

Crown Pastoral Land Tenure Review

Lease name: BEN NEVIS

Lease number: PO 241

Public Submissions - Part 11

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

July

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APPENDIX 8

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of an application under section 216 to amend the Water Conservation (Kawarau) Order 1997 in respect of the Nevis River.

STATEMENT OF REBUTTAL & SUPPLEMENTARY EVIDENCE OF RICHARD MARK ALLIBONE ON BEHALF OF NEW ZEALAND AND OTAGO FISH & GAME COUNCILS

1. In this statement of evidence I set out my comments in rebuttal in respect of the evidence of Dr Gregory Ryder, Mr Ross Dungey, Mr Jeff Connell. I also refer to the statement of further evidence of Mr Murray Neilson and the status of Gollum galaxias following the June 2009 threatened species ranking process.
2. At paragraph 3.5 Dr Ryder states that he is not aware of any information to suggest rare or uncommon assemblages exist in any part of the catchment but also notes that more detailed assessment would probably be required. This statement fails to address two fundamental aspects of the distribution of freshwater fish species in Otago and the assessment of freshwater biodiversity in New Zealand, as outlined below.
3. Firstly, I stated in my evidence in chief that I am the chair of the freshwater fish ranking committee that conducts the threat ranking process for the Department of Conservation. The ranking committee met in early June 2009 and ranked all freshwater fish in New Zealand according to the protocol of Townsend et al (2007). Mr Neilson in Section 3 of his further statement of evidence has provided details of the ranking process that correctly represents the process and criteria.
4. Mr Neilson does refer to the Nevis galaxiid as "smeagol" galaxias. This stems from a comment in the threat committee group records referring to the alternative name from Gollum (from the book Lord of the Rings) as Smeagol.
5. In the June 2009 ranking process the Nevis River galaxiids were assessed and the committee concluded the Nevis Valley populations of Gollum galaxias should be

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considered a distinct taxa and ranked separately from Gollum galaxias elsewhere. The Nevis Valley population was given a draft ranking of Nationally Vulnerable, the third highest ranking available.

6. The Nevis Valley populations are currently considered to be stable but restricted to a limited geographic area giving rise to this relatively high ranking. The additional qualifiers of Data Poor (DP) indicates the threat committee considers there is some uncertainty with regard to the ranking due to limited data, however the data available allows the taxa to be ranked. The Range Restricted (RR) qualifier indicates the taxa has a limited distribution and this increases the vulnerability of this taxa to potential threats such as habitat loss, climate change, and invasion by predators.
7. It is important to note the threat ranking assesses current status of the taxon, and it has been assessed as having a stable population on the basis that "the population is stable (+- 10%) and is predicted to remain stable over the next 10 years or three generations, whichever is longer". The ranking does not assess the effect of potential developments that may impact on a species, but have yet to be consented and constructed. In the case of the Nevis population of Gollum galaxias the ranking has not considered the potential effect of the construction of a hydro electric scheme. If it had, the population might not be "predicted to remain stable" and the ranking might have been even higher.
8. This revised high ranking demonstrates that Dr Ryder's suggestion that there are no rare or uncommon assemblages existing in the Nevis catchment is incorrect.
9. Secondly, in the last fifteen years there has been considerable research effort directed at the taxonomy of indigenous fish species of relevance when considering indigenous freshwater fish values of the Nevis River catchment. Studies on galaxiids (e.g. Allibone et al. 1996 through to BurrIDGE et al. 2007) and bullies (Smith et al. 2005) have found New Zealand's freshwater fish fauna to be far more diverse than previously thought. For freshwater fish this diversity is often characterised by the presence of species with restricted ranges and the species diversity at single sites is often low. For sites in small streams in inland Otago only a single native fish, a galaxiid, would be expected to be present at many sites. Therefore in the case of native fish in the Nevis Valley we would not expect an assemblage to be present and the single species present represents the maximum diversity expected. As noted in my evidence in chief (paragraphs 27-37) the Gollum galaxias in the Nevis Valley is

unique, rare and now considered threatened. I would therefore conclude that a unique, rare and threatened *assemblage* of native fish does occur in the Nevis Catchment, contrary to Dr Ryder's statement. Such an assemblage is, in my opinion, a matter of national significance.

- 9 In addition to the freshwater biodiversity values there are other distinct species restricted to the Nevis Valley that utilise the riparian zone. Mr Connell in his evidence in chief (paragraph 22) notes the presence of the cryptic skink that occurs within and outside the potential reservoir zone. Mr Connell notes the species status is uncertain. Since Mr Connell presented his evidence, genetic studies investigating the cryptic skink have determined that the Nevis population of the cryptic skink is distinct from other cryptic skink populations and warrants species specific status (Chapple et al. in prep). This species has been most commonly recorded in the areas close to the Nevis River where it is most abundant in old gold mining tailings (Trent Bell, Landcare Research Dunedin, pers. com. Figure 2). This skink represents another unique and rare biogeographic value that is associated with the Nevis River. The skink's association with tailings piles along the river and tributaries also means the protection of riparian habitat is of relevance to the skink and any inundation caused by a hydro-electric dam will lead to a reduction in habitat and the skink population.
11. Mr Dungey in paragraph 92 of his evidence in chief comments that movement by Gollum galaxias in the mainstem of the Nevis River is unlikely to be affected by the creation of the reservoir. He suggests that given movement between tributaries is likely to be low any reduction in movement is unlikely to be significant. I would agree that movement of Gollum galaxias between tributaries is currently likely to be very limited. However, gene flow studies have indicated that the movement and spawning of a single individual per generation can be all that is required to maintain gene flow among populations. The creation of reservoirs will further reduce or halt movement of Gollum galaxiids amongst tributaries as lake habitats are not utilised by non-migratory galaxiids.
12. At paragraph 4.4 Dr Ryder notes evidence of Dr Roger Young from the Hurunui WCO hearing where Dr Young suggests trout may prey upon galaxiids. This is certainly true, but neither Dr Ryder nor Dr Young comments on the fact that brook char are present in the Nevis River and tributaries. Brook char are an additional fish prey species for large brown trout, as are juvenile brown trout, therefore large brown trout do not have to exclusively prey upon galaxiids to achieve a size larger than

- expected from growth models. It should also be noted that this is the current situation in the Nevis Valley and both the sports fishery values and indigenous fish values are supported. The natural state of the Nevis catchment has so far retained the galaxiids. In my opinion the best form of protection is keeping the river in its existing state. Altering the current balance by introducing hydro development is unlikely to provide any better protection and introduces new risks.
13. At paragraph 4.5 Dr Ryder comments on the limited loss of galaxiid habitat in the Nevis Valley if a hydro-electric scheme as assessed by Mr Dungey is constructed. It is important to note that Mr Dungey has assessed some options for hydro-electric schemes (paragraphs 91, 116, 117. 121 map 1 reproduced here as Figure 3 and map 3 reproduced here as Figure 4), but does not include an assessment of the largest scheme currently allowed under the present WCO (Figures 3 to 5). In my opinion for the purposes of this WCO hearing, where we are trying to determine what protection is needed, we need to consider the effects of the largest scheme possible under the existing WCO.
 14. The effects of the largest hydro-electric development will inundate more tributary areas of the Nevis River and larger areas of galaxiid habitat than assessed in Mr Dungey's evidence (Figures 3 to 5). One true left bank tributary of the Nevis downstream of the Crossing will lose the majority if not all of the possible galaxiid habitat. A second true left bank tributary immediately upstream of the lower dam site will have the lower reaches inundated which could result in the flooding of the trout barrier and put galaxiids at greater risk of predation. A third true left bank tributary upstream of the Crossing would also be inundated. A fourth true right bank tributary would have the very lower reaches inundated.
 15. At paragraph 4.6 Dr Ryder comments on the ability to construct barriers to fish passage to protect Gollum galaxias populations from invasion by trout and koaro. However, neither Dr Ryder nor Mr Dungey comment on the number of streams that require barriers. I have estimated that at least nine streams would require barriers for protection of Gollum galaxias, these are either direct tributaries of the hydro-electric impoundments or tributaries upstream of the upper dam that koaro could migrate to (i.e. within 5 km of the lake).
 16. Neither Dr Ryder or Mr Dungey comment on the range of design issues that have to be considered when constructing fish barriers. Dr Ryder does note barriers have

