

Crown Pastoral Land Tenure Review

Lease name : THE POPLARS

Lease number : PC 015

Conservation Resources Report - Part 1

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.

Note: Plans which form part of the Conservation Resources Report are published separately.

These documents are all released under the Official information Act 1982.

April

06

THE POPLARS

PASTORAL LEASE



CONSERVATION RESOURCES REPORT

DEPARTMENT OF CONSERVATION

APRIL 2006

TABLE OF CONTENTS

PART 1	INTRODUCTION.....	2
	Topographical map.....	3
PART 2	INHERENT VALUES:.....	4
2.1	Landscape.....	4
2.1.1	Landscape Context.....	4
2.1.2	Landscape Description.....	4
2.1.3	Visual Values.....	5
2.2	Geology, Landforms and Soils.....	6
2.2.1	Geology.....	6
2.2.2	Landforms.....	6
2.2.3	Soils.....	6
2.3	Climate.....	7
2.4	Land Environments of New Zealand.....	7
	LENZ threat map.....	8
2.5	Vegetation.....	9
2.5.1	Ecological Context.....	9
2.5.2	Vegetation and Flora.....	9
	Botanical values map.....	10
2.5.3	Problem Plants.....	16
2.6	Fauna.....	17
2.6.1	Mammals (bats).....	17
2.6.2	Birds.....	17
	Fauna values map.....	18
2.6.3	Lizards.....	21
2.6.4	Freshwater Fauna (fish and invertebrates).....	22
	Aquatic values map.....	23
2.6.5	Terrestrial Invertebrates.....	25
	Invertebrate values map.....	26
2.6.6	Problem Animals.....	29
2.7	Historic.....	30
2.7.1	Maori Cultural Values.....	30
2.7.2	European Heritage Values.....	30
2.8	Public Recreation.....	31
2.8.1	Physical Characteristics.....	31
2.8.2	Legal Access.....	31
2.8.3	Activities.....	32
PART 3	OTHER RELEVANT MATTERS AND PLANS.....	33
3.1	Consultation.....	33
3.2	District Plans.....	33
3.3	Conservation Management Strategies.....	34
3.4	New Zealand Biodiversity Strategy.....	34
PART 4	ATTACHMENTS.....	35
4.1	Additional Information.....	35
4.1.1	Scientific Names of Species.....	35
4.1.2	References Cited.....	38

PART 1 INTRODUCTION

The 1,880 ha Poplars Pastoral Lease is located in the Hope and Boyle valleys near Lewis Pass in North Canterbury. The property comprises two discrete blocks separated by the Hope River. One block covers the north-facing slopes of the Hope Valley between the confluence of the Kiwi River in the west and the Boyle River in the east. The other block covers lower-altitude slopes in the lower Boyle Valley, just above the confluence of the Boyle and Hope rivers, and south-facing slopes of the Hope Valley just below the Boyle River confluence (adjacent to the homestead).

Access to the property is via State Highway 7 (the Lewis Pass Highway) which runs through the eastern part of the property.

The property lies across the boundaries of three ecological districts (Lewis, Sumner and Miromiro), within three ecological regions (Spenser, Puketeraki and Molesworth). These ecological districts have not been surveyed as part of the Protected Natural Areas Programme.

The property adjoins Glenhope Pastoral Lease to the east and Glynn Wye Pastoral Lease (and freehold parts of Glynn Wye Station) to the south. The property adjoins the following areas managed by the Department of Conservation: the Lower Doubtful and Boyle River Conservation Area (Conservation Land Unit M32014) to the north and Lake Sumner Conservation Park (Conservation Land Unit L32001) to the southwest, west and northeast. No parts of the lease are currently subject to protection for conservation purposes.

The previous Poplars Pastoral Lease of 6,236 hectares was purchased in February 2003 by the present owner with 4,356 hectares in the Upper Hope and Boyle Valleys being surrendered to the Department of Conservation in an agreement with the Nature Heritage Fund. The remainder of the property retained by the owner is subject to the current review (see attached map).

The tenure review inspection of the property was undertaken during November 2005 by a range of specialists. These specialists' reports (listed below) form the basis of this Conservation Resources Report.

- The Poplars Pastoral Lease Landscape Assessment, Alan Petrie, January 1998, 10p + map.
- Plant Communities of The Poplars Pastoral Lease, Mike Harding, November 2006, 17p + photographs + maps.
- Assessment of the Fauna Values of The Poplars Pastoral Lease, Jane Sedgeley, December 2005, 13p + photographs + maps.
- The Poplars Pastoral Lease, A Report on the Aquatic Fauna Survey, Scott Bowie, December 2005, 21p + maps.
- The Poplars Pastoral Lease Invertebrate Survey, Warren Chinn, December 2005, 5p + appendices + maps.

Note: Two un-named huts are present on the property in the upper Hope Valley. In this report, the westernmost hut (at grid reference M32: 516-420) is named "Broadleaf Hut" and the easternmost hut (at grid reference M32: 552-434) is named "Hope Hut".

PART 2 INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE

2.1 LANDSCAPE

2.1.1 Landscape Context

The Poplars Pastoral Lease lies in a transitional landscape, between the largely forested mountains of Lake Sumner Conservation Park and the more modified sparsely-vegetated mountains further east. The property occupies lower slopes and valley floors from which the original vegetation has been mostly removed or modified, but within a rainfall zone where the recovery of woody vegetation can be rapid. Nearly all parts of the property are clearly visible from an important regional transport link and tourist highway (State Highway 7) and from a popular walking track to Lake Sumner Conservation Park.

2.1.2 Landscape Description

For the purposes of this landscape assessment The Poplars Pastoral Lease is divided into three landscape units, principally based on landform, vegetation cover and drainage pattern. The criteria used to assess and evaluate the landscape values of each unit are intactness, coherence and visibility. Intactness is the condition of the natural vegetation and the degree of modification resulting from natural processes, ranging from pristine to heavily-modified. Coherence is the level of harmony between natural elements. Visibility is the extent to which a particular landscape or natural feature is visible from public vantage points.

Upper Hope Valley (above the Boyle River confluence)

This landscape unit covers the slopes of the mountain range and the associated river terraces and river flats south of and parallel to the Hope River above the confluence of the Boyle River. These north-facing slopes are broken by a regular series of gullies and secondary ridges. The upper boundary of the unit is the property boundary which follows the forest edge at approximately the 800 metre contour. Below the forest a mixture of tussockland, grassland, shrubland and fernland cover the colluvial slopes, while the terraces and river flats are covered in a mixture of grassland and matagouri shrubland. On the opposite (north) side of the river beech forest covers the slopes down to the river's edge, except for small areas of grassland and shrubland.

Past burning has resulted in the present broken pattern of vegetation. The striking contrast between the angular form of the mountains and the strong horizontal lines of the river terraces makes this a particularly memorable landscape. Almost all this landscape unit is clearly visible from State Highway 7, particularly to people travelling towards Lewis Pass. It is also clearly visible to people on the tramping track up the Hope Valley to Hope-Kiwi Hut and Lake Sumner Conservation Park.

Windy Point Terraces

This landscape unit covers the lower colluvial slopes and terraces on the west side of the lower Boyle Valley. The predominant vegetation is grassland, shrubland and scrub, with areas of forest along the river and stream banks and an area of depleted short tussockland on the lower Windy Point terrace. An important landscape feature is the prominent series of terraces at the confluence of the Hope and Boyle rivers, and especially the lowest triangular-shaped terrace. The small gorge of the Boyle River is also striking, with its steep rock faces, deep pools and dense riparian forest.

This landscape unit conveys a strong feeling of containment, in contrast to the wider vistas present further down the Hope Valley. It forms the gateway to the forested mountains of Lake Sumner Conservation Park and the Lewis Pass when travelling from the open mountains of the Canterbury high country. The entire unit is clearly visible to travellers on State Highway 7, especially those travelling towards Lewis Pass. The river flats, lower terraces and riparian vegetation have high naturalness values, despite the dominance of introduced species on the river beds. The Windy Point terraces are also clearly visible from the footbridge at Windy Point and from the tramping track to Lake Sumner Conservation Park.

Poplars Range and Homestead Faces (lower Boyle and Hope valleys)

This landscape unit is dominated by the lower southwest end of the Poplars Range east of the Boyle River and above the homestead. Its most prominent features are the broad colluvial fans of Rough Creek, Poplars Fan Stream and Matagouri Stream, the steep slopes behind the homestead, and the broad terraces and flats alongside the highway. Pasture, shrubland and scrub are present on the fans and steep slopes, beech forest is present along streams and in gullies, and matagouri shrubland and pasture are present on the terraces and flats.

This is a distinctive landscape, with a range of landforms characteristic of the Canterbury high country. Landform processes are especially clear, with the colluvial fans and alluvial flats forming a substantial part of the landscape. Loss of forest cover has disrupted the natural vegetation patterns on the hill slopes, but the shrublands on the river flats are representative of the original landscape character. The entire unit is clearly visible to travellers on State Highway 7, and also visible to people on the tramping track to Lake Sumner Conservation Park.

2.1.3 Visual Values

Almost all parts of The Poplars Pastoral Lease are clearly visible to travellers on State Highway 7, an important regional transport link and a nationally-important tourist highway. The property forms a substantial part of a gateway to the mountains, between the sparsely-vegetated mountains of the Canterbury high country and the mostly-forested mountains of Lake Sumner Conservation Park and the Lewis Pass area. An important recreational access track to Lake Sumner Conservation Park, via the Hope Valley from Windy Point, traverses the property.

Significance of Landscape Values

The position of The Poplars Pastoral Lease between the forested mountains of Lake Sumner Conservation Park and the Lewis Pass area and the open mountains of the Canterbury high country, give the property particular landscape significance. The prominence of the landforms, especially the terraces and river flats, the naturalness of the vegetation, and the extent to which the property is visible from a tourist highway and popular tramping track, contribute to the importance of its inherent landscape values.

2.2 GEOLOGY, LANDFORMS AND SOILS

2.2.1 Geology

Basement rocks of The Poplars Pastoral Lease are strongly indurated, mostly graded-bedded greywacke and argillite of the Torlesse Group. Overlying these rocks on the floor of the Hope and Boyle valleys are glacial outwash gravels of the St Bernard Formation, with local fan and river gravels. The western (upper) Windy Point terraces comprise glacial outwash gravels of the Burnham Formation. The eastern (lower) Windy Point terrace and the river flats near the homestead comprise recent river gravels. A small area of moraine is present on the floor of the Boyle Valley between Poplars Fan Stream and Matagouri Stream (Gregg, 1964). The Hope Fault, a prominent branch of the Alpine Fault, follows the Hope Valley through the property.

2.2.2 Landforms

The Poplars Pastoral Lease comprises two discrete blocks separated by the Hope River. The western block covers the moderately steep north-facing slopes and associated fans and river flats of the Hope Valley between the confluence of the Kiwi River in the west and the Boyle River in the east. The eastern block covers the prominent fans, terraces and river flats of the lower Boyle Valley, just above the confluence of the Boyle and Hope rivers, and the steep south-facing slopes and associated terraces and flats of the Hope Valley just below the Boyle River confluence (adjacent to the homestead). Mountain slopes and broad colluvial fans dominate the western block. Fans, terraces and river flats dominate the eastern block. The influence of glaciation and subsequent fluvial erosion and deposition, are clearly evident from the over-steep valley sides, incised side streams and the relatively extensive fans, terraces and river flats.

