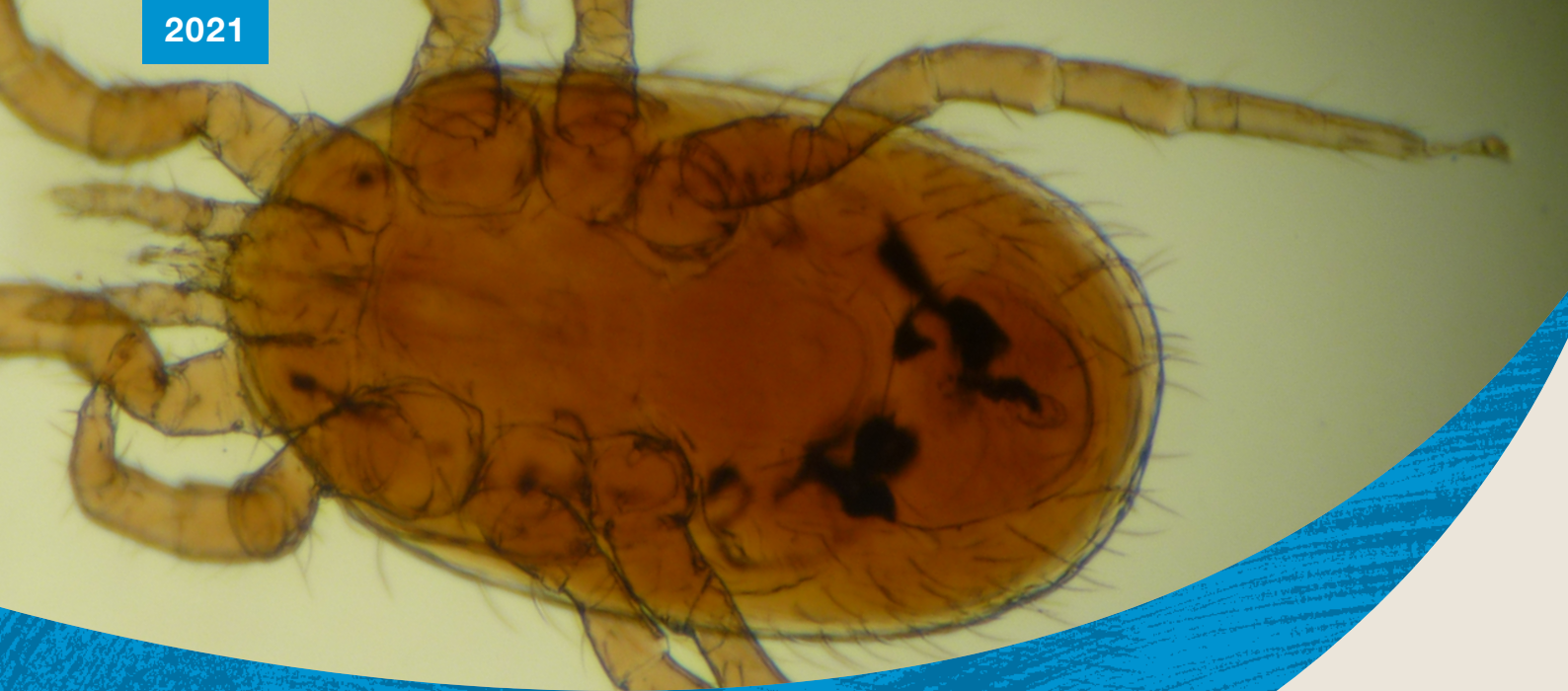


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NEW ZEALAND THREAT CLASSIFICATION SERIES 37

# Conservation status of parasitic mites and ticks (Acari) in New Zealand, 2021

Allen Heath, Jeremy Rolfe, and Pascale Michel



Department of  
Conservation  
*Te Papa Atawhai*



**Te Kāwanatanga  
o Aotearoa**  
New Zealand Government

Cover: Female dermanyssid (Mesostigmata), *Dermanyssus* sp. from the red-crowned parakeet (*Cyanoramphus novaezelandiae novaezelandiae*), At Risk – Relict. Photo: A.C.G. Heath

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The NZTCS database can be accessed at [nzctcs.org.nz](http://nzctcs.org.nz). For all enquiries, email [threatstatus@doc.govt.nz](mailto:threatstatus@doc.govt.nz).

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# Conservation status of parasitic mites and ticks (Acari) in New Zealand, 2021

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## Abstract

The conservation status of 211 parasitic (on animals only) mite and tick (Acari) taxa was assessed using the New Zealand Threat Classification System (NZTCS). A list is presented, along with a statistical summary and brief notes on the most important changes. This list replaces all previous NZTCS lists for parasitic mites and ticks.

Keywords: New Zealand Threat Classification System, NZTCS, conservation status, Alloptidae, Analgidae, Argasidae, Atopomelidae, Avenzoariidae, Cheyletidae, Demodicidae, Dermanyssidae, Dermoglyphidae, Epidermoptidae, Falculiferidae, Freyaniidae, Gabucinidae, Hypoderatidae, Ixodidae, Kiwilichidae, Knemidokoptidae, Laelapidae, Laminosioptidae, Leeuwenhoekidae, Listorophoridae, Macronyssidae, Myobiidae, Myocoptidae, Proctophyllodidae, Psorergatidae, Psoroptidae, Psoroptoididae, Pterolichidae, Pteronyssidae, Ptiloxenidae, Rhinonyssidae, Sarcoptidae, Spinturnicidae, Trombiculidae, Trouessartiidae, Turbinoptidae, Xolalgidae

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# 1. Summary

Eleven parasitic Acari taxa were assessed in 2010 (Buckley et al. 2012) using the New Zealand Threat Classification system (NZTCS) (Townsend et al. 2008, Michel 2021), with eight being assessed as Threatened, one At Risk and two Data Deficient (Table 1). Two species assessed in 2010 were not included in this report because they are parasitic mites of plant taxa. These are *Aceria clianthi* Lamb, 1952 and *Eriophyoidea incertae cedis*.

## 1.1 Changes to the list of taxa

In this report, the conservation status of 211 mite and tick (Acari) taxa is assessed (Tables 1 & 2), most for the first time. This list is comprehensive for parasitic mites of animals, but not of plants. Species of mites associated with animal nests or burrows are not included unless there is evidence that they are facultatively parasitic on the inhabitants. Each record was checked as to taxonomic validity and host association(s) using numerous specialist references. Not all references – such as the first description of a species – are given, although many would be found in the bibliography of some of the papers cited here. Principally, the basic databases of Bishop & Heath (1985), Halliday (1998), Tenquist & Charleston (2001), Krantz & Walter (2009), Sirvid et al. (2010) and Heath (2010) and any relevant descriptions published after 2008 (Sirvid et al.'s latest references were up to 2007) are cited here (see section 4 – References). In addition, where name changes have occurred or there is reference to a particular host, then such references are cited, as well as reviews of some groups, but no claim is made for the reference list being comprehensive. Material representing indeterminate species (predominately feather mite taxa) has been lodged with Museum of New Zealand Te Papa Tongarewa (MNZ), but is awaiting accession numbers (pers. comm. P.J. Sirvid, MNZ, 13 May 2021). Those in other families that do not have a specific epithet are in the collection of the first author. Current bird names were confirmed using Gill et al. (2010).

Of the 211 taxa (some genera may be polytypic) listed in this report, at least 35 have yet to be formally named. Further study may reduce the number of Taxonomically Unresolved species by both establishing taxonomic validity and add to their host-associations. Therefore, because of this current uncertainty, their conservation status can only be regarded as provisional at this point.

## 1.2 Trends

In this assessment, 28 taxa are endemic to New Zealand (11 of which are Taxonomically Unresolved), 97 are Introduced and Naturalised (3 of which are Taxonomically Unresolved) and 1 is Vagrant. Of the 211 parasitic Acari taxa assessed in this report, 8 are Data Deficient, 25 are Threatened, 18 are At Risk and 61 are Not Threatened (Table 1). One species – the huia mite *Coraciacarus muellermotzfeldi* Dabert & Alberti, 2008 – is assessed as Extinct as its only known host, the huia (*Heteralocha acutirostris*), is known to be extinct (Robertson et al. 2017). Ticks originally thought to be associated with *H. acutirostris* are now considered to be contaminants or erroneously assigned to that host (Heath & Palma 2016).