- been used on tributaries of Lake Mahinerangi, but fails to note whether these barriers have been successful in preventing koaro entering the streams.
17. I have worked with Department of Conservation staff on the design, construction and monitoring of the Mahinerangi barriers and it would be more appropriate to consider these as trials rather than successful management programmes. There are three barriers currently in place to prevent trout and koaro (Figure 6) entering galaxiid habitat in the Mahinerangi area. Two have been constructed on established weirs, on small streams, that already exclude brown trout and these weirs have been modified in an attempt to exclude koaro that climb the weir (Figure 7). With several design iterations, that included construction of overhanging lips and water deflection flanges these may now be successful at excluding koaro, but monitoring is on going to determine this.
 18. A third barrier was constructed at a culvert on a water race where the streambed downstream from the culvert was excavated to create an overhanging lip on the culvert to prevent climbing fish gaining passage through the culvert (Figure 8). This is believed to be successful but has not been monitored to confirm this (Golder 2009). It is important to note that the water race is not a natural stream subjected to widely varying flows, rather the intake site limits inflows and precludes high flows reaching the culvert reducing the chance of damage to the culvert or fish passage becoming available at high flows. Therefore, in my opinion this working example of a fish barrier does not demonstrate the efficacy of barriers on natural stream environments such as the Nevis River tributaries.
 19. Dr Ryder and Mr Dungey do not indicate several important factors that need to be considered when barriers are being considered as a management tool. Firstly, all of the Department of Conservation's barrier trials to date (at Mahinerangi and Orokonui Stream) have been on very small streams or controlled water ways and despite this we have encountered difficulty in maintaining exclusion of koaro and for other species. This fact has been acknowledged by Mr Neilson in his evidence in chief. He indicated that experiences elsewhere gave cause for some degree of care about assuming barriers would keep koaro out. I agree with his considered assessment.
 20. I note that there are Gollum galaxias populations upstream of the potential reservoir on tributaries within Carrick Station (Figure 5). Placement of fish passage barriers to protect these populations will require the agreement of that landowner and provision

to be made for monitoring of effectiveness and maintenance of the barriers. This carries with it some uncertainty and risk as agreement may not be obtained.

21. The exclusion of koaro from climbing a barrier such as a weir utilising the *splash zone* is difficult. High flow events also have to be considered as these events can provide pathways that bypass a barrier that is effective at low flows. The stability of the streambed and banks at a barrier site also requires consideration. Trout exclusion trials in Australia failed after two of five barriers were washed out in the first five years (Dr. Tarmo Raadik, Arthur Rylah Institute, Victoria, per. com. 2002) and therefore the placement of barriers need to be in section of stable river channel or well anchored into the stream bank. Culvert type barriers in natural streams are vulnerable to washouts during high flows and the storm flow capacity of the culverts needs to be assessed and the barrier designed to manage high flows.
22. To have a high degree of confidence that koaro will be excluded the barrier type and location need to be carefully selected. The ideal barrier is a culvert with a substantial overhang at the downstream end and no potential for erosion around the culvert embankment or for high flows to over top the culvert embankment. It is likely that such barriers would have to be constructed at some distance upstream from any area inundated by a hydro-electric dam. For instance Mr Dungey in photos 12a and 12b of his evidence shows the present natural barriers to upstream movement of brown trout in two Gollum galaxias streams. In my opinion it will be difficult to construct permanent koaro barriers in such steep gradient streams. High flows have the potential to overtop barrier structures, boulder cascades are liable to move during high flows undermining barriers and scour around the barrier edges can cause the failure of the barrier or provide pathways for koaro to move past the barrier. Furthermore, any wetted surface (Figure 10) rather than flowing water on the barrier will provide passage for koaro juvenile unless carefully constructed overhanging ledges are present.
23. To establish permanent barriers stable bedrock areas in low to moderate gradient stream sections are the most suitable sites and the barrier must maintain exclusion during the full range of flows in the stream. I would expect that this would restrict the placement of barriers in the Nevis River tributaries of the Crossing, Dell and lower Gorge areas and the lower reaches of Gollum galaxias streams are unlikely to be protected from invasion by koaro. Conversely, construction in low gradient streams is more readily achieved, but to gain the required fall of 1-3 m (to exclude jumping

- brown trout and koaro) at the culvert outflow this will require the flooding of areas upstream of the barrier and additional loss of Gollum galaxias stream habitat.
24. A final effect that would occur if koaro fish barriers are established as part of a mitigation programme is the permanent isolation of each Gollum galaxias population upstream of the barriers from other Gollum galaxias populations in the Nevis Valley. Any barrier that prevents upstream movement of the aggressive migrant koaro will also prevent upstream passage for Gollum galaxias. This effect coupled with the construction of dams on the mainstem of the Nevis River and the creation of lake habitat will lead to the fragmentation of the suite of Gollum galaxias stream populations (that also contain the high density populations in the Dell and Crossing area). At least nine separate tributary streams with Gollum galaxias would be permanently isolated from one another by the construction of dams and fish passage barriers. This fragmentation will preclude any further chance of gene flow between populations among the tributaries and potentially increases the individual extinction risk of Gollum galaxias in each tributary due events such as drought or catastrophic floods, and for small populations from *allee* effects such as inbreeding depression, disease impacts, lack of mature adults and unbalanced sex ratios. This could threaten their long-term survival.
25. In paragraph 130 of his evidence Mr Dungey notes that koaro have not been located in the Nevis Valley and I agree with this assessment. However, it should be noted that fisheries and habitat surveys of the lower Nevis Gorge are problematic (Mr Dungey paragraphs 110-111 and 134-136) due to the high water velocities and turbulence. Koaro are known to be riffle and cascade dwellers and often reside in fast turbulent water. As such areas of the lower Nevis Gorge may provide suitable habitat, but restrict upstream movement and koaro currently settle in the lower reaches. The diversion of water into a hydro-electric scheme will reduce flows in the lower Gorge and reduce turbulence and cascade habitat. Mr Dungey notes in paragraphs 134-136 that the residual river will have more pool habitat and lower velocity riffle habitat. These changes to the available habitat in the lower Gorge may improve upstream passage for koaro and allow koaro to penetrate upstream to Potters Creek and the base of the lower dam. Koaro that reach the dam face may also ascend the dam face using wetted surfaces (Figure 11) and enter the impoundment.

27. Mr Connell in section 12 of his evidence in chief describes the current tenure review proposals for Ben Nevis and Craigroy Stations. The protection afforded to Gollum galaxias populations on Craigroy and Ben Nevis stations appears limited according to the maps presented by Mr Connell (Craigroy maps 1 and 2, Ben Nevis maps 1, 2, 3, 4 and 5 his evidence in chief).
28. Figure 9 illustrates the pastoral leases and the location of Gollum galaxias populations. Mr Connell in paragraph 12 c) notes the current proposal includes a landscape protection covenant for the lower slopes of the Craigroy Station. A scenic Reserve is proposed for an area just south of the Nevis Road (Mr Connell's evidence paragraph 12 e) and no Gollum galaxias are reported from this area although they are present in the lower reaches of Barn Creek (Dungey site G16). The ridge crest will also return to full Crown ownership and areas that extend downslope to the Carrick Station water race (Mr Connell's evidence paragraph 12 a). This area that is proposed to become DOC land has no reported Gollum galaxias populations and has limited potential for Gollum galaxias due to the altitude and small size of streams present on the ridge crest.
29. For Ben Nevis Station the proposal includes the creation of a significant area of DOC reserve between Schoolhouse Creek and Commissioners Creek (Mr Connell's evidence paragraph 12 g). In this zone there is a single small stream with a population of Gollum galaxias. A large area of Ben Nevis Station on the ridge crest and flanks of the Hector Mountains is also proposed for DOC estate and again this does not include areas of Gollum galaxias habitat (Mr Connell's evidence paragraph 12 f). The other small scale land areas that are proposed to protect other flora and fauna also appear from Mr Connell's descriptions not to be associated with Gollum galaxias habitat. For areas to be freeholded it is proposed that a landscape protection covenant will be put in place.
30. In 2003 as the author of The Non-migratory Galaxiid Recovery Plan (DOC 2004) I wrote Appendix 3 of the plan that presents a series of land protection levels for the protection of non-migratory galaxiid populations (Appendix 1 of this evidence). This indicates that preferred land protection is Crown ownership or covenants that allow DOC full management of the galaxiid inhabited catchment and no water abstraction is allowed. There is a descending set of protection levels that afford decreasing levels of protection and management options. I note that landscape covenants are not considered as a protection mechanism for non-migratory galaxiids. It is therefore my

opinion that the proposed tenure outcomes presented by Mr Connell do not provide protection for Gollum galaxias in the Nevis as only one small population potentially occurs on areas proposed to be returned to full Crown ownership and landscape protection covenants would not be an effective protection mechanism.

