healthy animals. Recreational hunters will be encouraged to participate in such a programme.

Should deer populations increase to the detriment of conservation objectives then immediate steps to reduce their numbers will be taken. This shall be achieved by (in order of priority):

- 1 Increasing recreational hunting pressure through the permit issuing system. Hunters will be directed to specific areas.
- 2 Introducing a selective culling programme overseen by DOC staff, with recreational hunter participation where feasible.
- 3 Allowing commercial ground or aerial hunters into specified parts of, or the whole RHA along with recreational hunters for a period sufficient to reduce the population to appropriate levels.
- 4 Where shown to be necessary, DOC control will be introduced if the above are not entirely successful.

Deer capture pens, leg traps, nets and snares will not be permitted in the RHA, nor will tranquilliser dart guns or other devices used for injecting narcotics for live animal capture except as may be determined by the director-general of Conservation (Wild Animal Control Act 1977, Part III, Section 29(4)).

Should other species of wild or introduced animals require urgent control because of disease or for conservation objectives, the Department of Conservation will implement appropriate control measures which may include the use of hand laid poison baits for ungulate control, or aurally applied poison baits for possum control.

Night time hunting and or spotlighting will not be permitted in the RHA except during monitoring operations (see section 7) or pest board operations engaged in pest control at the discretion of the regional conservator.

9 RESEARCH

9.1 ASSESSMENT OF HUNTING PRESSURE

Information obtained from permit returns will indicate the areas of greatest hunting success, and where hunters should be directed to. The information will also help in establishing the effects of hunting pressure on the distribution and density of the fallow herd.

Information from permit returns will be used to determine those areas of greatest hunting success. This should assist management by maintaining a balanced control effort over the entire area.

Should further information, hunter views, or ideas be considered necessary during the life of the plan a user survey may be undertaken and the results used to assist management.

9.2 ANIMAL CONDITION

The Department of Conservation will, with the advice of its Science Directorate and the Forest Research Institute investigate the assessment of condition indices for deer from physical measurements, the ecology of deer, better techniques for assessing changes in vegetation conditions and trends, and wild animal population densities and distribution, as considered necessary.

In order to assist in assessment of condition indices recreational hunters are:

- 1 Requested to return lower right jawbone of deer together with their permit returns.
- 2 Requested to allow DOC staff at Glenorchy to measure and grade according to the Douglas score, all antlered heads taken as trophies.

ADMINISTRATION

The Wild Animal Control Plan for the Wakatipu RHA shall be administered by the regional conservator, Dunedin. He shall be responsible for issuing hunting permits, collection of kill returns and hunter statistics and herd condition information. He shall also ensure compliance with the conditions of use of the RHA as may be detailed in regulations, permits or the wild animal control plan.

The regional conservator and staff from Otago Conservancy will be responsible for producing an annual report summarising use statistics, and reviewing and recommending changes to the Wild Animal Control Plan so as to more effectively manage the RHA.

The monitoring of vegetation condition and animal densities within the RHA shall be the responsibility of the regional conservator, Dunedin, and staff from Otago Conservancy.

The Wild Animal Control Plan shall be reviewed at intervals not exceeding five years.

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APPENDIX 1

WILD ANIMAL CONTROL ACT 1977

PART III

RECREATIONAL HUNTING

27 Declaration of Recreational Hunting Areas

- 1 The Director General may from time to time, by notice in The Gazette, subject to such conditions as he may indicate publicly notify that any area of Crown owned land (other than national park land or maritime park land), and any other land included with agreement of the owner or occupier or land controlling authority, being land on which wild animals are present, shall form or be part of a recreational hunting area where hunting as a means of recreation is to be used to control (though not exclusively) the number of wild animals.
- 2 The Director General shall not declare any land other than State forest land as a recreational hunting areas unless he has first sought the views of, and received written approve to such use of the land from the person or board or authority or Minister having or charged with the administration or control of the land.
- 3 The Director General may at any time vary or revoke any such notice, or the conditions under which any recreational hunting area may be used; and where studies and investigations have shown that the presence of wild animals is detrimental to the maintenance of the land and vegetation or the natural waters flowing through the land in a satisfactory state, he may:
 - (a) permit for a specified period the hunting of all or any part of the are by wild animal recovery hunters under Department of Conservation supervision;
 - (b) introduce control measure carried out by conservation officers and employees; or
 - (c) agree to allow for a specified period a trial of intensive recreational hunting;
- 4 The Director General may at any time carry out control operations against any species of wild animals not sought after by recreational hunters in a recreational hunting area, or such species of wild animals as are not listed in a wild animal control plan for an area as animals to be controlled by recreational hunting.

