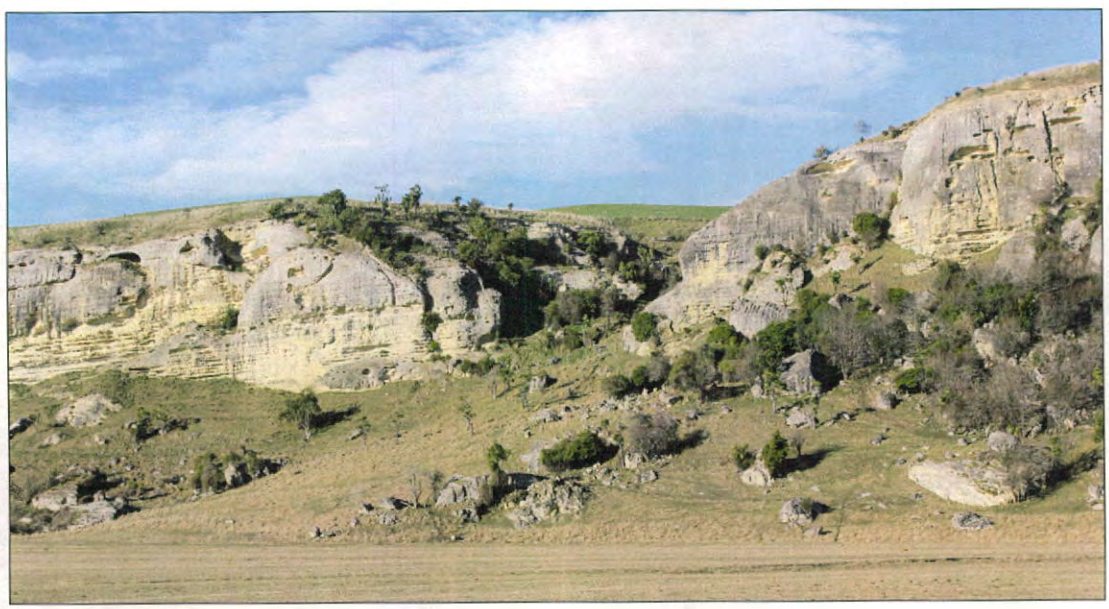
TIMARU DISTRICT

SIGNIFICANT NATURAL AREAS SURVEY

HUDSON PROPERTY ROCKPOOL



Report prepared for Timaru District Council by Mike Harding
February 2014

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

PROPERTY REPORT

PROPERTY DETAILS:

Owner: ..... Donald and Kathy Hudson
Valuation References: 24810/005.00
Address: ..... Gates Road, Ashburton.
Location: ..... Between Raincliff Road and Parr Road, Raincliff.
Ecological District: ..... Geraldine Ecological District.
TDC Land Type: ..... 'Soft Rock Hills and Downs'
Land Environments: ..... N3.1a.

ECOLOGICAL CONTEXT:

The property covers a prominent limestone landform on the south side of the Opihi River at the confluence of the Opuha River, between Raincliff and Totara Valley. The property lies in Geraldine Ecological District.

It is likely that the original vegetation of this area was predominantly podocarp-hardwood forest, dominated by matai and totara. Shrubland, treeland and tussockland may have occupied steeper slopes and disturbed sites. Limestone bluffs supported specialised flora, and valley floors would have supported areas of wetland vegetation.

Today the original forest cover in this part of Geraldine Ecological District is largely confined to remnants in gullies or on steep slopes associated with limestone scarps. Otherwise, the indigenous vegetation of the ecological district is substantially depleted or modified. The indigenous fauna would have originally been significantly more numerous and diverse, with a greater range of birds, lizards and invertebrates than is presently found in the area.

SIGNIFICANT AREAS ON THE PROPERTY:

Indigenous vegetation on the property comprises hardwood forest, treeland, shrubland and sparsely vegetated rockland associated with limestone bluffs, and small areas of wetland vegetation on the valley floors. The property lies near to areas of indigenous forest, shrubland and rockland vegetation on adjoining properties, contributing to the network of fauna habitat in the wider area. This part of the ecological district is a stronghold for a remnant South Canterbury population of long-tailed bat; a threatened species.

The property was surveyed as part of the District-wide survey of Significant Natural Areas during July 2013. Twelve areas, comprising approximately 36 hectares, are regarded as significant when assessed against the District Plan criteria. These are described in this report as five Significant Natural Areas (SNAs), as listed in the table below.

