

Crown Pastoral Land Tenure Review

Lease name : ISLAND HILLS

Lease number : PC 034

Conservation Resources Report – Part 2

As part of the process of Tenure Review, advice on significant inherent values within the pastoral lease is provided by Department of Conservation officials in the form of a Conservation Resources Report. This report is the result of outdoor survey and inspection. It is a key piece of information for the development of a preliminary consultation document.

The report attached is released under the Official Information Act 1982.

2.5.3 Problem Plants

The broom infestation on the southern slopes of Clay Knob is the main plant pest concern on the lease. This infestation may, over time, regenerate to native forest. However, broom control may be required to prevent spread above the natural tree line. Vigilance will be necessary to ensure broom does not spread onto the property from other nearby infestations.

2.6 FAUNA

2.6.1 Bats, Birds and Lizards

Long-tailed bat ‘South Island’ (Nationally Critical) has previously been recorded in beech forest at Jollie Brook in Lake Sumner Conservation Park (Colin O’Donnell, DOC Christchurch; *pers. comm.*). Island Hills Pastoral Lease was surveyed for bats some years ago following a possible sighting, but this did not yield any records (Dan Shand, Island Hills lessee; *pers. comm.*). If bats are present, it is almost certainly the long-tailed bat ‘South Island’. The other species present in the South Island – the southern lesser short-tailed bat (Nationally Endangered) – is known only from Oparara in North Westland, the Eglinton and Kepler Mountains in Fiordland and Whenua Hou/Codfish Island in Foveaux Strait (O’Donnell *et al.*, 2010).

Notable (threatened and at risk) bird species recorded from adjoining Glynn Wye Pastoral Lease include eastern falcon (Nationally Vulnerable), grey duck (Nationally Critical), kea (Naturally Uncommon), pied stilt (Declining), South Island rifleman (Declining) and New Zealand pied oystercatcher (Declining) (Conservation Resources Report, 1998). Additional notable species known from Lake Sumner Conservation Park are blue duck, great spotted kiwi and yellowhead (all Nationally Vulnerable). Blue ducks are rarely encountered in the park: the most recent (2011) sighting was from the Nina River. Yellowheads persist only in small numbers in the South Branch of the Hurunui River (Hurunui Mainland Island area). Great spotted kiwi are relatively widespread in the area (Jack van Hal, DOC Christchurch; *pers. comm.*).

Approximately 11 species of lizard are found within the Waimakariri Area administered by DOC (Herpetofauna Database; Whitaker, 2008), constituting 11% of New Zealand’s lizard fauna (currently 100 recognized and proposed species; Hitchmough *et al.*, 2010). The Herpetofauna Database does not contain any lizard records for Island Hills Pastoral Lease. There are several records of notable (At Risk) species within 25 km of lease boundary: spotted skink ‘South Marlborough’ (Declining) has been recorded from the Hope River and Montrose Stream; rough gecko (Declining) from the Hanmer Basin; and, West Coast green gecko (Declining) from the Doubtful and Boyle river catchments (DOC Herpetofauna Database).

Bird and lizard species observed on Island Hills Pastoral Lease are described below for two geographic areas of the lease.

Unit 1: Mandamus River and Hill Slopes

This area contains the low- to mid-elevation hill slopes on the true right of the Mandamus River, from its confluence with Silver Brook in the south (excluding freehold land adjoining the southeast corner of the lease) to the upper catchment lease boundary in the north. The extensive woody vegetation covering this area consists primarily of mixed beech and second-growth kānuka forest. Mixed indigenous shrubland is present in some areas.

A possible bat pass was recorded at a small lake/pond near the lease boundary. It was recorded after dusk but before it was fully dark, typical conditions under which long-tailed bats 'South Island' emerge from their roosts to start foraging. Unfortunately, the recording was too faint to confirm it as being a long-tailed bat pass with 100% certainty by either the author of this report or by bat expert Dr Colin O'Donnell (DOC Christchurch).

Native bird species recorded from this area were bellbird, black shag (Naturally Uncommon) (one bird), brown creeper, eastern falcon (Nationally Vulnerable) (one bird), grey warbler, paradise shelduck, silvereye, South Island fantail, South Island rifleman (Declining) (one sighting of two birds), swamp harrier and yellow-breasted tomtit. Small bush birds appeared to be most abundant in the QEII covenant in the Bush Creek catchment. In addition, black-fronted tern (Nationally Endangered) was observed near (several km south of) the lease boundary in riverine habitat on two occasions while travelling to the property. Although not detected during this survey, small numbers of kereru are known to be present in the covenanted area and tui regularly appear on the property in good numbers over the winter months (Dan Shand, lessee; *pers. comm.*).

Introduced bird species observed were blackbird, California quail, chaffinch, dunnock, goldfinch, greenfinch, redpoll, song thrush and yellowhammer.

Pygmy gecko (18 individuals) and common skink (five individuals) were found at a number of sites in this area. Pygmy geckos were found under rocks on riverbeds, and in dry and relatively open patches of second-growth kānuka forest beside the Hurunui High Country Track. Common skinks were found in rocky streambeds near Mandamus Hut and along the track. There is extensive shrubland and forest habitat suitable for green geckos (rough or West Coast green gecko), but weather conditions did not permit more than a cursory (unsuccessful) search.

Unit 2: Tops

Survey coverage of the tops included brief searches of two peaks (La Grippe and Mt Skedaddle) and a rock outcrop c. 2.5 km north-east of Mt Skedaddle, and a traverse of the ridgeline between Mt Skedaddle and Clay Knob. Tussockland, herbfield and rockland (rock outcrops, scree and fellfield) dominate this area. A helicopter flight over the property confirmed that other areas on the property that were not surveyed contained similar habitats.

Native bird species recorded from this area were kea (Naturally Uncommon) (one bird), eastern falcon (Nationally Vulnerable) (two sightings of lone birds) and New Zealand pipit (Declining) (13 sightings: five of lone birds, five of pairs, two of trios and one of a group of four individuals). Introduced bird species were not encountered on the tops.

Pygmy gecko (four individuals) and an unidentified skink were found near Clay Knob. The geckos were found in rock outcrops and the skink was encountered in scree habitat. Apart from the western slopes of Clay Knob, screes on the tops appeared to be too fine and of insufficient depth to support lizard populations. Mt Skedaddle and Nicholson's Knob contain extensive rock outcrops that are likely to support populations of pygmy and/or Southern Alps gecko.

