NEW ZEALAND PLANT CONSERVATION NETWORK

TRILEPIDEA

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The Network will publish almost any article about plants and plant conservation with a particular focus on the plant life of New Zealand and Oceania.

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NEW ZEALAND

PLANT OF THE MONTH, p. 4

Gingidia haematitica. Photo: S. Walls.

Tales of cloud forest

Marley Ford (marsbars14@hotmail.co.nz)

A few days spent in the Waima forest during June shows the true nature of these mountains. The highest range in the far north provides horizontal rain on the tops with consistent gales, swollen waterfalls and flooded rivers (Heenan & Cameron, 2002). In true cloud forest fashion, the tops of this maunga always seem to be clouded at one point of your visit. The local legend Frampton once farmed these 'tops', his legacy now a Department of Conservation hut bearing his name. At this end of the ranges most of larger old-growth trees have been felled and regenerating towai (*Weinmannia silvicola*) forest dominates, kanono (*Coprosma grandifolia*) is a common shrub underneath and every inch of forest substrate is covered in epiphytes, moss, liverworts and cold-tolerant lichens.

Figure 1. Author (Marley Ford) pointing out the large foliage of Turoa Onamata (*Ackama nubicola)* in its typical habitat. Photo: T.J. Hooker.

Some of the ridge tops are leaning towards being pasture; large fields of red fescue (*Festuca rubra* subsp. *rubra*) are seen with other common grasses such as yorkshire fog (*Holcus lanatus*) On the shrubby margins of these pasture relicts, a locally iconic plant makes this one of the few places it calls home—Turoa Onamata (*Ackama nubicola*). Any nature lover with a good eye would be able to pick out this large-leaved tree of the cloud forest illustrated in Figure 1. This species' epithet suggests its ties to the cloud forest, '*nubicola*' means to grow in the clouds (de Lange et al., 2002). The

common name turoa onamata has been given to this plant acknowledging the establishment of the plant since ancient times. It has been hypothesised by Hokianga local Whiu Waata that the high point Te Raupua is named in reference to the distinctive petal-like stipules of turoa onamata (Figure 2). Raupua means petal in the Māori language.

Figure 2. The large petal like stipule of Turoa Onamata (*Ackama nubicola*). Photo: M. Ford.

Karen Riddel, a Department of Conservation botanist, found this tree in 2000. The story goes as she sheltered from one of Waima's notorious showers, she looked up to see what tree was protecting her from the rain, the tree being 'turoa onamata' a tree at that point unknown to science. Turoa onamata is the second New Zealand species in the genus *Ackama*, which in turn is a genus within the Cunoniaceae family. The only other indigenous genus within that family found in New Zealand is *Weinmannia,* also with two species. Superficially, the Northland representatives of this family all look pretty similar, so much time can be spent trying to identify the members of the Cunoniaceae family in the tree lands of Waima forest. However, once you have seen the large hairless leaves of turoa onamata your headache will clear (Fig. 3). It is most like makamaka (*Ackama rosifolia*), a species with which turoa onamata is sympatric. However, makamaka has smaller, narrower leaves which usually bear more leaflets, smaller green, usually toothed stipules and the leaf domatia are conspicuous, of the hair-tuft pocket type, whereas turoa onamata has larger leaves with fewer leaflets, inconspicuous, almost vestigial hair-tuft domatia, and much larger yellowish entire stipules. The ripening fruits of turoa onamata are white, whereas those of makamaka are pink (de Lange et al. 2002; de Lange, 2020).

Figure 3. The lush foliage of the large-leaved Turoa Onamata. Photo: M. Ford.

Assessed as 'Nationally Critical', the populations of this plant all lie within the Waima forest (de Lange et al., 2018). Thanks to locals, like bush man Tom Donovan, this tree is known from four populations at most consisting of 10+ medium sized-trees. The threat assessment of this plant makes sense with the localisation of this species and the limited habitat. This tree appears to be an early successional tree in ecology, needed disturbance provided in this case at Frampton's by the clearing of the forest for farming. The population at Frampton's seems stable at the moment because of the area of pasture like clearing still present on the tops, but as succession advances into a taller forest, the survival of this tree will come under risk.

