

## **Crown Pastoral Land Tenure Review**

**Lease name: BEN NEVIS**

**Lease number: PO 241**

### **Public Submissions - Part 13**

These submissions were received as a result of the public advertising of the Preliminary Proposal for Tenure Review.

**July**

**10**



## Introduction

1. My name is Kelvin Michael Lloyd. I have been employed as a Senior Ecologist and Botanist with Wildland Consultants Ltd since 2004, based in Dunedin.
2. I hold the degrees of Doctorate of Philosophy and Bachelor of Science with First Class Honours, both obtained from the University of Otago, where my studies were undertaken at the Department of Botany. Subsequent to University study I was briefly self-employed as an ecological consultant, prior to being awarded a three year Post-Doctoral Fellowship from the Foundation for Research, Science and Technology, during which I was employed by Landcare Research Ltd in Dunedin.
3. I am an author of 16 scientific papers published in peer-reviewed national and international scientific journals, as well as several popular articles. My scientific papers describe research on tussock grassland ecology and evolution, the ecology of rare plant species, ecological responses to disturbance, and weed invasion. I have presented aspects of my research at national and international scientific conferences. I am an honorary research associate of Landcare Research Ltd and continue to research and author scientific papers. I am also a member of the New Zealand Ecological Society, the Ornithological Society of New Zealand, the New Zealand Plant Conservation Network, the New Zealand Botanical Society, and the Botanical Society of Otago.
4. My work as an ecological consultant has covered a wide range of vegetation types throughout New Zealand, including wetlands, grasslands, shrublands, forests, and alpine vegetation. This work has included ecological investigations of many areas of upland vegetation in Otago, including sites on the Kakanui Mountains, Lammermoor Range, Maungatua, Rough Ridge, Carrick Range, Kawarau Gorge, and Skippers Saddle.
5. The topic of my PhD was the comparative ecology of rare and common species, using New Zealand species of *Acaena* (bidibids) and *Chionochoa* (snow tussocks). As a consultant, I have undertaken

many targeted searches for threatened and uncommon plant species throughout the South Island and in the lower North Island.

6. I have a very good knowledge of the vegetation of the southern South Island, and have undertaken many assessments of the significance of stands of indigenous vegetation in Otago and Southland, in relation to both Section 6(c) of the Resource Management Act 1991 and Section 24 of the Crown Pastoral Land Act 1998. I have provided assessments of ecological effects for a wide range of development activities in natural areas within the region, and helped district councils write rules for the recognition and protection of significant natural areas in relation to the requirements of Section 6(c) of the Resource Management Act 1991.
7. I was a member of the Parliamentary Commissioner for the Environment's (PCE) external reference group for their recent investigation of the high country tenure review process. I wrote a technical report on the ecology of the high country which is annexed to the PCE's tenure review investigation report.
8. I helped deliver nationwide workshops on use of the recently developed Threatened Environments Classification developed by Landcare Research, and as a consequence I have a good understanding of the classification and the strengths and weaknesses of the databases that underly it.
9. I have driven through the Nevis Valley on several occasions, and visited the nearby Old Woman Range several times for scientific research. I have assessed indigenous vegetation and the effects of grazing in an unnamed tributary catchment of the Nevis River, north of the Potters Creek catchment, and on the Meg Faces above the Kawarau River, during the Mt Difficulty Pastoral Lease tenure review process. I have also undertaken field work in the Mt Tennyson area at the head of the Nevis Valley.
10. I confirm I have read and agree to apply with the Code of Conduct of Expert Witnesses (July 2006). This evidence is within my area of expertise, except where I state that I am relying on what I have been told by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

### Summary of Evidence

11. I have been asked to assess the regional and national context of indigenous vegetation and plant species on the Nevis valley floor, particularly as their distributions relate to the Nevis River and the area that could potentially be inundated under the current water conservation order.
12. I initially undertook this assessment as a desktop exercise that considered the lower Nevis valley. Where my opinions rely on information from other sources, I indicate the source of the information in my evidence. Following directions from the Court, I undertook a visit to the Nevis Valley on 6-7 October 2009 to assess the distribution of threatened and uncommon plant species across the valley floor, and assess their connection to the Nevis River and its processes.
13. By the term 'valley floor', I mean the lowest lying periodically flooded plain that has been formed by Nevis River processes between the lowest terrace scarps. This area includes mining tailings, tributary stream courses, and flood channels of the Nevis River (Figure 2).
14. During the field survey I was accompanied by Ms Sue Maturin and Mr John Turnbull of the Royal Forest and Bird Protection Society, who assisted with searches for threatened plants. The field survey involved approximately 8 hours of searching time. Only the lower valley floor (from Nevis Crossing to just above the confluence with Schoolhouse Creek) was covered in detail during this time, but I also viewed the upper valley floor below Lower Nevis from the road. Accordingly my evidence and resulting opinions are limited by the fact that I was not able to survey the entire Nevis valley floor in detail. Further survey is very likely to have produced further relevant data.
15. I was supplied with the Nevis Valley locations (GPS coordinates) of important plant species previously mapped by Department of Conservation staff (Barkla 2005). I verified the presence of these species at some of these locations on the valley floor and adjacent sites that I was able to survey, but did not have sufficient time to verify the upper valley sites.

16. Wildland Consultants Ltd GIS staff performed the GIS analyses outlined in this evidence, based on information supplied by me or available from other sources.
17. In summary, my evidence will address:
  - a. The current botanical characteristics of the Nevis valley floor, including the species and plant assemblages present and their local context and environment.
  - b. Distinctive or unusual features of plant species and species assemblages in the Nevis Valley.
  - c. Distinctive features of LENZ environments in the Nevis Valley floor (derived from my desktop review of the entire area).
  - d. The threat classification of Nevis Valley floor LENZ Environments (derived from my desktop review of the entire area).
  - e. The ecological significance of the plants, plant assemblages and plant habitats of the Nevis valley floor at local, regional, and national scales.
  - f. The potential effects of the inundation allowed by the water conservation order on Nevis valley floor botanical values and plant habitats.