31. In my view landscape covenants do not adequately extend to protect biodiversity values. This is a view that Mr Connell has himself advocated on behalf of DOC in the past. I refer to Appendix 2 where I attach three Otago Daily Times newspaper articles discussing the effectiveness of landscape covenants to protect biodiversity. In an article dated 29 October 2004 Mr Connell is quoted as saying covenants are too risky a protection mechanism for biodiversity conservation : *"It is simply a more risky protection method than direct ownership by the Crown, councils or trusts charged with protecting areas of significant conservation values"*. Then in an article dated 15 December 2004 written by Mr Connell he states:

"It is simply not realistic for a Crown pastoral leaseholder to expect from tenure review that the public interest in secure and properly managed access, and the protection of key aspects of our biodiversity and other inherent values will be left to widespread freeholding and hollow covenanting. After all, and notwithstanding that the Crown has alienated a great deal of its interest in a pastoral lease, it is still a type of public land and the public has expectations with regard to it. These expectations include participation and accountability - i.e. the public having some role in decision making and having a way of holding the steward accountable. ...

Preferring Crown ownership (which addresses participation and accountability) is not a question of ideology. Parliament has spoken on the matter. In a tenure review, there is a statutory preference for access and conservation values to be protected by returning the land to full Crown ownership for management under the Reserves and Conservation Acts. Covenants are indeed provided for, and they have their place, but the statutory preference has to be given some meaning. "

32. In conclusion it is my opinion that:

- The Nevis Valley does contain a unique and rare assemblage of native fish;

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- The scale of impact of hydro-electric development allowed under the current WCO is greater than Mr Dungey or Dr Ryder have assessed;
- The use of barriers could protect Gollum galaxias populations from invasion but the placement and design of the barriers is not simple nor does experience indicate that they are guaranteed to be successful.
- Hydro-electric dams and successful fish passage barrier construction will lead to the isolation of at least nine Gollum galaxias tributary stream populations;
- The construction and maintenance of fish passage barriers requires the agreement of all landowners with tributaries on their land;
- The reduction of flows in the lower Gorge has the potential to improve upstream passage for koaro and allow koaro to enter Potters Creek and possibly ascend the dam face and colonise the upstream impoundments;
- This would put the rare galaxiid populations at increased risk of predation; and
- The current proposed tenure outcomes for Ben Nevis and Craigroy Stations provide very limited protection for Gollum galaxias.

Richard Allibone

24 August 2009

References

- Allibone R., Crowl, T., Holmes, J., King, T., McDowall, R., Townsend, C., Wallis, G. 1996: Isozyme analysis of *Galaxias* species (Teleostei: Galaxiidae) from the Taieri River, South Island, New Zealand: a species complex revealed. *Biological Journal of the Linnean Society*, 57:107-127.
- Burridge, C.P.; Craw, D.; Waters, J.M. 2007: An empirical test of freshwater vicariance via river capture. *Molecular Ecology* 16: 1883-1895.
- Chapple, D.G., Patterson, G.B., Bell, T. (in prep). Taxonomic revision of the *Oligosoma inconspicuum* (Reptilia: Scincidae) species complex from southern New Zealand.
- Golder Associates. 2009: A review of the Shepherd Stream fish removal. Client report DOCDN-DUD-004 produced for the Department of Conservation.
- McDowall, R.M. 1980: New Zealand Freshwater Fishes: a natural history and guide. Heinemann Reed MAF Publishing Group, Auckland. 553p.
- Smith P., McVeagh, M., Allibone, R. 2005: Extensive genetic differentiation in the upland bully *Gobiomorphus breviceps* (Pisces: Gobiidae) from New Zealand. *Journal of Fish Biology*, 67: 627-639.



Figure 1. The Eyres/Nevis skink (photo provided by Trent Bell, Landcare Research).

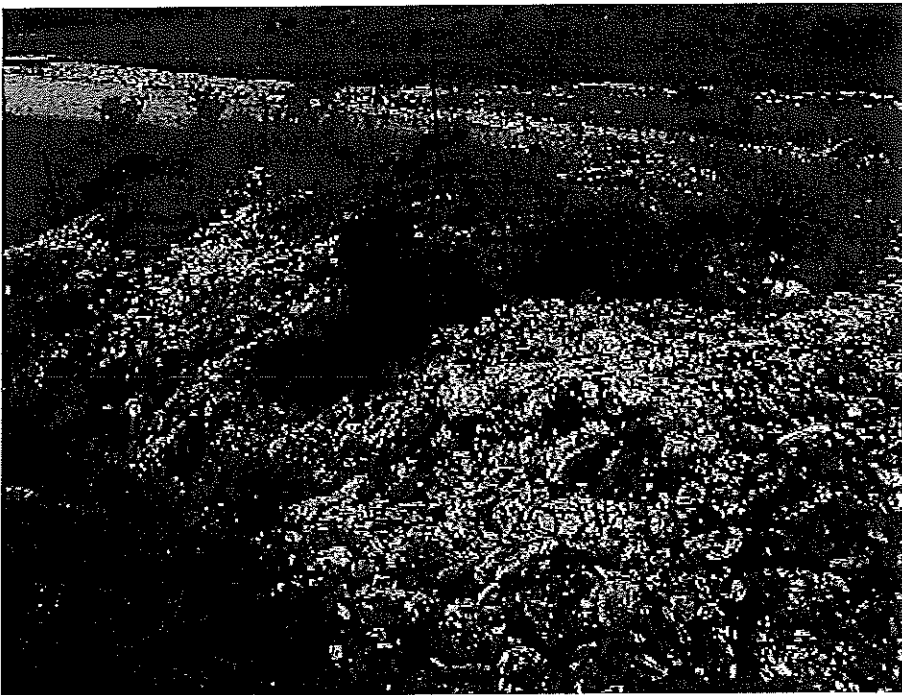
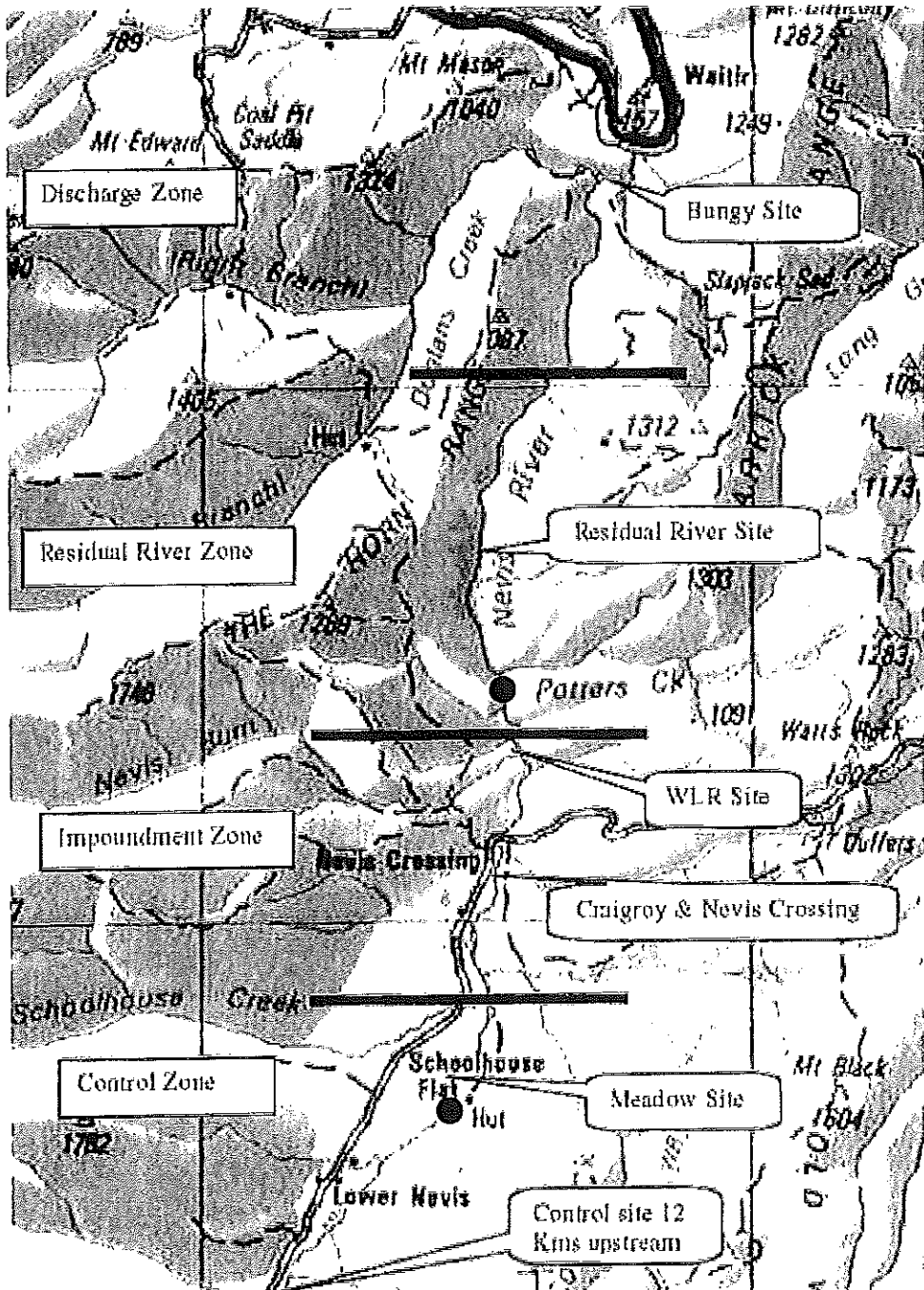
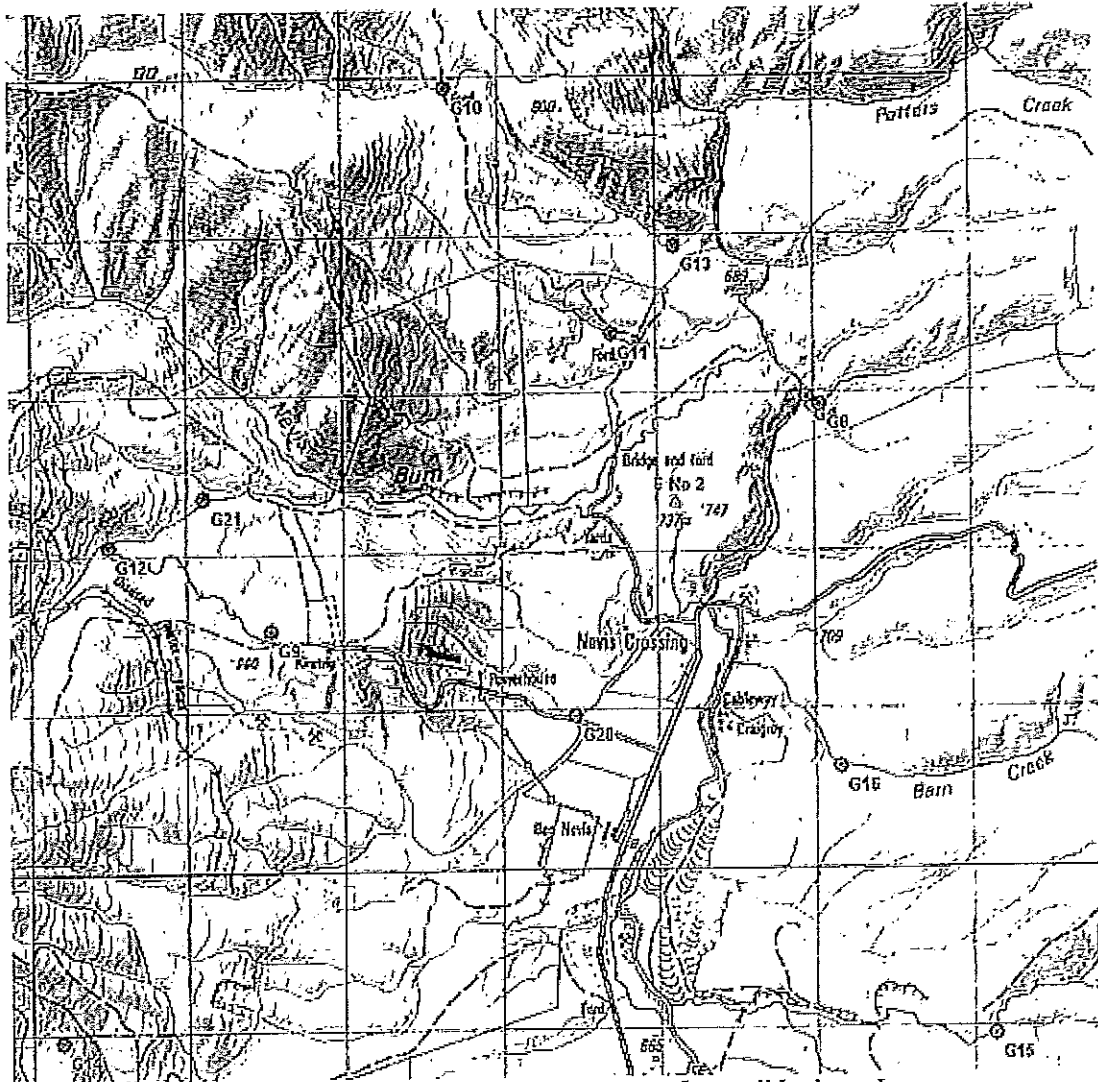


