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Conservation status of mosses in Aotearoa New Zealand, 2025

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Te Kāwanatanga o Aotearoa
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Cover: *Atrichopsis tenuirostris*, At Risk – Uncommon. *Photo: Marley Ford.*

New Zealand Threat Classification Series is a scientific monograph series presenting publications related to the New Zealand Threat Classification System (NZTCS). Most will be lists providing the NZTCS status of members of a group (e.g. algae, birds, spiders, fungi). There are currently 23 groups, each assessed once approximately every 5 years. From time to time the manual that defines the categories, criteria and process for the NZTCS will be reviewed. Publications in this series are considered part of the formal international scientific literature.

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Conservation status of mosses in Aotearoa New Zealand, 2025

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Abstract

The conservation status of all known indigenous moss taxa in Aotearoa New Zealand was assessed using the New Zealand Threat Classification System (NZTCS). A list of these taxa is presented, along with a statistical summary and brief notes on the most important changes since the previous assessment was made in 2014. This list replaces all previous NZTCS lists for mosses. In total, 560 moss taxa are assessed in this report. Of these, 36 taxa (6%) are assessed as being Threatened, 156 (28%) as At Risk, 285 (51%) as Not Threatened, 5 (1%) as Non-resident Native and 42 (8%) as Introduced and Naturalised. A further 36 taxa (6%) are assessed as Data Deficient (i.e. insufficient information was available to assess their conservation status). Of the 109 taxa that are assessed here and were previously assessed in 2014, one taxon has an improved status, and 18 have a worse status. An additional 454 taxa were added to the list and are assessed for the first time. Of the taxa assessed in this report, only one taxon has not been formally described and named.

Keywords: Andreaeopsida, Bryopsida, bryophytes, conservation status, non-vascular plants, mosses, Polytrichopsida, Sphagnopsida, Tetraphidopsida

1. Background

The New Zealand Threat Classification System (NZTCS) was established to complement the International Union for Conservation of Nature (IUCN) Red List system. Categories and criteria were defined to reflect Aotearoa New Zealand's unique environments and to consider the country's relatively small size and great diversity of ecosystems, as well as the large number of taxa with naturally restricted ranges and/or small population sizes (de Lange and Norton 1998; Molloy et al. 2002; Townsend et al. 2008; Rolfe et al. 2022). The conservation status of mosses in Aotearoa New Zealand was first assessed using the NZTCS in 2010 (Glenny et al. 2011) and was re-assessed in 2014 (Rolfe et al. 2016).

The NZTCS methodology was refined in 2019 following a rigorous review by teams of experts to ensure that all possible combinations of status and trend were covered within the different categories. The resulting manual (Rolfe et al. 2022) was used to re-assess the conservation status of mosses in 2024 (this report).

Minor changes to the categories, criteria and qualifiers from the previous assessment are as follows:

- The statuses At Risk – Naturally Uncommon and At Risk – Relict did not allow for taxa that had declined and then stabilised at a level greater than 10% of their former range. To address this, these statuses have been combined and renamed At Risk – Uncommon, with the population state value (Natural, Unnatural or Unknown) indicating whether the population size is a natural or induced state. For taxa with stable populations that occupy less than 10% of their former ranges, the status At Risk – Relict has been replaced by the qualifier Relict.
- The qualifier Climate Impact (CI) has been added to reflect new pressures from changing environments and to acknowledge taxa that are or will be adversely affected by long-term climate trends and/or extreme events. Adverse effects of climate change may be direct (e.g. extreme weather) or indirect (e.g. a change in predator pressure following masting events).
- The qualifier Conservation Research Needed (CR) has been added to indicate the need for research to better understand the cause of decline and/or a solution for recovery.
- The qualifier Data Poor (DP) has been replaced by the qualifiers Data Poor Recognition (DPR), Data Poor Size (DPS) and Data Poor Trend (DPT) to indicate whether the low confidence in the assessment is due to difficulty in determining the identity of the taxon in the field and/or laboratory, a lack of data on population size, or a lack of data on population trend.
- The qualifier Possibly Extinct (PE) has been added to indicate that a taxon has not been observed for more than 50 years and may be extinct but there has been insufficient search effort to formally declare it extinct.

A call for information was advertised through the New Zealand Plant Conservation Network, the John Child Bryophyte and Lichen Workshop network, botanical societies, DOC's 'Have your say' process, the NZTCS website and expert networks. One submission was received through this process.

When making their assessment, experts consider the previously published assessment as the starting point for the new assessment and evaluate any new information available, both published and unpublished. Taxa are assessed according to the reported population size and trend since the last assessment and predicted future changes over the next 10 years or three generations, whichever is longer. Generation time was not readily available for New Zealand mosses, and we used the default 10-year period.

Taxa are assigned to the category Data Deficient when insufficient data are available to assess their conservation status, or are given the qualifier Data Poor Size or Data Poor Trend when assessments are made but with low confidence due to limited data being available. No systematic monitoring of mosses exists in Aotearoa New Zealand, and trends could be inferred based on known habitat trends.

The list of mosses presented in this report follows the checklist of the New Zealand mosses (Gibb et al. 2022), updated with the latest taxonomic revision as per Biota of New Zealand. Distribution data for candidate moss species found in Aotearoa New Zealand were compiled from multiple sources, including herbarium datasets, the Department of Conservation's Tier 1 monitoring programme, private collections, species lists compiled during the John Child Bryophyte and Lichen Workshops and BioBlitzes, and expert knowledge. The area of occupancy (AREA) was derived from this data compilation, using the IUCN guidelines (IUCN Standards and Petitions Committee 2024). When AREA could not be estimated from the habitat extent derived from NZ Topo Map, a standardised grid approach was used and grid size was adjusted to species growth form and habitat type as recommended in Lughadha et al. (2019). We acknowledge that herbarium data present several limitations due to the qualitative nature of the collection process (presence data only) and sample bias (site accessibility and hot spot bias); however, when combined with other sources of information such as expert knowledge, they can provide a standardised approach to estimating population size (Verspagen and Erkens 2021). Habitat type and species growth form were sourced from the Flora of New Zealand (accessible online at www.nzflora.info) and from herbarium specimens.

We used the definition of mature individual based on species growth form and habitat type, as described in Bergamini et al. (2019):

GROWTH FORM/HABITAT	DEFINITION OF AN 'INDIVIDUAL'
Terricolous taxa that are growing on the ground of various substrates (e.g. sand, gravel, earth, or litter), or **Saxicolous taxa that are growing on cliffs or on other more or less flat surfaces**	1 m^2 in which the taxon occurs, whether as a single ramet or as a dense carpet of many ramets covering most of the surface.
Saxicolous or terricolous taxa on boulders	1 boulder on which the taxon is growing.
Epiphytic and epiphyllic taxa	1 tree or 1 shrub on which the taxon is growing.
Epixylic taxa	1 log on which the taxon in growing.

Assessment criteria and categories are interpreted in the context of scientific evidence (e.g. population monitoring) and expert understanding of the ecology of each taxon/order (e.g. natural population fluctuations). The NZTCS manual (Rolfe et al. 2022) requires that a precautionary approach is applied where a taxon is on the border of two possible threat categories, resulting in the most threatened category being chosen. Notes from the expert panel meeting and the rationales for the reclassification of taxa have been summarised in the present report. Full details can be found on the assessment page for each taxon on the NZTCS website (https://nztcs.org.nz/reports/1155).

2. Summary

This report presents the conservation status of all known indigenous moss taxa in Aotearoa New Zealand, as well as Vagrant, and Introduced and Naturalised species. It is the most comprehensive assessment of mosses and the latest update in a series of assessments (Glenny et al. 2011; Rolfe et al. 2016). In 2014, Rolfe et al. (2016) assessed the conservation status of 109 native moss taxa in Aotearoa New Zealand using the criteria specified in the NZTCS manual (Townsend et al. 2008). Here, we report on a new assessment of 560 taxa, 454 of which were assessed for the first time, using the revised NZTCS manual (Rolfe et al. 2022). This comprehensive list replaces all previous NZTCS lists for mosses.

2.1 Changes to the list of taxa

Four taxa that were assessed in Rolfe et al. (2016) are excluded from this assessment because they are either absent in Aotearoa New Zealand, a synonym of a species already listed, or of uncertain identity (Table 1). Sixteen species that were assessed in Rolfe et al. (2016) had a name change since the last assessment (Table 2).

Table 1. Moss taxa that were assessed by Rolfe et al. (2016) but not included in this assessment.

TAXON IN ROLFE ET AL. 2016	FAMILY	REASON FOR DELETION
Brachythecium subpilosum (Hook.f. & Wilson) A.Jaeger	Brachytheciaceae	Now considered absent from Aotearoa New Zealand
Dicranella temperata Allison	Dicranaceae	*Incertae sedis*
Didymodon calycinus Dixon	Pottiaceae	Synonym of *Ceratodon purpureus* (Hedw.) Brid.
Macromitrium angulatum Mitt.	Orthotrichaceae	Now considered absent from Aotearoa New Zealand

Table 2. Name changes affecting native moss taxa in Aotearoa New Zealand between the publication of Rolfe et al. (2016) and this report.

NAME AND AUTHORITY IN ROLFE ET AL. 2016	NAME AND AUTHORITY IN THIS REPORT	FAMILY
Brachythecium allisonii Fife	*Brachythecium campestre* (Müll.Hal.) Schimp.	Brachytheciaceae
Camptochaete aciphylla Dixon & Sainsbury	*Fifea aciphylla* (Dixon & Sainsbury) H.A.Crum	Lembophyllaceae
Campylopus acuminatus var. *kirkii* (Beckett) J.-P.Frahm	*Campylopus kirkii* Beckett	Dicranaceae
Dicranoweisia spenceri Dixon & Sainsbury	*Arctoa spenceri* (Dixon & Sainsbury) Fedosov, Brinda & M.Stech	Rhabdoweisiaceae
Didymodon (CHR 611390; "Ihu Pott")	*Tridontium novae-zelandiae* (J.E.Beever & Fife) J.A.Jiménez & M.J.Cano	Scouleriaceae
Fissidens oblongifolius var. *oblongifolius* Hook.f. & Wilson	*Fissidens oblongifolius* Hook.f. & Wilson	Fissidentaceae
Hymenostylium recurvirostrum (Hedw.) Dixon	*Ardeuma recurvirostrum* R.H.Zander & Hedd.	Pottiaceae
Hypnobartlettia fontana Ochyra[a]	*Cratoneuropsis relaxa* (Hook.f. & Wilson) M.Fleisch.	Amblystegiaceae
Macromitrium ramsayae Vitt	*Macromitrium longirostre* var. *ramsayae* (Vitt) Fife	Orthotrichaceae
Muelleriella angustifolia (Hook.f. & Wilson) Dusén	*Orthotrichum angustifolium* Hook.f. & Wilson	Orthotrichaceae
Muelleriella aucklandica Vitt	*Orthotrichum aucklandicum* (Vitt) Goffinet	Orthotrichaceae
Neckeropsis lepineana (Mont.) M.Fleisch.	*Neckeromnion lepineanum* (Mont.) S.Olsson, Enroth, Huttunen & D.Quandt	Neckeraceae
Orthotheciella varia (Hedw.) Ochyra	*Amblystegium varium* (Hedw.) Lindb.	Amblystegiaceae
Physcomitrella patens subsp. *readeri* (Müll.Hal.) B.C.Tan	*Physcomitridium readeri* (Müll.Hal.) G.Roth	Funariaceae
Seligeria diminuta (R.Br.bis) Dixon	*Blindiadelphus diminutus* (R.Br.bis) Fedosov & Ignatov	Seligeriaceae
Thamnobryum pumilum (Hook.f. & Wilson) B.C.Tan	*Austrothamnium pumilum* (Hook.f. & Wilson) Enroth	Neckeraceae

[a++] *Hypnobartlettia fontana* Ochyra was assessed in 2005 (Hitchmough et al. 2007) and was omitted in 2010 (Glenny et al. 2011) and 2014 (Rolfe et al. 2016).

2.2 Trends

In total, 36 taxa (6%) were assessed as being Threatened, 156 (28%) as At Risk, 285 (51%) as Not Threatened, 5 (1%) as Non-resident Native and 42 (8%) as Introduced and Naturalised (Table 3). A further 36 taxa (6%) were assessed as Data Deficient (i.e. insufficient information was available to assess their conservation status). Of the 560 taxa assessed in this report, only one taxon has not been formally described and named.

Since the last assessment in 2014 (Rolfe et al. 2016), one taxon has an improved status, and 18 have a worse status (Table 4). Of the 67 taxa that did not change status, 12 taxa remain in the category Threatened, namely the 8 taxa assessed as Threatened – Nationally Critical, 3 as Threatened – Nationally Endangered and 1 as Threatened – Nationally Vulnerable (Tables 4 and 5).

2.2.1 Moved out of Threatened – Nationally Critical

Tayloria tasmanica was moved from Threatened – Nationally Critical to Non-resident – Vagrant because it is known from a single collection from Stewart Island/Rakiura on a dune or levee. It has not been resighted since collection. Further surveys are required to confirm that this Tasmanian species has established in Aotearoa New Zealand.

2.2.2 Worsened status

The conservation status of 18 taxa has worsened since the last assessment (Tables 4 and 5). Only one taxon has changed status because of an actual decline in its population; the remaining 17 changes are based on a reinterpretation of existing data or more information being available for this re-assessment (Table 4). Two taxa were moved to Threatened – Nationally Critical, the most threatened status in the NZTCS.

