



# TRILEPIDEA

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## PLANT OF THE MONTH, p. 2



*Olearia hectorii*. Photo: Rowan Hindmarsh-Walls.

## Eradication of goats on Taranaki Mouna – the sequel

John Barkla ([mjbarkla@xtra.co.nz](mailto:mjbarkla@xtra.co.nz))

My note in last month's *Trilepidea* brought a swift response from NZPCN member Colin Ogle of Whanganui. Colin recalled walking around the mountain with his brother and cousin in 1965. He recalled that they “*were horrified by the number of goats we saw and the damage they were doing. In more remote subalpine areas like above Opunake we hardly saw any live ‘leatherwood’ (at that time we had to do a detour way up to get around the head of Mangahume Gorge).*” Colin sent a photo that he’d taken at the time that graphically depicts the damage being wrought by goats on the leatherwood (*Brachyglottis elaeagnifolia*) above Mangahume Gorge (Fig.1).



Figure 1. Dead *Brachyglottis elaeagnifolia* above Mangahume Hut, Egmont National Park 7 January 1965. Photo: Colin Ogle.

Professor Bruce Clarkson made similar observations in his book ‘Vegetation of Egmont National Park New Zealand’ (Clarkson 1986). He noted that goat numbers were greatest during the 1960s and that “*...damage was so severe that many “dead areas” developed on sites at lower altitude in the scrub and shrubland belt.*” Professor Clarkson went on to write that “*The shrub cover was completely removed over areas as great as 5 ha, being superseded by graze-tolerant low-growing grasses, sedges, and herbs.*”

Thanks to the efforts of Taranaki Mouna Project let’s hope we never again have to witness such scenes of devastation of the Park’s vegetation.

## Reference

Clarkson BD 1986. Vegetation of Egmont National Park New Zealand. DSIR Science Information Publishing Centre. *National Parks Scientific Series, no. 5.*



## PLANT OF THE MONTH – *OLEARIA HECTORII*

Rowan Hindmarsh-Walls ([rowan.hindwalls@gmail.com](mailto:rowan.hindwalls@gmail.com))

The plant of the month for June is *Olearia hectorii*, one of at least 35 *Olearia* species endemic to the New Zealand region. The species is only found on the eastern side of the South Island, from northern Southland to Marlborough. It favours damp areas of high fertility in gullies or on alluvial fans and is a coloniser of recently disturbed ground. This is a long-lived species that is often found in similar-aged stands, indicating that the whole stand colonised after a specific disturbance event.

*Olearia hectorii* is a small, deciduous, twiggy tree that grows up to 10 metres tall, with pale furrowed bark. Leaves are reasonably small and grey-green on the upper surface, with silvery tomentum on the undersides. The capitula (flower clusters) are on slender, silky pedicels and consist of pale yellow florets. The achenes (seeds) are small and wind-dispersed.



*Olearia hectorii*, Chalk Range, Marlborough, 29 April 2022. (left) Growth habit; (centre) bark; (top right) foliage; (bottom right) foliage detail. Photos: Rowan Hindmarsh-Walls.

The species is similar to both *Olearia fragrantissima* and *Olearia odorata* and is often found growing near the latter. *O. fragrantissima* has alternate leaves and zig-zagging stems whereas *O. hectorii* has opposite leaves and straight stems. *O. odorata* is generally a smaller shrub, with narrower, smaller leaves and, unlike *O. hectorii*, lacks a leaf stalk. *Olearia gardneri* is very similar and is regarded by some as a sister species. However it is only found in the North Island and therefore does not co-occur.

*O. hectorii* has a threat status of 'Threatened – Nationally Endangered', as it has been wiped out from much of its original range, and is suffering from serious recruitment failure at most of its known locations. Remnant populations are predominantly old senescent trees on unprotected land. Recruitment failure is largely due to competition from introduced grasses and herbs, but the species is also palatable to some herbivores, especially rabbits and hares.

Bluff Station in Marlborough has one of the largest remaining populations in the country. This is a site where recruitment still occurs and where ground disturbance plus grazing by cattle appears to actually promote recruitment, especially as the species is not favoured by cattle. Now that the national population is so small and scattered, the species is no longer able to mass colonise after disturbance events, due to lack of seed in the area and rapid colonisation of these sites by weedy species.

New Zealand species are all endemic and are either trees or shrubs. The species occupy a wide range of habitats from coastal to alpine environments.

The genus *Olearia* was named after Johann Gottfried Olearius, a 17th century German scholar and author of '*Specimen Florae Hallensis*'. This species is named after Sir James Hector, a 19th century geologist and botanist who explored much of southern New Zealand, especially Otago.