Bat species recorded

A possible bat pass was recorded near the pastoral lease boundary. Unfortunately the recording was too faint to be 100% certain. If it was a bat pass, it would have been from a long-tailed bat 'South Island' (Nationally Critical), which is known to occur in the vicinity (Jollie Brook).

Bird Species Recorded

Twenty-two bird species were recorded from Island Hills Pastoral Lease, consisting of 13 native (Table 3) and nine introduced species. In addition, black-fronted tern (Nationally Endangered) was seen near the lease boundary. Introduced bird species recorded were blackbird, California quail, chaffinch, dunnoek, goldfinch, greenfinch, redpoll, song thrush and yellowhammer.

Table 3: Native bird species recorded from Island Hills Pastoral Lease, February 2012

Species	Threat status	Distribution on property
<i>Threatened and At Risk species</i>		
eastern falcon	nationally vulnerable	Throughout
black shag	naturally uncommon	Mandamus River
kea	naturally uncommon	Tops
New Zealand pipit	declining	Tussocklands throughout
South Island rifleman	declining	Bush Creek beech forest
<i>Non-threatened species</i>		
bellbird		Woody vegetation throughout
brown creeper		Woody vegetation throughout
grey warbler		Woody vegetation throughout
paradise shelduck		Wetlands, streambeds and pasture
silvereye		Woody vegetation throughout
South Island fantail		Woody vegetation throughout
swamp harrier		Throughout
yellow-breasted tomtit		Woody vegetation throughout

Lizard species recorded

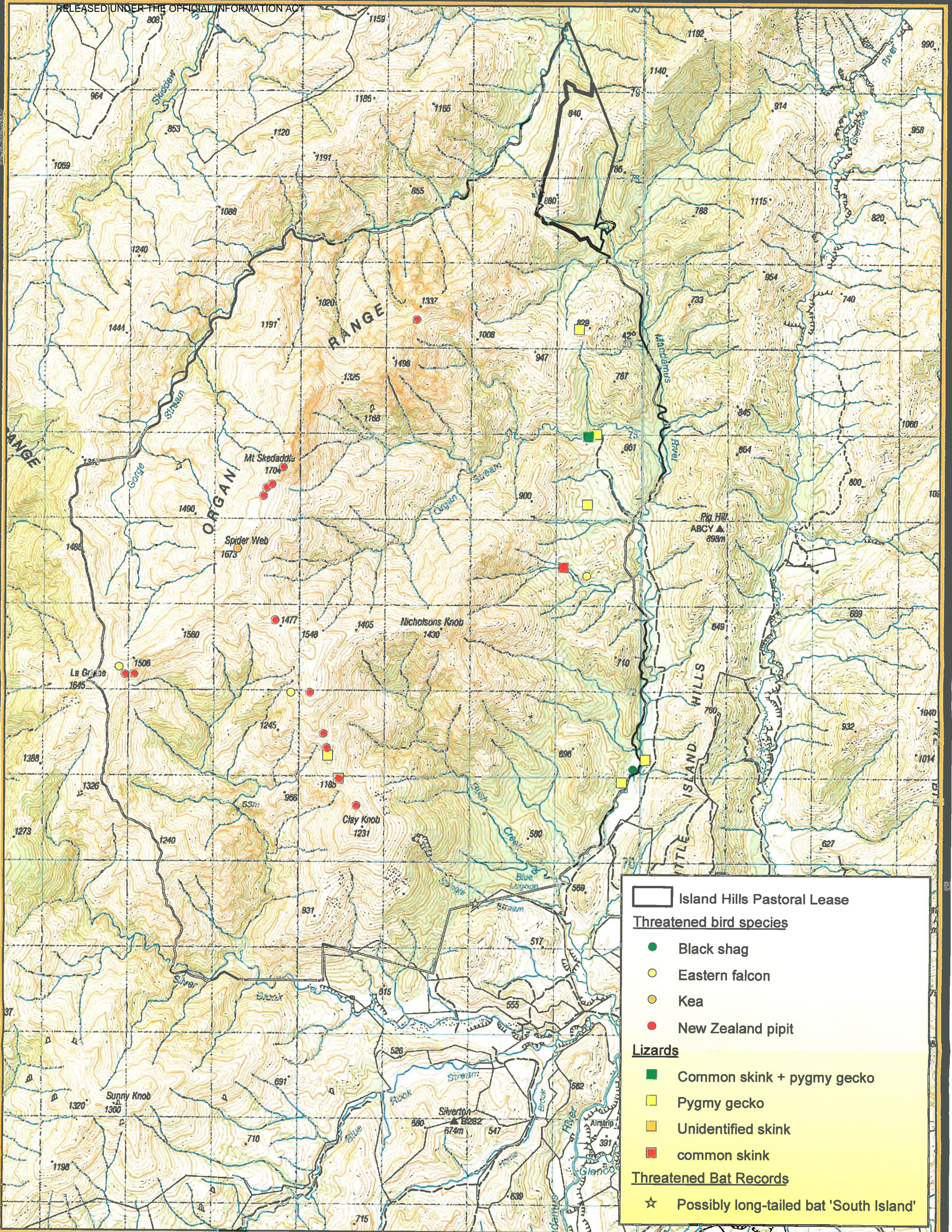
In total, 29 individual lizards of two identified species (Table 4) were recorded from nine sites on the property. This total consisted of 23 pygmy geckos, five common skinks and one unidentified skink (most likely to have been a common skink). All lizards were found in rocky areas (rock outcrops, scree, stream/riverbeds, and under scattered rocks in relatively open areas along the Hurunui High Country Track).

Table 4: Lizard species recorded from Island Hills Pastoral Lease, February 2012

Species	Threat status	Distribution on property
common skink	not threatened	Lower Mandamus River catchment
pygmy gecko	not threatened	Rocky areas throughout
unidentified skink	not threatened	Scree habitat near Clay Knob

Significance of the Bat, Bird and Lizard Fauna

Island Hills Pastoral Lease provides feeding and potential breeding habitats for two threatened species: long-tailed bat 'South Island' (Nationally Critical) and eastern falcon (Nationally Vulnerable); and four At Risk bird species: black shag (Naturally Uncommon), kea (Naturally Uncommon), New Zealand pipit (Declining) and South Island rifleman (Declining) (Map 5). In addition, the property provides feeding and breeding habitats for at least seven non-threatened native bird species (Table 3) and two non-threatened lizard species (Table 4). Although not detected during this survey, kereru and tui are also known from the property. Black-fronted tern (Nationally Endangered) was observed several km from the lease boundary.



