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Myoporum semotum (Scrophulariaceae), a new tree species from the Chatham Islands, New Zealand

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Myoporum semotum is described as a new species from the Chatham Islands, New Zealand, where it is known from Pitt Island, and the neighbouring South East, Rabbit, Mangere and Little Mangere islands. Notably, it is absent from Chatham Island where only *Myoporum laetum* occurs. *Myoporum semotum* is a coastal species occurring mostly in forest habitats but also in wind-shorn coastal shrubland. This new species is distinguished from *M. laetum* by its smoother bark, usually wider leaves, the leaf secretory cavities being obscure, smaller and dense, the midrib, petioles and branchlets being smooth and lacking prominent protruding tubercles, and in having slightly larger flowers. The conservation status of *M. semotum* is assessed as Nationally Vulnerable as it is currently known from between 1000 and 5000 mature plants.

Keywords: Chatham Islands; Myoporaceae; *Myoporum*; *Myoporum laetum*; *Myoporum semotum*; new species; New Zealand flora

Introduction

A recent taxonomic revision of *Myoporum* by Chinnock (2007) accepted 30 species. The genus has a centre of diversity in Australia, but extends from there to islands in the south-west Pacific Ocean with species in New Guinea, New Caledonia, Bonin, Marianus and Norfolk islands, westward into the Indian Ocean (Mauritius and Rodrigues Islands), north-east to the Cook Islands and French Polynesia, and northwards across the equator to Hawai'i. New Zealand is represented by two *Myoporum* taxa at the rank of species or below (Chinnock 2007), excluding the species newly described here. The most well known and common is ngaio, *Myoporum laetum* G.Forst., which was considered by Chinnock (2007) to occur in the main New Zealand islands but also extending eastward to Chatham Islands. The

second, *Myoporum rapense* subsp. *kermadecense* (W.R.Sykes) Chinnock, is a recent combination for plants previously known as *Myoporum kermadecense* W.R.Sykes (Sykes 1987) and is restricted to the Kermadec Islands.

During recent fieldwork on the Chatham Islands, as part of our ongoing research into the flora of those islands (Heenan et al. 2008, 2010), it was noted that the *Myoporum* on South East Island (Rangatira), Pitt Island (Rangiauria) and Mangere Island differed from plants on Chatham Island (Rekohu) and on the main islands of New Zealand that are referable to *M. laetum*. In this article, we examine morphological variation in *Myoporum* from the Chatham Islands and New Zealand, and as a consequence of this study we formally name and describe a new species endemic to the Chatham Islands.

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Materials and methods

For consistency and clarity throughout this article, the discussion that follows refers to the newly recognized species as *Myoporum semotum* Heenan et de Lange.

Fieldwork in the Chatham Islands on *Myoporum* has been undertaken by PB Heenan and PJ de Lange in February 2006, September 2007, May/June 2008 and November 2008, and by PB Heenan during December 2007. Specimens of *M. laetum* from Chatham Island and specimens of *M. semotum* from numerous sites on Pitt Island and South East Island were collected and deposited in the AK and CHR herbaria (see Representative Specimens). Seedlings were collected and grown in a common garden environment at the Landcare Research experimental nursery, Lincoln, for comparative purposes and a chromosome count. The chromosome count was provided by B Murray, following the methods outlined in de Lange et al. (2008b). Herbarium material in AK and CHR was also examined.

Leaf secretory cavities of *M. laetum* and *M. semotum* were compared on a fluorescent light box at $73 \mu\text{mol s}^{-1} \text{m}^{-2}$, and were examined in more detail with a Leica MZ6 stereomicroscope with a cold light source at $750 \mu\text{mol s}^{-1} \text{m}^{-2}$ (Fig. 1). Size and density of leaf secretory cavities were scored on the plants shown in Fig. 1 as well as additional herbarium material in CHR.

