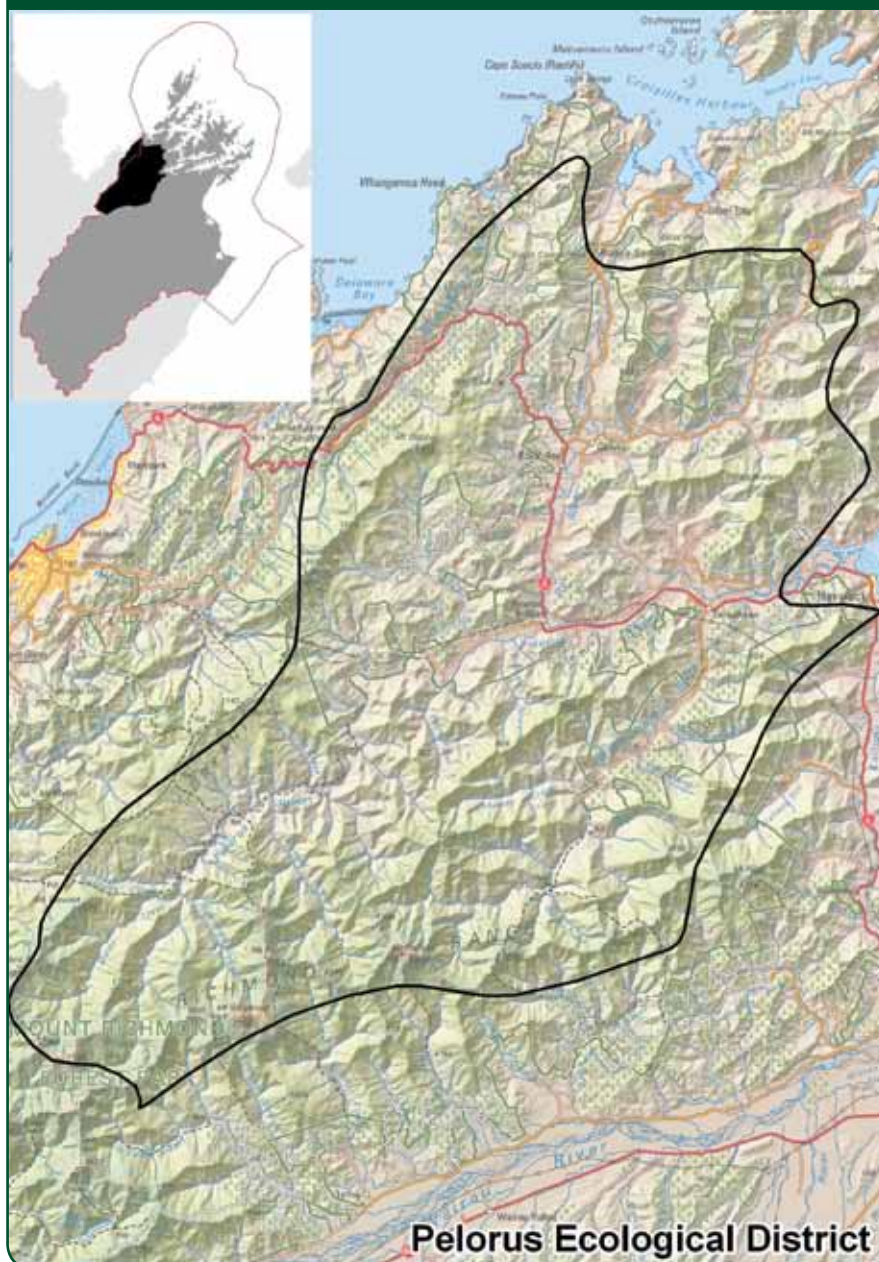


## PELORUS ECOLOGICAL DISTRICT

MAP 5 - PELORUS ECOLOGICAL DISTRICT



### OVERVIEW

The Pelorus Ecological District is one of three forming the Richmond Ecological Region; the others are Para and Fishtail. The Region is named for the Richmond Range that rises between the Alpine Fault at Top House Saddle and the inland-most extension of the Marlborough Sounds. Pelorus forms the northern district, Para the eastern and Fishtail the southern.