The property covers an altitudinal range of approximately 1000 m, from just over 400 m in the lower Hope Valley to over 1400 m in the upper Hope Valley. It is drained by the Hope River and its tributaries (the lower parts of Kiwi and Nathan streams, and a number of un-named streams), and the Boyle River and its tributaries (including the lower parts of Tui Stream, Rough Creek, Poplars Fan Stream and Matagouri Stream). The Hope and Boyle rivers are part of the Waiarau River catchment. No geopreservation sites are recorded from the property, though two sites representing deformation features along the Hope Fault are present just southeast of the property boundary (sites 31148 and 31679).

2.2.3 Soils

Soils on higher-altitude slopes of The Poplars Pastoral Lease are predominantly Bealey steepland soils and bare rock. Lower altitude slopes, fans and older terraces have Katrine soils, and recent alluvial deposits have Tasman sandy loams.

Significance of Geology, Landforms and Soils

The prominence of the glacial and post-glacial landforms, notably the extensive glacial outwash terraces at the confluence of the Hope and Boyle rivers, is the most significant landform feature of the area. The presence of the Hope Fault, the down-cutting of the Boyle River through a short gorge and the extensive colluvial fans on the lower slopes are associated features of interest. Otherwise the geology, landforms and soils are typical of those found in this part of the Canterbury high country.

2.3 CLIMATE

The Poplars Pastoral Lease lies in a climate zone characterised by cool wet weather, strongly influenced by the rain shadow effect of the Southern Alps. Annual rainfall at the homestead is approximately 1150 mm. Further up the Hope Valley annual rainfall is approximately 1300 mm. Annual rainfall further west at the main divide of the Southern Alps is likely to be approximately 4000 mm. Predominant winds are from the northwest and are frequently strong. Snow may fall on all parts of the property in winter and lie at higher altitudes for several weeks (Tomlinson, 1976). The area experiences high annual and moderate winter solar radiation, and slight rainfall deficits (Leathwick *et al*, 2003).

2.4 LAND ENVIRONMENTS OF NEW ZEALAND (LENZ)

Leathwick *et al* (2003) proposed that the higher altitude parts of the property in the upper Hope Valley and on the ridge north of the homestead (covering c.26% of the property) lie within Level IV land environments P1.2a, P1.2d and P2.1b. Mid altitude slopes (c. 9%) lie within Land Environment E1.4c. Gentler lower altitude slopes and terraces (c.48%) lie within E1.4d, E4.2a and E4.2b. Valley floor terraces and river flats (c.17%) lie within J2.2a, K1.1a and K1.1b.

Land Environments P1.2a, P1.2d, P2.1b, E1.4c, E1.4d, E4.2a and E4.2b (hill slopes and terraces) are described by Leathwick *et al* (2003) as originally supporting beech forest. Land Environments J2.2a, K1.1a and K1.1b (recent river flats and terraces) are described as originally supporting grassland, shrubland and occasionally treeland. However, these data should be interpreted with caution, as the predicted extent and suggested vegetation types for each Land Environment (Leathwick *et al*, 2003) have been extrapolated from limited field data.

The approximate extents to which the Level IV land environments of the property are legally protected are: P1.2a, 33%; P1.2d, 49%; P2.1b, 47%; E1.4c, 27%; E1.4d, 7%; E4.2a, 26%; E4.2b, 5%; J2.2a, 2%; K1.1a, 53%; and K1.1b, 10% (Department of Conservation, *unpublished data*, January 2006). Toe slopes north of the homestead (E1.4d) are “critically under-protected”. Recent river flats and terraces of the Hope and Boyle rivers (J2.2a, K1.1b and E4.2b) are “at risk”. Critically under-protected land environments are those in which more than 30% of the original indigenous vegetation remains and less than 10% is legally protected. At risk land environments are those in which less than 30% of the original indigenous vegetation remains.

Significance of Land Environments

Level IV Land Environment E1.4d, covering a narrow strip at the base of the hill (toe slopes) north of the homestead (covering c.17 ha) is regarded as critically under-protected. Level IV land environments J2.2a, K1.1b and E4.2b, covering recent river flats and terraces of the Hope and Boyle rivers (c.428 ha) are regarded as at risk. Only 2% of Land Environment J2.2a, covering the recent river flats of the Hope River below the confluence of the Boyle River, is legally protected (see attached map).

2.5 VEGETATION

2.5.1 Ecological Context

The Poplars Pastoral Lease lies across the boundaries of three ecological districts. The part of the property in the upper Hope Valley lies on the boundary of the Lewis Ecological District, (within Spenser Ecological Region) and the Sumner Ecological District (Puketeraki Ecological Region). The Windy Point terraces and other parts of the property west of the Boyle River lie within the Lewis Ecological District. Areas of the property east and north of the lower Boyle and Hope rivers lie within Miromiro Ecological District (Molesworth Ecological Region) (McEwen, 1987). These ecological districts have not been surveyed as part of the Protected Natural Areas Programme.

The distribution of beech forest in the area today indicates that it was the dominant vegetation type at the time of the arrival of humans. Analyses of macrofossils at a site in the lower Doubtful Valley (Burrows, 1997) suggest that, after the retreat of glaciers, mountain toatoa scrub was initially dominant, followed by the spread and eventual dominance of beech forest.

Mixed red beech-silver beech-mountain beech forest was formerly present on lower slopes and terraces throughout the district. Mountain beech-silver beech forest covered most montane slopes. Mountain beech forest formed the timberline forests and was present at colder valley-floor sites (Alexander *et al*, 1979; Guest and Wilkinson, 1977). Smaller areas of hardwood forest dominated by broadleaf and/or kowhai would have been present at lower-altitude sites, especially along riverbanks and on stable talus and bluffs. Valley floors supported a mosaic of matagouri shrubland and short tussockland on recent alluvial surfaces (river flats), mixed shrubland or scrub on older terraces, *Carex* sedgeland at wetlands, and possibly kanuka forest and scrub at recently disturbed sites.

2.5.2 Vegetation and Flora

The Poplars Pastoral Lease mostly covers lower altitude valley floors and hill slopes. The original indigenous vegetation has been largely removed from hill slopes, remaining only in smaller pockets or strips along river and stream sides. Larger areas of partly modified indigenous plant communities are present on river flats and strongly regenerating communities are present on lower slopes and fans. These indigenous plant communities are described below for four distinct parts of Poplars Pastoral Lease (see attached map).

Upper Hope Valley (above Boyle River confluence)

This area covers the western part of the property in the Hope Valley above the confluence of the Boyle River. It comprises moderately steep to steep north-facing slopes and associated lower-altitude terraces and river flats below these slopes, on the south side of the Hope River. The upper boundary is the remnant fire-induced edge of the beech forest or the adjacent ridge crest; the lower boundary is the Hope River.

Recent alluvial flats near the river are dominated by scattered to dense matagouri shrubland or scrub and pasture. Other species present in the shrubland are, *Coprosma propinqua*, mountain wineberry, native broom, bush lawyer and prickly shield fern. Small wetlands are present. These are mostly sedgelands dominated by pukio and rautahi. Other species commonly present in the wetlands are *Coprosma propinqua*, prickly shield fern, mountain kiokio, *Blechnum minus*, *B. penna-marina*, lotus, harebell, white clover, red pondweed and, at one site, a small area of raupo.

Terraces and fans on lower slopes are dominated by pasture with scattered to dense matagouri-*Coprosma propinqua* shrubland. Other species present are *Coprosma* sp. "t", *C. rugosa*, mountain

wineberry, porcupine shrub, pohuehue, bush lawyer, prickly shield fern and occasionally kowhai, koromiko, broadleaf and native broom. Steeper slopes near the river midway along this part of the property (opposite Boundary Stream) support denser scrub with abundant kowhai and small trees of kohuhu, broadleaf and cabbage tree. A small group of grey willow trees is present here beside the vehicle track.

Steeper mid-altitude slopes (above approximately 700 m) support rough pasture with variable shrub cover. At the western end of this part of the property, these slopes support bracken and scattered to dense *Coprosma propinqua* with matagouri, *Coprosma* sp. "t", *C. rugosa*, koromiko, prickly shield fern, broadleaf and occasional kowhai. Further east, shrubland is generally less widespread, although dense kanuka scrub is present at some sites.

Higher altitude slopes (above approximately 900 m) at the eastern end of this part of the property support grassland dominated by fescue tussock, browntop, sweet vernal, snowberry and mouse-ear hawkweed, with silver tussock, blue tussock, bristle tussock, bracken, red woodrush, *Raoulia subsericea*, patotara, *Celmisia gracilentia*, Yorkshire fog, *Geranium sessiliflorum*, harebell, *Pimelea oreophila*, catsear, cotton daisy and *Blechnum penna-marina*. Scattered through this community are plants of inaka, manuka, matagouri, porcupine shrub and *Gaultheria crassa*.

This community grades upslope to slim snow tussock grassland with a lower density of introduced grasses and a higher density and diversity of indigenous sub-shrubs and herbs. Additional species present are *Coprosma pseudocuneata*, *C. rugosa*, *C. cheesemanii*, mountain wineberry, tauhinu, *Hebe subalpina*, *Olearia nummulariifolia*, mountain akeake, *Helichrysum intermedium*, golden speargrass, tutu, *Leucopogon suaveolens*, *Acaena caesiiglauca*, *Celmisia discolor*, *C. angustifolia*, dwarf inaka, *Anisotome aromatica*, *Brachyglottis bellidioides* and *Kelleria dieffenbachii*.

An area of broadleaf-dominated forest is present on the property near Broadleaf Hut. Its canopy comprises large old broadleaf trees, with large kowhai and marbleleaf trees present at the base of the slope. Understorey species are yellowwood, lancewood, tree fuchsia, koromiko, marbleleaf, *Coprosma* sp. "t", *C. ciliata*, *C. microcarpa*, weeping mapou, bush snowberry and bush lawyer. Important ground-cover species are prickly shield fern, *Hydrocotyle* sp., necklace fern, *Asplenium hookerianum*, *A. richardii*, *Blechnum penna-marina*, *B. fluviatile*, thousand-leaved fern, *Gentiana spenceri*, *Lagenifera petiolata*, *Nertera ciliata*, wall lettuce, selfheal, *Pterostylis* sp., *Ranunculus* sp., *Urtica* sp. and *Carex* sp.

Windy Point Terraces

This area covers the river terraces and flats between the Boyle and Hope Rivers, from the footbridge across the Boyle River at Windy Point to the confluence of the two rivers.

The highest (western-most) terrace supports rough pasture with scattered matagouri and tauhinu. Other important species are *Pernettya macrostigma*, mouse-ear hawkweed, catsear, *Celmisia gracilentia*, patotara, bracken, *Pimelea oreophila*, tutu, blue tussock, coral lichen and moss.

The second terrace supports similar vegetation, though with the addition of scattered kanuka. The scarp between the two terraces supports shrubland dominated by *Coprosma* sp. "t", *C. propinqua*, matagouri, bracken, mouse-ear hawkweed, *Acaena caesiiglauca*, oxeye daisy and pasture grasses.

The third (southwestern-most) terrace supports rough pasture with scattered kanuka and matagouri. Other important species are fescue tussock, mouse-ear hawkweed, sweet vernal, browntop, *Pimelea oreophila*, *Pernettya macrostigma* and moss. Also present are red woodrush, *Celmisia gracilentia*, *Coprosma propinqua*, wire moss, patotara, catsear, blue tussock, tauhinu, *Brachyglottis bellidioides*, bracken and small patches of rushes (*Juncus* sp.) in wetter areas. The scarp between this terrace and the lower terrace to the east supports low kanuka forest. Understorey and ground-cover species

beneath the kanuka are porcupine shrub, bush lawyer, necklace fern, *Lagenifera petiolata*, *Acaena* sp., wire moss and other moss species.