Results and discussion

Myoporum laetum and *M. semotum* are similar in being robust, spreading trees, up to 16–18 m tall that occur in lowland and coastal forest, and they have distinctive black leaf buds. Bark, branchlets and leaves provide useful taxonomic characters to distinguish *M. semotum* from *M. laetum*. First, *Myoporum laetum* is readily distinguished from all other species in the genus by the leaves having numerous, large and prominent schizogenous secretory cavities in the epidermal layers that are pellucid at relatively low light levels (Fig. 1). These secretory

cavities occur in all species of *Myoporum*, but in the other species they are not as large and do not usually occur in the epidermal layers and so are not as obvious at low light levels. In *M. laetum*, the majority of these secretory cavities are typically 0.2–0.4 mm in diameter, although some as small as 0.1 mm in diameter occur, and their density is 110–118 per 10 mm^2 . By contrast, *M. semotum* has leaves with far fewer conspicuous secretory cavities because they are immersed in the mesophyll and are smaller (0.1–0.2 mm in diameter), but they are more dense (289–372 per 10 mm^2). Differences between secretory cavities of the leaves of *M. laetum* and *M. semotum* remain consistent from seedlings through to mature plants (Figs. 1, 2). The shape of the leaves also differs, with those of *M. laetum* generally being elliptic to lanceolate although, as illustrated in Fig. 1, some leaves are often broader, being broadly elliptic, elliptic–obovate or obovate. The leaves of *M. semotum* are ovate, broadly elliptic, oblong–broadly elliptic to occasionally elliptic, and are typically wider than those of *M. laetum*.

The branchlets of *M. laetum* are tuberculate, having the schizogenous secretory cavities appearing as prominent protrusions (Fig. 2). These tubercles are generally very obvious, being clearly visible with the naked eye and often quite coarse and harsh to touch. On the main trunks and branches of *M. laetum* the bark is grey–brown, rough and deeply furrowed or segmented. By contrast, the branchlets of *M. semotum* are generally smooth and lack prominent protruding tubercles, but they can sometimes be very weakly tuberculate. In *M. laetum*, the tubercles also extend from the branchlet onto the abaxial surfaces of the petiole and midrib, but this does not occur in *M. semotum*. Both wild and cultivated plants (up to 3 years old) of *M. laetum* and *M. semotum* clearly displayed these differences (Fig. 2). The bark on the main trunks and branches of *M. semotum* is smooth to lightly furrowed and pale brown to cream–brown.

The flowers of *M. laetum* range in size from 10.0 to 15.0 mm in diameter and have