One of the 'populations' is one large tree seen in Figure 4, a 15m canopy tree being the largest tree of this species on record (https://inaturalist.nz/observations/42025181). It is growing on a southern facing old slip face with an understorey of *Austroblechnum colensoi,* another cold-loving species rare in the far north. The Waima forest has several narrow-ranged cold climate endemics including *Coprosma waima*, *Olearia crebra* and turoa onamata which are thought to be possible relics of a once colder land. Potentially explaining why Waima forest, which does not have unique geology, hosts a relatively large proportion of endemic plants. The wet and often cloudy weather makes Waima one of the cloudiest and wettest parts of Northland. It has been known to snow on the Waima tops, once in the 1930s and again in the early 2000s.

Figure 4. Perhaps the largest specimen of Turoa Onamata a 15m tree canopy tree seen in the centre. Photo: M. Ford.

However, these conditions are not that different from Warawara in the North Hokianga where more populations of Turoa Onamata could exist. There are still many unknowns around turoa onamata, including the distribution of the species, the number of plants and flowering times. It is said that cutting easily take but plants are quick to die, as they require cool conditions and lots of moisture (de Lange, 2020). Because of these factors paired with climate change, the future survival of this cloud dwelling species remains uncertain.

Acknowledgements

I would like to thank Tom Donovan for sharing his knowledge on the new populations of turoa onamata, Whiu Waata for sharing his thoughts on this species and Peter de Lange for his suggestions and comments on this article.

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PLANT OF THE MONTH – *GINGIDIA HAEMATITICA*

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The plant of the month for July is *Gingidia haematitica,* one of nine *Gingidia* species endemic to the New Zealand region. G. *haematitica* is a basicole (base rich soil loving) species that grows on dolomite karst landscapes at the top end of the South Island. The species has an extremely restricted distribution and is only found on Mt. Burnett, where it grows in open sunny areas on rocky outcrops. The plant is an herbaceous perennial with glabrous, pinnate leaves that are bright green or sometimes bronze-green in more exposed conditions. The leaflets are typically in seven to eight pairs with crenate teeth on the margins of each leaflet. The species has white flowers and is gynodioecious. Both male and female flowers are borne in umbels atop stems that are slightly taller than the leaves. The seeds are brown with five ribs.

Gingidia haematitica. (left) In flower, December 2006; (right) Seed heads, January 2012. Photos: S. Walls.

G. haematitica is most similar to *G. montana* and their distributions overlap but *G. haematitica* is distinguished by its more compact habit, smaller leaves and brown-red veins on the petioles and leaflets. Other similar species include *G. amphistoma* and *G. grisea* but these two species are only found further south, so do not co-occur with *G. haematitica* in the wild.

The species is endemic to New Zealand and has a current threat ranking of "Threatened, Nationally Critical" due to its extremely restricted distribution and small population size. It is a highly palatable species and is vulnerable to browse by goats. The other key threats are habitat destruction from mining operations on Mt. Burnett and competition with exotic weeds.

Species in the genus *Gingidia* are predominantly found in New Zealand, however at least one species is native to Australia. *Gingidia* is in the family *Apiaceae* along with prominent New Zealand genera such as *Aciphylla* and *Anisotome*. The genus name *Gingidia* is based on the vernacular name of a Syrian species of *Daucus* (carrot), while the epithet *haematitica* and is derived from the Greek word *haima* meaning blood, and refers to the brown-red veins of the leaflets, midrib and petiole.

