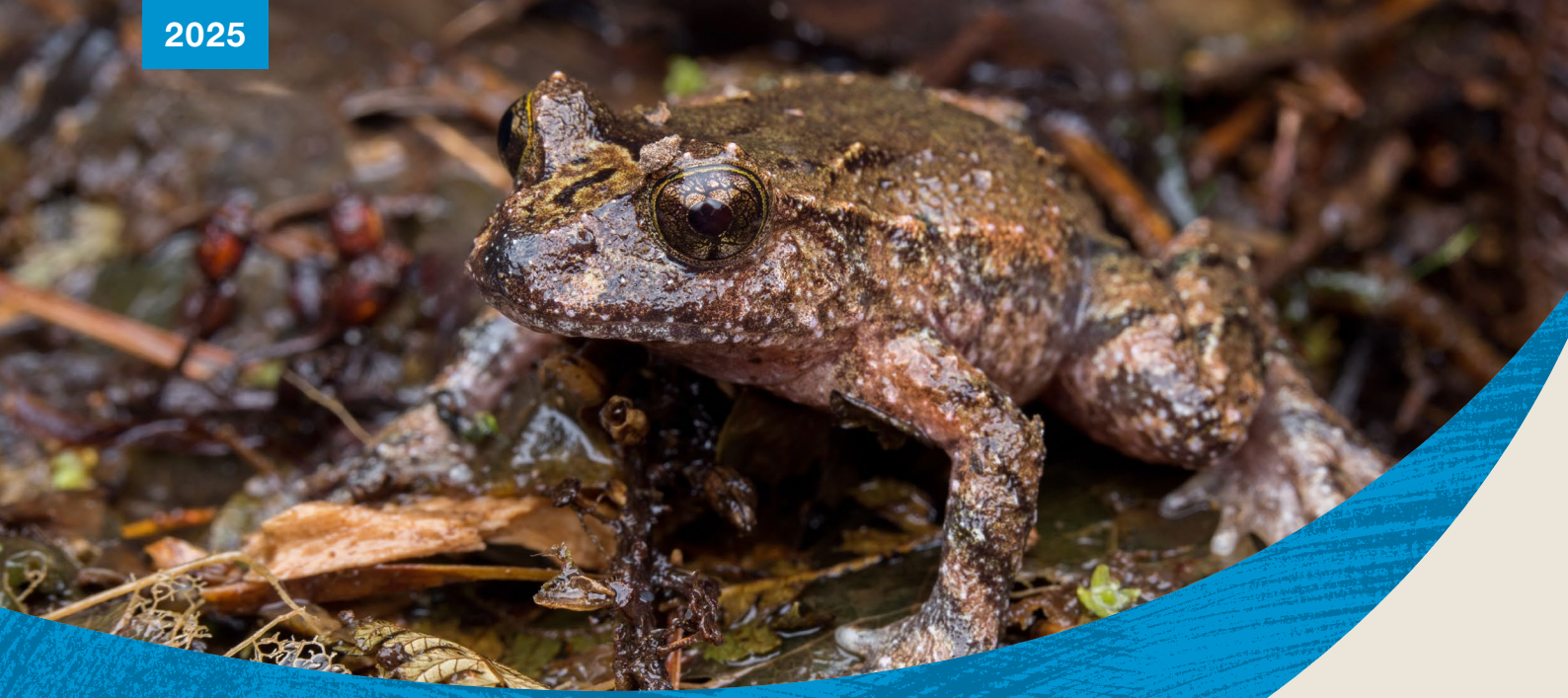
2025



NEW ZEALAND THREAT CLASSIFICATION SERIES 44

Conservation status of amphibians in Aotearoa New Zealand, 2024

Rhys J. Burns, Doug P. Armstrong, Ben D. Bell, Amanda Haigh, Jennifer Germano, Nicolas J. Rawlence, Tertia Thurley, Rodney A. Hitchmough, Troy Makan and Pascale Michel