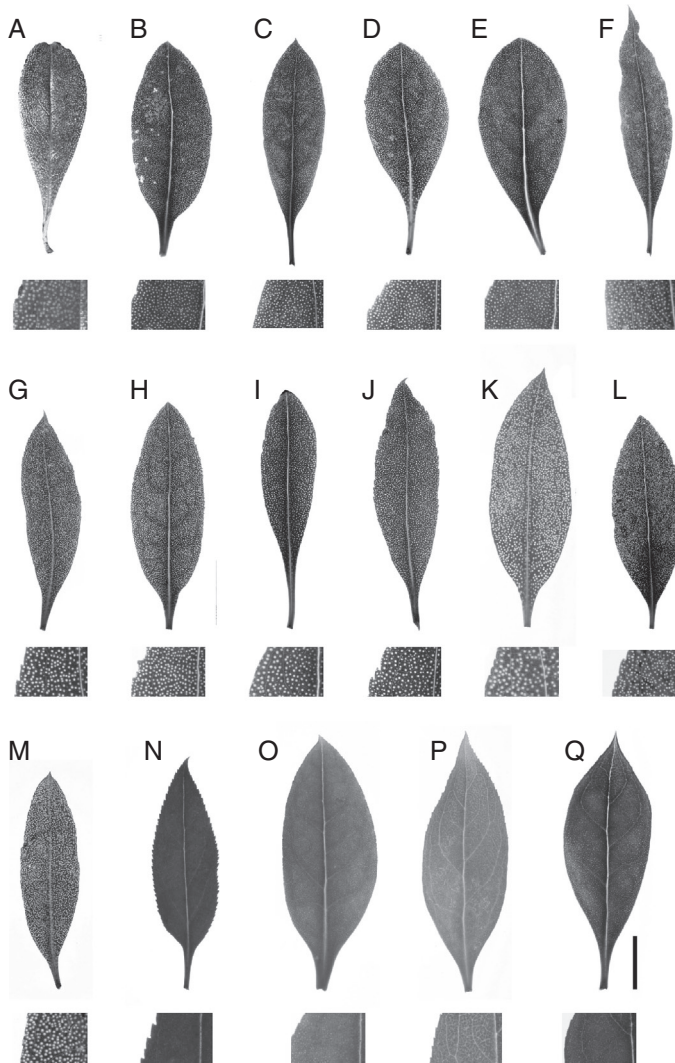


Figure 1 A range of leaf shapes and close-up images showing pellucid secretory cavities in *Myoporum laetum* (A–M) from throughout its geographic range, and obscure secretory cavities in *Myoporum rapense* subsp. *kermadecense* (N) and *Myoporum semotum* (O–Q). All images are of fresh leaves and herbarium vouchers of all samples are deposited in CHR. *Myoporum laetum*: **A**, North Cape, North Auckland; **B**, Omaha Bay, North Auckland; **C**, Paparoa, North Auckland; **D**, Manukau Harbour, North Auckland; **E**, Poor Knights Islands, North Auckland; **F**, Port Waikato, North Auckland; **G**, Coromandel Peninsula, North Auckland; **H**, Wellington; **I**, Kekerengu, Marlborough; **J**, Goose Bay, Marlborough; **K**, Napenape, Canterbury; **L**, Banks Peninsula, Canterbury; **M**, Otago Peninsula, Otago. *Myoporum rapense* subsp. *kermadecense*: **N**, Kermadec Islands. *Myoporum semotum*: **O**, Pitt Island; **P**, Mangere Island; **Q**, South East Island. Scale bar = 20 mm.

conspicuous purple or lavender–purple spots being 17.0–18.5 mm in diameter, and the spots on the corolla tube and lobes. In comparison, the flowers of *M. semotum* are slightly larger,

being 17.0–18.5 mm in diameter, and the spots on the corolla lobes and tube are often pink–brown, as well as sometimes being purple to

