

BEFORE THE MINISTER FOR THE ENVIRONMENT SPECIAL TRIBUNAL

IN THE MATTER of the Resource Management Act
1991

AND

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

BY **NEW ZEALAND FISH & GAME
COUNCIL AND OTAGO FISH
& GAME COUNCIL**

**REBUTTAL EVIDENCE OF FLORA AND FAUNA BY
BRIAN PATRICK AND JOHN DOUGLAS**

Brian Patrick and John Douglas
41 Glencarron Street
Alexandra 9320

Phone 03 448 7474
E-mail brian.paterick@xtra.co.nz
jdouglas@xtra.co.nz

Date 26 March 2010

And To
Susan Newell
Solicitor. Buddle Findlay
Po Box 322
Christchurch
Susan.newell@buddlefindlay.com

And to
Fish & Game New Zealand
C/- Maree Baker
Anderson Lloyd
Private Bag 1959
Dunedin 9054
Maree.baker@alclegal.com

And to
Sue Maturin
Otago Southland Field Officer
Royal Forest & Bird Protection Society
PO Box 6230
Dunedin
s.maturing@forestbird.org.nz

And to
Anne Stevens
Central Lakes Branch
Royal Forest & Bird Protection Society
4 Brookstead Drive
Wanaka
a.steven@xtra.conz

And to
Deborah Crawford
Investigating and Planning Manager
Pioneer Generation Ltd
PO Box 275
Alexandra 9340
dx@pioneergen.conz

And to
Pene Williams
Department of Conservation
PO Box 5344
Dunedin 9058
pwilliams@doc.govt.nz

And to
Administration Officer to the Special
Tribunal
Kawarau Water Conservation Order
Ministry of Environment
PO Box 10362
Environment House
23 Kate Sheppard Place
Thorndon
Wellington
kawarauwco@emf.govt.nz

1.0 Introduction

1.1 Brian Patrick

1.1.1 My full name is Brian Hunter Patrick. I am a consultant scientist specialising in the study of insects (entomology) and plants (botany), particularly insect-plant relationships within New Zealand. I am based in Alexandra, Central Otago and trade as New Zealand Butterfly Enterprises Limited. This company is in its fifth year of operation, but I have performed consultancies for over 25 years under various employers or privately.

1.1.2 Although I have attended university, I am essentially self-taught in specialist ecological subjects, such as entomology and botany.

1.1.3 I have authored or co-authored 164 scientific papers, reviews, articles, popular books and book chapters. Of these 5 are popular books and one substantial set of chapters in a major work on southern New Zealand natural history. Eighty-eight of these publications were published in peer-reviewed journals or books

1.1.4 I have presented numerous papers on my research at national and international conferences to my peers.

1.1.5 I am a Past President of the New Zealand Entomological Society, and former member of the Otago Conservation Board. I am also a member of the Botanical Society of Otago, Otago Entomological Society, Queen Elizabeth II National Trust, Royal Forest & Bird Society, Orokonui Sanctuary and Dunedin Naturalists Field Club.

1.1.6 My work as a consultant has covered a wide range of different areas in Southern New Zealand from the coastal zone to the high country, covering different issues including hydro-electricity and windfarm developments, Tenure Review, insect and plant survey, stream health, insect identification and biological rearing.

1.1.7 In my private scientific research and as a former employee of the Department of Conservation, I have made in excess of 2,800 excursions and expeditions to various parts of New Zealand, but particularly Southern New Zealand. I have explored the Central and Eastern Otago mountains extensively, and in all seasons.

1.1.8 I have been involved in all the Protected Natural Areas (PNAP) surveys in Otago over the years from 1984, and many of the Tenure Review surveys across the Otago High Country also. Those that I have not been directly involved in, I have nevertheless had a contract that involved identifying all the insects collected and pointing out their significance.

1.1.9 I have read the Code Of Conduct For Expert Witnesses In The Environment

Court Consolidated Practise Note (2006). I agree to comply with this Code Of Conduct. This evidence is all within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

1.2 John Douglas

1.2. 1 My full name is John Wilson Douglas and my qualifications and experience comes from more than 20 years of knowledge building on Central Otago, as well from numerous field visits and as a tour guide since 1991 (Safari Excursions – Wildflower Walks) with a specific interest in the Otago Goldfields and Central Otago natural history.

1.2.2 Over these years I have produced my own tour notes as information handouts to my clients. I have made up my own plant lists of some of the Central Otago mountains, Otago Central Rail Trail and helped Brian Patrick with Pisa Flats and Schoolhouse Terrace – Lower Nevis Valley.

1.2.3 During my time with Otago Goldfields Heritage Trust as an executive, I was responsible for brochures and signage interpretation panels. Projects associated with the Nevis was the production of the Nevis Valley brochure along with six interpretation panels and as well a rewrite of the Otago Goldfields Heritage Trail brochure.