You can view the NZPCN website factsheet for *Olearia hectorii* at: <https://www.nzpcn.org.nz/flora/species/olearia-hectorii/>

## The weedy purple tops

Marley Ford ([mfecobotany@gmail.com](mailto:mfecobotany@gmail.com)), Private Consultant

Long confused have been the purple tops of New Zealand. A recent revision has undertaken some 'taxonomic housekeeping' outlining how the name *Verbena bonariensis* has been misapplied in New Zealand (Ford 2022). The revision shows the species *Verbena incompta* seems a better fit for our widespread purple top, with *Verbena bonariensis* being a rarer species. This dilemma is not specific to New Zealand, *Verbena incompta* was first split from *Verbena bonariensis* in Australia where the plant is exotic. Seemingly, this species is native to South America but has naturalised across the globe. New Zealand had seven species of *Verbena*, all adventives. This genus is commonly called vervain or purple top and occupies a range of 'weedy' habitats.

I first pondered *Verbena* in my Far North travels, when I noticed a large purple topped plant lining the weedy roadsides. I thought about this more while undertaking a species list on my family land (Ford 2019). I tried to get to know the wild purple tops but quickly realised my specimen didn't match *Verbena bonariensis*, the species thought to be the common and most widespread of the purple tops. My first thought was to check Inaturalist, where I saw overseas botanists suggesting that *Verbena incompta* was present in New Zealand. From here I found the paper by Michael (1995) naming this species from an Australian specimen and even proving the weed's presence in New Zealand. Thinking Australia is not too far away I matched my weedy *Verbena* to the description of *Verbena incompta*. Armed with newfound knowledge and the encouragement of fellow botanists I began the review of specimens across New Zealand's main herbaria, Auckland Museum, Te Papa and the Allan Collections. The latter two I examined from digitised specimens. I further went through New Zealand's observations of *Verbena* on Inaturalist. I quickly realised the common weedy purple top was *V. incompta* in New Zealand.

*Verbena incompta* is a more robust plant than the rarer *V. bonariensis*, and these species can be easily separated. *V. incompta* has elongated flower spikes (Figure 1) and *V. bonariensis* has a broader corolla (Figure 2). The species epithet of *Verbena incompta* refers to the untidy nature of this plant and the untidy places it often inhabits (Michael 1995). It is a widespread weed in the North Island and the northern South Island, often seen on disused land (Figure 3).



Figure 1 (left). Flower spikelet of *Verbena incompta*. Photo: Marley Ford, 2020.

Figure 2 (right). Flower spikelet of *Verbena bonariensis*. Photo: Marley Ford, 2020.

*Verbena bonariensis* is a rare weed mostly seen as a garden escape, but locally can be the common vervain. In the southern South Island, this species is the most common of the pair. From the review of specimens *Verbena incompta* appears to be spreading southward. In the north, this species isn't a terrible weed as natural forest succession displaces local populations. Michael (1995) outlined this species' preference for moisture, less apparent in the moist country of New Zealand. Hopefully, this preference will keep the species from invading indigenous dryland environments where it poses the most threat.





Figure 3. Weedy habit of *Verbena incompta*. Photo: Marley Ford, 2020.

*Verbena incompta* is the name best suited to the weedy, widely spread purple top of New Zealand (Ford 2022). Since the revision, true *V. bonariensis* has been found throughout Auckland and on the Chatham Islands but still remains the less common of the pair.

### Acknowledgements

I would like to thank Ewen Cameron, Peter de Lange and Rhys Gardner for their support and the assistance from New Zealand's multiple herbaria.

For a copy of the paper email Marley at: [mfecobotany@gmail.com](mailto:mfecobotany@gmail.com) or see the NZPCN factsheets for New Zealand's exotic *Verbena*: <https://www.nzpcn.org.nz/flora/species/>

### References

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- Ford, M. 2022: *Verbena Incompta* P.W.Michael: an overlooked name for an old weed in New Zealand. *New Zealand Journal of Botany*: 1–12.
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## Giant trees and tiny herbs: vegetation and flora of the mid Tautuku catchment, the Catlins

Brian Rance ([brance@doc.govt.nz](mailto:brance@doc.govt.nz)) and John Barkla ([mjbarkla@xtra.co.nz](mailto:mjbarkla@xtra.co.nz))

### Introduction

The Tautuku catchment forms the majority of an extensive (6,600 ha) Forest & Bird Society (F&B) Tautuku Ecological Restoration project. This project extends from Tautuku Bay, at the southern end of the Catlins, inland to the head of the Tautuku catchment at c. 500 m above sea level (asl), with its core being the F&B 550-ha Lenz Reserve. This large area supports a wide range of ecosystems, habitats and species that characterise the Catlins. The Tautuku Ecological Restoration project involves intensive predator control, and also includes deer and pig control. The project will benefit both the fauna and flora of the area. While the fauna of the Tautuku catchment and the Catlins is generally well known, the flora is less well known. We are aware of just one recent botanical report (Morris, 2010) specific to the Tautuku catchment.

In September 2021 one of us (JB) along with Marilyn Barkla, walked into the Tautuku Hut for an overnight stay. While there, we undertook a brief survey of some non-forest areas (hereafter referred to as 'clearings') near the hut. That brief survey made several important discoveries, most notably the presence of the small nationally threatened herbaceous plants *Ourisia modesta* and *Tetrachondra hamiltonii*. We recognised that more time was required to undertake a comprehensive survey, preferably in summer.