Archidium elatum is an endemic species, considered one of the least known mosses in the New Zealand flora (Fife 2014a). It is currently known from three extant populations, two in Northland and one in the Chatham Islands. The population at the type locality in Ahipara is now believed to be extinct because of competition from weeds such as kikuyu grass (*Cenchrus clandestinus*), and reduction of its habitat by coastal erosion. Consistent searching by bryologists has failed to locate the species again at this site. However, during this moss assessment, a new population of *Archidium elatum* was discovered in damp soil in a mānuka (*Leptospermum hoipolloi* f. *hoipolloi*) fen bordering a dune lake (Marley Ford personal collection MF3236). This suggests that this species may have a broader habitat range than previously recognised. *Archidium elatum* was moved from Threatened – Nationally Endangered to Threatened – Nationally Critical and was assigned the qualifier Climate Impact. Further surveys are recommended to improve understanding of its distribution and conservation needs.

Cryptogonium phyllogonioides is known from only two small populations on Raoul Island that occupy an estimated area of less than 1 ha, thereby meeting the criteria for Threatened – Nationally Critical.

Of the 17 taxa that have worsened because of reinterpretation of data, two taxa were moved to the category Threatened – Nationally Endangered (the second most threatened status). *Fissidens integerrimus* was assessed in 2014 with an increasing population, thereby meeting the criteria for Threatened – Nationally Vulnerable. This aquatic species is known from seven sites in the North Island and from the Chatham Islands (Beever 2014). It has recently (Dec. 22, 2024) been found at a new population inland from Whangārei (MF3168), suggesting it could be more widespread (Figure 1). Confined to lowland streams, it is highly vulnerable to changes in water levels and quality, aquatic recreation activities such as canyoning, and competition from weeds (de Lange 2025a). We did not find evidence to support a population increase; with an estimated stable population, the species was assessed as Threatened – Nationally Endangered. More targeted surveys of this species are recommended.

Fissidens strictus was moved from At Risk – Uncommon to Threatened – Nationally Endangered. It is known from about three sites that occupy less than 10 ha. It is highly vulnerable to change in water levels and quality, pollution, deforestation and weed invasion. The reduction and possible loss of at least one population because of changes in the surrounding water catchment has been observed since the last assessment (de Lange 2025b). It is also reported to be rare in Australia (Beever 2014).

Figure 1. *Fissidens integerrimus* (Threatened – Nationally Endangered). *Credit: Marley Ford.*

2.2.3 Moved in and out of Data Deficient

Six taxa were moved out of Data Deficient, of which four were assessed as Threatened (Table 4). *Calymperes tahitense*, *Fissidens crispulus* var. *robinsonii* and *F. dietrichiae* are known from three or fewer specimens, collected on the Kermadec Islands and each of which was inferred to have a population of less than 1 ha or fewer than 250 mature plants. *Calymperes tahitense* is a poorly known species occurring in Aotearoa New Zealand at the limit of its range (Fife 2014b). These three taxa were assessed as Threatened – Nationally Critical.

Tridontium novae-zelandiae is known from four sites in Northland, Hawke's Bay and Wellington Regions. Extensive searches by experts on the family Pottiaceae have not resulted in any further records of this species, and its area of occupancy was inferred to be less than 10 ha, thereby meeting the criteria for Threatened – Nationally Endangered (Beever and Fife 2016).

Eight taxa were moved into Data Deficient, including four taxa that were previously assessed as Threatened – Nationally Critical (Table 5). *Physcomitridium readeri* is only known from three sites in the Auckland region. It is a poorly documented, ephemeral species with the latest collection dating from 2010. Fife (2019a) noted that distinguishing *Physcomitridium* from *Physcomitrella* without using genetic markers was nearly impossible; therefore, all published distribution records of *P. readeri* should be regarded with caution.

Physcomitrium pusillum is an ephemeral species known from four sites in the Auckland region. The site where it was last collected in 1983 was reported to be altered by the building of a boat launching ramp (Fife 2019a), and it remains uncertain whether the species still exists at this site.

Plagiopus oederianus is known from a single New Zealand collection on damp marble at c. 1200 m elevation on Mount Owen (Kahurangi National Park) in 1983. The collection was split into multiple specimens now held across three herbaria (AJ Fife, in sched., May 2010). The species was also reported on Mount Arthur (Barlett 1987) but the specimens on which these records are based are not present in any New Zealand herbaria. It is not endemic to Aotearoa New Zealand, and is present throughout the northern hemisphere. *Willia calobolax* has been historically confused with *Trichostomum imshaugii*, and both taxa are accepted species. *Willia calobolax* is known from only two collections in the Antipodes Island Group and its range has been poorly explored. *Plagiopus oederianus* and *W. calobolax* were assessed as Threatened – Nationally Critical in 2014, based on their small population size and area of occupancy (Rolfe et al. 2016). Both species were moved to Data Deficient in this assessment because the available information is insufficient to estimate size and distribution, and a survey is desperately needed to locate them again.

Bartramia alaris was first assessed in 2002 as Threatened – Nationally Critical with a population of fewer than 250 mature plants. It was moved in 2010 (Glenny et al. 2011) to Data Deficient,

being confined to one locality in Hawke's Bay Region. In 2025 (this report), *B. alaris* remains Data Deficient and is assigned the qualifier Possibly Extinct. This species has not been reported in Aotearoa New Zealand since its first collection in 1929 on bare or sparsely vegetated ground in pasture. Little is known of its ecology, and it is considered threatened overseas. It is known in Australia from one locality where it was collected in 1899.

Table 3. Comparison of the conservation status of moss taxa in Aotearoa New Zealand assessed in 2010 (Glenny et al. 2011), in 2014 (Rolfe et al. 2016) and 2025 (this report).

CONSERVATION STATUS	2010	2014	2025
Data Deficient	20	20	36
Threatened – Nationally Critical	12	14	16
Threatened – Nationally Endangered	2	4	9
Threatened – Nationally Vulnerable	3	2	11
At Risk – Declining	0	0	0
At Risk – Uncommon[a]	47	48	156
Not Threatened	2	11	285
Non-resident Native – Vagrant	7	7	4
Non-resident Native – Coloniser	0	0	1
Introduced and Naturalised	3	3	42
Total	**96**	**109**	**560**

[a] The status At Risk – Naturally Uncommon defined in Townsend et al. (2008) and used in 2010 and 2014 has been renamed At Risk – Uncommon following Rolfe et al. (2022).

Figure 2. *Scorpiurium cucullatum* (Data Deficient). *Credit: Marley Ford.*

Table 4. Summary of changes to the number of moss taxa assigned to each conservation status between 2014 (Rolfe et al. 2016) and 2025 (this report). A 'neutral' change is any movement into or out of Data Deficient.

TYPE OF CHANGE, REASON, CONSERVATION STATUS	NUMBER OF TAXA
BETTER	**1**
More Knowledge	1
Not Threatened	1
WORSE	**18**
Actual decline	1
Threatened – Nationally Critical	1
More knowledge	**3**
Threatened – Nationally Critical	1
Threatened – Nationally Vulnerable	1
At Risk – Uncommon	1
Reinterpretation of data	**14**
Threatened – Nationally Endangered	2
Threatened – Nationally Vulnerable	6
At Risk – Uncommon	6
NEUTRAL	**17**
Greater uncertainty	**8**
Data Deficient	8
More knowledge	**4**
Threatened – Nationally Critical	1
At Risk – Uncommon	1
Introduced and Naturalised	2
Reinterpretation of data	**5**
Threatened – Nationally Critical	2
Threatened – Nationally Endangered	1
Non-resident Native – Vagrant	1
Non-resident Native – Coloniser	1
NO CHANGE	**70**
More knowledge	**3**
Introduced and Naturalised	3
No change of status	**30**
Data Deficient	11
Threatened – Nationally Critical	8
Threatened – Nationally Endangered	3
Threatened – Nationally Vulnerable	1
Not Threatened	4
Non-Resident Native – Vagrant	3
Status name changed	**37**
At Risk – Uncommon	37
NEW LISTING	**454**
Data Deficient	17
Introduced and Naturalised	37
Threatened – Nationally Critical	3
Threatened – Nationally Endangered	3
Threatened – Nationally Vulnerable	3
At Risk – Uncommon	111
Not Threatened	280
TOTAL	**560**

Table 5. Summary of status changes of moss taxa between 2014 (rows; Rolfe et al. 2016) and 2025 (columns; this report). Numbers on the diagonal (shaded black) represent those taxa that have not changed status between 2014 and 2025, numbers to the right of the diagonal (shaded green) represent taxa with an improved status, numbers to the left of the diagonal (shaded pink) represent taxa with a poorer status (e.g. one taxon has moved from Threatened – Nationally Endangered in 2014 (Rolfe et al. 2016) to Threatened – Nationally Critical in 2025 (this assessment)), and numbers without shading represent taxa that either have moved into or out of Data Deficient, are Non-resident Native, have been newly added to this assessment, or have not been assessed in this report because they are now considered taxonomically indistinct (TI) from other taxa in this report or for any other reason (NA).

		CONSERVATION STATUS 2025										
		Total	DD	NC	NE	NV	Unc	NT	Vag	Col	IN	NA[a]
	Grand Total	**564**	36	16	9	11	156	285	4	1	42	4
CONSERVATION STATUS 2014	Data Deficient (DD)	**20**	11	3	1		1				1	3
	Threatened – Nationally Critical (NC)	**14**	4	8					1			1
	Threatened – Nationally Endangered (NE)	**4**		1	3							
	Threatened – Nationally Vulnerable (NV)	**2**			1	1						
	At Risk – Naturally Uncommon (Unc)[b]	**49**	1	1	1	7	37	1			1	
	Not Threatened (NT)	**11**					7	4				
	Non-resident Native – Vagrant (Vag)	**7**	3						3	1		
	Non-resident Native – Coloniser (Col)	**0**										
	Introduced and Naturalised (IN)	**3**									3	
	New listing	**454**	17	3	3	3	111	280			37	

[a] NA = not assessed.

[b] The status Range Restricted defined in Molloy et al. 2002 and used in 2005 was renamed At Risk – Uncommon in Townsend et al. (2008). One taxon, Cratoneuropsis relaxa (Hook.f. & Wilson) M.Fleisch. (synonym Hypnobartlettia fontana Ochyra) was assessed as Range Restricted in 2005 (Hitchmough et al. 2007), omitted in 2010 (Glenny et al. 2011) and 2014 (Rolfe et al. 2016), and is assessed as Not Threatened in this assessment.

The status At Risk – Naturally Uncommon defined in Townsend et al. (2008) and used in 2014 (Rolfe et al. 2016) has been renamed At Risk – Uncommon in this assessment following Rolfe et al. (2022).

2.3 Threats

Habitat Loss: The main known threat to mosses is loss and degradation of habitat (Horvat et al. 2017). Moss taxa, with the exception of those found on offshore islands and in high alpine habitats, would generally have experienced historical decline in Aotearoa New Zealand due to land use change. Species highly associated with native forests and wetlands would have been particularly impacted, as 75% of forested areas and 90% of wetlands have been lost in the past 150 years (Ewers et al. 2006; Michel et al. 2011; Dymond et al. 2021). Most populations of mosses are believed to have now stabilised, but the lack of systematic monitoring does not allow for certainties. It is also unclear how many of these taxa now occupy a relict range.

In this assessment, *Calymperes tenerum* remains assessed as having a declining trend because its habitat in the Chatham Islands is reported to continue to deteriorate. *Hampeella pallens* is also assessed as having a declining trend as part of its range is largely occupied by pine plantations, and its survival in these modified areas is uncertain (Fife 2019b).

Weeds: While several moss taxa, such as *Brachythecium* and *Hypnum* species, can thrive amongst exotic grass and herb species, tiny earth mosses are easily outcompeted (Furness and Grime 1982; Ingerpuu et al. 2005; Löbel et al. 2006). *Ditrichum brachycarpum*, *Physcomitrium pusillum* and *Blindiadelphus diminutus* are particularly vulnerable to weed invasion.

Change in water level and quality: Aquatic taxa, such as several *Fissidens* species (*F. berteroi*, *F. integerrimus* and *F. strictus*) are vulnerable to change in water quality and aeration resulting from floods, pollution or sedimentation (Ceschin et al. 2012; de Lange 2025a, b).

Climate change: In this report, three taxa, *Archidium elatum*, *Bryum creberrimum* and *Sphagnum compactum* are assigned the qualifier Climate Impact. The habitat of *Archidium elatum* has been reduced by increased coastal erosion. Increasing coastal erosion, sea surges and sea level rise are expected to impact on additional coastal taxa in the future, including several taxa that already have a small distribution, such as the Threatened – Nationally Critical *Lindbergia maritima*.

The habitats of *Bryum creberrimum* and *Sphagnum compactum* have already been observed drying over recent time. Drier habitats resulting from change in temperature and rainfall are expected to impact further taxa, particularly in alpine areas and ephemeral wetlands.

Increasing fire pressure has also recently been observed in parts of Aotearoa New Zealand. Fire kills mosses and alters the biotic and abiotic environment, favouring the establishment of colonist mosses such as *Bryum* and *Polytrichum* species (Michel et al. 2013).

3. Conservation status of all known moss taxa in Aotearoa New Zealand

Taxa were assessed according to the criteria of Rolfe et al. (2022) and have been grouped in Table 6 by conservation status and then alphabetically by scientific name. The Data Deficient list is inserted first, then categories are ordered by degree of extinction risk, with Threatened – Nationally Critical at the top of the list and Not Threatened at the bottom, above Non-resident Native and Introduced and Naturalised. Although the true status of Data Deficient taxa will span the entire range of available categories, many of the taxa in that list are there because they are very seldom seen and so are likely to eventually be considered threatened (Figure 2) – and some may already be extinct. The Data Deficient list is likely to include many of the most threatened species in Aotearoa New Zealand.