1.2.4 I am also a member of the Botanical Society of Otago, Queen Elizabeth II National Trust, Royal New Zealand Forest & Bird Society, New Zealand Historic Places Trust, Central Otago Environment Society and Central Otago Ecological Trust.

1.2.5 I have been to the Nevis Valley in all of the four seasons. (Winter visits depend on the snow depth over the saddle.) Visits, field research and guided trip tours in the last 20 years would total now well over 130 visits into the Lower Nevis Valley with a good third continuing on into the Upper Nevis.

1.3 We have assessed the evidence of Neill Simpson, Barbara Barratt, Tony Jewell, Mark Sanders and John Barkla and make the following points of rebuttal and revised our List of Flora and Fauna to evidence dated 2nd October 2009.

2. Evidence of that of Neill Simpson

2.1 Page 4 Point 19 - We assume Neill is referring to *Carmichaelia vexillata*, not *Aciphylla vexillata*.

2.2 Page 6 Point 23 (b) - We dispute that there is no relationship between a river and its surrounding terrace. This is ecologically unsound. We also dispute that this important population of *Leptinella conjuncta* is beyond the effects of the proposed new reservoir. Strong north westerly winds will result in wave action across the reservoir causing terrace bank erosion and associated dust, increased vehicle use and recreation will continue to negatively affect this small population plus other native plants that are within this zone around the proposed reservoir.

2.3 It is of additional concern that we understand Pioneer Generation states that there operating regime will have significant environmental impacts (Mr Peter Mulvihills evidence page 14 point 67) operating over an eight-metre range (Page 14 point 68.) This will at times expose large areas of the terrace bank face of bare surface that will potentially cause large volumes of dust to blow and settle on the very small plants.

2.4 Also the higher water table may have an effect of the plants on the terrace. Some will likely benefit but those that like mainly dry conditions, may in time die out. To our knowledge there are no known studies on rare plants affected by an increase in soil dampness.

3. Evidence of that of Barbara Barratt

3.1 As we have previously found *Mecodema chiltoni* in the Nevis Valley it was prudent to note that record.

3.2 We endorse Barbara Barratt's thorough field survey and concur that this large beetle is very unlikely to live in the lower part of the Nevis Valley now.

3.3 But we dispute that *Mecodema chiltoni* is a forest species. We have observed four specimens in natural tussock grasslands above natural beech forest, where its prey, a large land snail, also lives. Both live naturally in both forest and adjacent tussock grasslands.

4. Evidence of that of Tony Jewell

4.1 Table One is confusing. Tony Jewell lists 12 lizard species that may be present – five geckos and seven skinks. Of these it is not clear how many have actually been recorded from the Nevis Valley, how many species are present in collections from the Nevis Valley, or that has he recorded there is, not apparent from his evidence.

4.2 Later he states that five of the lizard species are present in the lower elevations near the Nevis River.

4.3 Further that the two gecko species are known close to, but downstream and upstream of the proposed reservoir area.

4.4 We submit that one-day (25 January 2010) of observation is insufficient to survey nocturnal geckos satisfactorily, let alone for diurnal skink species.

4.5 Tony Jewell is undermining both the validity of the Nevis skink taxonomically and suggesting it is found in adjacent alpine areas when there is no evidence of its occurrence elsewhere.

4.6 Further, the Nevis skink is now known to be only found in the Lower Nevis along and beside the Nevis River and is a distinct species according to Dr Geoff Patterson (Wellington) and Dr Rod Hitchmough (Department of Conservation, Wellington). It will be listed as **Data Deficient** in the next assessment and publication of the New Zealand Threatened Species. (publication in draft form - Rod Hitchmough pers. comm.)

4.7 We submit that the proposed reservoir will impact on the five lizard species of the Lower Nevis particularly the local endemic *Oligosoma* new species (Nevis skink).

5. Evidence of that of Mark Sanders

5.1 It is irrelevant what size the Nevis River native bird habitat is – threatened bird species live and breed there, therefore the area is important in sustaining these species in the wider landscape.

5.2 Therefore the Nevis River flats are biogeographically and ecologically important for both threatened and widespread native birds.

5.3 The proposed reservoir level variations will greatly alter the existing habitats, putting all these bird populations at risk. Physically, changing levels will at times drown any nests around the lake edge.

6. Evidence of that of John Barkla

6.1 We accept the new information and threat status on the sedge *Carex muelleri*, but support John Barkla's statement that the Nevis Valley population of this uncommon species is the best site nationally and therefore of strategic importance.

6.2 We still hold the view that *Galium* new species is a distinct taxon, despite the view of Peter Heenan (Landcare Research Ltd.) that is cited by others. While we acknowledge his expertise on such taxonomic matters, he could be wrong. Brian Patrick has had separate discussions with Peter Heenan on this point, but in our own experience it is better to be cautious on these issues and trust our own judgement.