Island Hills Pastoral Lease

Map 5: Bat, Bird and Lizard Values

2.6.2 Freshwater Fauna (fish and invertebrates)

Island Hills Pastoral Lease is located on the Organ Range, which divides the Hurunui River catchment from the Waiau River catchment in North Canterbury. The parts of the Hurunui River catchment associated with this lease are the Mandamus River with its tributaries of Organ Stream, Bush Stream, Shingle Stream and Silver Brook. The Waiau River is represented by the small tributary of Gorge Stream.

Ecological Context

The Hurunui River and the Waiau River are both free of the large barriers present in other South Island rivers. This has two important influences on the fish communities within these rivers; the first is that the fish communities are more likely to have diadromous species present, those species with a sea phase in their lifecycle. The second influence is that fish communities are more able to migrate between streams allowing colonisation of previously dewatered streams.

The Waters of National Importance (WONI) documentation (Chadderton *et al* 2004) recognises the Hurunui River as having sections of waterway containing special features of national significance. This significance is for its highly natural and diverse headwaters, and for its naturally significant braided river bird populations.

The successor to this work, Freshwater Environments of New Zealand (FENZ; Leathwick *et al* 2007), uses modified criteria to rank the rivers in a different way at a finer scale, to establish how that unit of river fits across a matrix of variables. This ranks the waterways of the Hurunui catchment on this property in and around the top quarter and the Waiau catchment stream is placed in the middle in terms of regional significance.

The New Zealand Freshwater Fish Database (NZFFD) records for the Hurunui and Waiau Rivers were searched on the 11th of September 2012, using protocols described in McDowall & Richardson (1983); with 96 records found and 15 fish species recognised in the Hurunui River and 105 records found and 17 fish species recognised in the Waiau River. Six of these fish species are recognised as threatened by Allibone *et al* (2010) In common, the two catchments shared the species: yelloweyed mullet, shortfin eel, longfin eel (declining), torrentfish (declining), koaro (declining), alpine galaxias, upland longjaw galaxias (nationally vulnerable), Canterbury galaxias, upland bully, common bully, rainbow trout, common smelt, brown trout and Stokell's smelt (naturally uncommon). Additionally, the Hurunui is recorded as having perch and the Waiau is recorded as having goldfish, inanga (declining) and rudd. None of these records are in close proximity to Island Hills Pastoral Lease.

The 'Statement of National Priorities' document (MfE 2007) recognises in Priority Four that all species in the nationally critical, nationally endangered and nationally vulnerable threat categories as Acutely Threatened; and all the species in serious decline and gradual decline as Chronically Threatened. Allibone *et al* (2010) uses criteria detailed in Townsend *et al* (2008) which supercedes the criteria described in Molloy *et al* (2002). Under this updated system, "Threatened" species are considered to be those ranked as nationally critical, nationally endangered and nationally vulnerable (previously termed "Acutely Threatened" species); and the "At Risk" species are those listed as declining, recovering, relict and naturally uncommon (replacing the previous criteria of the "Chronically Threatened" species).

Methods

The aquatic fauna surveys were undertaken on Island Hills Pastoral Lease between the 13th and 16th of February 2012. Macro-invertebrate surveys were carried out using samples collected both while electrofishing and from making thorough searches of waterway margins and substrate. Survey sites, for both fish and macro-invertebrates, were selected to cover the entire accessible aquatic habitat types present on the pastoral lease; utilising other known information from adjacent pastoral leases and previous freshwater survey work. All survey sites had a basic habitat assessment done for input into the NZFFD. Aquatic insects were identified using Winterbourn *et al* (2006) and a photo identification guide produced by the Otago Regional Council (1997).

Areas Surveyed

Seven sites on Island Hills Pastoral Lease were surveyed for their freshwater fauna communities using standard electrofishing practises.

For the purposes of the aquatic values survey, the pastoral lease was split into two geographical units (blocks), defined by their watershed catchments within the catchment units. The units are 'Mandamus River Block' and the 'Gorge Stream Block'.

'Mandamus River Block': This area of approximately 3865 hectares incorporates the south-east side of Island Hills Pastoral Lease, being the part that drains south-east from the Organ Range. This section of pastoral lease is dominantly by the south and east flowing waterways which bisect this side of the Organ Range, including Organ Stream, Bush Stream, Shingle Stream and Silver Brook. These streams flow into the larger Mandamus River which generally defines the eastern boundary of this lease.

Animal access is generally unrestricted on all waterways in this block; however, topography and thick vegetation act as barriers for stock in some parts. Vehicle tracks are present in parts of this block, running adjacent to the Mandamus River to reach Valley Camp Hut in Organ Stream, using fords to cross waterways. The Mandamus River is between three and five metres wide for most of the property and between 100 mm and 300 mm deep with occasional holes up to a metre in depth. The tributary streams are up to three and a half metres wide in the bigger streams with about 300 mm depth but up to a metre in some places. All waterways generally have a boulder and cobble substrate with some gravels present.

Five sites were surveyed in the 'Mandamus River Block', using the electrofishing method. All sites had brown trout present; with Canterbury galaxias and upland bully also present in all but the Bush Stream site. There are no NZFFD records for this property; however, it is expected that both longfin eel and koaro are able to access this property via accessible migration paths and are present in other similar localities around the catchment.

The streams of the 'Mandamus River Block' have very good water quality, evident with the occurrence of the mayflies: *Coloburiscus humeralis*, *Deleatidium lillii*-group and *Deleatidium myzobranchia*-group; the stonefly: *Stenoperla prasina*; the caddisflies: *Aoteapsyche* sp., *Helicopsyche* sp., *Hydrobiosis frater*, *Hydrobiosis* sp., *Olinga feredayi* and *Pycnocentria* sp.; the dobsonfly: *Archichauliodes diversus*; the two-winged flies: *Austrosimulium* spp., Chironominae sp.; the snail: *Potamopyrgus* sp.; the flatworm: *Cura* sp. and the worm: *Oligochaete* sp.

‘Gorge Stream Block’: This area of approximately 1135 hectares incorporates the parts of Island Hills Pastoral Lease that drain the northwest faces of the property, flowing to Gorge Stream that defines the western boundary of this lease.