Pelorus Ecological District is based on the inland hill country and mountains of the Pelorus River catchment. It includes the tributaries of the Wakamarina, Ronga, Opouri, Rai and Tinline rivers, all of which drain into Pelorus Sound at Havelock. It also contains most of the catchment of the Whangamoia River, excluding only the coastal portion. The valley floors are mostly gentle, with fertile terraces and flats. The flanks are generally steep and rise to strong ridges, hills and peaks. In the SW, Mt Richmond (1758m) and Mt Fishtail (1641m) rise like islands surrounded by continuous forest and support several endemic species as a result of this sub-alpine isolation. Other prominent peaks are Mt Baldy, Mt Sunday, Dun Mountain, Mt Duppa, Castor Peak, Editor Hill, Opouri Peak, Mt Rutland and Benbown. Many of the rivers

and streams have deep pools of clear water, and the upper parts are often a series of cascading falls and pools. In the lower valleys narrow, swampy flood plains would have once been typical, but most have been drained for farming.

The ecological district is geologically complex and interesting. The Richmond Range is composed of Palaeozoic rocks forming a NW-SE sequence. This is a sequence of increasing metamorphism; in the NW the rocks retain their sedimentary character of greywacke and argillite, to the SE they are metamorphosed to a low-grade schist. In the vicinity of Dun Mountain and along the Bryant Range are the distinctive ultramafic rocks and soils of the Nelson Mineral Belt. Associated with the Mineral Belt are outcrops of metasomatised argillite, highly sought after for stone tool manufacture by Maori and traded throughout the country in the past. Mineral deposits associated with both the Mineral Belt and the schist, notably gold and copper, have been the subject of much Pakeha mining activity.

The climate of Pelorus Ecological District is one of contrasts. The lowland valleys are locally wet and cool, with the strong influence of a diurnal ponding of cold air, creating valley fogs and frosts. The hill





country, with the exception of the mountains, has a milder climate. Summers are warm and rainfall (quite high at 1600-2000mm annually) is reliable. Winds from the W-NW quarter prevail, and storms occasionally create localised damage.

Owing to the location, physical character and climate the natural vegetation exhibits several gradients: coastal to inland, lowland to alpine, and somewhat dry to wet. This results in fairly complex forest patterns. In the lower valleys and slopes podocarps are common, including kahikatea, matai, rimu and miro, with occasional lowland totara and Hall's totara. These are associated with beech forest; black and silver beech on valley floors, hard beech on lower more coastal slopes, red beech further inland and higher, and mountain beech and silver beech at higher elevations still. Frequently several beech species occur together, a rather uncommon feature in New Zealand.

The coastal to inland gradient also influences the composition of the broad-leaved vegetation usually occupying the gullies. A number of lowland species occur in the north-east but don't go far inland (nikau, tawa and New Zealand passion vine, for instance). Others such as mahoe, supplejack, rangiora, pigeonwood, lemonwood, mamaku and bush cabbage tree extend further inland. Montane species such as pokaka, horopito, silver beech and *Alseuosmia pusilla* occur at low altitudes where cold air ponds. In montane forests are localised occurrences of southern rata, pahautea (mountain cedar) and mountain toatoa. Above the bushline are subalpine shrublands, alpine grasslands, herbfields, scree communities and cushion bogs. Several threatened and notable plants have been found in fertile valley sites. Some species are endemic to the high peaks, as mentioned, and others are confined to the ultramafic areas. Together all these patterns combine to create a vegetation and flora of considerable interest.

The natural patterns of vegetation and fauna have been greatly changed in the valley floors and lower slopes by human activity. This was begun by Maori inhabitants, associated with hunting, travelling, camping and exploration. Subsequent Pakeha gold and copper mining led to vegetation clearance (especially of podocarps) and inadvertent fire to high elevations. Clearance for farming has been very widespread. Valleys and slopes have been logged and valley floors have been drained. Small remnants of the great forests of the valleys remains in some of the reserves, notably Pelorus Bridge Scenic Reserve, otherwise the only evidence is a scattering of old trees in the farmland.

