



NEW ZEALAND THREAT CLASSIFICATION SERIES 6

# Conservation status of New Zealand bats, 2012

C.F.J. O'Donnell, J.E. Christie, B. Lloyd, S. Parsons and R.A. Hitchmough

[newzealand.govt.nz](http://newzealand.govt.nz)

Department of  
Conservation  
*Te Papa Atawhai*

Cover: Cluster of short-tailed bats, *Mystacina tuberculata*, Ohakune, 1997. Photo: B.D. Lloyd.

*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.

This report is available from the departmental website in pdf form. Titles are listed in our catalogue on the website, refer [www.doc.govt.nz](http://www.doc.govt.nz) under *Publications*, then *Science & technical*.

© Copyright December 2013, New Zealand Department of Conservation

ISSN 2324-1713 (web PDF)

ISBN 978-0-478-15001-8 (web PDF)

This report was prepared for publication by the Publishing Team; editing and layout by Lynette Clelland. Publication was approved by the Deputy Director-General, Science and Capability Group, Department of Conservation, Wellington, New Zealand.

Published by Publishing Team, Department of Conservation, PO Box 10420, The Terrace, Wellington 6143, New Zealand.

In the interest of forest conservation, we support paperless electronic publishing.

# CONTENTS

Abstract	1
<hr/>	
1. Summary	2
<hr/>	
2. Conservation status of all known Zealand bats	3
<hr/>	
2.1 Taxonomically Determinate	3
Extinct	3
Data Deficient	3
Threatened	4
Nationally Critical	4
Nationally Endangered	4
Nationally Vulnerable	5
At Risk	5
Declining	5
Recovering	6
Relict	6
Naturally Uncommon	6
Non-resident Native	6
Migrant	6
Vagrant	7
Coloniser	7
Not Threatened	7
Introduced and naturalised	7
2.2 Taxonomically Indeterminate	7
Threatened	7
Nationally Critical	7
Nationally Vulnerable	7
3. References	8
<hr/>	



# Conservation status of New Zealand bats, 2012

C.F.J. O'Donnell<sup>1</sup>, J.E. Christie<sup>1</sup>, B. Lloyd<sup>2</sup>, S. Parsons<sup>3</sup> and R.A. Hitchmough<sup>4</sup>

1. Science and Capability Group, Department of Conservation, PO Box 4715, Christchurch 8011, New Zealand  
Email: codonnell@doc.govt.nz
2. Lloyds Ecological Consulting, 57 School Rd., RD1, Upper Moutere 7173, New Zealand
3. School of Biological Sciences, University of Auckland, Private Bag 92019, Auckland 1142, New Zealand
4. Science and Capability Group, Department of Conservation, PO Box 10420, Wellington 6011, New Zealand

## Abstract

The conservation status of all known New Zealand bat taxa was reassessed using the New Zealand Threat Classification System (NZTCS). A full list is presented, along with brief notes on the most important changes. This list replaces all previous NZTCS lists for bats. One taxon was classed as Nationally Critical, two taxa as Nationally Endangered, and one each as Nationally Vulnerable, Declining, Data Deficient and Vagrant.

Keywords: threatened species, bats, *Chalinolobus*, *Mystacina*, *Pteropus*, Vespertilionidae, Mystacinidae, Pteropodidae, threat classification, New Zealand

# 1. Summary

O'Donnell et al. (2010) previously classified New Zealand bats according to their threat status in 2009. The conservation status of these taxa was assessed using the criteria of Townsend et al. (2008). This report reviews the 2009 threat classifications and assesses whether any of the new knowledge and management actions instigated since 2009 had led to a change of status by 2012. There were no changes in taxonomy or taxon circumscription between the two assessments. The two 'subspecies' of long-tailed bat remain undescribed and are therefore listed in the 'taxonomically indeterminate' section.

Five New Zealand bat taxa are still listed as Threatened or At Risk and threat status changed only slightly (Table 1). The only change was the worsening in the threat status of northern lesser short-tailed bats from Nationally Vulnerable in 2009 to Nationally Endangered, reflecting our precautionary interpretation of the area of occupancy criterion.

Table 1. Statistical summary of the status of New Zealand bat species assessed in 2009 and 2012 (this document).

CATEGORY	TOTAL 2009	TOTAL 2012
Extinct	0	0
Data Deficient	1	1
Threatened—Nationally Critical	1	1
Threatened—Nationally Endangered	1	2
Threatened—Nationally Vulnerable	2	1
At Risk—Declining	1	1
At Risk—Recovering	0	0
At Risk—Relict	0	0
At Risk—Naturally Uncommon	0	0
Non-resident native—Migrant	0	0
Non-resident native—Vagrant	1	1
Non-resident native—Coloniser	0	0
Not Threatened	0	0
Introduced and Naturalised	0	0
<b>Total</b>	<b>7</b>	<b>7</b>

Both northern and southern short-tailed bats (*Mystacina tuberculata*) qualify as Nationally Critical under the area of occupancy criterion (i.e. most vulnerable life history stage is at maternity colonies and the basal area of the few trees used is less than 30 m<sup>2</sup> per colony), but we felt that that level of threat was inappropriate, designating both as Nationally Endangered.

The long-tailed bat *Chalinolobus tuberculatus* "South Island" is still classed as Nationally Critical. Although management (integrated pest control) has commenced at one site (Eglington Valley), it is too early to judge the outcome of rat (*Rattus* spp.) control operations and apply them at other key sites through the range.