Stock and wild animals generally have access to all waterways in this block, although many topographical barriers are present. There are no vehicle tracks on this block. The waterways in this block vary between two and a half metres in width up to six metres, although it is only one main channel running the length of this block, which has significant flow. The waterways are about 300 mm deep, although there were often holes of up to one metre deep in many areas. The substrate of all the waterways is mainly boulders and cobbles, with occasional areas of gravels and bedrock.

Two sites were surveyed in the ‘Gorge Stream Block’ with brown trout being found in the lower site only. There are no records from the NZFFD for this block.

The streams of the ‘Gorge Stream Block’ have very good water quality, evident with the occurrence of the mayflies: *Ameletopsis perscitus*, *Coloburiscus humeralis*, *Deleatidium lillii*-group, *Deleatidium myzobranchia*-group and *Nesameletus* sp.; the stoneflies: *Stenoperla prasina* and *Zelandobius* sp.; the caddisflies: *Aoteapsyche* sp., *Helicopsyche* sp., *Hydrobiosis* sp., *Olinga feredayi* and *Pycnocentria* sp.; the dobsonfly: *Archibauliodes diversus*; the two-winged flies: *Austrosimulium* spp.; the flatworm: *Cura* sp.; and the worm: *Oligochaete* sp.

Significance of the Aquatic Fauna

The most significant of aquatic fauna are the threatened species; however, none were recorded on Island Hills Pastoral Lease. Also of note are the local fish communities adjacent to this property or in surrounding waterways of the same catchments; this is more relevant for this property because there is a lack of any recorded freshwater fish data from the tributaries specific to this property. Threatened fish recorded from surrounding waterways includes koaro and longfin eel.

The lack of findings for both koaro and longfin eel across Island Hills Pastoral Lease is of some concern. McDowall (2000) describes koaro as “favouring clear, swiftly flowing, boulder-cobble streams of small to moderate size that flow through forest, though also in tussock streams that drain into high elevation lakes”; and longfin eels, which are acknowledge as great climbers, as being generally found in “a variety of habitats, from large rivers through to small streams”. Therefore, many of the streams of Island Hills Pastoral Lease have the habitat to support both koaro and longfineel.

2.6.3 Terrestrial Invertebrates

No known invertebrate surveys have been carried out on Island Hills Pastoral Lease. The nearest location with any collection records is The Poplars Pastoral Lease (LINZ, 2006). A survey of the neighbouring Glynn Wye Pastoral Lease did not cover invertebrate values (LINZ, 2002). In the early 1980s entomologist Peter Johns conducted an invertebrate survey of Hanmer forests and noted that the proportion of native and endemic beetles was significant (Johns, *pers. comm.*).

Invertebrates of Island Hills Pastoral Lease are described below for three distinct parts of the lease.

Unit 1: Gorge Stream catchment

This area encompasses the northwest slopes above the true right of Gorge Stream and includes the ridge line of the Organ Range. The slopes are dominated by tussockland and herbfield with several narrow gullies supporting shrublands of snow totara, *Dracophyllum*, *Coprosma*, *Melicytus* and *Ozothamnus*. Grasshoppers (*Sigauss* sp.), darkling beetles, black mountain cicada, tussock ringlet butterflies and native bees were common during a walked descent of these slopes.

Mountain stone weta (*Hemideina maori*) was found at two ridge locations between Mt Skedaddle (1704m) and La Grippe (1645m). The northwest slopes are in moderate to high ecological condition, showing little grazing damage and with a range of native invertebrates typical of the habitat. A descent was made into an unnamed gully above Gorge Stream which supported a diverse shrubland community and several large invertebrates: beetles, spiders and numerous tussock ringlets (*Argyrophenga antipodum*) and the day flying moth (*Paranotoreas ferox*). Due to time and logistical constraints, the northern toe of the Organ Range was not surveyed.

Unit 2: Organ Stream Catchment and Eastern Faces

This east-facing portion of the lease includes Mt Skedaddle (1704m) and some of the steepest landforms of the Organ Range. Beech forest is extensive on lower slopes, with shrubland in most gullies and the upper reaches of Organ Stream. Snow tussock is common throughout higher elevations where bluffs and steep gullies are also present. The tops comprise tors and bluffs and support an alpine community that is in high, if not excellent, ecological condition. The vegetation includes alpine forms of *Helichrysum*, *Celmisia*, *Hebe*, *Gaultheria* and *Raoulia*. A fly-over by helicopter indicated that the native vegetation communities are intact and form an unbroken transition from valley floor to the tops.

Several forms of invertebrate were collected from the alpine habitat, in an area immediately north of Mt Skedaddle, including several weta species: two species of cave weta (*Neonetes pilosus* and *Isoplectron* sp.: Rhaphidophoridae); the South Island endemic scree weta (*Deinacrida connectens*); and mountain stone weta (*Hemideina maori*: Anostomatidae). It is not common to find such an abundance of weta species in a confined location and it suggests that the summit ridge and tors of the Organ Range represent ecological islands, with low numbers of invertebrate predators.

Two mountain grasshopper species were also collected from the Organ Range: *Sigauss australis* was abundant where found; and *Brachaspis nivalis* was present at rocky tors. The latter is related to the Nationally Endangered *B. robustus* and is itself a distinctive endemic insect. The rocky tor habitats also support darkling beetles (*Artystona* sp.), which are characteristic of the alpine zone and indicative of an intact community.

Significant insects collected from the tussock habitats include the large speargrass weevil *Lyperobius buttoni*, grasshoppers (*Sigauss australis*) and ringlet butterflies (*Argyrophenga antipodum*). *Lyperobius buttoni* are large (12mm) slow moving beetles that are susceptible to predation. To that extent, finding *L. buttoni* at this elevation on Island Hills indicates a low predator threat at these locations. However, several wild pigs were seen while flying over the Organ Range.

Invertebrates collected from the lower elevations include a stonefly (*Aoteapsyche* sp.) and the large mountain dragonfly (*Uropetala chiltoni*), both in the lower section of Organ Stream. Several invertebrate taxa commonly found in Canterbury beech forest were noted within the beech forests of the Mandamus River valley. Taxa include the endemic ground beetle *Metaglymma*

moniliferum, cockroaches (*Celatoblatta vulgaris*) and tunnel web spider (*Porrhothele antipodiana*). The introduced common wasp *Vespula vulgaris* was abundant throughout the beech forests, feeding on honey dew.