Brief descriptions of the NZTCS categories and criteria are provided in Appendix 1. See Rolfe et al. (2022) for full definitions of categories, criteria and qualifiers, as well as an explanation of the assessment process.

The full data for the assessments listed in Table 6 can be viewed and downloaded at https:// nztcs.org.nz/reports/1155.

Table 6. Conservation status of mosses in Aotearoa New Zealand.

Qualifiers are abbreviated as follows: CI = Climate Impact, CR = Conservation Research Needed, De = Designated, DPR = Data Poor Recognition, DPS = Data Poor Size, DPT = Data Poor Trend, EF = Extreme Fluctuations, IE = Island Endemic, OL = One Location, PE = Possibly Extinct, RR = Range Restricted, SO = Secure Overseas, SO? = Secure Overseas?, S?O = Secure? Overseas, Sp = Biologically Sparse, TO = Threatened Overseas, TO? = Threatened Overseas?, T?O = Threatened? Overseas.

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
DATA DEFICIENT (36)				
Taxonomically Determinate (35)				
Aloina bifrons (De Not.) Delgad.	Pottiaceae		SO, Sp	Neutral
Andreaea heinemannii Hampe & Müll.Hal.	Andreaeaceae			New listing
Ardeuma recurvirostrum R.H.Zander & Hedd.	Pottiaceae		OL, SO	No change
Bartramia alaris Dixon & Sainsbury	Bartramiaceae		OL, PE, TO	No change
Bryum funkii Schwägr.	Bryaceae		S?O	No change
Bryum tenuidens Dixon & Sainsbury	Bryaceae			No change
Conostomum pusillum var. *otagoensis* Fife	Bartramiaceae			New listing
Coscinodon calyptratus (Drumm.) Kindb.	Grimmiaceae			New listing
Cryphaea ovalifolia (Müll.Hal.) A.Jaeger	Cryphaeaceae			New listing
Ditrichum brachycarpum Hampe	Ditrichaceae		OL, TO	No change
Ditrichum rufoaureum (Hampe) J.H.Willis	Ditrichaceae		S?O	No change
Fissidens anisophyllus Dixon	Fissidentaceae		RR	No change
Fissidens perangustus Broth.	Fissidentaceae		S?O	No change
Fissidens taylorii var. *epiphytus* (Allison) I.G.Stone & J.E.Beever	Fissidentaceae			New listing
Goniomitrium acuminatum Hook. & Wilson	Funariaceae		OL, SO	Neutral
Hennediella arenae (Besch.) R.H.Zander var. *arenae*	Pottiaceae			New listing
Hollia myrmecoa Sieber ex Hoppe	Dicnemonaceae		S?O	New listing
Hyophila involuta (Hook.) A.Jaeger	Pottiaceae		SO	New listing
Macromitrium incurvifolium (Hook. & Grev.) Schwägr.	Orthotrichaceae			New listing
Meteoriopsis reclinata (Müll.Hal.) Broth.	Meteoriaceae			No change
Microbryum davallianum (Sm.) R.H.Zander	Pottiaceae		SO	New listing
Mniodendron comosum var. *sieberi* (Müll.Hal.) N.E.Bell, A.E.Newton & D.Quandt	Hypnodendraceae		S?O	New listing
Physcomitridium readeri (Müll.Hal.) G.Roth.	Funariaceae		DPR, EF	Neutral
Physcomitrium pusillum Hook.f. & Wilson	Funariaceae		EF, RR	Neutral
Plagiopus oederianus (Sw.) H.A.Crum & L.E.Anderson	Bartramiaceae		OL, S?O	Neutral
Pterygoneurum macleanum Warnst.	Pottiaceae			New listing
Rosulabryum microrhodon (Müll.Hal.) J.R.Spence	Bryaceae			New listing
Scorpiurium cucullatum (Mitt.) Hedenäs	Brachytheciaceae		SO	No change

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Sematophyllum fiordensis Fife	Sematophyllaceae		DPR	Neutral
Symphysodontella cylindracea (Mont.) M.Fleisch.	Pterobryaceae		DPR	New listing
Syntrichia ruralis (Hedw.) F.Weber & D.Mohr	Pottiaceae		DPR	New listing
Tortula splachnoides (Hornsch.) R.H.Zander	Pottiaceae			New listing
Trichostomum imshaugii (Vitt) R.H.Zander	Pottiaceae			New listing
Vesicularia inflectens (Brid.) Müll.Hal.	Hypnaceae		OL, SO	No change
Willia calobolax (Müll.Hal.) Lightowlers	Pottiaceae		DPR	Neutral
Taxonomically Unresolved (1)				
Tortula sp. “red costa” (CHR 576584: Whakamahi; ?Phascopsis rubicunda I.G.Stone)	Pottiaceae		SO	Neutral
THREATENED (36)				
NATIONALLY CRITICAL (16)				
Taxonomically Determinate (16)				
Andreaea alpina Hedw.	Andreaeaceae	NCu2a	DPS, DPT, S?O	New listing
Andreaea amblyophylla Müll.Hal. ex. Broth.	Andreaeaceae	NCu2a	DPS, DPT, S?O	New listing
Archidium elatum Dixon & Sainsbury	Archidiaceae	NCu3g	Sp, CI, TO	Worse
Blindiadelphus diminutus (R.Br.bis) Fedosov & Ignatov	Seligeriaceae	NCu3g	DPS, DPT, RR	No change
Calymperes tahitense (Sull.) Mitt.	Calymperaceae	NCn2g	DPS, OL, SO	Neutral
Cryptogonium phyllogonioides (Sull.) Isov.	Pterobryaceae	NCn2g	DPS, DPT, RR, SO	Worse
Cyclodictyon blumeanum (Müll.Hal.) Kuntze	Pilotrichaceae	NCn2g	OL, SO, St	No change
Epipterygium opararense Fife & A.J.Shaw	Mielichhoferiaceae	NCu2g	DPS, DPT	No change
Erpodium glaucum (Wilson) I.G.Stone	Erpodiaceae	NCu2g	SO	No change
Fissidens crispulus var. *robinsonii* (Broth.) Z.Iwats. & Z.H.Li	Fissidentaceae	NCn2a		Neutral
Fissidens dietrichiae Müll.Hal.	Fissidentaceae	NCn2a	DPS, DPT, OL, S?O	Neutral
Grimmia anodon Bruch & Schimp.	Grimmiaceae	NCu2a	DPR, DPS, DPT	New listing
Grimmia plagiopodia Hedw.	Grimmiaceae	NCu2g	DPS, DPT, OL, TO	No change
Hampeella pallens (Sande Lac.) M.Fleisch.	Ptychomniaceae	NCu3g	DPS, DPT, SO	No change
Lindbergia maritima Lewinsky	Leskeaceae	NCu5g	OL	No change
Timmia norvegica J.E.Zetterst.	Timmiaceae	NCu2g	DPS, DPT, SO	No change
NATIONALLY ENDANGERED (9)				
Taxonomically Determinate (9)				
Andreaea huttonii R.Br.bis	Andreaeaceae	NEu2b	DPR, DPS, DPT	New listing
Andreaea microvaginata Müll.Hal.	Andreaeaceae	NEu2b	DPS, DPT, S?O	New listing
Arctoa spenceri (Dixon & Sainsbury) Fedosov, Brinda & M.Stech	Rhabdoweisiaceae	NEu2o	DPR, DPS, DPT, De	No change

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Calymperes tenerum Müll.Hal.	Calymperaceae	NEu3h	RR, SO	No change
Conostomum curvirostrum (Mitt.) Mitt.	Bartramiaceae	NEu2b	Sp, DPS, DPT, SO	New listing
Fissidens integerrimus Mitt.	Fissidentaceae	NEu2h	DPS, DPT, RR, TO	Worse
Fissidens strictus Hook.f. & Wilson	Fissidentaceae	NEu2h	RR, TO	Worse
Tortula viridipila Dixon & Sainsbury	Pottiaceae	NEu2h		No change
Tridontium novae-zelandiae (J.E.Beever & Fife) J.A.Jiménez & M.J.Cano	Scouleriaceae	NEu2h	DPS, DPT	Neutral
NATIONALLY VULNERABLE (11)				
Taxonomically Determinate (11)				
Amblystegium varium (Hedw.) Lindb.	Amblystegiaceae	NVu2i	DPR, DPS, DPT, RR, SO	Worse
Bryum pallescens Schwägr.	Bryaceae	NVu2i	DPR, DPS, DPT, SO	Worse
Dicranella dietrichiae (Müll.Hal.) A.Jaeger	Dicranaceae	NVu2i	SO, Sp	Worse
Fissidens berteroi (Mont.) Müll.Hal.	Fissidentaceae	NVu2i	RR, TO	No change
Fissidens hyophilus Mitt.	Fissidentaceae	NVu2i	Sp, DPS, DPT, S?O	Worse
Fissidens rigidulus var. *pseudostrictus* J.E.Beever	Fissidentaceae	NVu2i	Sp, DPR, DPS, DPT, RR	Worse
Fissidens taylorii Müll.Hal. var. *taylorii*	Fissidentaceae	NVu2i	DPS, DPT, SO	New listing
Fissidens taylorii var. *sainsburyanus* J.E.Beever	Fissidentaceae	NVu2i	DPS, DPT	New listing
Grimmia wilsonii H.Greven	Grimmiaceae	NVu2i	DPR, DPS, DPT	New listing
Syrrhopodon armatus Mitt.	Calymperaceae	NVu2i	DPS, DPT, SO	Worse
Zygodon rufescens (Hampe) Broth.	Orthotrichaceae	NVu2i	Sp, DPR, DPS, DPT	Worse
AT RISK (156)				
UNCOMMON (156)				
Taxonomically Determinate (156)				
Amphidium lapponicum (Hedw.) Schimp.	Rhabdoweisiaceae	UNCu2j	Sp, DPR, DPS, DPT, RR, S?O	No change
Andreaea acuminata Mitt.	Andreaeaceae	UNCu2l	DPS, DPT, S?O	New listing
Andreaea australis F.Muell. ex Mitt.	Andreaeaceae	UNCu2l	DPS, DPT, S?O	New listing
Andreaea flabellata Müll.Hal.	Andreaeaceae	UNCu2k	DPS, DPT	New listing
Andreaea flexuosa R.Br.bis	Andreaeaceae	UNCu2l	DPR, DPS, DPT	New listing
Andreaea nitida Hook.f. & Wilson	Andreaeaceae	UNCu2l	DPS, DPT, S?O	New listing
Andreaea subulata Harv.	Andreaeaceae	UNCu2l	DPS, DPT, S?O	New listing
Anoectangium aestivum (Hedw.) Mitt.	Pottiaceae	UNCu2l	DPS, DPT, S?O	New listing
Atrichopsis tenuirostris (Hook.) N.E.Bell & Hyvönen	Polytrichaceae	UNCu2l	DPS, DPT	New listing
Austrothamnium pumilum (Hook.f. & Wilson) Enroth	Neckeraceae	UNCu2l	DPS, DPT, SO	Worse
Bartramia crassinervia Mitt.	Bartramiaceae	UNCn2j	Sp, DPS, DPT	No change

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Bartramia robusta Hook.f. & Wilson	Bartramiaceae	UNCu2I	DPS, DPT, SO	New listing
Beeveria distichophylloides (Broth. & Dixon) Fife	Daltoniaceae	UNCn2k	RR, Sp	No change
Blindia contecta (Hook.f. & Wilson) Müll.Hal.	Seligeriaceae	UNCn2j	DPS, DPT, RR	No change
Blindia immersa (E.B.Bartram & Dixon) Sainsbury	Seligeriaceae	UNCu2I	DPS, DPT	New listing
Blindia seppeltii J.K.Bartlett & Vitt	Seligeriaceae	UNCn2j	DPS, DPT, RR	No change
Brachythecium fontanum Fife	Brachytheciaceae	UNCu2I	DPS, DPT	New listing
Bryobeckettia bartlettii (Fife) Fife	Funariaceae	UNCu2k	DPS, DPT	New listing
Bryoerythrophyllum recurvirostrum (Hedw.) P.C.Chen	Pottiaceae	UNCu2I	DPS, DPT	New listing
Bryum algovicum var. *rutheanum* (Warnst.) Crundw.	Bryaceae	UNCu2k	DPS, DPT, SO	No change
Bryum amblyodon Müll.Hal.	Bryaceae	UNCu2j	DPR, DPS, DPT, SO	No change
Bryum coronatum Schwägr.	Bryaceae	UNCu2I	DPR, DPS, DPT, SO	New listing
Bryum crassum Hook.f. & Wilson	Bryaceae	UNCu2I	DPS, DPT, S?O	New listing
Bryum creberrimum Taylor	Bryaceae	UNCu2k	CI, DPS, DPT, S?O	New listing
Bryum harriottii R.Br.bis	Bryaceae	UNCu2I	DPS, DPT	New listing
Bryum mucronatum Mitt.	Bryaceae	UNCu2k	DPS, DPT	New listing
Bryum preissianum Hampe	Bryaceae	UNCu2k	DPS, DPT, S?O	New listing
Buxbaumia aphylla Hedw.	Buxbaumiaceae	UNCu2I	DPR, DPS, DPT	New listing
Buxbaumia novae-zelandiae Dixon	Buxbaumiaceae	UNCu2I	Sp, DPR, DPS, DPT	Worse
Calliergon richardsonii (Mitt.) Kindb. ex G.Roth	Amblystegiaceae	UNCu2k	DPR, DPS, DPT	New listing
Camptochaete arbuscula var. *tumida* Tangney	Lembophyllaceae	UNCu2I	DPR, DPS, DPT	New listing
Campyliadelphus stellatus (Hedw.) Kanda	Amblystegiaceae	UNCu2I	DPS, DPT	New listing
Campylopodium lineare (Mitt.) Dixon	Dicranaceae	UNCu2I	DPS, DPT	New listing
Campylopus kirkii Beckett	Dicranaceae	UNCu2I	DPS, DPT	Worse
Chionoloma tenuirostre (Hook. & Taylor) M.Alonso, M.J.Cano & J.A.Jiménez	Pottiaceae	UNCu2j	DPR, DPS, DPT	New listing
Cratoneuron filicinum (Hedw.) Spruce	Amblystegiaceae	UNCn2k	Sp, DPR, DPS, DPT, RR, SO	No change
Crosbya nervosa (Hook.f. & Wilson) Vitt	Daltoniaceae	UNCn2k	DPS, DPT, RR	No change
Cyptodon dilatatus (Hook.f. & Wilson) Paris & Schimp.	Cryphaeaceae	UNCu2I	DPS, DPT	New listing
Dicnemon dixonianum B.H.Allen	Dicnemonaceae	UNCu2I	DPS, DPT	New listing
Dicranella gracillima (Beckett) Paris	Dicranaceae	UNCu2k	DPS, DPT	New listing
Dicranum leioneuron Kindb.	Dicranaceae	UNCu2I	DPS, DPT	New listing
Distichophyllum crispulum var. *adnatum* (Hook.f. & Wilson) Dixon	Daltoniaceae	UNCu2I	DPS, DPT	New listing
Distichophyllum crispulum Hook.f. & Wilson var. *crispulum*	Daltoniaceae	UNCu2I	DPS, DPT, SO	New listing
Ditrichum brotherusii (R.Br.bis) Seppelt	Ditrichaceae	UNCu2I	DPS, DPT	New listing
Ditrichum buchananii (R.Br.bis) Broth.	Ditrichaceae	UNCu2I	DPS, DPT	New listing