The two lowest (eastern-most) terraces are younger landforms comprising recently-deposited river gravels. Plant communities vary from dense grassland on silty substrates in old river channels to short tussockland-herbfield on stony substrates on old river bars. Grasslands are dominated by introduced pasture species, notably sweet vernal and browntop. Fescue tussock, *Pernettya macrostigma* and mouse-ear hawkweed are also common. Other species present are catsear, *Geranium sessiliflorum*, patotara, *Celmisia gracilentia*, Yorkshire fog, lotus, mouse-ear chickweed, white clover, red woodrush and scattered low plants of matagouri and occasionally kanuka.

Short tussockland-herbfield on drier stonier sites is dominated by mouse-ear hawkweed, forming up to 40% cover. Other important species are fescue tussock, browntop, blue tussock, *Carmichaelia monroi*, wire moss and coral lichen. Also present are sweet vernal, patotara, *Celmisia gracilentia*, *Pimelea oreophila*, *Geranium sessiliflorum*, *Gnaphalium* sp., *Brachyglottis bellidioides*, catsear, *Coprosma acerosa*, creeping pohuehue, native dandelion, suckling clover, sheep's sorrel and low plants of matagouri and porcupine shrub.

The low stony scarp between these two eastern terraces supports low shrubland dominated by matagouri, *Coprosma propinqua* and bracken with creeping pohuehue, bush lawyer, porcupine shrub and *Acaena caesiiglauca*. A dense infestation of gorse and tree lupin, with occasional broom, is present on the adjoining riverbed.

A relatively large wetland (seepage) is present alongside the vehicle track at the base of the main scarp between the lower eastern terraces and the elevated western terraces. The seepage is dominated alternately by raupo and pukio, with scattered to dense manuka at its margins. Other important species are *Carex echinata*, *Juncus canadensis*, *Luzula multiflora*, musk, *Veronica catenata*, lotus, *Plantago major*, *Ranunculus glabrifolius*, *Blechnum minus*, *B. penna-marina*, *Celmisia gracilentia* and Yorkshire fog. This is one of the largest and most intact wetlands observed on the property.

Boyle Valley

This area covers the part of the property in the Boyle Valley, except for the Windy Point terraces. It includes the area on the western side of the Boyle River between the footbridge at Windy Point and Tui Stream, and the area between Rough Creek and the small stream down-valley from Matagouri Stream on the eastern side of the Boyle River. Most of this area supports open pasture or grassland with scattered to dense matagouri or kanuka shrubland or scrub. Other areas within this part of the property which are dominated by indigenous vegetation are described below.

A diverse forest remnant is present in the small gully opposite the Windy Point footbridge. It is dominated by mountain beech, and grades to kanuka forest on the gully sides. Important subcanopy and understorey species are broadleaf, marbleleaf, lancewood, kohuhu, yellowwood, mountain ribbonwood, kowhai, kanuka, tree fuchsia, korokio, weeping mapou, *Coprosma propinqua*, *C. crassifolia*, *C. ciliata*, mingimingi, mountain wineberry, koromiko, *Hebe parviflora* and *Raukaua anomalus*. Important ground-cover species are prickly shield fern, *Polystichum richardii*, *Libertia ixioides*, tutu, *Blechnum penna-marina*, *B. chambersii*, *Asplenium richardii* and hound's tongue fern.

The river banks upstream from the footbridge support mixed beech-hardwood forest dominated by kanuka, kowhai, kohuhu, mountain beech, broadleaf and yellowwood. Other species within or associated with this forest are korokio, *Helichrysum lanceolatum*, mingimingi, *Coprosma crassifolia*, *C. propinqua*, *C. rhamnoides*, bush lawyer, pohuehue, *Polystichum richardii* and bidibid. Areas of exposed rock near the river gorge support mountain akeake, tutu and *Heliohebe raoulia*.

Further upstream, the western side of the river terrace scarp supports scrub and low forest dominated by matagouri, korokio, *Coprosma propinqua*, bracken and pohuehue. Other important species are kanuka, kohuhu, porcupine shrub, bush lawyer, tutu, *Coprosma rugosa* and occasionally mountain beech, kowhai, broadleaf and mountain ribbonwood.

At the northern boundary of the property, and beside the vehicle bridge, is a stand of tall kanuka forest with a diverse understorey. Other canopy species are mountain beech, red beech, broadleaf and kowhai, especially nearer the Boyle River and alongside lower Tui Stream. Important subcanopy and understorey species are yellowwood, marbleleaf, kohuhu, lancewood, bush lawyer, pohuehue, weeping mapou, mingimingi, *Raukaua anomalus*, *Coprosma* sp. "t", *C. propinqua*, *C. crassifolia*, *C. rhamnoides*, *C. ciliata*, *Pittosporum divaricatum*, mountain wineberry, tutu, prickly shield fern, necklace fern, mountain kiokio, *Blechnum penna-marina*, bidibid, *Brachyscome radicata*, *Lagenifera petiolata*, wall lettuce, *Caladenia lyallii*, *Carex* sp., *Hydrocotyle* sp. and *Stellaria parviflora*. Additional species present at the forest margins are kowhai, scrub pohuehue, gorse and bracken.

An area of mixed mountain beech-red beech forest is present on the other side of the Boyle River, alongside lower Rough Creek. This forest grades away from the creek to kanuka forest, then matagouri scrub with scattered broadleaf and mountain ribbonwood.

The terrace and river flats between the highway and Boyle River downstream from Rough Creek support scattered to dense matagouri scrub, one large wetland and smaller areas of open grassland. The scrub is dominated by matagouri, with *Coprosma propinqua*, korokio, pohuehue, bush lawyer and occasional emergent mountain ribbonwood. The wetland is dominated at its centre by toetoe and at its margins by the sedges pukio and rautahi. Other important species are lotus, rushes (*Juncus* sp.), bog rush, *Coprosma propinqua*, *C. rugosa*, mountain ribbonwood, scrub pohuehue, prickly shield fern, *Blechnum minus*, *B. penna-marina*, *Hypolepis ambigua*, cocksfoot, Yorkshire fog, white clover, red clover and watercress.

Further down valley, between the highway and Boyle River, are river flats dominated by low dense matagouri shrubland over pasture. Nearer the river are small stands of kanuka with a range of understorey species. A small pukio- raupo-dominated seepage is present at the base of the terrace scarp.

Above (northeast of) the highway, the slopes support open pasture and areas of scattered to dense matagouri shrubland and scrub. On the slopes southeast of Matagouri Stream, this scrub is especially extensive and dense. It is dominated by matagouri and *Coprosma propinqua*, with bush lawyer, pohuehue and prickly shield fern. Patches of kanuka are present, broadleaf and kowhai are emergent and dominant in places, and mountain ribbonwood is present in small gullies. The scrub is contiguous with similar vegetation on adjoining hill slopes across the property boundary.

At the down slope margin of the scrub is an area of wetland (seepage) vegetation at the base of the slope on a narrow terrace. This wetland is dominated by pukio, rautahi and bog rush. Also present are *Juncus conglomeratus*, lotus, prickly shield fern, mountain kiokio, *Blechnum minus*, *B. penna-marina*, water forget-me-not, *Viola cunninghamii*, *Coprosma propinqua*, manuka, *Ranunculus glabrifolius*, red pondweed, Yorkshire fog, white clover and mouse-ear chickweed.

In the incised gully of Matagouri Stream is a relatively extensive beech forest remnant. It is dominated by mountain beech and grades to tall kanuka at the forest margins. Important understorey species are broadleaf, yellowwood, lancewood, tree fuchsia, mountain ribbonwood, bush lawyer, *Coprosma microcarpa*, *Pittosporum divaricatum*, mingimingi, koromiko, prickly shield fern, necklace fern, *Blechnum penna-marina*, wall lettuce, *Chiloglottis cornuta* and moss.

Lower Hope Valley (below Boyle River confluence)

This area covers the river flats and hill slopes downstream from the confluence of the Boyle River, in the vicinity of the farm buildings. The river flats are substantially modified, with scattered low matagouri shrubland over pasture. The terrace scarp above (behind) the homestead supports denser mixed scrub. Higher-altitude slopes above the terrace support a much denser cover of indigenous scrub, grassland and forest.

Scrub on lower south-facing slopes is dominated by *Hebe traversii*, *Coprosma* sp. "t", *C. propinqua*, *C. rugosa*, mountain wineberry, korokio, koromiko, matagouri, *Gaultheria crassa*, *Olearia nummulariifolia*, *Traversia baccharoides*, mountain flax, native broom, prickly shield fern, bracken and tauhinu. Other important species are golden speargrass, *Pimelea oreophila*, *Gingidia montana*, *Lycopodium scariosum*, browntop, Yorkshire fog, sweet vernal, *Clematis forsteri*, tutu, cocksfoot, *Anisotome filifolia*, *Raoulia glabra*, wall lettuce and moss. Broadleaf, mountain ribbonwood and occasionally mountain beech are emergent from the scrub. Additional species present in scrub further upslope are *Olearia cymbifolia*, inaka and *Coprosma cheesemanii*.

Beech forest remnants in gullies on this south-facing slope are dominated by mountain beech, with broadleaf, mountain ribbonwood and yellowwood. Important understorey species are marbleleaf, tree fuchsia, *Hebe parviflora*, koromiko, *Coprosma* sp. "t", three finger, bush lawyer, prickly shield fern, *Polystichum richardii*, necklace fern, hanging spleenwort, *Asplenium richardii*, mountain kiokio, *Blechnum penna-marina*, *B. fluviatile*, *Chiloglottis cornuta*, wall lettuce, mouse-ear chickweed and moss.

A more open grassland-shrubland community is present on west-facing slopes. This is dominated by tauhinu, *Hebe traversii*, fescue tussock, blue tussock, sweet vernal, snowberry, *Helichrysum filicaule* and moss. Other species present are kanuka, *Coprosma* sp. "t", *C. propinqua*, *C. rugosa*, mountain wineberry, *Anisotome aromatica*, patotara, golden speargrass, *Pimelea oreophila*, red woodrush, tutu, prickly shield fern, *Blechnum penna-marina*, silver tussock, bracken, Yorkshire fog, browntop, catsear and mouse-ear hawkweed.

At higher altitudes, on the ridge crest, short tussockland-shrubland is present. Dominant species are tauhinu, fescue tussock, bristle tussock, tutu, cotton daisy, patotara, sweet vernal, snowberry and woolly moss. Other species present are inaka, matagouri, *Hebe traversii*, red woodrush, *Anisotome aromatica*, golden speargrass, *Celmisia sessiliflora*, harebell, *Leucopogon suaveolens*, *Pimelea oreophila*, *Kelleria dieffenbachii*, *Helichrysum filicaule*, *Prasophyllum colensoi*, *Thelymitra* sp., browntop, catsear, mouse-ear hawkweed, sheep's sorrel and Yorkshire fog.

Small areas of mountain beech forest are present on this part of the property, alongside the small stream that drains east to Nathan Stream and alongside the stream draining southwest to the Boyle River.

Notable Species Recorded

No plant species listed as threatened by de Lange *et al* (2004) were observed during this inspection of The Poplars Pastoral Lease. Notable plant species are listed in Table 1 below.

Table 1 Notable plant species, The Poplars Pastoral Lease, November 2005.

