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ASSESSMENT OF RECOMMENDED AREAS FOR PROTECTION FROM
MORVEN HILLS PASTORAL LEASE, LINDIS ECOLOGICAL DISTRICT

(Short Answers in Conservation Science)

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**ASSESSMENT OF RAPS FROM MORVEN HELLS PASTORAL LEASE,
LINDIS E.D. 1-2 June 1993**

Report to Department of Conservation

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Introduction

Two days (June 1 and 2, 1993) were spent assessing the five first priority Recommended Areas for Protection (RAPS), A2 to A6 and the one second priority RAP, B5, on Morven Hills Pastoral Lease in accordance with the brief from the Department of Conservation:

1. Advice on hawkweed infestation levels in montane to low-alpine Morven Hills RAPS (5). The possibility of using these RAPS as a model for hawkweed infestation in other RAPS in Otago (Manorburn E.D.) or elsewhere.
2. Projected short term/long term infestation levels on Morven Hills RAPS under current land management regime (Trends).
3. Advice on management options on infested RAPS to reduce hawkweed infestation. Should RAPS be revised, deleted or expanded? Should grazing continue, at what level, type etc? What type of monitoring is applicable in these circumstances?

These RAPS had been identified as part of the Protected Natural Areas (PNA) survey of the Lindis Ecological District (Ward et al. 1987). All but two of the RAPS (A4 and A5) were visited in the company of Mr D. Gage, Department of Conservation, Dunedin. Weather conditions were damp and cool with passing showers and continuous low cloud cover. RAPS A4 and A5 were seen from the Lindis Highway but persistent low cloud and valley fog on June 2 precluded an examination of either RAP with binoculars from the opposite slopes above Dip Creek. These two small RAPS, being both of forest remnants, were considered less critical in relation to the main purpose of the exercise. Most of the RAPS (A2, A3, A4, A5, B5) had been visited with the PNA survey team in 1986, in my capacity as scientific adviser to the team.

Method

An attempt was made in the time available to obtain an adequate assessment of each RAP together with that part of Lindis Pass Scenic Reserve within Morven Hills Station, as well as the area between RAPS A2 and A3. Qualitative descriptions were made and are indicated on the map supplied to the Dunedin Office of the Department, which also outlines all the RAPS on Morven Hills, together with the Lindis Pass Scenic Reserve, roads and access tracks.

Results

Areas recommended for protection have been indicated on the map supplied to the Dunedin Office in relation to the RAPS proposed in the original survey. Only the lower elevation part of RAP A3 is recommended for exclusion while some additional areas are recommended for inclusion.

1. **Lindis Pass Scenic Reserve.** About half of this 440 ha Scenic Reserve is within Morven Hills run. Snow tussock cover is highly variable from 50% to nil but, where present, is up to 1.2 m tall and apparently healthy, without sign of recent burning or severe grazing. The subdominant fescue tussock cover is generally weak and locally dead, apparently in relation to

the degree of hawkweed infestation associated with it. Hawkweed, predominantly mouse ear (*Hieracium pilosella*) but up to one-third king devil (*H. praealtum*) in places, dominates locally on ridge crests and north to northeast aspect slopes, and generally provides about 30% of the ground cover. Up to 20% of the ground is bare soil. There is a reasonable diversity of indigenous intertussock species present.

Despite being rejected as an RAP by the survey team the tussock grassland vegetation probably has some potential to recover in the absence of sheep grazing and, given the high landscape values and proximity to the highway, should continue to be reserved but without grazing.

2. RAP A2, Double Peak (650 ha). A topographically diverse area between the Lindis Pass Scenic Reserve and upper Dip Creek. Shady faces retain narrow-leaved snow tussockland in generally good condition with tussock to 1.2 m tall and up to 50% cover but with locally conspicuous hawkweeds, mostly *H. pilosella* but also *H. praealtum* and some *H. lepidulum* (tussock hawkweed) among a diverse community. Hard tussock (*Fescue novae zelandiae*) dominates extensively and mouse ear hawkweed locally on sunny faces while red tussock (*Chionochloa rubra*) plants are scattered among snow tussock down the broad alluvial surfaces of the valley floor. Associated species are generally diverse.