Figure 2. Eyres/Nevis skink habitat in old gold mine tailings adjacent to the Nevis River (photo provided by Trent Bell, Landcare Research).



Map 1 Location of survey sites corresponding to control, impoundment, residual, and discharge zones.

Figure 3, Map 1 from Mr Dungey evidence that assesses the potential effects of a small hydro-scheme rather than the maximum allowed under the current WCO (potential dam area indicated by red dots).



Map 3, Galaxiid distribution within potential impact zone of a small hydro-scheme.
 Ross Dungey 2008-09

Many of the water courses shown on this map are only wet during rain events and do not provide habitat for Galaxiids. The water course maybe totally dry or have intermittent pockets of water. G20 has brown trout and galaxiids present and would be flooded by a storage dam. All the other sites are above lake level and have barriers that would not be flooded. Branch Creek (G12 & G21) is a site for barrier enhancement and an improvement in security for the galaxiids.

Figure 4. Map 3 from the evidence of Mr Dungey showing part of the area available for hydro-electric development under the current WCO.

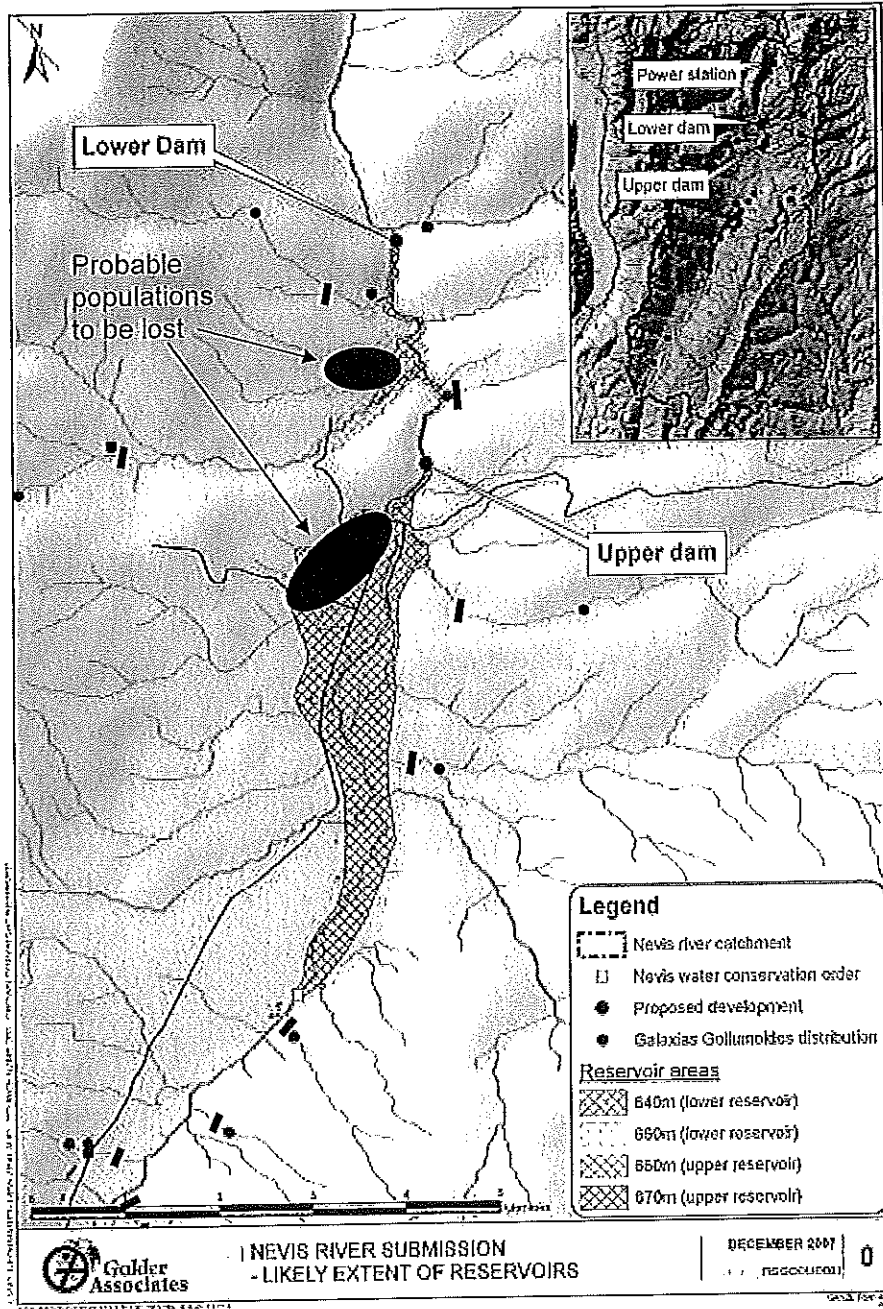


Figure 5. Possible hydro-electric dam options and storage reservoir areas, note lower dam situated immediately upstream of Potters Creek. Black bars indicate sites for fish passage barriers (redrawn from Golder 2008).