Plant Species	Threat Status	Distribution on Property
<i>Carmichaelia monroi</i>	Not threatened; uncommon at lower altitudes in the area.	A dense healthy population on the lower Windy Point terraces.
<i>Coprosma acerosa</i>	Not threatened; locally uncommon.	Present on the lower Windy Point terraces.
<i>Raukaua anomalus</i>	Not threatened; uncommon in the high country.	Healthy populations in forest patches alongside the Boyle River.
<i>Traversia baccharoides</i>	Not threatened; confined to northern South Island; uncommon in the high country.	Present in shrubland and scrub on south-facing slopes in the lower Hope Valley.

Species of beech forest mistletoe, *Peraxilla tetrapetala* and *Alepis flavida* (threat status: gradual decline) and *Pittosporum patulum* (nationally endangered) have been recorded in nearby forests and may also be present in forests on the property.

Significance of Vegetation and Flora

Indigenous plant communities on higher-altitude parts of The Poplars Pastoral Lease (generally above 700 m), on south-facing slopes in the lower Hope Valley and north-facing slopes in the upper Hope Valley, have significant inherent values. These areas of forest, scrub, shrubland and tussockland are representative, or have components that are representative, of the original vegetation, have high naturalness values and buffer more intact plant communities at higher altitudes.

Lower-altitude parts of the property are more modified. However, all areas of indigenous forest (including kanuka forest), the larger wetlands and areas of uncultivated short tussockland on recent river flats have significant inherent values. These plant communities are representative of the original vegetation, have high species diversity, contain uncommon plant species and have high naturalness values. Some older denser areas of scrub at lower altitudes also have significant inherent values. They have moderate species diversity, high naturalness values and they buffer other areas of indigenous vegetation.

2.5.3 Problem Plants

Introduced plant species that may have an important effect on indigenous plant communities on the property, and that can be controlled or contained, are listed and discussed below. Other ubiquitous naturalised species for which containment or control are probably impractical, such as mouse-ear hawkweed and pasture grasses, are not discussed here but are listed in the vegetation descriptions.

Gorse

Dense infestations of gorse are present on the open gravel beds of the lower Boyle and Hope Rivers. Scattered small infestations of gorse are present at other lower-altitude locations. Gorse poses a threat to wetland and tussockland communities, especially those in the vicinity of Windy Point. Monitoring and control of gorse infestations will be necessary to protect conservation values.

Broom

Scattered small infestations of broom are present at lower altitudes. Broom is much more widespread further down the Hope Valley. Monitoring and control of broom infestations will be necessary to protect conservation values.

Grey willow

Several grey willow trees are present alongside the vehicle track in the upper Hope Valley. Scattered small grey willow trees were observed in the open gravel bed of the Hope River. These trees should be removed.

Tree lupin

Dense infestations of tree lupin are present on the open gravel beds of the lower Boyle and Hope Rivers. An isolated tree lupin bush was observed further up the Hope River. Tree lupins are unlikely to pose a significant threat to areas on the property as they prefer open gravel or sand substrates. However, they pose a major threat to riverbeds in the area, including the bed of the upper Hope River. The present tree lupin infestation should be contained in the lower valley.

Wilding pines

Seedlings of radiata pine were observed near Museum Hut in the upper Hope Valley and at the southern (Hope River) side of the Windy Point terraces. Both infestations comprise small scattered seedlings and do not yet pose a significant threat. However, these wilding pines (and if possible the parent trees) should be removed.

2.6 FAUNA

2.6.1 Mammals (bats)

South Island long-tailed bats (threat status: nationally endangered) have been recorded near The Poplars Pastoral Lease at Boyle Base in the 1990s (the late Max Cullen, *pers. comm.*) and in the Springs Junction area north of the property in the late 1990s (C. O'Donnell, *unpublished data*). Automatic bat detector and recording units were placed in three different locations at the edge of tall shrubland and forest on the property near Rough Creek and Matagouri Stream. No bats were recorded, though conditions were generally unfavourable for recording bat activity.

2.6.2 Birds

The forest bird fauna of the areas surrounding The Poplars Pastoral Lease is typical of eastern South Island beech forests. The Lewis Ecological District has a particularly diverse bird fauna, especially in the mixed beech forest of the valley floors (McEwen, 1987; Bull *et al.*, 1985; Elliott, 1992). Mixed beech forest in the Hope Valley supports South Island robin, South Island tomtit and bellbird, and has high numbers of yellow-crowned parakeet (threat status: gradual decline), South Island kaka (nationally endangered), New Zealand pigeon (gradual decline) and kea (nationally endangered). It is one of the few places in Canterbury to support a population of tui and is notable as one of the few sites to support the rare orange-fronted parakeet (critically endangered). New Zealand falcon (gradual decline) is also present (Cox, 1981; Nilsson, 1988; O'Donnell, 1999). Yellowhead and great-spotted kiwi have also been recorded in the Lake Sumner-Lewis Pass area.

The Hope River forms part of the Waiiau River Site of Special Wildlife Interest (SSWI), which is ranked as "high" value for riverbed birds. Thirty-six bird species have been recorded on the river system including 16 wetland specialists. Threatened species include black-fronted tern (nationally endangered), banded dotterel (gradual decline), black shag (sparse) and grey duck (nationally endangered) (O'Donnell, 2000). Marsh crake (sparse) were recorded in the 1980s at Horseshoe Lake (the nearest swamp SSWI) less than 10 km from the property (C. O'Donnell, *pers. comm.*).

Birds observed on The Poplars Pastoral Lease are described below for the four distinct parts of the property (see attached map).

Upper Hope Valley (above Boyle River confluence)

Shrubland and grassland on river flats adjacent to the Hope River were inspected in generally unfavourable weather. Common indigenous birds present in shrublands were bellbird, brown creeper, silveryeye, grey warbler, welcome swallow and South Island fantail. Australian magpie, Australasian harrier and a range of naturalised passerines were also present. Shining cuckoo was recorded at the western tip of the property. Indigenous birds present on the river flats were black-fronted tern (nationally endangered), southern black-backed gull, grey duck (nationally endangered), and paradise shelduck. South Island pied oystercatchers were observed breeding on the riverbed east of this part of the property. This area of riverbed appears to provide suitable nesting habitat for banded dotterel (gradual decline), though no birds were observed during this survey. Canada goose and cattle were present on the river bed.

A small area of mature broadleaf forest and associated shrubland behind Broadleaf Hut provides habitat for New Zealand pigeon (gradual decline), silveryeye, grey warbler and brown-creeper. A range of common introduced passerines were also present.

Several small wetlands are present on the Hope Valley river flats. Paradise shelduck were present here, and the habitat appears suitable for marsh crake (sparse)

Windy Point Terraces

An area of river flats and terraces between the Boyle and Hope rivers downstream from Windy Point footbridge provides habitat for a wide range of river and shrubland birds. Indigenous birds present were grey warbler, silvereeye, South Island fantail, paradise shelduck, Australasian harrier, spur-winged plover, southern black-backed gull and black shag (sparse). The area provides important feeding habitat for black-fronted terns (nationally endangered); one tern was observed catching a common skink on one of the terraces. An area of mountain beech forest and kanuka is present at the southern edge of the terraces. Birds observed here were South Island robin, South Island fantail, bellbird, silvereeye, grey warbler and introduced passerines.

A large seepage (wetland) between the eastern and western terraces may be seasonally important for wetland birds, though no birds were observed during the survey.

Boyle Valley

Areas of mixed beech forest and tall shrubland and scrub are present in the Boyle Valley above Windy Point footbridge. Birds observed in these habitats along the Boyle River and at Rough Creek were New Zealand pigeon (gradual decline), South Island fantail, bellbird, silvereeye, grey warbler and introduced passerines.

Beech forest beside Matagouri Stream and scrub and shrubland on adjacent southwest-facing slopes provide nesting, roosting and feeding habitat for a range of bird species. Indigenous birds observed were South Island rifleman (gradual decline), bellbird, silvereeye, tui, brown creeper, South Island tomtit, grey warbler, South Island fantail, New Zealand falcon (gradual decline), New Zealand pipit, Australasian harrier and welcome swallow. A wide range of introduced passerines and California quail were also recorded.

Lower Hope and Boyle valleys

Matagouri shrubland and grassland is present on river flats between the highway and the lower Boyle River and the Hope River. Birds observed here were New Zealand pipit, welcome swallow, silvereeye, spur-winged plover and introduced passerines. Black shag (sparse), South Island pied oystercatcher, southern black-backed gull and Australasian pied stilt were recorded flying over the river. Several black-fronted terns (nationally endangered) were seen feeding over the shrublands and river.

Three small wetlands are present on river flats and terraces alongside the lower Boyle River and two larger wetlands present alongside the Hope River below the Boyle River confluence. The largest of these wetlands, on a terrace near the homestead, comprises several pools of open water, with associated sedgeland and shrubland. Indigenous birds recorded using the wetland areas were Australasian pied stilt, southern black-backed gull, Australasian harrier, spur-winged plover, paradise shelduck and mallard. Some of the wetland habitat may be suitable for marsh crake (sparse).

Species Recorded

Table 2 Indigenous bird species recorded from The Poplars Pastoral Lease, November 2005.
(e = endemic species, n = native species)

Bird species	Threat status	Distribution on property
Australasian harrier (n)	Not threatened.	Throughout.
Australasian pied stilt (n)	Not threatened.	Wetlands, lower Boyle and Hope valleys.
Bellbird (e)	Not threatened.	Forest remnants and shrublands throughout.
black-fronted tern (e)	Nationally endangered.	River bed and river flats throughout.
black shag (n)	Sparse.	Hope River; Boyle River.
brown creeper (e)	Not threatened.	Forest remnants and shrublands throughout.
grey duck (n)	Nationally endangered.	Hope River.
grey warbler (e)	Not threatened.	Forest remnants and shrublands throughout.
New Zealand falcon (eastern) (e)	Gradual decline.	Matagouri Stream.
New Zealand pigeon (e)	Gradual decline.	Rough Creek; Broadleaf Hut.
New Zealand pipit (e)	Not threatened.	Throughout.
paradise shelduck (e)	Not threatened.	River flats and wetlands throughout.
shining cuckoo (e)	Not threatened.	Hope Valley, western tip of property.
Silvereye (n)	Not threatened.	Forest remnants and shrublands throughout.
southern black-backed gull (n)	Not threatened.	Throughout.
South Island fantail (n)	Not threatened.	Forest remnants and shrublands throughout.
South Island pied oystercatcher (e)	Not threatened.	Hope River.
South Island rifleman (e)	Gradual decline.	Forest remnants and shrublands throughout.
South Island robin (e)	Not threatened.	Kanuka shrublands between Boyle and Hope rivers.
South Island tomtit (e)	Not threatened.	Matagouri Stream; Museum Hut shrublands.
spur-winged plover (n)	Not threatened.	River flats throughout.
Tui (e)	Not threatened.	Trees around homestead, Matagouri Stream.
welcome swallow (n)	Not threatened.	Throughout.
white-faced heron (n)	Not threatened.	Trees around homestead.

Naturalised bird species observed on the property were Australian magpie, blackbird, Canada goose, California quail, chaffinch, dunnock, goldfinch, greenfinch, grey duck/mallard hybrid, house sparrow, mallard, redpoll, skylark, song thrush, starling and yellowhammer.

Significance of the Bird Fauna

Forty bird species were recorded on The Poplars Pastoral Lease during this inspection: 24 indigenous species (14 endemic and 10 native) (Table 2) and 16 naturalised species. Six threatened bird species were recorded: black shag (sparse), New Zealand falcon (gradual decline), black-fronted tern (nationally endangered), grey duck (nationally endangered), New Zealand pigeon (gradual decline) and South Island rifleman (gradual decline). River flats, terraces and associated shrublands provide important feeding habitats for black-fronted terns. Some sedgeland on the property appear to provide suitable habitat for marsh crake (sparse). The presence of numerous tui in shrubland and forest on the property is notable, because there are few populations of this species in Canterbury. Habitats on the property buffer and complement extensive high-quality areas of forest and riverbed bird habitat on adjoining land.