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Te Papa Atawhai

Te Kāwanatanga o Aotearoa
New Zealand Government

Cover: Hochstetter's frog "Whareorino" (*Leiopelma* aff. *hochstetteri* "Whareorino" sensu Newman et al. (2013)), Threatened – Nationally Vulnerable. *Photo: Bryce McQuillan* www.brycephotography.co.nz

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

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ISSN 2324-1713 (web PDF)
ISBN 978-1-0670480-0-6 (web PDF)

This report was prepared for publication by Te Rōpū Ratonga Auaha, Te Papa Atawhai/Creative Services, Department of Conservation; editing by Amanda Todd and layout by Holly Slade. Publication was approved by Henley McKegg, Manager Reporting & Insights, Department of Conservation, Wellington, New Zealand.

Published by Department of Conservation Te Papa Atawhai, PO Box 10420, Wellington 6143, New Zealand.

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

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Conservation status of amphibians in Aotearoa New Zealand, 2024

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Abstract

The conservation status of all 21 amphibian taxa that are found in the wild in Aotearoa New Zealand was reassessed using the New Zealand Threat Classification System (NZTCS). A list of these taxa is presented, along with a statistical summary and brief notes on the most important changes since the previous assessment. This list replaces all previous NZTCS lists for amphibians. In total, three taxa (14.3%) were assessed as being Extinct, five (23.8%) as Threatened, eight (38.1%) as At Risk, and four (19.0%) as Introduced and Naturalised. One further taxon (4.8%) was assessed as Data Deficient (i.e. insufficient information was available to assess its conservation status).

Keywords: frogs, herpetofauna, newts, New Zealand Threat Classification System, threat listing

Burns, R.J.; Armstrong, D.P.; Bell, B.D.; Haigh, A.; Germano, J.; Rawlence, N.J.; Thurley, T.; Hitchmough, R.A.; Makan, T.; Michel, P. 2025: Conservation status of amphibians in Aotearoa New Zealand, 2024. *New Zealand Threat Classification Series 44*. Department of Conservation, Wellington. 19 p.

1. Background

The New Zealand Threat Classification System (NZTCS) was developed to complement the International Union for the Conservation of Nature (IUCN) Red List system. Categories and criteria were defined to reflect Aotearoa New Zealand's unique natural environments and to account for the country's relatively small size and diversity of ecosystems, as well as the large number of taxa with naturally or anthropogenically-driven restricted ranges and / or small population sizes (Molloy et al. 2002; Townsend et al. 2008).

NZTCS assessments are reviewed approximately every 5 years by an expert panel facilitated by the New Zealand Department of Conservation Te Papa Atawhai (DOC). The assessment panel brings together experts in the fields of Aotearoa New Zealand taxonomy, conservation biology and ecology, as well as people with a good technical knowledge of the NZTCS process to ensure consistent approaches across the various assessment panels.

When making their assessments, experts consider the previously published assessment as the starting point for the new assessment and evaluate any new information available, both published and unpublished. Taxa are assessed according to the reported population size and trend since the last assessment and predicted future changes over the next 10 years or three generations, whichever is longer. Assessment criteria and categories are interpreted in the context of robust scientific evidence (e.g. population monitoring) and expert understanding of the ecology of each taxon (e.g. natural population fluctuations). The NZTCS manual requires that a precautionary approach is applied where a taxon is on the border of two possible conservation statuses, resulting in the higher threat category being chosen (Townsend et al. 2008).

The conservation status of amphibians in Aotearoa New Zealand was assessed using the NZTCS in 2009 (Newman et al. 2010), 2013 (Newman et al. 2013), 2017 (Burns et al. 2018) and 2024 (this report). Notes from the expert panel meeting and the rationales for the reclassification of taxa have been summarised in the present report. Full details can be found on the assessment page for each taxon on the NZTCS website (https://nztcs.org.nz/reports/1125).