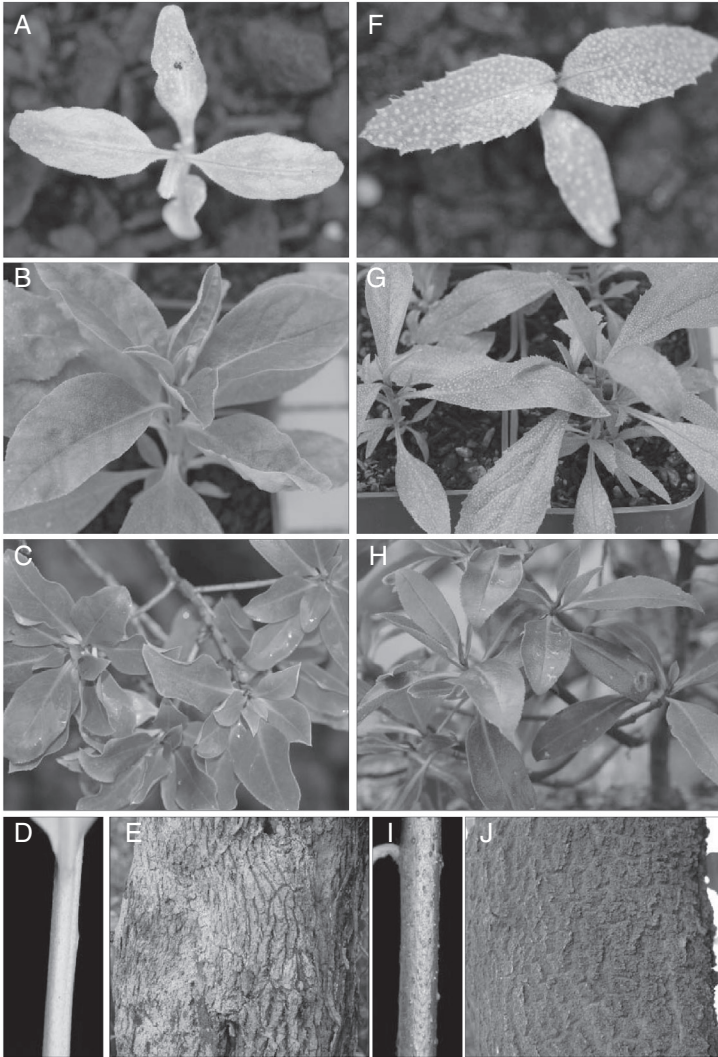


Figure 2 Comparison of the features of *Myoporum semotum* and *Myoporum laetum*. *Myoporum semotum*: **A**, seedling cotyledons and first leaves with obscure secretory cavities; **B**, broadly elliptic leaves with obscure secretory cavities on a 15 cm high young plant; **C**, broadly elliptic to ovate leaves from a mature tree; **D**, stem lacking prominent tubercules; **E**, smooth bark. *Myoporum laetum*: **F**, seedling cotyledons and first leaves with pellucid secretory cavities; **G**, elliptic to lanceolate leaves with pellucid secretory cavities on a 10 cm high young plant; **H**, elliptic to lanceolate leaves from a mature tree; **I**, stem with prominent tubercules; **J**, rough bark.

lavender–purple. Fruit and seeds are similar between *M. laetum* and *M. semotum* and we found no discriminating characters.

Plants of *M. semotum* do not belong to any other species of *Myoporum*, for as described, illustrated and/or keyed out by

Chinnock (2007), these have a range of unique diagnostic characters such as shrubby or decumbent growth habit, narrower or smaller leaves, different size and shape calyces and corollas, and a wide variety of hair types that occur on the leaves, stems, and flower parts.

However, consideration was also given to *M. semotum* being similar to *M. insulare* R.Br. and *M. rapense* subsp. *kermadecense*. *Myoporum insulare* (sensu Chinnock 2007) is a widespread and variable species that occurs in southern Australia, Tasmania and Lord Howe Island, and is also cultivated and naturalized in New Zealand, but it is not known to be cultivated or naturalized in the Chatham Islands. The leaves of *M. semotum* and *M. insulare* are alike in having obscure secretory cavities, with *M. semotum* being most similar in general appearance to the serrate-leaved form of *M. insulare* (Chinnock 2007, Fig. 56C). However, these two species differ as *M. insulare* is a shrub or small tree to 6 m tall (versus *M. semotum* being a tree to 18 m tall), the apical bud is green (versus black), the flower is 7.0–9.0 mm diameter (versus 17.0–18.5 mm diameter), spots on the corolla occur only at the base of the lobes and the top of the tube (versus spotted on most of the lobes and tube), the stamens are scarcely exerted beyond the corolla throat (versus exerted well beyond the throat), and the fruit is globular to broad ovoid (versus broadly elliptic and angled). The close relationship between *M. semotum*, *M. insulare* and *M. laetum* is supported by their identical nrDNA internal transcriber sequence (ITS) sequences (Heenan et al. 2010).

With regard to *M. rapense* subsp. *kermadecense*, the new species *M. semotum* differs by leaf, flower and fruit characters (see Sykes 1987, Figs. 1–4; Chinnock 2007). The leaves of both species have obscure pellucid glands, but in *M. rapense* subsp. *kermadecense* the leaves are glandular–punctate and are usually narrow elliptic to elliptic–lanceolate, prominently serrate in the distal half to three-quarters (Fig. 1N), and with the apex short to long acuminate. The leaves of *M. semotum* are not glandular–punctate (having a smooth surface), are broader (ovate, broadly elliptic, oblong–broadly elliptic to occasionally elliptic), the marginal teeth are finer and usually confined to the distal one-third of the leaf or the leaves are entire, and the apex is acute to sometimes

subacute. The flowers of *M. rapense* subsp. *kermadecense* are 11.0–15.0 mm in diameter and the style is usually hairy to near the apex, whereas the flowers of *M. semotum* are 17.0–18.5 mm in diameter and the style hairy at the base. The fruit of *M. rapense* subsp. *kermadecense* are smooth or slightly 3-angled and the seeds 2.2–2.7 mm long, whereas the fruit in *M. semotum* are prominently 3–5-angled and the seeds 2.8–3.0 mm long.