The conservation status of parasitic Acari taxa (see Section 2.2) principally reflects the status of their respective hosts, as the availability of a host is a major limiting factor to parasites' distribution and abundance. Nevertheless, low host specificity, high reproductive potential, and longevity can sustain parasite populations (Poulin & Morand 2004). Parasite taxa, without these properties, are often more threatened than their host species. Further, because of the

inherent complexity of parasite life cycles, population thresholds below which extinction is inevitable are much lower than in most free-living species. Low host densities may therefore lead to the disappearance of parasites if transmission rates become too low. Kwak et al. (2020) developed a comprehensive set of guidelines aimed at understanding the importance of animal parasites as worthy of preservation, and suggestions as to how this might be achieved.



Kiwi tick (female), *Ixodes anatis* (Ixodidae). Photo: Allen Heath

Two of the taxa that were assessed in 2010 (Buckley et al. 2012) have changed status, both because there is now a better understanding of their populations. The kiwi tick, *Ixodes anatis* Chilton, 1904 which was previously assessed as Threatened – Nationally Vulnerable, is now known to occur on several species of kiwi (genus *Apteryx*) and it is reassessed as Not Threatened. The unnamed slug mite, *Riccardoella* sp. 1 from Trounson Kauri Park Scenic

Reserve, Northland, had been assessed as Data Deficient. However, the range of its host (*Athoracophorus* sp. 7 (NMNZ M.151433) “Warawara 2”) is now known to be widespread in western Northland forests (Barker 2011, Mahlfeld et al. 2012), but *Riccardoella* sp. 1 has not been found outside Trounson Kauri Park Scenic Reserve. Therefore, it is now assessed as Threatened – Nationally Vulnerable.

Table 1. Summary of the status of parasitic mite and tick (Acari) taxa in New Zealand, assessed in 2010 (Buckley et al. 2012) and 2021 (this document).

CATEGORY	Buckley et al. 2012	This document
Extinct		1
Data Deficient	2	8
Threatened – Nationally Critical	2 <sup>1</sup>	5
Threatened – Nationally Endangered		6
Threatened – Nationally Vulnerable	6	9
Threatened – Nationally Increasing <sup>2</sup>		5
At Risk – Declining		10
At Risk – Relict		6
At Risk – Naturally Uncommon	1	2
Not Threatened		61
Non-Resident Native – Vagrant		1
Introduced and Naturalised		97
<b>Total</b>	<b>11</b>	<b>211</b>

<sup>1</sup> This includes two taxa, *Aceria clianthi* Lamb, 1952 and *Eriophyoidea incertae cedis*, which were assessed in 2010 and are not included in this report because they are parasites of plants.

<sup>2</sup> Threatened – Nationally Increasing is a new name and category for what was previously named At Risk – Recovering A (Michel 2021).

## 2. Conservation status of parasitic mites (Acari) in New Zealand

Taxa are assessed according to the criteria of Townsend et al. (2008), grouped by conservation status, then alphabetically by scientific name. Categories are ordered by degree of loss, with Extinct at the top of the list and Not Threatened at the bottom, above Introduced and Naturalised. The Data Deficient list is inserted between Extinct and Threatened. 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, as searches for these species have repeatedly failed to resight them.

Brief descriptions of the NZTCS categories and criteria are provided in section 2.2. See Townsend et al. (2008) and Michel (2021) for full definitions of categories, criteria and qualifiers, and explanation of the assessment process (<https://www.doc.govt.nz/globalassets/documents/science-and-technical/sap244.pdf>).

### 2.1 Assessments

The conservation status of 211 parasitic mite and tick (Acari) taxa in New Zealand is presented in Table 2. The full data for the taxa listed in this table can be viewed and downloaded at <https://nztcs.org.nz/reports/69>.



Table 2. Conservation status of parasitic (for animals only) mite and tick taxa (Acari) in New Zealand.

NZTCS categories are listed for all known host species and abbreviated as follows: DD = Data Deficient, Dec = At Risk – Decreasing, Ext = Extinct, IN = Introduced and Naturalised, Rec = At Risk – Recovering, Rel = At Risk – Relict, NC = Threatened – Nationally Critical, NE = Threatened – Nationally Endangered, NI = Threatened – Nationally Increasing, NU = At Risk – Naturally Uncommon, NV = Threatened – Nationally Vulnerable, Vag = Non-Resident Native – Vagrant.

Qualifiers are abbreviated as follows: CD = Conservation Dependent, DP = Data Poor, EF = Extreme Fluctuations, IE = Island Endemic, Inc = Increasing, OL = One Location, PD = Partial Decline, RR = Range Restricted, SO = Secure Overseas, Sp = Sparse, St = Stable.

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<b>EXTINCT (1)</b>						
<i>Coraciacarus muellermotzfeldi</i> Dabert & Alberti, 2008	huia mite	Gabucinidae	huia ( <i>Heteralocha acutirostris</i> , Ext)			New listing
<b>DATA DEFICIENT (8)</b>						
<b>Taxonomically Determinate (7)</b>						
<i>Carios quadridentatus</i> Heath, 2012	tick	Argasidae	southern short-tailed bat ( <i>Mystacina tuberculata tuberculata</i> , Rec)			New listing
<i>Chirolaelaps mystacinae</i> Heath, Bishop & Daniel, 1987	mite	Laelapidae	central lesser short-tailed bat ( <i>Mystacina tuberculata rhyacobia</i> , Dec)			New listing
<i>Chirophagoides mystacopsis</i> Fain, 1963	mite	Sarcoptidae	greater short-tailed bat ( <i>Mystacina robusta</i> , DD)			New listing
<i>Demodex mystacina</i> Desch, 1989	mite	Demodecidae	central lesser short-tailed bat ( <i>Mystacina tuberculata rhyacobia</i> , Dec)			New listing
<i>Demodex novaezealandica</i> Desch, 1989	mite	Demodecidae	central lesser short-tailed bat ( <i>Mystacina tuberculata rhyacobia</i> , Dec)			New listing
<i>Ixodes amersoni</i> Kohls, 1966	tick	Ixodidae	grey noddy ( <i>Procelsterna cerulea albivitta</i> , Rel)			New listing
<i>Riccardoella</i> ( <i>Proriccardoella</i> ) <i>novaezealandiae</i> Fain & Barker, 2004	slug mite	Ereynetidae	leaf-veined slug ( <i>Athoracophoridae</i> "Mt Hikurangi", DD)		OL	No change
<b>Taxonomically Unresolved (1)</b>						
<i>Spinturnix</i> sp. 1 "long-tailed bat" von Heyden	long-tailed bat mite	Spinturnicidae	long-tailed bat ( <i>Chalinolobus tuberculatus</i> , NC)			New listing
<b>THREATENED (25)</b>						
<b>NATIONALLY CRITICAL (5)</b>						
<b>Taxonomically Determinate (5)</b>						
<i>Bychovskia thinorni</i> Mironov, 1994	mite	Avenzoariidae	shore plover ( <i>Thinornis novaeseelandiae</i> , NC)	A(3)	CD, Inc, RR	New listing
<i>Kakapolichus strigopsis</i> Mironov & Perez, 2003	mite	Pterolichidae	kākāpō ( <i>Strigops habroptilus</i> , NC)	A(1)		New listing