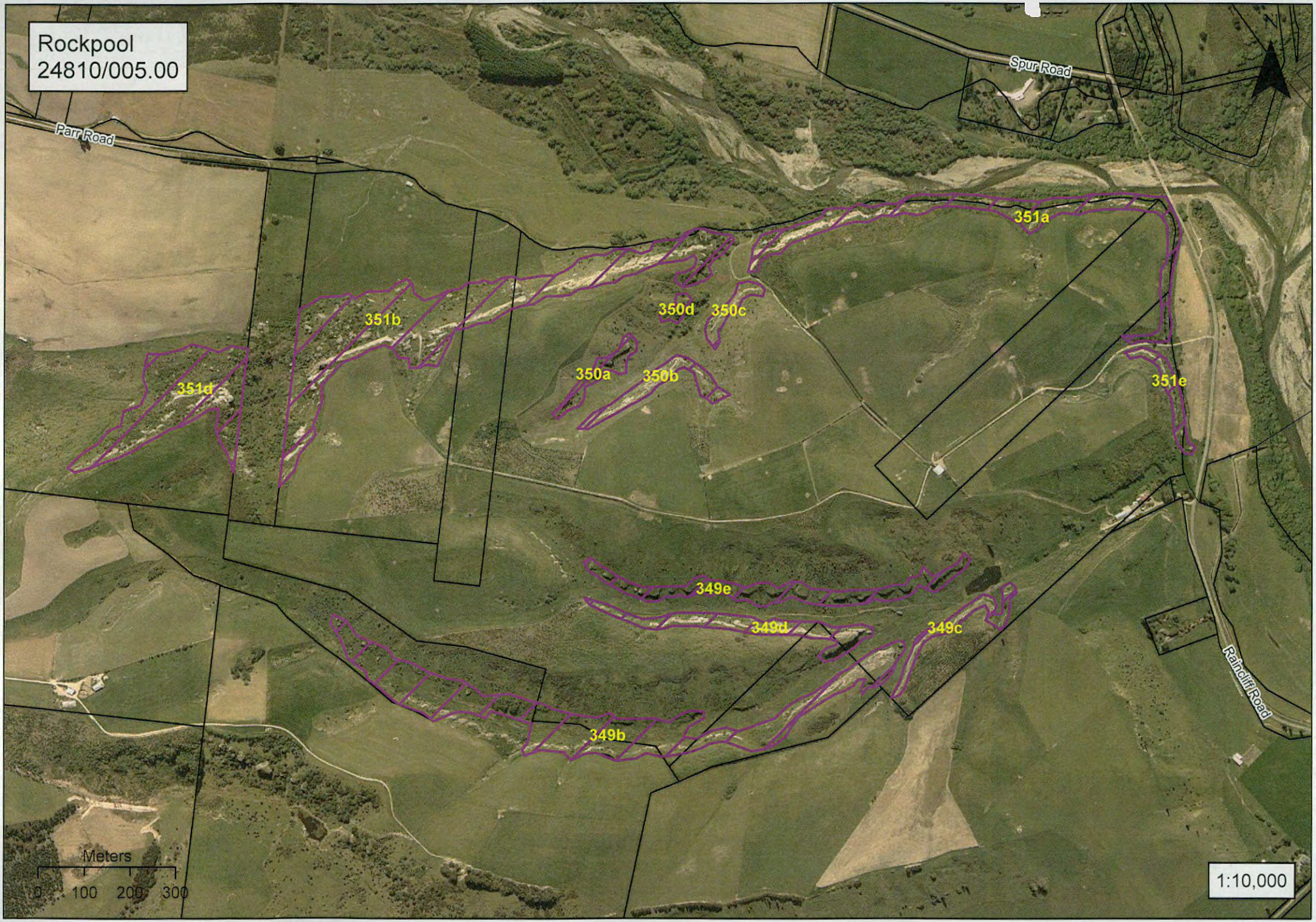
Area No.	Area Name	Central grid reference	Aprox. size (ha)	Vegetation/habitat type
349	Rockpool southern valley	J38: 485-675	13.9	treeland; shrubland; rockland; wetland
350	Rockpool northern valley	J38: 482-682	2.5	treeland; shrubland; rockland
351a,e	Rockpool northeast scarp	J38: 490-685	4.9	treeland; rockland
351b	Rockpool northern scarp	J38: 475-681	10.5	forest; treeland; shrubland; rockland
351d	Rockpool northwest scarp	J38: 471-680	4.9	forest; treeland; shrubland; rockland

The boundaries of these SNA are illustrated and the values described on the SNA forms in this report. Note that the boundaries of the SNAs are indicative, rather than precise. These areas meet the ecological criteria in the Timaru District Plan (criteria i-vi, pages B18-B19) and are considered to be sustainable in the long term, or sustainable with appropriate management (criterion vii, page B19). SNAs are subject to confirmation by Council after regarding the matters listed in the District Plan (pages B19-B20). It is expected that SNAs will eventually be listed in the District Plan by way of a notified plan change.

At present, consent is required from Council for clearance of areas of indigenous vegetation or habitat which meet the Interim Definitions in the District Plan. Clearance includes burning, track construction, spraying with herbicides and over-planting.

To assist with the protection and management of any SNA, landowners can apply to Council for financial assistance. Any questions regarding the protection, management and use of SNAs should be directed to the District Planner.

The at-risk (naturally uncommon) plant Einadia allanii.


Rockpool
24810/005.00
Parr Road
Spur Road
Raincliff Road
351a
351b
351d
350d
350c
350a
350b
351e
349e
349d
349c
349b
Meters
0 100 200 300
1:10,000

TIMARU DISTRICT SNA SURVEY — SNA 349b, c, d and e

Area Name: Rockpool southern valley
Location (central map reference): J38: 485-675
Ecological District: Geraldine
Surveyors: Mike Harding
Property: Rockpool (Donald and Kathy Hudson)
Nearest Locality: Raincliff
Area Size (ha): 13.9 **Altitude (m):** 180-240
Survey Time: 3½ hours **Survey Date:** 09-07-13

General Description:

This SNA lies in a large east-trending valley along the southern part of the property. The valley divides in its upper (western) reaches. The SNA comprises four long narrow areas of exposed limestone scarp on the valley sides. These are connected by open pasture with scattered shrubs and, in the upper reaches of the southern gully, by sedgeland (wetland) on the valley floor.

Plant Communities:

The exposed limestone scarps of this SNA are sparsely vegetated, as is typical for such areas. Vegetation is restricted to inaccessible ledges, crevices and at the base of the rock face, especially beneath overhangs. Plant species observed are described below. Naturalized (exotic) species are indicated with an asterisk*.