2.6.3 Lizards

Spotted skink (threat status: gradual decline), and West Coast green gecko (sparse) have been recorded along the Lewis and Boyle Rivers and at Lewis Pass within three kilometres of The Poplars Pastoral Lease. Rough gecko (gradual decline) has been recorded in forest on the Hanmer Range (McEwen, 1987). The Department of Conservation’s Herpetofauna database contains records of common skink and Southern Alps gecko from within seven kilometres of the property. There are no lizard records from within the present property boundaries.

Lizards observed on The Poplars Pastoral Lease are described below for the four areas on the property surveyed.

One common skink was found in the upper Hope Valley under a piece of roofing iron at Hope Hut.

Five common skinks and one Southern Alps gecko were found in rough pasture and shrubland on stable scarps of the Windy Point terraces.

One small juvenile Southern Alps gecko was found in a small area of scree on a south-facing terrace scarp above the highway west of the homestead.

Ten common skinks and two Southern Alps geckos were found in boulderfields and small scree with associated shrubland on eroding terrace scarps and hill slopes in the Matagouri Stream area. Habitats in this area appear suitable for West Coast green gecko, spotted skink (gradual decline) and long-toed skink (sparse) but none were recorded during this short survey.

Species Recorded

Table 3 Indigenous lizard species recorded from The Poplars Pastoral Lease, November 2005.

Lizard species	Threat status	Distribution on property
common skink	Not threatened.	Terraces and hill slopes in the Matagouri Stream area; hill slopes below the confluence of the Boyle and Hope rivers; Windy Point terraces; Hope River Hut.
Southern Alps gecko	Not threatened.	Terraces and hill slopes in the Matagouri Stream area; hill slopes below the confluence of the Boyle and Hope rivers; Windy Point terraces.

Significance of the Lizard Fauna

Two lizard species were found on the property: common skink and Southern Alps gecko. A greater number of individuals and species may have been found if weather conditions had been more suitable for survey. Mature shrubland habitats on the property appear to provide suitable habitat for West Coast green gecko (sparse), and rockland habitats appear suitable for spotted skink (gradual decline); both species have been recorded in the area.

2.6.4 Freshwater Fauna (fish and invertebrates)

The Poplars Pastoral Lease lies in the watershed of the Hope River, in the upper Waiau River catchment. The property is drained by the Hope River and a very small section of the Kiwi River in the west, the lower Boyle River and its tributaries (the lower parts of Tui Stream, Rough Creek, Poplars Fan Stream and Matagouri Stream) in the north, and by lower Nathan Stream in the east.

A distinguishing feature of the Waiau River is the lack of dams. This has two main effects on the fish communities. The first is that fish communities are more likely to have diadromous species present (species with a sea phase in their lifecycle). The second effect is that fish are able to migrate between streams, allowing colonisation of previously dewatered streams. The New Zealand Freshwater Fish Database has 76 records (at 22nd of December 2005) from the Waiau River catchment. Species recorded from streams near the property are longfin eel, Canterbury galaxias, upland bully and brown trout. Longfin eel has a threat status of gradual decline (Hitchmough and Bull, *in press*; Hitchmough, 2002).

Four freshwater habitats, classified by size and physical character, were observed on the property. These habitats and the fish species recorded are described below (see attached map).

Rivers

Three rivers flow along the boundaries of The Poplars Pastoral Lease: the Hope River, Kiwi River and Boyle River. These rivers mostly flow through open grassland, short tussockland and shrubland, and through smaller areas of scrub and forest. The open beds of the Boyle River and the Hope River below the confluence of the Boyle River are heavily infested with gorse and tree lupin. The upper Hope River is accessible to and well used by cattle. Stock access to the Boyle River is restricted by topography. Stock access to the lower Hope River is restricted by fences. The rivers are generally between 10 and 40 metres wide and more than 300 mm deep, with occasional holes up to one and a half metres deep. River substrates are predominantly boulders and cobbles with some areas of bedrock.

Two sites of river habitat were electro-fished, one at the eastern extremity of the property by the highway bridge over the Hope River and the other at the western extremity of the property in the Kiwi River near its confluence with the Hope River. Large numbers of juvenile brown trout were found at the Kiwi River site and upland bullies were present at both sites. Large brown trout were observed in the Boyle River at the Windy Point footbridge and at the vehicle bridge at the northern boundary of the property.

Invertebrates observed in rivers were *Zelandobius* sp., *Stenoperla prasina*, *Olinga feredayi*, *Pycnocentria* sp., *Nesameletus* sp., *Deleatidium* spp. and *Coloburiscus humeralis*.

Large Streams

Seven large streams are present on the property: "Museum Hut Stream" (just west of Museum Hut), "Broadleaf Hut Stream" (just west of Broadleaf Hut), "Hope Stream" (just west of Hope Hut), "Amuri School Stream" (just west of the Windy Point footbridge), Tui Stream, lower Matagouri Stream and Nathan Stream. These streams mostly flow through grassland, shrubland and scrub, except for Tui Stream, Nathan Stream and the lower part of "Amuri School Stream" which flow through forest. All except Tui Stream, Nathan Stream and "Amuri School Stream" are accessible to stock and wild animals. The lower reaches of Matagouri Stream have been straightened and confined between stop banks. The large streams are between one and four metres wide and 100 to 500 mm deep, with occasional deeper holes. Large stream substrates are commonly gravels and cobbles, with bedrock in some areas and mud and silt in others.

Five sites of this habitat type were electro-fished, in Matagouri Stream, Nathan Stream, “Amuri School Stream”, “Museum Hut Stream” and “Broadleaf Hut Stream”. Canterbury galaxias were recorded at three sites (Nathan Stream, Matagouri Stream and “Museum Hut Stream”), upland bully at two sites (Nathan Stream and Matagouri Stream), longfin eel at two sites (Matagouri Stream and “Amuri School Stream”) and brown trout at two sites (Nathan Stream and “Museum Hut Stream”). No fish were found in “Broadleaf Hut Stream”. Tui Stream and “Hope Hut Stream” were not electro-fished. It appears that Tui Stream is readily accessible to brown trout, upland bully, Canterbury galaxias and longfin eel, and that “Hope Hut Stream” is likely to contain only Canterbury galaxias.

Invertebrates observed in large streams were *Archichauliodes diversus*, *Stenoperla prasina*, *Megaleptoperla grandis*, *Zelandoperla* sp., *Zelandobius* sp., *Aoteapsyche* sp., *Aphrophila* sp., *Nesameletus* sp., *Deleatidium* spp., *Coloburiscus humeralis* and *Rallidens mcfarlanei*.

Small Streams

Small streams are present throughout the property, as tributaries of the large streams and rivers. They often have steep gradients and gorges, with gradients occasionally easing in the lower reaches. Other small streams flow across terraces, with waterfalls connecting them to large streams and rivers. The small stream beds are often sparsely vegetated (indicating the large water volumes they carry during floods), occasionally with filamentous algae and mosses, or grassland and shrubland, or a mixture of vegetation types. Steeper streams, such as Rough Creek and Poplars Fan Stream, have wide beds of exposed rock. Other small streams flow through grassland, shrubland, scrub and forest. Stock and wild animal access to the small streams is occasionally limited by topography, but is otherwise unrestricted. Small streams are generally up to one metre wide, normally smaller, and less than 400 mm deep. Stream substrates are varied: many small streams have a gravel substrate with a few boulders and cobbles, while others have silt substrates.

Five sites of this habitat type were electro-fished: in Rough Creek, Poplars Fan Stream, the upper part of “Amuri School Stream”, a small stream on the terrace north of Windy Point and a small stream opposite the main homestead. Three fish species were recorded. Longfin eel was the most common species, occurring at three sites (“Amuri School Stream”, the terrace stream and the homestead stream). Upland bully and Canterbury galaxias were found in one site only, in the homestead stream. No fish were found in Rough Creek and Poplars Fan Stream.

Invertebrates observed in small streams were *Nesameletus* sp., *Deleatidium* spp., *Coloburiscus humeralis* and *Rallidens mcfarlanei*.

Wetlands

Numerous wetlands are present on the property. The largest are in the upper Hope Valley just downstream of Hope Hut, on the upper terrace edge east of lower Matagouri Stream, on the western side of the lower Windy Point terrace, and between the highway and the Boyle River just south of lower Poplars Fan Stream. Other smaller wetlands occur near the Kiwi River, on the terrace above the Boyle River just south of Tui Stream, at the base of the lower terrace east of lower Matagouri Stream, and on the terrace above the old homestead. Smaller seepage wetlands tend to be dominated by exotic grasses, buttercup, rushes, sedges and lotus. The larger wetlands support areas of raupo, manuka, pukio, rautahi, toetoe and flax. All wetlands are accessible to stock and wild animals. The area of the largest wetland, downstream of Hope Hut appears to exceed two hectares. The other wetlands are less than one hectare, though sometimes form interconnected systems greater than 10 hectares in combination with other small wetlands. The water depth in the wetlands is generally 100 to 200 mm, with some areas deeper than one metre. The wetlands mostly have muddy bases, though some have gravels deposited over mud.

Two wetland streams were electro-fished: a small spring-fed stream at the wetland at the base of the lower terrace east of lower Matagouri Stream and a small spring-fed seepage near the Hope-Kiwi confluence. Longfin eels were found at both sites, Canterbury galaxias in the spring-fed stream east of Matagouri Stream and upland bully in the small spring-fed seepage near the Hope-Kiwi confluence. Upland bullies were found in the wetland downstream of Hope Hut. No fish species were found in the other wetlands.

The wetlands were not surveyed for macro-invertebrates. However, several species were noted, including water-boatmen (*Sigara* sp.) backswimmers (*Anisops* sp.), dragonflies (*Anisoptera* spp.), and damselfly larvae (*Zygoptera* spp.).

Species Recorded

Table 4 Fish species recorded from The Poplars Pastoral Lease, November 2005.

Fish species	Threat status	Distribution on property
brown trout	Introduced.	Rivers and streams with easy access to the rivers.
Canterbury galaxias	Not threatened.	Large streams, some wetlands and small streams.
longfin eel	Gradual decline.	In most streams with continuous flow and river access.
upland Bully	Not threatened.	Rivers, most wetlands and streams with river access.

Significance of the Freshwater Fauna

Four fish species were recorded during the survey of The Poplars Pastoral Lease: longfin eel (threat status: gradual decline), Canterbury galaxias, upland bully and brown trout. A diverse range of aquatic macro-invertebrates including insect larvae and worms were found. The presence of the threatened longfin eel is significant. The fish and macro-invertebrate populations on the property are indicative of good water quality. Matagouri Stream, “Amuri School Stream” (west of the Windy Point footbridge), the wetland south of lower Poplars Fan Stream and the small stream near the homestead contain freshwater habitats with significant inherent values.

2.6.5 Terrestrial Invertebrates

The Poplars Pastoral Lease straddles a climatic and ecological transition, from the dry rain-shadow environment of modified tussockland and grassland in the east, to the wetter beech forest and tussockland communities in the west. To that extent, the property supports a diversity of invertebrates with preferences for forest, stream, tussockland and shrubland habitats. There are no published studies of the invertebrates present on the property; however, numerous collection records exist for invertebrate species found in nearby Lake Sumner Conservation Park, Lewis Pass and the surrounding North Canterbury hill country. Terrestrial invertebrates of The Poplars Pastoral Lease are described below for the four main parts of the property (see attached map).