Continued on next page

Table 2 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Mesalges lyrurus</i> Trouessart & Neumann, 1888	kākāpō feather mite	Psoroptoididae	kākāpō ( <i>Strigops habroptilus</i> , NC)	A(1)		New listing
<i>Ornithonyssus spinosa</i> Manson, 1973	mite	Macronyssidae	long-tailed bat ( <i>Chalinolobus tuberculatus</i> , NC)	C		New listing
<i>Protalges psittacinus</i> Trouessart, 1885	kākāpō mite	Analgidae	kākāpō ( <i>Strigops habroptilus</i> , NC)	A(1)	CD	New listing
<b>NATIONALLY ENDANGERED (6)</b>						
<b>Taxonomically Determinate (4)</b>						
<i>Calyptrichus favettei</i> (Trouessart, 1899)	mite	Pterolichidae	kea ( <i>Nestor notabilis</i> , NE)	A(3)		New listing
<i>Laminilloptes phaetontis</i> (Fabricius, 1775)	mite	Alloptidae	red-tailed tropicbird ( <i>Phaethon rubricauda</i> , NI)	B(1)	RR, SO, St	New listing
<i>Laminilloptes simplex</i> (Trouessart, 1885)	mite	Alloptidae	red-tailed tropicbird ( <i>Phaethon rubricauda</i> , NI)	B(1)	Inc, RR, SO	New listing
<i>Odontacarus lygosomae</i> (Dumbleton, 1947)	mite	Leeuwenhoekidae	grand skink ( <i>Oligosoma grande</i> , NE)	B(1)	CD, RR	New listing
<b>Taxonomically Unresolved (2)</b>						
<i>Leptosphyra</i> sp. 1 “red-tailed tropic bird”	feather mite	Xolalgidae	red-tailed tropicbird ( <i>Phaethon rubricauda</i> , NI)	B(1)	RR, SO, St	New listing
<i>Sulanyssus</i> sp. “masked booby”	feather mite	Freyaniidae	masked booby ( <i>Sula dactylatra tasmani</i> , NE)	B(1)		New listing
<b>NATIONALLY VULNERABLE (9)</b>						
<b>Taxonomically Determinate (8)</b>						
<i>Alloptes (Sternalloptes) oxylobus</i> Dubinin, 1951	mite	Alloptidae	red-billed gull ( <i>Larus novaehollandiae scopulinus</i> , Dec)	D(1)		New listing
<i>Guntheria (Derrickiella) apteryxi</i> Loomis & Goff, 1983	mite	Trombiculidae	North Island brown kiwi ( <i>Apteryx mantelli</i> , NT)	D(1)	OL, CD	No change
<i>Ixodes jacksoni</i> Hoogstraal, 1967	tick	Ixodidae	spotted shag ( <i>Stictocarbo punctatus punctatus</i> , NV)	E(1)		New listing
<i>Kiwialges phalagotrichus</i> Gaud & Atyeo, 1970	kiwi feather mite	Analgidae	little spotted kiwi ( <i>Apteryx owenii</i> , NI)	D(1)		No change
<i>Kiwilichus cryptosikyus</i> Gaud & Atyeo, 1970	kiwi feather mite	Kiwilichidae	southern Fiordland tokoeka ( <i>Apteryx australis</i> “southern Fiordland”, NE)	D(1)		No change
<i>Kiwilichus delosikyus</i> Gaud & Atyeo, 1970	kiwi feather mite	Kiwilichidae	tokoeka ( <i>Apteryx australis australis</i> , NU; <i>A. australis</i> “southern Fiordland”, NE)	D(1)		No change
<i>Temnalges mesalgoides</i> Gaud & Atyeo, 1967	mite	Psoroptoididae	South Island takahē ( <i>Porphyrio hochstetteri</i> , NV)	A(1)	CD	New listing
<i>Scutomegninia chathamensis</i> Mironov, 1990	mite	Avenzoariidae	Pitt Island shag ( <i>Stictocarbo featherstoni</i> , NV); Chatham Island shag ( <i>Leucocarbo onslowi</i> , NV)	B(1)		New listing

Continued on next page

Table 2 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<b>Taxonomically Unresolved (1)</b>						
<i>Riccardoella (Proriccardoella)</i> sp. 1	slug mite	Ereynetidae	leaf-veined slug ( <i>Athoracophorus</i> sp.7 (NMNZM.151433) "Warawara 2", NU)	B(3)	OL	Neutral
<b>NATIONALLY INCREASING (5)</b>						
<b>Taxonomically Determinate (2)</b>						
<i>Kiwialgos haastii</i> Bishop, 1985	kiwi feather mite	Analgidae	great spotted kiwi ( <i>Apteryx haastii</i> , NV)	A		New listing
<i>Laminalloptes minor</i> (Trouessart, 1885)	mite	Alloptidae	red-tailed tropicbird ( <i>Phaethon rubricauda</i> , NI); frigatebirds ( <i>Fregata ariel ariel</i> , Vag; <i>F. minor palmerstoni</i> , Vag)	A	RR, SO	New listing
<b>Taxonomically Unresolved (3)</b>						
<i>Brephosceles</i> sp. 1 "red-tailed tropic bird"	red-tailed tropic bird feather mite	Alloptidae	red-tailed tropicbird ( <i>Phaethon rubricauda</i> , NI)	A	RR, SO, St	New listing
<i>Dermanyssus</i> sp. 1 "North Island saddleback"	north Island saddleback mite	Dermanyssidae	North Island saddleback ( <i>Philesturnus rufusater</i> , Rec)	A		New listing
<i>Pseudalloptinus</i> sp. 1. "Kermadec parakeet"	Kermadec parakeet feather mite	Pterolichidae	Kermadec parakeet ( <i>Cyanoramphus novaezelandiae cyanurus</i> , NU)	A	EF, Inc, IE, RR	New listing
<b>AT RISK (18)</b>						
<b>DECLINING (10)</b>						
<b>Taxonomically Determinate (7)</b>						
<i>Brephosceles constrictus</i> Peterson, 1971	mite	Alloptidae	banded dotterel ( <i>Charadrius bicinctus bicinctus</i> , Dec)	A(1)		New listing
<i>Brephosceles puffini</i> Peterson, 1971	mite	Alloptidae	Hutton's shearwater ( <i>Puffinus huttoni</i> , NV)	A(1)	OL	New listing
<i>Bychovskiata obscura</i> Mironov & Dabert, 1997	mite	Avenzoariidae	New Zealand dotterel ( <i>Charadrius obscurus obscurus</i> , NC; <i>C.o. aquilonius</i> , NI); wrybill ( <i>Anarhynchus frontalis</i> , NI)	C(1)		New listing
<i>Geckobia naultina</i> Womersley, 1941	mite	Pterygosomatidae	elegant gecko ( <i>Naultinus elegans</i> , DEC)	B(1)		New listing
<i>Neodectes pilgrimi</i> Mironov & O'Connor, 2017	wren feather mite	Proctophyllodidae	rock wren ( <i>Xenicus gilviventris</i> , NC; <i>X. g. rineyi</i> , NE); rifleman ( <i>Acanthisitta chloris chloris</i> , NE; <i>A. c. grantis</i> , Dec)	C(1)		New listing
<i>Nestorilichus atyeoi</i> Mironov & Dabert, 2007	mite	Pterolichidae	kākā ( <i>Nestor meridionalis meridionalis</i> , NV; <i>N. m. septentrionalis</i> , Rec)	A(1)	PD	New listing
<i>Zachvatkinia puffini</i> (Buchholz, 1869)	mite	Avenzoariidae	Hutton's shearwater ( <i>Puffinus huttoni</i> , NV)	B(1)		New listing
<b>Taxonomically Unresolved (3)</b>						
<i>Bychovskiata</i> sp. "dotterel, sooty shearwater"	feather mite	Avenzoariidae	dotterel spp. ( <i>Charadrius</i> spp. NC; NI; Dec, Rel, Vag); sooty shearwater ( <i>Puffinus griseus</i> , Dec)	C(1)		New listing