On the ultramafic areas, even at high altitudes, the vegetation has been modified by burning. The earliest deliberate fires probably date back centuries, to when Maori exploration for stone materials began. Moa gizzard stones, the only remaining signs of a rich previous fauna of large flightless birds, can still be found in places.

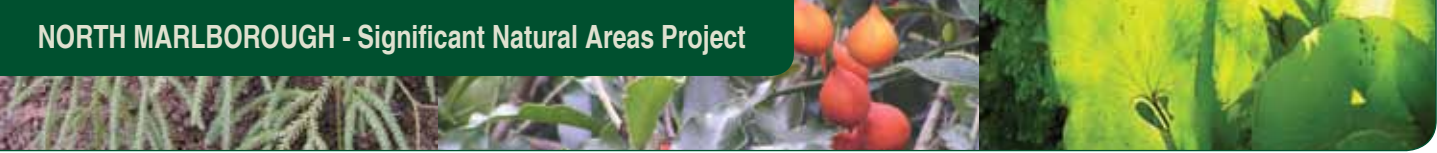
Natural infertility coupled with moist soils has favoured scrub regeneration on marginal farmland, especially bracken, manuka and kanuka. Introduced weeds are widespread including gorse, broom, barberry, hawthorn, Spanish heath and blackberry. Feral pigs, deer, possums, goats and predators such as rodents and mustelids have become well established. As a result of the difficulty of farming, soil depletion and erosion, exotic production forestry has been established on much of the lower hill country.

There are likely to be long-term problems with weeds and feral animal pests in places, but with good stewardship the opportunity exists to protect and enhance remaining native vegetation and freshwater habitats, along with their populations of native plants, birds, lizards, invertebrates and fish.

## SURVEY RESULTS

Of the 28 properties where the owners were approached, 18 were surveyed. A total of 43 significant sites were identified. These have a combined area of 1467.5 ha and make up approximately 1.5% of the total land area of the ecological district. They are classified into 12 basic categories or ecosystem types (see Table 5). They are mostly native forests, the most extensive being beech forests, but there are also several other forest types and some shrublands and wetlands. The sites that have high value for ecological significance are those that occur on valley floors or have intact valley-to-skyline ridge forest sequences.





**TABLE 5 - SITES IDENTIFIED IN THE PELORUS ECOLOGICAL DISTRICT**

Ecosystem type	Total number of sites	Total area (ha)	% private land area of Ecological District	% total area of Ecological District (DoC and private)
Inland wetlands	4	13.5		
Riparian communities	5	35.0		
Lowland shrublands	3	32.0		
Alluvial valley flats forests	3	12.0		
Beech forests	10	1,031.0		
Broadleaved forests	2	42.0		
Lowland podocarp-beech forests	4	122.0		
Lowland podocarp-broadleaved forests	3	42.0		
Podocarp-broadleaved-beech forests	3	112.0		
Kanuka forests	2	18.0		
Treelands	4	8.0		
<b>Totals</b>	<b>43</b>	<b>1,467.5</b>	<b>3.8%</b>	<b>1.5%</b>

**ECOSYSTEMS FOUND**

Much of the original vegetation cover of the Pelorus Ecological District has been disturbed, modified and cleared since human arrival, especially in the valleys. However, much remains more or less intact and prolific natural regeneration has restored many areas, providing opportunities for protection and enhancement. The main ecosystems found were:

**INLAND WETLANDS**

Most of the former valley floor wetlands have been drained, but a few examples still exist.

**RIPARIAN COMMUNITIES**

Many of the river banks have riparian strips of native trees and shrubs, some containing rare plants.

**LOWLAND SHRUBLANDS**

Included in sites if serving as nurseries for regenerating native forest.

**BRACKEN FERNLANDS**

Also included in sites if serving as nurseries for regenerating native forest.