Gavin White, who leads the pest control undertaken as part of the Tautuku Ecological Restoration project had, during his field work, located a very large southern rātā tree. Gavin wondered if this could be the largest rātā in the Catlins or possibly even southern New Zealand.

These botanical discoveries prompted further survey. In this article we document the findings from follow-up botanical surveys undertaken 4–6 March 2022 and 7 May 2022. The study area for these surveys is the mid Tautuku catchment, extending from the McLean Falls carpark c. 30 m asl, up



the Tautuku catchment to c. 280 m asl along the river and c. 330 m asl on ridges. This survey was undertaken by John Barkla, Gavin White and Brian Rance.

### Ecological setting

The Tautuku catchment is located in the southern-central portion of the Catlins, within the Tahakopa Ecological District (ED). The Tahakopa ED is a lowland and montane expanse, largely below 600 m asl, extending from the coast to the summit of Mt Pye (720 m asl). The climate is moist, cool and cloudy, has an annual rainfall of 800–1400 mm, and a strong coastal influence (McEwan, 1987). The vegetation is mainly forest, which is characterised by podocarp-hardwood forest dominated by kāmahi (*Pterophylla racemosa*), rimu (*Dacrydium cupressinum*) and southern rātā (*Metrosideros umbellata*).

The Tautuku catchment extends from the Tautuku Estuary and Tautuku Beach through lowland riparian ribbonwood-kōwhai forest, kahikatea forest, matai-kahikatea forest into extensive kāmahi-rimu-rātā forest. The extent of non-forest vegetation is small but includes localised peatbog, *Carex-Coprosma* swamp, *Olearia-Coprosma* frost flat shrubland and red tussockland. The non-forest vegetation has importance that belies its extent and contributes greatly to the ecological and flora diversity of the area.

### Survey programme

The surveys were undertaken 4–6 March and 7 May 2022. The survey team departed from the McLean Falls carpark early in the afternoon of Friday 4 March. A survey of the forest along the Tautuku Hut access track along the ridge on the true right (west side) of the Tautuku River was undertaken on the way to the hut. Surveys of the hut clearing and first clearing downstream from the hut were undertaken in the late afternoon. On Saturday 5 March a forest circuit was undertaken to the northwest of the hut. This survey included a visit to the giant rātā and investigations along sections of riverside forest. The circuit included a survey of the second clearing above the hut in mid-late afternoon. On Sunday 6 March the return walk included visiting “The Shute” (Fig. 1.) along the Tautuku River and climbing to the ridge on the true left (east side) of the river and dropping back to the McLean Falls Track and carpark in the early afternoon. On 7 May 2022 the Tautuku River was crossed at the McLean Falls carpark after which we circumnavigated and surveyed the clearing on the true left of the river.