Continued on next page

Table 2 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Scopusacarus</i> sp. “godwit”	feather mite	Pterolichidae	eastern bar-tailed godwit ( <i>Limosa lapponica</i> , Dec)	B(1)		New listing
<i>Sokoloviana</i> sp. 1 “SI pied oystercatcher”	feather mite	Ptiloxenidae	South Island pied oystercatcher ( <i>Haematopus finschi</i> , Dec)	B(1)		New listing
<b>RELICT (6)</b>						
<b>Taxonomically Determinate (4)</b>						
<i>Archaeocroton sphenodonti</i> (Dumbleton, 1943)	tuatara tick	Ixodidae	tuatara ( <i>Sphenodon punctatus</i> , Rel)	B	CD, RR	Worse
<i>Brephosceles lunatus</i> Peterson, 1971	mite	Alloptidae	white-naped petrel ( <i>Pterodroma cervicalis</i> , Rel)	B		New listing
<i>Neotrombicula sphenodonti</i> Goff, Loomis & Ainsworth, 1988	mite	Trombiculidae	tuatara ( <i>Sphenodon punctatus</i> , Rel)	A		New listing
<i>Ophionyssus galeotes</i> Domrow, Heath & Kennedy, 1980	mite	Macronyssidae	Duvaucel's gecko ( <i>Hoplodactylus duvaucelii</i> “northern”, Rel; <i>H. d.</i> “southern”, NI)	A	CD	New listing
<b>Taxonomically Unresolved (2)</b>						
<i>Dermanyssus</i> sp. 2 “red-crowned parakeet”	red-crowned parakeet mite	Dermanyssidae	red-crowned parakeet ( <i>Cyanoramphus novaezelandiae novaezealandiae</i> , Rel)	A		New listing
<i>Protalgus</i> sp. 1 “bittern, Chatham Island snipe, red-crowned parakeet, falcon”	feather mite	Analgidae	Australasian bittern ( <i>Botaurus poiciloptilus</i> , NC); Chatham Island snipe ( <i>Coenocorypha pusilla</i> , NV); red-crowned parakeet ( <i>Cyanoramphus novaezelandiae novaezealandiae</i> , Rel); New Zealand falcon ( <i>Falco novaeseelandiae</i> : <i>F. n. ferox</i> , NI; <i>F. n. novaeseelandiae</i> , NV; <i>F. n.</i> “southern”, NE)	B		New listing
<b>NATURALLY UNCOMMON (2)</b>						
<b>Taxonomically Determinate (2)</b>						
<i>Kiwialges palametricus</i> Gaud & Atyeo 1979	kiwi feather mite	Analgidae	Rakiura tokoeka ( <i>Apteryx australis australis</i> , NU)			Better
<i>Scutomegninia phalacrocoracis</i> (Dubinin & Dubinin, 1940)	mite	Avenzoariidae	black shag ( <i>Phalacrocorax carbo novaehollandiae</i> , Rel)		SO, Sp	New listing
<b>NOT THREATENED (61)</b>						
<b>Taxonomically Determinate (42)</b>						
<i>Alloptes stercorarii</i> Dubinin, 1952	mite	Alloptidae	not specified			New listing
<i>Bychovskia subchararii</i> Dubinin, 1951	mite	Avenzoariidae	not specified			New listing
<i>Calcealges yunkerii</i> Gaud, 1962	mite	Trouessartiidae	silvereve ( <i>Zosterops lateralis lateralis</i> , NT)			New listing

Continued on next page

Table 2 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Echinacarus rubidus</i> (Trouessart, 1886)	mite	Alloptidae	albatross species (Diomedidae)			New listing
<i>Exochojoubertia lobulata</i> (Trouessart, 1885)	mite	Proctophylloidae	tūi ( <i>Prothemadera novaeseelandiae novaeseelandiae</i> , NT); bellbird ( <i>Anthornis melanura melanura</i> , NT)			New listing
<i>Geckobia haplodactyli</i> Womersley, 1941	mite	Pterygosomatidae	Raukawa gecko ( <i>Woodworthia maculata</i> , NT); Duvaucel's gecko ( <i>H. duvaucelii</i> "northern", Rel; <i>H. d.</i> "southern", NI); Pacific gecko ( <i>Dactylocnemis pacificus</i> , NT)			New listing
<i>Hemialges pilgrimi</i> Mironov & Galloway, 2002	mite	Analgidae	South Island fantail ( <i>Rhipidura fuliginosa fuliginosa</i> , NT)			New listing
<i>Hemiphagacarus spinosus</i> (Trouessart, 1898)	feather mite	Falculiferidae	not specified			New listing
<i>Ixodes anatis</i> Chilton, 1904	tick	Ixodidae	North Island brown kiwi ( <i>Apteryx mantelli</i> , NT); Rakiura tokoeka ( <i>A. australis australis</i> , NU); southern Fiordland tokoeka ( <i>A. australis</i> "southern Fiordland", NE); grey duck ( <i>Anas superciliosa</i> , NV); mallard duck ( <i>A. platyrhynchos</i> , IN); Canada goose ( <i>Branta canadensis</i> , IN); buff weka ( <i>Gallirallus australis hectori</i> , Rel)			Better
<i>Ixodes auritulius zealandicus</i> Dumbleton, 1961	tick	Ixodidae	South Island saddleback ( <i>Philesturnus carunculatus</i> , Rec); numerous seabirds in New Zealand and subantarctic islands			New listing
<i>Ixodes eudyptidis</i> Maskell, 1885	tick	Ixodidae	Penguin species (Spheniscidae) in New Zealand and Australia			New listing
<i>Ixodes kerguelenensis</i> André & Colas Belcour, 1942	tick	Ixodidae	kākāpō ( <i>Strigops habroptilus</i> , NC); grey petrel ( <i>Procellaria cinerea</i> , Rel); numerous seabirds in Australia, New Zealand subregion and subantarctic islands			New listing
<i>Ixodes laridis</i> Heath & Palma, 2017	tick	Ixodidae	gulls (Laridae); gannets ( <i>Morus</i> spp.); shags (cormorants, Phalacrocoracidae); throughout New Zealand and Australia			New listing
<i>Ixodes uriae</i> White, 1852	tick	Ixodidae	numerous seabirds in New Zealand and circumpolar region		SO	New listing
<i>Megninia androgyna</i> Trouessart, 1886	feather mite	Analgidae	weka ( <i>Gallirallus australis</i> : <i>G. a. australis</i> , NT; <i>G. a. hectori</i> , Rel; <i>G. a. greyi</i> , Rel; <i>G. a. scotti</i> , NV); kākāpō ( <i>Strigops habroptilus</i> , NC); kea ( <i>Nestor nobilis</i> , NE)			New listing
<i>Megninia elongata</i> Trouessart, 1886	feather mite	Analgidae	weka ( <i>Gallirallus australis</i> : <i>G. a. australis</i> , NT; <i>G. a. hectori</i> , Rel; <i>G. a. greyi</i> , Rel; <i>G. a. scotti</i> , NV)			New listing