In New Zealand *M. laetum* varies in growth habit and the shape of the leaves (Fig. 1), and based on this variation *M. laetum* var. *decumbens* Simpson was described from a garden plant purportedly collected from the Poor Knights Islands (Simpson 1952). The variety is said to be distinguished by decumbent growth habit and large leaves, but plants exhibiting the general characters of the variety are known from a range of sites including the Three Kings Islands, Hauraki Gulf islands and Coromandel Peninsula (de Lange & Cameron 1999). Few genuinely wild gatherings that match the type are known, and this variety is but one part of the range of natural variation in *M. laetum* from eastern parts of the northern North Island (de Lange & Cameron 1999; Chinnock 2007). In this general area there is a continuum between large-leaved decumbent, small-leaved decumbent and upright shrub and tree forms of *M. laetum*, all of which defy conventional taxonomic classification; all of these leaf and growth habit variants are unified under *M. laetum* by the black leaf bud colour and secretory cavity size and density (Fig. 1). Fruit colour of *M. laetum* var. *decumbens* is described as white (Simpson 1952), but this description is most likely to be based on immature or shaded fruit, besides which, wild fruiting examples approaching or matching the type that we have seen have purple fruit. Therefore, we follow Chinnock (2007) in treating *M. laetum* var. *decumbens* as part of the natural variation within *M. laetum*.

Based on the above discussion that provides distinguishing characters between *M. laetum* and plants of *Myoporum* from the Chatham

Islands (Pitt, South East, Mangere, Little Mangere and Rabbit islands), we consider that the latter warrant recognition as the new species *M. semotum*. Recognition of *M. semotum* at species rank is consistent with the taxonomic concepts and application of that rank in *Myoporum* by Chinnock (2007).

Taxonomy

Scrophulariaceae

Myoporum has traditionally been placed in the Myoporaceae, but the genus is now considered to be a member of the Scrophulariaceae (Olmstead et al. 2001).

Myoporum Sol. ex G.Forst.

LECTOTYPE SPECIES (*fide* Webster 1951): *Myoporum laetum* G.Forst., *Prodr.* 44 (1786); Lectotype (*fide* Chinnock 2007): New Zealand, *J.R. & G. Forster s.n.*, K (left-hand specimen).

Myoporum semotum Heenan et de Lange, sp. nov.

DIAGNOSIS: Distinguished from *M. laetum* by the branchlets, petioles and leaf midribs that are usually smooth and lack prominent protruding tubercles, leaves that are broader and thicker, with margins often less serrate, and with secretory cavities that are smaller, more dense and less conspicuous as they are immersed in the mesophyll.

A *M. laeto* ramulis petiolis et costis foliorum plerumque glabris et sine tuberculis prominentibus protrudentibus, foliis latioribus crassioribusque marginibus saepe minus serratis, cavum secretum minoribus densioribus et minus conspicuis propter suam immersionem in mesophyllo differt.

HOLOTYPE: New Zealand, Chatham Islands, Pitt Island, North Head Road, Caravan Bush, *P.B. Heenan, P.J. de Lange CH1547 & G. Houlston*, 30 May 2008, CHR 602441. Isotypes: CHR 610435, CHR 610436, CHR 610437.

DESCRIPTION: Tree up to 14 m tall, trunk up to 500 mm in diam., bark smooth to lightly furrowed and pale brown to cream-brown.

Branchlets prominently angled, smooth and usually lacking tubercles, but occasionally weakly tuberculate, glabrous, non-resinous, leaf scars raised. Leaf bud and emerging leaves usually black, resinous. Leaves 70–100 × 25–35 mm, ovate, broadly elliptic, oblong–broadly elliptic to occasionally elliptic, glabrous, discolorous, alternate, coriaceous; secretory cavities obscure, minute, immersed in lamina; base cuneate; margins finely serrate distally, sometimes entire; apex acute to sometimes subacute; abaxial surface with midrib prominently raised. Flowers 17.0–18.5 mm in diam., 1–5 per axil, variable number on same branch; pedicels terete, 3–12 mm long, glabrous. Sepals 5, 1.3–3.0 × 0.7–1.0 mm, narrowly triangular, attenuate, glabrous, apex acute. Corolla bud pale white, open flower white, pink–brown or purple to lavender–purple spotted on lobes and in tube; lobes 4.5–6.5 × 4.0–4.5 mm, apex obtuse to rounded; tube 4.2–4.5 mm long, 3.5–5.5 mm across; outer surface of lobes and tube glabrous; inner surface of lobes and tube with succulent hairs, tube hairs ~ 0.15 mm long, lobe hairs up to 1.0 mm long. Stamens 4; filaments 5.0–5.5 mm long, glabrous, tapered toward apex, exerted, inserted ~ 1/3 from base of corolla tube; anthers 0.9–1.3 × 0.7–0.9 mm, creamy-white. Ovary 3.2–4.8 × 1.8–3.0 mm, green, glabrous, ovoid, 3–5-locular with one ovule per locule; style 2.8–4.0 mm long, white, with pilose patent hairs toward base. Fruit a drupe; exocarp white when immature, becoming purple when mature, drying brown; endocarp 5.0–9.0 × 4.0–5.5 mm, woody, hard, broadly elliptic, elliptic–oblong to ovoid, not compressed, prominently 3–5 angled, apex acute to apiculate, base obtuse; seed 2.8–3.0 × 0.9–1.1 mm, oblong, pale orange–yellow. Chromosome number $2n = 108$.