Upper Hope Valley (above Boyle River confluence)

An area of mature broadleaf forest at the base of the steep slopes near “Broadleaf Hut” was sampled. A clear association between the forest habitat and the diversity of native invertebrates was observed. Seven litter-dwelling endemic spider species and an endemic Opilione were collected. The spiders included a *Neoramia* species (a genus with range-restricted species), an Amphinectid species (a data-deficient group), an unidentified species of Agelenid and the large *Porrothele antipodiana* tunnel web spider. A data-deficient hunting spider (*Toxopsiella dugdalei*) was also found. The

genus *Toxopsiella* includes eleven species which are data-deficient and one species which is range-restricted. These hunting spiders are not readily found as they are nocturnal and very fast-moving when disturbed.

In the nearby creek, the large *Dolomedes aquaticus* spider was found, a species which is also listed as data-deficient. Numerous endemic millipedes (*Icosidesmus falcatus*) and an unidentified carabid beetle were also collected from the forest litter. This site represents a significant invertebrate habitat in the otherwise modified grassland-matagouri shrubland present in this part of the Hope Valley.

A small creek with surrounding matagouri scrub near Museum Hut was sampled. Abundant were native cockroaches (*Celatoblatta vulgaris*) and the millipede (*Icosidesmus falcatus*). Manuka beetles and orbweb spiders were also common on the surrounding matagouri shrubs.

Boyle River – Hope River Confluence (Windy Point terraces)

Higher western terraces at the property boundary in this area support tall kanuka and regenerating mountain beech, and adjoin the extensive beech forest habitats of the Doubtful Range. Numerous forest invertebrates were found including a giant leaf-veined slug (*Pseudoneitea* sp.), native forest-dwelling harvestmen (*Megalopsalis* sp.), cockroaches (*Celatoblatta subcorticaria*) and centipedes (*Zelanion* sp.). The stippled ground beetle *Mecodema rugiceps* was also found at this site. This 23 mm-long beetle is common in higher rainfall forests of the South Island and is of conservation interest (Johns, 2005). A single specimen of a ground weta *Zealandosandrus gracilis* was collected at this site. These frail mottled-brown weta are common above the bush line though also occur in lower altitude forest (Meads, 1997).

Lower eastern terraces between the two rivers support short tussockland-herbfield, grassland and scattered shrubs of matagouri and kanuka. High numbers of manuka beetles (*Pyronota festiva*) and *Costelytra zealandica* were present. Tussock moths (*Orocrambus flexuosellus*, *Orocrambus* sp. and *Eudonia* sp.), copper butterflies and New Zealand blue butterflies (*Boldenaria boldenarum* and *Zizina* sp.) were also abundant in this area. New Zealand blue butterflies visit flowers of the prostrate *Carmichaelia monroi* and *Leucopogon fraseri*, both of which are common in this area. Other common grassland species found in the area were the grasshopper *Phaulacridium marginale* and a cricket (*Bobilla* sp.). Tall kanuka and young beech trees are present at the terrace edge beside the Hope River. Present here were native butterflies, cockroaches (*Celatoblatta vulgaris*), crickets, and a cicada (*Maoricicada* sp.). These terraces form a locally-important transitional habitat between the damp beech forest and the open river beds of the Boyle and Hope rivers.

Boyle Valley (Matagouri Stream area)

The beech forest habitat alongside lower Matagouri Stream is in excellent condition. All invertebrate species collected from this site are indigenous. Rock-turning produced a large *Megadromus* beetle (possibly *M. rectangulus*), darkling beetles (*Mimopeus* sp.) and *Icosidesmus falcatus*. Beating vegetation produced an abundance of crane flies (*Leptotarsus* sp.), stoneflies (*Austroperla* sp.), caddisflies (*Zelandopsyche* sp.), Cossinine weevils and root gnats. No other habitat of equivalent character was observed on the property.

Light-trapping at a shrubland site near the lower reaches of Matagouri Stream yielded a number of species of indigenous moths. Common nocturnal moths collected included *Graphania mutans*, a Geometrid (*Pseudocoremia suavis*) and numerous *Scoparia* sp. The collection of Lycaenid butterflies indicates the presence of *Muehlenbeckia* at the site.

Lower Hope Valley (Homestead area)

Small stands of mature and regenerating mountain beech trees surrounded by tussockland and scrub are present on south-facing slopes in this area. Invertebrates collected in this area are representative

of unmodified dry beech forest communities and include carabid beetles (*Mecodema fulgidum*, *Megadromus* sp. and *M. rectangulus*), the common grass grub beetle (*Costelytra zealandica*), millipedes (*Icosidesmus* sp. and the naturalised *Ophiulus pilosus*), a native leaf-veined slug (*Pseudoneitea* sp.), large crane flies (*Leptotarsus* sp.) and common tussock moths (*Orocrambus* sp.).

The upper slopes and ridge above the beech forest remnants support tussockland and shrubland habitats. This vegetation provides floral resources (nectar, pollen and seeds) for many insects, including hoverflies, native bees, butterflies, moths and beetles. Hoverflies (*Melangyna* sp.) and butterflies (*Lycaena salustris* and *Boldenaria boldenarum*) were observed visiting tauhinu and *Hebe* flowers. Also present was a common endemic darkling beetle, *Artystona* sp. (probably *A. obscura*) and two spider species, *Cambridgea antipodiana* and *Novakia* sp. This habitat extends, uninterrupted, northward to Garnet Peak and northwest above the Boyle River, providing habitat continuity for invertebrate fauna.

Shrubland and scrub habitats dominated by kanuka, matagouri, kowhai and species of *Coprosma* are present on the lower western slopes in this area. Within these communities an abundance of scarab beetles was found, including the manuka beetle (*Pyronota festiva*) and grass grub beetles (*Costelytra zealandica* and *Odontria* sp.). A modified habitat of wet seepages and exotic grasses is present on the terrace at the base of the slope. It supports the grass moth *Orocrambus flexuosellus* and the common damselfly *Xanthocnemis* sp. Beating *Coprosma propinqua* shrubs produced caterpillars (typically Geometridae), crane flies (*Leptotarsus*) and spiders (*Colaranea* sp., Araneidae, Salticidae and Theridiidae).

Notable Species Recorded

Table 5 Notable invertebrate species recorded from The Poplars Pastoral Lease, November 2005.

Invertebrate species	Threat status	Distribution on property
<i>Neoramia</i> sp.	Probably range-restricted (four species of <i>Neoramia</i> spider are listed as range-restricted or sparse).	Broadleaf forest in the upper Hope Valley (near "Broadleaf Hut").
<i>Amphinecta</i> sp.	Probably data-deficient (10 species of <i>Amphinecta</i> are classified data-deficient).	Broadleaf forest in the upper Hope Valley (near "Broadleaf Hut").
<i>Dolomedes aquaticus</i>	Data deficient	Stream in the upper Hope Valley (near "Broadleaf Hut").
<i>Toxopsiella dugdalei</i>	Probably data-deficient (11 species of <i>Toxopsiella</i> are classified data-deficient).	Broadleaf forest in the upper Hope Valley (near "Broadleaf Hut").
<i>Mecodema fulgidum</i>	Southern limit of this species is mid-Canterbury.	Beech forest on slopes above the homestead (lower Hope Valley).
<i>Celatoblatta subcorticaria</i>	Southern limit of this species is north Canterbury.	Western Windy Point terraces.

Significance of the Terrestrial Invertebrate Fauna

Five classes, 14 Orders, 40 families and 56 species of invertebrates were collected from The Poplars Pastoral Lease. Nearly all species are indigenous and many of these species are endemic. No invertebrate species listed by Hitchmough (2002) as acutely threatened or chronically threatened were recorded; however the property does support taxa which are at risk (range-restricted or data-deficient) or of general conservation and biogeographical interest. The range of habitats present on the property, the quality of some of the habitats and the proximity to more extensive intact habitats on adjoining land, make parts of the property particularly significant for invertebrate conservation.

2.6.6 Problem Animals

Introduced animal species that may have an important effect on indigenous plant or animal communities on the property, and that can be controlled or contained, are listed and discussed below. Other ubiquitous naturalised species for which containment or control are probably impractical (such as rodents and mustelids), or domesticated animals that are grazed on the property, are not discussed here.

Brushtail possum

Possum sign was observed throughout the property and was abundant at some locations. Recent control of possums has apparently been undertaken. Continued control will be necessary to effectively protect conservation values on the property.

Rabbits and hares

Rabbits and hares were observed in low numbers on the property. Control of these species may be required to protect conservation values on the property.

Cats and mustelids

Cat scat (droppings) and a stoat were observed on the property. Control of these predators may be required to protect indigenous fauna on the property.

Red deer, chamois and pig

No large wild animals were seen on the property. However red deer and chamois are present in the wider area and are likely to be at least occasionally present on parts of the property. Pigs are also likely to be present. Control of these species may be required to protect conservation values on the property.

2.7 HISTORIC

2.7.1 Maori Cultural Values

The Hope Valley appears to have been an important route for Maori, providing access to Harper, Hope, Amuri and Lewis passes (Brailsford, 1984). These relatively low passes between the east and west coasts are readily accessible from the Hope Valley. Little information is recorded about early Maori use of The Poplars Pastoral Lease area. No archaeological sites have been recorded from the area (Alexander *et al*, 1979).

2.7.2 European Heritage Values

The first application for The Poplars Run was in the 1860s, although it appears the run may not have been stocked until 1864. In 1877 the property was run along with Glynn Wye by W A Low but reverted back to a sole run in 1883 when A W Rutherford took over the lease.

In 1911 the Government resumed all The Poplars Run, as well as Glynn Wye and Glenhope runs, split them into units and put them up for ballot. The Poplars Run was won by Miss Oldfield and was held by the Oldfield family until 1929. During the early years of the Oldfield occupation many of the run's buildings were erected. In 1929 Arthur Oldfield and Travis Barrett became the lessees, with Barrett soon taking sole charge until 1983. In 1933, during Travis Barrett's occupation, a portion of the run was taken back by the Crown for the Lewis Pass Scenic Reserve.

The highway (State Highway 7) through the property was first formed as a bridle path in 1862, providing (via Lewis Pass) one of several important routes between Canterbury and the West Coast during the gold rush of 1864-65. The first recorded crossing of Lewis Pass by Europeans was in 1860, when Henry Lewis and Christopher Maling ascended the pass from the Maruia River. A graded track was constructed over Lewis Pass between 1866 and 1876 (Alexander *et al*, 1979). The highway was recently re-routed from the north to the south side of the homestead, to avoid material deposited by an actively eroding stream.

There are four known historic sites on the property, none of which have been recently assessed: a beech-pole framed woolshed, a whare (known as the "cookhouse"), a concrete swim dip and the 1929 homestead. The woolshed and whare, built in the early years of the Oldfield occupation (possibly 1912) appear to be the most significant historic places on the property.