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Table 2 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Megninia scapularis</i> Trouessart, 1899	feather mite	Analgidae	kererū ( <i>Hemiphaga novaeseelandiae</i> , NT)		CD	New listing
<i>Mesalges diaphanoxus</i> Bonnet, 1924	feather mite	Psoroptoididae	western weka ( <i>Gallirallus australis australis</i> , NT); South Island kōkako ( <i>Callaeas cinerea</i> , DD)			New listing
<i>Mesalges oscinum</i> (Koch, 1841)	feather mite	Psoroptoididae	kererū ( <i>Hemiphaga novaeseelandiae</i> , NT)			New listing
<i>Microspalax brevipes</i> (Mégnin & Trouessart, 1884)	feather mite	Alloptidae	petrel species (Procellariidae)			New listing
<i>Microtrombicula hoplodactyla</i> Goff, Loomis & Ainsworth, 1987	mite	Trombiculidae	Raukawa gecko ( <i>Woodworthia maculata</i> , NT)		PD	New listing
<i>Morinyssus simplex</i> Gaud & Atyeo, 1982	mite	Freyaniidae	Australasian gannet ( <i>Morus serrator</i> , NT)			New listing
<i>Mouchetia novaeseelandica</i> Mironov & Galloway, 2002	silvereve feather mite	Pteronyssidae	silvereve ( <i>Zosterops lateralis lateralis</i> , NT)			New listing
<i>Neotrombicula nautini</i> Dumbleton, 1947	mite	Trombiculidae	forest gecko ( <i>Mokopirirakau granulatus</i> , NT); Raukawa gecko ( <i>Woodworthia maculata</i> , NT); Pacific gecko ( <i>Dactylocnemis pacificus</i> , NT); elegant gecko ( <i>Nautinus elegans</i> , Dec)			New listing
<i>Neottialges hughesae antipodus</i> (Fain & Clark, 1994)	mite	Hypoderatidae	Australasian gannet ( <i>Morus serrator</i> , NT)			New listing
<i>Neottialges hughesae hughesae</i> (Fain, 1969)	mite	Hypoderatidae	Australasian gannet ( <i>Morus serrator</i> , NT)			New listing
<i>Ophionyssus scincorum</i> Domrow, Heath and Kennedy, 1980	mite	Macronyssidae	Otago skink ( <i>Oligosoma otagense</i> , NE); moko skink ( <i>Oligosoma moco</i> , Rel); Burgan skink ( <i>Oligosoma burganae</i> , NE); northern grass skink ( <i>Oligosoma polychroma</i> , NT)			New listing
<i>Ornithodoros capensis</i> Neumann, 1901	tick	Argasidae	petrels, shearwaters (Procellariidae); shags (cormorants, Phalacrocoracidae); red-tailed tropicbird ( <i>Phaethon rubicauda</i> , NI); Australasian gannet ( <i>Morus serrator</i> , NT); red-billed gull ( <i>Larus novaehollandiae scopulinus</i> , Dec); brown booby ( <i>Sula leucogaster plotus</i> , Vag); sooty tern ( <i>Onychoprion fuscata serratus</i> , Rec); spotless crane ( <i>Porzana tabuensis tabuensis</i> , Dec)			New listing
<i>Proctophyllodes anthi</i> (Vitzthum, 1922)	mite	Proctophyllodidae	New Zealand pipit ( <i>Anthus novaeseelandiae novaeseelandiae</i> , Dec); skylark ( <i>Alauda arvensis</i> , IN)			New listing
<i>Proctophyllodes ceratophyllus</i> Atyeo & Braasch, 1966	mite	Proctophyllodidae	silvereve ( <i>Zosterops lateralis lateralis</i> , NT)			New listing
<i>Proctophyllodes gerygone</i> Mironov & Galloway, 2002	mite	Proctophyllodidae	grey warbler ( <i>Gerygone igata</i> , NT)			New listing

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Table 2 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Protalgae australis</i> Trouessart, 1885	mite	Analgidae	bellbird ( <i>Anthornis melanura melanura</i> , NT)			New listing
<i>Pteroherpis zosteropus</i> Mironov, 1992	mite	Pteronyssidae	silveryeye ( <i>Zosterops lateralis lateralis</i> , NT)		SO	New listing
<i>Rallinyssus gallinulae</i> Fain, 1960	nasal mite	Rhinonyssidae	pūkeko ( <i>Porphyrio melanotus melanotus</i> , NT)			New listing
<i>Sokoloviana gracilis</i> (Mégnin & Trouessart, 1884)	mite	Ptiloxenidae	pieb stilt ( <i>Himantopus himantopus leucocephalus</i> , NT); black stilt ( <i>H. novaezealandiae</i> , NC)			New listing
<i>Strelkoviacarus</i> aff. <i>quadratus</i> (Haller, 1882)	mite	Analgidae	not specified			New listing
<i>Sulanyssus caputmedusae</i> (Trouessart, 1887)	mite	Freyaniidae	Australasian gannet ( <i>Morus serrator</i> , NT)			New listing
<i>Tinaminyssus halcyonus</i> (Domrow, 1965)	mite	Rhinonyssidae	sacred kingfisher ( <i>Todiramphus sanctus vagans</i> , NT)			New listing
<i>Trouessartia megadisca</i> Gaud, 1962	mite	Trouessartiidae	silveryeye ( <i>Zosterops lateralis lateralis</i> , NT)			New listing
<i>Trouessartia microcaudata</i> Mironov, 1983	mite	Trouessartiidae	welcome swallow ( <i>Hirundo neoxena neoxena</i> , NT)			New listing
<i>Trouessartia rhipidurae</i> Mironov & Galloway, 2002	mite	Trouessartiidae	South Island fantail ( <i>Rhipidura fuliginosa fuliginosa</i> , NT)			New listing
<i>Turbinoptes strandtmanni</i> Boyd, 1949	mite	Turbinoptidae	red-billed gull ( <i>Larus novaehollandiae scopulinus</i> , Dec); southern black-backed gull ( <i>Larus dominicanus dominicanus</i> , NT)			New listing
<b>Taxonomically Unresolved (19)</b>						
<i>Anhemialges</i> sp. 1 “fantail”	feather mite	Analgidae	fantail ( <i>Rhipidura fuliginosa</i> , NT)			New listing
<i>Brephosceles</i> sp. 3 “prions etc. [9 hosts]”	feather mite	Alloptidae	several species of prion (Procellariidae)			New listing
<i>Dubininia</i> sp. “shags, gannets”	feather mite	Xolalgidae	shags (cormorants, Phalacrocoracidae); gannets ( <i>Morus</i> spp.)			New listing
<i>Grallobia</i> sp. “black stilt, weka, shore plover”	feather mite	Pterolichidae	black stilt ( <i>Himantopus novaezealandiae</i> , NC); weka ( <i>Gallirallus australis</i> : <i>G. a. australis</i> , NT; <i>G. a. hectori</i> , Rel; <i>G. a. greyi</i> , Rel; <i>G. a. scotti</i> , NV); shore plover ( <i>Thinornis novaeseelandiae</i> , NC)			New listing
<i>Grallolichus</i> sp. “pūkeko”	feather mite	Pterolichidae	pūkeko ( <i>Porphyrio melanotus melanotus</i> , NT)			New listing
<i>Ingrassia</i> (? <i>eudyptula</i> ) Mironov & Proctor, 2008	mite	Xolalgidae	blue penguin ( <i>Eudyptula minor</i> , Dec, Rel)			New listing
<i>Ingrassiella</i> sp. “warbler, fantail”	feather mite	Xolalgidae	fantail ( <i>Rhipidura fuliginosa</i> , NT); grey warbler ( <i>Gerygone igata</i> , NT)			New listing
<i>Megniniella</i> sp. 1 “pūkeko, banded rail”	feather mite	Analgidae	pūkeko ( <i>Porphyrio melanotus melanotus</i> , NT); banded rail ( <i>Gallirallus philippensis assimilis</i> , Dec)			New listing