Trees and shrubs present on or adjacent to the limestone bluffs are cabbage tree, kowhai, mahoe, broadleaf, five-finger, mountain akeake, *Coprosma propinqua*, matagouri, koromiko, native broom, porcupine shrub and gorse* with the climbers, pohuehue, scrub pohuehue, native bindweed and leafless lawyer.

Herbaceous species present on or beneath the bluffs are *Asplenium lyallii*, *Blechnum chambersii*, maidenhair fern, hound's tongue fern, *Asplenium hookerianum* (uncommon), common shield fern (uncommon), *Epilobium nummularifolium*, blue tussock, *Parietaria debilis*, *Oxalis exilis*, *Dichonda repens*, toatoa, *Einadia allanii*, *Carex breviculmis*, *Geranium microphyllum*, *Cardamine debilis*, *Wahlenbergia gracilis* and stonecrop*.

High limestone scarps of SNA 349b (left) and SNA 349d (right)

Other species commonly present beneath the bluffs, along with pasture grasses, are dwarf mallow*, black nightshade*, nodding thistle*, hemlock*, *Epilobium pedunculare** and *Chenopodium murale**.

The valley-floor wetland is dominated by *Carex secta* and *Carex coriacea*. Other species present are *Juncus edgariae*, *Juncus distegus*, soft rush* and creeping buttercup*.

Areas of shrubland adjacent to and linking the limestone scarps are dominated by matagouri and *Coprosma propinqua*. Other species present are native broom, silver tussock, leafless lawyer, scrub pohuehue, with scattered cabbage trees, elderberry* and gorse* (mostly dead/sprayed).

Birds/Fauna Observed:
Native birds observed during this brief survey were fantail, harrier and paradise shelduck. Welcome swallow nests are present at limestone overhangs.

Notable Flora, Fauna and Habitats:
Important features of this area are the presence of limestone scarp habitat and wetland vegetation (nationally uncommon ecosystems), the presence of at-risk plant species (*Eiandia allanii* and *Geranium microphyllum*), a locally-uncommon plant species (*Parietaria debilis*), the habitat the area may provide for long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat.

Notable Plant and Animal Pests:
Herbaceous plants on the exposed limestone pose the greatest threat to the native plant species. The most important are grasses (especially Chewings fescue), stonecrop, mouse-ear hawkweed and horehound. Animal pests were not surveyed, though hares were observed grazing on the limestone scarp.

Boundaries (buffering, fencing, adjoining plant communities and habitats):
The boundaries of this SNA are defined by the extent of exposed limestone. These areas are not well buffered, except on the steeper higher scarps. The four parts of this SNA lie close to one another and are part of a more extensive limestone system which outcrops elsewhere on the property.

Condition and Management Issues:
Vegetation on these scarps is in moderate condition. It is sparse and in places dominated by naturalized plants, as is typical for limestone scarps in this area, but nevertheless supports a number of representative species. Important management issues are control of invasive weeds and management of grazing.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	A modified example of indigenous vegetation on limestone scarps, though typical of scarps elsewhere in the ecological district.
Rarity	M/H	A good example of a limestone scarp and wetland (nationally uncommon ecosystems); supports at risk (naturally uncommon) plant species and a locally uncommon plant species; may provide habitat for long-tailed bat (nationally endangered).
Diversity and pattern	M	Plant species diversity is moderate and presumably much reduced from its original condition.
Distinctiveness/special features	L/M	An integral part of a more extensive system of exposed limestone. Maori rock drawings are present at two locations and sinkholes present in the valley floor.
Other Criteria		
Size/shape	M/H	A moderate-sized area though some parts are not well buffered.
Connectivity	M	Part of a much more extensive limestone system.
Long-term Sustainability	M	Some control of plant pests and management of grazing will probably be necessary to maintain ecological values in the long term.

Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):
This SNA has been protected by its unsuitability for development. It has little potential for further farm development.

Discussion:
This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of limestone scarp habitat and wetland vegetation (nationally uncommon ecosystems), the presence of at-risk plant species (*Eiandia allanii* and *Geranium microphyllum*), a locally-uncommon plant species (*Parietaria debilis*), the habitat the area may provide for long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat.

The valley-floor sedgeland (wetland) at SNA 349b

TIMARU DISTRICT SNA SURVEY — SNA 350a, b, c and d

Area Name: Rockpool northern valley
Location (central map reference): J38: 482-682
Ecological District: Geraldine
Surveyors: Mike Harding
Property: Rockpool (Donald and Kathy Hudson)
Nearest Locality: Raincliff
Area Size (ha): 2.5 **Altitude (m):** 180-220
Survey Time: 1 hour **Survey Date:** 02-07-13

General Description:

This SNA lies in a large northeast-trending gully at the northern part of the property. The gully bisects the main northern limestone scarp on the property (SNA 351). The SNA comprises four areas of exposed limestone scarp connected by open pasture with scattered shrubs.

Plant Communities:

The exposed limestone scarps that form this SNA are sparsely vegetated, as is typical for such areas. Vegetation is restricted to inaccessible ledges, crevices and at the base of the rock face, especially beneath overhangs. Plant species observed are described below. Naturalized (exotic) species are indicated with an asterisk*.

Southeast-facing scarps:
Scarps on the shaded southeast-facing side of the valley support more native vegetation. Present here are scattered trees and shrubs, including broadleaf, cabbage tree, *Coprosma propinqua*, native broom, matagouri, koromiko, porcupine shrub, elderberry*, sweet brier* (uncommon) and the climbers pohuehue, scrub pohuehue and leafless lawyer.

