



NEW ZEALAND THREAT CLASSIFICATION SERIES 20

Conservation status of New Zealand butterflies and moths (Lepidoptera), 2015

R.J.B. Hoare, J.S. Dugdale, E.D. Edwards, G.W. Gibbs, B.H. Patrick, R.A. Hitchmough and
J.R. Rolfe

Cover: *Hierodoris extensilis*, a Naturally Uncommon moth of an east Fiordland mountain range. It is cryptic in its habitat of *Racomitrium* mosses and low *Dracophyllum muscoides* on granite. Photo: Robert Hoare.

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 NZTCS status of members of a plant or animal group (e.g. algae, birds, spiders). There are currently 23 groups, each assessed once every 3 years. After each three-year cycle there will be a report analysing and summarising trends across all groups for that listing cycle. 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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R.J.B. Hoare¹, J.S. Dugdale², E.D. Edwards³, G.W. Gibbs⁴, B.H. Patrick⁵,
R.A. Hitchmough³ and J.R. Rolfe³

¹ New Zealand Arthropod Collection (NZAC), Landcare Research, Private Bag 92170, Auckland Mail Centre, Auckland 1142, New Zealand.

² Landcare Research, Private Bag 6, Nelson Mail Centre, Nelson 7042, New Zealand.

³ Biodiversity Group, Department of Conservation, PO Box 10420, Wellington 6143, New Zealand. Email: eedwards@doc.govt.nz

⁴ Victoria University, PO Box 600, Wellington 6140, New Zealand.

⁵ Wildland Consultants, PO Box 33499, Barrington, Christchurch 8244, New Zealand.

Abstract

The conservation status of 202 New Zealand butterflies and moths (Lepidoptera taxa) was assessed using the New Zealand Threat Classification System (NZTCS). Nine taxa and six undescribed entities that were not included in previous assessments have been added to the list. The conservation status of 26 taxa has changed in this assessment. All 202 taxa are presented, along with a statistical summary and brief notes on the most important changes. This list replaces all previous NZTCS lists for Lepidoptera.

Keywords: New Zealand Threat Classification System, NZTCS, conservation status, butterfly, moth, Crambidae, Geometridae, Nepticulidae, Noctuidae, Oecophoridae, Stathmopodidae, Tineidae, Tortricidae.

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1. Summary

The conservation status of 202 New Zealand butterflies and moths was assessed using New Zealand Threat Classification System (NZTCS) criteria (Townsend et al. 2008). This list replaces the 2010 list of butterfly and moth taxa reported in Stringer et al. (2012). The categories, criteria and process for assessing the conservation status of moths and butterflies were identical between the two listings.

Stringer et al. (2012) reported on 187 taxa (1 butterfly, 186 moths). However, they did not list the more than 1800 species of butterfly and moth fauna that were deemed to be not threatened or introduced and naturalised. This document reports on the 187 taxa listed in Stringer et al. (2012) plus an additional fifteen taxa that are new to the list (Table 1). One taxon, *Homoeosoma ischnomorpha* Meyrick, 1931, listed as Data Deficient in Stringer et al. (2012), is now considered to be taxonomically indistinct from *Ephestia kuehniella* Zeller, 1879, which has a world-wide distribution. Therefore, *E. kuehniella* is listed in this document as Not Threatened with a 'Secure Overseas' (SO) qualifier. The micro-leafminer moth *Stathmopoda* cf. *albimaculata* is now confirmed as *Stathmopoda albimaculata* Philpott, 1931. The names of ten other taxa (Table 2.) in this document have been changed from Stringer et al. (2012). Most are small nomenclatural changes to undescribed 'tag-named' entities. However, a change in the use of the name *Graphania tetrachroa* (Meyrick, 1931), an owlet moth, may cause confusion. In Stringer et al. (2012), this name was used for a Nationally Vulnerable species. That species is now believed to be an undescribed entity and has been renamed in this document "*Graphania*" cf. *tetrachroa* (Table 2). The name *Graphania tetrachroa* (Meyrick, 1931) reappears in the document as a 'new' inclusion (Table 1) for a Data Deficient species that is known only from the type specimen. Further work on the taxonomy of this group may show that these entities are, after all, conspecific, but they are retained as separate for now based on distinct differences in wing pattern and lack of variability in known series of *G.* cf. *tetrachroa*. Both entities belong in the genus *Meterana* but have not been moved to this genus yet.

The New Zealand Lepidoptera fauna is estimated at a little over 1800 species of which 201 (c. 11%) are assessed for this document. It is intended that future conservation status assessments will report on a more comprehensive list of the New Zealand Lepidoptera.

Table 3 summarises the taxonomic status of taxa in each category. The term 'taxonomically indeterminate' is used for taxa that have been accepted for assessment by the expert panel but which do not have validly published names ('tag named'). Table 4 summarises the movement of taxa between categories. More comprehensive information on the status of individual taxa, the qualifiers that apply to each, and the criteria that triggered the taxon to be placed in a category, is outlined in section 2.

One of the most significant matters is the retention of the carpet moth *Xanthorhoe bulbulata* (Guenée, 1868) as Nationally Critical. Over the last century, *X. bulbulata* was frequently recorded from much of New Zealand including Southland to the central North Island (Patrick 2000). However, the last two records are from near Queenstown in 1979 and 1991 respectively (Patrick 2000), despite many surveys by several experts within the range of the species of what was once a common, brightly coloured and easily recognised day-active moth (Fig. 1). Survey for *X. bulbulata* is urgently needed; research into its likely historical plant associations and the food preferences of closely related Geometrid moths may help to direct survey effort.