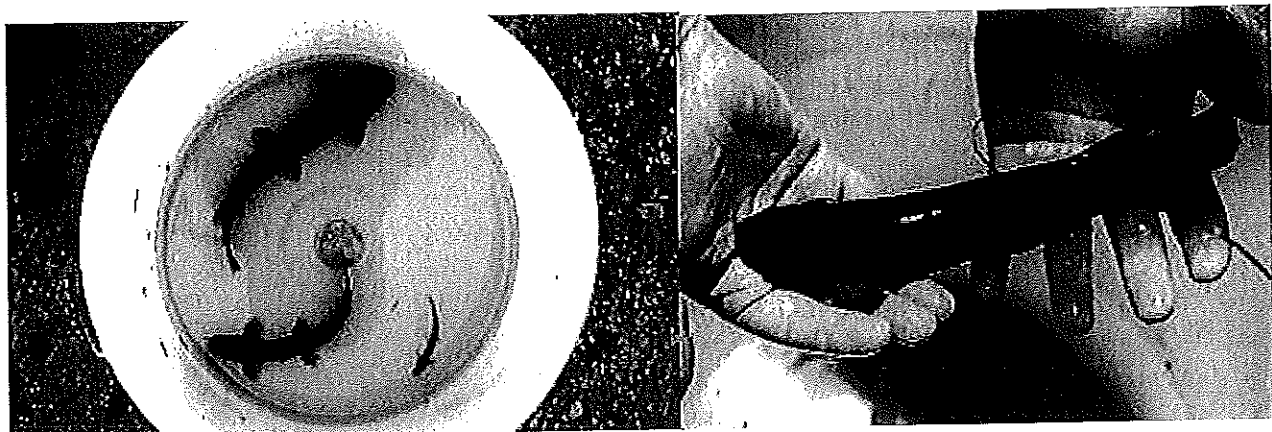


Figure 6(a). Two adult koaro and a migrant juvenile koaro, (b) A large adult koaro.

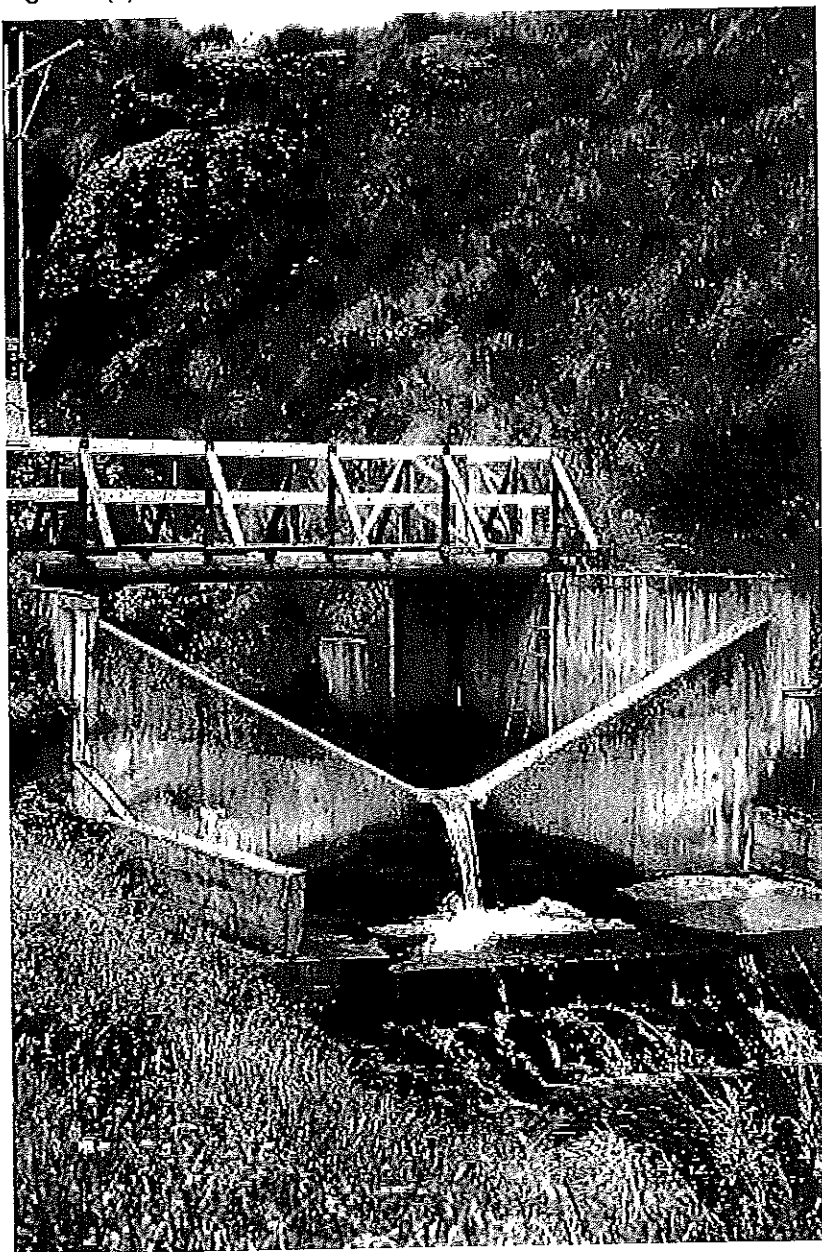


Figure 7a. Concrete weir with trial koaro exclusion device installed.



Figure 7b. A close up view of the trial koaro exclusion device on the concrete weir.

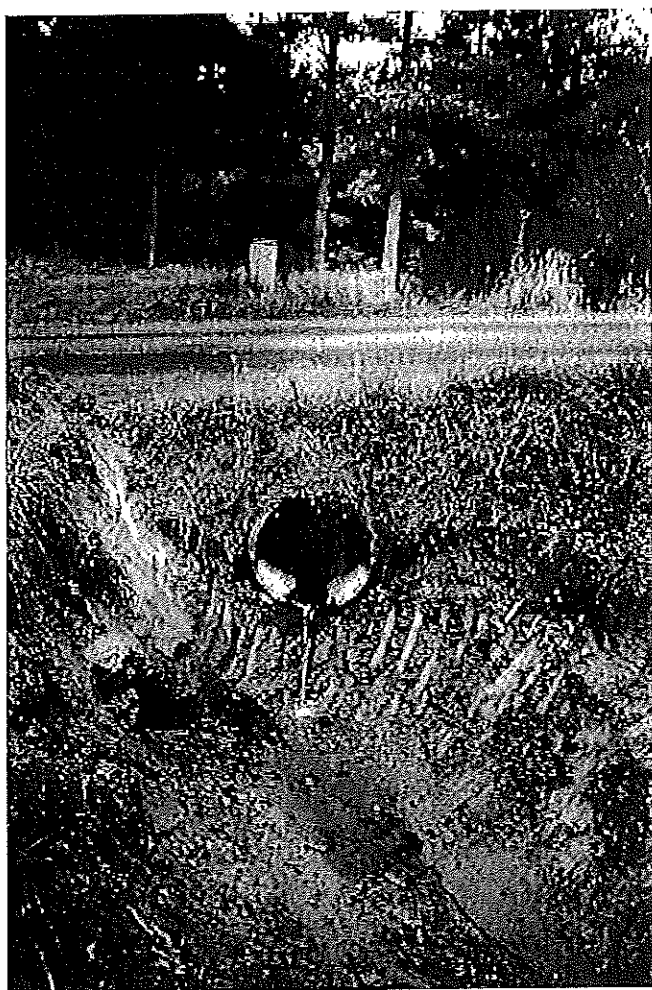


Figure 8. Culvert fish passage barrier on the Shepherd Stream water race.