The general condition of this area is satisfactory and adequate to justify its continued recognition as an RAP.

3. RAP A3, Chain Hills (1230 ha). Given the weather conditions, this RAP was accessed via the vehicle track on its boundary with RAP B5 up to an elevation of c. 1000 m. Here the condition of the narrow-leaved snow tussockland is generally poor with only 5-20% cover of snow tussock and up to 40% cover of hard tussock in a generally weakened state, probably because of abundant mouse ear hawkweed (to 20 - 40% cover). Most of the fescue tussocks here were partly dead and could be readily plucked from the ground. There were many small mounds of bare soil, several covering vegetation and apparently recently deposited, perhaps by earthworms. Frost heaving had been recently active on the c. 15% of bare ground. Exotic species in addition to hawkweeds include browntop (*Agrostis capillaris*), sweet vernal (*Anthoxanthum odoratum*), cats ear (*Hypochoeris radicata*) and sheep sorrel (*Rumex acetosella*) in general provide more cover than the many native species present (*Raoulia subsericea*, *Leucopogon fraseri*, *Acaena caesiiglauca*, *Celmisia gracilentia*, *Brachyglottis bellidioides*, *Schoenus pauciflorus*, *Poa colensoi*, *Deyeuxia avenoides*, *Pimelea oreophylla*, *Gaultheria depressa*). Juvenile plants of snow tussock are not uncommon in the area.

These mid-altitude slopes probably have deteriorated somewhat since the PNA survey was conducted but the grassland condition improves with increase in elevation. The slim snow tussockland and associated boulderfields above c. 1100 m appear to be in good condition (as was confirmed for a similar area between RAP A2 and RAP A3 to be discussed later).

The area of fescue tussockland of this RAP, below the transmission line at c. 900 m, however, is more obviously depleted, with a greater abundance of hawkweed and is of doubtful conservation value. The remainder of the RAP, however, appears to have some potential for recovery if grazing is terminated.

4. RAPs A4 (Dip Creek, 10 ha mountain beech stand) and A5 (Dip Creek, 20 ha; Halls totara stand), on a steep, relatively inaccessible rocky south aspect slope and taking in the lower section of Dip Creek, could not be visited in the time available, or viewed other than from the

highway because of persistent valley cloud on the second day when a closer examination was planned. Security and integrity of the conservation values could be enhanced for these two RAPS with the inclusion of the entire steep rocky southern aspect slope of the gorge above the highway.

Tussock hawkweed was listed in the PNA report as being abundant among the generally exotic ground cover. While it probably still persists here this should not affect the viability of the mountain beech stand. It is doubtful if the condition of either of these RAPS has changed since the survey was conducted since both sites are relatively inaccessible to stock.

5. RAP A6, Morven Hills (330 ha). Occupying broad undulating ridges and generally shallow but asymmetric gully sides and stream beds, this area appears to have been recently subjected to heavy grazing. The broad ridges and northern aspect slopes, especially around the margin of this RAP, are now very highly modified with a generally sparse cover of mostly exotic species particularly grasses, clovers and hawkweeds. The areas of narrow-leaved snow tussockland on south aspect slopes and of open, mixed size kanuka shrubland on rocky and sunny slopes appear to be little changed from the original descriptions. A broad flattish ridge crest at c. 680 m on the western side of the RAP is occupied by highly depleted fescue tussockland with very thin to absent soil and up to 60% stone pavement. A sparse ground cover of scabweeds (*Raoulia australis*, *R. apice nigra*, *R. parkii*), *Stellaria parviflora*, *Carex brevifolia*, *Trifolium dubium* and two distinctive semi-arid species, the minute grass *Poa maniototo* and the yellow ground lichen *Chondropsis semiviridis* are both abundant.