Figure 1. *Xanthorhoe bulbulata* was once a common moth but over the last century it has declined to the point where it may possibly be extinct. It remains listed as Nationally Critical pending further survey for it. Photo: Birgit Rhode, © Landcare Research.

Table 1. Names of New Zealand Lepidoptera taxa that have been newly added since Stringer et al. (2012).

NAME AND AUTHORITY	FAMILY
" <i>Cnephasia paterna</i> " Philpott, 1926	Tortricidae
<i>Aoraia oreobolae</i> Dugdale, 1994	Hepialidae
<i>Arctesthes</i> sp. "Denniston"	Geometridae
<i>Dichromodes</i> "Gore Bay"	Geometridae
<i>Gadira leucophthalma</i> (Meyrick, 1882)	Crambidae
<i>Graphania tetrachroa</i> (Meyrick, 1931)	Noctuidae
<i>Gymnobathra</i> sp. "dark splash"	Oecophoridae
<i>Hierodoris torrida</i> Hoare, 2005	Oecophoridae
<i>Lycaena ianthina</i> (Salmon, 1946)	Lycaenidae
<i>Lycaena</i> sp. "Chrystall's Beach"	Lycaenidae
<i>Musotima</i> sp. "Three Kings"	Crambidae
<i>Platyptilia campsiptera</i> Meyrick, 1907	Pterophoridae
<i>Pyrausta comastis</i> Meyrick 1884	Crambidae
<i>Scythris niphozela</i> Meyrick, 1931	Scythrididae
<i>Sporophyla oenospora</i> (Meyrick, 1897)	Pyalidae

Table 2. Name changes affecting New Zealand Lepidoptera species between the publication of Stringer et al. (2012) and this document.

NAME IN STRINGER ET AL. (2012)	NAME IN THIS DOCUMENT	FAMILY
<i>Declana</i> cf. <i>hermione</i>	<i>Declana</i> cf. <i>hermione</i> "Te Paki"	Geometridae
Gracillariidae n. sp. "Teucridium"	<i>Caloptilia</i> sp. "Teucridium"	Gracillariidae
<i>Graphania tetrachroa</i> (Meyrick, 1931)	" <i>Graphania</i> " cf. <i>tetrachroa</i>	Noctuidae
<i>Homoeosoma ischnomorpha</i> Meyrick, 1931	<i>Ephestia kuehniella</i> Zeller, 1879	Pyalidae
<i>Notoreas perornata</i> "Waiho Flats"	<i>Notoreas perornata</i> subsp. "Waiho Flats"	Geometridae
<i>Notoreas perornata</i> s.l., Cape Turnagain population	<i>Notoreas perornata</i> subsp. "Cape Turnagain"	Geometridae
<i>Notoreas perornata</i> s.l., Castlepoint population	<i>Notoreas perornata</i> subsp. "Castlepoint"	Geometridae
<i>Notoreas perornata</i> s.l., Cape Campbell population	<i>Notoreas perornata</i> subsp. "Cape Campbell"	Geometridae
<i>Notoreas perornata</i> s.l., ND/AK populations	<i>Notoreas perornata</i> subsp. "ND/AK"	Geometridae
<i>Notoreas perornata</i> s.l., TK/NN populations	<i>Notoreas perornata</i> subsp. "TK/NN"	Geometridae
<i>Notoreas perornata</i> s.l., WA/WN populations	<i>Notoreas perornata</i> subsp. "WA/WN"	Geometridae
<i>Stathmopoda</i> cf. <i>albimaculata</i> Philpott, 1931	<i>Stathmopoda albimaculata</i> Philpott, 1931	Stathmopodidae

Table 3. Summary of taxonomic status of New Zealand species assessed in each category.

	TAXONOMICALLY DETERMINATE	TAXONOMICALLY INDETERMINATE	TOTAL
Data Deficient	32	15	47
Threatened	29	37	66
Nationally Critical	13	12	25
Nationally Endangered	4	8	12
Nationally Vulnerable	12	17	29
At Risk	64	13	77
Declining	10	3	13
Relict	14	4	18
Naturally Uncommon	40	6	46
Not Threatened	10	2	12
Total	132	70	202

Table 4. Summary of status changes of New Zealand Lepidoptera between 2010 (Stringer et al. 2012, data in rows) and 2015 (this document, data in columns). Numbers above the diagonal (shaded mid-grey) indicate improved status (e.g. 1 taxon of 27 assessed as Nationally Vulnerable in 2010 has moved to Naturally Uncommon in 2015), numbers below the diagonal (shaded light grey) indicate poorer status, numbers on the diagonal (shaded dark grey) have not changed. Numbers without shading are either new to this report or were previously Data Deficient.