2. Summary

This report presents the conservation status of 21 amphibian taxa that are found in the wild in Aotearoa New Zealand. It is the latest update in a regular series of re-assessments (Newman et al. 2010, 2013; Burns et al. 2018). In 2017, Burns et al. (2018) assessed the conservation status of 11 amphibian taxa in Aotearoa New Zealand using the criteria specified in the NZTCS manual (Townsend et al. 2008). Here, we report a new assessment of 21 amphibian taxa, 10 of which have not been assessed since 2013.

2.1 Changed taxon names

Eleven taxa have changed name since the previous assessment, including Hochstetter's frog, which is now considered as 10 separate indeterminate / unresolved taxa (see Box 1), and the proposed Northern Great Barrier Island swimming frog (Table 1). These name changes reflect a re-assessment of frog taxonomy in light of new evidence and ongoing (palaeo)genetic research and revert to the same taxonomic assessment as Newman et al. (2013).

In the 2013 assessment (Newman et al. 2013), the taxon *Leiopelma hochstetteri* sensu stricto included only the northern Coromandel and Hunua Ranges populations, with all other populations being assigned to separate putative subspecies. However, the expert panel in 2017 (Burns et al. 2018) received advice that the various regional populations of Hochstetter's frog (*Leiopelma hochstetteri*) had insufficient depth of genetic differentiation to justify a taxonomic split by population (i.e. they were considered to be evolutionary significant units (ESUs) only and not sufficiently differentiated to be recognised as subspecies, precluding them from being listed separately under the NZTCS). Therefore, Burns et al. (2018) assessed all Hochstetter's frogs as one species only, with no subspecies.

The expert panel for the current assessment considered that more recent partial mitochondrial gene sequencing and nuclear microsatellite analysis have provided sufficient evidence to indicate that Hochstetter's frog is highly genetically structured into different regional populations throughout its range. Shallow genetic divergences between these regional populations are likely to have occurred during the Pleistocene Ice Ages within the past 2 million years (Fouquet et al. 2010). Karyotype and sex chromosome variation between regional populations, as well as an absence of differentiated sex chromosomes in the Great Barrier Island (Aotea Island) population (which are present in all other Hochstetter's frog populations), have also been observed (Fouquet et al. 2010; Gleeson et al. 2010). The genetic differences were interpreted to indicate that there may be real taxonomic differences between these regional populations and, as a principle, the NZTCS assessment method promotes a precautionary approach around the use of taxonomic classifications if there is sufficient uncertainty in taxonomic status (Townsend et al. 2008). Consequently, the expert panel considered that each regional population should be recognised as comprising a lineage of indeterminate taxonomic status and assessed separately until genetic research resolves their taxonomy (there has been no new taxonomic or genetic research on these regional populations since the previous assessment by Burns et al. (2018), but research is currently underway). Therefore, in the current assessment, all indeterminate taxa were reassessed, meaning that *L. hochstetteri* sensu stricto once again only includes the northern Coromandel and Hunua Ranges populations, following Newman et al. (2013).

Table 1. Name changes affecting amphibian taxa in Aotearoa New Zealand between the publication of Burns et al. (2018) and this report.

NAME AND AUTHORITY IN BURNS ET AL. (2018)	NAME AND AUTHORITY IN THIS REPORT	FAMILY
Incertae cedis "Northern Great Barrier Island swimming frog"	Anura genus *incertae sedis* "Northern Great Barrier Island swimming frog"	*Incertae sedis*
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Central / South Coromandel" sensu Newman et al. (2013)	Leiopelmatidae
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Eastern Raukūmara" sensu Newman et al. (2013)	Leiopelmatidae
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Great Barrier" sensu Newman et al. (2013)	Leiopelmatidae
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Kaimai" sensu Newman et al. (2013)	Leiopelmatidae
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Northland" sensu Newman et al. (2013)	Leiopelmatidae
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Otawa" sensu Newman et al. (2013)	Leiopelmatidae
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Waikato" sensu Newman et al. (2013)	Leiopelmatidae
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Waitākere" sensu Newman et al. (2013)	Leiopelmatidae
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Western Raukūmara" sensu Newman et al. (2013)	Leiopelmatidae
Leiopelma hochstetteri Fitzinger, 1861	*Leiopelma* aff. *hochstetteri* "Whareorino" sensu Newman et al. (2013)	Leiopelmatidae