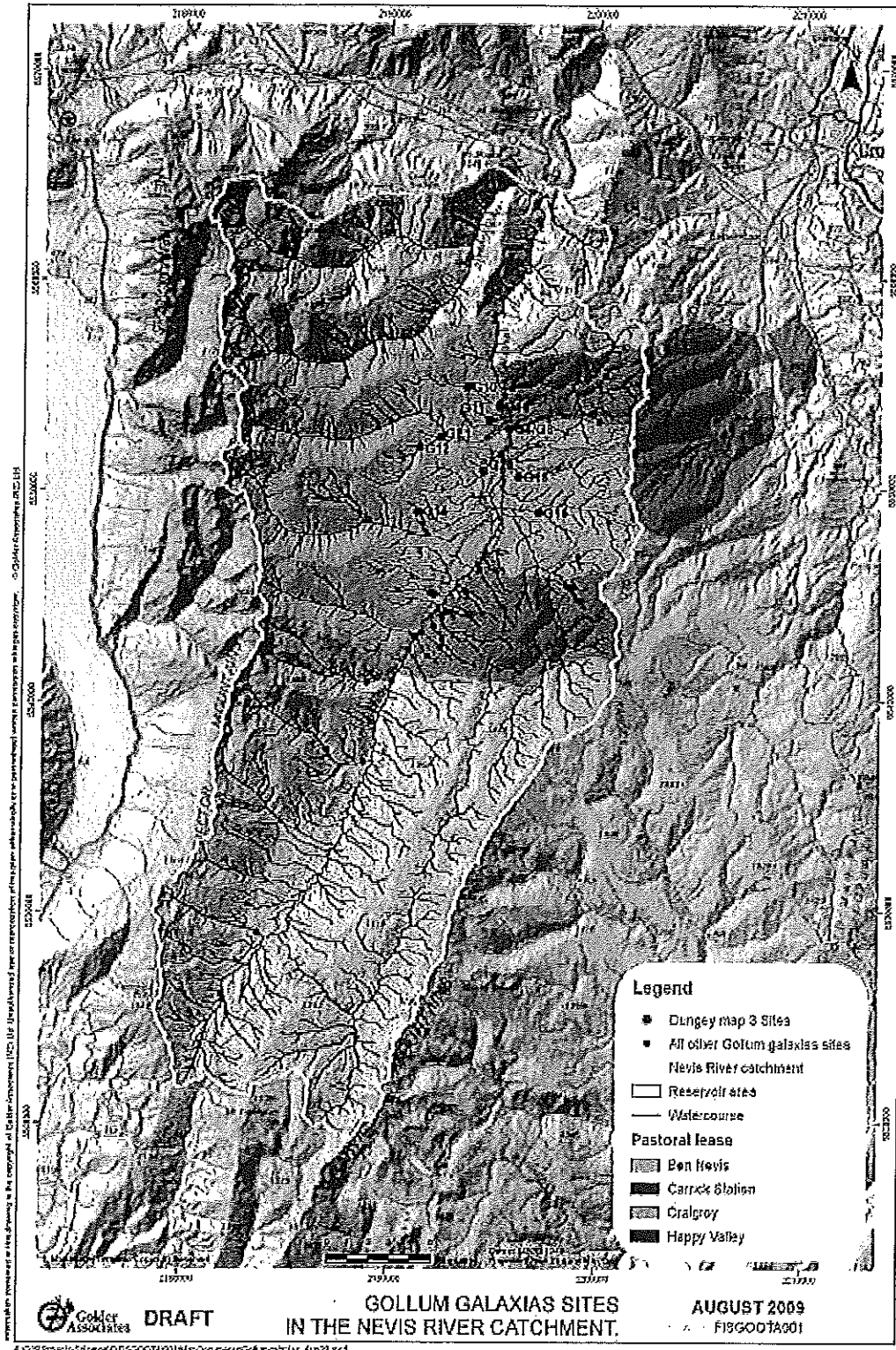


Figure 9. Gollum galaxias sites (from Dungey map 3 and NZFFD) and pastoral lease boundaries in the area adjacent to Nevis crossing.

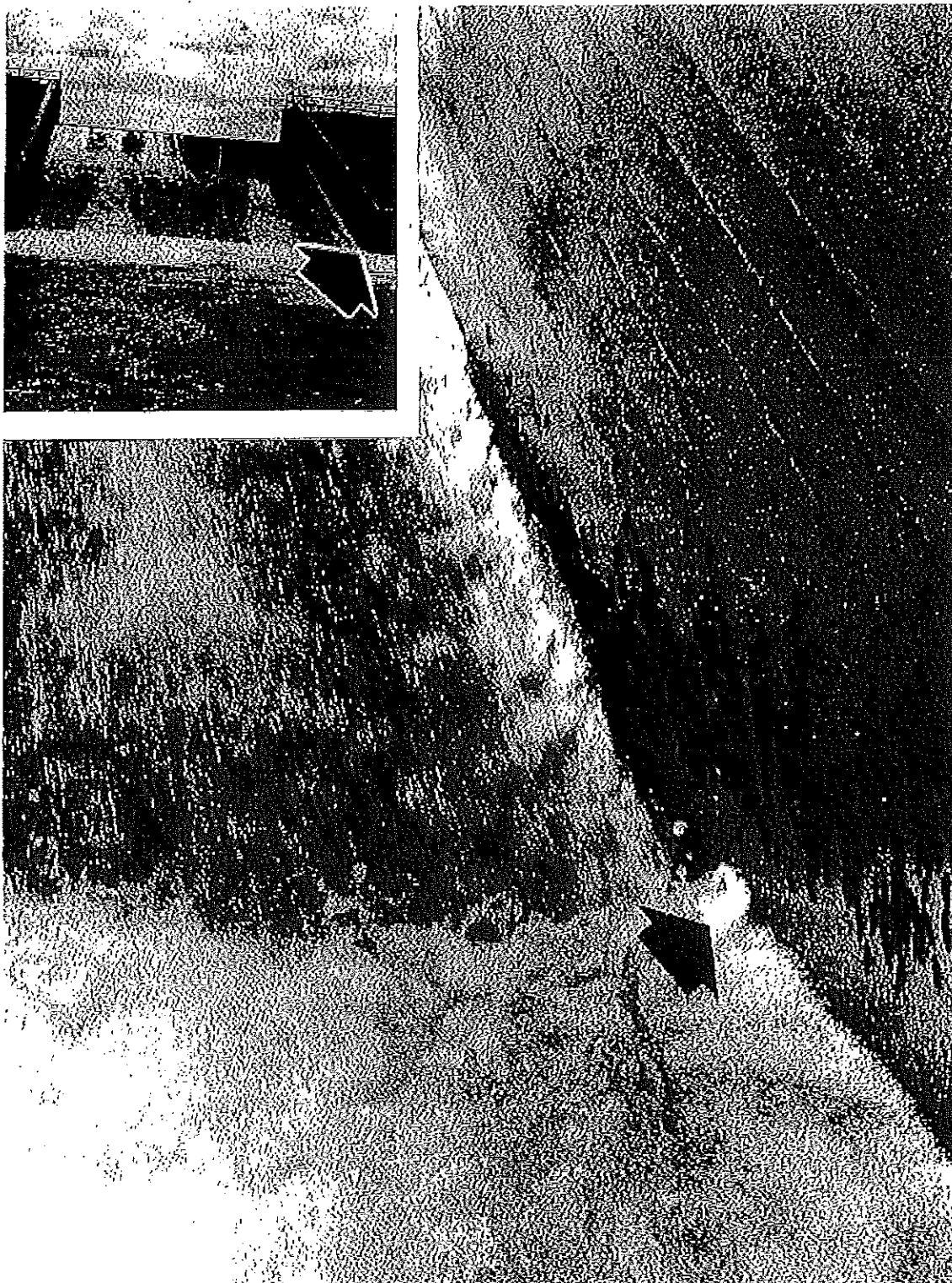


Figure 10. Koaro climbing in the wetted splash zone of a fish barrier in the Central North Island Power Scheme (photo E.C. Cudby, from McDowall 1980).

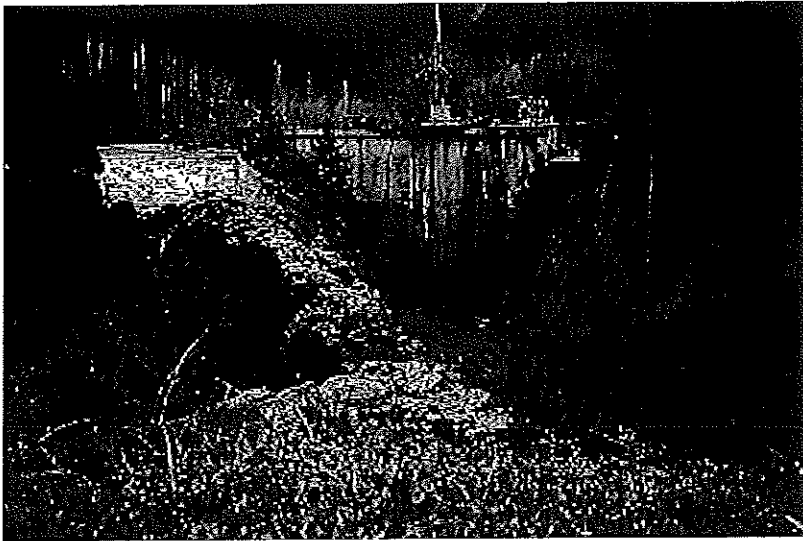


Figure 11. The Waihopai Dam and spillway that elvers and occasionally koaro ascend.