#### **The Current Botanical Characteristics of the Nevis Valley floor**

18. The Nevis Valley floor between Nevis Crossing and Lower Nevis is mostly dominated by exotic pasture with scattered short tussocks, and mats of mouse ear hawkweed (*Hieracium pilosella*) and indigenous scabweeds (*Raoulia* spp.) in depleted sites. Willows (*Salix* sp.) occur beside the river in places, and shrubs of brier (*Rosa rubiginosa*), and indigenous matagouri (*Discaria toumatou*), and porcupine shrub (*Meliccytus alpinus*) are scattered throughout. Valley floor wetlands are mostly dominated by indigenous *Carex* sedges. Tailings in the valley floor comprise extensive areas with small gravel mounds that provide habitats for a distinctive suite of indigenous plant species, including *Muehlenbeckia axillaris*, *Coprosma petriei*, *Collobanthus muelleri*, *Myosotis pygmaea* var. *glauca*, and *Acaena saccaticupula*.

19. A survey for threatened plants on the Nevis Valley floor was reported on by Barkla (2005). Six nationally threatened plant species (*Myosotis pygmaea* var. *glauca*, *Myosotis pygmaea* var. *minutiflora*, *Myosurus minimus* subsp. *novae-zelandiae*, *Leptinella* (a) (CHR 515297; Clutha River), *Carmichaelia vexillata*, and *Acaena buchananii*) were recorded in this survey. Of these six, the first four were classified as 'Acutely Threatened' and the latter two as 'Chronically Threatened'.
20. Since the above study was reported, a new classification of nationally threatened and uncommon species has been devised (Townsend *et al.* 2008). Indigenous plant species were recently reclassified with respect to this new system (de Lange *et al.* 2009). The effects of these changes are that three of the 'Acutely Threatened' taxa have a corresponding classification under the 'Threatened' category of Townsend *et al.* (2008), while the remaining 'Acutely Threatened' species, *Myosurus minimus* subsp. *novae-zelandiae*, has had its threat status upgraded from 'Nationally Endangered' to 'Nationally Critical'. *Carmichaelia vexillata* now has a threat classification of 'At Risk – Declining'. *Acaena buchananii* is no longer classified as being threatened or at risk, but the Nevis Valley population represents the southwestern limit of its known range (Figure 1). I am not aware of any records of *A. buchananii* from Southland.
21. During my own field survey, I confirmed the persistence of *Myosurus minimus* subsp. *novae-zelandiae* at the one site where it was recorded by Barkla (2005), and confirmed several of his records of *Myosotis pygmaea* var. *glauca* on the Nevis Valley floor. Barkla (2005) noted that his team's survey of the tallings on the lower true right of the Nevis River may have been compromised by a poorly-defined search pattern for *Myosotis*, and that further survey would likely reveal additional sites for many of the species of concern. I searched the tallings on the lower true right of the Nevis River (Figure 2), but despite suitable *Myosotis* habitat being present, did not detect any individuals of this species at this location, similar to the Barkla (2005) findings.
22. I did record several additional sites for *Myosotis pygmaea* var. *glauca* and *Acaena buchananii*, and one additional site for *Carmichaelia vexillata*, mostly on the true left of the Nevis River (Figure 2; Table 1). I did not record *Myosotis pygmaea* var. *minutiflora* or *Leptinella* (a) in

the lower valley. These taxa have been recorded from three sites and one site respectively in the upper valley, together with many additional records of *Myosotis pygmaea* var. *glauca* (Barkla 2005; Figure 2). I have no reason to doubt the accuracy of these upper valley records, although I did not have sufficient field time to verify them.

Table 1: Threatened and uncommon plant species recorded during the October 2009 survey.

Species	NZMG Easting	NZMG Northing	Number of individuals*	Status/importance
<i>Myosotis pygmaea</i> var. <i>glauca</i>	2194907	5548481	8	Threatened – Nationally Vulnerable
	2194913	5548510	25	
	2194930	5548543	8	
	2194944	5548575	3	
	2194989	5548635	8	
	2194988	5548651	27	
	2194968	5548676	34	
	2194965	5548646	10	
	2194943	5548626	40	
	2194912	5549029	28	
<i>Acaena buchananii</i>	2194820	5549210	1	Apparent south-western distribution limit
	2194974	5549636	1	
	2194852	5549220	1	
	2195455	5551655	1	
<i>Myosurus minimus</i> subsp. <i>novae-zelandiae</i>	2195421	5551710	several hundred	Threatened – Nationally Critical
<i>Carmichaelia vexillata</i>	2194658	5548437	2	At Risk – Declining

\*for *Myosotis pygmaea*, the number of individuals refers to the number of individual rosettes or rosette clusters.

### Distinctive features of Nevis Valley floor plant species and species assemblages

23. The concentration of nationally threatened plant species in the Nevis Valley floor is an outstanding feature of the site. It is unusual to have so many nationally threatened plant species occurring at close proximity in a single location. I am not aware of any other location in Otago or New Zealand where all of the species described above occur together. This implies that the site supports highly distinctive or unique habitats.
24. With respect to the Nevis Valley floor, distinctive and unusual habitats appear to be caused by the interaction of the Nevis River and



environmental stresses caused by its topographic and geographic location. The location of the Nevis Valley floor in an upland basin among inland mountains means that it is likely to experience particularly heavy frosts in winter because of cold air drainage and ponding. The basin is also likely to experience summer droughts, due to its relatively continental, inland location. Disturbance caused by the Nevis River would be superimposed on these environmental stresses, creating terrace landforms and providing open gravel habitats that could be exploited by light-demanding plant species.