Other plants present on or adjacent to the exposed rock are *Geranium microphyllum*, cardamine, *Epilobium nummularifolium*, *Lagenifera petiolata*, buttercup, hairy pennywort, blue tussock, horehound*, stonecrop*, mouse-ear hawkweed*, white clover* and the ferns *Asplenium lyallii* (*image at right*) and *Blechnum chambersii*.

Large crack willow* trees and rushland dominated by soft rush* and rautahi are present on the valley floor adjacent to the scarps.

Northwest-facing scarps:
Scarps on the sunny side of the valley are more sparsely vegetated, especially at the upper end of the valley. Plant species present are grasses, stonecrop*, horehound*, oxalis, narrow-leaved plantain*, white clover*, dandelion*, mouse-ear hawkweed*, king devil hawkweed*, wild marjoram*, dwarf mallow*, *Epilobium nummularifolium*, *Carex breviculmis*, *Dichondra repens* and the ferns *Asplenium lyallii*, button fern (uncommon) and maidenhair fern (uncommon).

Scattered through this area are cabbage trees and shrubs of *Coprosma propinqua*, porcupine shrub, koromiko, elderberry*, gorse* and the climbers native bindweed and clematis.

Birds/Fauna Observed:

Native birds observed during this brief survey were bellbird and paradise shelduck.

Notable Flora, Fauna and Habitats:

Important features of this area are the presence of limestone scarp habitat (a nationally uncommon ecosystem), the presence of an at-risk plant species (*Geranium microphyllum*), a locally-uncommon plant

species (*Lagenifera petiolata*), the habitat the area may provide for long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat.

Notable Plant and Animal Pests:
Herbaceous plants on the exposed limestone pose the greatest threat to the native plant species. The most important are grasses (especially Chewings fescue), stonecrop, mouse-ear hawkweed and horehound. Animal pests were not surveyed.

Boundaries (buffering, fencing, adjoining plant communities and habitats):
The boundaries of this SNA are defined by the extent of exposed limestone. These areas are not well buffered, except on the steeper higher scarps at the lower end of the valley. The four parts of this SNA lie close to one another and to an extensive limestone scarp at the bottom of the valley (SNA 351).

Condition and Management Issues:
Vegetation on these scarps is in moderate condition. It is dominated by naturalized plants, as is typical for limestone scarps in this area, but nevertheless supports a number of representative species. Important management issues are control of invasive weeds and management of grazing.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	**M**	A modified example of indigenous vegetation on limestone scarps, though typical of scarps elsewhere in the ecological district.
Rarity	**M/H**	A reasonable example of a limestone scarp (a nationally uncommon ecosystem); supports an at risk (naturally uncommon) plant species and a locally uncommon plant species. May provide habitat for long-tailed bat (nationally endangered).
Diversity and pattern	**L/M**	Plant species diversity is low and presumably much reduced from its original condition.
Distinctiveness/special features	**L/M**	An integral part of a more extensive system of exposed limestone.
Other Criteria		
Size/shape	**M**	Small areas, parts of which are well buffered.
Connectivity	**M**	Part of a much more extensive limestone system.
Long-term Sustainability	**M**	Some control of plant pests and management of grazing will probably be necessary to maintain ecological values in the long term.

Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):
This SNA has been protected by its unsuitability for development. It has little potential for further farm development.

Discussion:
This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of limestone scarp habitat (a nationally uncommon ecosystem), the presence of an at-risk plant species and a locally-uncommon plant species, the habitat the area may provide for long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat.

TIMARU DISTRICT SNA SURVEY — SNA 351a and 351e

Area Name: Rockpool northeast scarp
Location (central map reference): J38: 490-685
Ecological District: Geraldine
Surveyors: Mike Harding
Property: Rockpool (Donald and Kathy Hudson)
Nearest Locality: Raincliff
Area Size (ha): 4.9 **Altitude (m):** 160-200
Survey Time: 1 hour **Survey Date:** 09-07-13

General Description:

This SNA comprises the north- and east-facing limestone scarps at the northeast corner of the property. The scarps run west from Raincliff Bridge, along the south side of the Opihi River (SNA 351a), and south from the bridge, along Raincliff Road (SNA 351e). The SNA adjoins SNA 351b to the west and lies near to SNA 349 to the south.

Plant Communities:

The scarps within these two SNAs are more modified by woody weeds than scarps elsewhere on the property. Infestations of sycamore* and old man's beard* are present at Raincliff Bridge and broom* scrub dominates most parts of the scarp crest.

Native woody plant species present on or adjacent to the limestone scarp are cabbage tree, broadleaf, kowhai, lancewood (uncommon), five-finger, mountain akeake, *Coprosma propinqua*, koromiko, porcupine shrub and the climbers leafless lawyer and pohuehue.

Herbaceous species present are flax, blue tussock, male fern*, hemlock*, stinking iris*, oxeye daisy* and the ferns *Blechnum chambersii*, *Asplenium lyallii*, hound's tongue fern and maidenhair fern.

Naturalized species are sycamore*, old man's beard*, broom*, gorse*, elderberry*, cotoneaster*, plum*, Darwin's barberry* and blackberry*. Additional species along the river margin are crack willow* and tree lupin*.

The west end of SNA 351a.

Birds/Fauna Observed:

Native birds observed during this brief survey were bellbird and fantail, though the area is likely to provide habitat for grey warbler, welcome swallow, harrier and kereru (NZ pigeon). Rock crevices and tree trunks with cavities are common, providing roost sites for birds and long-tailed bat.

Notable Flora, Fauna and Habitats:
Important features of this area are the limestone scarp habitat (a nationally uncommon ecosystem), the habitat the area provides for birds and probably long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat.