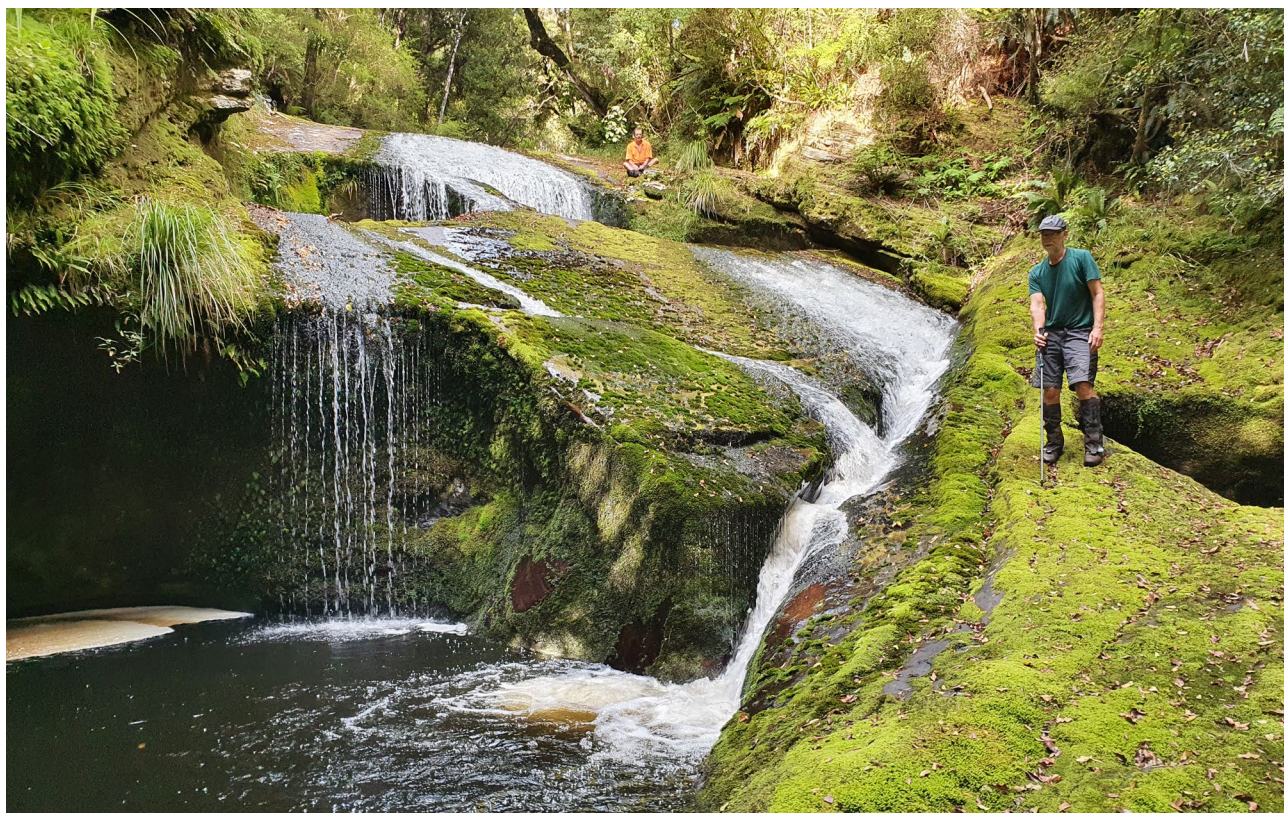


Figure 1. Gavin White (top) and John Barkla in The Shute, Tautuku River. Photo: Brian Rance.



## Vegetation

### A Tautuku Hut Clearing

This small clearing (c. 1 ha) is dominated by shrubland, with a small grassy area (0.03 ha) that has the hut at its southern edge. The vegetation present includes: mixed *Olearia*-mānuka-inaka shrubland, exotic grassland-cutty grass-red tussockland, stream margin shrubland and forest.

### B First Clearing

The First Clearing is located c. 400 m north-east (downstream) of Tautuku Hut. This clearing is c. 4 ha in size consisting of c. 3 ha of shrubland surrounding 0.85 ha of red tussockland. The vegetation present includes: red tussockland, marsh, mixed shrubland and mānuka shrubland. The mixed shrubland on the fringe of the red tussockland was of particular interest being dominated by *Olearia laxiflora*, *Coprosma dumosa*, *C. decurva*, *C. rigida*, mountain tauhinu and inaka, with an understory of prickly shield fern and red tussock. The ground cover includes a rich diversity of herbs including the rare *Ourisia modesta* (Fig. 2.), *Tetrachondra hamiltonii*, *Myosotis tenericaulis* and *Ranunculus ternatifolius*.



Figure 2. A flowering plant of *Ourisia modesta* collected and cultivated from the Catlins 30 November 2021. Photo: John Barkla.

### C Second Clearing

The Second Clearing (Fig 3.) is the largest of the clearings (c. 11.72 ha) and is located c. 250 m north of the First Clearing. It consists of red tussockland and grassland (c. 3.08 ha) and mixed shrubland (8.64 ha). The vegetation present includes: red tussock – exotic grassland, tall red tussockland, *Olearia bullata* shrubland, *Olearia lineata* shrubland, mixed forest and mānuka forest. The *Olearia lineata* shrubland was of particular interest, being dense and diverse with emergent *Olearia lineata* up to c. 6m tall. The commonly associated shrubs are weeping māpou, *Coprosma decurva*, *C. dumosa*, *C. rigida*, *C. pseudociliata*, *Olearia laxiflora* and *Meliccytus flexuosus*. The ground cover has little hard fern, *Poa imbecilla*, *Hydrocotyle heteromeria*, *H. novae-zeelandiae*, *Ranunculus membranifolius*, *R. ternatifolius*, *R. foliosus*, *Tetrachondra hamiltonii*, *Galium propinquum* and *Myosotis tenericaulis*.



Figure 3. Second clearing Tautuku Valley. Photo: John Barkla.

## D Northern Clearing

This clearing is located c. 800 m north of the Second Clearing and is c. 5.06 ha in extent. It was not surveyed, however aerial photography suggests that its vegetation differs from the other clearings and is worthy of further investigation.

## E McLean Falls Carpark Clearing

This 7.2-ha clearing/shrubland is across the Tautuku River from the McLean Falls carpark. It comprises shrubland, grassland, prickly shield fern fernland, wetland and fringing riparian forest.

## F Forest

Forest is the major vegetation of the mid Tautuku catchment. The main types are kāmahi-rimu-rātā forest and regenerating kāmahi forest, however there is subtle variation dependent upon aspect, exposure and other site conditions.

A full description of the vegetation is available on request.

## Flora

A flora of 214 indigenous plants has been recorded (see Table 1). A flora of greater than 200 indigenous species in a lowland forest is considered very rich. The diversity is in part due to that contributed from the non-forest frost flat ecosystems. The most diverse plant groups are herbs (60 taxa), trees/shrubs (54 taxa) and ferns (52 taxa) (Table 1). The rich diversity of herbs is notable, with 36 species being restricted to or largely occurring in the clearings compared to 17 species for the forest. Another notable feature is the diversity of *Coprosma* (15 species) and *Olearia* (4 species).

A highlight of the flora is the rich diversity of nationally and locally rare species (Table 1).