CATEGORY	DD	NC	NE	NV	Dec	Rel	NU	NT	2010 TOTAL
Data Deficient (DD)	45	3	1	1			4	2	56
Nationally Critical (NC)		13							13
Nationally Endangered (NE)		2	7						9
Nationally Vulnerable (NV)		2	2	22			1		27
At Risk – Declining (Dec)				2	13		1		16
At Risk – Relict (Rel)				1		17	1		19
At Risk – Naturally Uncommon (NU)			1				33		34
Not Threatened (NT)							3	10	13
Not listed	2	5	1	3		1	3		15
2016 Total	47	25	12	29	13	18	46	12	202

Of the remaining 185 moth taxa assessed by Stringer et al. (2012), twenty-six have changed conservation status in this report. Only three taxa have an improved status – the moths *Glyphipterix euastera* Meyrick, 1880, *Kiwaia jeanae* Philpott, 1930, and *Meterana pansicolor* (Howes, 1912) have been assessed as At Risk: Naturally Uncommon. These changes are the result of improved knowledge and reinterpretation of data rather than observed changes since the previous assessment (Stringer et al. 2012). Two Data Deficient, two Nationally Endangered and two Nationally Vulnerable moth taxa have been reclassified as Nationally Critical (Table 3); four taxa have worsened to Nationally Endangered (Table 3), and four to Nationally Vulnerable (Table 3). Six Data Deficient and three Not Threatened taxa are now assessed as At Risk (Table 3). In total, 189 species (approximately 10% of the New Zealand Lepidoptera fauna) are either Extinct, Data Deficient, Threatened or At Risk.

2. Conservation status of New Zealand Lepidoptera

Taxa have been assessed using the criteria of Townsend et al. (2008). The assessment results are presented in Table 5. They are grouped by conservation status, then alphabetically by scientific name. For non-endemic species that are threatened internationally, the IUCN category is listed alongside the NZTCS listing. Categories are ordered by degree of loss, with Data Deficient at the top of the list and Not Threatened at the bottom. Although the true status of Data Deficient taxa will span the entire range of available categories, taxa are in that list mainly because they are very seldom seen, so most are likely to end up being considered threatened and some may already be extinct. The Data Deficient list is likely to include many of the most threatened species in New Zealand.

Brief definitions of the conservation status categories and qualifiers follow Table 5. For full definitions, see Townsend et al. (2008).

No At Risk – Recovering, Non-resident native (Migrant, Vagrant, Coloniser), or Introduced and Naturalised species are listed in this report.

Table 5. Conservation status of New Zealand butterflies and moths (Lepidoptera) assessed in 2015.

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
Data Deficient (47)				
Taxonomically Determinate (32)				
<i>Aletia cyanopetra</i> (Meyrick, 1927)	Owlet moth	Noctuidae		
<i>Archyala culta</i> Philpott, 1931	Micro moth	Tineidae		
<i>Archyala opulenta</i> Philpott, 1926	Micro moth	Tineidae		
<i>Bascantis sirenica</i> Meyrick, 1914	Micro moth	Tineidae		
<i>Cateristis eustyla</i> Meyrick, 1889	Leafminer moth	Lyonetiidae		
<i>Chersadaula ochrogaster</i> Meyrick, 1923	Concealer moth	Oecophoridae		OL
<i>Elachista eurychora</i> (Meyrick, 1919)	Sedge miner moth	Elachistidae		
<i>Elachista melanura</i> Meyrick, 1889	Sedge miner moth	Elachistidae		
<i>Erechthias lynchnopa</i> Meyrick, 1927	Micro moth	Tineidae		
<i>Eudonia linealis</i> (Walker, 1866)	Crambid snout moth	Crambidae		
<i>Eudonia ustiramis</i> (Meyrick, 1931)	Crambid snout moth	Crambidae		
<i>Graphania tetrachroa</i> (Meyrick, 1931)	Owlet moth	Noctuidae		
<i>Heterocrossa maculosa</i> (Philpott, 1927)	Snoutlet moth	Carposinidae		
<i>Hierodoris huia</i> Hoare, 2005	Concealer moth	Oecophoridae		
<i>Hierodoris sesioides</i> Hoare, 2005	Concealer moth	Oecophoridae		
<i>Hydriomena iolanthe</i> Hudson, 1939	Carpet moth	Geometridae		
<i>Izatha caustopa</i> Meyrick, 1892	Concealer moth	Oecophoridae		
<i>Izatha rigescens</i> Meyrick, 1929	Concealer moth	Oecophoridae		
<i>Izatha walkerae</i> Hoare, 2010	Concealer moth	Oecophoridae		
<i>Lathicrossa prophetica</i> Meyrick, 1927	Concealer moth	Oecophoridae		
<i>Orocrambus punctellus</i> (Hudson, 1950)	Crambid snout moth	Crambidae		
<i>Orocrambus sophronellus</i> (Meyrick, 1885)	Crambid snout moth	Crambidae		
<i>Petasactis technica</i> Meyrick, 1888	Micro moth	Tineidae		
<i>Phaeosaces lindsayae</i> (Philpott, 1928)	Concealer moth	Oecophoridae		
<i>Platyptilia hokowhitalis</i> Hudson, 1939	Plume moth	Pterophoridae		
<i>Stigmella progama</i> (Meyrick, 1924)	Pigmy leafminer moth	Nepticulidae		
<i>Stigmella propalaea</i> (Meyrick, 1889)	Pigmy leafminer moth	Nepticulidae		
<i>Thectophila acmotypa</i> Meyrick, 1927	Cosmet moth	Cosmopterigidae		
<i>Tingena loxotis</i> (Meyrick, 1905)	Concealer moth	Oecophoridae		
<i>Titanomis sisyrota</i> Meyrick, 1888	Moth	Undetermined		
<i>Trachypepla nimbosea</i> Philpott, 1930	Concealer moth	Oecophoridae		
<i>Trachypepla roseata</i> Philpott, 1923	Concealer moth	Oecophoridae		
Taxonomically Indeterminate (15)				
" <i>Gymnobathra</i> " <i>origenes</i> Meyrick, 1936	Concealer moth	Oecophoridae		
" <i>Gymnobathra</i> " <i>rufopunctella</i> Hudson, 1950	Concealer moth	Oecophoridae		
" <i>Leptocroca</i> " <i>xyrias</i> Meyrick, 1931	Concealer moth	Oecophoridae		
" <i>Porina</i> " <i>mairi</i>	Porina moth	Hepialidae		
" <i>Tinea</i> " <i>texta</i> Meyrick, 1931	Micro moth	Tineidae		
<i>Archyala</i> sp. "Mataroa"	Micro moth	Tineidae		
<i>Ericodesma</i> sp. "mingimingi"	Mingimingi leafroller moth	Tortricidae		
<i>Gymnobathra</i> sp. "dark splash"	Concealer moth	Oecophoridae		
<i>Sabatinca</i> sp. "Secretary Island"	Jawed moth	Micropterigidae		OL
<i>Stigmella</i> sp. "blue"	Pigmy leafminer moth	Nepticulidae		
<i>Stigmella</i> sp. "giant"	Pigmy leafminer moth	Nepticulidae		
<i>Stigmella</i> sp. "October"	Pigmy leafminer moth	Nepticulidae		
<i>Theoxena</i> sp. 'non-pectinate'	Looper moth	Geometridae		
<i>Tineidae</i> n. sp. "Matuku monster"	Micro moth	Tineidae		
<i>Trachypepla</i> sp. "Cloudy Bay"	Concealer moth	Oecophoridae		