This RAP appears to have deteriorated in condition much more than any of the others but, given its distinctive landform and vegetation, representative of the Georges Land System, plus the presence of a population of Otago skink (*Leiolopisma otagense*), it remains worthy of protection. Removal of grazing should improve the condition of much of the RAP but the future of some of the perimeter areas is unpredictable. Monitoring would be highly desirable if protection and destocking were achieved.

7. RAP B5 West Chain Hills (540 ha). A currently heavily grazed block of mixed narrow-leaved snow tussock-fescue tussockland with numerous sheep tracks and up to 20% bare ground on north facing slopes. Fescue tussockland on the lower slopes remains depleted with abundant hawkweeds (*H. pilosella*, *H. praealtum*, *H. lepidulum*) but there are some patches of red tussockland in moist depressions with some distinctive associated species - Maori onion (*Bulbinella angustifolia*), *Schoenus pauciflorus*, *Juncus* spp., *Carex sinclairii*, *Pernettya nana*) together with abundant browntop and yorkshire fog. South-facing slopes at mid altitudes and the higher altitude slopes of *C. macra* snow tussockland with associated boulderfields, appear to be much less degraded. The existing fence on the southern side would be an acceptable boundary.

Areas beyond RAPS

1. Non designated Area 1. Located between RAPS A2 and A3 and extending to ridge crest at Old Man Peak (c. 1000 ha). Type and condition of vegetation generally similar to RAPS A2 and A3 bordering it but including extensive boulderfields along ridge crest to north and south of Old Man Peak (which is the logical boundary to the Lindis Ecological District in this area). The continuity and upper elevation extension provided by this addition would improve both the protection, integrity and representation of the area to be protected.

2. Non-designated Area 2. Located between the southern boundary of RAP A3 and the southern boundary of the property (c. 700 ha). This proposed addition includes slim snow

tussockland on the upper slopes. Unfortunately this area could not be visited in the time available.

Conclusions and Recommendations

The landscape and nature conservation values of the Lindis Ecological District in the vicinity of the Lindis Pas are widely recognised. However, both qualities have deteriorated over recent decades and continue to deteriorate because of pastoral practices associated with traditional management of the high country. Infestation by three species of hawkweed, but particularly by mouse ear, *Hieracium pilosella*, is general on all non-arable land investigated on Morven Hills pastoral lease and is locally very serious, undermining both productive and nature conservation values of the tussock grassland ecosystems.

Because of the current uncertainty as to the cause of the recent hawkweed explosion but with the evidence that full protection of snow tussockland can allow both measurable improvement in snow tussock cover and associated decline in the cover of mouse ear hawkweed in some situations (Dickinson *et al* 1992), formal protection and conservation management of that part of Lindis Pass Scenic Reserve, all six RAPs recognised in the Lindis PNA survey and some intervening areas on Morven Hills Pastoral Lease are recommended. Acquisition sooner rather than later would be preferred in terms of hopefully arresting or at least retarding the apparent continuing decline in condition of the tussocklands within the areas being recommended. Since exclusion of stock from such areas would be a matter of priority, boundary readjustments have been recommended largely to facilitate such control although considerable additional fencing would be required along much of the lower boundary of the area embracing RAPs A2, A3, B5 and the scenic reserve, to achieve this. RAP A6 is already fenced. The fencing of the enlarged area recommended to embrace RAPS A4 and A5 is less important at this time but would be desirable ultimately.

Monitoring of representative areas using the height/frequency method (Dickinson *et al.* 1992) should be initiated as soon as formal management control of part or all of the area by the Department of Conservation has been achieved.

I am unable to comment on the possibility of using the Morven Hills RAPs as a model for hawkweed infestation in other ecological districts. Such advice could only come after comparable monitoring in this and other areas such as was initiated in the Manorburn E.D. in 1991 (Harris and Mark 1992).

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