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Ditrichum strictum (Hook.f. & Wilson) Hampe	Ditrichaceae	UNCu2I	DPS, DPT	New listing
Drepanocladus brachiatus (Mitt.) Dixon	Amblystegiaceae	UNCu2I	DPR, DPS, DPT, SO	New listing
Eccremidium pulchellum (Hook.f. & Wilson) Müll.Hal.	Ditrichaceae	UNCn2k	Sp, DPS, DPT, SO	No change
Ectropothecium sandwichense (Hook. & Arn.) Mitt.	Hypnaceae	UNCn2k	DPS, DPT, RR, SO	No change
Encalypta rhaptocarpa Schwägr.	Encalyptaceae	UNCu2k	DPS, DPT, RR, SO	No change
Encalypta vulgaris Hedw.	Encalyptaceae	UNCu2I	DPS, DPT, SO	New listing
Entosthodon apophysatus (Taylor) Mitt.	Funariaceae	UNCu2k	DPS, DPT, SO	New listing
Entosthodon jamesonii subsp. *productus* (Mitt.) Fife	Funariaceae	UNCu2k	DPS, DPT, SO	New listing
Entosthodon laxus (Hook.f. & Wilson) Mitt.	Funariaceae	UNCu2I	DPS, DPT	New listing
Entosthodon subnudus var. *gracilis* (Hook.f. & Wilson) Fife	Funariaceae	UNCu2k	DPS, DPT, SO	New listing
Fallaciella robusta Tangney & Fife	Lembophyllaceae	UNCn2k	DPS, DPT	No change
Fifea aciphylla (Dixon & Sainsbury) H.A.Crum	Lembophyllaceae	UNCu2I	DPS, DPT	Worse
Fissidens adianthoides Hedw.	Fissidentaceae	UNCu2I	DPS, DPT	New listing
Fissidens blechnoides J.E.Beever	Fissidentaceae	UNCu2I	DPS, DPT	New listing
Fissidens capitatus Hook.f. & Wilson	Fissidentaceae	UNCu2j	DPS, DPT	New listing
Fissidens curvatus var. *inclinabilis* (Dixon) J.E.Beever	Fissidentaceae	UNCu2j	DPS, DPT, S?O	New listing
Fissidens dealbatus Hook.f. & Wilson	Fissidentaceae	UNCu2t	DPS, DPT	New listing
Fissidens hylogenes Dixon	Fissidentaceae	UNCu2k	DPS, DPT	No change
Fissidens megalotis Schimp. ex Müll.Hal. subsp. *megalotis*	Fissidentaceae	UNCu2I	DPS, DPT, SO	New listing
Fissidens oblongifolius Hook.f. & Wilson	Fissidentaceae	UNCn2j	Sp, DPR, SO	No change
Fissidens waiensis J.E.Beever	Fissidentaceae	UNCu2I	DPS, DPT	New listing
Flexitrichum flexicaule (Schwägr.) Ignatov & Fedosov	Ditrichaceae	UNCu2k	DPR, DPS, DPT, S?O	New listing
Geheebia tophacea (Brid.) R.H.Zander	Pottiaceae	UNCu2I	DPS, DPT	New listing
Gigaspermum repens (Hook.) Lindb.	Gigaspermaceae	UNCn2k	DPS, DPT, RR, SO	No change
Grimmia australis (Dixon & Sainsbury) J.M.Muñoz & Ochyra	Grimmiaceae	UNCu2k	DPR, DPS, DPT	New listing
Grimmia incrassicapsulis B.G. Bell	Grimmiaceae	UNCu2j	DPS, DPT	New listing
Grimmia longirostris Hook.	Grimmiaceae	UNCn2k	DPS, DPT, SO	No change
Haplohymenium pseudotriste (Müll.Hal.) Broth.	Anomodontaceae	UNCu2I	DPS, DPT	New listing
Hedwigidium integrifolium (P.Beauv.) C.E.O.Jensen	Hedwigiaceae	UNCu2I	DPS, DPT, SO	New listing
Hennediella arenae var. *petriei* (Broth. ex Beckett) R.H.Zander	Pottiaceae	UNCu2j	DPR, DPS, DPT	New listing
Hennediella heimii (Hedw.) R.H.Zander	Pottiaceae	UNCu2j	DPS, DPT	New listing
Holodontium strictum (Hook.f. & Wilson) Ochyra	Dicranaceae	UNCn2i	Sp, DPS, DPT	No change
Hylocomium splendens (Hedw.) Schimp.	Hylocomiaceae	UNCu2k	DPS, DPT, SO	No change
Hyophila novae-seelandiae Dixon & Sainsbury	Pottiaceae	UNCu2j	DPS, DPT	New listing

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Hypnum cupressiforme var. *lacunosum* Brid.	Hypnaceae	UNCu2j	DPR, DPS, DPT, SO	New listing
Ischyrodon lepturus (Taylor) Schelpe	Fabroniaceae	UNCn2k	Sp, DPS, DPT, S?O	No change
Isopterygiopsis pulchella (Hedw.) Z.Iwats.	Hypnaceae	UNCu2l	DPR, DPS, DPT, SO	New listing
Isopterygium albescens (Hook.) A.Jaeger	Pylaisiadelphaceae	UNCu2k	DPS, DPT, SO	New listing
Leratia obtusifolia (Hook.) Goffinet	Orthotrichaceae	UNCu2k	DPR, DPS, DPT	New listing
Longiella distichacea (Mitt.) J.T.Wynns	Neckeraceae	UNCu2j	DPS, DPT	New listing
Macromitrium ligulifolium Broth.	Orthotrichaceae	UNCu2k	DPS, DPT, SO	New listing
Macromitrium longirostre var. *ramsayae* (Vitt) Fife	Orthotrichaceae	UNCu2k	IE	No change
Macromitrium orthophyllum Mitt.	Orthotrichaceae	UNCu2l	DPS, DPT	New listing
Microbryum starckeanum (Hedw.) R.H.Zander	Pottiaceae	UNCu2k	DPS, DPT, SO	New listing
Neckeromnion lepineanum (Mont.) S.Olsson, Enroth, Huttunen & D.Quandt	Neckeraceae	UNCn2h	DPS, DPT, OL, S?O	Neutral
Notoligotrichum bellii (Broth.) G.L.Sm.	Polytrichaceae	UNCu2k	DPS, DPT	No change
Orthothecium strictum Lorentz	Hypnaceae	UNCn2h	DPS, DPT, RR, SO	No change
Orthotrichum angustifolium Hook.f. & Wilson	Orthotrichaceae	UNCn2i	DPS, DPT, IE	No change
Orthotrichum assimile Müll.Hal.	Orthotrichaceae	UNCu2k	DPS, DPT, S?O	New listing
Orthotrichum aucklandicum (Vitt) Goffinet	Orthotrichaceae	UNCn2i	DPS, DPT, IE	No change
Orthotrichum crassifolium Hook.f. & Wilson subsp. *crassifolium*	Orthotrichaceae	UNCu2k	DPS, DPT	New listing
Orthotrichum cupulatum Brid.	Orthotrichaceae	UNCu2l	DPS, DPT, SO	New listing
Orthotrichum cyathiforme R.Br.bis	Orthotrichaceae	UNCu2l	DPS, DPT	New listing
Orthotrichum graphiomitrium Müll.Hal. ex Beckett	Orthotrichaceae	UNCu2l	DPS, DPT	New listing
Orthotrichum hortense Bosw.	Orthotrichaceae	UNCu2l	DPS, DPT, SO	New listing
Orthotrichum rupestre var. *papillosum* Lewinsky	Orthotrichaceae	UNCu2j	DPS, DPT, S?O	New listing
Orthotrichum rupestre Schwägr. var. *rupestre*	Orthotrichaceae	UNCu2k	DPS, DPT	New listing
Orthotrichum sainsburyi Allison	Orthotrichaceae	UNCu2l	DPS, DPT	New listing
Orthotrichum tasmanicum var. *parvithecum* (R.Br.bis) Lewinsky	Orthotrichaceae	UNCu2k	DPS, DPT	New listing
Palamocladium leskeoides (Hook.) E.Britton	Brachytheciaceae	UNCu2k	DPS, DPT, RR	New listing
Pendulothecium auriculatum (Hook.f. & Wilson) Enroth & S.He	Neckeraceae	UNCu2l	DPS, DPT	New listing
Plagiobryum novae-seelandiae Broth.	Bryaceae	UNCu2k	Sp, DPS, DPT	No change
Pleuridium arnoldii (R.Br.bis) Paris	Ditrichaceae	UNCu2k	DPS, DPT	New listing
Pleurophascum ovalifolium Fife & P.J.Dalton	Pleurophascaceae	UNCu2l	DPS, DPT	New listing
Pohlia australis A.J.Shaw & Fife	Mielichhoferiaceae	UNCu2j	DPS, DPT	No change
Pohlia elongata Hedw.	Mielichhoferiaceae	UNCu2k	DPS, DPT, S?O	New listing
Polytrichastrum longisetum Brid.	Polytrichaceae	UNCu2l	DPS, DPT, SO	New listing
Polytrichum formosum Hedw.	Polytrichaceae	UNCu2j	DPR, DPS, DPT, SO	New listing

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Pseudoleskea imbricata (Hook.f. & Wilson) Broth.	Leskeaceae	UNCu2l	DPS, DPT, SO	Worse
Ptychomnion densifolium (Brid.) A.Jaeger	Ptychomniaceae	UNCu2l	DPS, DPT	Worse
Pyrrhobryum paramattense (Müll.Hal.) Manuel	Rhizogoniaceae	UNCu2k	DPS, DPT, SO	No change
Racomitrium crumianum Fife	Grimmiaceae	UNCu2j	DPS, DPT	No change
Racomitrium curiosissimum Bedn.-Ochyra & Ochyra	Grimmiaceae	UNCu2l	DPS, DPT	Worse
Rosulabryum perlimbatum (Cardot) Ochyra	Bryaceae	UNCu2j	DPR, DPS, DPT	New listing
Saelania glaucescens (Hedw.) Bom. & Broth.	Ditrichaceae	UNCu2k	DPS, DPT	New listing
Schistidium rivulare (Brid.) Podp. var. *rivulare*	Grimmiaceae	UNCu2l	DPR, DPS, DPT	New listing
Schistidium rivulare var. *subflexifolium* (Müll.Hal.) Fife	Grimmiaceae	UNCu2j	DPR, DPS, DPT	New listing
Schlotheimia campbelliana Müll.Hal.	Orthotrichaceae	UNCu2j	DPR, DPS, DPT	New listing
Scorpidium cossonii (Schimp.) Hedenäs	Amblystegiaceae	UNCn2k	RR, SO, Sp	No change
Seligeria cardotii R.Br.bis	Seligeriaceae	UNCu2k	DPR, DPS, DPT, RR	New listing
Sematophyllum homomallum (Hampe) Broth.	Sematophyllaceae	UNCu2l	DPS, DPT, SO	New listing
Sematophyllum jolliffii (Mitt.) Dixon	Sematophyllaceae	UNCu2l	DPS, DPT, T?O	New listing
Sematophyllum kirkii (Müll.Hal. ex Beckett) Paris	Sematophyllaceae	UNCn2i	DPR, DPS, DPT, RR	No change
Sphagnum compactum DC.	Sphagnaceae	UNCu2j	Sp, CI, SO	No change
Sphagnum perichaetiale Hampe	Sphagnaceae	UNCu2k	RR, SO, Sp	No change
Sphagnum simplex Fife	Sphagnaceae	UNCu2j	DPS, DPT	New listing
Sphagnum squarrosum Crome	Sphagnaceae	UNCu2j	DPS, DPT, S?O	New listing
Straminergon stramineum (Brid.) Hedenäs	Amblystegiaceae	UNCu2k	DPR, DPS, DPT	New listing
Syntrichia abruptinervis (Dixon) R.H. Zander ex Ochyra, Saługa & Ronikier	Pottiaceae	UNCu2l	DPS, DPT	New listing
Syntrichia laevipila Brid.	Pottiaceae	UNCu2l	DPS, DPT, SO	New listing
Syntrichia rubra (Mitt.) R.H.Zander	Pottiaceae	UNCu2l	DPS, DPT, S?O	New listing
Tayloria callophylla (Müll.Hal.) Mitt.	Splachnaceae	UNCu2l	Sp, DPS, DPT, EF	New listing
Tayloria octoblephara (Hook.) Mitt.	Splachnaceae	UNCu2l	Sp, DPS, DPT, EF, SO	New listing
Tayloria purpurascens (Hook.f. & Wilson) Broth.	Splachnaceae	UNCu2l	Sp, DPS, DPT, EF	New listing
Tetrodontium brownianum (Dicks.) Schwägr.	Tetraphidaceae	UNCn2k	DPS, DPT, RR, S?O	No change
Thuidium cymbifolium (Dozy & Molk.) Dozy & Molk.	Thuidiaceae	UNCu2j	DPR, DPS, DPT, SO	No change
Tortella cirrhata Broth.	Pottiaceae	UNCn2k	RR, S?O	No change
Tortella fragilis (Hook. & Wilson) Limpr.	Pottiaceae	UNCu2j	DPS, DPT	New listing
Tortula areolata (C.Knight) Fife	Pottiaceae	UNCu2l	DPS, DPT	New listing
Trematodon flexipes Mitt. ex Hook.f. & Wilson	Dicranaceae	UNCu2l	DPS, DPT, SO	New listing
Trematodon mackayi (R.Br.bis) Broth.	Dicranaceae	UNCu2k	DPS, DPT, RR	No change
Trichostomum sciophilum Müll.Hal.	Pottiaceae	UNCu2l	DPR, DPS, DPT	New listing