2.2 Poorly known populations requiring survey

One population of the *L. hochstetteri* complex is known from a single observation at Pirongia in 1985 (Peter de Lange, Unitec Institute of Technology, Auckland, pers. comm.). No samples were taken from the individual that was found, so there have been no genetic studies to determine how closely aligned it is to other *L. hochstetteri* populations. The population is relatively isolated, being approximately 40 km from the Maungatautari population (part of the Waikato population that also includes Rangitoto) and separated from this population by the Waipā basin, and 50 km from the Whareorino population. In comparison, the Maungatautari and Rangitoto sub-populations are separated by a distance of approximately 30 km. While there have been attempts to determine whether the Pirongia population is still extant (T. Thurley & A. Haigh, unpubl. data), no Hochstetter's frogs are known to have been found since the initial discovery and Fouquet et al. (2010) considered the Pirongia population as likely extinct.

There have also been reported live sightings of an unknown *Leiopelma* species (presumed to be *L. hochstetteri*) in the Kaweka Range (1940; one individual), at Wharerātā (1973; one individual), near Raetihi (two records, both in 1975; one and five individuals) and in the Tararua Range (1946; four individuals), but no subsequent records are known from any of these sites. The panel assessed these sightings and decided that as the sightings were old and possibly unreliable, with the species not confirmed, they would not be included in this assessment.

A historic translocation of 15 *L. hochstetteri* (or possibly *L. archeyi*) from Coromandel to Kapiti Island is assumed to have failed but also requires a follow-up survey (Bell 1985).

We recommend that an expert survey of all these locations is undertaken to determine whether frogs are still present and, if so, that samples are collected to confirm their taxonomic status.

Box 1. What triggers the listing of taxonomically unresolved entities?

Under the New Zealand Threat Classification System (NZTCS), taxa (species, subspecies and, in the case of plants and fungi, varieties and forms) are considered taxonomically determinate if they have been formally described and named in a manner that meets the rules of the International Code of Zoological Nomenclature (www.iczn.org/the-code/the-international-code-of-zoological-nomenclature) or the International Code of Nomenclature for algae, fungi, and plants (www.iapt-taxon.org/nomen/main.php) and their status as a distinct entity is generally accepted by the scientific community.

This excludes many entities that are known or suspected to be distinct taxa but have not yet been formally described and named. Where such entities are threatened with extinction, they are included in the NZTCS lists but flagged as 'taxonomically unresolved' (TU; formerly called 'taxonomically indeterminate') to indicate that their recognition is still a hypothesis that requires testing through further research and formal peer-reviewed description. Rarely, formally named entities are also included in the TU list if the specialist group doubts their validity as separate entities.

The level of knowledge about TU taxa varies greatly, from taxa whose genetics, morphology and ecology are well understood and which lack only the formal last step of naming, to those about which little is known. Translation of the conservation status of TU taxa to management prioritisation needs to be informed by the level of knowledge about the taxa and the level of expert confidence in their taxonomic distinctiveness.

A TU listing does not suggest which taxonomic level (e.g. species or subspecies) the entity may be recognised at in the future, just that there is evidence that further taxonomic investigation is justified. A basic threshold of evidence is needed before a taxon is included in the TU list. Most often this is a discovery that a distinct population has a set of morphological characters that separate it from other populations of its species and / or forms a distinct clade when included in phylogenetic studies. Occasionally, the difference may be behavioural or ecological, such as a distinct call that may be important for mate recognition and therefore of taxonomic significance (e.g. many frogs outside Aotearoa New Zealand).