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Table 5 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
THREATENED (66)				
Nationally Critical (25)				
Taxonomically Determinate (13)				
<i>Asaphodes frivola</i> (Meyrick, 1913)	Looper moth	Geometridae	A(3)	RR
<i>Asaphodes imperfecta</i> (Philpott, 1905)	Looper moth	Geometridae	C	De, DP
<i>Asaphodes obarata</i> F & R, 1875	Looper moth	Geometridae	B(1/1)	DP, Sp
<i>Australothis volatilis</i> Matthews & Patrick, 1998	Vittadinia moth	Noctuidae	B(2/1)	RR, Sp
<i>Gymnobathra ambigua</i> (Philpott, 1926)	Concealer moth	Oecophoridae	A(1)	DP, Sp
<i>Lycaena ianthina</i> (Salmon, 1946)	Copper butterfly	Lycaenidae	A(3)	CD, OL
<i>Notoreas edwardsi</i> Patrick & Hoare, 2010	Pimelea moth	Geometridae	A(3)	OL
<i>Orocrambus fugitivellus</i> (Hudson, 1950)	Crambid snout moth	Crambidae	B(3/1)	
<i>Orocrambus ornatus</i> (Philpott, 1927)	Crambid snout moth	Crambidae	A(1)	DP
<i>Orthoclydon pseudostinaria</i> (Hudson, 1918)	Looper moth	Geometridae	B(2/1)	DP, Sp
<i>Sporophyla oenospora</i> (Meyrick, 1897)	Snout moth	Pyralidae	C	Sp
<i>Stathmopoda campylocha</i> Meyrick, 1889	Micro moth	Stathmopodidae	A(3)	OL
<i>Xanthorhoe bulbulata</i> (Guenée, 1868)	Looper moth	Geometridae	C	
Taxonomically Indeterminate (12)				
"Schiffermuelleria" <i>orthophanes</i> (Meyrick, 1905)	Looper moth	Geometridae	A(1)	De, DP
<i>Arctesthes</i> sp. "Denniston"	Denniston triangle moth	Geometridae	A(3)	OL
<i>Declana</i> cf. <i>hermione</i> "Te Pahi"	Looper moth	Geometridae	A(3)	OL
<i>Dichromodes</i> "Gore Bay"	Gore Bay looper moth	Geometridae	A(3)	OL
<i>Gingidiobora</i> "Eastern Otago"	Looper moth	Geometridae	C	RR
<i>Kiwaia</i> sp. "Cloudy Bay"	Cloudy Bay twirler moth	Gelechiidae	A(3)	CD, EF, OL
<i>Lycaena</i> sp. "Chrystall's Beach"	Copper butterfly	Lycaenidae	A(3)	CD, OL
<i>Notoreas perornata</i> subsp. "Cape Turnagain"	Pimelea moth	Geometridae	A(3)	CD, OL
<i>Notoreas perornata</i> subsp. "Castlepoint"	Pimelea moth	Geometridae	A(3)	CD, OL
<i>Notoreas perornata</i> subsp. "Waiho Flats"	Pimelea moth	Geometridae	A(3)	
<i>Scythris</i> sp. "stripe"	Flower moth	Scythrididae	A(1)	DP, OL
<i>Stigmella</i> sp. "Olearia"	Pigmy leafminer moth	Nepticulidae	A(3)	OL
Nationally Endangered (12)				
Taxonomically Determinate (4)				
<i>Izatha psychra</i> (Meyrick, 1883)	Moth	Oecophoridae	B(3/1)	RR
<i>Maoricrambus oncobolus</i> (Meyrick, 1885)	Crambid snout moth	Crambidae	B(2/1)	RR
<i>Pseudocoremia alba</i> (Philpott, 1915)	Flash moth	Geometridae	B(2/1)	RR, Sp
<i>Stathmopoda albimaculata</i> Philpott, 1931	Micro moth	Stathmopodidae	B(3/1)	DP, OL
Taxonomically Indeterminate (8)				
" <i>Cnephasia</i> " <i>paterna</i> Philpott, 1926	Leafroller moth	Tortricidae	B(3/1)	OL
" <i>Epichorista</i> " <i>lindsayi</i> Philpott, 1928	Leafroller moth	Tortricidae	B(3/1)	OL
<i>Dichromodes</i> "Cloudy Bay"	Cloudy Bay looper moth	Geometridae	B(3/1)	OL
<i>Kiwaia</i> "plains jumper"	Twirler moth	Gelechiidae	A(3/1)	RR
<i>Meterana</i> "Foveaux Strait"	Owlet moth	Noctuidae	A(3/1)	CD, RR, Sp
<i>Notoreas perornata</i> subsp. "Cape Campbell"	Pimelea moth	Geometridae	B(3/1)	RR, St
<i>Paranotoreas</i> "Banks Peninsula"	Banks Peninsula orange underwing moth	Geometridae	B(3/1)	RR
<i>Pseudocoremia</i> sp. "Knobby Range"	Flash moth	Geometridae	A(2/1)	RR
Nationally Vulnerable (29)				
Taxonomically Determinate (12)				
<i>Asaphodes stinaria</i> (Guenee, 1868)	Looper moth	Geometridae	B(2/1)	
<i>Cephalissa siria</i> Meyrick, 1884	Orange triangle moth	Geometridae	C(2/1)	RR
<i>Gadira leucophthalma</i> (Meyrick, 1882)	Crambid snout moth	Crambidae	B(3/1)	RR, Sp
<i>Gingidiobora nebulosa</i> (Philpott, 1917)	Looper moth	Geometridae	B(2/1)	RR