25. A common feature of the threatened plants on the Nevis Valley floor is that they are all low-growing plants, and most are very small and cryptic. These are typical responses to environmental stress.
26. Two of the nationally Threatened taxa, *Myosurus minimus* subsp. *novae-zelandiae* and *Myosotis pygmaea* var *minutiflora*, have a 'spring annual' life history. Annual life forms are rare within the New Zealand flora, and spring annuals particularly so - only four indigenous taxa are classified as such (Rogers *et al.* 2002). Spring annuals complete their life cycles in spring and early summer, thus avoiding seasonal aridity in the height of summer, and freezing conditions in winter.
27. *Acaena buchananii* is typically found in basin floors, where it grows in turf or open ground where there is little competition for light, but it also occurs on dry hillslopes where the vegetation cover has become sparse. *Myosotis pygmaea* var *glauca*, *Myosotis pygmaea* var *minutiflora*, and *Carmichaelia vexillata* occur in similar dry, open sites and are similarly vulnerable to competition for light.
28. The occurrence of all of these taxa together in the Nevis Valley floor indicates that the site has provided a constant supply of relatively open habitats for a long period of time. As described above, natural environmental stresses and disturbance in the form of floods would have been the key factors responsible for creating these open habitats in the past. Natural open habitats would have included periodically disturbed gravel river terraces, terrace scarps, dry terrace tops, and ephemeral wetlands in seasonally wet hollows.
29. Human uses have modified the valley floor through mining and pastoral activities such as burning, grazing, application of fertiliser, and oversowing with exotic pasture species. Exotic plant species now

dominate most of the valley floor [apart from in wetlands and on tailings], and this has almost certainly reduced the historic extent of open habitats. Alluvial gold mining would have destroyed many of the original habitats of currently threatened plant species, but has also created new landforms. These provide habitats that are free from dense swards of exotic species, and provide important habitat for threatened plant species.

30. Thus the only population of *Myosurus minimus* occurs where sluicing to bedrock has created a seasonally wet depression that becomes dry in summer (Plate 1).
31. Similarly, *Myosotis pygmaea* occurs on dry, open sites on tailings formed by alluvial dredging, most commonly on the upper slopes of the gravel mounds within these tailings (Plate 2). Its local distribution is centred on two sites on the Nevis Valley floor. I did not observe *Myosotis pygmaea* growing in habitats other than tailings sites and the persistence of this species in the valley appears to be almost completely dependent on the habitats provided by tailings. This is likely due to exclusion of *Myosotis pygmaea* from all but the driest gravel sites because of competition with exotic grass and herb swards.
32. *Acaena buchananii* occurs locally on the valley floor where the exotic grass cover is not so dense, mostly in or adjacent to shallow flood channels of the river (Figure 2). It also occurs in roadside turf near Nevis Crossing.
33. *Carmichaella vexillata* chiefly occurs on terrace tops adjacent to scarps, presumably because there is less competition with other plants in these dry sites, but was recorded in one riverside site by Barkla (2005) (Figure 2). *Carmichaella vexillata* probably occurred in similar habitats in the past.

#### **Nevis Valley floor LENZ Environments and their threat categories**

34. Land Environments New Zealand is an environmental classification of New Zealand, based on 15 climate, soil, and landform factors (Leathwick *et al.* 2002). At the finest resolution (Level IV), the classification has 500 land environments nationally. The Nevis Valley floor comprises a number of different Level IV land environments

(Table 2), most of which are at higher elevation in the Nevis Valley than the average elevation of those types on a national basis.

Table 2: Level IV land environments of the Nevis Valley floor, showing their mean elevation on a national basis and the proportion of the national extent that is above 600 m..

Land environment	Threat classification	Mean elevation (m)	Area above 600 m (% of national extent)
K3.3a	Acutely Threatened	365	0.2
K3.3b	Acutely Threatened	365	10.8
N3.2a	Acutely Threatened	535	25.2
N5.1a	Acutely Threatened	425	3.54
N5.1c	Acutely Threatened	425	0.2
N4.1b	Chronically Threatened	495	35.6
N4.1d	Chronically Threatened	495	6.0
N6.2a	Chronically Threatened	445	6.1
K3.2a	At Risk	765	88.3
N6.1b	Critically Underprotected	500	11.8
Q2.2a	Critically Underprotected	730	86.8

35. Of particular note in the Nevis Valley are the Chronically Threatened environment N6.2a and Critically Underprotected environment N6.1b which are widespread on the Nevis Valley floor, but have only 6.1% and 11.8% respectively of their national area distributed above 600 m elevation. Environment 6.2a comprises recent alluvial soils with high annual water deficits on gently undulating plains, and its distribution includes Omarama, the upper Waitaki catchment, and alluvial sites in Central Otago (Figure 3). The Nevis Valley is the southernmost location for this land environment, as well as being at an atypically high elevation. Environment 6.1b is mostly confined to the Mackenzie Basin (Figure 3), and comprises well-drained but less droughty older soils of high fertility on gently undulating plains.
36. It is unusual to have Acutely Threatened and Chronically Threatened land environments in upland sites. This is because indigenous cover is more extensive in upland areas as land use activities are usually less intensive. In addition, the extent of protected land generally increases in tandem with elevation. As a consequence, Acutely Threatened and Chronically Threatened land environments are mostly confined to fertile low elevation sites with gentle relief, including plains, valley floors, and inland basins (Figure 4).