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Tridontium cockaynei (R.Br.bis) J.E.Beever, Fife & Jiménez	Scouleriaceae	UNCu2l	DPS, DPT, SO	New listing
Tridontium milleneri J.E.Beever, Fife & J.A.Jiménez	Scouleriaceae	UNCu2k	DPS, DPT, SO	New listing
Triquetrella tasmanica (Broth.) Granzow	Pottiaceae	UNCu2j	DPR, DPS, DPT, SO	New listing
Ulota membranata Malta	Orthotrichaceae	UNCu2j	DPR, DPS, DPT	New listing
Ulota perichaetialis (Sainsbury) Goffinet	Orthotrichaceae	UNCu2k	DPS, DPT	New listing
Warburgiella leucocyta (Müll.Hal.) B.C.Tan, W.B.Schofield & H.P.Ramsay	Sematophyllaceae	UNCu2l	DPS, DPT, S?O	New listing
Weissia controversa var. *gymnostoma* Sainsbury	Pottiaceae	UNCu2k	DPR, DPS, DPT, SO	New listing
Wilsoniella blindioides (Broth.) Sainsbury	Ditrichaceae	UNCu2k	DPS, DPT	New listing
Zygodon gracillimus M.Fleisch.	Orthotrichaceae	UNCu2k	DPR, DPS, DPT	New listing
NOT THREATENED (285)				
Taxonomically Determinate (285)				
Acaulon integrifolium Müll.Hal.	Pottiaceae	NTu2m	DPS, DPT, SO	New listing
Achrophyllum dentatum (Hook.f. & Wilson) Vitt & Crosby	Daltoniaceae	NTu2m	SO	New listing
Achrophyllum quadrifarium (Sm.) Vitt & Crosby	Daltoniaceae	NTu2m		New listing
Acrocladium chlamydophyllum (Hook.f. & Wilson) Müll.Hal. & Broth.	Lembophyllaceae	NTu2m	SO	New listing
Alleniella hymenodonta (Müll.Hal.) S.Olsson, Enroth & D.Quandt	Neckeraceae	NTu2m	SO	New listing
Alleniella laevigata (Hook.f. & Wilson) Enroth	Neckeraceae	NTu2m	DPT	New listing
Amblystegium serpens (Hedw.) Schimp.	Amblystegiaceae	NTu2m	SO	New listing
Amphidium cyathicarpum (Mont.) Broth.	Rhabdoweisiaceae	NTu2m	DPS, DPT, S?O	New listing
Andreaea acutifolia Hook.f. & Wilson	Andreaeaceae	NTu2m	DPS, DPT, S?O	New listing
Andreaea mutabilis Hook.f. & Wilson	Andreaeaceae	NTn2m	DPT, SO	New listing
Atrichopsis crispula (Hook.f. & Wilson) N.E.Bell & Hyvönen	Polytrichaceae	NTu2m	DPS, DPT, SO	New listing
Atrichum androgynum (Müll.Hal.) A.Jaeger	Polytrichaceae	NTu2m	SO	New listing
Austrohondaella limata (Hook.f. & Wilson) Z.Iwats., H.P.Ramsay & Fife	Hypnaceae	NTu2m	DPS, DPT, SO	New listing
Austrothamnium pandum (Hook.f. & Wilson) Enroth	Neckeraceae	NTu2m	DPT, SO	New listing
Barbula calycina Schwägr.	Pottiaceae	NTu2m	DPT, SO	New listing
Bartramia mossmaniana Müll.Hal.	Bartramiaceae	NTu2f	DPT, SO	New listing
Bartramia papillata Hook.f. & Wilson	Bartramiaceae	NTu2m	DPT	New listing
Blindia lewinskyae J.K.Bartlett & Vitt	Seligeriaceae		DPS, DPT	No change
Blindia magellanica Schimp.	Seligeriaceae	NTu2m	DPS, DPT, SO	New listing
Blindia martinii Sainsbury	Seligeriaceae	NTu2m	DPS, DPT	New listing
Blindia robusta Hampe	Seligeriaceae	NTu2m	DPT, SO	New listing
Brachythecium paradoxum (Hook.f. & Wilson) A.Jaeger	Brachytheciaceae	NTu2m	DPT, SO	New listing

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Brachythecium plumosum (Hedw.) Schimp.	Brachytheciaceae	NTu2m	DPT, SO	New listing
Brachythecium rutabulum (Hedw.) Schimp.	Brachytheciaceae	NTu2m	SO	New listing
Brachythecium salebrosum (F.Weber & D.Mohr) Schimp.	Brachytheciaceae	NTu2m	SO	New listing
Braithwaitea sulcata (Hook.) A.Jaeger	Braithwaiteaceae	NTu2e	DPS, DPT, SO	New listing
Breutelia affinis (Hook.) Mitt.	Bartramiaceae	NTu2m	DPS, DPT, SO	New listing
Breutelia elongata (Hook.f. & Wilson) Mitt.	Bartramiaceae	NTu2m	SO	New listing
Breutelia pendula (Sm.) Mitt.	Bartramiaceae	NTu2m	SO	New listing
Bryoerythrophyllum dubium (Schwägr.) P.Sollman	Pottiaceae	NTu2m	DPS, DPT	New listing
Bryum appressifolium Broth.	Bryaceae	NTu2m	DPS, DPT	New listing
Bryum argenteum Hedw.	Bryaceae	NTu2m	SO	New listing
Bryum caespiticium Hedw.	Bryaceae	NTu2m	SO	New listing
Bryum clavatum (Schimp.) Müll.Hal.	Bryaceae	NTu2m	DPT, SO	New listing
Bryum dichotomum Hedw.	Bryaceae	NTu2m	DPT, SO	New listing
Bryum duriusculum Hook.f. & Wilson	Bryaceae	NTu2m	DPT, SO	New listing
Bryum laevigatum Hook.f. & Wilson	Bryaceae	NTu2m	DPT, SO	New listing
Bryum pseudotriquetrum (Hedw.) P.Gaertn., E. Meyer & Scherb	Bryaceae	NTu2m	DPR, DPT, SO	New listing
Bryum radiculosum Brid.	Bryaceae		DPR, De, SO	New listing
Bryum sauteri Bruch & Schimp.	Bryaceae	NTu2m	DPS, DPT, SO	New listing
Calomnion complanatum (Hook.f. & Wilson) Lindb.	Rhizogoniaceae	NTu2m		New listing
Calyptopogon mnioides (Schwägr.) Broth.	Pottiaceae	NTu2m	DPT, SO	New listing
Calyptrochaeta apiculata (Hook.f. & Wilson) Vitt	Daltoniaceae	NTu2m	DPS, DPT, SO	New listing
Calyptrochaeta brownii (Dixon) J.K.Bartlett	Daltoniaceae	NTu2m	DPS, DPT	New listing
Calyptrochaeta cristata (Hedw.) Desv.	Daltoniaceae	NTu2m	DPT	New listing
Calyptrochaeta flexicollis (Mitt.) Vitt	Daltoniaceae	NTu2m	DPS, DPT	New listing
Camptochaete angustata (Mitt.) Reichardt	Lembophyllaceae	NTu2m		New listing
Camptochaete arbuscula (Sm.) Reichardt var. *arbuscula*	Lembophyllaceae	NTu2m	SO	New listing
Camptochaete deflexa (Wilson) A.Jaeger	Lembophyllaceae	NTu2m	DPT, SO	New listing
Camptochaete pulvinata (Hook.f. & Wilson) A.Jaeger	Lembophyllaceae	NTu2m	DPT	New listing
Campyliadelphus polygamus (Schimp.) Kanda	Amblystegiaceae	NTu2m	DPS, DPT, S?O	New listing
Campylopodium capillaceum (Hook.f. & Wilson) Fife	Dicranaceae	NTu2m	DPS, DPT, SO	New listing
Campylopus bicolor (Müll.Hal.) Hook.f. & Wilson	Dicranaceae	NTu2m	DPR, DPS, DPT, SO	New listing
Campylopus clavatus (R.Br.) Hook.f. & Wilson	Dicranaceae	NTu2m	SO	New listing
Campylopus introflexus (Hedw.) Brid.	Dicranaceae	NTu2m	SO	New listing
Campylopus pallidus Hook.f. & Wilson	Dicranaceae	NTu2m	DPS, DPT, SO	New listing

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Campylopus purpureocaulis Dusén	Dicranaceae	NTu2m	DPS, DPT	New listing
Canalohypopterygium tamariscinum (Hedw.) Kruijer	Hypopterygiaceae	NTu2m	SO	New listing
Catagonium nitens (Brid.) Cardot	Catagoniaceae	NTu2m	DPT, SO	New listing
Catharomnion ciliatum (Hedw.) Hook.f. & Wilson	Hypopterygiaceae	NTu2m		New listing
Ceratodon purpureus (Hedw.) Brid.	Ditrichaceae	NTu2m	SO	New listing
Chrysoblastella chilensis (Mont.) Reimers	Ditrichaceae	NTu2m	Sp, DPS, DPT, SO	New listing
Cladomnion ericoides (Hook.) Hook.f. & Wilson	Ptychomniaceae	NTu2m		New listing
Conostomum pentastichum (Brid.) Lindb.	Bartramiaceae	NTu2m	SO	New listing
Conostomum pusillum Hook.f. & Wilson var. *pusillum*	Bartramiaceae	NTu2m	DPS, DPT, SO	New listing
Cratoneuropsis relaxa (Hook.f. & Wilson) M.Fleisch.	Amblystegiaceae	NTu2m	DPT, SO	Better
Crosbya straminea (Beckett) Vitt	Daltoniaceae	NTu2m	DPS, DPT	New listing
Cryphaea acuminata Hook.f. & Wilson	Cryphaeaceae	NTu2m	DPS, DPT	New listing
Cryphaea chlorophyllosa Müll.Hal.	Cryphaeaceae	NTu2m	DPS, DPT	New listing
Cryphaea parvula Mitt.	Cryphaeaceae	NTu2m	DPS, DPT	New listing
Cryphaea tenella (Schwägr.) Müll.Hal.	Cryphaeaceae	NTu2m	DPS, DPT, SO	New listing
Cryptopodium bartramioides (Hook.) Brid.	Rhizogoniaceae	NTu2m		New listing
Ctenidium pubescens (Hook.f. & Wilson) Broth.	Hypnaceae	NTu2m	DPS, DPT, SO	New listing
Cyathophorum bulbosum (Hedw.) Müll.Hal.	Hypopterygiaceae	NTu2m	SO	New listing
Cyrtopus setosus (Hedw.) Hook.f.	Cyrtopodaceae	NTu2m		New listing
Daltonia splachnoides (Sm.) Hook. & Taylor	Daltoniaceae	NTu2m	DPS, DPT, SO	New listing
Dawsonia superba Grev.	Polytrichaceae	NTu2m	SO	New listing
Dendrocryphaea tasmanica (Mitt.) Broth.	Cryphaeaceae	NTu2m	DPS, DPT, SO	New listing
Dendrohypopterygium filiculiforme (Hedw.) Kruijer	Hypopterygiaceae	NTu2m		New listing
Dendroligotrichum tongariroense (Colenso) Tangney	Polytrichaceae	NTu2m	DPS, DPT	New listing
Dichelodontium nitidum (Hook.f. & Wilson) Broth.	Ptychomniaceae	NTu2m	DPS, DPT	New listing
Dicnemon calycinum (Hook.) Schwägr.	Dicnemonaceae	NTu2m	DPT	New listing
Dicnemon semicryptum Müll.Hal.	Dicnemonaceae	NTu2m	DPS, DPT	New listing
Dicranella cardotii (R.Br.bis) Dixon	Dicranaceae	NTu2m	DPT	New listing
Dicranella schreberiana (Hedw.) Hilf. ex H.A.Crum & L.E.Anderson	Dicranaceae	NTu2m	DPS, DPT	New listing
Dicranella vaginata (Hook.) Cardot	Dicranaceae	NTu2m	DPS, DPT	New listing
Dicranoloma billardierei (Brid.) Paris	Dicranaceae	NTu2m	SO	New listing
Dicranoloma dicarpum (Nees) Paris	Dicranaceae	NTu2m	SO	New listing
Dicranoloma fasciatum (Hedw.) Paris	Dicranaceae	NTu2m	DPT	New listing
Dicranoloma menziesii (Taylor) Renauld	Dicranaceae	NTu2m	SO	New listing