The long-tailed bat "North Island" remains as Nationally Vulnerable and the central lesser short-tailed bat as Declining. However, caution needs to be applied to these assessments as little is known of current population trends in these species. Predation and competition from introduced mammals, habitat degradation and disturbance are the major factors implicated in declines. Vespulid wasps appear to be a serious problem for bats in beech forests in the north of the South Island; especially in the drier eastern areas. Precipitous declines in long-tailed bat numbers since 1960 correspond with the establishment of vespulid wasps. The main impact is likely to be direct

competition for invertebrate prey—during late summer and autumn, wasps reduce available lepidopterans by 95% (Beggs 1998). There might also be direct impacts with wasps stinging bats, but the extent of these has not been established.

One taxon was assessed as Data Deficient (greater short-tailed bat *M. robusta*) and one (little red flying fox *Pteropus scapulatus*) as Vagrant.

## 2. Conservation status of all known New Zealand bats

Taxa are assessed according to the criteria of Townsend et al. (2008), 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 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.

See Townsend et al. (2008) for details of criteria and qualifiers, which are abbreviated as follows:

- CD Conservation Dependent
- De Designated
- 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

### 2.1 Taxonomically Determinate

#### 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.

No taxonomically determinate bat taxa are listed in this category.

#### 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).

SCIENTIFIC NAME	COMMON NAME	FAMILY	QUALIFIERS
<i>Mystacina robusta</i>	Greater short-tailed bat	Mystacinidae	OL

## Threatened

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

Limited to taxa that are native and resident, i.e. excluding introduced taxa or those that are colonisers, migrants or vagrants.

### 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 km<sup>2</sup>)

#### ***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 km<sup>2</sup>), 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%

No taxonomically determinate bat taxa are listed in this category.

### 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 km<sup>2</sup>), 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 km<sup>2</sup>), 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, decline 50–70%

C(3/1) Total area of occupancy ≤100 ha (1 km<sup>2</sup>), predicted decline 50–70%



SCIENTIFIC NAME	COMMON NAME	FAMILY	CRITERIA 2012	QUALIFIERS
<i>Mystacina tuberculata aupourica</i>	Northern short-tailed bat	Mystacinidae	B(3/1)	CD, De, PD
<i>Mystacina tuberculata tuberculata</i>	South Island lesser short-tailed bat	Mystacinidae	C(1/1)	CD, De, PD, RR

## 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 km<sup>2</sup>), 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 km<sup>2</sup>), 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 km<sup>2</sup>), 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 km<sup>2</sup>), 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 km<sup>2</sup>), predicted decline 50–70%

No taxonomically determinate bat taxa are listed in this category.

## 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 km<sup>2</sup>), 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 km<sup>2</sup>), 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 km<sup>2</sup>), predicted decline 10–70%

SCIENTIFIC NAME	COMMON NAME	FAMILY	CRITERIA 2012	QUALIFIERS
<i>Mystacina tuberculata rhyacobia</i>	Central lesser short-tailed bat	Mystacinidae	B(1/1)	CD

### **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 km<sup>2</sup>), and predicted increase >10%

B 5000–20000 mature individuals or total area of occupancy ≤1000 ha (10 km<sup>2</sup>), and predicted increase >10%

No taxonomically determinate bat 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 5000–20000 mature individuals; population stable (±10%)

B >20000 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)).

No taxonomically determinate bat taxa are listed in this category.

### **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.

No taxonomically determinate bat taxa are listed in this category.

## **Non-resident Native**

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

### **Migrant**

Taxa that predictably and cyclically visit 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.

No taxonomically determinate bat taxa are listed in this category.

## Vagrant

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

SCIENTIFIC NAME	COMMON NAME	FAMILY	QUALIFIERS
<i>Pteropus scapulatus</i>	Little red flying fox	Pteropodidae	SO

## Coloniser

Taxa that otherwise trigger Threatened categories because of small population size, but have arrived in New Zealand without direct or indirect help from humans and have been successfully reproducing in the wild only since 1950.

No taxonomically determinate bat taxa listed in this category.

## Not Threatened

Resident native taxa that have large, stable populations.

No taxonomically determinate bat taxa are listed in this category.

## Introduced and naturalised

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

No taxonomically determinate bat taxa are listed in this category.

## 2.2 Taxonomically Indeterminate

This section includes described taxa whose taxonomic status is uncertain and requires further investigation, and also potentially distinct entities whose taxonomic status has yet to be formally determined.

## Threatened

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

Limited to taxa that are native and resident, i.e. excluding introduced taxa or those that are colonisers, migrants or vagrants.

### Nationally Critical

SCIENTIFIC NAME	COMMON NAME	FAMILY	CRITERIA 2012	QUALIFIERS
<i>Chalinolobus tuberculatus</i> "South Island"	Long-tailed bat (South Island)	Vespertilionidae	C	CD

### Nationally Vulnerable

SCIENTIFIC NAME	COMMON NAME	FAMILY	CRITERIA 2012	QUALIFIERS
<i>Chalinolobus tuberculatus</i> "North Island"	Long-tailed bat (North Island)	Vespertilionidae	D1	DP

### 3. References

- Beggs, J.R.; Toft, R.J.; Malham, J.S.; Tilley, J.A.V.; Moller, H.; Alspach, P. 1998: The difficulty of reducing introduced wasps *Vespula vulgaris* populations for conservation gains. *New Zealand Journal of Ecology* 22(1): 55-63.
- O'Donnell, C.F.J.; Christie, J.E.; Hitchmough, R.A.; Lloyd, B.; Parsons, S. 2010: The conservation status of New Zealand bats, 2009. *New Zealand Journal of Zoology* 37: 297-311.
- Townsend, A.J.; de Lange, P.J.; Duffy, C.A.J.; Miskelly, C.M.; Molloy, J.; Norton, D.A. 2008: New Zealand threat classification system manual. Department of Conservation Wellington, New Zealand. 35 p.