Unit 3: Bush Stream and Southern Valleys

The inspection of this area was confined to two locations: the summit ridge from La Grippe to Point 1548m; and the beech forest track between Organ Stream and Bush Creek, including the terraces on the true right of the Mandamus River. A helicopter fly-over demonstrated that over 80% of the area is native vegetation with extensive old growth beech forest nearly filling Bush Creek catchment. There is some introduced broom on the south faces of Clay Knob.

Several *Hemideina maori* weta were noted throughout the stone pavement habitat around La Grippe at 1600m and the mountain cicada *Maoricicada* was common on the ridge between La Grippe and Point 1548. These insects are typical of undisturbed alpine environments.

The invertebrate fauna within the beech forest of Bush Creek is typical of eastern Canterbury, with characteristic groups including ground dwelling spiders (*P. antipodiana*, *Uliodon frenatus*), the endemic ground beetle (*Megadromus rectalis*), ants (*Monomorium antarcticus*) and flies (*Leptotarsus* sp.: Tipulidae). *Megadromus rectalis* is a relatively large (12mm) beetle, with a range from Marlborough to mid-Canterbury (Johns, 2005) and is probably at its range limit on Island Hills.

A specimen of the spider parasite fly *Ogcodes* was collected from within the forest and, although not a threatened taxon, they are naturally rare. A visit to the small Blue Lagoon tarn (the result of a landslide), identified numerous red coat damselflies (*Xanthocnemis zealandica*), Tipulid flies, hover flies (*Melanagyna* sp.) and *Kikihia* cicada, all of which are native taxa. Sedge and shrublands surrounding the tarn grade to a beech forest margin, no further than ten metres from the water's edge. Little disturbance (stock damage, fire, weeds and pests) was evident at Blue Lagoon and to that extent the tarn and its surroundings are considered to have high intrinsic value.

Species Recorded

Fifty-five taxa were recognised from the lease and of these 26 are endemic, 28 native and one introduced. No threatened invertebrate species were found on the property. However, several taxa are considered of conservation interest (Table 5), and the habitats in which these and other species were found are of moderate to high conservation value.

Table 5: Notable invertebrate species recorded on Island Hills Pastoral Lease, February 2012

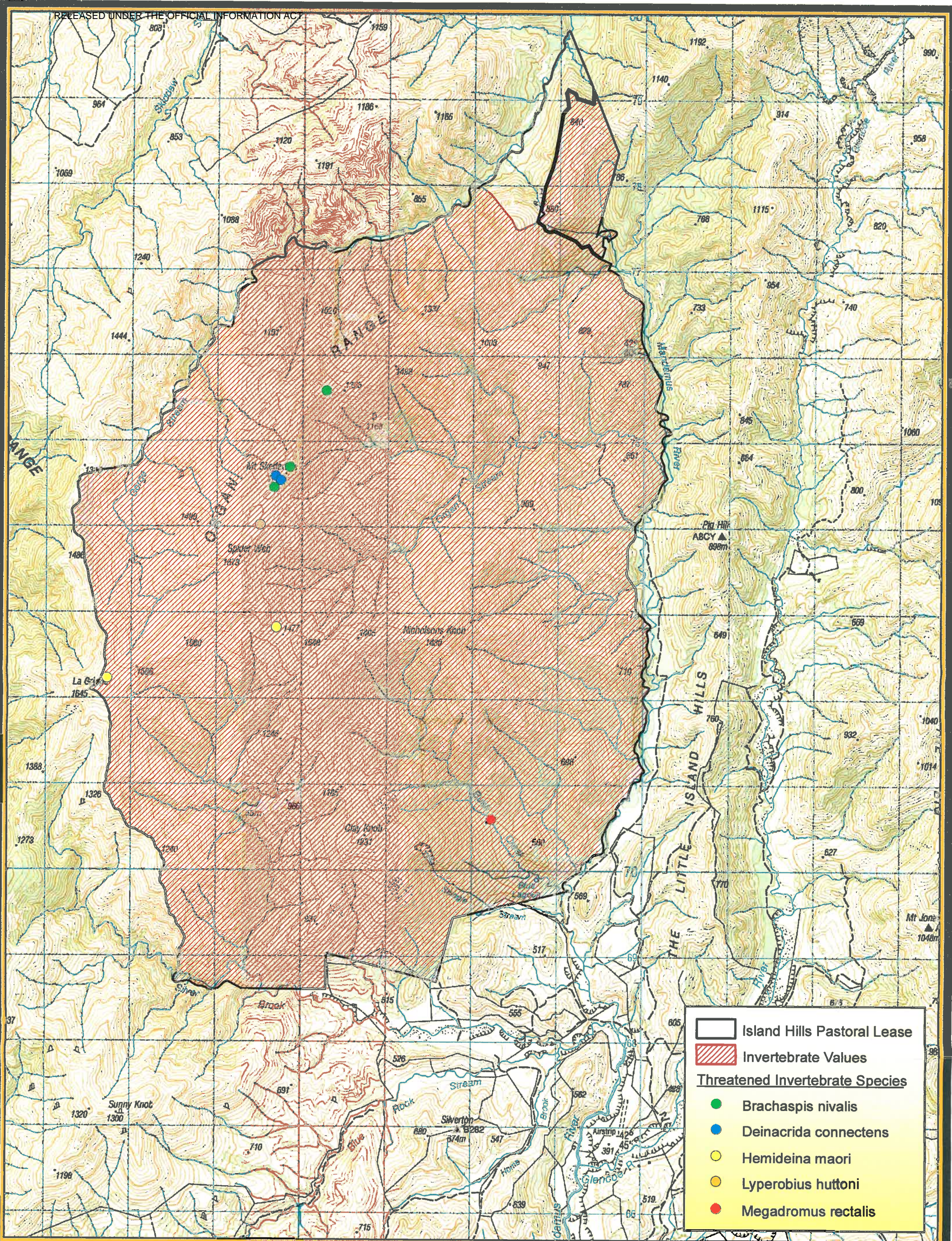
Common Name	Scientific Name	Threat status/conservation value
Large ground beetle	<i>Megadromus rectalis</i>	At or near southern limit of natural range.
Large speargrass weevil	<i>Lyperobius huttoni</i>	These are the largest native weevils found in the South Island. Presence indicates low predator density and suitable host plant density.
Mountain grasshopper	<i>Brachaspis nivalis</i>	Endemic to the eastern South Island high country. Related species (<i>B. robustus</i>) threatened.
Mountain stone weta	<i>Hemideina maori</i>	Indicator species. Presence indicates low predation and intact indigenous habitat.
Scree weta	<i>Deinacrida connectens</i>	Endemic (10 <i>Deinacrida</i> species are threatened).