You can view the NZPCN website factsheet for *Gingidia haematitica* at: https://www.nzpcn.org.nz/flora/species/gingidia-haematitica/

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Observations of *Korthalsella salicornioides* on kānuka windfall at Ross Creek, Dunedin

John Barkla (mjbarkla@xtra.co.nz)

For several years I have regularly walked a track in Ross Creek Reserve on the northern edge of the Dunedin urban area. The track circles the Ross Creek Reservoir and is mostly through kānuka-dominant broadleaved forest. The kānuka (*Kunzea robusta*) is up to 15 m tall with large diameter trunks.

During a walk after strong south-westerly winds in September 2013 I found the track littered with branchlets of kānuka. When I looked closely at these, I was surprised that many branchlets were host to the hemiparasitic dwarf mistletoe *Korthalsella salicornioides.*

Following that discovery, I have regularly inspected fallen kānuka branchlets along the track to see how much dwarf mistletoe is present. I estimate that, after storms, up to 20 per cent of fallen branchlets are host to dwarf mistletoe. Sometimes the dwarf mistletoe is also found detached from its host.

All of this got me thinking about whether kānuka branchlets hosting dwarf mistletoe are more vulnerable to breakage in the wind or whether their occurrence on the ground is truly representative of their presence in the canopy. I discussed this with Peter de Lange who was of the view that the way *Korthalsella* parasitises its host is likely to weaken the branches. Peter mentioned that Dr Brian Fineran (retired, University of Canterbury) had once shown him images of thin sections through parasitised host branchlets that showed that *Korthalsella* completely rings the stele (the central core of the stem) and then bursts through the branch as it runs up and down the host branches.

Figure 1. *Korthalsella salicornioides* detached from its host, Ross Creek, 4 January 2017. Photo: J. Barkla.

Figure 2. *Korthalsella salicornioides* on host *Kunzea robusta*, Ross Creek, 4 November 2018. Photo: J. Barkla.

Following the arrival of myrtle rust (*Austropuccinia psidii*) to New Zealand in 2017, the threat status of both *Kunzea robusta* and *Korthalsella salicornioides* (as the sole non-myrtaceous plant known to be intimately associated with NZ myrtaceae) were elevated to 'Nationally Vulnerable' and 'Nationally Critical' respectively (de Lange et al. 2018). This was a precautionary step by the NZ Threatened Plant Committee recognising the uncertainty around the impact that myrtle rust might have in New Zealand. My understanding is that, so far, myrtle rust has not been detected on *Kunzea,* or this far south. The quantity of fallen dwarf mistletoe on the ground at Ross Creek suggests the kānuka forest there supports a substantial *Korthalsella salicornioides* population. Let's hope it stays that way.

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The little daisy that New Zealand forgot – *Solenogyne christensenii*

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Sometime in 1912, the Hanmer Springs Baths Attendant Charles Edward Christensen discovered a little daisy growing in "*bare spots in dry fescue* [probably Festuca novae-zelandiae] *tussock steppe*". Christensen (1876–1938) was born in Christchurch on 31 March 1876, where he resided for some time before taking up the position of 'Government Masseur' at Hanmer Springs, Amuri, North Canterbury in 1912 (possibly 1913) (Godley 1994). Christensen's job was to assist the care of soldier patients at the Queen Mary Hospital suffering from 'nervous disorders' (probably post trauma stress disorder). During his time at Hanmer Christensen befriended Leonard Cockayne (1855–1934) (Fig. 1) who encouraged him to study plants and the associations they form (Godley 2004). So inspired, Christensen determined to document the flora of the Amuri district, which on account of his having had a knee joint 'excised' must have been extremely difficult. Irrespective, Christensen covered some difficult country by bicycle and on foot, often ascending peaks over 1200 m above sea level (Godley 2004).