Appendix 1: Appendix 3 from the Non-Migratory Galaxiid Recovery Plan

Appendix 3

LEVELS OF PROTECTION FOR KEY POPULATIONS OF NON-MIGRATORY GALAXIIDS

The objective of any specific protection action is to gain the maximum possible protection for a galaxiid population. Early consultation with DOC Statutory Land Management staff will find the best option for key sites. The three major threats to non-migratory galaxiids (reduction in water quality and availability and invasion by other fish species) are controlled via the protection objectives below:

- Landuse change impacts that reduce water and habitat quality are halted or reduced by catchment level management and protection of riparian margins.
- Prohibiting or controlling abstractive activities (e.g. water or gravel abstraction) in the stream prevents or limits habitat loss.
- Invasion of galaxiid habitat by competing, predatory or potentially hybridising fish species is prevented by maintaining the barriers that isolate the populations and prevent invasion via water races.

Isolation of non-migratory galaxiid populations from salmonid invasion is seen to be a key factor in preventing acute local extinction events. Reducing land use impacts and abstraction activities will reduce long-term chronic impacts that may eventually lead to significant decline in population size or even extinction.

Levels of protection

The levels of protection listed below (from maximum to minimum level) are the most preferred options; however, other options are also available.

1. The catchment containing the key population is in Public Conservation estate

or legally covenanted area (e.g. DOC or Queen Elizabeth the 2nd National Trust (QEII)) that allows any required management action to take place. Downstream barriers preventing invasion by fish species are contained within this area and are maintained to prevent failure. No abstractive activities occur within the catchment inhabited by the galaxiids or upstream areas.

2. The catchment containing the key population is within a covenanted area (e.g. DOC or QEII) that is destocked and fenced. Downstream barriers preventing invasion by other fish species are contained within this area and are maintained to prevent failure. No abstractive activities occur within the area inhabited by the galaxiids or upstream and this is recognised in Regional Council plans.

3. The catchment containing the key population has fenced riparian margins preventing stock access and is managed by the Department of Conservation or is a covenanted area (e.g. DOC or QEII), allowing any required management actions to take place. Downstream barriers preventing invasion by other fish species are contained within this area and are maintained to prevent failure. No abstractive activities occur within the area inhabited by the galaxiids or upstream and this is recognised in Regional Council plans.

4. The catchment containing the key population is a covenanted area (e.g. DOC or QEII) with stock grazing limited to sheep (no cattle, deer or goats). Downstream barriers preventing invasion by other fish species are contained within this area and are maintained to prevent failure. No abstractive activities occur within the area inhabited by the galaxiids or upstream, and this is recognised in Regional Council plans.

5. The catchment containing the key population is a covenanted area (e.g. DOC or QEII) with low-intensity stock grazing. Downstream barriers preventing invasion by other fish species are contained within this area and are maintained to prevent failure. No abstractive activities occur within the area inhabited by the galaxiids or upstream, and this is recognised in Regional Council plans.

6. The catchment containing the key population is freehold. Downstream barriers preventing invasion by other fish species, have been identified and

are maintained to prevent failure. A legal agreement exists with the landowner(s) (e.g. a management agreement) to allow DOC access to these sites to maintain the barriers. No abstractive activities occur within the area inhabited by the galaxiids or upstream, and this is recognised in Regional Council plans.

7. The catchment containing the key population is freehold. Downstream barriers preventing invasion by other fish species have been identified and are maintained to prevent failure. A legal agreement exists with the landowner(s) to allow DOC access to these sites to maintain the barriers. Water abstraction activities occur within the area inhabited by the galaxiids or upstream, but the special status of the catchment is recognised in Regional Council plans and residual or minimum flows are in place and monitored. Abstraction sites ; (water or other) allow fish passage through the sites (e.g. over weirs or dams), but fish passage is prevented along the abstraction pathway (e.g. water race or pipe line) to prevent invasive fish access to the stream.

8. The catchment containing the key population is freehold. Downstream barriers preventing invasion by other fish species have been identified and are maintained to prevent failure. An agreement exists with the landowner(s) to allow DOC access to these sites to maintain the barriers. Water and other abstraction activities occur within the area inhabited by the galaxiids or upstream, but the special status of the catchment is recognised in Regional Council plans. Residual or minimum flows are in place and monitored, or other appropriate environmental conditions exist on the abstraction consent. Abstraction sites (water or other) allow fish passage through the sites (e.g. over weirs or dams), but fish passage is prevented along the abstraction pathway (e.g. water race or pipe line) to prevent invasive fish access to the stream.

Appendix 2: Otago Daily Times newspaper articles



Doc sees risks in covenant management

By Neal Wapace
High country farmers could be thinking wishfully if they expect the Government to make wider use of covenants during tenure review of Crown Pastoral Lease Land.

A combination of breaches and Government policy which rates second best covenants over areas of conservation value, means it has a low priority.

High country farming leaders have been pushing for a greater use of



Jeff Connell.

Otago Daily Times is say covenants were risky.

covenants from tenure review, as a way to allow farmers to continue farming the land but also to protect conservation values.

But the Department of Conservation's Otago regional conservator, Jeff Connell, contacted the

Otago Daily Times to say covenants were risky. He said two prosecutions in the

provinces following damage to covenanted land, showed the risk of that type of protection.

Dairy farming company Blue Sky Dairy was recently convicted of essential a fence and damaging natural features at Pateara.

John Falconer of Ranfurly, was convicted of allowing cattle to graze the Belmont Conservation Covenant and of damaging the covenant.

The prosecutions illustrate the risks involved in relying on covenant protection, particularly when the farmers who have entered into a cove-

nant are no longer on the property," Mr Connell said.

In the case of Big Sky Dairy, there had been staffing changes which Mr Connell said might have contributed to a break down in communication over the covenant and Mr Falconer had bought the land on which Belmont covenant was sited.

Covenants were binding on the property's title.

"I don't know for sure if these incidents are isolated. We hope they are."

Doc inspects covenants every two

years but relies on the integrity of the land-owners to meet their legal obligations.

"It is simply a more risky protection method than direct ownership by the Crown, councils or trusts charged with protecting areas of significant conservation values," he said.

Government policy gave a limited role to covenants, such as in discrete areas surrounded by farmland, places where public access was not expected and where management was passive. They were useful for protecting landscape values, he said.

Land management plans vital for the high country

Are covenants really too risky a protection method for biodiversity conservation, asks DAVID NORTON. They are not, in themselves, the answer, the most important thing is the way the land is managed.

HIGH country farming groups have been strongly advocating the use of covenants as an alternative to splitting land between conservation and production during tenure review. Other groups, including the Department of Conservation and the Forest and Bird Protection Society have opposed covenants, saying that they will not adequately protect indigenous biodiversity.

Jeff Connell, from Doe, has argued (ODT, 29.10.04) that covenants are too risky a protection method for biodiversity conservation, citing examples of two covenants that have been damaged. Despite these criticisms the covenants option has never been critically assessed, especially in terms of how they might be implemented through tenure review.

Covenants are not, in themselves, the answer, the most important thing is the way the land is managed. Whole property management plans can be used to integrate a range of

objectives including farming, recreation and conservation for a high country property. Covenants can then be used as a tool to formalise these plans especially if they become part of the tenure review agreement.

High country properties are not uniform. Each one has a range of different values including those associated with farming, landscape, biodiversity and recreation. Every part of a property, such as a particular hillside, also comprises a mixture of values. While wetlands and some other areas might have outstanding values for one attribute alone, most parts of the property will have high values for several attributes. By managing a property in an integrated manner, this mixture of values can be recognised.

So, how would integrated management be implemented on a high country farm subject to tenure review? First, a management plan is needed. This would define the desired outcomes for the full range of values present on the property and would include both short-term (say 5-year) and longer-term (say 30-year) goals.

However, a single set of goals will not be sufficient when it comes to managing a geographically complex property that might cover 10,000ha or more. To deal with this, each property will need to be divided up into smaller discrete landscape units such as river flats, fans, lower hill slopes and alpine tops, with specific management goals developed for each. To implement these goals, the management plan will need to consider constraints to management such as the vulnerability of vegetation to a particular farm management practice, or sensitivity

of a farm management activity such as lambing to disturbance from recreational users.

Based on both the goals and constraints, the management plan can then outline the objectives and methods for management of each landscape unit.

This might involve limiting stock numbers or using more fencing to manage stock better, or it might involve plant or animal pest control or the building of a hut or track for recreation purposes. It is these methods that will form the basis of the integrated farm management plan.