REPRESENTATIVE SPECIMENS: CHATHAM ISLANDS: PITT ISLAND: *M.A. Ritchie & I.M. Ritchie* s.n., 24 Aug. 1968, CHR 178635; Ellen Elizabeth Preece Conservation Covenant ('Caravan Bush'), *A. Baird & B.D. Rance* s.n., 1 Feb. 2008, AK 304812; Waipapaku Stream, *A. Baird & B.D. Rance* s.n., 5 Feb. 2008, AK 304813;

Waipaua Scenic Reserve, Waipaua Catchment, *A. Baird* & *B.D. Rance* s.n., 6 Feb. 2008, AK 304814; North Head Road, *P.J. de Lange* CH1497 & *P.B. Heenan*, 30 May 2008, CHR 602392; North Head Road, *P.J. de Lange* CH1487 & *P.B. Heenan*, 30 May 2008, CHR 602382; Caravan Bush, North Head Road, *P.B. Heenan*, *P.J. de Lange* CH1546, & *G. Houlston*, 30 May 2008, CHR 602440; North Head, *P.B. Heenan* & *P.J. de Lange* s.n., 15 Sep. 2007, CHR 594818; Hopua Hill, *P.J. de Lange* CH1502 & *P.B. Heenan*, 30 May 2008, CHR 602397. SOUTH EAST ISLAND: *B. Bell* s.n., Dec. 1961, CHR 158344; *G.A. Taylor* s.n., Nov. 1991, AK 228969; *S. Courtney* s.n., 8 Mar. 1986, CHR 436569; *P.B. Heenan* & *P.J. de Lange* s.n., 14 Feb. 2006, CHR 594713; Te Outa, *P.B. Heenan* & *P.J. de Lange* s.n., 14 Feb. 2006, CHR 505221. RABBIT ISLAND: *P.J. de Lange* CH666 & *P.B. Heenan*, 14 Feb. 2006, AK 296742/CHR 552883. HOKOPE ISLAND: *M.A. Ritchie* & *I.M. Ritchie* s.n., 8 Sep. 1968, CHR 178732. MANGERE ISLAND: *A. Baird* s.n., 8 Apr. 2008, CHR 595613.

DISTRIBUTION: *Myoporum semotum* is endemic to the Chatham Islands where it is known only from the smaller southern islands of Pitt, Rabbit, Mangere, Little Mangere and South East (Fig. 3). *Myoporum semotum* appears to be absent from Chatham Island (Fig. 3), but it is possible that it may occur on the southern part of the island on the steep, inaccessible and south-east-facing coastal cliffs between Point Gap and Cape Fournier. The distribution of *M. semotum* is consistent with the general distributional patterns of the oceanic island species of *Myoporum*, whereby a given species or subspecies is often confined to a particular island or geographically close group of islands (Chinnock 2007, p. 60).

HABITATS: *Myoporum semotum* grows in coastal forest and scrub where it is often the dominant canopy species. On Pitt Island, in the Ellen Elizabeth Preece Conservation Covenant ('Caravan Bush'), it is the main canopy species along with *Olearia traversiorum* and *Plagianthus regius* subsp. *chathamicus*, with the understorey

comprising *Coprosma chathamica*, *Corokia macrocarpa*, *Melicytus chathamicus* and *Pseudopanax chathamicus*. In the Waipaua Scenic Reserve, *M. semotum* is the dominant remnant tree species in partially cleared coastal forest where it occurs along with scattered individuals of *Dracophyllum arboreum*, *Hebe barkeri*, *Myrsine chathamica*, *Olearia traversiorum* and *Rhopalostylis sapida*. On the smaller Mangere, Little Mangere, Rabbit and South East islands, *M. semotum* is a local component of the mainly coastal *Olearia traversiorum* forest. In these habitats it is often a sparse canopy emergent in the more sheltered parts of the forest.