37. The presence of Acutely Threatened land environments above 600 m elevation in the Nevis Valley is a distinctive feature. On a national basis, only 0.5% of Acutely Threatened land environments occur above 600 m. Of the Acutely Threatened land environments in the Nevis Valley, environments N5.1c and K3.3a occupy several hectares of the valley floor (Figure 3), but only 0.2% of their national extent occurs above 600 m elevation (Table 2). The Acutely Threatened K3.3b land environment also occupies several hectares of Nevis Valley floor but has a greater percentage (ca. 11%) of its national extent above 600 m elevation.
38. Environment K3.3 occurs in Central Otago on gently undulating floodplains on recent, imperfectly drained alluvium, experiencing mild temperatures and high solar radiation. Environment K3.3b is slightly cooler than Environment K3.3a. Environment 5.1c also occurs on gently undulating plains with imperfectly drained soils, but is more drought prone than Environment K3.3. It occurs around Ranfurly, Wanaka, and Queenstown (Figure 3).
39. The LENZ analysis described above indicates that the Nevis Valley floor between Nevis Crossing and Lower Nevis has affinities with lower elevation flood plains and basin floors in Central Otago and the upper Waitaki, rather than surrounding upland systems. This is an unusual and distinctive feature for an upland site such as the Nevis Valley.

**Ecological Significance of Nevis Valley floor botanical features at local, regional, and national scales**

40. As described above, the assemblage of nationally threatened and uncommon plant species on the Nevis Valley floor is an outstanding feature of the site. I am not aware of this assemblage of species being replicated in any other upland basin in Central Otago, such as the valley floors of the upper Manuherikia River, and the upper flats of Dunstan Creek, or in any other site in New Zealand.
41. Ecological values on the Nevis Valley floor meet at least three of the four National Priorities that have been recently developed to address the protection of rare and threatened indigenous biodiversity on private land (DOC/MfE 2007). These are:

**National Priority 1:** To protect indigenous vegetation associated with land environments (defined by Land Environments of New Zealand at Level IV), that have 20% or less remaining in indigenous cover.

**National Priority 2:** To protect indigenous vegetation associated with sand dunes and wetlands; ecosystem types that have become uncommon due to human activity.

**National Priority 3:** To protect indigenous vegetation associated with 'originally rare' terrestrial ecosystem types not already covered by priorities 1 and 2.

**National Priority 4:** To protect habitats of acutely and chronically threatened indigenous species.

42. There are approximately 230 ha of Acutely Threatened and Chronically Threatened land environments on the Nevis Valley floor, but not all of the valley floor is covered by indigenous vegetation. Those parts of the valley floor that do have indigenous vegetation (for example wetlands, tailings mounds) would meet National Priority 1.
43. Wetlands are common on the Nevis Valley floor. Some probably represent original wetlands, formed for example in oxbows of the river, but most appear to have formed where mining tailings have impeded water flow. These wetlands are generally dominated by indigenous plant species, but have been modified to varying extent by stock tramping and grazing. The indigenous vegetation in wetlands on the Nevis Valley floor would meet the criteria for National Priority 2.
44. It is likely that the Nevis Valley floor supported frost hollows, inland outwash gravels, and strongly leached terraces prior to human modification. Each of these ecosystem types has been defined as an 'originally rare' ecosystem (Williams *et al.* 2007). These authors define frost hollows as terraces with over 200 frost days per year. This may apply to the Nevis Valley, though frost frequency information would be required to provide conclusive evidence of this. Outwash gravels may be more limited in extent than historically, due to modification of the valley floor by invasion of exotic grass swards, but on the other hand they are extensively exposed in mining tailings. Parts of the Schoolhouse Flat terrace appear to be strongly leached and currently support skeletal vegetation, with scattered short tussocks and scabweeds. It thus appears likely that the Nevis Valley

floor retains originally rare ecosystems that would meet the criteria of National Priority 3.

45. A new threat classification system (Townsend *et al.* 2008) has been developed since National Priority 4 was developed, with the current 'Threatened' category corresponding to the Acutely Threatened category of the old classification, with the addition of Chronically Threatened species that were subclassified as being under 'Serious Decline' (De Lange *et al.* 2009). Chronically Threatened species subclassified as 'Gradual Decline' have generally been reclassified as 'At Risk'. The Nevis Valley floor is currently known to support five plant species that correspond to the previous Acutely Threatened and Chronically Threatened categories, and clearly meets the criteria for National Priority 4.
46. In addition to these national scale priorities, the population of *Acaena buchananii* in the Nevis Valley floor represents the southwestern limit of the national distribution of this species (Figure 2). Populations of species at the margins of their range are generally given higher importance as they may comprise different genotypes to populations in the core of the species' distribution.

#### **Connection between ecological values and the Nevis River**

47. As described above, the Nevis River has been the primary factor responsible for creating terrace landforms and open gravel outwash habitats in the valley floor. These landforms would have been the primary habitats of several of the threatened plant taxa found in the valley. The local distributions of the two varieties of *Myosotis pygmaea* and *Acaena buchananii* remain almost confined to the valley floor adjacent to the river, the former species in anthropogenic habitats analogous to its natural ones. As a consequence I regard these species as having a strong connection to the Nevis River.
48. This is supported by Mr Heller's hydrological evidence and rebuttal evidence which defined the area of floodplain inundated by the biennial flood level. *Myosotis pygmaea* and *Acaena buchananii* have most of their occurrences on lower lying land within or adjacent to the biennial flood zone as defined by Mr Heller (Figure 2).