Monitoring the effects of management activities on the full range of values that are present is a key part of integrated farm management. This monitoring will need to be simple and focus specifically on the objectives or goals for management. But if undertaken properly, it will enable the farmer to adjust farm management practices to ensure that the desired outcomes are being met and especially that no adverse impacts are occurring on one particular value such as biodiversity.

Covenants provide the legal means to ensure that the management actions are undertaken and achieve the desired outcomes.

There is a range of different types of covenant available but by far the most successful have been the QEII National Trust covenants. There are now more than 2000 of these, ranging in size from under 1ha to over 6000ha. QEII covenants are developed as a partnership between the land owner and the QEII National Trust, with the trust's regional representatives providing valuable support to the land owner

in their management.

The benefits of an integrated approach to high country management, backed by legally binding covenants, are considerable.

For a start, scarce central government funds can be released for spending on high priority conservation issues like preventing kiwi extinction. The Government has already spent some \$18 million on high country property purchases and over \$50 million on implementing tenure review. In addition, Doc estimates suggest that ongoing management of high country land acquired during tenure review could cost the taxpayer an additional \$6 million-\$7 million each year.

The approach outlined here will free up much of this money as farmers, not Doe, will manage these properties and continue to look after issues like weed control.

Another real advantage is that farm management can be used to sustain the very things that so many value in the high country — the vast rolling mountainsides clothed in tall tussocks. These grasslands are there because of farm management and in its absence, they will slowly but surely revert to woody vegetation, much of it dominated by undesirable exotic species. The integrated farm management approach also ensures there is a land manager on site all the time — Doe is a severely under-resourced agency and it simply does not have the staff to keep an eye on the one-third of New Zealand it already manages, let alone an additional 1 million ha or more in the high country.

This approach builds on the established ethic of stewardship that high country farmers have been developing over the past 150 years.

Sure, some major mistakes were made in the early days of pastoralism (as there were in most aspects of early settlement), but today's high country farmers have learnt from these and are approaching land management in a very different manner to the early pastoralists.

Finally, high country farming will be retained as a highly valued part of New Zealand's cultural heritage.

So what are the costs? Well, Doc claims that covenants are regularly abused, yet documented examples are very limited and the two instances cited by Mr Connell do not involve QEII National Trust covenants. Maybe the only negative is that Doe doesn't manage the land directly, but is that really a negative, especially as groups such as Auckland Regional Council, Native Forest Restoration Trust and even Forest and Bird all manage land for conservation purposes and do a good job of it?

While Doe and environmental non-governmental organisations are opposed to covenants, it is interesting to note that one of the conditions imposed on the sale of pastoral lease of Mutatapu and Mt Soho Stations to Canadian singer Shaola Twaie was a covenant with Doe for all land over 1100m. As this seems to be a contradictory position, we can only hope that the Government has finally seen the light and now recognises that covenants are in fact acceptable for pastoral leasehold land.

The integrated farm management approach with covenants outlined here has similarities with the catchment board farm plans that were being used a couple of decades ago in the high country. They fell out of favour with the major

restructuring of government agencies in the 1980s but, as with many things from the past, they had much merit. The major difference is that under the approach outlined here, a much broader range of values will be considered. Also, it will be possible to draw on a raft of modern technological tools such as the Global Information System to assist with land management.

What's wrong with taking an integrated approach to land management that recognises that landscapes contain a mixture of values? What's wrong with using farm management as a tool for conservation as well as a means to generate income for New Zealand? No law changes are needed just a change in attitude.

Covenants are provided for under the Crown Pastoral Lands Act and, with one exception, meet the Government's objectives for the high country. The exception is the preference, based solely on ideology, for land with indigenous biodiversity values being put into Crown ownership.

Take away the ideology and there is no reason why covenanted private land could not be included as part of a high country park.

The Government needs to invest its limited funds through Doe in the real priorities for conservation management, such as ensuring that future generations can hear kiwi calling in the wild. It should then work with rural communities to ensure that the diverse values of the high country are also sustained, but letting the high country farmers take the responsibility for this work.

Associate Prof David Norton is a conservation biologist at the University of Canterbury.

Altruism well and good, but this is business

THE QE II National Trust Open Space magazine of December 2003 celebrates, among other things, the Michael Peak covenant in the Mauthehika headwaters, Central Otago. One would think the covenant holder would be proud to show off his conservation commitment, but the Otago Conservation Board has twice been refused access to this area.

A close examination of the Michael Peak covenant reveals there is no right of public access and the covenant does not prevent burning, overgrazing and topdressing, nor the installation of structures. Is this the kind of whole property covenant Associate Prof David Norton is talking about (ODT, 8.12.04)? No wonder some farmers and their associates are advocating this approach.

But I get me wrong. Voluntary covenants of the kind facilitated by the QE II National Trust does have a part to play in the totality of

Department of Conservation Otago conservator **JEFF CONNELL** responds to University of Canterbury biologist David Norton's concerns about covenants and management on high-country land.

conservation activity in New Zealand. I would like to believe the other QE II covenants are more than hollow instruments. The altruistic, voluntary impulse should be encouraged and supported.

But Crown pastoral-lease tenure review is something altogether different. There is really no altruism in it. It is a business transaction in which value (often in the millions of dollars) is exchanged between the Crown and the leaseholder. It is simply not realistic for a Crown pastoral leaseholder to expect from tenure review that the public interest in secure and properly managed access, and the protection of key aspects of our biodiversity and other inherent values will be left to widespread freeholding and hollow covenanting.

After all, and notwithstanding that the Crown has alienated a great deal of its

interest in a pastoral lease. It is still a type of public land and the public has expectations with regard to it. These expectations include participation and accountability — i.e. the public having some role in decision making and having a way of holding the steward accountable. These aspects are not considered in the Norton proposals.

Preferring Crown ownership (which addresses participation and accountability) is not a question of ideology. Parliament has spoken on the matter. In a tenure review, there is a statutory preference for access and conservation values to be protected by returning the land to full Crown ownership for management under the Reserves and Conservation Acts. Covenants are indeed provided for, and they have



Jeff Connell

their place, but the statutory preference has to be given some meaning. This is not acknowledged by Prof Norton.

I agree with Prof Norton that each property is different. The mix of access and conservation values will be different and the holder's land-use aspirations post-tenure review will be different.

The record of tenure reviews so far is that covenants are frequently used to protect discrete areas surrounded by freehold where there is no expectation of public access, or to protect larger areas for their landscape values. These covenants complement the lands being returned to Crown ownership for conservation management as public lands.

The Department of Conservation is not ideological in its approach to the tenure-review programme, but there are Government policies that we must follow. The decisions are made by Land Information

New Zealand officials, but Doc advice has to be pragmatic and constructive. We recognise that if there is no tenure-review agreement, an opportunity to secure public access and advance conservation is foregone.

Contrary to the dire predictions about tenure review being the death knell of high-country farming, in places where there has been a lot of review activity, high-country farming has continued. For example, in the Strath Taieri, where nearly all the properties on the eastern Rock and Pillar range have gone through the programme, the farming character of the district has not greatly changed. A new conservation park, however, is emerging on the range. This will eventually complement the district's growing portfolio of visitor attractions (including the Otago Central Rail Trail) and add further diversity to its economic base.

A range of protection methods has always been negotiated with pastoral lease holders outside the tenure-review programme, including management agreements and covenants. There is,

accordingly, no contradiction in the Moutapu case. It was not a tenure review, it was not a case of pure altruism either, so it is appropriate the covenants are with Doc, rather than QE II.

The Moutapu arrangement is strong on public access and protection and I am sure the holders have the resources and motivation to be good nature conservation managers, in partnership with Doc, of the parts of the property being retired.

Is it realistic, on the other hand, to say (as Prof Norton would have to do to prove his case) that every farmer will have the resources and motivation to keep stock out of the indigenous shrublands, trap for predators around the bush remnants, put out and update brochures for the public on access opportunities, maintain directional signs and basic recreational facilities and install interpretational panels to enhance public appreciation of the values?

In the real world, most farmers need to be farming. On the other hand, the provision and management of public recreational opportunities is core Doc

business, for which we are adequately resourced.

Prioritisation choices do have to be made about biodiversity programmes, but we have demonstrated time and time again that our weed-control standards are as good as, and in many cases better than, those of our high-country neighbours or previous occupiers. The Korowai/Torlesse Conservation Park is virtually weed free and Te Papanui Conservation Park will be in a similar state by the end of the financial year.

Crown pastoral-lease tenure review has been around for more than 10 years. It is well recognised that it is voluntary and is not going suit every property. From time to time, I have had discussions with the High Country Committee and the High Country Trustees about conservation alternatives to tenure review. The approach being suggested by Prof Norton is not new, but I would have thought by now a credible specific proposal would have emerged that addresses secure public access and the active conservation management of the values, public participation and public accountability.