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Dicranoloma obesifolium (R.Br.bis) Broth.	Dicranaceae	NTu2m	DPS, DPT	New listing
Dicranoloma platycaulon Dixon	Dicranaceae	NTu2m	DPT, SO	New listing
Dicranoloma plurisetum Dixon	Dicranaceae	NTu2m		New listing
Dicranoloma robustum (Hook.f. & Wilson) Paris	Dicranaceae	NTu2m	SO	New listing
Dicranoweisia antarctica (Müll.Hal.) Kindb.	Dicranaceae	NTu2m	DPT, SO	New listing
Distichium capillaceum (Hedw.) Bruch & Schimp.	Ditrichaceae	NTu2m	DPS, DPT, SO	New listing
Distichophyllum microcarpum (Hedw.) Mitt.	Daltoniaceae	NTu2m	SO	New listing
Distichophyllum pulchellum (Hampe) Mitt.	Daltoniaceae	NTu2m	SO	New listing
Distichophyllum rotundifolium (Hook.f. & Wilson) Müll.Hal. & Broth.	Daltoniaceae	NTu2m	DPT, SO	New listing
*Ditrichum brevirostr*um (R.Br.bis) Broth.	Ditrichaceae	NTu2m	DPS, DPT, SO	New listing
Ditrichum cylindricarpum (Müll.Hal.) F.Muell.	Ditrichaceae	NTu2m	DPS, SO	New listing
Ditrichum difficile (Duby) M.Fleisch.	Ditrichaceae	NTu2m	SO	New listing
Ditrichum punctulatum Mitt.	Ditrichaceae	NTu2m	DPT, SO	New listing
Drepanocladus aduncus (Hedw.) Warnst.	Amblystegiaceae	NTu2m	DPT, SO	New listing
Echinodiopsis hispida (Hook.f. & Wilson) S.Olsson, Enroth & D.Quandt	Neckeraceae	NTu2m	SO	New listing
Echinodiopsis umbrosa (Mitt.) S.Olsson, Enroth & D.Quandt	Neckeraceae	NTu2m	DPS, DPT	New listing
Entodon plicatus Müll.Hal.	Entodontaceae	NTu2m	DPS, DPT, SO	New listing
Entosthodon radians (Hedw.) Müll.Hal.	Funariaceae	NTu2m	DPT, SO	New listing
Ephemeropsis trentepohlioides (Renner) Sainsbury	Daltoniaceae	NTu2m	DPS, DPT	New listing
Eriodon cylindritheca (Dixon) Dixon & Sainsbury	Brachytheciaceae	NTu2m	DPS, DPT	New listing
Eurhynchium asperipes (Mitt.) Dixon	Brachytheciaceae	NTu1m	DPS, DPT, SO	New listing
Fabronia australis Hook.	Fabroniaceae	NTu2m	SO	New listing
Fallaciella gracilis (Hook.f. & Wilson) H.A.Crum	Lembophyllaceae	NTu2m	DPT, SO	New listing
Fissidens asplenioides Hedw.	Fissidentaceae	NTu2m	SO	New listing
Fissidens curvatus Hornsch. var. *curvatus*	Fissidentaceae	NTu2m	DPS, DPT, S?O	New listing
Fissidens leptocladus Müll.Hal. ex Rodway	Fissidentaceae	NTu2m	SO	New listing
Fissidens linearis Brid. var. *linearis*	Fissidentaceae	NTu2m	DPR, DPS, DPT, SO	New listing
Fissidens linearis var. *angustifolius* (Dixon) I.G.Stone	Fissidentaceae	NTu2m	DPR, DPS, DPT	New listing
Fissidens pallidus Hook.f. & Wilson	Fissidentaceae	NTu2m	SO	New listing
Fissidens rigidulus Hook.f. & Wilson var. *rigidulus*	Fissidentaceae	NTu2m	SO	New listing
Fissidens tenellus Hook.f. & Wilson var. *tenellus*	Fissidentaceae	NTu2m	DPS, DPT, SO	New listing
Fissidens tenellus var. *australiensis* (A.Jaeger) J.E.Beever & I.G.Stone	Fissidentaceae	NTu2m	DPS, DPT, SO	New listing
Funaria hygrometrica Hedw.	Funariaceae	NTu2m	SO	New listing
Geheebia ceratodontea (Müll.Hal.) J.E.Beever	Pottiaceae	NTu2m	DPS, DPT	New listing

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Gertrudiella torquata (Taylor) J.A.Jiménez & M.J.Cano	Pottiaceae	NTu2m	DPT, SO	New listing
Glyphothecium sciuroides (Hook.) Hampe	Ptychomniaceae	NTu2m	SO	New listing
Goniobryum subbasilare (Hook.) Lindb.	Rhizogoniaceae	NTu2m	DPS, DPT, SO	New listing
Grimmia laevigata (Brid.) Brid.	Grimmiaceae	NTu2m	DPS, DPT, SO	New listing
Grimmia pulvinata var. *africana* (Hedw.) Hook.f. & Wilson	Grimmiaceae	NTu2m	DPS, DPT, SO	New listing
Grimmia reflexidens Müll.Hal.	Grimmiaceae	NTu2m	DPS, DPT	New listing
Grimmia trichophylla Grev.	Grimmiaceae	NTu2m	DPT, SO	New listing
Gymnostomum calcareum Nees & Hornsch.	Pottiaceae	NTu2m	SO	New listing
Hampeella alaris (Dixon & Sainsbury) Sainsbury	Ptychomniaceae	NTu2m	DPT, SO	New listing
Hedwigia ciliata (Hedw.) P.Beauv.	Hedwigiaceae	NTu2m	DPT, SO	New listing
Hennediella macrophylla (R.Br.bis) Paris	Pottiaceae	NTu2m	DPR, DPT	New listing
Holomitrium perichaetiale (Hook.) Brid.	Dicranaceae	NTu2m	DPT, SO	New listing
Holomitrium trichopodum (Mitt.) Klazenga	Dicranaceae	NTu2m	DPT, SO	New listing
Hymenodon pilifer Hook.f. & Wilson	Orthodontiaceae	NTu2m	SO	New listing
Hypnodendron arcuatum (Hedw.) Mitt.	Hypnodendraceae	NTu2m		New listing
Hypnodendron marginatum (Hook.f. & Wilson) Limb.	Hypnodendraceae	NTu2m	DPS, DPT	New listing
Hypnodendron spininervium (Müll.Hal.) A.Jaeger & Sauerb. subsp. *spininervium*	Hypnodendraceae	NTu2m		New listing
Hypnum chrysogaster Müll.Hal.	Hypnaceae	NTu2m	SO	New listing
Hypnum cupressiforme Hedw. var. *cupressiforme*	Hypnaceae	NTu2m	SO	New listing
Hypnum cupressiforme var. *filiforme* Brid.	Hypnaceae	NTu2m	DPT, SO	New listing
Hypopterygium didictyon Müll.Hal.	Hypopterygiaceae	NTu2m	SO	New listing
Hypopterygium tamarisci (Sw.) Brid. ex Müll.Hal.	Hypopterygiaceae	NTu2m	SO	New listing
Kiaeria pumila (Mitt.) Ochyra	Dicranaceae	NTu2m	DPS, DPT	New listing
Lembophyllum clandestinum (Hook.f. & Wilson) Lindb.	Lembophyllaceae	NTu2m	DPT, SO	New listing
Lembophyllum divulsum (Hook.f. & Wilson) Lindb.	Lembophyllaceae	NTu2m	DPT, SO	New listing
Leptodictyum riparium (Hedw.) Warnst.	Amblystegiaceae	NTu2m	DPT, SO	New listing
Leptodon smithii (Hedw.) F.Weber & D.Mohr	Leptodontaceae	NTu2m	DPT, SO	New listing
Leptodontium interruptum (Mitt.) Broth.	Pottiaceae	NTu2m	DPT	New listing
Leptostomum inclinans R.Br.	Leptostomataceae	NTu2m	SO	New listing
Leptostomum macrocarpon (Hedw.) Bach.Pyl.	Leptostomataceae	NTu1m	SO	New listing
Leptotheca gaudichaudii Schwägr.	Orthodontiaceae	NTu2m	DPT, SO	New listing
Lepyrodon australis Hampe ex Broth.	Lepyrodontaceae	NTu2m	DPT	New listing
Lepyrodon lagurus (Hook.) Mitt.	Lepyrodontaceae	NTu2m	DPT	New listing
Leucobryum javense (Brid.) Mitt.	Leucobryaceae	NTu2m		New listing

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Lopidium concinnum (Hook.) Hook.f. & Wilson	Hypopterygiaceae	NTu2m	SO	New listing
Macrocoma tenue (Hook. & Grev.) Vitt subsp. *tenue*	Orthotrichaceae	NTu2m	DPT, SO	New listing
Macromitrium brevicaule (Besch.) Broth.	Orthotrichaceae	NTn2e	RR, SO	No change
Macromitrium gracile (Hook.) Schwägr.	Orthotrichaceae	NTu2m		New listing
Macromitrium grossirete Müll.Hal.	Orthotrichaceae	NTu2m	DPS, DPT	New listing
Macromitrium helmsii Paris	Orthotrichaceae	NTu2m	DPT	New listing
Macromitrium ligulare Mitt.	Orthotrichaceae	NTu2m	DPT, SO	New listing
Macromitrium longipes (Hook.) Schwägr.	Orthotrichaceae	NTu2m		New listing
Macromitrium longirostre (Hook.) Schwägr. var. *longirostre*	Orthotrichaceae	NTu2m	DPS, DPT, SO	New listing
Macromitrium microstomum (Hook. & Grev.) Schwägr.	Orthotrichaceae	NTu2m	DPT	New listing
Macromitrium prorepens (Hook.) Schwägr.	Orthotrichaceae	NTu2m	DPT	New listing
Macromitrium retusum Hook.f. & Wilson	Orthotrichaceae	NTu2m	DPR, DPS, DPT	New listing
Meesia uliginosa Hedw.	Meesiaceae	NTu2m	DPS, DPT, S?O	New listing
Mesotus celatus Mitt.	Dicranaceae	NTu2m		New listing
Mielichhoferia bryoides (Harv.) Wijk & Margad.	Mielichhoferiaceae	NTu2m	DPS, DPT	New listing
Mittenia plumula (Mitt.) Lindb.	Mitteniaceae	NTu2m	DPS, DPT	New listing
Mniodendron colensoi (Hook.f. & Wilson) Besch.	Hypnodendraceae	NTu2m		New listing
Mniodendron comatum (Müll.Hal.) Lindb.	Hypnodendraceae	NTu2m		New listing
Mniodendron comosum (Labill.) Lindb. var. *comosum*	Hypnodendraceae	NTu2m	DPS, DPT, SO	New listing
Notoligotrichum australe (Hook.f. & Wilson) G.L.Sm.	Polytrichaceae	NTu2m	DPT, SO	New listing
Ochiobryum blandum (Hook.f. & Wilson) J.R.Spence & H.P.Ramsay	Mielichhoferiaceae	NTu2m	DPT, SO	New listing
Orthodontium lineare Schwägr.	Orthodontiaceae	NTu2m	SO	New listing
Orthorrhynchium elegans (Hook.f. & Wilson) Reichardt	Orthorrhynchiaceae	NTu2m	SO	New listing
Orthotrichum calvum Hook.f. & Wilson	Orthotrichaceae	NTu2m	DPT	New listing
Orthotrichum tasmanicum Hook.f. & Wilson var. *tasmanicum*	Orthotrichaceae	NTu2m	DPS, DPT, SO	New listing
Papillaria crocea (Hampe) A.Jaeger	Meteoriaceae	NTu2m	DPT, SO	New listing
Papillaria flavolimbata (Müll.Hal. & Hampe) A.Jaeger	Meteoriaceae	NTu2m	DPT, SO	New listing
Papillaria flexicaulis (Wilson) A.Jaeger	Meteoriaceae	NTu2m	DPT, SO	New listing
Papillaria leuconeura (Müll.Hal.) A.Jaeger	Meteoriaceae	NTu2m	DPS, DPT, SO	New listing
Papillaria nitens (Hook.f. & Wilson) Sainsbury	Meteoriaceae	NTu2m	DPS, DPT, SO	New listing
Pendulothecium oblongifolium (Hook.f. & Wilson) Enroth & S.He	Neckeraceae	NTn2e	DPS, DPT	No change
Pendulothecium punctatum (Hook.f. & Wilson) Enroth & S.He	Neckeraceae	NTu2m		New listing
Philonotis pyriformis (R.Br.bis) Wijk & Margad.	Bartramiaceae	NTu2m	DPT	New listing
Philonotis scabrifolia (Hook.f. & Wilson) Braithw.	Bartramiaceae	NTu2m	SO	New listing