49. *Leptinella* (a) Clutha River and *Carmichaelia vexillata* have been recorded mostly on the margins of terrace landforms, which were historically created by Nevis River processes, but one *Carmichaelia vexillata* location (from Barkla 2005) appears to be closer to the river (Figure 2).
50. The known distribution of *Myosurus minimus* within the Nevis Valley is not directly related to Nevis River processes.
51. Wetlands on the Nevis Valley floor are strongly related to the river, which has formed a flat, poorly-drained landform, cut-off river meanders, and provides a supply of water. These factors are of critical importance to the continued existence of these valley floor wetlands.
52. As described in paragraphs 35 and 38 of my evidence, many of the distinctive LENZ environments present in the Nevis Valley are characteristic of alluvial terraces and gently undulating plains. In the Nevis Valley floor, these landform features have been created by the Nevis River and thus are strongly connected to it.

#### **The Potential Effects of Inundation on botanical values of the Nevis Valley floor**

53. Based on the maximum inundation area allowed under the water conservation area, mapped by Olsen & Hayes (2006; their Figure 4), inundation of the Nevis River would destroy the only known population of *Myosurus minimus* subsp. *novae-zelandiae*, all of the known occurrences of *Acaena buchananii*, one of the two important sites for *Myosotis pygmaea* var. *glauca*, and a considerable portion of the locally-available habitats of these taxa. The inundation would also flood many of the wetlands on the valley floor, and convert distinctive upland examples of Acutely and Chronically Threatened LENZ environments to aquatic habitats. These effects would probably be irreversible and I would assess them as major.

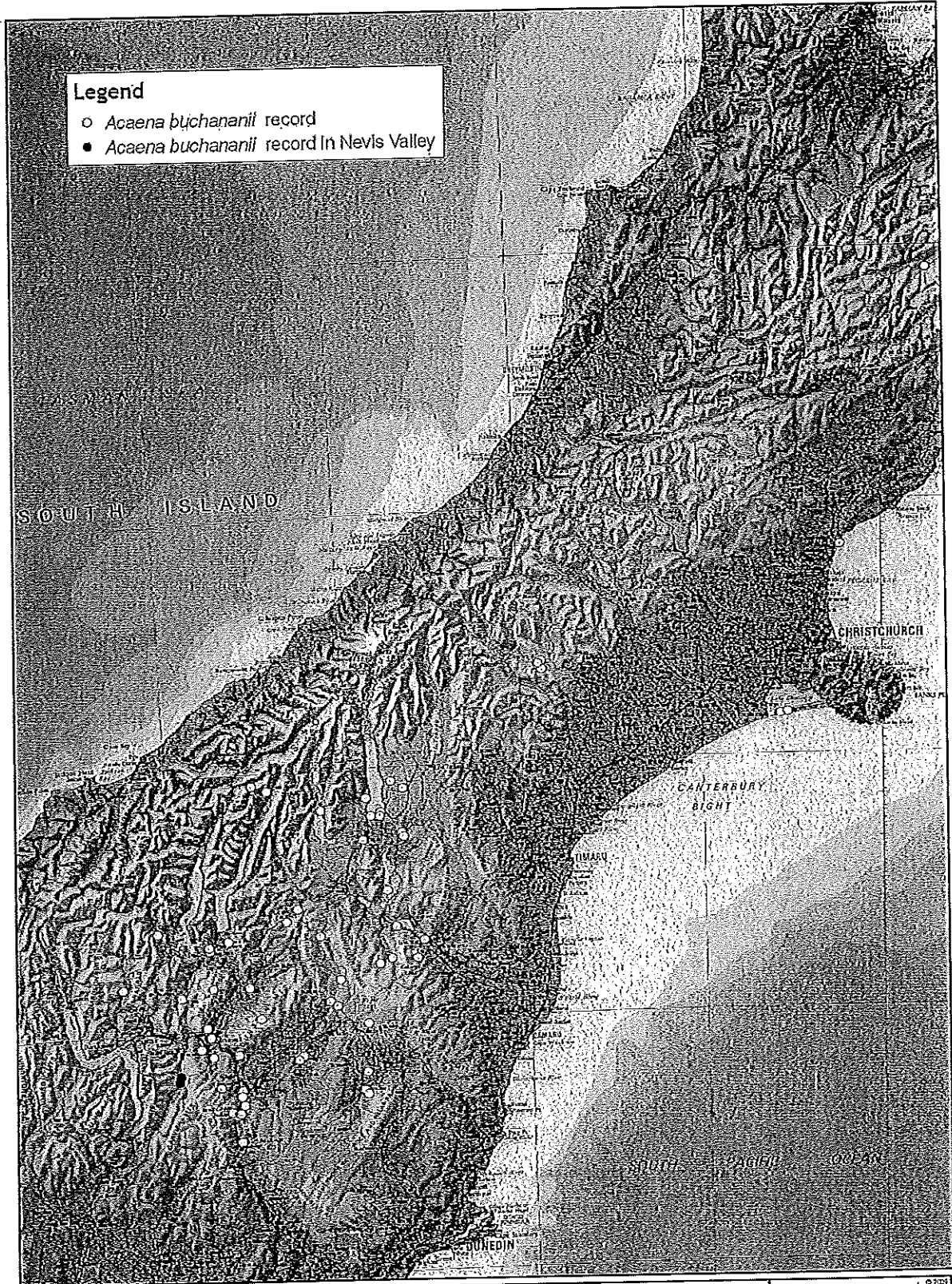
#### **Conclusion**

54. The Nevis Valley floor is outstanding on the basis of its habitat for a unique assemblage of nationally threatened plant species, and has added value as the southwestern limit of *Acaena buchananii*. It also has unusual and distinctive LENZ environments for an upland basin above 600 m elevation. The values on the Nevis Valley floor meet at least three of the four national priorities for protection of indigenous biodiversity. The Nevis River has a strong connection to these values. The inundation area allowed by the current water conservation order on the Nevis River would create a reservoir that would have major effects on the ecological features of the valley.