Notable Plant and Animal Pests:
Naturalized plants are present throughout this site and in places dominant. Important species are sycamore*, old man's beard*, broom*, blackberry* and plum. Animal pests were not surveyed.

Boundaries (buffering, fencing, adjoining plant communities and habitats):
The boundary of this area follows areas of exposed limestone. It is long and narrow and not well buffered except for the steep rock faces. The area is part of a more extensive limestone scarp, other parts of which are also SNAs. It lies within the range of a local population of long-tailed bat, a nationally endangered species.

Condition and Management Issues:
Less accessible parts of the limestone bluff are in reasonable condition. Elsewhere the SNA is dominated by woody weeds. The most important management issues are control of woody weeds, notably sycamore (*image above*) and old man's beard. Maori rock drawing, more recent graffiti and bolted rock-climbing routes are present.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	Vegetation on the exposed limestone is representative of the original vegetation; vegetation elsewhere is more modified, though still supports representative species.
Rarity	M/H	Limestone scarps are a nationally uncommon ecosystem; the area provides potential habitat for long-tailed bat (nationally endangered).
Diversity and pattern	L	Native plant species diversity is low (16 native vascular species) and substantially depleted from its original state.
Distinctiveness/special features	M	Part of an extensive area of exposed limestone.
Other Criteria		
Size/shape	M	Moderate-sized areas, well buffered on the steeper scarp.
Connectivity	M	Part of a larger limestone scarp, linking other SNAs.
Long-term Sustainability	M	Plant pest control and careful management of grazing will probably be necessary to maintain the ecological values in the long term.

Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):
The steepness of most of the area makes it unsuitable for further development.

Discussion:
This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the limestone scarp habitat (a nationally uncommon ecosystem), the habitat the area provides for birds and probably long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat.

TIMARU DISTRICT SNA SURVEY — SNA 351b

Area Name: Rockpool northern scarp
Location (central map reference): J38: 475-681
Ecological District: Geraldine
Surveyors: Mike Harding
Property: Rockpool (Donald and Kathy Hudson)
Nearest Locality: Raincliff
Area Size (ha): 10.5 **Altitude (m):** 200-240
Survey Time: 4 hours **Survey Date:** 02-07-13

General Description:

This SNA comprises a large north-facing limestone scarp and toe-slopes near Raincliff. It lies on the south side of the Opihi River just upstream from the confluence of Opuha River. The limestone scarp extends east (SNA 351a) and west (SNA 351d).

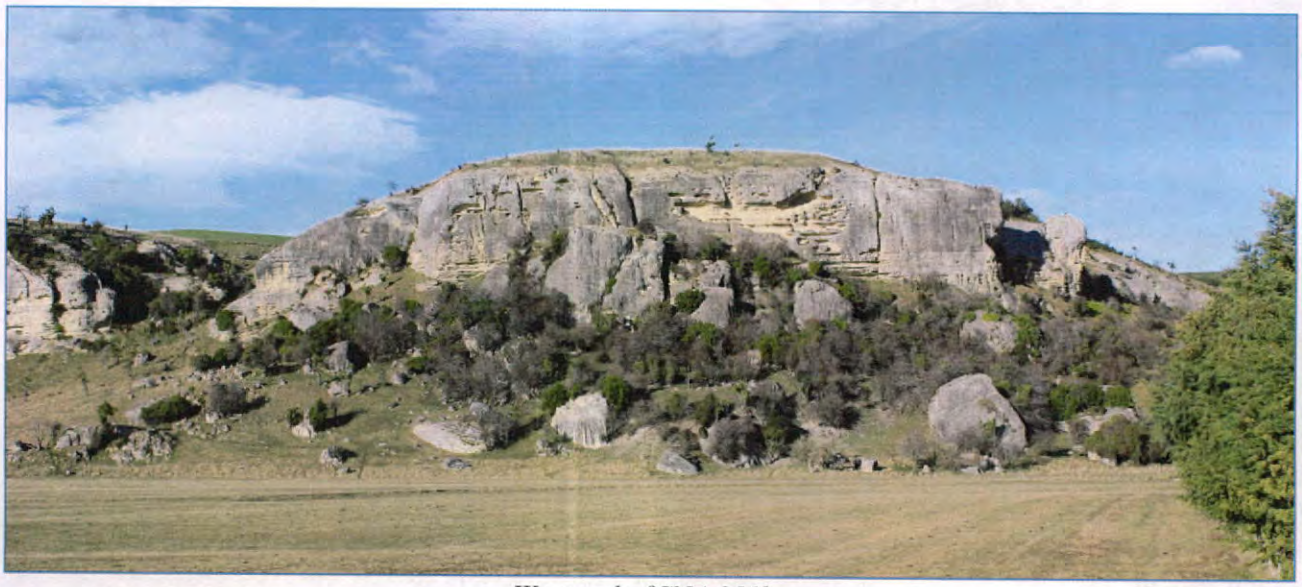
Plant Communities:

Two main plant communities are present: treeland/forest on slopes below the scarp and a sparsely-vegetated rockland community on the exposed limestone. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk*.

Treeland/forest:

The treeland community ranges from scattered trees to open forest. The forest community occupies the western part of the SNA and is dominated by cherry*, hawthorn* and plum*. Native trees present in this community are broadleaf, kowhai and cabbage tree. Other canopy species are pohuehue, leafless lawyer, native bindweed, native jasmine, clematis, cotoneaster*, elderberry* and privet*.