Table 1. Numbers of indigenous, exotic and rare plants by life form

Life form	Indigenous species	Exotic species	Total species	Rare species*
Ferns	52	–	52	–
Podocarps	5	–	5	–
Trees & shrubs	54	2	56	9
Climbers & vines	9	1	10	1
Herbaceous plants	60	25	85	6
Grasses	6	7	13	–
Sedges	13	1	14	1
Orchids	7	–	7	1
Rushes	4	3	7	–
Other monocots	4	–	4	–
Total	214	39	253	18

\* includes Threatened and At Risk taxa

## Threatened taxa

Nine taxa in the study area are ranked as ‘Threatened’ in the most recent conservation status assessment of New Zealand indigenous vascular plants (de Lange et al. 2018). These are listed, with their occurrence at key study sites, in Table 2.

## Nationally Critical

**Rōhutu (*Neomyrtus pedunculatus*):** Occasional, throughout forest and shrubland.

***Ourisia modesta*:** This survey only relocated the original site found by one of us (JB) in September 2021. The site is a small (c. 2 × 0.5 m) area under shrubland on the margin between the red tussockland clearing and the forest. It is thought that the *O. modesta* may have precise light requirements that restrict its occurrence. This site is of high ecological significance as it represents only the sixth New Zealand population of *O. modesta* (the others being Stewart Island/Rakiura, Waitutu, South Westland, Nelson and Central North Island). A more comprehensive survey for this species in the Catlins is desirable.

### Nationally Vulnerable

***Coprosma obconica***: This shrub was recorded in 2000 by Graeme Jane from the shrubland adjacent to the McLean Falls carpark. This record needs to be relocated and verified and is one of only three known locations in the Catlins.

***Melicytus flexuosus***: This shrub was scattered through all the surveyed clearings. The total population consists of at least 100 plants and may be the largest Catlins population. The plants are a robust form and may represent a hybrid.

**White rātā vine (*Metrosideros diffusa*)**: Occasional throughout forest.

**Southern rātā (*Metrosideros umbellata*)**: Locally common throughout forest areas and dominant in some ridge-crest habitats.

***Pittosporum obcordatum***: A single female plant is known from the trackside within the shrubland adjacent to the McLean Falls carpark. As this is one of only two sites in the Catlins, a more comprehensive survey for this species in the Catlins is desirable.

***Ranunculus ternatifolius***: This small buttercup was observed in both the First and Second Clearings from scattered sites under shrubland and red tussock. Like *Ourisia modesta*, it may be restricted in occurrence because of competition from exotic grasses in the clearing and too much shade in the forest. This site may represent only the second population in the Catlins.

***Tetrachondra hamiltonii***: This small creeping herb was found at several sites in the First and Second Clearings, under both shrubland and red tussock, and also locally in short exotic grassland. These sites are of high ecological significance as they represent the only Catlins population for this species. The size of the population suggests that this is a national stronghold.

Table 2. Threatened and At Risk taxa at key study sites

Conservation status	Taxa	Hut Clearing	First Clearing	Second Clearing	McLean Falls Shrubland	Forest sites
Threatened – Nationally Critical	<i>Neomyrtus pedunculatus</i>					×
	<i>Ourisia modesta</i>		×			
Threatened – Nationally Vulnerable	<i>Coprosma obconica</i>					
	<i>Melicytus flexuosus</i>	×	×	×	×	
	<i>Metrosideros diffusa</i>					×
	<i>Metrosideros umbellata</i>					×
	<i>Pittosporum obcordatum</i>				×	
	<i>Ranunculus ternatifolius</i>		×	×	×	
	<i>Tetrachondra hamiltonii</i>		×	×		
At Risk – Declining	<i>Carex tenuiculmis</i>		×			
	<i>Coprosma wallii</i>				×	
	<i>Drymoanthus flavus</i>					×
	<i>Epilobium insulare</i>		×			
	<i>Leptospermum scoparium</i>	×	×	×	×	
	<i>Olearia lineata</i>	×		×	×	
	<i>Senecio biserratus</i>				×	
At Risk – Naturally Uncommon	<i>Cardamine unguiculus</i>	×	×	×	×	
	<i>Myosotis tenericaulis</i>		×	×		

### At Risk taxa

Nine taxa in the study area are ranked as 'At Risk' in the most recent conservation status assessment of New Zealand indigenous vascular plants (de Lange et al. 2018). These are listed, with their occurrence at key study sites, in Table 2.



### **At Risk – Declining**

***Carex tenuiculmis***: A small population (c. 50 plants) occurs in a wet channel in the First Clearing amongst red tussockland. This site may represent the only population known in the Catlins.

**Bloodwood (*Coprosma wallii*)**: Bloodwood was recorded in 2000 by Graeme Jane, from the shrubland adjacent to the McLean Falls carpark. This species needs to be relocated and verified as this is one of just a few locations in similar habitats in the Catlins.

**Little moa orchid (*Drymoanthus flavus*)**: This orchid was recorded by Pen Gillette from the canopy of a fallen rimu tree near McLean Falls. It is likely that this orchid is scattered through the forest.

***Epilobium insulare***: A population occurs in a wet channel within red tussockland of the First Clearing and may be the only population known in the Catlins.

**Mānuka (*Leptospermum scoparium*)**: This is locally common in shrubland fringing forest, particularly in the clearings.