CONSERVATION STATUS: On South East and Mangere islands, *M. semotum* is well-protected as these islands are nature reserves, and smaller populations also occur on the privately owned Little Mangere and Rabbit islands; these islands are all rodent-free. Plants on Little Mangere Island are well protected by the extremely steep cliffs that form the margin of the island and on Rabbit Island *M. semotum* is naturally confined to a small area of low *Olearia traversiorum* forest that grows on the summit. Accurate counts of the numbers of plants are unavailable, although observations indicate that there are upwards of 1000 adult trees on South East Island, and on Mangere Island *M. semotum* is being actively replanted from local seed sources as part of the island's restoration. On Rabbit Island only a few shrubs were seen during a brief visit there in February 2006, while an unknown number exist on Little Mangere Island where *M. semotum* has been noted to be a scarce component of that island's forest cover (D Merton personal communication).

On Pitt Island, scattered trees of *M. semotum* are present in several conservation covenants, most notably the Ellen Elizabeth Preece Conservation Covenant and in the Waipaua Scenic Reserve. However, few trees are secure from livestock, and while some of the trees in the Waipaua Scenic Reserve and along the catchments of the Waipapaku (Second Water) and Waipaua streams are in good health, many have fallen over as a consequence of windthrow and/

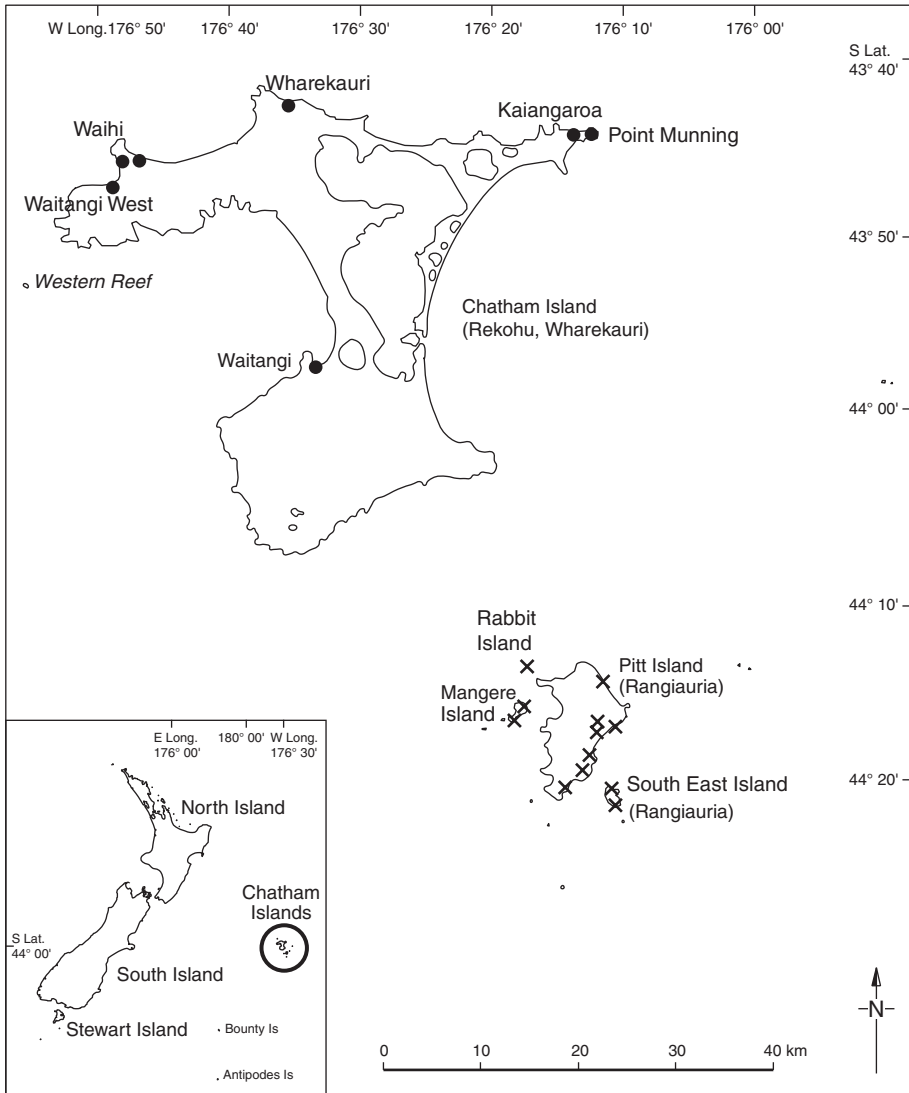


Figure 3 Distribution of *Myoporum laetum* (●) and *M. semotum* (×) on the Chatham Islands.

or stock damage. Much of their habitat on Pitt Island is highly modified and there is little, if any, recruitment. However, there are significant parts of the island that we have not seen, and it is likely that *M. semotum* occurs in at least some of these areas; most notably the large area of privately owned and fenced forest that extends west of Hakepa Hill toward the Tupangi catchment. As with the other islands, for Pitt Island we have no accurate figures for the number of

individuals of *M. semotum*, but our observations indicate that it is unlikely there are more than 500 mature trees. There are few sites with seedlings and saplings on Pitt Island, and to secure this species' long-term survival it is important to exclude stock from many of the forest remnants, and in particular Waipaua Scenic Reserve.