The forest understorey is very open, except at the western end where deer are excluded and grazing appears restricted to sheep (from the adjacent property). Understorey species present at the western end are Himalayan honeysuckle*, *Coprosma propinqua*, native broom, leafless lawyer, pohuehue, elderberry* and blackberry*. Additional species present at less accessible sites beneath the limestone bluff are mahoe, pate and koromiko.



West end of SNA 351b

The ground-cover is also open, except at less accessible sites where seedlings of *Coprosma propinqua*, cabbage tree and mahoe are present. Additional species present in the shelter of the bluff are toatoa, *Parietaria debilis* (uncommon), burdock*, velvety nightshade*, dwarf mallow*, hemlock* and the ferns *Asplenium lyallii*, *Blechnum chambersii*, common shield fern and maidenhair fern.

Open areas amongst the treeland/forest and on slopes beneath the limestone scarp support shrubland and scattered trees. Important species are *Coprosma propinqua*, matagouri, gooseberry*, pohuehue, cabbage tree,

Californian thistle* and horehound*. Additional species at the fenced western end are native broom, mistletoe (on *Coprosma propinqua*), native jasmine and small patches of broom* and gorse*.

Rockland/exposed limestone:
Vegetation is present on the exposed limestone bluff at ledges, crevices and erosion pockets. Woody species are cabbage tree, broadleaf, kowhai, mahoe, koromiko, *Coprosma propinqua*, mountain akeake, matipo, korokio (uncommon), porcupine shrub, sweet brier*, Himalayan honeysuckle*, hawthorn*, spindle tree*, ivy* and flax (uncommon).

Herbaceous species present are *Epilobium nummularifolium*, *Dichondra repens*, *Colobanthus* sp., *Lagenifera petiolata*, *Einadia allanii*, stonecrop*, hawksbeard* and the ferns *Asplenium lyallii*, maidenhair fern and hound's tongue fern (uncommon).

Herbaceous vegetation on ledges is dominated by Chewings fescue*, cocksfoot*, mouse-ear hawkweed*, narrow-leaved plantain* and horehound*. Other species present are blue tussock, cardamine, *Geranium microphyllum*, mouse-ear chickweed*, dandelion* and white clover*.

Birds/Fauna Observed:
Native birds observed during this brief survey were bellbird, fantail, silvereye, welcome swallow, grey warbler, harrier and kereru (NZ pigeon). Paradise shelduck were observed adjacent to the site. Rock crevices and tree trunks with cavities are common, providing roost sites for birds and long-tailed bat. Skinks (presumably common skink) were observed in longer grass.

Notable Flora, Fauna and Habitats:
Important features of this area are the extent of limestone scarp habitat (a nationally uncommon ecosystem), the presence of a diverse range of native species (at least 38 vascular plant species), at-risk plant species (*Einadia allanii* and *Geranium microphyllum*), locally-uncommon plant species (*Parietaria debilis* and *Lagenifera petiolata*), the habitat the area provides for birds and probably long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat.

Notable Plant and Animal Pests:
Naturalized plants are present throughout this site and in places dominant. Cherry and, to a lesser extent hawthorn and plum, dominate the forest at the western end of the site. Ivy is also common in this area. Fewer weeds are present at the eastern end, though gooseberry, horehound, hemlock, thistles and grasses are still common. Chewings fescue and stonecrop are the most significant plant pests on the exposed limestone. Animal pests were not surveyed. Most parts of the area are grazed by deer, resulting in a depleted forest understorey.

Boundaries (buffering, fencing, adjoining plant communities and habitats):
The boundary of this area follows areas of exposed limestone and associated vegetation. It is long and narrow and not particularly well buffered except for the steep rock faces. The area is part of a more extensive limestone scarp, other parts of which are also SNAs. It lies within the range of a local population of long-tailed bat, a nationally endangered species.

Condition and Management Issues:
Less accessible parts of the limestone bluff appear in reasonable condition. The western end of the SNA where denser vegetation, overhanging bluffs and deer fences provide protection, are in relatively good condition, though still affected by woody weeds. Elsewhere the SNA is affected by woody weeds and grazing pressure. The most important management issues are control of woody weeds, notably cherry, hawthorn, plum, ivy and cotoneaster, and protection from grazing/browsing. Maori rock drawings are present beneath a rock overhang at the western end of the site.

Property Owner Comment:
Mr Hudson is interested in fencing parts of the area, notably the western end, to protect the rock drawings.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	Vegetation on the exposed limestone is representative of the original vegetation; vegetation elsewhere is more modified, though still supports representative species.
Rarity	H	Limestone scarps are a nationally uncommon ecosystem; the area provides potential habitat for long-tailed bat (nationally endangered); supports two at risk (naturally uncommon) plant species (*Einadia allanii* and *Geranium microphyllum*) and locally uncommon plant species.
Diversity and pattern	M	Plant species diversity is relatively high (38 vascular species), though probably substantially depleted from its original state.
Distinctiveness/special features	M	A very extensive area of exposed limestone.
Other Criteria		
Size/shape	M/H	A relatively large area, but long and narrow and only well buffered on the steeper scarp.
Connectivity	M/H	Part of a larger limestone scarp, linking other SNAs.
Long-term Sustainability	M	Plant pest control and careful management of grazing will probably be necessary to maintain ecological values in the long term.

Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):
Most parts of this area have been voluntarily excluded from farm development. The steepness of most of the area makes it unsuitable for further development.

Discussion:
This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the extent of limestone scarp habitat (a nationally uncommon ecosystem), the presence of a diverse range of native species, two at-risk plant species , locally-uncommon plant species, the habitat the area provides for birds and probably long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat. The presence of Maori rock drawings is also notable.