***Olearia lineata***: This tree daisy occurs in the Tautuku Hut Clearing, First and Second Clearings and McLean Falls shrubland but is most common in the Second Clearing. The population here is thought to consist of at least a few hundred plants and may be the largest Catlins population.

***Senecio biserratus***: This groundsel was recorded in 2000 by Graeme Jane, from the McLean Falls track.

### **At Risk – Naturally Uncommon**

***Cardamine unguiculata* (TBC)**: This bittercress was common in the Hut, First and Second Clearings, and McLean Falls shrubland. It is most common in light shade under *Coprosma* shrubland and *Olearia* treeland communities. The total population is thought to consist of many hundreds of plants.

***Myosotis tenericaulis***: This forget-me-not occurs in a few scattered sites in both the First and Second Clearings where it is restricted to lightly shaded sites under *Coprosma* shrubland and *Olearia* treeland. The population may consist of less than one hundred plants. Some plants are unusual in appearance, having abnormally large leaves up to c. 5+cm.

### **Other notable species**

Two taxa were found whose identity has not yet been determined. These are:

***Craspedia* sp.**: This was found in one site near a watercourse in the central portion of the Second Clearing. Less than 50 plants were observed in short grassland. It is significant as the first Catlins record for a *Craspedia* species, and may be a new species. A few plants were collected as a voucher specimen and for growing on.

***Hypericum* sp.**: A small St Johns wort occurs in both the First and Second Clearings. It is locally common, occurring under lightly shaded *Coprosma* shrubland and also in open red tussockland.

### **Regionally uncommon species**

Based on our knowledge of plant distribution in south-eastern South Island we have assessed a further 11 taxa as regionally uncommon. These are listed, with their occurrence at key study sites, in Table 3.

### **The giant rātā**

One of the reasons for undertaking this survey was to inspect and measure a large rata tree that had been previously found by Gavin White. This impressive tree has a diameter at breast height (dbh) of 4.036 m (Fig. 4.) and we estimated it to be more than 30 m tall. The giant rātā had 22 other plant species growing on it. These included 9 shrubs and trees—kāmahi, rimu, miro, broadleaf, three finger, haumakoroa, matipo, stinkwood and *Coprosma colensoi*; 11 ferns—hard tree fern, hard fern, hounds tongue fern, chain fern (*Tmesipteris tannensis*), *Notogrammitis heterophylla*, *N. billardierei*, *Hymenophyllum bivalve*, *H. flabellatum*, *H. rarum*, *H. revolutum* and *H. sanguinolentum*; and also bush flax (*Astelias fragrans*) and Easter orchid.

The top of the tree is emergent above the kāmahi canopy. This is the largest southern rātā observed on the survey and is the largest southern rātā tree known to ourselves or Gavin White.

Table 3. Regionally uncommon taxa at key study sites

Taxa	Hut Clearing	First Clearing	Second Clearing	McLean Falls Shrubland	Forest sites
<i>Coprosma pseudociliata</i>			×		
<i>Coprosma rubra</i>				×	
<i>Gentianella grisebachii</i>		×	×		
<i>Hymenophyllum pulcherrimum</i>					×
<i>Mazus radicans</i>		×			
<i>Notogrammitis angustifolia</i>					×
<i>Olearia bullata</i>		×	×		
<i>Ophioglossum coriaceum</i>				×	
<i>Oxalis magellanica</i>					×
<i>Raukahu anomalus</i>				×	
<i>Raukahu edgerleyi</i>					×



Figure 4. Brian Rance dwarfed by the giant southern rātā. Photo: John Barkla.

### Exotic plants

Forty exotic plants were recorded. Three species of concern, broom (*Cytisus scoparius*), Himalayan honeysuckle (*Leycesteria formosa*) and blackberry (*Rubus fruticosus*), are restricted to the McLean Falls carpark and adjacent areas. Other species of conservation concern that impact upon the important frost flat clearings include exotic grasses and oval sedge.

### Discussion

The primary ecological drivers in the creation and maintenance of the clearings appear to be a combination of winter waterlogging and cold air drainage; conditions not conducive to forest growth. Technically these clearings, with a combination of shrubland and tussockland vegetation, are frost flats. Singers & Rogers (2014) recognised six frost flat ecosystem types including *Coprosma-Olearia* scrub [Grey scrub; = TI4] and Red tussock tussockland (= TI6).



### **Vegetation condition**

All vegetation types are being detrimentally impacted by the browsing, grazing and soil disturbance of possums, deer and pigs. While the most obvious impacts are browsing of palatable species, deer trampling and pig rooting have the potential to be locally devastating for the most restricted of the rare herbs.

While there are few weeds in the forest, open areas within the clearings are locally dominated by exotic grasses, particularly browntop. The grass sward has suppressed many native herbs, which now only persist under shrubland or dense red tussock in shade levels that exotic grasses cannot tolerate.

The local abundance of mānuka suggests a history of fires. Mānuka shrublands are now regenerating strongly and are expected to continue to do so, in the absence of further fires.