**ALLUVIAL VALLEY FLATS FORESTS**

Very rare, but a few small remnants exist.

**BEECH FORESTS**

Widespread and predominant. Black beech and silver beech occur on valley floors and in riparian zones, hard beech occurs on lower more coastal slopes, red beech occurs further inland and higher, and mountain beech and silver beech are dominant at still higher elevations. Podocarps are usually present.

**BROADLEAVED FORESTS**

In gullies and shaded faces, where the podocarps have been logged out and conditions are not favourable for beeches. Main tree species are kamahi, tawa, mahoe, wineberry and putaputaweta.

**LOWLAND PODOCARP-BEECH FORESTS**

Not very common due to past logging and forest clearance.

**LOWLAND PODOCARP-BROADLEAVED FORESTS**

Not very common due to past logging and forest clearance.

**PODOCARP-BROADLEAVED-BEECH FORESTS**

In places where a range of tree species can coexist.

**KANUKA FORESTS**

Surprisingly uncommon, especially compared with its abundance in the Sounds.





### TREELANDS

Several examples on valley floors. Include big old podocarps (kahikatea and matai) and beeches (black and silver), also some secondary totara. Important living reminders of the towering lowland forests of the past.

### SPECIAL FEATURES

The ecological district is one of valleys, hills and mountains and has a largely intact hinterland. It comes near the coast in places but does not feature coastal habitats. Instead, it has a broad array of native vegetation types, flora and fauna, spanning the range from those of the lowlands to those of the alpine tops. One of the most striking features though is the ultramafic zone, with its unique influence on soil fertility, vegetation and flora.

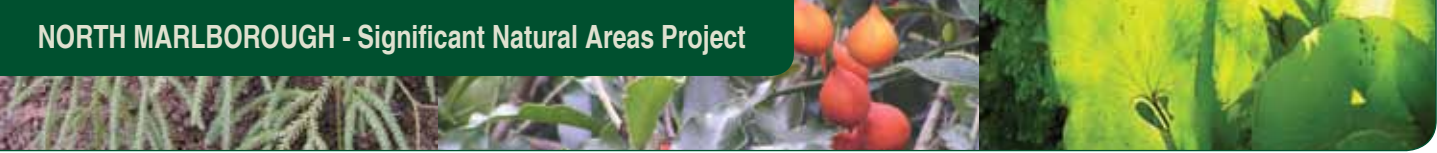
### NATIVE FLORA

- There is distinct altitudinal zoning of the forest species, with consistent changes at about 600m, 800m and 1000m asl. Many of the high ridges have a capping of cloud forest, festooned with mosses, lichens, filmy ferns and perching orchids. The transition from bush cover to open tops occurs at around 1300m asl.
- There are substantial areas of the ultramafic zone. The suite of plant species in the native vegetation is unusual and distinctive and contains species endemic to the ultramafics. The forest is rather stunted and contains southern rata and mountain beech.
- Above the bushline are subalpine shrublands, alpine grasslands, herbfields, scree communities and cushion bogs. Some species are endemic to the high peaks, including the mountain daisies *Celmisia macmahonii* var. *hadfieldii* and *C. rutlandii*. Others are notable, such as pahautea or mountain cedar (*Libocedrus bidwillii*).
- Several threatened and notable plants have been found in fertile valley sites, for example *Teucrium parvifolium*, *Leptinella nana*, *Scutellaria novae-zelandiae*, *Olearia hectorii* (now locally extinct), *Myosotis spathulata* and various mistletoes.
- Other threatened and regionally rare plants that occur in the ecological district include *Pittosporum patulum*, *Hebe rigidula* and the beech mistletoes *Alepis flavida*, *Peraxilla colensoi* and *P. tetrapetala*.
- The localised presence of tanekaha (*Phyllocladus trichomanoides*), pokaka (*Elaeocarpus hookerianus*), lowland ribbonwood (*Plagianthus regius*), climbing fuchsia (*Fuchsia perscandens*) and mountain cabbage tree (*Cordyline indivisa*) is interesting. They are at distribution limits and/or are uncommon. Tawa (*Beilschmiedia tawa*) is near its southern limit.