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Table 2 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Metanalges</i> sp. 1 “pukeko, banded rail”	feather mite	Analgidae	pūkeko ( <i>Porphyrio melanotus melanotus</i> , NT); banded rail ( <i>Gallirallus philippensis assimilis</i> , Dec)			New listing
<i>Michaelia</i> sp. 1 “cormorants”	feather mite	Freyaniidae	shags (cormorants, Phalacrocoracidae)			New listing
<i>Neodectes</i> sp. 1 “bellbird, tui, wren”	feather mite	Proctophylloidae	tūi ( <i>Prosthemadera novaeseelandiae novaeseelandiae</i> , NT); bellbird ( <i>Anthornis melanura melanura</i> , NT); rock wren ( <i>Xenicus gilviventris</i> , NC; <i>X. g. rineyi</i> , NE)			New listing
<i>Pteralloptes</i> sp. 1 “weka”	feather mite	Xolalgidae	weka ( <i>Gallirallus australis</i> : <i>G. a. australis</i> , NT; <i>G. a. hectori</i> , Rel; <i>G. a. greyi</i> , Rel; <i>G. a. scotti</i> , NV)			New listing
<i>Pterodectes</i> sp. 1 “many host spp.”	feather mite	Proctophylloidae	not specified			New listing
<i>Spilolichus</i> sp. “masked booby”	feather mite	Falculiferidae	masked booby ( <i>Sula dactylatra tasmani</i> , NE); kererū ( <i>Hemiphaga novaeseelandiae</i> , NT)			New listing
<i>Sturnotrogus</i> sp. 1 “welcome swallow”	feather mite	Pteronyssidae	welcome swallow ( <i>Hirundo neoxena neoxena</i> , NT)			New listing
<i>Temnalges</i> sp. “pukeko”	feather mite	Psoroptoididae	pūkeko ( <i>Porphyrio melanotus melanotus</i> , NT)			New listing
<i>Trouessartia</i> sp. 1 “warbler, fantail, silvereye”	feather mite	Trouessartiidae	fantail ( <i>Rhipidura fuliginosa</i> , NT); grey warbler ( <i>Gerygone igata</i> , NT); silvereye ( <i>Zosterops lateralis lateralis</i> , NT)			New listing
<i>Whartonacarus</i> sp. 1 “gull”	mite	Trombiculidae	gull species (Laridae)			New listing
<i>Zachvatkinia</i> sp. “many seabirds”	feather mite	Avenzoariidae	several seabird species			New listing
<b>NON-RESIDENT NATIVE (1)</b>						
<b>VAGRANT (1)</b>						
<b>Taxonomically Unresolved (1)</b>						
<i>Brephosceles</i> sp. 2 “white-tailed tropic bird”	white-tailed tropicbird feather mite	Alloptidae	white-tailed tropicbird ( <i>Phaeton lepturus dorotheae</i> , Vag)		SO	New listing
<b>INTRODUCED AND NATURALISED (97)</b>						
<b>Taxonomically Determinate (94)</b>						
<i>Analges anthi</i> Mironov, 1985	mite	Analgidae	New Zealand pipit ( <i>Anthus novaeseelandiae novaeseelandiae</i> , Dec)			New listing
<i>Analges nitzschi</i> Haller, 1878	mite	Analgidae	yellowhammer ( <i>Emberiza citrinella</i> , IN)			New listing
<i>Analges passerinus</i> Linnaeus, 1758	mite	Analgidae	chaffinch ( <i>Fringilla coelebs</i> , IN); redpoll ( <i>Carduelis flammea</i> , IN); greenfinch ( <i>C. chloris</i> , IN)			New listing

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NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Analgas turdinus</i> Mironov, 1985	mite	Analgidae	blackbird ( <i>Turdus merula</i> , IN)			New listing
<i>Androlaelaps casalis</i> Berlese, 1887	mite	Laelapidae	wide range of mammals including rats ( <i>Rattus</i> spp.) and hedgehog ( <i>Erinaceus europaeus occidentalis</i> ); birds			New listing
<i>Androlaelaps fahrenheitzi</i> (Berlese, 1911)	mite	Laelapidae	Norway rat ( <i>Rattus norvegicus</i> ), house mouse ( <i>Mus musculus</i> ), mustelids			New listing
<i>Androlaelaps pachyptilae</i> (Zumpt & Till, 1956)	mite	Laelapidae	Fairy prion ( <i>Pachyptila turtur</i> , Rel), blue penguin ( <i>Eudyptula minor</i> , Dec, Rel)			New listing
<i>Apexolichus affinis</i> (Mégnin & Trouessart, 1884)	mite	Pterolichidae	parrots (Psittaciformes)			New listing
<i>Atellana papilio</i> Domrow, 1958	mite	Atopomelidae	brushtail possum ( <i>Trichosurus vulpecula</i> )			New listing
<i>Brephosceles disjunctus</i> Peterson, 1971	mite	Alloptidae	white-naped petrel ( <i>Pterodroma cervicalis</i> , Rel)			New listing
<i>Caparinia tripilis</i> (Michael, 1889)	mite	Psoroptidae	hedgehog ( <i>Erinaceus europaeus occidentalis</i> )			New listing
<i>Cheyletiella blakei</i> Smiley, 1970	mite	Cheyletidae	cat ( <i>Felis catus</i> )			New listing
<i>Cheyletiella parasitivorax</i> Megnin, 1878	mite	Cheyletidae	European rabbit ( <i>Oryctolagus cuniculus cuniculus</i> ), cat ( <i>Felis catus</i> ), and human ( <i>Homo sapiens</i> )			New listing
<i>Cheyletiella yasguri</i> Smiley, 1965	mite	Cheyletidae	dog ( <i>Canis lupis familiaris</i> ), human ( <i>Homo sapiens</i> )			New listing
<i>Chirodiscoides caviae</i> Hirst, 1917	mite	Atopomelidae	guinea pig ( <i>Cavia porcellus</i> )			New listing
<i>Chorioptes bovis</i> (Hering, 1845)	mite	Psoroptidae	cosmopolitan; sheep ( <i>Ovis aries</i> ), cattle ( <i>Bos taurus</i> ), and other ruminants			New listing
<i>Demodex aries</i> Desch, 1986	mite	Demodecidae	range of hosts including sheep ( <i>Ovis aries</i> )			New listing
<i>Demodex bovis</i> Stiles, 1892	mite	Demodecidae	range of hosts including cattle ( <i>Bos taurus</i> )			New listing
<i>Demodex brevis</i> Akbulatova, 1963	mite	Demodecidae	range of hosts including human ( <i>Homo sapiens</i> )			New listing
<i>Demodex caballi</i> Railliet, 1895	mite	Demodecidae	range of hosts including horse ( <i>Equus ferus caballus</i> )			New listing
<i>Demodex canis</i> Leydig, 1859	mite	Demodecidae	range of hosts including dog ( <i>Canis lupis familiaris</i> )			New listing
<i>Demodex caprae</i> Railliet, 1895	mite	Demodecidae	range of hosts including goat ( <i>Capra hircus</i> )			New listing
<i>Demodex cati</i> Hirst, 1919	mite	Demodecidae	range of hosts including cat ( <i>Felis catus</i> )			New listing
<i>Demodex equi</i> Railliet, 1893	mite	Demodecidae	horse ( <i>Equus ferus caballus</i> )			New listing
<i>Demodex erminae</i> Hirst, 1919	mite	Demodecidae	range of hosts including stoat ( <i>Mustela erminea</i> )			New listing
<i>Demodex folliculorum</i> Simon, 1842	mite	Demodecidae	range of hosts including human ( <i>Homo sapiens</i> )			New listing

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NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Demodex ovis</i> Railliet, 1895	mite	Demodecidae	range of hosts including sheep ( <i>Ovis aries</i> )			New listing
<i>Demodex phylloides</i> Csokor, 1879	mite	Demodecidae	cosmopolitan; pig ( <i>Sus domesticus</i> )			New listing
<i>Dermanyssus gallinae</i> (de Geer, 1778)	mite	Dermanyssidae	poultry and other birds			New listing
<i>Echinonyssus butantanensis</i> (Fonseca, 1932)	mite	Laelapidae	house mouse ( <i>Mus musculus</i> ) and rats ( <i>Rattus</i> spp.), including kiore ( <i>R. exulans</i> )			New listing
<i>Echinonyssus talpae</i> Zenskaya, 1955	mite	Laelapidae	not specified			New listing
<i>Euandrolaelaps sardous</i> (Berlese, 1911)	mite	Laelapidae	cosmopolitan; small mammals and in organic debris			New listing
<i>Falculifer rostratus</i> (Bucholz, 1889)	mite	Falculiferidae	cosmopolitan; rock pigeon ( <i>Columba livia</i> , IN) and human ( <i>Homo sapiens</i> )			New listing
<i>Freyana anatina</i> (Koch, 1844)	mite	Freyaniidae	recorded on at least 15 species of ducks including grey duck ( <i>Anas superciliosa</i> , NE) and mallard ( <i>A. platyrhynchos</i> , IN)		SO	New listing
<i>Haemaphysalis longicornis</i> Neumann, 1901	tick	Ixodidae	wide range of hosts; ruminants and other mammals, and birds			New listing
<i>Haemogamasus pontiger</i> (Berlese, 1904)	mite	Laelapidae	not specified			New listing
<i>Hemimiyalges macdonaldi</i> Evans, Fain, and Bafort	mite	Epidermoptidae	adventive; on red-crowned parakeet ( <i>Cyanoramphus novaezealandiae novaezealandiae</i> , Rel); phoretic on hippoboscid fly ( <i>Ornithoica exilis</i> )		SO	New listing
<i>Hirstionyssus latiscutatus</i> (de Meillon & Lavoipierre, 1944)	mite	Laelapidae	not specified			New listing
<i>Knemidokoptes mutans</i> Robin & Lanquentin, 1859	mite	Knemidokoptidae	domestic fowl; budgerigar ( <i>Melopsittacus undulatus</i> )			New listing
<i>Knemidokoptes pilae</i> Lavoipierre & Griffiths, 1951	mite	Knemidokoptidae	not specified			New listing
<i>Kytodites nudus</i> (Vizioli, 1868)	mite	Kytoditidae	not specified			New listing
<i>Laelaps nuttalli</i> Hirst, 1915	mite	Laelapidae	not specified			New listing
<i>Laminosioptes cisticola</i> (Vizioli, 1868)	mite	Laminosioptidae	domestic fowl			New listing
<i>Leporacarus gibbus</i> (Pagenstecher, 1861)	mite	Listrophoridae	European rabbit ( <i>Oryctolagus cuniculus cuniculus</i> ); European hare ( <i>Lepus europaeus</i> ); brushtail possum ( <i>Trichosurus vulpecula</i> )			New listing
<i>Leporacarus mustelae</i> (Megnin, 1885)	mite	Listrophoridae	ferret ( <i>Mustela furo</i> ), stoat ( <i>M. erminea</i> )			New listing
<i>Lynxacarus radovskyi</i> Tenorio, 1974	mite	Listrophoridae	cat ( <i>Felis catus</i> )			New listing
<i>Marsupiopus trichosuri</i> Fain, 1968	mite	Echymiopodidae	brushtail possum ( <i>Trichosurus vulpecula</i> )			New listing