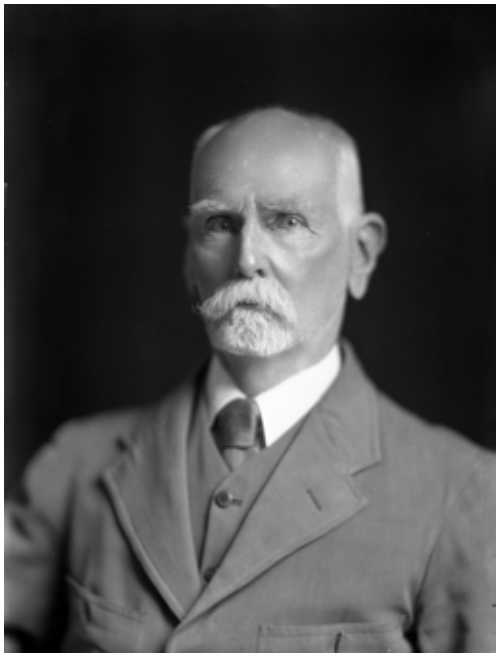

Figure 1. Leonard Cockayne (1855–1934) as he was in 1928. Cockayne was a botanical mentor to Charles E. Christensen during his early botanical explorations of Hanmer Plain and the Amuri district, North Canterbury. Photo: Stanley Polkinghorne Andrew.

At least initially, Cockayne was Christensen's mentor in all things botanical. Whatever Christensen found that he did not know he passed to Cockayne who resided in Christchurch until 1914 (Godley 2004). As noted elsewhere (Cockayne 1926; de Lange 2019) by this stage of his career, Cockayne had become disillusioned with New Zealand taxonomists, most of whom he disagreed with. The one notable exception was Donald Petrie (1846–1925) (Fig. 2), to whom Cockayne habitually passed anything he felt warranted formal recognition.

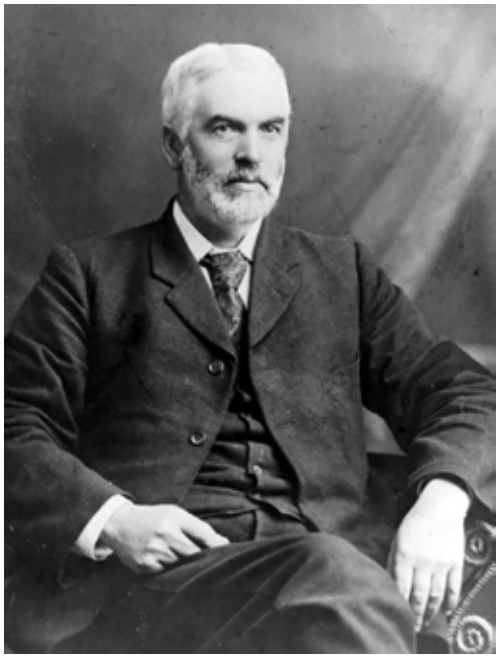

Figure 2. Donald Petrie (1846–1925) as he was in c.1904. In my opinion Petrie was one of New Zealand's most under-rated pioneering botanical taxonomists. Petrie was the person Cockayne sent plants he found or had been passed to after he had fallen out with other prominent New Zealand botanists of the time. Photographer unknown.

Petrie (1915) makes clear that this is what happened to Christensen's daisy, not only in his protologue but also in his label details on the holotype (WELT SP02098) in which Petrie notes '*C. Christensen Rec L. C.*[ockayne]' (Fig. 3).

As for Christensen's daisy, Petrie described this as a new species of *Abrotanella*, *A. christensenii*, so honouring Charles for its discovery (Petrie 1915). At the time of this species' description Petrie had little to say of it taxonomically or ecologically and there the matter rested until Thomas Cheeseman (1845–1923) was revising his Manual of the New Zealand Flora. In that revision Cheeseman (1925, p. 1005) noted that he only saw two specimens that Petrie had lent him for examination (Fig. 3), and these were all that had ever been found. Cheeseman felt unconvinced about the generic placement of Petrie's species but left it in *Abrotanella*. Later Allan (1961, p. 695) who treated the

Figure 3. Holotype of *Abrotanella christensenii* (WELT SP02098). Photo: P.J. de Lange.