### NATIVE FAUNA

- Bush birds are still quite prevalent, due to the extent of bush cover and diversity of other native vegetation. The forests and shrublands support strong populations of tui, kereru, bellbird, tomtit, brown creeper, silvereye, fantail and grey warbler (riroriro). Of note are the local occurrences of weka, New Zealand robin, rifleman, kaka, kakariki and New Zealand falcon (karearea or sparrowhawk). New Zealand pipit is common in open places.
- Wetland birds have some remaining habitats available to them, mostly in the lowlands. Ducks, paradise shelduck and pukeko are quite common in places.
- Moa gizzard stones have been found in this ecological district.
- Lizards (skinks and geckos) are widely present, especially in rock outcrops, screes, forest and shrubland. These habitats are also good for native invertebrates such as weta, ground beetles, moths and spiders. The giant land snails *Powelliphanta hochstetteri obscura* and *Powelliphanta hochstetteri consobrina* are still present in local populations, although severely threatened by feral pigs, possums, rats and thrushes.
- At least 14 species of native freshwater fish have been recorded from the rivers and streams of the ecological district. Of particular note are longfin eel, lamprey, torrentfish, giant kokopu and shortjaw kokopu.





## PELORUS ECOLOGICAL DISTRICT – PHOTO ESSAY

### RAIN FOREST AREAS

Lower altitude “rain forest” in this high rainfall area, showing the border of tree fern forest and regenerating rimu and matai along a waterway. The brown shrubs are *Coprosma rotundifolia*, a lowland species that grows in fertile soil. Tawa occurs behind and beech-podocarp forest further up the valley. The stream at this point forms a narrow alluvial flat but gets steeper higher up the catchment. It is likely to provide good habitat for various native fish species and invertebrates.



### BEECH FOREST

This higher altitude hard beech forest (4-600m) is in very good condition containing trees of all different ages. The understorey is lush with shrubs, ferns and seedlings of the larger trees. Feral animal numbers (pigs, goats, deer possums) must be reasonably low for the forest understorey to be so healthy.







### WEKA

New Zealand is internationally famous for its ground dwelling birds like takahe, moa species, kiwi, kakapo and weka. Moa are extinct, kakapo and takahe are close to extinction and are being intensively managed by the Department of Conservation and kiwi are locally extinct in Marlborough although still present in some other parts of the country. While weka are locally extinct in other areas, they are still relatively common in North Marlborough. They are very vulnerable to attack and disturbance by pigs, dogs and cats as well as smaller predators when nesting (stoats and rats). They are classified as a threatened species and are fully protected.



### MOSESSES AND FERNS

The Pelorus Ecological District has the highest rainfall in Marlborough (up to 2600mm) providing excellent conditions for ferns and mosses. This naturally uncommon moss, *Dawsonia superba*, forms dense patches in the open moist forest. These specimens are about 20cm tall. Pahau-kakapo is the Maori name meaning “the beard of the kakapo”, referring to the whiskers under the beak that project sideways and forwards.





### TAWA FOREST

Forest vegetation of mainly tawa forest with a few emergent trees of matai and beech on the upper slopes. Hinau occurs in the gullies, and in the foreground on the lower slopes silver beech is the dominant species along the river edge where cold air drainage is a major factor determining the forest composition.



### FOREST BIRDS

Kereru/wood pigeon are still relatively common in forested areas of North Marlborough. They play an important role in spreading seed from fruiting native trees and are the only large flying bird that can consume and spread the large sized tawa seed.







RARE PLANTS

Pygmy button daisy (*Leptinella nana*) occurs sporadically on flood-prone riverbanks in the Pelorus catchment. It is listed as “Threatened, Nationally Endangered”.



UPLAND “CLOUD” FORESTS

The upland forests throughout North Marlborough frequently have cloud cappings. The trees, silver beech in particular, are festooned with mosses, epiphytic orchids and filmy ferns that relish such reliably cool, damp conditions.