Evidence that is generally not sufficient to trigger a TU listing includes the discovery of:

- A new subpopulation, with no other evidence of taxonomic distinctiveness
- An individual or group of individuals that differ from the rest of the population in only a single character, such as colour, with no evidence of other differences
- A new sub-population that occupies a slightly different habitat from those already known

Such populations might be flagged as justifying further research in the text of an NZTCS report but should not be included in the list of assessed entities.

The term 'evolutionarily significant unit' (ESU) can be used when different populations of an organism are geographically separated and moderately phylogenetically divergent or have locally adapted phenotypic traits. The label ESU usually implies that each population should be managed separately as an independent population. ESUs are not listed separately under the NZTCS if they are not considered candidates for formal taxonomic description.

2.3 Trends

Of the 21 amphibian taxa assessed in 2024 (this report), three (14.3%) were assessed as being Extinct, five (23.8%) as Threatened, eight (38.1%) as At Risk, and four (19.0%) as Introduced and Naturalised (Table 2). One further taxon (4.8%) was assessed as Data Deficient because insufficient information was available to assess its conservation status.

Table 2. Comparison of the status of amphibian taxa in Aotearoa New Zealand assessed in 2009 (Newman et al. 2010), 2013 (Newman et al. 2013), 2017 (Burns et al. 2018) and 2024 (this report).

CONSERVATION STATUS	2009	2013	2017	2024
Data Deficient	1	1	1	1
Extinct	3	3	3	3
Threatened – Nationally Critical	1	2	0	2
Threatened – Nationally Vulnerable	2	2	1	3
At Risk – Declining	1	10	2	8
Introduced and Naturalised	3	3	4	4
Total	**11**	**21**	**11**	**21**

The conservation status of 4 of the 21 currently recognised taxa has changed since the previous assessment in 2017 (Burns et al. 2018) or since 2013 for the additional 10 Hochstetter's frog taxa that were last assessed by Newman et al. (2013). The conservation status of all four of these taxa has worsened (Tables 3 & 4). Of these, *Leiopelma hamiltoni* was assessed as having experienced a real decline in population; *Leiopelma* aff. *hochstetteri* "Great Barrier" and *Leiopelma* aff. *hochstetteri* "Whareorino" were estimated to have smaller population sizes based on new data; and *Leiopelma* aff. *hochstetteri* "Waikato" was estimated to have a higher rate of population decline based on new data.

The taxa that have declined since the previous assessment in 2017 (Burns et al. 2018) can be divided into two groups:

1. Hochstetter's frog ESUs / lineages with a change in conservation status since their last assessment by Newman et al. (2013).
2. Other amphibian taxa with a change in conservation status since Burns et al. (2018).

Additionally, seven taxonomically indeterminate Hochstetter's frog taxa that were not assessed in 2017 have had no change in their conservation status since 2013, forming a third group:

3. Hochstetter's frog taxa with no change in conservation status since Newman et al. (2013).

2.3.1 Hochstetter's frog ESUs / lineages with a change in conservation status since Newman et al. (2013)

Leiopelma aff. *hochstetteri* "Great Barrier" sensu Newman et al. (2013)

This indeterminate / unresolved taxon was assessed as At Risk – Declining by Newman et al. (2013) but was reassessed as Threatened – Nationally Vulnerable in 2024 due to studies on the population over the last 12 years suggesting a possible decline (Johnson et al. 2024).

Leiopelma aff. *hochstetteri* "Waikato" sensu Newman et al. (2013)

This indeterminate / unresolved taxon was assessed as At Risk – Declining by Newman et al. (2013) but was reassessed as Threatened – Nationally Vulnerable in 2024 due to a documented potential range contraction between 2000 and 2014 near the Rangitoto Range (T. Thurley, unpubl. data). This taxon is also considered to include the small Maungatautari population

(Fouquet et al. 2010), which appeared to increase after a predator-proof fence was erected in 2006 based on surveys by Longson et al. (2017).