species as '*Incertae Sedis*', had another look, noting that '*the sp.*[ecies] *is known only from 2 small species, Cheeseman… found the material* '*insufficient to satisfy me* [Cheeseman] *that the species is a true* Abrotanella'. Allan opined that *Abrotanella christensenii* '*may possibly prove to be a* Cotula'. There the matter rested until 1993 when Ulf Swenson, then engaged in the completion of a revision of *Abrotanella,* revisited the status of *A. christensenii*, recognising that both Cheeseman and Allan were right, it was not an *Abrotanella* but a species of *Solenogyne*, *S. gunnii* (Swenson 1993). *Solenogyne gunnii* (Fig. 4) is a naturalised plant in New Zealand (Webb et al. 1988), so there the matter rested, Christensen's enigmatic daisy, known only from the holotype was now an introduced weed, and so being relegated to weed status it was almost—but not quite—forgotten.


Figure 4. *Solenogyne gunnii*, Cashmere Hills, Christchurch, New Zealand. Photo: P. Enright.

Ten or so years later in the early 2000s then Department of Conservation botanist John Barkla was taking a walk along the bank of the Clutha River near its source at Lake Wanaka, Otago, South Island. There on the river bank, in a small area of open herbfield sheltered by kahikātoa (*Leptospermum scoparium* s.l.) (Fig. 5), John noted a small rosette forming herb with dark green maroon mottled hispid leaves with tridentate apices (Fig. 6). Not sure what it was John grew some on until flowering. The plant was clearly Asteraceous but what kind of daisy was it? John sent images to a number of botanists including me, and I, on receipt of these, recognised that the plant was a species of *Solenogyne*, the capitula possessing the tubular ray florets and achenes that lacked a beak and glands—diagnostic characters of this genus. The closest match was still *Solenogyne gunnii* but that species did not have the same hair investiture, and leaf colour (Fig. 6, 7). I wondered if John had actually discovered "*Abrotanella christensenii*"? If so, I also wondered if

Figure 5. *Solenogyne christensenii* habitat near the source of the Clutha River, Wanaka, Otago, New Zealand. Photo: J.W. Barkla.

Figure 6. Young plant of *Solenogyne christensenii* growing in open herbfield near the source of the Clutha River, Wanaka, Otago, New Zealand. Photo: J.W. Barkla.

Abrotanella christensenii might be an indigenous species of *Solenogyne* rather than a synonym of the introduced *S. gunnii*? With this in mind I checked the holotype of *Abrotanella christensenii* held at the Museum of New Zealand Te Papa Tongarewa Herbarium (WELT) (Fig. 3)—a perfect match!

In the late 2000s Dr Gisela Sancho arrived from Buenos Aires, Argentina, to take up a phylogeographic study of *Lagenophora*, the sister genus of *Solenogyne* (indeed some taxonomists have even merged *Solenogyne* into *Lagenophora*). Gisela, based at Landcare Research, Lincoln, worked with Steve Wagstaff and me. For her outgroup she wanted some *Solenogyne*. Remembering John's enigmatic plant, we included it and some genuine *Solenogyne gunnii* collected from Auckland, as part of her outgroup. The DNA results were unequivocal, John's daisy was a *Solenogyne* but it was not *S. gunnii*, rather it placed as sister to it (Sancho et al. 2015). Whilst writing up her findings, Gisela, by now back in Argentina, was not interested in taking the necessary taxonomic steps to make a new combination in *Solenogyne* for *Abrotanella christensenii.* That task she suggested fell to me and John. John and I had also talked about this, and we agreed it was important but several Department of Conservation restructurings later we had changed jobs and managers, so this paper fell off my radar to start. Then, in August 2017 I left the Department to take up a teaching

position at the School of Environmental & Animal Sciences, Unitec Institute of Technology. I admit that with a new career teaching and all the other associated activities I soon forgot about the paper. Then during May 2018 whilst visiting Dunedin to give the Tennant Lecture to the School of Botany, University of Otago, John and I caught up in a café. John reminded me about this daisy problem and paper. Feeling more than a little embarrassed I solemnly promised John I would get on to it 'straight away' and well, of course, I didn't.