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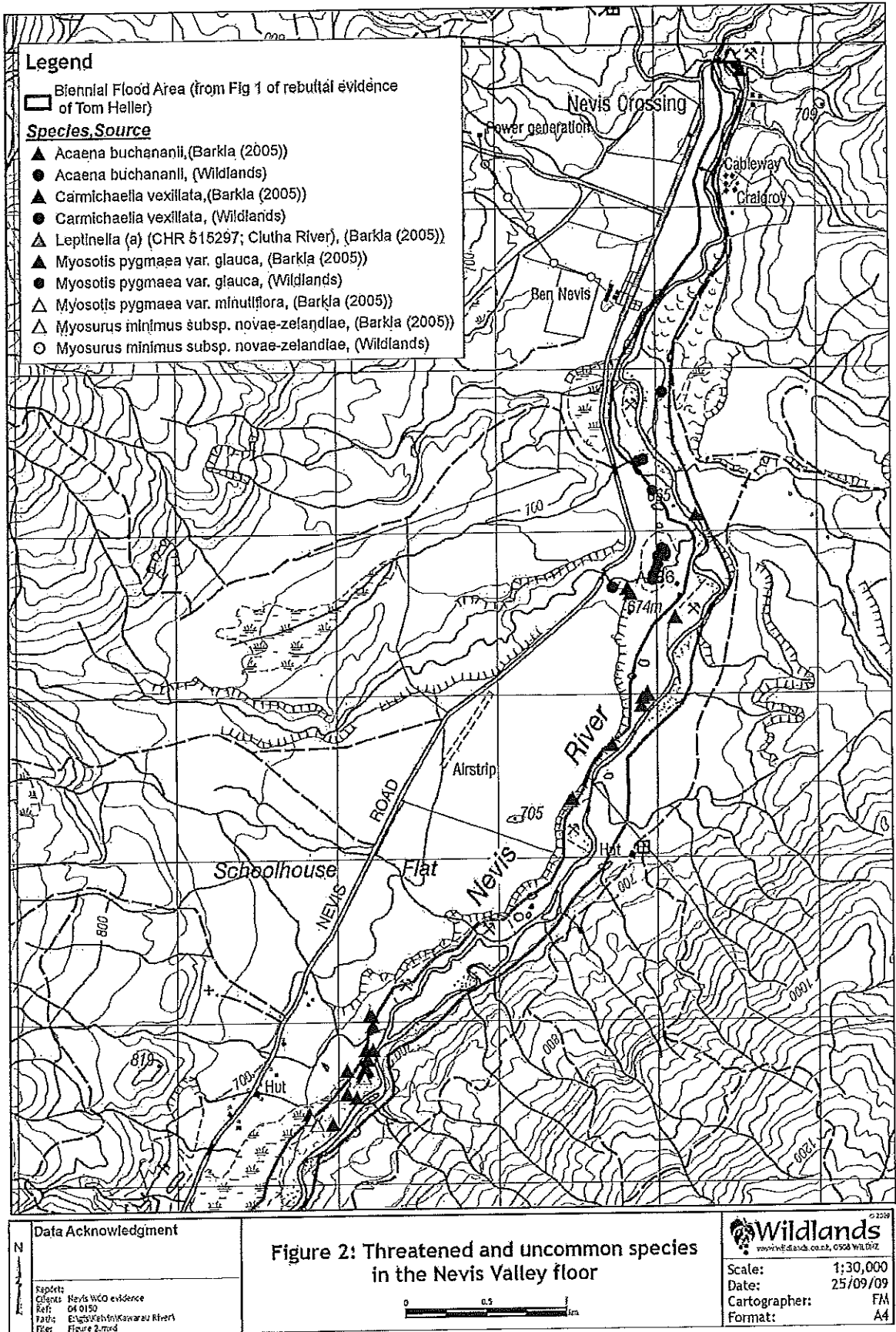
**Data Acknowledgment**