6.3 John Barkla comments on *Leptinella conjuncta* population in the Nevis Valley being outside the footprint of inundation has not taken into account the vulnerability of this population to a series of other disturbance factors that could eliminate it if the proposed reservoir goes ahead.

6.4 We reiterate that *Carex kaloides* is an uncommon species. The New Zealand Threat Classification system does not deal with commonness.

7.0 Revised Flora and Fauna List

7.1 The Revised 15-3-2010- Flora and Fauna of the Lower Nevis of the area covering the proposed reservoir and of the Schoolhouse Terrace Face is attached.

Revised 15-3-2010-

**FLORA AND FAUNA LIST: LOWER NEVIS VALLEY FLOOR /
SCHOOLHOUSE FLAT TERRACE FACE - LOWER NEVIS VALLEY**

Compiled by Brian Patrick & John Douglas.

This list comprises of only natives, takes into account the direct threat to the reservoir flooding but not natives that will / maybe be affected on the unflooded terraces surfaces.

Flora List:

Acaena caesiiglauca - small bluish leaved bidibid. Not at all common

A. microphyllum - a very small leaved bidibid. In along the face of the sluiced river terrace

Aciphylla aurea - speargrass found along the face of the sluiced river terrace slopes and on the old tailings.

Agrostis petriei - native grass well liked by grazing sheep. Found on some of the sluiced face area on the river terrace slopes.

Blechnum penna-marina subs *alpina* - Alpine hard fern - a small common fern.

Carex breviculmis - grassland sedge

C. kaloides – uncommon sledge

C. muelleri - a rare grass sedge though here locally common in patches throughout the Lower Nevis Valley

Carmichaelia petriei - desert broom found along the face of the sluiced river terrace

Colobanthus brevisepalus - dense green cushion plant with tiny white flowers

Colobanthus stritus – common herb

Coprosma petriei - a very small Coprosma, though with normal size transparent drupes. Found amongst the tailings and along the face of the sluiced river terrace in large patches.

Discaria toumatou - matagouri (Irish thorn) found along amongst the tailings and on the face of the sluiced river terrace.

Elymus apricus - a large native grass in clumps and often grazed out.

Festuca novae-zelandiae - hard fodder tussock. Common in patches throughout the flats.

Galium new species - found only here and on the Pisa Flats. Sweet smelling with a small white flower often found growing within *Raoulia australis*.

Geranium sessiliflorum - a cranesbill found throughout - green and bronze form

Leucopogon fraseri - a small heath found in large patches across the flats.
Leptinella conjuncta - rare tiny button daisy along on the river terrace found here, Pisa Flats and recently at another three sites
Luzula rhadina - a common reddish tinge woodrush

Muehlenbeckia axillaris - mountain pohehue.
Melicytus alpinus (*likely a new species*) - porcupine shrub.
Myosotis pygmaea var. *glauca* - small rare forget-me-not found only along on the river terrace.

Olearia odorata - scented tree daisy found along the face of sluiced river terrace.

Pimelea oreophila - mountain-loving daphne / Pinaatoro
Poa aff. *colensoi* - bluegrass
P. maniototo - small desert grass

Raoulia apicenigra - a loose mat cushion plant. (Flower buds are black at first.)
R. australi - a dense greenish cushion plant yellow daisy.
R. beauverdi - a loose mat cushion plant daisy.
R. parkii - a loose mat cushion plant daisy. Common in the flats above the river terrace
R. subsericea - a pale greenish cushion plant daisy. Common in small patches above the river terrace.
Rhytidosperma buchananii – low tough grass

Ranunculus ternatifolius - a rare buttercup.
Scleranthus uniflorus - moss plant.
Stellaria gracilentia – New Zealand chickweed.

Wahlenbergia albomarginata – New Zealand bluebell (harebell). Only noticeable when in flower.

FAUNA LIST:

Lepidoptera (Moths & Butterflies)

Arctesthes catapyrrhas - small diurnal moth.

Lycaena boldenarum - boulder copper butterfly.

Orocrambus sophistes - rare grassmoth. The female moth is flightless.

Metacrias huttoni – *tiger moth species with flightless female rendering the populations effectively immobile*

Zizina oxleyi - southern blue butterfly.

Beetles (Coleoptera)

Mecodema chiltoni - a large carabid (ground beetle) and now rare in the Nevis Valley

Megadromus sandageri - a large black carabid.

Lizards – skinks are common in the tailings with one undescribed species here.

Nevis skink – undescribed species of *Oligosoma*. Only found in the Lower Nevis Valley beside the Nevis River.

Native Birds feeding / breeding observed on the valley floor

Australian harrier hawk

Black-billed gull

Black-fronted tern

Banded dotterel

Great black cormorant, black shag

New Zealand kingfisher – observed by a friend travelling with me

New Zealand pipit

Paradise shelduck

South Island pied oystercatcher

Spur-winged plover