This inactivity all changed though, through the serendipitous review of a paper for *Austrobaileya* in early January 2019. That paper on Australian *Lagenophora* written by Jian Wang and Tony Bean from the Queensland Herbarium (BRI) meant I was introduced to Jian who I started corresponding with. One set of correspondence raised by Jian in late 2019 was whether New Zealand had any *Solenogyne*? Jian was of the view that New Zealand had no Solenogyne, which struck him as odd, and as he was starting a revision of the genus he wanted to know if his view was correct. I replied that in New Zealand there are three species recorded as weeds, the Australian *S. gunnii*, *S. dominii* and the Japanese *S. mikadoi* (Webb et al. 1988). I also remarked that we had an indigenous, possibly even endemic one that I had 'sort of done nothing with', Petrie's *Abrotanella christensenii*. I sent Jian images and notes I had taken from Petrie's type and live plants Jeremy Rolfe and John Barkla had grown and suggested he sort it out. Jian was excited when he saw my notes and images. He agreed that Petrie's *Abrotanella christensenii* was a *Solenogyne* and that it was distinct from *S. gunnii*. He also proposed that a paper be written between him, I and John. Inspired, Jian set to and by mid-March 2020 he presented me with a draft manuscript for my input, and oddly the COVID-19 lockdown that took effect soon after made for a great time to stop finding excuses and get on with writing the rest. The manuscript came together nicely, John wrote his parts, I mine, Jian added some fine tuning and Unitec graduate and Ecological consultant Andrew Marshall came in with much needed help with images and a critical eye for text. The paper, a four-person effort written via the internet between Brisbane, Auckland and Dunedin took shape within three weeks. It was a pleasure to coordinate, rarely have I had so much fun working on a multi-authored manuscript.

Figure 7. Cultivated flowering and fruiting plant of *Solenogyne christensenii*. Photo: J.R. Rolfe.

We submitted the paper to the *Ukrainian Botanical Journal* and our work has now been published (de Lange et al. 2020). Christensen's enigmatic little daisy, pretty much forgotten by the New Zealand botanical community has now been resurrected 108 years after Charles found it and 105 years after Petrie described it. It is now New Zealand's first endemic species of *Solenogyne*, *S. christensenii* (de Lange et al. 2020) (Fig. 6,7).

Solenogyne christensenii is, alas, seriously threatened with extinction (see de Lange et al. 2018 as *Abrotanella christensenii*). We are not even sure it survives in the location where John found it though it is in cultivation. With our publication we now hope people will start looking for it. Other than Hanmer Plain where we assume it is extinct and Wanaka, where John found it, plants attributed to it have been collected from North West Nelson by Department of Conservation botanist Shannel Courtney but due to lockdown his specimens, though loaned to me, were out of my reach because they were sent to the Auckland Museum Herbarium (AK). When lockdown ends I know what I will be checking. That aside, I feel that *Solenogyne christensenii* should occur elsewhere and that it may not necessarily be a South Island endemic either. Now that the taxonomy is resolved people need to start looking.

Solenogyne christensenii (Fig. 6,7) is most likely to be confused with *S. gunnii*. From that species it differs by its overall smaller size, sparsely hispid hair covering, leaf shape (oblanceolate, obdeltoid to cuneate for *S. christensenii*; narrowly obovate and obtuse for *S. gunnii*) and colour (green mottled maroon vs. green), obtusely serrated rather than sinuate to undulate leaf margins, and in other features of the scape, Capitula and achenes – for more differences see de Lange et al. (2020).