### **Significance**

Frost flat clearings are a naturally rare ecosystem type (Williams et al., 2007) and have been classified as Endangered (Holdaway et al., 2012). The frost flat clearings contain two major types—*Olearia-Coprosma* shrubland and red tussockland. Both of these vegetation types are also rare and localised in the Catlins, and contain the first recorded Catlins presence of *Ourisia modesta*, *Tetrachondra hamiltonii*, and *Myosotis tenericaulis*.

### **Summary**

Despite its relative accessibility, the mid catchment of the Tautuku River appears to have been seldom botanised or described. The clearings are a distinct feature, that add ecological diversity, interest and importance to the vegetation of the catchment, and we assess them to be regionally significant. The Tautuku catchment is one of the largest, most intact and diverse in the Catlins and we consider the catchment is of national importance. We expect the vegetation will benefit from the control of browsers being undertaken as part of the Tautuku Ecological Restoration project.

This survey records the presence of several threatened plant populations, including some of regional importance either because of their size, or significance as new records. Some threatened species would benefit from conservation management, including enhancement planting.

A giant southern rata tree was measured with a diameter of 4.036 m and an estimated height of c. 30 m. This tree is larger than any southern rata in the New Zealand Tree Register <https://register.notabletrees.org.nz>. Is it the largest southern rātā in the Catlins, Southland or possibly New Zealand?

Further ecological survey of both the forest and frost flat clearings is warranted and will provide improved information on the extent of occupancy of the rare plants. Priorities for survey include a clearing north of the Second Clearing, and a silver beech stand noted (G. White pers. comm.) in the upper Tautuku catchment.

### **References**

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## **NZPCN 2022 conference student scholarship profile**

Alex Fergus ([fergusa@landcareresearch.co.nz](mailto:fergusa@landcareresearch.co.nz)) and Ben Teele ([benteele@mac.com](mailto:benteele@mac.com))

In anticipation of our 2022 conference in December in Queenstown we are including brief profiles of our four NZPCN conference student scholarship recipients in *Trilepidea*. To support student participation at the 2022 conference we have sponsored the registration costs of the first four students who registered and submitted a poster or spoken presentation abstract. This month we've asked Ben Teele a few questions about his botanical background and the work he'll be presenting at the conference.

*How did you first become involved in botany/plant ecology/native plant conservation/ecological restoration?*

I started via the replanting gateway through the Wakatipu Reforestation Trust back in 2015. Having trained as an archaeologist, I'd run into plant remains in a different context from excavations. Interest grew from there into manifesting itself into a PhD in Botany with a Central Otago focus.

*Briefly describe the background to the research you are presenting at the NZPCN 2022 conference*

Ben's NZPCN conference presentation is titled "What follows after – the challenges of restoration in Central Otago."

Part of my PhD is looking at pre-human vegetation and models predicting their original cover in Central Otago. Running in parallel is the ongoing challenge to deal with wilding conifers and other naturalised exotic species aggressively moving into what remains of the native ecosystems. The natural pairing is to look forward into the future to see what novel ecosystems might emerge, and whether we can effectively influence that outcome for better biodiversity gains.

*Beyond study, where, in a mythical world of limitless science funding, are you hoping your botany/plant ecology/native plant conservation/ecological restoration career path will lead?*

Mass scale repair and regeneration of the woody communities in Central Otago via seed islands and natural regeneration. Demonstrating to the public via interactive 3D visualisations of our past and future natural world.

## **Updated NZPCN 2022 conference COVID-19 protocol**

Alex Fergus, Jesse Bythell, Jo Smith

This is the third version of the NZPCN 2022 conference COVID-19 protocol and we will continue to alter the protocol as government recommendations and infection levels around the country change.

The government is currently following a COVID-19 traffic light system as part of their COVID-19 protection framework. The NZPCN conference committee have decided to adopt this framework also. Given our estimated attendance, the conference can go ahead at the Green, Orange or Red COVID-19 traffic light settings, with the limit for Red being 200 people. Vaccination is no longer mandatory at any of these settings. Currently, at the Orange setting, face masks are not mandatory for controlled-access events, which include conferences. If, come December, we are in a Red setting, face masks will be mandatory and we will need to alter how we serve food and drink at social events, given that participants will need to be seated and separated.

72 hours before the conference commences all participants will receive a wellness reminder. We will be asking all participants to consider staying home and not attending the conference if they are unwell in any way. Any last-minute cancellations due to illness will be fully refunded.

If you are already registered for the NZPCN 2022 conference and our revised COVID-19 protocol gives you cause for concern, please contact us to discuss this (details below). We are more than happy to fully refund anyone who no longer wishes to attend the conference due to these changes.

We will work with the conference venue to have a seating plan and a servery plan that permits social distancing.



As per our conference code of conduct, we are dedicated to creating a positive, supportive and rewarding experience for everyone involved in this conference. We ask you to look out for one another and contribute towards a safe environment where people are treated with dignity and respect, feel comfortable and encouraged, feel their opinions are valued, and can speak without fear. Be conscientious about how your actions and comments might be perceived or misunderstood by others. There are a multitude of COVID-19 related attitudes and behaviours held by New Zealanders and we ask you to extend our code of conduct to these. Please respect conference participants who wish to wear masks or maintain social distancing during the conference, if that is their preference.