Ferns Asplenium lyallii and Blechnum chambersii beneath limestone overhang, SNA 351b

TIMARU DISTRICT SNA SURVEY — SNA 351d

Area Name: Rockpool northwest scarp
Location (central map reference): J38: 471-680
Ecological District: Geraldine
Surveyors: Mike Harding
Property: Rockpool (Donald and Kathy Hudson)
Nearest Locality: Raincliff
Area Size (ha): 4.9 **Altitude (m):** 200-250
Survey Time: 1½ hours **Survey Date:** 09-07-13

General Description:

This SNA comprises the west end of a north-facing limestone scarp near Parr Road, Raincliff. It lies on the south side of the Opihi River and extends east (SNA 351b).

Plant Communities:

Two main plant communities are present: treeland/forest on slopes below the scarp and a sparsely-vegetated rockland community on the exposed limestone. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk*.

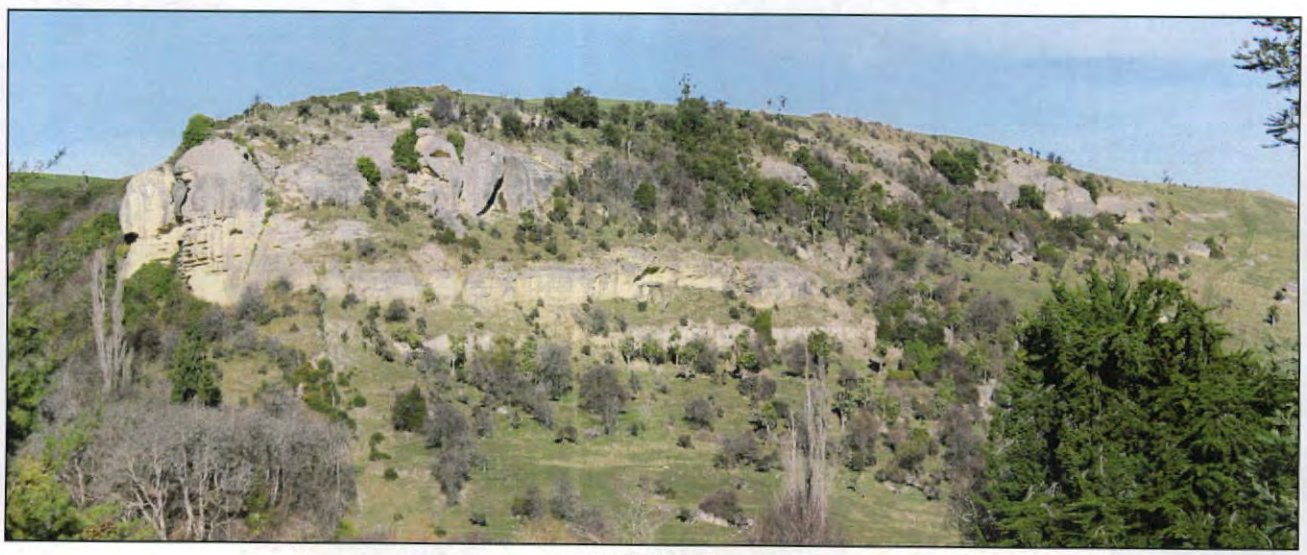
Treeland/forest:

The treeland community at the western end supports scattered cabbage trees with occasional gorse*, hawthorn* and *Coprosma propinqua*. Treeland and denser open forest is present at the eastern end below the steeper bluff. Native species in this community are cabbage tree, kowhai, broadleaf, mahoe, leafless lawyer, pohuehue, scrub pohuehue, native bindweed and native jasmine. Other species are hawthorn*, elderberry*, cherry*, plum* and cotoneaster*. Species present at open sites are *Coprosma propinqua*, matagouri, mistletoe (on *Coprosma propinqua*), gorse*, sweet brier*, gooseberry* and woolly mullein*.

Rockland/exposed limestone:

Vegetation is present on the exposed limestone bluff at ledges, crevices and erosion pockets. Woody species are kowhai, broadleaf, five-finger, matipo (uncommon), mapou (uncommon), mountain akeake, *Coprosma propinqua*, matagouri, native broom, gorse*, Himalayan honeysuckle* and ivy*.

Native herbaceous species present are *Dichondra repens*, *Einadia allanii*, blue tussock and the ferns *Asplenium lyallii* and maidenhair fern. Exotic species commonly present are mouse-ear hawkweed*, yarrow*, narrow-leaved plantain*, dandelion*, dwarf mallow*, nodding thistle*, black nightshade*, nettle*, hemlock* and white clover*.



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Birds/Fauna Observed:

Native birds observed during this brief survey were bellbird, fantail, harrier and kereru (NZ pigeon). Welcome swallow nests are present at limestone overhangs. Rock crevices and tree trunks with cavities are common, providing roost sites for birds and long-tailed bat.

Notable Flora, Fauna and Habitats:
Important features of this area are the limestone scarp habitat (a nationally uncommon ecosystem), the presence of an at-risk plant species (*Einadia allanii*), the habitat the area provides for birds and probably long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat.

Notable Plant and Animal Pests:
Naturalized plants are present throughout this site and in places dominant. Important species are cherry, hawthorn, elderberry, plum and ivy. Animal pests were not surveyed. Most parts of the area are grazed by deer, resulting in a depleted forest understorey.

Boundaries (buffering, fencing, adjoining plant communities and habitats):
The boundary of this area follows areas of exposed limestone and the rocky slope below the scarp. It is not well buffered except for the steep rock faces. The area is part of a more extensive limestone scarp, other parts of which are also SNAs. It lies within the range of a local population of long-tailed bat, a nationally endangered species.