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NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Megninia californica</i> Mironov & Galloway, 2002	mite	Analgidae	California quail ( <i>Callipepla californica</i> , IN)		SO	New listing
<i>Megninia cubitalis</i> (Mégnin in Robin & Mégnin, 1877)	feather mite	Analgidae	not specified			New listing
<i>Megninia gallinulae</i> (Buchholz, 1869)	feather mite	Analgidae	not specified			New listing
<i>Megninia ginglymura</i> (Mégnin, 1877)	feather mite	Analgidae	not specified			New listing
<i>Mesolaelaps australiensis</i> (Hirst, 1926)	mite	Laelapidae	rodents, including kiore ( <i>Rattus exulans</i> )			New listing
<i>Monojoubertia microphylla</i> (Robin, 1877)	mite	Proctophyllodidae	chaffinch ( <i>Fringilla coelebs</i> , IN)		SO	New listing
<i>Murichirus anabiotus</i> Domrow, 1992	mite	Atopomelidae	brushtail possum ( <i>Trichosurus vulpecula</i> )			New listing
<i>Myobia murismusculi</i> (Schrank, 1781)	mite	Myobiidae	house mouse ( <i>Mus musculus</i> )			New listing
<i>Myocoptes musculinus</i> (Koch, 1836)	mite	Myocoptidae	house mouse ( <i>Mus musculus</i> )			New listing
<i>Myonyssus decumani</i> Tiraboschi, 1904	mite	Laelapidae	house mouse ( <i>Mus musculus</i> )			New listing
<i>Neocnemidocoptes gallinae</i> (Railliet, 1887)	mite	Knemidokoptidae	domestic fowl			New listing
<i>Nidilaelaps annectans</i> (Womersley, 1955)	mite	Laelapidae	cosmopolitan; birds and mammals; kiore ( <i>Rattus exulans</i> )			New listing
<i>Notoedres cati</i> (Hering, 1838)	mite	Sarcoptidae	cat ( <i>Felis catus</i> )			New listing
<i>Notoedres muris</i> Megnin, 1877	mite	Sarcoptidae	rodents			New listing
<i>Nymphicilichus perezae</i> Mironov & Galloway, 2002	feather mite	Pterolichidae	cockatiel ( <i>Nymphicus hollandicus</i> )			New listing
<i>Ornithonyssus bacoti</i> (Hirst, 1913)	mite	Macronyssidae	Norway rat ( <i>Rattus norvegicus</i> )			New listing
<i>Ornithonyssus bursa</i> (Berlese, 1888)	mite	Macronyssidae	cosmopolitan; including North Island fernbird ( <i>Bowdleria punctata vealeae</i> , Dec), North Island saddleback ( <i>Philesturnus rufusater</i> , Rec), fowls and wild birds			New listing
<i>Ornithonyssus sylviarum</i> (Canestrini & Fanzago, 1877)	mite	Macronyssidae	cosmopolitan; including North Island saddleback ( <i>Philesturnus rufusater</i> , Rec), canary ( <i>Serinus canaria</i> ), fowls and wild birds			New listing
<i>Otodectes cynotis</i> (Hering, 1838)	mite	Psoroptidae	cat ( <i>Felis catus</i> ); dog ( <i>Canis lupis familiaris</i> )			New listing
<i>Petrogalochirus dycei</i> (Domrow, 1960)	mite	Atopomelidae	brushtail possum ( <i>Trichosurus vulpecula</i> )			New listing
<i>Petrogalochirus macropus</i> Fain & Domrow, 1974	mite	Atopomelidae	Bennett's wallaby ( <i>Macropus rufogriseus rufogriseus</i> )			New listing
<i>Petrogalochirus tasmaniensis</i> Fain, 1970	mite	Atopomelidae	brush-tailed rock wallaby ( <i>Petrogale pencillata</i> )			New listing

Continued on next page

Table 2 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Picicnemidocoptes laevis</i> (Railliet, 1885)	mite	Knemidokoptidae	rock pigeon ( <i>Columbia livia</i> , IN)			New listing
<i>Procnemidocoptes jansseni</i> Fain, 1966	mite	Knemidokoptidae	red-crowned parakeet ( <i>Cyanoramphus novaezelandiae novaezelandiae</i> , Rel); introduced with parakeets from Africa			New listing
<i>Proctophyllodes ciae</i> Bauer, 1939	mite	Proctophyllodidae	yellowhammer ( <i>Emberiza citrinella</i> , IN)		SO	New listing
<i>Proctophyllodes pinnatus</i> (Nitzsch, 1818)	mite	Proctophyllodidae	common redpoll ( <i>Carduelis flammea</i> , IN); goldfinch ( <i>Carduelis carduelis</i> , IN)		SO	New listing
<i>Proctophyllodes truncatus</i> Robin, 1877	mite	Proctophyllodidae	house sparrow ( <i>Passer domesticus</i> , IN)		SO	New listing
<i>Psorergates mustelae</i> Lukoschus, 1969	mite	Psorergatidae	weasel ( <i>Mustela nivalis vulgaris</i> )			New listing
<i>Psorobia ovis</i> (Womersley, 1941)	mite	Psorergatidae	sheep ( <i>Ovis aries</i> )			New listing
<i>Psoroptes cuniculi</i> (Delafond, 1859)	mite	Psoroptidae	European rabbit ( <i>Oryctolagus cuniculus cuniculus</i> ); goat ( <i>Capra hircus</i> )			New listing
<i>Psoroptes natalensis</i> Hirst, 1919	mite	Psoroptidae	range of hosts including cattle ( <i>Bos taurus</i> )			New listing
<i>Pteronyssoides striatus</i> (Robin, 1877)	mite	Pteronyssidae	chaffinch ( <i>Fringilla coelebs</i> , IN);			New listing
<i>Pterophagus strictus</i> Mégnin in Robin & Mégnin, 1877	mite	Falculiferidae	rock pigeon ( <i>Columbia livia</i> , IN)			New listing
<i>Ptilonyssus cractici</i> Domrow, 1964	nasal mite	Rhinonyssidae	Australian magpie ( <i>Gymnorhina tibicen</i> , IN)			New listing
<i>Ptilonyssus emberizae</i> Fain, 1956	nasal mite	Rhinonyssidae	yellowhammer ( <i>Emberiza citrinella</i> , IN)			New listing
<i>Ptilonyssus euroturdi</i> Fain & Hyland, 1963	nasal mite	Rhinonyssidae	blackbird ( <i>Turdus merula</i> , IN); song thrush ( <i>Turdus philomelos</i> , IN)			New listing
<i>Radfordia affinis</i> (Poppe, 1896)	mite	Myobiidae	house mouse ( <i>Mus musculus</i> )			New listing
<i>Radfordia davisii</i> (Radford, 1938)	mite	Myobiidae	rats ( <i>Rattus</i> spp.)			New listing
<i>Radfordia ensifera</i> (Poppe, 1896)	mite	Myobiidae	rats ( <i>Rattus</i> spp.) including kiore ( <i>R. exulans</i> )			New listing
<i>Rhinonyssus rhinolethrum</i> (Trouessart, 1895)	nasal mite	Rhinonyssidae	waterfowl			New listing
<i>Sarcoptes scabiei</i> Linnaeus, 1758	mite	Sarcoptidae	range of hosts including dog ( <i>Canis lupis familiaris</i> ), pig ( <i>Sus domesticus</i> ), and human ( <i>Homo sapiens</i> )			New listing
<i>Sternostoma tracheacolum</i> Lawrence, 1948	mite	Rhinonyssidae	finch (Fringillidae) species			New listing
<i>Struthiopterolichus bicaudatus</i> (Gervais, 1844)	mite	Pterolichidae	ostrich ( <i>Struthio camelus</i> )			New listing
<i>Tinaminyssus melloi</i> (de Castro, 1948)	mite	Rhinonyssidae	rock pigeon ( <i>Columbia livia</i> , IN)			New listing