***Leiopelma* aff. *hochstetteri* "Whareorino" sensu Newman et al. (2013)**

This indeterminate / unresolved taxon was assessed as At Risk – Declining by Newman et al. (2013) but was reassessed as Threatened – Nationally Vulnerable in 2024 due to an estimated smaller population size (T. Thurley, unpubl. data). This decline in conservation status should justify additional studies being carried out to better understand how real this perceived decline in population size is.

2.3.2 Other amphibian taxa with a change in conservation status since Burns et al. (2018)

***Leiopelma hamiltoni* McCulloch, 1919**

This species has declined from Threatened – Nationally Vulnerable to Threatened – Nationally Critical. Recent scientific evidence indicates that the main population on Maud Island / Te Hoiere, which has been subject to several decades of consistent monitoring (Bell 2016), has substantially declined on the two sample plots in the lower forest (Bell et al. 2018; Bell 2023). The cause of this decline is not known, but multiple factors could be at play, including climate change drying the forest understorey habitat (Germano et al. 2023); incursions by the omnivorous flightless rail, the western weka (*Gallirallus australis australis*), with populations peaking at approximately two birds per hectare before population control was carried out in 2018; direct or secondary poisoning from two brodifacoum anticoagulant aerial operations to eradicate mice (*Mus musculus*) in 2014 and 2019 (Oyston et al. 2022); direct mouse predation of frogs; or the impact of the pathogenic amphibian fungus *Batrachochytrium dendrobatidis*, which can cause chytridiomycosis in frogs and was detected in samples collected on the island in 2020 (Eda et al. 2023).

The translocated population at Boat Bay on Maud Island appears to be more stable and has increased in size (Bell et al. 2018), but this represents only a small proportion of the Maud Island population, so the expert panel considered that there had still been a substantial decline of the Maud Island population overall.

The other natural population is on Stephens Island / Takapourewa and is managed as a separate ESU. The population here remains at an estimated few hundred frogs.

Other translocated populations on nearby islands (Nukuwaiata, Motuara) and in Zealandia Te Māra a Tāne, a mainland fenced site in Wellington (Karst et al. 2023), are considered to have had variable levels of success, while an attempted translocation to Long Island appears to have failed (Wren et al. 2023).

2.3.3 Hochstetter's frog taxa with no change in conservation status since Newman et al. (2013)

***Leiopelma* aff. *hochstetteri* "Otawa" sensu Newman et al. (2013)**

This indeterminate / unresolved taxon was last considered as a separate lineage in 2013, when the population was assessed as being Threatened – Nationally Critical (Newman et al. 2013). Pest control targeting rats (*Rattus* spp.), possums (*Trichosurus vulpecula*) and stoats (*Mustela erminea*) has since been implemented over approximately 200 ha at Otawa. However, in January 2023, a series of severe rainfall events culminated in a major slip in the stream that was most populated by these frogs, destroying downstream riparian vegetation and presumably any frogs residing there (J. Heaphy, DOC, Tauranga, pers. comm.). It has been estimated that approximately 30–40% of the total population was lost, making the plight of this indeterminate / unresolved taxon even more precarious, so it was reassessed as Threatened – Nationally Critical once more.

Leiopelma aff. *hochstetteri* "Central / South Coromandel" sensu Newman et al. (2013)
Leiopelma aff. *hochstetteri* "Eastern Raukūmara" sensu Newman et al. (2013)
Leiopelma aff. *hochstetteri* "Kaimai" sensu Newman et al. (2013)
Leiopelma aff. *hochstetteri* "Northland" sensu Newman et al. (2013)
Leiopelma aff. *hochstetteri* "Waitākere" sensu Newman et al. (2013)
Leiopelma aff. *hochstetteri* "Western Raukūmara" sensu Newman et al. (2013)

These six taxonomically indeterminate taxa of the *L. hochstetteri* complex were not assessed separately in 2017 (Burns et al. 2018) but their conservation status was reinstated in the 2024 assessment. All six taxa are considered to be At Risk – Declining, which is the same conservation status as was assigned to them in 2013 when each taxon was last considered individually (Newman et al. 2013).