Significance of the Invertebrate Fauna

The majority of the lease is in high, if not excellent, ecological condition (Map 6). The invertebrate fauna is dominated by native and endemic species, some of which are at their range limit while others are typical of specific habitats (e.g. alpine). The higher elevations on the property (the Organ Range) represent an ecological island that supports four species of mountain weta, large speargrass weevils and at least two grasshopper species.

2.6.4 Problem Animals

Introduced wasps (*Vespula* spp.) were the most abundant pest animals observed on the lease. Wasps are capable of reaching very high densities (10,000 workers ha⁻¹) in honeydew beech forests in New Zealand, thereby depriving native birds, reptiles and invertebrates of a valuable food source (Beggs, 2001). Wasps also prey on some native invertebrates (Thomas, 1987; Beggs, 2001). Pest mammal species recorded on Island Hills Pastoral Lease were brown hare, European rabbit, brushtail possum (scat only), chamois and feral pig. A group of pigs (two adults and at least half a dozen piglets) were seen feeding on *Celmisia* leaves and digging up *Aciphylla* roots on the tops at c.1500m altitude. Although not detected, other introduced mammalian predators (European hedgehog, feral cat, ferret, stoat and/or weasel and rodents) are likely be present. Their negative impacts on native bird and lizard populations are well-documented (e.g., Tocher, 2006).



Island Hills Pastoral Lease

Map 6: Invertebrate Values

2.7 HISTORIC

2.7.1 European Heritage Values

Lease History

Island Hills was originally part of the Glens of Tekoa property. Island Hills was purchased from McRae by Y.T. Shand in 1928 and later farmed by his son A.C. Shand (Hurunui High Country Track Guide, Everything NZ).

Historic Sites

There are several recorded historic sites on the Island Hills property. However, only two of these sites appear to be within or near to the pastoral lease:

Bush Hut (Site No.229):

Bush Hut was constructed at lower Bush Creek in 1932 by a Norwegian, Chris Johnson, employed on a Government-sponsored Depression work scheme. He was assisted by a carpenter, Jack Allen. Arthur Shand felled red beech trees and pulled them to the site by draught horse. The logs were carefully marked and then hand-trimmed by axe, to ensure a close fit. Gaps between the trimmed logs were filled with moss and the hut roofed with corrugated iron. The hut is still used today as part of the Hurunui High Country Track. It is in relatively good condition. Important historic values are its uncommon Scandinavian design and that it is an example of a Depression work project.

Gills Yards (site No.232):

Gills Yards are a rough clearing with a few pieces of old fencing wire (thicker than No.6), located in the Mandamus valley near the confluence of Organ Stream. It is a site at which Mr Gill gathered stolen sheep in c.1896 before driving them to the West Coast to sell. Mr Gill served approximately ten years in jail for his crime. The site is significant as a location of the apparently uncommon practice of sheep stealing. It is unclear whether this site is within the lease or near its boundary.

Also present within the lease are remnants of an old pack track that is believed to have been built by Sir Charles Upham, and an old snow fence. The historic significance of these features is unclear.

Significance of Historic Resources

Island Hills Pastoral Lease is part of a larger property with a relatively rich farming history, typical of North Canterbury high country runs. Significant historic sites are Bush Hut and Gills Yards.

2.8 PUBLIC RECREATION

2.8.1 Physical Characteristics

Island Hills Pastoral Lease is dominated by the steep slopes and summits of the Organ Range. Gentler country is present on the lower eastern slopes of the range in the Mandamus valley, at the eastern boundary of the lease. Landforms are typical of the North Canterbury mountain lands and are transitional in character between the lower foothills ranges and the mountain ranges of the Southern Alps.

2.8.2 Legal Access

Roads

An un-named legal road, aligning with a formed farm track in parts, provides access to the southeast and eastern boundaries of the property from the Tekoa Road.

Adjoining Public Conservation Land

Access to the western boundary of the lease on the Organ Range is available from Lake Sumner Conservation Park, though this is not an easy access route.

Marginal Strips

The property is subject to Section 58 Land Act 1948 as it had a lease renewal in 1986. There has been no formal survey to determine what streams have an average width of greater than 3 m which would qualify for marginal strips. Observation suggests that this will be limited to the parts of the lower Organ Stream, lower Bush Creek and sections of the Mandamus River and lower Gorge Stream where they occur in the lease.

2.8.3 Activities

The most important recreational use of the lease is probably walkers on the Hurunui High Country Track as part of a commercial tourist operation. The lease is otherwise not readily accessible to the public. Higher altitude parts of the lease are appreciated by the public, in distant views from the Culverden basin. The lease could potentially provide opportunities for walking, tramping, horse-riding, mountain biking and nature study.

Significance of Recreation

Significant recreational features of Island Hills Pastoral Lease are the Hurunui High Country Track and the contribution the Organ Range makes to the scenery of the North Canterbury high country.

PART 3 OTHER RELEVANT MATTERS AND PLANS

3.1 CONSULTATION

Comments were received from the following parties during the preparation of this document.

Canterbury Aoraki Conservation Board

The Board requests that:

- ecological connectivity with adjacent protected areas be maintained;
- altitudinal sequences be protected;
- freshwater systems be protected and buffered (fenced) from the effects of activities on adjacent land;
- boundaries with freehold land be fenced and include buffers to protect ecological values from the effects of activities on adjacent land;
- opportunities for recreational access be provided (e.g. mountain bike tracks);
- land use capability be taken into consideration;
- Ngai Tahu values be respected and protected;
- covenants on freeholded land be effective.

New Zealand Historic Places Trust

Desktop studies show no registered historic places, historic ares, wāhi tapu or wāhi tapu areas on the lease. Also there are no sites recorded in the NZ Archaeological Association Site Recording Scheme in the immediate area of the subject land and there are no heritage items identified in the respective District Plans at these locations.