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Table 2 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	KNOWN HOST(S) AND THEIR THREAT STATUS	CRITERIA	QUALIFIERS	STATUS CHANGE
<i>Trichosuroaelaps crassipes</i> Womersley, 1956	mite	Laelapidae	brushtail possum ( <i>Trichosurus vulpecula</i> )			New listing
<i>Trixacarus caviae</i> Fain, Hovell & Hyatt, 1972	mite	Atopomelidae	range of hosts including guinea pig ( <i>Cavia porcellus</i> )			New listing
<i>Trouessartia rosteri</i> (Berles, 1886)	mite	Trouessartiidae	Indian myna ( <i>Acridotheres tristis</i> , IN), common starling ( <i>Sturnus vulgaris</i> , IN)			New listing
<b>Taxonomically Unresolved (3)</b>						
<i>Knemidokoptes</i> sp. 1 "cockatiel"	cockatiel feather mite	Knemidokoptidae	cockatiel ( <i>Nymphicus hollandicus</i> )			New listing
<i>Mesalges</i> sp. "passerines"	feather mite	Psoroptoididae	passerine (Passeriformes) species			New listing
<i>Proctophyllodes</i> sp. "passerines"	feather mite	Proctophyllodidae	passerine (Passeriformes) species			New listing

## 2.2 NZTCS categories and criteria used in this assessment

### 2.2.1 Conservation status criteria

For complete definitions of conservation statuses and criteria, see Townsend et al. (2008) and Michel (2021). See Townsend et al. (2008) for definitions of qualifiers.

#### ***Extinct (Ext)***

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.

#### ***Data Deficient (DD)***

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 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 (NC)***

##### **A – very small population (natural or unnatural)**

A(1) < 250 mature individuals

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

A(3) Total area of occupancy ≤ 1 ha (0.01 km<sup>2</sup>)

##### **B – small population (natural or unnatural) with a high ongoing or predicted decline of 50–70%**

B(1) 250–1000 mature individuals

B(2) ≤ 5 subpopulations, ≤ 300 mature individuals in the largest subpopulation

B(3) Total area of occupancy ≤ 10 ha (0.1 km<sup>2</sup>)

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

C Predicted decline > 70%

#### ***Nationally Endangered (NE)***

##### **A – small population (natural or unnatural) that has a low to high ongoing or predicted decline of 10–50%**

A(1) 250–1000 mature individuals

A(2) ≤ 5 subpopulations, ≤ 300 mature individuals in the largest subpopulation

A(3) Total area of occupancy ≤ 10 ha (0.1 km<sup>2</sup>)

##### **B – small stable population (unnatural)**

B(1) 250–1000 mature individuals

B(2) ≤ 5 subpopulations, ≤ 300 mature individuals in the largest subpopulation

B(3) Total area of occupancy ≤ 10 ha (0.1 km<sup>2</sup>)

##### **C – moderate population and high ongoing or predicted decline of 50–70%**

C(1) 1000–5000 mature individuals

C(2) ≤ 15 subpopulations, ≤ 500 mature individuals in the largest subpopulation

C(3) Total area of occupancy ≤ 100 ha (1 km<sup>2</sup>)

### ***Nationally Vulnerable (NV)***

#### **A – small population (unnatural), increasing > 10%**

- A(1) 250–1000 mature individuals
- A(2) ≤ 5 subpopulations, ≤ 300 mature individuals in the largest subpopulation
- A(3) Total area of occupancy ≤ 10 ha (0.1 km<sup>2</sup>)

#### **B – moderate population (unnatural), stable ± 10%**

- B(1) 1000–5000 mature individuals
- B(2) ≤ 15 subpopulations, ≤ 500 mature individuals in the largest subpopulation
- B(3) Total area of occupancy ≤ 100 ha (1 km<sup>2</sup>)

#### **C – moderate population, with population trend that has a low to high ongoing or forecast decline of 10–50%**

- C(1) 1000–5000 mature individuals
- C(2) ≤ 15 subpopulations, ≤ 500 mature individuals in the largest subpopulation
- C(3) Total area of occupancy ≤ 100 ha (1 km<sup>2</sup>)

#### **D – moderate to large population and moderate to high ongoing or forecast decline of 30–70%**

- D(1) 5000–20 000 mature individuals
- D(2) ≤ 15 subpopulations, ≤ 1000 mature individuals in the largest subpopulation
- D(3) Total area of occupancy ≤ 1000 ha (10 km<sup>2</sup>)

#### **E – large population and high ongoing or forecast decline of 50–70%**

- E(1) 20 000–100 000 mature individuals
- E(2) Total area of occupancy ≤ 10 000 ha (100 km<sup>2</sup>)

### ***Nationally Increasing (NI)***

(This name replaces At Risk – Recovering A of Townsend et al. (2008); for more details, see Michel (2021)).

Taxa that have undergone a documented decline within the last 1000 years to a population size of 1000–5000 mature individuals or a total area of occupancy of ≤ 100 ha (1 km<sup>2</sup>) 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.

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 other Threatened statuses, depending on their population size (see Townsend et al. 2008).

### ***At Risk***

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

#### ***Declining (Dec)***

##### **A – moderate to large population and low ongoing or forecast decline of 10–30%**

- A(1) 5000–20 000 mature individuals
- A(2) Total area of occupancy ≤ 1000 ha (10 km<sup>2</sup>)

##### **B – large population and low to moderate ongoing or forecast decline of 10–50%**

- B(1) 20 000–100 000 mature individuals
- B(2) Total area of occupancy ≤ 10 000 ha (100 km<sup>2</sup>)

##### **C – very large population and low to high ongoing or forecast decline of 10–70%**

- C(1) > 100 000 mature individuals
- C(2) Total area of occupancy > 10 000 ha (100 km<sup>2</sup>)

### ***Recovering (Rec)***

Taxa that have undergone a documented decline within the last 1000 years to a population size of 5000–20 000 mature individuals or a total area of occupancy of  $\leq 1000$  ha ( $10 \text{ km}^2$ ) 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.

Taxa that are increasing but have a population size of  $< 5000$  mature individuals (or total area of occupancy of  $< 100$  ha) are listed in one of the Threatened statuses, depending on their population size (for more details, see the description of Nationally Increasing above, Townsend et al. 2008, and Michel 2021).

### ***Relict (Rel)***

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 (NU)***

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).

### ***Vagrant (Vag)***

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

### ***Not Threatened (NT)***

Resident native taxa that have large, stable populations.

### ***Introduced and Naturalised (IN)***

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



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