The *Solenogyne* paper is available at: https://doi.org/10.15407/ukrbotj77.02.073

Acknowledgements

I'd like to thank my colleagues Jian Wang, Andrew Marshall and especially John Barkla for their assistance in bringing the story of *Solenogyne christensenii* to a successful published conclusion. Shannel Courtney I also thank for drawing to my attention in early 1993 the existence of *Abrotanella christensenii* in the 'fine print' of Allan (1961) through a submission to the New Zealand Botanical Society Threatened Plant Listing Panel. Jeremy Rolfe for his stunning image of *Solenogyne christensenii*, Pat Enright for his of *S. gunnii*, and the reviewers, editor, production team and editorial board, especially Professor Sergei Mosyakin, of the *Ukrainian Botanical Journal* for their handling of our paper.

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Rare mistletoe come-back in Hawke's Bay back-blocks astonishes conservationists

An 'at risk' species of mistletoe appears to be staging a remarkable come-back in parts of a Hawke's Bay forest following a highly successful possum eradication programme. More than 200 specimens of yellow mistletoe (*Alepis flavida*), known as pirita or piriraki in te reo Māori, have been found over the past year by the Forest Lifeforce Restoration Trust on its property in the Maungataniwha Native Forest, adjacent to Te Urewera.

Alepis flavida. Photo: John Barkla.

The parasitic species has leap-frogged from being unrecorded in the forest to having 21 plants seen within one host tree alone. On a single day in February this year Trust volunteers and staff found 109 new plants on 49 host trees, a record daily tally for the area.

Forest Lifeforce Restoration Trust manager Pete Shaw said he was "staggered" by the finds. "It's the most remarkable change in the forest we've seen for years," Mr Shaw said. "It's notable that the recovery is not obvious across the entire forest, though, so it's possible that we've stumbled across one or two hot-spots where this species wasn't entirely wiped out by possum before we started our work here in 2006."

The Trust's possum eradication work in the Maungataniwha Native Forest has been so successful that over the past year any possum seen at night was an exceptional event to be commented on. Determined trapping and targeting of the few remaining animals by Trust staffer Barry Crene has helped keep the number of these pests low.

"Barry's got it to the point now that every possum killed at this stage could mean keeping the lid on the possum numbers in this forest for future years," Mr Shaw said. "It's vital for the health of our forest that we are able to do this."

The nearby Department of Conservation-administered Boundary Stream Mainland Island also experienced a rapid recovery of yellow mistletoe following possum control there.

The pattern of the plant's recovery at Maungataniwha should continue in future years if possum control continues, the Trust says. "We're hoping that yellow mistletoe may be reaching a critical mass that could result in lots of available seed being flown by birds, and a much faster recovery into the future," Mr Shaw said.

All yellow mistletoe found at Maungataniwha so far have been hosted on red beech.

Other species of mistletoe are also being discovered in increasing numbers at Maungataniwha. These include scarlet mistletoe *(Peraxilla colensoi)* and red mistletoe *(Peraxilla tetrapetala)*.

About the Forest Lifeforce Restoration Trust

The Forest Lifeforce Restoration Trust was established in 2006 to provide direction and funding for the restoration of threatened species of fauna and flora, and to restore the *ngahere mauri* (forest lifeforce) in native forests within the Central North Island.

It runs eight main regeneration and restoration projects, involving native New Zealand flora and fauna, on three properties in the central North Island. It also owns a property in the South Island's Fiordland National Park.

UPCOMING EVENTS

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

Waikato Botanical Society

Field Trip: Sunday 2 August to Glovers Farm, Waiohotu Road, Fitzgerald Glade, Western Mamakus (combined with Rotorua Botanical Society). **Meet:** 8.15am at the Convention Centre carpark, Fenton Street, Rotorua or 9.00am at the corner of Waiohotu Road and SH 5. **Grade**: Medium.	**Leader:** Jacqui Bond, email: supajac@yahoo.com, ph. 021 125 9273.
Meeting: Monday 17 August at 6.00pm – Speaker Monica Peters. **Topic**: Canary Island Flora.	**Venue:** The Link Centre, corner of Te Aroha Road and River Road, Hamilton East.
Field Trip: Sunday 6 September to Dickeys Flat, Kaimai-Mamaku Forest Park (combined with Rotorua Botanical Society). **Meet:** 9.30 am to be confirmed. **Grade**: Moderate.	**Leaders:** Graeme Jane and Gael Donaghy, email: gtjane@kinect.co.nz, ph. 027 570 3123.