Contact: Alex Fergus, [fergusa@landcareresearch.co.nz](mailto:fergusa@landcareresearch.co.nz)

### Thank you to our conference sponsors!

The NZPCN would like to thank our sponsors for showing their commitment to plant conservation networking by supporting our conference. For more information regarding our conference sponsors please follow this link <https://www.nzpcn.org.nz/nzpcn/events/conference-2022/2022-conference-sponsors/>.

If you or your organisation is in a position to show your support, please contact us now for a sponsorship package at [fergusa@landcareresearch.co.nz](mailto:fergusa@landcareresearch.co.nz).



Wildlands



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## UPCOMING EVENTS

If you have events or news that you would like publicised via this newsletter please email the Network ([info@nzpcn.org.nz](mailto:info@nzpcn.org.nz)).

If you are intending to participate in one of the advertised meetings or field trips please check with the appropriate Botanical Society beforehand to confirm that the published details stand.

### Auckland Botanical Society

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**Meeting:** Wednesday 6 July at 7.30pm. **Speaker:** Ewen Cameron.  
**Topic:** The Wet Tropics of northern Queensland.

**Venue:** Unitec, School of Natural Sciences, 139 Carrington Road, Mt. Albert (Gate 4, Building 115, Room 1028).

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**Field Trip:** Saturday 16 July to Auckland Botanic Gardens. **Meet:** Inside the Visitor Centre (on left as you enter) at 10.00am.

**Leader:** Bec Stanley, email [presidentaucklandbotsoc@gmail.com](mailto:presidentaucklandbotsoc@gmail.com), ph. 027 451 2289.

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## Waikato Botanical Society

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**Meeting:** Monday 18 July at 6.00pm. **Speaker:** Members' 10 minute talks. **Venue:** The Link (corner Te Aroha Street and River Road).

**Contact:** Kerry Jones 027 747 0733.

**Field Trip:** Saturday 23 July to Pakoka Scenic Reserve. **Meet:** Countdown Dinsdale at 8.45am or Te Mata School, Te Mata Road at 9.30am. **Grade:** Easy.

**Leader:** Kerry Jones, email [km8j1s@gmail.com](mailto:km8j1s@gmail.com), ph. 027 747 0733.

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## Rotorua Botanical Society

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**Field Trip:** Saturday 9 July to Western Matata dunes. **Meet:** Rotorua carpark at 8.00am or Murphys Motorcamp, 174 SH2, Matata at 9.00am. **Grade:** Easy.

**Leader:** Sarah Beadel, email [sarah.beadel@wildlands.co.nz](mailto:sarah.beadel@wildlands.co.nz), ph. 021 924 476.

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## Wellington Botanical Society

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**Field Trip:** Saturday 2 July to Whakanui Track, Remutaka Forest Park. **Meet:** Near south end of Sunny Grove, Wainuiomata at 9.30am.

**Co-Leaders:** Leon Perrie, email [leon.perrie@tepapa.govt.nz](mailto:leon.perrie@tepapa.govt.nz), ph. 027 419 1378 and Lara Shepherd, email [lara.shepherd@tepapa.govt.nz](mailto:lara.shepherd@tepapa.govt.nz), ph. 027 363 5854.

**Meeting:** Monday 18 July at 7.30pm. **Speaker:** Matt Ward, owner/operator of RESTORE. **Topic:** Seeds, Surveys and Sweet Finds – Working as a self-employed botanist in the lower North Island.

**Venue:** Lecture Theatre M101, ground floor Murphy Building, west side of Kelburn Parade.

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## Nelson Botanical Society

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**Field Trip/Meeting:** Please refer to the website: <https://www.nelsonbotanicalsociety.org/trips-meetings>, for details.

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## Canterbury Botanical Society

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**Meeting:** Monday 4 July at 7.30pm. AGM, followed by a short film and discussion. **Venue:** St Albans Community Centre, 1049 Colombo Street, Christchurch.

**Contact:** Alice Shanks, email [alice@caverock.net.nz](mailto:alice@caverock.net.nz).

**Field Trip:** Saturday 9 July to Putaringamotu/Riccarton Bush, Christchurch. **Meet:** To be advised. **Grade:** Easy.

**Contact:** Alice Shanks, email [fieldtrips@canterburybotanicalsociety.org.nz](mailto:fieldtrips@canterburybotanicalsociety.org.nz) or phone 027 366 1246 to confirm participation.

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## Botanical Society of Otago

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**Meeting:** Wednesday 13 July at 5.30pm. **Speakers:** Jessica and Shar. **Topic:** Looking for shrubs in all the wrong places.

**Venue:** Main seminar room, Manaaki Whenua Landcare Research, 764 Cumberland Street, Dunedin.

**Field Trip:** Saturday 16 July to Mihiwaka. **Meet:** Botany Department carpark (464 Great King Street North) at 9.30am. **Grade:** Medium/Hard.

**Contact:** Lydia Turley, ph. 021 062 3602.

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