2.8 PUBLIC RECREATION

2.8.1 Physical Characteristics

Most parts of The Poplars Pastoral Lease, in the Boyle and upper Hope valleys, lie within the ‘backcountry accessible’ recreation opportunity class in the Recreation Strategy for Canterbury Conservancy (Department of Conservation, 1994). The river flats and terraces in the vicinity of the homestead lie within the “rural’ recreation opportunity class. The property can be divided into two main recreation settings:

Roadside

This recreation setting covers the valley floor areas that are readily accessible from State Highway 7. It includes the road, car park, footbridge and associated tracks at Windy Point, the Amuri Area School Lodge at Windy Point, the rock-climbing sites and associated tracks in the gorge of the Boyle River at Windy Point, and the disused vehicle bridge at the northern boundary of the property. It also includes the corridor of roadside scenery alongside State Highway 7, which forms an important setting for the passive recreation experience (scenery viewing) enjoyed by travellers through the area. The roadside corridor, apart from the areas in the vicinity of the homestead, provides a relatively natural recreation setting. The Windy Point and Boyle River gorge area provides a highly natural recreation setting. Structures present with the roadside recreation setting are the road, car park, footbridge and school lodge at Windy Point, and the road bridge at the northern boundary of the property.

Valleys

This recreation setting covers the mid and lower slopes of the Hope and Boyle valleys, away from State Highway 7. It has moderate to moderately-steep slopes, with associated terraces and flats nearer the valley floors. It supports modified grasslands and tussocklands, with areas of shrubland, scrub and forest. It is traversed, at the confluence of the Boyle and Hope rivers, by the tramping track between State Highway 7 at Windy Point and Lake Sumner Conservation Park in the upper Hope Valley. Structures within the area are Museum Hut, “Broadleaf Hut” and “Hope Hut” in the upper Hope Valley, and a privately-owned un-marked hut on the boundary of the property just southeast of Matagouri Stream. Nearly all parts of this recreation setting are visible from State Highway 7.

2.8.2 Legal Access

Roads

A major formed legal road, State Highway 7 (the Lewis Pass Highway), crosses through the eastern part of the property in the lower Hope and lower Boyle valleys. An unformed legal road crosses the lower Windy Point terrace between the Hope and Boyle rivers. Another legal road, in places followed by a rough vehicle track, traverses the lower slopes in the upper Hope Valley (above the confluence of the Boyle River). An easement provides for foot access along the tramping track between the Windy Point footbridge and the boundary of Lake Sumner Conservation Park in the Hope Valley. This easement also forms part of the Te Araroa The Long Pathway hiking trail – a hiking trail being established as a New Zealand-long walking trail proposed to be in place by the end of 2008. An easement provides for vehicle access along the formed road from State Highway 7 to the Amuri Area School Lodge, car park and footbridge at Windy Point.

Marginal Strips

Marginal strips are present along the Hope and Boyle rivers.

Adjoining Public Conservation Land

The Lower Doubtful and Boyle River Conservation Area (Conservation Land Unit M32014) adjoins the northern (Boyle Valley) part of the property. Lake Sumner Conservation Park (Conservation Land Unit L32001) adjoins the property to the north, west and southwest in the upper Hope Valley, and to the northeast in the lower Hope Valley.

2.8.3 Activities

The main recreation activities associated with the roadside recreation setting are scenery viewing (especially from State Highway 7), picnicking, walking, rock climbing, swimming, fishing, nature study and outdoor education. The main recreation activity on other parts of the property is tramping, predominantly along the track to Lake Sumner Conservation Park. Other recreational activities in the valleys are four-wheel-drive vehicle use, hunting, fishing, tramping, horse-riding and mountain-biking.

Significance of Recreation

The Poplars Pastoral Lease provides a highly-visible scenic backdrop to travellers along State Highway 7, a nationally-important tourist route. The area around Windy Point, where access off the highway already exists, is very popular for a range of recreational and educational activities. There is considerable potential for the development of further recreational facilities in this area. The tramping track through the property provides regionally-significant access to Lake Sumner Conservation Park and will form part of the national Te Araroa The Long Pathway hiking trail.

PART 3 OTHER RELEVANT MATTERS AND PLANS

3.1 CONSULTATION

Information-gathering meetings were held with representatives of non-governmental organisations (NGOs) at Christchurch on 5th September 2005 and at Geraldine on 6th September 2005. Comments made at those meetings are summarised below.

- Matagouri shrublands and remnants of woody vegetation alongside the road and in gullies are important; these areas provide continuity between the riverbed and higher altitude areas; they should be protected.
- The roadside corridor has high scenic value.
- Riparian areas have strategic importance as buffers.
- It is important to prevent stock trespass across the Hope River into Lake Sumner Conservation Park, though fencing of the lower slopes up the Hope River may be impractical.
- Ideally, the area up the Hope Valley should be protected to avoid creating an enclave of farmland within Lake Sumner Conservation Park.
- Any existing arrangements resulting from the Nature Heritage Fund purchase should be clearly stated at the outset of the tenure review process.
- The Hope-Kiwi Track is a popular tramp; access to the Hope River Track from the highway should be provided by an easement which provides unrestricted year-round access.
- Public access across the bridge near the Engineers Camp should be provided. A route between this bridge and the Windy Point access would provide a good walk.
- The road from the highway to the start of the track at Windy Point, the car park and the shelter should be protected as conservation land.
- Public foot access between the Hope River and the Neschacker Hill ridge should be provided; the route along this ridge to Evangeline Stream (Lake Sumner Conservation Park) is a good tramp.
- Public foot access to the Poplars Range from the highway should be provided up the ridge west of Nathan Stream; this route was used historically until permission for access was refused.
- Horse-riding access should be provided if suitable tracks are present.

3.2 DISTRICT PLANS

The Poplars Pastoral Lease lies within the Hurunui District. The plan places all of the property in an outstanding landscape area. It does not identify any areas on the property as significant natural sites, “potentially significant natural sites” or heritage features. The Boyle and Hope rivers are listed in Appendix E1 of the plan as priority resources for access and protection.

Forestry (excluding associated earthworks) and buildings (other than private dwellings and their accessory buildings) are discretionary activities which require resource consent in areas of outstanding landscape value.

Earthworks, including the construction of roads or tracks, but excluding tracks providing foot access, are a permitted activity where cumulatively less than 1000m³ is affected within any three-year period. Clearance of indigenous vegetation, including by burning, is a permitted activity where the clearance is limited to maintenance or construction of foot access less than three metres wide, or maintenance of existing drains, ponds, and vehicle tracks, provided that clearance within a one-year

period is limited to 1 ha or 5% of the area of any landholding, whichever is less. Beyond these limits, earthworks and vegetation clearance are discretionary activities. The Council's definition of indigenous vegetation means that many modified areas are excluded from the coverage of these rules.

In all areas it is a discretionary activity to remove indigenous vegetation located within 20 m of any river, stream or wetland or within 50 m of the margin of a lake listed in Appendix E1 of the plan. It is also a discretionary activity for any building or forestry located within 20 m of the Waiau River, or any wetland. Earthworks within 20 m of a stream, 50 m of a wetland or 100 m of any lake listed in Appendix E1 are also discretionary.

Other discretionary activities are commercial recreation within 20 m of the margin of any river, lake or wetland, and farming, keeping or release of deer species, thar, chamois or wild pig in the high country. Harvesting of indigenous vegetation under a sustainable forest management plan or permit approved under the Forests Amendment Act is a discretionary activity in outstanding landscape areas.

3.3 CONSERVATION MANAGEMENT STRATEGIES

The Poplars Pastoral Lease lies within the Hurunui Place Unit of the Canterbury Conservancy. Relevant priority objectives for this unit are listed in the Canterbury Conservation Management Strategy (Department of Conservation, 2000) as:

- To identify the significant indigenous vegetation and threatened plant and animal species.
- To use a range of effective methods to protect indigenous biodiversity.
- To protect and enhance the viability of priority threatened species' populations and their habitats.
- To set and implement priorities for wilding pine and broom control and maximise benefits for indigenous biodiversity.
- To prevent unauthorised stock intrusion into the Lewis Pass National Reserve (the reserve lies in the upper Boyle Valley, adjacent to parts of the original Poplars Pastoral Lease purchased by the Nature Heritage Fund).
- To protect the natural and historic resources adjacent to the Lewis Pass Highway.
- To upgrade State Highway 7 roadside recreation and interpretation facilities.

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 Species

Plant Species

Species names follow those in the published volumes of New Zealand Flora and the name changes listed in A Checklist of Indigenous Vascular Plants of New Zealand, 10th Revision (*Unpublished Document*, S. Courtney, Department of Conservation, Nelson). Maori names are included for taonga species listed in Schedule 97 of the Ngai Tahu Claims Settlement Act 1998. Naturalised species are indicated by an asterisk (*).

<u>Common name</u>	<u>Scientific name</u>
bidibid	<i>Acaena</i> sp.
blue tussock	<i>Poa colensoi</i>
bog rush	<i>Schoenus pauciflorus</i>
bracken	<i>Pteridium esculentum</i>
bristle tussock	<i>Rytidosperma setifolium</i>
broadleaf/kapuka	<i>Griselinia littoralis</i>
broom*	<i>Cytisus scoparius</i>
browntop*	<i>Agrostis capillaris</i>
bush lawyer	<i>Rubus</i> spp.
bush snowberry	<i>Gaultheria antipoda</i>
cabbage tree/ti rakau	<i>Cordyline australis</i>
catsear*	<i>Hypochoeris radicata</i>
cocksfoot*	<i>Dactylis glomerata</i>
coral lichen	<i>Cladia retipora</i>
cotton daisy/tikumu	<i>Celmisia spectabilis</i>
creeping pohuehue	<i>Muehlenbeckia axillaris</i>
dwarf inaka	<i>Dracophyllum pronum</i>
fescue tussock	<i>Festuca</i> sp.
golden speargrass/taramea	<i>Aciphylla aurea</i>
gorse*	<i>Ulex europaeus</i>
grey willow*	<i>Salix cinerea</i>
hanging spleenwort	<i>Asplenium flaccidum</i>
harebell	<i>Wahlenbergia albomarginata</i>
hound's tongue fern	<i>Microsorium pustulatum</i>
inaka	<i>Dracophyllum uniflorum</i>
kanuka	<i>Kunzea ericoides</i>
kohuhu	<i>Pittosporum tenuifolium</i>
korokio	<i>Corokia cotoneaster</i>
koromiko	<i>Hebe salicifolia</i>
kowhai	<i>Sophora microphylla</i>
lancewood	<i>Pseudopanax crassifolius</i>
lotus*	<i>Lotus pedunculatus</i>
manuka	<i>Leptospermum scoparium</i>