Condition and Management Issues:
Less accessible parts of the limestone bluff are in reasonable condition. Elsewhere the SNA is affected by woody weeds and grazing pressure. The most important management issues are control of woody weeds, notably cherry, hawthorn, plum, ivy and cotoneaster, and protection from grazing/browsing.

Property Owner Comment:
Mr Hudson is interested in fencing parts of the area to help protect native vegetation.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	Vegetation on the exposed limestone is representative of the original vegetation; vegetation elsewhere is more modified, though still supports representative species.
Rarity	M/H	Limestone scarps are a nationally uncommon ecosystem; the area provides potential habitat for long-tailed bat (nationally endangered); supports an at risk (naturally uncommon) plant species (*Einadia allanii*), which is relatively common at the site.
Diversity and pattern	M	Plant species diversity is moderate (22 native vascular species) though depleted from its original state.
Distinctiveness/special features	M	Part of an extensive area of exposed limestone.
Other Criteria		
Size/shape	M	A moderate-sized area, but well buffered only on the steeper scarp.
Connectivity	M	Part of a larger limestone scarp, linking other SNAs.
Long-term Sustainability	M	Plant pest control and careful management of grazing will probably be necessary to maintain the ecological values in the long term.

Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):
The steepness of most of the area makes it unsuitable for further development.

Discussion:
This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the limestone scarp habitat (a nationally uncommon ecosystem), the presence of an at-risk plant species (*Einadia allanii*), the habitat the area provides for birds and probably long-tailed bat (a nationally endangered species) and its proximity to other areas of limestone habitat.

Scientific names of species cited by common name in this report

(Note: this is not a complete species list; it is a list only of species cited by common name in this report)

Common Name (* = naturalised species)	Scientific name
blackberry*	*Rubus fruticosus*
black nightshade*	*Solanum nigrum*
blue tussock	*Poa colensoi*
broadleaf	*Griselinia littoralis*
broom*	*Cytisus scoparius*
burdock*	*Arctium minus*
buttercup	*Ranunculus* sp.
button fern	*Pellaea rotundifolia*
cabbage tree/ti rakau	*Cordyline australis*
Californian thistle*	*Cirsium arvense*
cardamine	*Cardamine debilis*
cherry*	*Prunus avium*
Chewings fescue*	*Festuca rubra* ssp. *commutata*
clematis	*Clematis foetida*
cocksfoot*	*Dactylis glomerata*
common shield fern	*Polystichum richardii*
cotoneaster*	*Cotoneaster* sp.
crack willow*	*Salix fragilis*
creeping buttercup*	*Ranunculus repens*
dandelion*	*Taraxacum officinale*
Darwin's barberry*	*Berberis darwinii*
dwarf mallow*	*Malva neglecta*
dwarf mistletoe	*Korthalsella lindsayi*
elderberry*	*Sambucus nigra*
five-finger	*Pseudopanax arboreus*
flax	*Phormium tenax*
gooseberry*	*Ribes uva-crispa*
gorse*	*Ulex europaeus*
hairy pennywort	*Hydrocotyle moschata*
hawksbeard*	*Crepis capillaris*
hawthorn*	*Crataegus monogyna*
hemlock*	*Conium maculatum*
Himalayan honeysuckle*	*Leycesteria formosa*
horehound*	*Marrubium vulgare*
hound's tongue fern	*Microsorum pustulatum*
ivy*	*Hedera helix*
king devil hawkweed*	*Pilosella piloselloides* ssp. *praealta*
korokio	*Corokia cotoneaster*
koromiko	*Hebe salicifolia*
kowhai	*Sophora microphylla*
lancewood	*Pseudopanax crassifolius*
leafless lawyer	*Rubus squarrosus*
mahoe/whiteywood	*Melicytus ramiflorus*
maidenhair fern	*Adiantum cunninghamii*
male fern*	*Dryopteris filix-mas*
mapou	*Myrsine australis*
matagouri	*Discaria toumatou*
matipo/kohuhu	*Pittosporum tenuifolium*
mistletoe	*Ileostylis micranthus*
mountain akeake	*Olearia avicenniifolia*
mouse-ear chickweed*	*Cerastium fontanum*
mouse-ear hawkweed*	*Pilosella officinarum*
narrow-leaved plantain*	*Plantago lanceolata*

native broom	*Carmichaelia* aff. *australis*
native bindweed	*Calystegia tuguriorum*
native jasmine	*Parsonsia* sp.
nettle*	*Urtica urens*
nodding thistle*	*Carduus nutans*
old man's beard*	*Clematis vitalba*
oxalis	*Oxalis exilis*
oxeye daisy*	*Leucanthemum vulgare*
pate	*Schefflera digitata*
plum*	*Prunus cerasifera*
pohuehue	*Muehlenbeckia australis*
privet*	*Ligustrum ovalifolium*
rautahi	*Carex coriacea*
scrub pohuehue	*Muehlenbeckia complexa*
silver tussock	*Poa cita*
soft rush*	*Juncus effusus*
spindle tree*	*Euonymus europaeus*
stinking iris*	*Iris foetidissima*
stonecrop*	*Sedum acre*
sweet brier*	*Rosa rubiginosa*
sycamore*	*Acer pseudoplatanus*
toatoa	*Haloragis erecta*
tree lupin*	*Lupinus arboreus*
velvety nightshade*	*Solanum chenopodioides*
white clover*	*Trifolium repens*
wild majoram*	*Origanum vulgare*
woolly mullein*	*Verbascum thapsus*
yarrow*	*Achillea millefolium*