Rotorua Botanical Society

Field Trip: Sunday 2 August to Glovers Farm, Waiohotu Road, Fitzgerald Glade, Western Mamakus (combined with Waikato Botanical Society). **Meet:** 8.15am at the Convention Centre carpark, Fenton Street, Rotorua or 9.00am at the corner of Waiohotu Road and SH 5. **Grade**: Medium.	**Leader:** Jacqui Bond, email: supajac@yahoo.com, ph. 021 125 9273.
Field Trip: Sunday 6 September to Dickeys Flat, Kaimai-Mamaku Forest Park (combined with Waikato Botanical Society). **Meet:** 9.30 am to be confirmed. **Grade**: Moderate.	**Leaders:** Graeme Jane and Gael Donaghy, email: gtjane@kinect.co.nz, ph. 027 570 3123.

Wellington Botanical Society

Field Trip: Saturday 1 August to Waikanae River. **Meet**: 9.45am at Waikanae Station north end carpark.	**Co-Leaders:** Kate Jordan, ph. 027 899 0018 and Chris Horne, ph. 04 475 7025 or 021 474 9300.
Meeting: Monday 17 August at 7.30pm – AGM and Tony Druce Memorial Lecture "The battle to save the Raukumara Range" – Speaker Graeme Atkins, DOC Biodiversity Ranger, East Cape/ Ruatoria.	**Venue:** Lecture Theatre M101, ground floor Murphy Building, west side of Kelburn Parade.
Field Trip: Saturday 5 September to Kiripiti Scientific Reserve, Old Hautere Road, Otaki. **Meet**: 10.00am at Waikanae Station north end carpark.	**Leader:** Mick Parsons, email parsonsroad@gmail.com, ph. 027 249 9663.

Nelson Botanical Society

Field Trip: Sunday 16 August to Onamaluta Reserve.	**Leader:** Tony Aldridge, email tony@southnet.co.nz, ph. 03 265 5071. Please contact Tony for further information.
Meeting: Monday 17 August at 7.30pm – Speaker and topic to be advised.	**Venue:** Jaycees room, Founders Park.

Canterbury Botanical Society

Meeting: Monday 3 August at 7.30pm - Speaker Dr Matiu Prebble, Post-Doctoral Fellow, University of Canterbury Geological Sciences. **Topic**: The fossil record of garden weeds in the Pacific Islands and Aotearoa.	**Venue:** Upper Riccarton Library community meeting room, 71 Main South Road, Riccarton.
Meeting: Saturday 8 August at 10.30am – AGM, followed by the speaker and then a shared lunch. Speaker Dr Leon Perrie, Curator – Botany, Te Papa Tongarewa.	**Venue:** St Ninians Presbyterian Church Hall, 9 Puriri Street, Riccarton.
Field Trip: Sunday 9 August to Te Tihi-o-Kahukura Castle Rock. **Meet**: 11.45am to carpool. Malcolm Avenue, on the corner opposite the Z service station, 23 Colombo Street, Thorrington. **Grade:** Easy to moderate.	**Contact:** Alice Shanks, email alice@caverock.net.nz, ph. 027 366 1246. Please let Alice know if you intend to participate.

Botanical Society of Otago

Meeting: Wednesday 12 August at 5.20pm – members' night for sharing items of botanical interest.	**Venue:** Benham Seminar Room, Room 215, Second Floor, Zoology Benham Building, 346 Great King Street, Dunedin.
Field Trip: Saturday 15 August to Trotters Gorge. **Meet:** 9.00am at the Botany Department carpark.	**Contact:** Gretchen Brownstein, email brownsteing@landcareresearch.co.nz, ph. 021 065 8497.