Continued on next page

Table 5 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Kiwaia pumila</i> (Philpott, 1928)	Northern pimelea twirler moth	Gelechiidae	C(3/1)	RR, Sp
<i>Kupea electilis</i> Philpott, 1930	Crambid snout moth	Crambidae	B(3/1)	RR, Sp
<i>Notoreas casanova</i> Patrick & Hoare 2010	Pimelea moth	Geometridae	C(3/1)	CD, RR
<i>Orocrambus sophistes</i> (Meyrick, 1905)	Crambid snout moth	Crambidae	B(3/1)	RR, Sp
<i>Platyptilia campsiptera</i> Meyrick, 1907	Plume moth	Pterophoridae	C(3/1)	Sp
<i>Pyrausta comastis</i> Meyrick 1884	Crambid snout moth	Crambidae	C(3/1)	CD, PD
<i>Theoxena scissaria</i> (Guenée, 1868)	Looper moth	Geometridae	C(2/1)	DP
<i>Xanthorhoe frigida</i> Howes, 1946	Carpet moth	Geometridae	C(3/1)	CD, RR, Sp
Taxonomically Indeterminate (17)				
" <i>Acroclita</i> " <i>discariana</i> Philpott, 1930	Leafroller moth	Tortricidae	C(2/1)	RR
" <i>Graphania</i> " cf. <i>tetrachroa</i>	Owlet moth	Noctuidae	D(3/1)	RR
" <i>Pseudocoremia</i> " <i>cineracia</i> (Howes, 1942)	Flash moth	Geometridae	B(3/1)	RR
<i>Arctesthes</i> sp. "Von"	Triangle moth	Geometridae	B(3/1)	RR, Sp, St
<i>Caloptilia</i> sp. "Teucidium"	Teucidium leafminer moth	Gracillariidae	B(3/1)	DP, Sp
<i>Clepsicosma</i> sp. "Titirangi"	Snout moth	Pyralidae?	E(2/1)	
<i>Declana toreuta</i> grey populations	Looper moth	Geometridae	D(3/1)	RR
<i>Maoritenes</i> sp. "Olearia"	Olearia leafroller moth	Tortricidae	C(3/1)	
<i>Notoreas perornata</i> subsp. "ND/AK"	Pimelea moth	Geometridae	B(3/1)	RR
<i>Notoreas perornata</i> subsp. "TK/NN"	Pimelea moth	Geometridae	B(3/1)	CD, RR
<i>Notoreas perornata</i> subsp. "WA/WN"	Pimelea moth	Geometridae	C(3/1)	CD, RR
<i>Orocrambus</i> "Mackenzie Basin"	Crambid snout moth	Crambidae	B(3/1)	RR
<i>Pasiphila</i> sp. "Olearia"	Olearia pug moth	Geometridae	B(3/1)	RR
<i>Protosynaema</i> sp. "Olearia"	Diamondback moth	Plutellidae	B(3/1)	Sp
<i>Pyrgotis</i> sp. "Olearia"	Olearia lafroller moth	Tortricidae	B(3/1)	RR
<i>Pyroderces</i> sp. "yellow"	Cosmet moth	Cosmopterigidae	B(3/1)	DP, RR
<i>Stathmopoda</i> sp. "Olearia"	Micro moth	Stathmopodidae	B(3/1)	RR
AT RISK				
Declining (13)				
Taxonomically Determinate (10)				
<i>Austrocidaria arenosa</i> Howes, 1911	Coprosma carpet moth	Geometridae	A(2/1)	RR
<i>Dasyuris partheniata</i> Guenee, 1868	Orange speargrass looper	Geometridae	A(2/1)	
<i>Declana griseata</i> Hudson, 1898	Looper moth	Geometridae	C(2/1)	
<i>Ericodesma aerodana</i> (Meyrick, 1881)	Pimelea leafroller moth	Tortricidae	A(2/1)	RR
<i>Gingidiobora subobscurata</i> s.l.	Looper moth	Geometridae	B(2/1)	CD, RR
<i>Heloxycanus patricki</i> Dugdale, 1994	Ghost moth	Hepialidae	A(2/1)	
<i>Meterana pictula</i> (White in Taylor, 1855)	Owlet moth	Noctuidae	C(2/1)	RR
<i>Proditrix chionochloae</i> Dugdale, 1987	Diamondback moth	Plutellidae	B(2/1)	RR
<i>Tatosoma agrionata</i> (Walker, 1862)	Spindle moth	Geometridae	C(2/1)	
<i>Zelleria sphenota</i> (Meyrick, 1889)	Moth	Yponomeutidae	C(2/1)	
Taxonomically Indeterminate (3)				
" <i>Hydriomena</i> " <i>clarkei</i> (Howes, 1917)	Looper moth	Geometridae	B(2/1)	Sp
<i>Pasiphila</i> sp. cf. <i>magnimaculata</i>	Pug moth	Geometridae	C(2/1)	CD, PD, Sp
<i>Stigmella</i> sp. "traversia"	Pigmy leafminer moth	Nepticulidae	A(2/1)	CD, RR
Relict (18)				
Taxonomically Determinate (14)				
<i>Asaphodes chlorocapna</i> (Meyrick, 1925)	Looper moth	Geometridae	B	IE, RR
<i>Dodonidia helmsii</i> Butler, 1884	Helm's butterfly	Nymphalidae	B	
<i>Elachista helonoma</i> (Meyrick, 1889)	Sedge miner moth	Elachistidae	B	RR
<i>Helastia angusta</i> Craw, 1987	Carpet moth	Geometridae	A	RR
<i>Helastia clandestina</i> (Philpott, 1921)	Carpet moth	Geometridae	A	RR
<i>Helastia expolita</i> (Philpott, 1917)	Carpet moth	Geometridae	A	RR