We consider that *M. semotum* qualifies for listing as Threatened/Nationally Vulnerable

C using the Threat Classification system of Townsend et al. (2008). This is because we estimate a wild population of >1000 but probably <5000 mature individuals; there are 10 subpopulations (two in nature reserves, the rest in scenic reserves, conservation covenants and on private land); and there is likely to be between 10 and 50% decline in the total population over the next 10 years. To this assessment we add the qualifiers 'DP' (Data Poor – because accurate information on numbers of wild plants is unavailable) and 'IE' (Island Endemic).

SPECIES EPITHET: The epithet *semotum* (distant, far removed) refers to this new Chatham Islands endemic species being geographically distant from *M. laetum* in New Zealand.

Status of *Myoporum laetum* on Chatham Island

On Chatham Island, *M. laetum* mostly occurs around the historic settlements of Waitangi, Waitangi West, Waihi, Kaiangaroa and Point Munning. These areas were settled by Ngati Mutuanga and Ngati Tama during their establishment on the islands in 1835 (King 1989, 2008), and subsequently they have been occupied by European settlers. *Myoporum laetum* is still being planted on Chatham Island and so the distinction between older 'historic' or possibly natural sites and more recently established cultivated or naturalized populations is being blurred. It should be noted that *M. laetum* may not be indigenous to Chatham Island, and accordingly it was listed by de Lange et al. (2008a) as naturalized there. *Myoporum laetum* is not known to occur on the islands that *M. semotum* occupies.

REPRESENTATIVE SPECIMENS: The following are vouchers for *M. laetum* s.n. from Chatham Island: *H.H. Travers* s.n., CHR 288408; Waitangi West, *P.B. Heenan & P.J. de Lange* CH1548, 28 May 2008, CHR 602355; Waitangi West, *P.B. Heenan & A. Baird* s.n., 6 Dec. 2008, CHR 595015; Waihi Creek, *D.R. Given 12878 & P.A. Williams*, 13 Feb. 1982, CHR 403203; Maunganui Beach, *G. Hamel* s.n., 31 Jan. 1976, CHR 301805;

Wharekauri homestead, *W.R. Sykes* 417/93, 1 Dec. 1993, CHR 496745; Te Whakaru Island, *D.R. Given 12837 & P.A. Williams*, 8 Feb. 1982, CHR 403162; Kaiwhata Homestead, *A. Baird* s.n., Aug 2007, CHR 595022; Waitangi, *D.R. Given 13032 & P.A. Williams*, 21 Feb. 1982, CHR 403390; Waitangi, *P.B. Heenan* s.n., 4 Dec. 2007, CHR 594954; Waitangi, *N.T. Moar 2250*, 7 Nov. 1959, CHR 97879.

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