28 Management of Recreational Hunting Areas

- 1 Each recreational hunting area shall be managed under a wild animal control plan issued by the Director General and revised from time to time at intervals no greater than five years.

- 2 Not less than one month before any such plan is prepared or revised the Director General shall advertise, on two occasions in at least one local newspaper and on two occasions in one major newspaper circulating in the district wherein the area lies, his intention to revise, or to prepare a wild animal control plan for the management of the recreational hunting area, and inviting submissions or proposals for the hunting of the area.

29 National Recreational Hunting Advisory Committees

The Minister may set up a Recreational Hunting Advisory Committee composed of such persons as the Minister thinks fit, or of representatives of organisations whose object is to foster hunting or shooting in recreational hunting areas, any Advisory Committee so established shall hold office during the pleasure of the Minister, and shall have such functions and powers as the Minister may decide.

Relevant Definitions

"Hunt or Kill" in relation to wild animals, includes:

- (a) hunting or searching for any wild animal, and killing, taking, trapping, capturing, having in possession, tranquillising or immobilising any such animal by any means;
- (b) pursuing, disturbing or molesting any such animal;
- (c) taking or using any dog, firearm, vehicle, vessel, aircraft, net, snare, trap, poison or like method while engaged in hunting any such animal, whether or not this results in capturing or killing any such animal;
- (d) attemptation to hunt or capture or kill any such animal while engaged in recreational, commercial, or guided hunting or hunting to capture live wild animals for export, farming, sale, breeding, exchange, public display, scientific, or other purposes.

"Recreation"

In relation to hunting means hunting as a pastime, or with the object of obtaining relaxation, without gaining pecuniary reward or gain from the hunting, or from the sale of any wild animal or part thereof

"Sale"

Includes barter and exchange for consideration, and also includes offering or attempting to sell, or receiving for sale, or having in possession for sale, or exposing for sale, or sending or conveying or delivery for sale, or causing or allowing to be sold or raffled or offered or exposed for sale; and "Sell" has a corresponding meaning.

"Wild Animal"

- (a) Means:
 - (i) any deer of the family Cervidae;

- (ii) any chamois, thar, wallaby, or possum;
- (iii) any goat that is deemed under section 20 of this Act to be a wild animal;
- (iv) any pig that is not being herded or handled as a domestic animal or kept within an effective fence or enclosure for farming purposes.

APPENDIX II

CRITERIA FOR SETTING ASIDE RECREATIONAL HUNTING AREAS

Recreational hunting areas should generally have the following qualities:

- (a) accessible to a significant large urban population;
 - (b) distinctive because of the species, trophy quality or recreational values of the wild animals therein;
 - (c) pleasant or challenging topography, vegetation, climate or other natural features, or attractions with particularly stable land forms;
 - (d) contain recreational hunting values so great that they should be catered for, following zoning if necessary, to provide a national recreational hunting area;
 - (e) not subject to stringent controls on recreational hunter use, or conflict with production values, ie, water, wood, which cannot be overcome by zoning, though land areas available may be subject to limitations on time (seasonal/daily) they are available to hunters under set conditions of use.
- NB** Exotic production forests may be proposed and parts of large exotic forests may be suitable for such management.

APPENDIX III

EXTRACT FROM THE GAME REGULATIONS 1975 PART V:

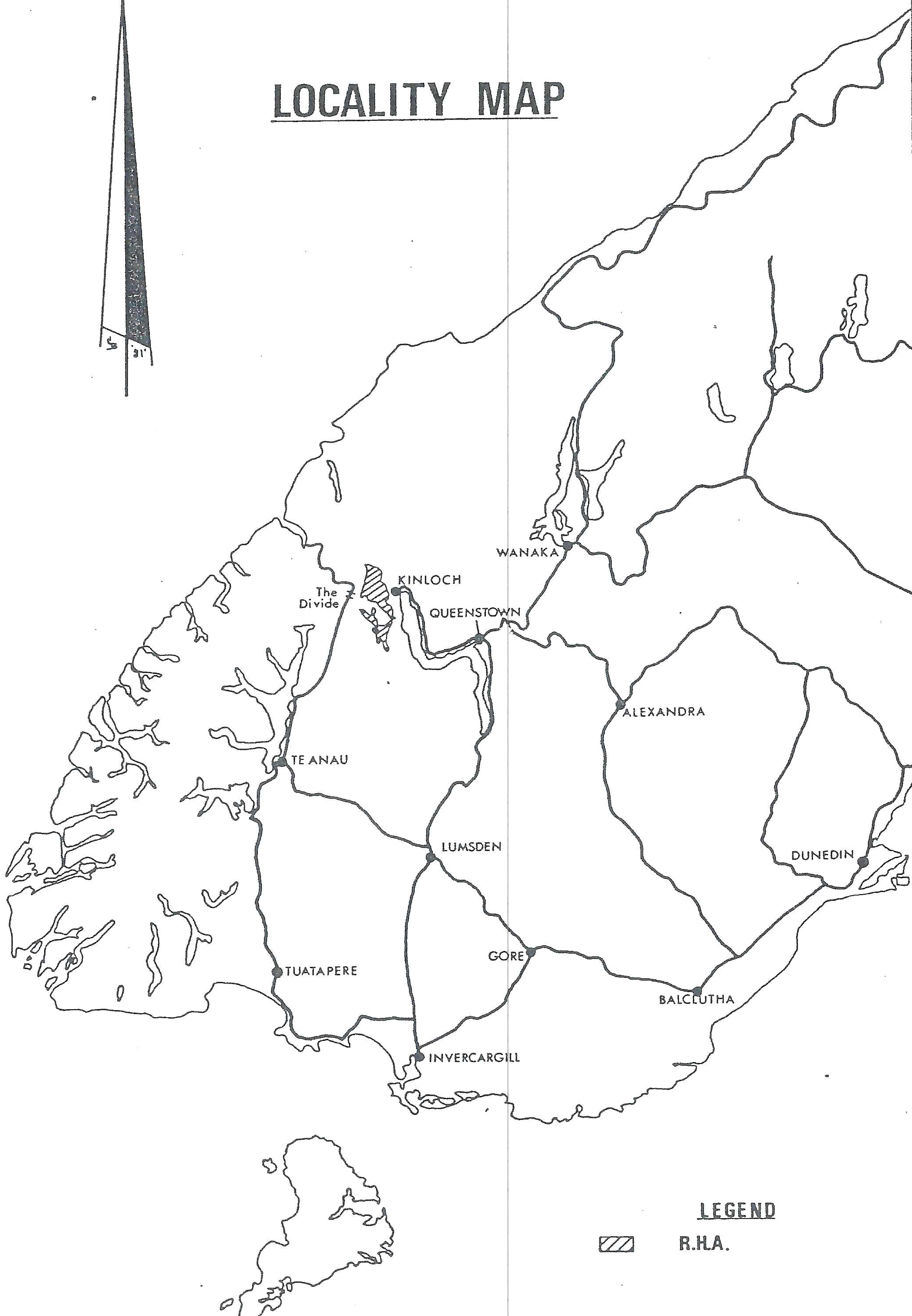
The following extract outlines the definition of a wild animal carcasse in "saleable" condition:

Procurement of Killed Game

83. Killed game to be bled and eviscerated - (1) All killed game shall immediately after being killed, be bled, opened, and the alimentary and urogenital tracts, except for the kidneys (and the pizzle in males), removed, but shall not be skinned.

(2) The heart, lungs, liver and kidneys shall be partially freed from, but remain attached to, the carcass of any killed game, but the Director may approve any other method of dealing with those organs if he is satisfied that any such alternative method will maintain proper standards of hygiene and the quality of the game and ensure that the organs are identified with the carcass.