Continued on next page

Table 5 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Helastia siris</i> (Hawthorne, 1897)	Carpet moth	Geometridae	A	RR
<i>Hierodoris stella</i> (Meyrick, 1914)	Concealer moth	Oecophoridae	B	
<i>Hierodoris torrida</i> Hoare, 2005	Concealer moth	Oecophoridae	A	DP
<i>Houdinia flexilissima</i> Hoare, Dugdale & Watts, 2006	Moth	Batrachedridae	B	CD, RR
<i>Meterana exquisita</i> (Philpott, 1903)	Owlet moth	Noctuidae	A	RR
<i>Meterana grandiosa</i> (Philpott, 1903)	Owlet moth	Noctuidae	A	RR
<i>Paranotoreas fulva</i> (Hudson, 1905)	Orange underwing moth	Geometridae	A	CD, RR
<i>Samana acutata</i> Butler, 1877	Looper moth	Geometridae	A	
Taxonomically Indeterminate (4)				
" <i>Epichorista</i> " <i>tenebrosa</i> Philpott, 1917	Leafroller moth	Tortricidae	A	
<i>Bactra</i> n. sp.	Leafroller moth	Tortricidae	B	CD, RR
<i>Chalastra</i> cf. <i>pellurgata</i>	Forest ringlet	Geometridae	B	RR
<i>Loxostege</i> sp. "salt pan"	Crambid snout moth	Crambidae	A	CD, RR
Naturally Uncommon (44)				
Taxonomically Determinate (40)				
<i>Aoraia oreobolae</i> Dugdale, 1994	Ghost moth	Hepialidae		RR
<i>Archyala lindsayi</i> (Philpott, 1927)	Micro moth	Tineidae		
<i>Austrocidaria lithurga</i> (Meyrick, 1911)	Coprosma carpet moth	Geometridae		Sp
<i>Bityla sericea</i> Butler, 1877	Owlet moth	Noctuidae		
<i>Circoxena ditrocha</i> Meyrick, 1916	Moth	Blastodacnidae		DP, Sp
<i>Ctenarchis cramboides</i> Dugdale, 1995	Snoutlet moth	Carposinidae		DP, Sp
<i>Dasyuris enysii</i> (Butler, 1877)	Looper moth	Geometridae		RR
<i>Dasyuris octans</i> Hudson 1923	Looper moth	Geometridae		Sp
<i>Ericodesma cuneata</i> (Clarke, 1926)	Corokia leafroller moth	Tortricidae		RR
<i>Eurythecta robusta</i> (Butler, 1877)	Leafroller moth	Tortricidae		RR
<i>Gadira petraula</i> (Meyrick, 1883)	Crambid snout moth	Crambidae		RR
<i>Glyphipterix euastera</i> Meyrick, 1880	Sedge moth	Glyphipterigidae		RR
<i>Graphania omicron</i> (Hudson, 1898)	Owlet moth	Noctuidae		RR
<i>Hierodoris bilineata</i> (Salmon, 1956)	Concealer moth	Oecophoridae		IE, RR
<i>Hierodoris extensilis</i> Hoare, 2012	Concealer moth	Oecophoridae		RR
<i>Hierodoris polita</i> Hoare 2005	Concealer moth	Oecophoridae		RR
<i>Isonomeutis restincta</i> Meyrick, 1923	Moth	Copromorphidae		RR
<i>Izatha dasydisca</i> Hoare, 2010	Concealer moth	Oecophoridae		Sp
<i>Izatha dulcior</i> Hoare, 2010	Concealer moth	Oecophoridae		IE, RR
<i>Izatha gibbsi</i> Hoare, 2010	Concealer moth	Oecophoridae		Sp
<i>Izatha haumu</i> Hoare, 2010	Concealer moth	Oecophoridae		RR
<i>Izatha minimira</i> Hoare, 2010	Concealer moth	Oecophoridae		Sp
<i>Izatha oleariae</i> Dugdale, 1971	Concealer moth	Oecophoridae		IE, RR
<i>Izatha quinquejacula</i> Hoare, 2010	Concealer moth	Oecophoridae		IE, RR
<i>Izatha spheniscella</i> Hoare, 2010	Concealer moth	Oecophoridae		IE, RR
<i>Izatha taingo</i> Hoare, 2010	Concealer moth	Oecophoridae		RR
<i>Kiwaia jeanae</i> Philpott, 1930	Twirler moth	Gelechiidae		RR
<i>Meterana pansicolor</i> (Howes, 1912)	Owlet moth	Noctuidae		RR
<i>Orocrambus jansonii</i> Gaskin, 1975	Crambid snout moth	Crambidae		
<i>Pseudocoremia lutea</i> (Philpott, 1914)	Flash moth	Geometridae		
<i>Pyrgotis pyramidioides</i> Meyrick, 1901 s.s.	Leafroller moth	Tortricidae		Sp
<i>Pyrgotis transfixa</i> (Meyrick, 1924)	Leafroller moth	Tortricidae		Sp
<i>Scythris niphosela</i> Meyrick, 1931	Flower moth	Scythrididae		OL
<i>Stathmopoda aristodoxa</i> Meyrick, 1926	Micro moth	Stathmopodidae		DP, Sp
<i>Stathmopoda endotherma</i> Meyrick, 1931	Micro moth	Stathmopodidae		Sp
<i>Stigmella laquaerum</i> (Dugdale, 1971)	Pigmy leafminer moth	Nepticulidae		IE, RR