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Philonotis tenuis (Taylor) Reichardt	Bartramiaceae	NTu2m	SO	New listing
Plagiomnium novae-zealandiae (Colenso) T.J.Kop.	Mniaceae	NTu2m	SO	New listing
Plagiothecium novae-seelandiae Broth.	Plagiotheciaceae	NTu2m	DPS, DPT, SO	New listing
Platyhypnidium austrinum (Hook.f. & Wilson) M.Fleisch	Brachytheciaceae	NTu2m	SO	New listing
Pleuridium nervosum (Hook.) Mitt.	Ditrichaceae	NTu2m	DPR, DPS, DPT, SO	New listing
Pleuridium subulatum (Hedw.) Rabenh.	Ditrichaceae	NTu2m	DPR, DPS, DPT	New listing
Pogonatum subulatum (Brid.) Brid.	Polytrichaceae	NTu2m	SO	New listing
Pohlia cruda (Hedw.) Lindb.	Mielichhoferiaceae	NTu2m	DPT, SO	New listing
Pohlia nutans (Hedw.) Lindb.	Mielichhoferiaceae	NTu2m	DPT, SO	New listing
Pohlia ochii Vitt	Mielichhoferiaceae	NTu2m	DPS, DPT	New listing
Pohlia tenuifolia (A.Jaeger) Broth.	Mielichhoferiaceae	NTu2m	DPS, DPT	New listing
Pohlia wahlenbergii (F.Weber & D.Mohr) A.L.Andrews	Mielichhoferiaceae	NTu2m	DPT, SO	New listing
Polytrichadelphus magellanicus (Hedw.) Mitt.	Polytrichaceae	NTu2m	SO	New listing
Polytrichastrum alpinum (Hedw.) G.L.Sm.	Polytrichaceae	NTu2m	DPS, DPT, S?O	New listing
Polytrichum commune Hedw.	Polytrichaceae	NTu2m	DPR, DPT, SO	New listing
Polytrichum juniperinum Hedw.	Polytrichaceae	NTu2m	SO	New listing
Pseudocrossidium crinitum (Schultz) R.H.Zander	Pottiaceae	NTu2m	DPT, SO	New listing
Pseudotaxiphyllum falcifolium (Hook.f. & Wilson) S.He	Hypnaceae	NTu2m		New listing
Ptychomitrium australe (Hampe) A.Jaeger	Ptychomitriaceae	NTu2m	DPS, SO	New listing
Ptychomnion aciculare (Brid.) Mitt.	Ptychomniaceae	NTu2m	SO	New listing
Pulchrinodus inflatus (Hook.f. & Wilson) B.H.Allen	Pulchrinodaceae	NTu2m	DPS, S?O	New listing
Pyrrhobryum bifarium (Hook.) Manuel	Rhizogoniaceae	NTu2m	SO	New listing
Pyrrhobryum mnioides subsp. *contortum* (Hook.f. & Wilson) Fife	Rhizogoniaceae	NTu2m	SO	New listing
Racomitrium crispulum (Hook.f. & Wilson) Hook.f. & Wilson	Grimmiaceae	NTu2m	SO	New listing
Racomitrium didymum (Mont.) Lorentz	Grimmiaceae	NTu2m	DPT, SO	New listing
Racomitrium lanuginosum (Hedw.) Brid.	Grimmiaceae	NTu2m	DPR, DPS, DPT, S?O	New listing
Racomitrium pruinosum (Hook.f. & Wilson) Müll.Hal.	Grimmiaceae	NTu2m	SO	New listing
Racomitrium striatipilum Cardot	Grimmiaceae	NTu2m	DPS, DPT	New listing
Racopilum cuspidigerum var. *convolutaceum* (Müll.Hal.) Zanten & Dijkstra	Racopilaceae	NTu2m	SO	New listing
Racopilum robustum Hook.f. & Wilson	Racopilaceae	NTu2m	DPT	New listing
Racopilum strumiferum (Müll.Hal.) Mitt.	Racopilaceae	NTu2m	DPT	New listing
Racomitrium ptychophyllum (Mitt.) Mitt.	Grimmiaceae	NTu2m	DPS, DPT	New listing
Rhacocarpus purpurascens (Brid.) Paris	Rhacocarpaceae	NTu2m	SO	New listing
Rhaphidorrhynchium amoenum (Hedw.) M.Fleisch.	Sematophyllaceae	NTu2m	SO	New listing

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Rhizogonium distichum (Sw.) Brid.	Rhizogoniaceae	NTu2m	SO	New listing
Rhizogonium novae-hollandiae (Brid.) Brid.	Rhizogoniaceae	NTu2m	DPT, SO	New listing
Rhizogonium pennatum Hook.f. & Wilson	Rhizogoniaceae	NTu2m	DPS, DPT, S?O	New listing
Rhynchostegium laxatum (Mitt.) Paris	Brachytheciaceae	NTu2m	DPT, SO	New listing
Rhynchostegium muriculatum (Hook.f. & Wilson) Reichardt	Brachytheciaceae	NTu2m	DPT, SO	New listing
Rhynchostegium tenuifolium (Hedw.) Reichardt	Brachytheciaceae	NTu2m	DPT, SO	New listing
Rosulabryum billardierei (Schwägr.) J.R.Spence	Bryaceae	NTu2m	DPT, SO	New listing
Rosulabryum campylothecium (Taylor) J.R.Spence	Bryaceae	NTu2m	DPT, SO	New listing
Rosulabryum capillare (Hedw.) J.R.Spence	Bryaceae	NTu2m	DPT, SO	New listing
Rosulabryum subtomentosum (Hampe) J.R.Spence	Bryaceae	NTu2m	DPT, SO	New listing
Sanionia uncinata (Hedw.) Loeske	Amblystegiaceae	NTu2m	DPT, SO	New listing
Sauloma tenella (Hook.f. & Wilson) Mitt.	Saulomataceae	NTu2m	DPT, SO	New listing
Schistidium apocarpum (Hedw.) Bruch & Schimp.	Grimmiaceae	NTu2m	DPT, SO	New listing
Schlotheimia knightii Müll.Hal.	Orthotrichaceae	NTu2m	DPT	New listing
Sciadocladus kerrii (Mitt.) Broth.	Pterobryellaceae	NTu2m	DPT	New listing
Sciadocladus menziesii (Hook.) Broth.	Pterobryellaceae	NTu2m		New listing
Sclerodontium pallidum (Hook.) Schwägr. subsp. *pallidum*	Dicranaceae	NTu2m	DPS, DPT, SO	New listing
Sematophyllum subhumile var. *contiguum* (Mitt.) B.C.Tan, W.B.Schofield & H.P.Ramsay	Sematophyllaceae	NTu2m	DPT, SO	New listing
Sematophyllum uncinatum I.G.Stone & G.A.M.Scott	Sematophyllaceae	NTu2m	DPT, SO	New listing
Sphagnum australe Mitt.	Sphagnaceae	NTu2m	DPT, SO	New listing
Sphagnum cristatum Hampe	Sphagnaceae	NTu2m	DPT, SO	New listing
Sphagnum falcatulum Besch.	Sphagnaceae	NTu2m	DPT, SO	New listing
Sphagnum novo-zelandicum Mitt.	Sphagnaceae	NTu2m	DPS, DPT, SO	New listing
Syntrichia anderssonii (Ångstr.) R.H.Zander	Pottiaceae	NTu2m	DPS, DPT, SO	New listing
Syntrichia antarctica (Hampe) R.H.Zander	Pottiaceae	NTu2m	DPS, DPT, SO	New listing
Syntrichia papillosa (Wilson ex Spruce) Jur.	Pottiaceae	NTu2m	DPT, SO	New listing
Syntrichia phaea (Hook.f. & Wilson) R.H.Zander	Pottiaceae	NTu2m	DPS, DPT	New listing
Syntrichia serrata (Dixon) R.H.Zander	Pottiaceae	NTu2m	DPS, DPT	New listing
Tetracoscinodon irroratus (Mitt.) R.H.Zander	Pottiaceae	NTu2m	DPS, DPT	New listing
Tetraphidopsis pusilla (Hook.f. & Wilson) Dixon	Ptychomniaceae	NTu2m	DPT	New listing
Thuidiopsis furfurosa (Hook.f. & Wilson) M.Fleisch.	Thuidiaceae	NTu2m	SO	New listing
Thuidiopsis sparsa (Hook.f. & Wilson) Broth.	Thuidiaceae	NTu2m	SO	New listing
Thuidium laeviusculum (Mitt.) A.Jaeger	Thuidiaceae	NTu2m	SO	New listing

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Tortella flavovirens (Bruch) Broth.	Pottiaceae	NTu2m	DPS, DPT, S?O	New listing
Tortella knightii (Mitt.) Broth.	Pottiaceae	NTu2m	DPT, SO	New listing
Tortula atrovirens (Sm.) Lindb.	Pottiaceae	NTu2m	DPS, DPT, SO	New listing
Tortula muralis Hedw.	Pottiaceae	NTu2m	SO	New listing
Trachyloma diversinerve Hampe	Trachylomataceae	NTu2m	SO	New listing
Trachyloma planifolium (Hedw.) Brid.	Trachylomataceae	NTu2m	SO	New listing
Trematodon suberectus Mitt.	Dicranaceae	NTu2m	DPT	New listing
Trichostomopsis australasiae (Hook. & Grev.) H.Rob.	Pottiaceae	NTu2m	SO	New listing
Trichostomum brachydontium Bruch	Pottiaceae	NTu2m	DPT, SO	New listing
Tridontium tasmanicum Hook.f.	Scouleriaceae	NTu2m	DPT, SO	New listing
Triquetrella papillata (Hook.f. & Wilson) Broth.	Pottiaceae	NTu2m	SO	New listing
Ulota lutea (Mitt. in Wilson) Mitt.	Orthotrichaceae	NTu2m	DPT, SO	New listing
Ulota viridis Venturi	Orthotrichaceae	NTu2m	DPS, DPT, SO	New listing
Warnstorfia fluitans (Hedw.) Loeske	Amblystegiaceae	NTn2m	S?O	No change
Warnstorfia sarmentosa (Wahlenb.) Hedenäs	Amblystegiaceae	NTu2m	DPS, DPT, SO	New listing
Weissia austrocrispa (Beckett) I.G.Stone	Pottiaceae	NTu2m	DPS, DPT	New listing
Weissia controversa Hedw. var. *controversa*	Pottiaceae	NTu2m	DPS, DPT, SO	New listing
Weissia patula (C.Knight) Fife	Pottiaceae	NTu2m	DPT, SO	New listing
Weymouthia cochlearifolia (Schwägr.) Dixon	Lembophyllaceae	NTu2m	SO	New listing
Weymouthia mollis (Hedw.) Broth.	Lembophyllaceae	NTu2m	SO	New listing
Wijkia extenuata var. *caudata* Fife	Sematophyllaceae	NTu2m	DPR, DPS, DPT	New listing
Wijkia extenuata (Brid.) H.A.Crum var. *extenuata*	Sematophyllaceae	NTu2m	DPS, S?O	New listing
Zygodon hookeri Hampe	Orthotrichaceae	NTu2m	DPS, DPT, SO	New listing
Zygodon intermedius Bruch & Schimp.	Orthotrichaceae	NTu2m	DPT, SO	New listing
Zygodon menziesii (Schwägr.) Arn.	Orthotrichaceae	NTu2m	DPT,SO	New listing
Zygodon minutus Müll.Hal. & Hampe	Orthotrichaceae	NTu2m	DPR, DPS, DPT	New listing
NON-RESIDENT NATIVE (5)				
VAGRANT (4)				
Taxonomically Determinate (4)				
Crossidium davidai Catches.	Pottiaceae		SO	No change
Crossidium geheebii (Broth.) Broth.	Pottiaceae		SO	No change
Entosthodon muhlenbergii (Turner) Fife	Funariaceae		SO	No change
Tayloria tasmanica (Hampe) Broth.	Splachnaceae		OL, SO	Neutral

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
COLONISER (1)				
Taxonomically Determinate (1)				
Aloina ambigua (Bruch & Schimp.) Limpr.	Pottiaceae		SO	Neutral
INTRODUCED AND NATURALISED (42)				
Taxonomically Determinate (42)				
Aulacomnium palustre (Hedw.) Schwägr.	Aulacomniaceae			New listing
Barbula unguiculata Hedw.	Pottiaceae			New listing
Brachythecium albicans (Hedw.) Schimp.	Brachytheciaceae			New listing
Brachythecium campestre (Müll.Hal.) Schimp.	Brachytheciaceae			Neutral
Brachythecium velutinum (Hedw.) Schimp.	Brachytheciaceae			New listing
Bryum rubens Mitt.	Bryaceae			New listing
Bryum ruderale Crundw. & Nyholm	Bryaceae			New listing
Bryum tenuisetum Limpr.	Bryaceae			New listing
Calliergonella cuspidata (Hedw.) Loeske	Amblystegiaceae			New listing
Chenia leptophylla (Müll.Hal.) R.H.Zander	Pottiaceae			New listing
Climacium dendroides (Hedw.) F.Weber & D.Mohr	Climaciaceae			New listing
Dicranella heteromalla (Hedw.) Schimp.	Dicranaceae			New listing
Eccremidium minutum (Mitt.) I.G.Stone & G.A.M.Scott	Ditrichaceae			Neutral
Ephemerum serratum (Hedw.) Hampe	Ephemeraceae			New listing
Ephemerum sessile (Bruch) Müll.Hal.	Ephemeraceae			New listing
Eurhynchium praelongum (Hedw.) Schimp.	Brachytheciaceae			New listing
Eurhynchium pulchellum (Hedw.) Jenn.	Brachytheciaceae			New listing
Eurhynchium speciosum (Brid.) Jur.	Brachytheciaceae			New listing
Fissidens bryoides Hedw.	Fissidentaceae			New listing
Fissidens dubius P.Beauv.	Fissidentaceae			Neutral
Fissidens exilis Hedw.	Fissidentaceae			New listing
Fissidens taxifolius Hedw.	Fissidentaceae			New listing
Leptobryum pyriforme (Hedw.) Wilson	Meesiaceae			New listing
Micromitrium tenerum (Bruch & Schimp.) Crosby	Ephemeraceae			New listing
Physcomitrium pyriforme (Hedw.) Hampe	Funariaceae			New listing
Pohlia annotina (Hedw.) Lindb.	Mielichhoferiaceae			New listing
Pohlia camptotrachela (Renauld & Cardot) Broth.	Mielichhoferiaceae			New listing
Pseudephemerum nitidum (Hedw.) Loeske	Ditrichaceae			New listing