LOCALITY MAP



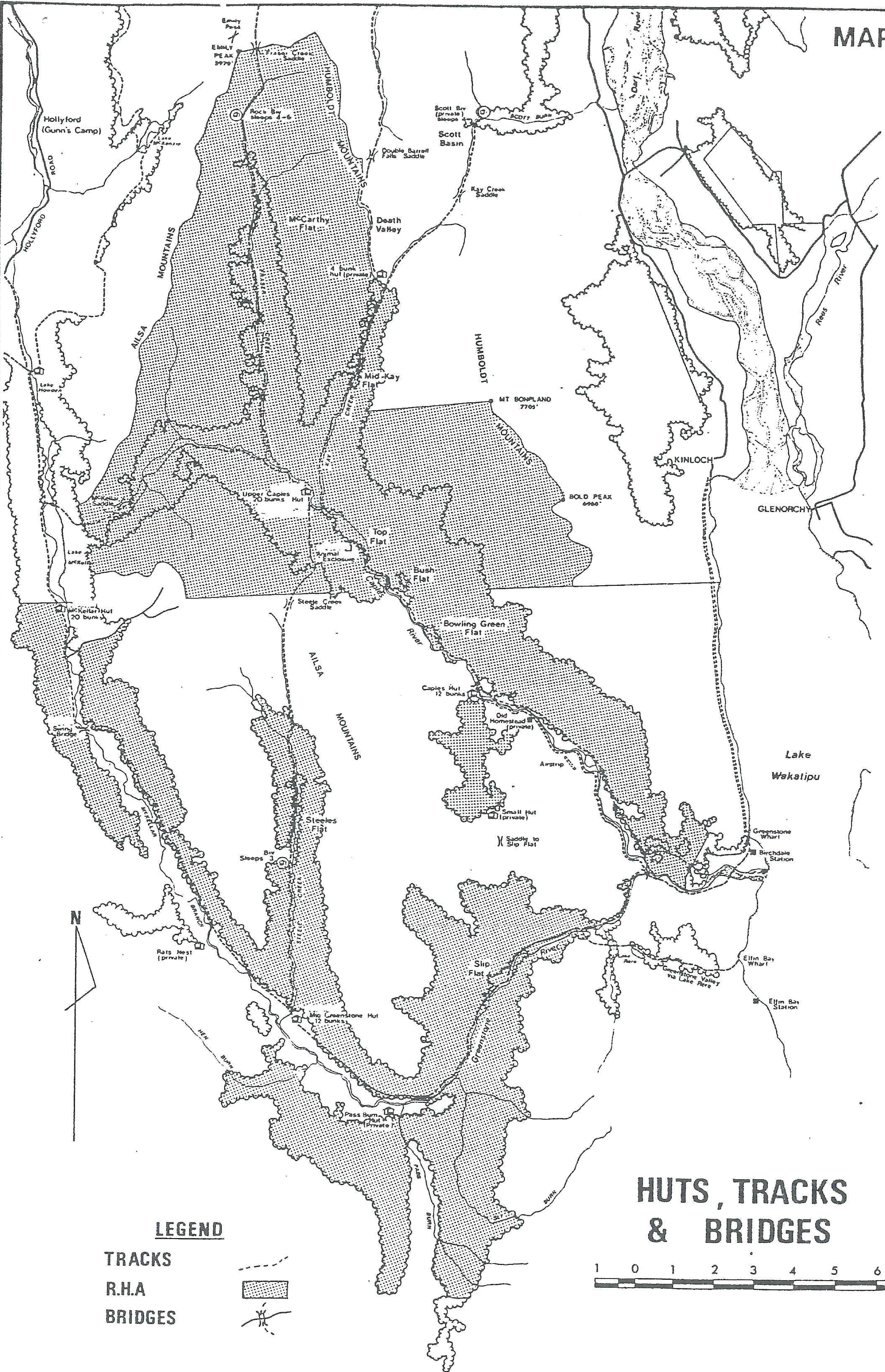
LEGEND



R.H.A.

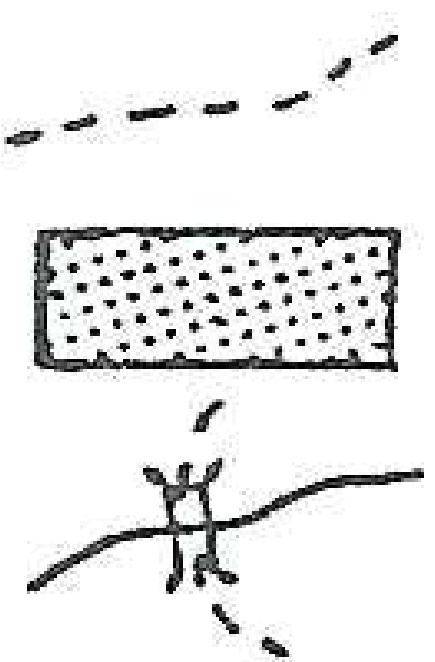
20 0 20 40 60 80 100 km





LEGEND

TRACKS
R.H.A
BRIDGES



**HUTS, TRACKS
& BRIDGES**