Continued on next page

Table 5 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Thamnotricha vates</i> Meyrick, 1922	Moth	Epermeniidae		Sp
<i>Tmetolophota blenheimensis</i> (Fereday, 1883)	Owlet moth	Noctuidae		Sp
<i>Trachypepla cyphonias</i> Meyrick, 1927	Concealer moth	Oecophoridae		Sp
<i>Xanthorhoe lophogramma</i> Meyrick, 1897	Carpet moth	Geometridae		Sp
Taxonomically Indeterminate (4)				
" <i>Lysiphragma</i> " <i>argentaria</i> Salmon, 1956	Micro moth	Tineidae		IE, RR
<i>Archyala</i> sp. "Mount Greenland"	Micro moth	Tineidae		RR
<i>Gadira</i> "black brown EGW"	Crambid snout moth	Crambidae		RR
<i>Mnesarchaea</i> sp. "Stellae"	NZ primitive moth	Mnesarchaeidae		RR
<i>Musotima</i> sp. "Three Kings"	Crambid snout moth	Crambidae		IE, OL
<i>Sabatinca</i> sp. "Percy"	Jawed moth	Micropterigidae		RR
NOT THREATENED (12)				
Taxonomically Determinate (10)				
<i>Cadmogenes literata</i> Meyrick, 1923	Moth	Incertae sedis		
<i>Ephestia kuehniella</i> Zeller, 1879	Snout moth	Pyralidae		SO
<i>Euxoa ceropachoides</i> Guenée, 1868	Owlet moth	Noctuidae		
<i>Glyphipterix necopina</i> Philpott, 1927	Sedge moth	Glyphipterigidae		
<i>Hierodoris tygris</i> Hoare 2005	Concealer moth	Oecophoridae		
<i>Izatha voluptuosa</i> Hoare, 2010	Concealer moth	Oecophoridae		
<i>Mnesarchaea fallax</i> Philpott, 1927	NZ primitive moth	Mnesarchaeidae		Sp
<i>Pseudocoremia fluminea</i> (Philpott, 1926)	Flash moth	Geometridae		
<i>Stigmella maoriella</i> (Walker, 1864)	Pigmy leafminer moth	Nepticulidae		
<i>Zizina oxleyi</i> (Felder & Felder, 1865)	Southern blue butterfly	Lycaenidae		
Taxonomically Indeterminate (2)				
" <i>Tinea</i> " <i>belonota</i> (this is the female!)	Micro moth	Tineidae		
<i>Dichromodes</i> sp. "plain grey"	Looper moth	Geometridae		

BRIEF DEFINITIONS

Qualifiers:

- CD Conservation Dependent
- De Designated (even though it could have been placed elsewhere)
- Dec Declining
- DP Data Poor
- EF Extreme Fluctuations
- EW Extinct in the Wild
- IE Island Endemic
- Inc Increasing
- OL One Location
- PD Partial Decline
- RF Recruitment Failure
- RR Range Restricted
- SO Secure Overseas
- Sp Sparse
- St Stable
- TO Threatened Overseas

Categories and criteria:

Data Deficient

Taxa that are suspected to be threatened, or in some instances, possibly extinct but are not definitely known to belong to any particular category 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 Townsend et al. 2008).

Threatened

Taxa that meet the criteria specified by Townsend et al. (2008) for the categories Nationally Critical, Nationally Endangered and Nationally Vulnerable.