marbleleaf.....	<i>Carpodetus serratus</i>
matagouri.....	<i>Discaria toumatou</i>
mingimingi.....	<i>Cyathodes juniperina</i>
mountain akeake.....	<i>Olearia avicenniifolia</i>
mountain beech.....	<i>Nothofagus solandri</i> var. <i>cliffortioides</i>
mountain flax/wharariki.....	<i>Phormium cookianum</i>
mountain kiokio.....	<i>Blechnum montanum</i>
mountain ribbonwood/houhi.....	<i>Hoheria lyallii</i>
mountain toatoa.....	<i>Phyllocladus alpinus</i>
mountain wineberry.....	<i>Aristotelia fruticosa</i>
mouse-ear chickweed*	<i>Cerastium fontanum</i>
mouse-ear hawkweed*	<i>Hieracium pilosella</i>
musk*	<i>Mimulus moschatus</i>
native broom.....	<i>Carmichaelia odorata</i>
native dandelion.....	<i>Taraxacum magellanicum</i>
necklace fern.....	<i>Asplenium flabellifolium</i>
oxeye daisy*	<i>Leucanthemum vulgare</i>
patotara.....	<i>Leucopogon fraseri</i>
pohuehue.....	<i>Muehlenbeckia australis</i>
porcupine shrub.....	<i>Melicytus alpinus</i>
prickly shield fern.....	<i>Polystichum vestitum</i>
pukio.....	<i>Carex secta</i>
radiata pine*	<i>Pinus radiata</i>
raupo.....	<i>Typha orientalis</i>
rautahi.....	<i>Carex coriacea</i>
red beech.....	<i>Nothofagus fusca</i>
red clover*	<i>Trifolium pratense</i>
red pondweed.....	<i>Potamogeton cheesemanii</i>
red woodrush.....	<i>Luzula rufa</i>
scrub pohuehue.....	<i>Muehlenbeckia complexa</i>
selfheal*	<i>Prunella vulgaris</i>
sheep's sorrel*	<i>Rumex acetosella</i>
short tussock.....	<i>Festuca</i> sp.
silver beech.....	<i>Nothofagus menziesii</i>
silver tussock/wi.....	<i>Poa cita</i>
slim snow tussock.....	<i>Chionochloa macra</i>
snowberry.....	<i>Gaultheria depressa</i> var. <i>novae-zelandiae</i>
suckling clover*	<i>Trifolium dubium</i>
sweet vernal*	<i>Anthoxanthum odoratum</i>
tauhinu.....	<i>Ozothamnus leptophyllus</i>
thousand-leaved fern.....	<i>Hypolepis millefolium</i>
three finger.....	<i>Pseudopanax colensoi</i>
toetoe.....	<i>Cortaderia richardii</i>
tree fuchsia/kotukutuku.....	<i>Fuchsia excorticata</i>
tree lupin*	<i>Lupinus arboreus</i>
tutu.....	<i>Coriaria sarmentosa</i>
wall lettuce*	<i>Mycelis muralis</i>
watercress*	<i>Rorippa</i> spp.
water forget-me-not*	<i>Myosotis laxa</i> ssp. <i>caespitosa</i>
weeping mapou.....	<i>Myrsine divaricata</i>
white clover*	<i>Trifolium repens</i>
wire moss.....	<i>Polytrichum juniperinum</i>
woolly moss.....	<i>Racomitrium pruinosum</i>
yellowwood.....	<i>Coprosma linariifolia</i>
Yorkshire fog*	<i>Holcus lanatus</i>

Animal Species

Species names follow King (1990) for mammals, the June 2003 version of the New Zealand Recognized Bird Names list (compiled by C.J.R. Robertson and D.G. Medway for the Ornithological Society of New Zealand Inc.) for birds, Whitaker (1998) for lizards and McDowall (2000) for fish. Maori names are included for taonga species listed in Schedule 97 of the Ngai Tahu Claims Settlement Act 1998. Naturalised species are indicated by an asterisk (*).

<u>Common name</u>	<u>Scientific name</u>
Australasian harrier/kahu	<i>Circus approximans</i>
Australasian pied stilt/poaka	<i>Himantopus himantopus leucocephalus</i>
Australian magpie*	<i>Gymnorhina tibicen</i>
banded dotterel	<i>Charadrius bicinctus bicinctus</i>
bat	see South Island long-tailed bat
bellbird/korimako	<i>Anthornis melanura melanura</i>
blackbird*	<i>Turdus merula</i>
black-fronted tern	<i>Sterna albostrata</i>
black shag/koau	<i>Phalacrocorax carbo novaehollandiae</i>
brown creeper	<i>Mohoua novaeseelandiae</i>
brown hare*	<i>Lepus europaeus occidentalis</i>
brown trout*	<i>Salmo trutta</i>
brush-tail possum*	<i>Trichosurus vulpecula</i>
California quail*	<i>Callipepla californica brunnescens</i>
Canada goose*	<i>Branta Canadensis maxima</i>
Canterbury galaxias	<i>Galaxias vulgaris</i>
cat*	see house cat
chaffinch*	<i>Fringilla coelebs</i>
chamois*	<i>Rupicapra rupicapra rupicapra</i>
common skink	<i>Oligosoma nigriplantare polychroma</i>
dunnock*	<i>Prunella modularis</i>
European rabbit*	<i>Oryctolagus cuniculus cuniculus</i>
feral cat* (house cat)	<i>Felis catus</i>
feral pig*	<i>Sus scrofa</i>
goldfinch*	<i>Carduelis carduelis</i>
greenfinch*	<i>Carduelis chloris</i>
great spotted kiwi/roroa	<i>Apteryx haastii</i>
grey duck/parera	<i>Anas superciliosa superciliosa</i>
grey warbler/riroriro	<i>Gerygone igata</i>
hare*	see brown hare
house cat*	<i>Felis catus</i>
house sparrow*	<i>Passer domesticus</i>
kea	<i>Nestor notabilis</i>
longfin eel/tuna	<i>Anguilla dieffenbachii</i>
long-toed skink	<i>Oligosoma longipes</i>
mallard*	<i>Anas platyrhynchos platyrhynchos</i>
marsh crake	<i>Porzana pusilla affinis</i>
New Zealand falcon/karearea	<i>Falco novaeseelandiae</i>
New Zealand pigeon/kereru	<i>Hemiphaga novaeseelandiae novaeseelandiae</i>
New Zealand pipit/pihoihoi	<i>Anthus novaeseelandiae novaeseelandiae</i>
orange-fronted parakeet	<i>Cyanoramphus malherbi</i>
paradise shelduck/putakitaki	<i>Tadorna variegata</i>
pig*	see feral pig
possum*	see brush-tail possum

rabbit*	.....	see European rabbit
red deer*	<i>Cervus elaphus scoticus</i>
redpoll*	<i>Carduelis flammea</i>
rough gecko	.....	<i>Heteropholis rudis</i>
shining cuckoo/pipiwaharuroa	.....	<i>Chrysococcyx lucidus lucidus</i>
silvereve	.....	<i>Zosterops lateralis lateralis</i>
skylark*	<i>Alauda arvensis</i>
song thrush*	<i>Turdus philomelos</i>
Southern Alps gecko	.....	<i>Hoplodactylus</i> aff. <i>maculatus</i> “Southern Alps”
southern black-backed gull/karoro	.....	<i>Larus dominicanus dominicanus</i>
South Island fantail/piwakawaka	.....	<i>Rhipidura fuliginosa fuliginosa</i>
South Island kaka	.....	<i>Nestor meridionalis meridionalis</i>
South Island long-tailed bat	.....	<i>Chalinolobus tuberculatus</i>
South Island pied oystercatcher	.....	<i>Haematopus ostralegus finschi</i>
South Island rifleman/titipounamu	.....	<i>Acanthisitta chloris chloris</i>
South Island robin/kakaruai	.....	<i>Petroica australis australis</i>
South Island tomtit/miromiro	.....	<i>Petroica macrocephala macrocephala</i>
spotted skink	.....	<i>Oligosoma lineocellatum</i>
spur-winged plover	.....	<i>Vanellus miles novaehollandiae</i>
starling*	<i>Sturnus vulgaris</i>
stoat*	<i>Mustela erminea</i>
tui	.....	<i>Prothemadera novaeseelandiae novaeseelandiae</i>
upland bully	.....	<i>Gobiomorphus breviceps</i>
welcome swallow	.....	<i>Hirundo tahitica neoxena</i>
West Coast green gecko	.....	<i>Naultinus tuberculatus</i>
white-faced heron	.....	<i>Ardea novaehollandiae novaehollandiae</i>
yellow-crowned parakeet/kakariki	.....	<i>Cyanoramphus auriceps auriceps</i>
yellowhammer*	<i>Emberiza cintrenella</i>
yellowhead/mohua	.....	<i>Mohoua ochrocephala</i>

4.1.2 References Cited

Alexander, D.J.; Neeson, M.P.; Simpson, N.C. 1979. *The Lewis Pass Region: An Investigation for the National Parks Authority.* Department of Lands and Survey. 116p + appendices.

Brailsford, B. 1984. *Greenstone Trails.* A.H. & A.W. Reed Ltd, Christchurch. 192p.

Bull, P.C.; Gaze, P.D.; Robertson, C.J.R. 1985. *The atlas of bird distribution in New Zealand.* OSNZ, Wellington.

Burrows, C.J. 1997. A macrofossil flora from early Aranuiian lake-bed deposits, Doubtful River, Waiau-uha catchment, North Canterbury, New Zealand. *NZ Journal of Botany* 35: 545-553.

Cox, A. 1981. Hope River orange-fronted parakeet capture 12–27 March 1981. *Unpublished Report,* Department of Conservation, Canterbury Conservancy, Christchurch.

de Lange, P.J.; Norton, D.A.; Heenan, P.B.; Courtney, S.P.; Molloy, B.P.J.; Ogle, C.C.; Rance, B.D.; Johnson, P.N.; Hitchmough, R. 2004. Threatened and uncommon plants of New Zealand. *NZ Journal of Botany* 42: 45-76.

Department of Conservation, 1994. Recreation Strategy for Canterbury Conservancy. *Canterbury Conservancy Conservation Management Planning Series No. 7.* Department of Conservation, Christchurch. 102p.

- Department of Conservation, 2000.** Canterbury Conservation Management Strategy, *Canterbury Conservation Management Planning Series No. 10*. Department of Conservation, Christchurch. 320p.
- Elliott, G.P. 1992.** Habitat relationships and conservation of the yellowhead. *NZ Journal of Ecology* 16: 83-90.
- Gregg, D.R. 1964.** Sheet 18 Hurunui. *Geological Map of New Zealand 1:250,000*. DSIR, Wellington.
- Guest, R.; Wilkinson, G.B. 1977.** Forests and animals of the Hope Catchment. *NZ Journal of Forestry Science* 7: 123-136.
- Hitchmough, R. (compiler) 2002.** New Zealand threat classification system lists. *Threatened Species Occasional Publication* 23. Department of Conservation, Wellington.
- Johns, P.M. 2005.** *Field guide to South Island carabid beetles of conservation interest*. Department of Conservation, Christchurch.
- King, C.M. (editor). 1990.** *The Handbook of New Zealand Mammals*. Oxford University Press, Auckland. 600p.
- Leathwick, J.; Wilson, G.; Rutledge, D.; Wardle, P.; Morgan, F.; Johnston, K.; McLeod, M.; Kirkpatrick, R. 2003.** *Land Environments of New Zealand*. David Bateman, Auckland. 184p.
- McDowall, R.M. 2000.** *The Reed Field Guide to New Zealand Freshwater Fish*. Reed Publishing (NZ) Ltd., Auckland.
- McEwen, W.M. (editor) 1987.** Ecological regions and districts of New Zealand, third revised edition (Sheet 3). *New Zealand Biological Resources Centre Publication No.5*. Department of Conservation, Wellington, 1987.
- Meads, M. 1997.** *The Weta book*. A guide to the identification of Wetas. Manaaki-Whenua Press.
- Nilsson, R.J. 1988.** Orange-fronted parakeet expedition Hope-Kiwi Valley- February 15–23 1988. *Unpublished Report*, Department of Conservation, Canterbury Conservancy, Christchurch.
- O'Donnell, C.F.J. 1999.** Parakeets in the Hope Valley. *File Note*, Department of Conservation, Canterbury Conservancy, 6/9/99.
- O'Donnell, C.F.J. 2000.** The significance of river and open water habitats for indigenous birds in Canterbury, New Zealand. Environment Canterbury *Unpublished Report U00/37*. Environment Canterbury, Christchurch.
- Tomlinson, A.I. 1976.** In: *New Zealand Atlas* (Ian Wards, Editor). Government Printer, Wellington.
- Whitaker, T. 1998.** Mackenzie Basin lizards: a field key. *Unpublished Report*. Department of Conservation, Twizel. 12p.