NAME AND AUTHORITY	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
Pseudocrossidium hornschuchianum (Schultz) R.H.Zander	Pottiaceae			New listing
Pseudoscleropodium purum (Hedw.) M.Fleisch.	Brachytheciaceae			New listing
Pterygoneurum ovatum (Hedw.) Dixon	Pottiaceae			New listing
Racomitrium elongatum Frisvoll	Grimmiaceae			New listing
Rhytidiadelphus squarrosus (Hedw.) Warnst.	Hylocomiaceae			New listing
Rhytidiadelphus triquetrus (Hedw.) Warnst.	Hylocomiaceae			New listing
Scleropodium touretii (Brid.) L.F.Koch	Brachytheciaceae			New listing
Sphagnum subnitens Russow & Warnst.	Sphagnaceae			New listing
Streblotrichum convolutum (Hedw.) P.Beauv.	Pottiaceae			New listing
Tortula acaulon (With.) R.H.Zander	Pottiaceae			New listing
Tortula marginata (Bruch & Schimp.) Spruce	Pottiaceae			Neutral
Tortula mucronifolia Schwägr.	Pottiaceae			Neutral
Tortula truncata (Hedw.) Mitt.	Pottiaceae			New listing
Trichodon cylindricus (Hedw.) Schimp.	Ditrichaceae			New listing

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Appendix 1
NZTCS criteria and categories

Full details of the criteria and categories included in Table 6 can be found in Rolfe et al. (2022).

Criteria codes

Resident native taxa are assessed for their conservation status, based on population state, size and trend criteria. These criteria are coded as shown in Table A1.1 to provide a short-hand summary of each assessment.

Table A1.1. Codes used in NZTCS assessments. INC = increasing, DEC = decreasing, MATIND = number of mature individuals, AREA = area of occupancy, SUBPOP = total number of sub-populations. This table is sourced from Rolfe et al. (2022, p. 20).

CONSERVATION STATUS		POPULATION STATE		POPULATION TREND		POPULATION SIZE	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
NC	Nationally Critical	n	Natural	1	INC >10%	a	MATIND < 250
NE	Nationally Endangered	u	Unnatural	2	STABLE (±10%)	b	MATIND 250–1,000
NV	Nationally Vulnerable	x	Unknown	3	DEC 10–30%	c	MATIND 1,000–5,000
NI	Nationally Increasing			4	DEC 30–50%	d	MATIND 5,000–20,000
DEC	Declining			5	DEC 50–70%	e	MATIND 20,000–100,000[a]
REC	Recovering			6	DEC >70%	f	MATIND >100,000[b]
UNC	Uncommon					g	AREA <1 ha
NT	Not Threatened					h	AREA 1–10 ha
						i	AREA 10–100 ha
						j	AREA 100–1,000 ha
						k	AREA 1,000–10,000 ha
						l	AREA 10,000–100,000 ha
						m	AREA >100,000 ha[c]
						n	SUBPOP 2, MATIND < 200 in largest sub-population
						o	SUBPOP 3–5, MATIND 200–300 in largest sub-population
						p	SUBPOP 6–15, MATIND 300–500 in largest sub-population
						q	SUBPOP 6–15, MATIND 500–1,000 in largest sub-population
						For stable and increasing populations only	
						r	MATIND 20,000 – 100,000 and AREA <100,000ha
						s	MATIND > 100,000 and AREA <100,000ha
						t	AREA > 100,000ha and MATIND 250-20,000

[a] Size code 'e' presumes that stable and increasing populations occupy more than 100 000 ha; otherwise use size code 'r'.

[b] Size code 'f' presumes that stable and increasing populations occupy more than 100 000 ha; otherwise use size code 's'.

[c] Size code 'm' presumes that stable and increasing populations are > 20 000 MATIND; otherwise use size code 't'.

Assessment code example

Lindbergia maritima Lewinsky was assessed as Threatened – Nationally Critical in 2025, based on an unnatural population state, a decline of 50–70% over 10 years and having a total area of occupancy of less than 1 ha. Thus, its assessment code is **NCu5g.**

Categories

Summary definitions for the categories are presented below.

DATA DEFICIENT

Taxa that cannot be assessed due to a lack of current information about their distribution and abundance. It is hoped that listing such taxa will stimulate research to find out the true category. For a fuller definition, see Rolfe et al. (2022).

EXTINCT

Taxa for which there is no reasonable doubt – following repeated surveys in known or expected habitats at appropriate times (diurnal, seasonal and annual) and throughout the taxon's historic range – that the last individual has died.

THREATENED

Taxa that meet the criteria specified by Rolfe et al. (2022) for the conservation statuses Nationally Critical, Nationally Endangered and Nationally Vulnerable, and Nationally Increasing.

Nationally Critical

Criteria for Nationally Critical:

- Very small population (natural or unnatural) regardless of the trend
  - The total population size is fewer than 250 mature individuals; or
  - The total area of occupancy is less than 1 ha (0.01 km^2); or
  - There are 2 sub-populations *and* fewer than 200 mature individuals in the largest sub-population
- Small population that is forecast to decline 50–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–1,000 mature individuals; or
  - The total area of occupancy is 1–10 ha (0.01–0.1 km^2); or
  - There are 3–5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population
- Population that is forecast to decline > 70% over the longer of 10 years or three generations (maximum 100 years), irrespective of the size or number of sub-populations

Nationally Endangered

Criteria for Nationally Endangered:

- Small population that is forecast to remain stable ± 10% (unnatural or unknown)
  - The total population size is 250–1,000 mature individuals; or
  - The total area of occupancy is 1–10 ha (0.01–0.1 km^2); or
  - There are 3–5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population
- Small population that is forecast to decline 10–50% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–1,000 mature individuals; or
  - The total area of occupancy is 1–10 ha (0.01–0.1 km^2); or
  - There are 3–5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population

- Moderate population that is forecast to decline 50–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 1,000–5,000 mature individuals; or
  - The total area of occupancy is 10–100 ha (0.1–1 km^2); or
  - There are 6-15 sub-populations *and* ≤ 500 mature individuals in the largest sub-population

Nationally Vulnerable

Criteria for Nationally Vulnerable:

- Small population (unnatural) that is forecast to increase by 10% or more, over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–1,000 mature individuals; or
  - The total area of occupancy is 1–10 ha (0.01–0.1 km^2); or
  - There are 3–5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population
- Moderate population (unnatural) that is forecast to remain stable ± 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 1,000–5,000 mature individuals; or
  - The total area of occupancy is 10–100 ha (0.1–1 km^2); or
  - There are ≤ 15 sub-populations *and* ≤ 500 mature individuals in the largest sub-population
- Moderate population that is forecast to decline of 10–50% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 1,000–5,000 mature individuals; or
  - The total area of occupancy is 10–100 ha (0.1–1 km^2); or
  - There are 6–15 sub-populations *and* ≤ 500 mature individuals in the largest sub-population
- Moderate to large population that is forecast to decline 30–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 5,000–20,000 mature individuals; or
  - The total area of occupancy is 100–1,000 ha (1–10 km^2); or
  - There are 6–15 sub-populations *and* ≤ 1,000 mature individuals in the largest sub-population
- Large population that is forecast to decline 50–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 20,000–100,000 mature individuals; or
  - The total area of occupancy is 1,000–10,000 ha (10–100 km^2)

Nationally Increasing

This is a new name and category for At Risk – Recovering (criterion A) of Townsend et al. (2008).

- Small population that has experienced previous decline (or for which it is unknown whether it has experienced a previous decline) *and* that is forecast to increase > 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 1,000–5,000 mature individuals; or
  - The total area of occupancy 10–100 ha (1–10 km^2); or
  - There are 6-15 sub-populations *and* 300–500 mature individuals in the largest sub-population.

Note: Taxa that have an increasing trend but whose populations are smaller than the size criteria listed here should be classified as Threatened – Nationally Critical or Threatened – Nationally Vulnerable.

AT RISK

Taxa that meet the criteria specified by Rolfe et al. (2022) for Declining, Recovering and Uncommon.

Declining

This conservation status replaces Chronically Threatened – Serious Decline and Chronically Threatened – Gradual Decline of Molloy et al. (2002).

- Moderate to large population that is forecast to decline 10–30% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 5,000–20,000 mature individuals; or
  - The total area of occupancy is 100–1,000 ha (1–10 km^2); or
  - There are 6–15 sub-populations *and* 500–1,000 mature individuals in the largest sub-population
- Large population that is forecast to decline of 10–50% over the longer of 10 years or three generations (maximum 100 years)
  - The total populations size is 20,000–100,000 mature individuals; or
  - The total area of occupancy is 1,000–10,000 ha (10–100 km^2)
- Very large population that is forecast to decline 10–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is > 100,000 mature individuals; or
  - The total area of occupancy > 10,000 ha (100 km^2)

Uncommon

This conservation status combines the conservations statuses At Risk – Naturally Uncommon and At Risk – Relict of Townsend et al. (2008), and replaces the conservation statuses At Risk – Range Restricted and At Risk – Sparse of Molloy et al. (2022).

Any taxon with a distribution that is confined to a specific substrate (e.g. ultramafic rock), habitat (e.g. high alpine fellfields, hydrothermal vents) or geographic area (e.g. subantarctic islands, seamounts) or that occurs within small and widely scattered populations is classified as Uncommon. The distribution may be natural or unnatural (i.e. the result of human-induced change) and populations may be stable or increasing.

- Naturally small population that is forecast to increase > 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–20,000 mature individuals; or
  - The total area of occupancy is 1–100,000 ha (0.01–1,000 km^2)
- Unnaturally small area of occupancy that is forecast to increase > 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total area of occupancy is 1,000–100,000 ha (10–1,000 km^2)
- Naturally small population that is forecast to remain stable ± 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–20,000 mature individuals; or

- The total area of occupancy is 1–100,000 ha (0.01–1,000 km2)

- Unnaturally small population that is forecast to remain stable ± 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–20,000 mature individuals; or
  - The total area of occupancy is 100–100,000 ha (1–1,000 km^2)

- Naturally or unnaturally moderate to large population that has a small to moderate area of occupancy that is forecast to increase > 10% or remain stable over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 20,000–100,000 mature individuals *and* the area of occupancy is < 100,000 ha (1,000 km^2); or
  - The total population size is > 100,000 mature individuals and the area of occupancy is < 100,000 ha (1,000 km^2)

  Minimum area of occupancy limits apply, which vary according to the state and trend of the population. If the area of occupancy is lower than the minimum limits listed below, the taxon should be classified as Threatened or At Risk – Recovering:
  - Natural, stable or increasing: minimum 1 ha (0.01 km^2); or
  - Unnatural, stable: minimum 100 ha (1 km^2); or
  - Unnatural, increasing: minimum 1,000 ha (10 km^2)

- Naturally or unnaturally small to moderate population that has a large area of occupancy that is forecast to remain stable over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is < 20,000 mature individuals and the area of occupancy is > 100,000 ha (1,000 km^2)

  Minimum population size limits apply, which vary according to the state of the population. If the population size is lower than the minimum limits listed below, the taxon will be assessed as Threatened:
  - Natural: minimum 250 mature individuals; or
  - Unnatural: minimum 5,000 mature individuals

Recovering

- Moderate to large population that has (or may have) experienced a previous decline (within the last 1,000 years) and that is forecast to increase by ≥ 10% over the longest of the next 10 years or three generations (maximum 100 years)
  - The total population size is 5,000–20,000 mature individuals; or
  - The total area of occupancy is 100–1,000 ha (1–10 km^2); or
  - There are 6–15 sub-populations *and* 500–1,000 mature individuals in the largest sub-population.

NOT THREATENED

- Naturally or unnaturally large population that is forecast to increase > 10% or remain stable ± 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is greater than 20,000 mature individuals; *and*
  - The total area of occupancy is greater than 100,000 ha (1,000 km^2)

NON-RESIDENT NATIVE

Taxa whose natural presence in Aotearoa New Zealand is either discontinuous (Migrant) or sporadic or temporary (Vagrant) or which have succeeded in recently (since 1950) establishing a resident breeding population (Coloniser).

Migrant

Taxa that predictably and cyclically visit Aotearoa New Zealand as part of their normal life cycle (a minimum of 15 individuals known or presumed to visit per annum) but do not breed here.

Vagrant

Taxa whose occurrences, though natural, are sporadic and typically transitory, or migrants with fewer than 15 individuals visiting Aotearoa New Zealand per annum.

INTRODUCED AND NATURALISED

Taxa that have become naturalised in the wild after being deliberately or accidentally introduced into Aotearoa New Zealand by human agency. To be considered naturalised, a taxon must have established a self-sustaining population in the wild over at least three generations and must have spread beyond the site of initial establishment.

References

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