Nationally Critical

Criteria for Nationally Critical:

A—very small population (natural or unnatural)

A(1) <250 mature individuals, regardless of cause

A(2) ≤2 subpopulations, ≤200 mature individuals in the larger subpopulation

A(3) Total area of occupancy ≤1 ha (0.01 km²)

B—small population (natural or unnatural) with a high ongoing or predicted decline

B(1/1) 250–1000 mature individuals, predicted decline 50–70%

B(2/1) ≤5 subpopulations, ≤300 mature individuals in the largest subpopulation, predicted decline 50–70%

B(3/1) Total area of occupancy ≤10 ha (0.1 km²), predicted decline 50–70%

C—population (irrespective of size or number of subpopulations) with a very high ongoing or predicted decline (>70%)

C Predicted decline >70%

Nationally Endangered

Criteria for Nationally Endangered:

A—small population (natural or unnatural) that has a low to high ongoing or predicted decline

A(1/1) 250–1000 mature individuals, predicted decline 10–50%

A(2/1) ≤5 subpopulations, ≤300 mature individuals in the largest subpopulation, predicted decline 10–50%

A(3/1) Total area of occupancy ≤10 ha (0.1 km²), predicted decline 10–50%

B—small stable population (unnatural)

B(1/1) 250–1000 mature individuals, stable population

B(2/1) ≤5 subpopulations, ≤300 mature individuals in the largest subpopulation, stable population

B(3/1) Total area of occupancy ≤10 ha (0.1 km²), stable population

C—moderate population and high ongoing or predicted decline

C(1/1) 1000–5000 mature individuals, predicted decline 50–70%

C(2/1) ≤15 subpopulations, ≤500 mature individuals in the largest subpopulation, predicted decline 50–70%

C(3/1) Total area of occupancy ≤100 ha (1 km²), predicted decline 50–70%

Nationally Vulnerable

Criteria for Nationally Vulnerable:

A—small, increasing population (unnatural)

A(1/1) 250–1000 mature individuals, predicted increase >10%

A(2/1) ≤5 subpopulations, ≤300 mature individuals in the largest subpopulation, predicted increase >10%

A(3/1) Total area of occupancy ≤10 ha (0.1 km²), predicted increase >10%

B—moderate, stable population (unnatural)

B(1/1) 1000–5000 mature individuals, stable population

B(2/1) ≤15 subpopulations, ≤500 mature individuals in the largest subpopulation, stable population

B(3/1) Total area of occupancy ≤100 ha (1 km²), stable population

C—moderate population, with population trend that is declining

C(1/1) 1000–5000 mature individuals, predicted decline 10–50%

C(2/1) ≤15 subpopulations, ≤500 mature individuals in the largest subpopulation, predicted decline 10–50%

C(3/1) Total area of occupancy ≤100 ha (1 km²), predicted decline 10–50%

D—moderate to large population and moderate to high ongoing or predicted decline

D(1/1) 5000–20 000 mature individuals, predicted decline 30–70%

D(2/1) ≤15 subpopulations and ≤1000 mature individuals in the largest subpopulation, predicted decline 30–70%

D(3/1) Total area of occupancy ≤1000 ha (10 km²), predicted decline 30–70%

E—large population and high ongoing or predicted decline

E(1/1) 20 000–100 000 mature individuals, predicted decline 50–70%

E(2/1) Total area of occupancy ≤10 000 ha (100 km²), predicted decline 50–70%

At Risk

Taxa that meet the criteria specified by Townsend et al. (2008) for Declining, Recovering, Relict and Naturally Uncommon.

Declining

Criteria for Declining:

A—moderate to large population and low ongoing or predicted decline

A(1/1) 5000–20 000 mature individuals, predicted decline 10–30%

A(2/1) Total area of occupancy ≤1000 ha (10 km²), predicted decline 10–30%

B—large population and low to moderate ongoing or predicted decline

B(1/1) 20 000–100 000 mature individuals, predicted decline 10–50%

B(2/1) Total area of occupancy ≤10 000 ha (100 km²), predicted decline 10–50%

C—very large population and low to high ongoing or predicted decline

C(1/1) >100 000 mature individuals, predicted decline 10–70%

C(2/1) Total area of occupancy >10 000 ha (100 km²), predicted decline 10–70%

Recovering

Taxa that have undergone a documented decline within the last 1000 years and now have an ongoing or predicted increase of >10% in the total population or area of occupancy, taken over the next 10 years or three generations, whichever is longer. Note that such taxa that are increasing but have a population size of <1000 mature individuals (or total area of occupancy of <10 ha) are listed in one of the Threatened categories, depending on their population size (for more details see Townsend et al. (2008)). Criteria for Recovering:

- A 1000–5000 mature individuals or total area of occupancy ≤ 100 ha (1 km²), and predicted increase >10%
- B 5000–20 000 mature individuals or total area of occupancy ≤ 1000 ha (10 km²), and predicted increase >10%

No taxonomically determinate Lepidoptera taxa are listed in this category.

Relict

Taxa that have undergone a documented decline within the last 1000 years, and now occupy <10% of their former range and meet one of the following criteria:

- A 5000–20 000 mature individuals; population stable ($\pm 10\%$)
- B >20 000 mature individuals; population stable or increasing at >10%.

The range of a relictual taxon takes into account the area currently occupied as a ratio of its former extent. Relict can also include taxa that exist as reintroduced and self-sustaining populations within or outside their former known range (for more details see Townsend et al. (2008)).

Naturally Uncommon

Taxa whose distribution is confined to a specific geographical area or which occur within naturally small and widely scattered populations, where this distribution is not the result of human disturbance.

Non-resident Native

Taxa whose natural presence in 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).

Not Threatened

Resident native taxa that have large, stable populations.

Introduced and Naturalised

Taxa that have become naturalised in the wild after being deliberately or accidentally introduced into New Zealand by human agency.

3. Acknowledgements

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4. References

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