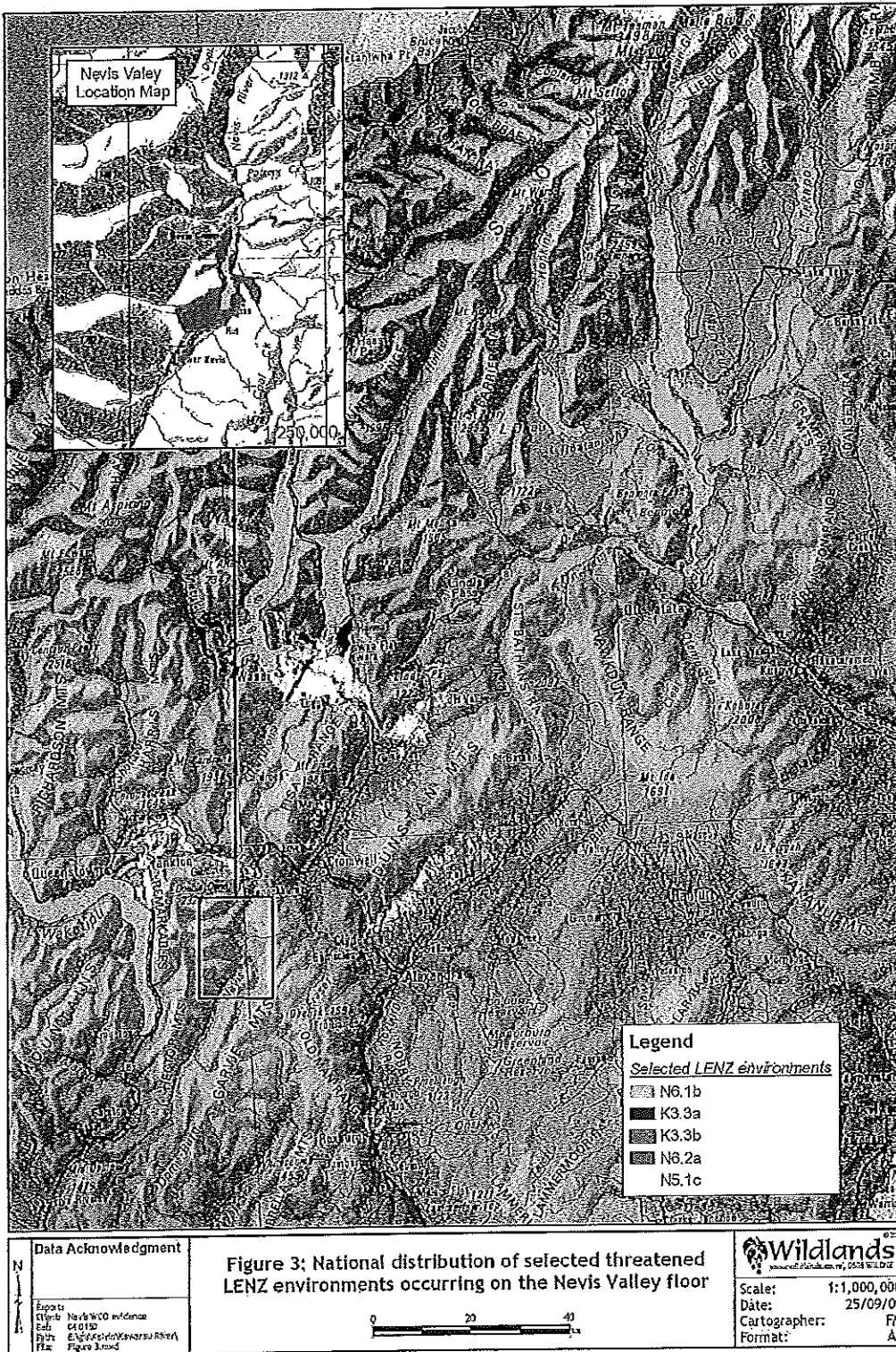
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**Figure 1: National distribution of *Acaena buchananii***








  
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Nevis Valley  
Location Map


- Legend**
- Selected LENZ environments*
-  N6.1b
  -  K3.3a
  -  K3.3b
  -  N6.2a
  -  N5.1c

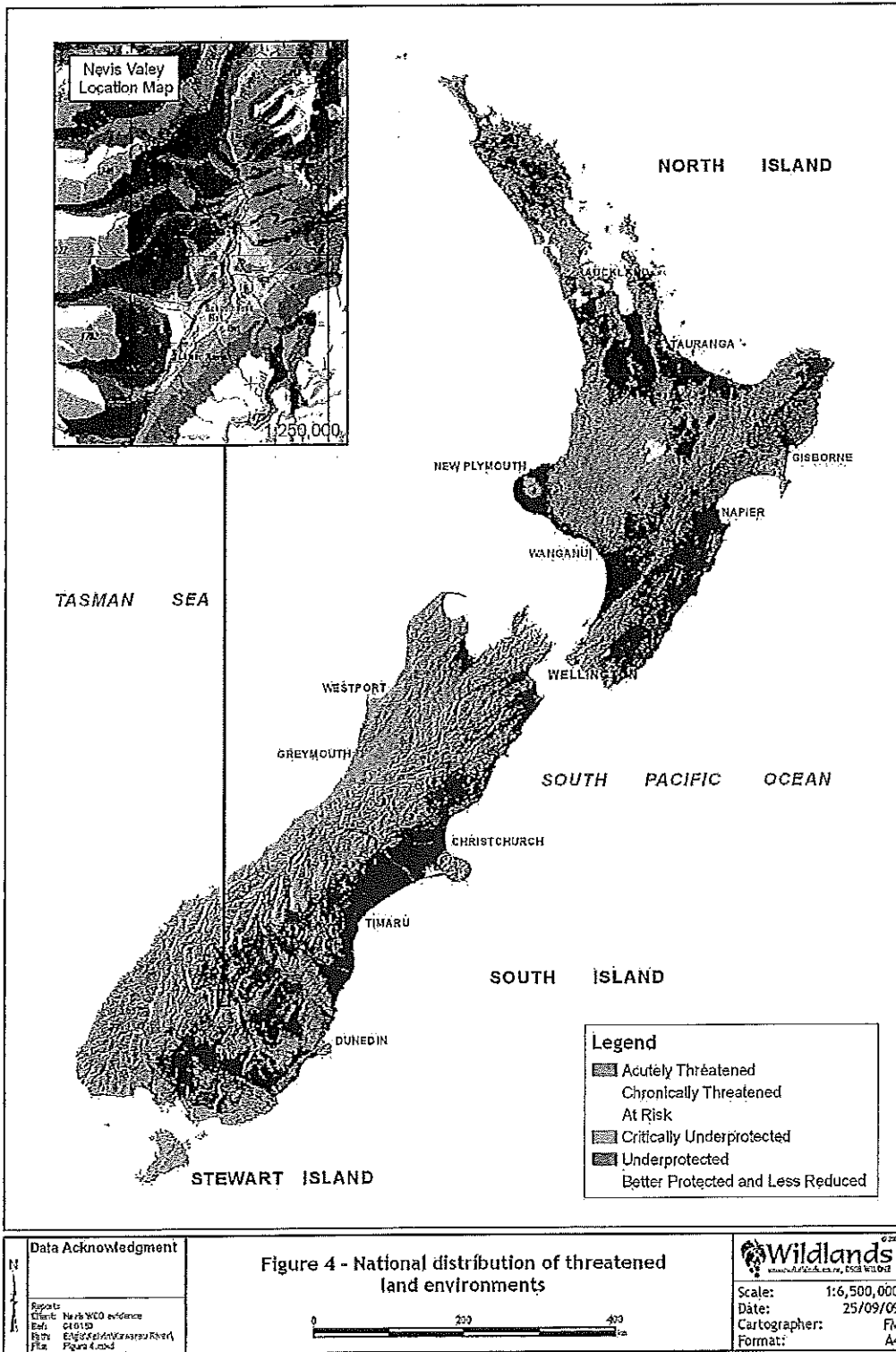
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Figure 3: National distribution of selected threatened LENZ environments occurring on the Nevis Valley floor