The absence of recorded archaeological sites in the NZAA Site Recording Scheme on the properties should not be taken as evidence that no sites are present, as a systematic survey has not been undertaken. Some additional research we have undertaken indicates that an historic stock track may be located near the northern boundary of Omahau Pastoral Lease, and historic fences may be present on both leases.

A comprehensive heritage survey should be undertaken to ensure any sites are appropriately recorded. With results supplied to NZHPT

If significant historic heritage places are identified in the survey, further consideration should be given to appropriate protection measures.

New Zealand Deer Stalkers Association

There is a recorded history of game hunting on this property, with reed deer and chamois being targeted. Other animals hunted include rabbits, hares and possums.

3.2 DISTRICT PLANS

Island Hills Pastoral Lease lies within the Rural Zone in the Hurunui District Councils District Plan.

There are no sites of significance listed in the district plan for this property.

Within this plan, the parts of Island Hills Pastoral Lease in the Waiau River Catchment (Gorge Stream side) are considered an Outstanding Landscape; whereas this is not recognised on the Hurunui Catchment area, with this recognised as a Forestry Management Area. The crest of the Organ Range defines these boundaries.

The entire property is defined as Soft Rock Downlands in this plan.

There are a number of rules defined in the Hurunui District Plan for the permissible, controlled and discretionary activities relating to land use activities on this property. These activities include limitations for the outstanding landscape areas, for riparian margins, and for other rural settings.

3.3 CONSERVATION MANAGEMENT STRATEGIES

Island Hills Pastoral Lease lies within the Hurunui Place Unit of the Canterbury Conservancy. Relevant priority objectives for this unit listed in the CMS (Department of Conservation, 2000) are:

- To identify the significant indigenous vegetation and threatened plant and animal species of the Hurunui Unit.
- To use a range of effective methods to protect the indigenous biodiversity of the Hurunui Unit.
- To protect and enhance the viability of priority threatened species' populations and their habitat(s) in the Hurunui Unit.
- To set and implement priorities for wilding pine and broom control and maximise benefits for indigenous biodiversity.

3.4 NEW ZEALAND BIODIVERSITY STRATEGY

The New Zealand Government is a signatory to the Convention on Biological Diversity. In February 2000, Government released the New Zealand Biodiversity Strategy. This strategy is a blueprint for managing the country's diversity of species and habitats. It sets a number of goals to achieve this aim. Of particular relevance to tenure review is Goal 3, which states:

- *Maintain and restore a full range of remaining natural habitats and ecosystems to a healthy functioning state, enhance critically scarce habitats, and sustain the more modified systems in production and urban environments, and do what is necessary to:*
- *Maintain and restore viable populations of all indigenous species across their natural range and maintain their genetic diversity.*

PART 4 ATTACHMENTS

4.1 ADDITIONAL INFORMATION

4.1.1 Scientific Names of Plant Species

Native and endemic plants

beechn	<i>Nothofagus</i> spp.
bidibid	<i>Acaena anserinifolia</i>
black beech	<i>Nothofagus cliffortioides</i> var <i>solandri</i>
blue tussock	<i>Poa colensoi</i>
blue wheat grass	<i>Elymus solandri</i>
bog rush	<i>Schoenus pauciflorus</i>
bracken	<i>Pteridium esculentum</i>
bristle tussock	<i>Rytidosperma setifolium</i>
broadleaf	<i>Griselinia littoralis</i>
bush lawyer	<i>Rubus schmidelioides</i>
bush lily	<i>Astelia fragrans</i>
carpet grass	<i>Chionochloa australis</i>
clubmosses	<i>Lycopodium</i> spp.
dwarf heath	<i>Leucopogon fraseri</i>
false speargrass	<i>Celmisia lyallii</i>
feathery tutu	<i>Coriaria angustissima</i>
fescue tussock	<i>Festuca novae-zelandiae</i>
golden speargrass	<i>Aciphylla aurea</i>
grassland buttercup	<i>Ranunculus multiscapus</i>
harebell	<i>Wahlenbergia albomarginata</i>
holy grass	<i>Hierochloe redolens</i>
hook grasses	<i>Uncinia</i> spp.
kānuka	<i>Kunzea</i> aff. <i>ericoides</i>
kiokio	<i>Blechnum montanum</i>
kiwakiwa	<i>Blechnum fluviatile</i>
kowhai	<i>Sophora microphylla</i>
lance fern	<i>Blechnum chambersii</i>
lancewood	<i>Pseudopanax crassifolius</i>
little hard fern	<i>Blechnum penna-marina</i>
manuka	<i>Leptospermum scoparium</i>
matagouri	<i>Discaria toumatou</i>
matai	<i>Prumnopitys taxifolia</i>
mountain beech	<i>Nothofagus cliffortioides</i> var <i>cliffortioides</i>
mountain fescue tussock	<i>Festuca matthewsii</i>
mountain five-finger	<i>Pseudopanax colensoi</i>
mountain ribbonwood	<i>Hoheria lyallii</i>
mountain tauhinu	<i>Ozothamnus vauvilliersii</i>

mountain tötara	<i>Podocarpus cunninghamii</i>
mountain wineberry	<i>Aristotelia fruticosa</i>
native broom	<i>Carmichaelia australis</i>
native jasmine	<i>Parsonsia capsularis</i>
native mint	<i>Mentha cunninghamii</i>
New Zealand edelweiss	<i>Leucogenes grandiceps</i>
pöhuehue	<i>Muehlenbeckia complexa</i>
porcupine shrub	<i>Meliccytus</i> aff. <i>alpinus</i>
prickly mingimingi	<i>Cyatodes juniperina</i>
prickly shield fern	<i>Polystichum vestitum</i>
putaputäwētā	<i>Carpodetus serratus</i>
red beech	<i>Nothofagus fusca</i>
red matipo	<i>Myrsine australis</i>
shining karamu	<i>Coprosma lucida</i>
silver beech	<i>Nothofagus menziesii</i>
silver tussock	<i>Poa cita</i>
slim snow-tussock	<i>Chionochloa macra</i>
small kiokio	<i>Blechnum procerum</i>
snow tötara	<i>Podocarpus nivalis</i>
snow tussock	<i>Chionochloa</i> spp.
snowberry	<i>Gaultheria antipoda</i> and <i>G. depressa</i>
spike sedge	<i>Eleocharis acuta</i>
spineless bidibid	<i>Acaena inermis</i>
thousand-leaved fern	<i>Hypolepis millefolium</i>
toetoe	<i>Austroderia richardii</i>
tree daisies	<i>Olearia</i> spp.
tree fuchsia	<i>Fuchsia excorticata</i>
turpentine shrub	<i>Dracophyllum uniflorum</i>
tutu	<i>Coriaria sarmentosa</i>
vegetable sheep	<i>Raoulia eximia</i> and <i>R. mammilaris</i>
water fern	<i>Histiopteris incise</i>
weeping māpou	<i>Myrsine divaricata</i>
whipcord hebes	some <i>Hebe</i> spp. (
wineberry	<i>Aristotelia serrulata</i>
wire moss	<i>Polytrichum juniperinum</i>
white fuzzweed	<i>Vittadinia australis</i>
woodrush	<i>Luzula rufa</i>
woolly moss	<i>Racomitrium</i> sp.

Introduced and naturalized plants

broom	<i>Cytisus scoparius</i>
browntop	<i>Agrostis capillaries</i>
catsear	<i>Hypochaeris radicata</i>
Chewings fescue	<i>Festuca rubra</i>
crested dogs tail	<i>Cynosurus cristatus</i>
king devil hawkweed	<i>Pilosella piloselloides</i> subsp. <i>Praealta</i>
monkey musk	<i>Mimulus guttatus</i>
mouse-ear chick weed	<i>Cerastium glomeratum</i>
mouse-ear hawkweed	<i>Pilosella officinarum</i>
purging flax	<i>Linum catharticum</i>
red clover	<i>Trifolium pratense</i>
sheep's sorrel	<i>Rumex acetosella</i>
sweet vernal	<i>Anthoxanthum odoratum</i>
water forget-me-not	<i>Myosotis laxa</i> subsp. <i>caespitosa</i>
water speedwell	<i>Veronica serypyllifolia</i>
white clover	<i>Trifolium repens</i>
yarrow	<i>Achillea millefolium</i>
Yorkshire fog	<i>Holcus lanatus</i>

4.1.2 Scientific Names of Animal Species**Native and endemic birds**

bellbird	<i>Anthornis melanura melanura</i>
black shag	<i>Phalacrocorax carbo novaehollandiae</i>
black-fronted tern	<i>Chlidonias albostratus</i>
blue duck	<i>Hymenolaimus malacorhynchos</i>
brown creeper	<i>Moboua novaeseelandiae</i>
eastern falcon	<i>Falco novaeseelandiae</i> "eastern"
great spotted kiwi	<i>Apteryx haastii</i>
grey duck	<i>Anas superciliosa superciliosa</i>
grey warbler	<i>Gerygone igata</i>
kea	<i>Nestor notabilis</i>
kereru	<i>Hemiphaga novaeseelandiae</i>
marsh crake	<i>Botaurus poiciloptilus</i>
New Zealand pied oystercatcher	<i>Haematopus finschi</i>
New Zealand pipit	<i>Anthus novaeseelandiae novaeseelandiae</i>
paradise shelduck	<i>Tadorna variegata</i>
pied stilt	<i>Himantopus himantopus leucocephalus</i>
silvereye	<i>Zosterops lateralis lateralis</i>
South Island fantail	<i>Rhipidura fuliginosa fuliginosa</i>
South Island rifleman	<i>Acanthisitta chloris chloris</i>
swamp harrier	<i>Circus approximans</i>
tui	<i>Prosthemadera novaeseelandiae novaeseelandiae</i>
yellowhead	<i>Moboua ochrocephala</i>
yellow breasted tomtit	<i>Petroica macrocephala macrocephala</i>

Introduced and naturalized birds

blackbird	<i>Turdus merula</i>
California quail	<i>Callipepla californica</i>
chaffinch	<i>Fringilla coelebs</i>
dunnock	<i>Prunella modularis</i>
goldfinch	<i>Carduelis carduelis</i>
greenfinch	<i>Carduelis chloris</i>
redpoll	<i>Carduelis flammea</i>
song thrush	<i>Turdus philomelos</i>
yellowhammer	<i>Emberiza citrinella</i>

Reptiles

common skink	<i>Oligosoma polychroma</i>
pygmy gecko	<i>Woodworthia</i> aff. <i>maculata</i> 'pygmy'
rough gecko	<i>Naultinus rudis</i>
Southern Alps gecko	<i>Hoplodactylus</i> aff. <i>maculatus</i> 'Southern Alps'
spotted skink 'South Marlborough'	<i>Oligosoma</i> aff. <i>lineocellatum</i> 'South Marlborough'
West Coast green gecko	<i>Naultinus tuberculatus</i>

Native mammals

long-tailed bat "South Island"	<i>Chalinolobus tuberculatus</i>
southern lesser short-tailed bat	<i>Mystacina tuberculata tuberculata</i>

Introduced mammals

brown hare	<i>Lepus europaeus occidentalis</i>
brush-tail possum	<i>Trichosurus vulpecula</i>
chamois	<i>Rupicapra rupicapra</i>
European hedgehog	<i>Erinaceus europaeus</i>
European rabbit	<i>Oryctolagus cuniculus cuniculus</i>
feral cat	<i>Felis catus</i>
feral ferret	<i>Mustela furo</i>
feral pig	<i>Sus scrofa</i>
stoat	<i>Mustela erminea</i>
weasel	<i>Mustela nivalis vulgaris</i>

Native Fish

alpine galaxias	<i>Galaxias paucispondylus</i>
Canterbury galaxias	<i>Galaxias vulgaris</i>
common bully	<i>Gobiomorphus cotidianus</i>
common smelt	<i>Retropinna retropinna</i>
inanga	<i>Galaxias maculatus</i>
Koaro	<i>Galaxias brevipinnis</i>
longfin eel	<i>Anguilla dieffenbachii</i>
shortfin eel	<i>Anguilla australis</i>
Stokell's smelt	<i>Stokellia anisodon</i>
Torrentfish	<i>Cheimarrichthys fosteri</i>
upland bully	<i>Gobiomorphus breviceps</i>
upland longjaw galaxias	<i>Galaxias prognathus</i>
yellow-eyed mullet	<i>Aldrichetta fosteri</i>

Introduced Fish

brown trout
goldfish
perch
rainbow trout
rudd

Salmo trutta
Carassius auratus
Perca fluviatilis
Oncorhynchus mykiss
Scardinius erythrophthalmus

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