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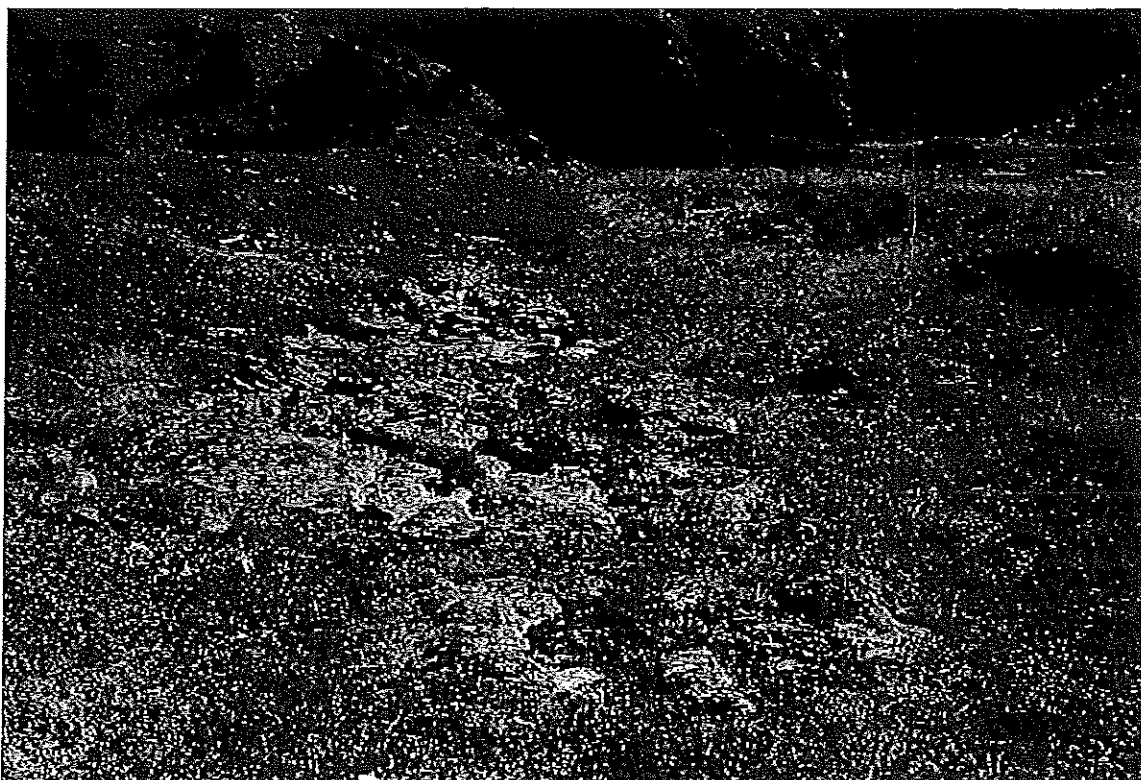
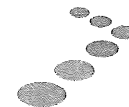


Plate 1: Habitat of *Myosurus minimus* subsp. *novae-zelandiae* in an old sluice channel near Nevis Crossing. *Myosurus* occurs in ephemerally wet silty soil (brown patches adjacent to rock outcrops in centre of photo) at this site.



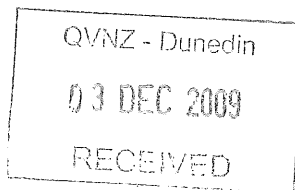
Plate 2: Habitat of *Myosotis pygmaea* var. *glauca* on the Nevis Valley floor. This species typically occurs in mats of *Muehlenbeckia axillaris* (dark brown patches) on the stony upper surfaces of tailings mounds on the Nevis Valley floor. A blue pen indicates the small population of *Myosotis* (small light brown patches growing within the *Muehlenbeckia* mat) at this site, the northernmost found within the valley (Figure 2).



**WALKINGACCESS**  
ARA HĪKOI AOTEAROA

27 November 2009

David Patterson  
Darroch Valuations  
PO Box 215  
Dunedin



Dear David,

**Re: Preliminary Proposal for Tenure Review: Ben Nevis Pastoral Lease (Pt Po 233)**

Thank you for providing the Walking Access Commission with the opportunity to comment on the preliminary proposal for the tenure review of the Ben Nevis pastoral lease. As you will appreciate this is the first opportunity that the Walking Access Commission has had to comment on this proposal.

We have reviewed the proposal and believe that while provision for access to the higher lands (by way of 4 easements in gross) is adequate walking access to the river could be improved.

The proposal tabled indicates that while access to the river from the road is limited to that already existing at Nevis Crossing two additional access routes i.e. "y-z" and "w-x" are proposed. One of these "y-z" is restricted to the Otago Fish and Game Council for management purposes. The Walking Access Commission requests that an easement in gross be granted over the route marked "y-z" as this river at this point is a popular fishing and picnicking spot.

The Walking Access Commission would like to discuss the legal nature and content of the proposed easements (if accepted) with you.

Yours sincerely

Mark Neeson  
Chief Executive