Table 3. Summary of status changes of amphibian taxa between 2017 (rows; Burns et al. 2018) or 2013 (rows in parentheses and italics; Newman et al. 2013) and 2024 (columns; this report). Numbers on the diagonal (shaded black) represent those taxa that have not changed status between 2017 or 2013 and 2024, numbers to the right of the diagonal (shaded green) represent taxa with an improved status, numbers to the left of the diagonal (shaded pink) represent taxa with a poorer status, and numbers without shading represent taxa that either have moved into or out of Data Deficient or were removed from this assessment.

		CONSERVATION STATUS 2024						
		Total	**DD**	**Ext**	**NC**	**NV**	**Dec**	**IN**
		21	**1**	**3**	**2**	**3**	**8**	**4**
CONSERVATION STATUS 2017 (or 2013)	Data Deficient (DD)	1	1					
	Extinct (Ext)	3		3				
	Threatened – Nationally Critical (NC)	0 *(1)*			*(1)*			
	Threatened – Nationally Vulnerable (NV)	1			1			
	At Risk – Declining (Dec)	2 *(9)*				*(3)*	2 *(6)*	
	Introduced and Naturalised (IN)	4						4

Note: Numbers in parentheses and italics indicate taxonomically unresolved Hochstetter's frog taxa that were not assessed in 2017 but were assessed in both 2013 and 2024.

Table 4. Summary of changes to the number of amphibian taxa assigned to each conservation status between 2017 (Burns et al. 2018) or 2013 (Newman et al. 2013) and 2024 (this report).

TYPE OF CHANGE, REASON, CONSERVATION STATUS	NO. TAXA
WORSE	**4**
Actual decline	**1**
Threatened – Nationally Critical	1
Reinterpretation of data	**3**
Threatened – Nationally Vulnerable*	3
NO CHANGE	**17**
No change in status	**10**
Data Deficient	1
Extinct	3
At Risk – Declining	2
Introduced and Naturalised	4
Reinterpretation of data	**7**
Threatened – Nationally Critical*	1
At Risk – Declining*	6
TOTAL	**21**

* The status changes for the 10 Hochstetter's frog taxa that were considered taxonomically indistinct in 2017 and reclassified in 2024 are in comparison to their conservation statuses in 2013 when they were last assessed.

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

3.1 Assessments

Taxa were assessed according to the criteria of Townsend et al. (2008) and have been grouped in Table 5 by conservation status and then alphabetically by scientific name. Data Deficient appears at the top of the list. Categories are then ordered by degree of loss, with Extinct at the top and At Risk – Declining at the bottom, above Introduced and Naturalised.

Brief descriptions of the NZTCS categories and criteria are provided in section 3.2. See Townsend et al. (2008), Michel (2021) and Rolfe et al. (2021) for details.

The full data for the assessments listed in Table 5 can be viewed and downloaded at https://nztcs.org.nz/reports/1125.

Table 5. Conservation status of all known amphibian taxa in Aotearoa New Zealand.

Qualifiers are abbreviated as follows: CD = Conservation Dependent, CI = Climate Impact, CR = Conservation Research Needed, DPS = Data Poor Size, DPT = Data Poor Trend, OL = One Location, RR = Range Restricted, Sp = Sparse. Further details about each of these can be found at https://nztcs.org.nz.

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
DATA DEFICIENT (1)					
Taxonomically unresolved (1)					
Anura genus *incertae sedis* "Northern Great Barrier Island swimming frog"	northern Great Barrier Island swimming frog	*Incertae sedis*			No change
EXTINCT (3)					
Taxonomically determinate (3)					
Leiopelma auroraensis Worthy, 1987	aurora frog	Leiopelmatidae			No change
Leiopelma markhami Worthy, 1987	Markham's frog	Leiopelmatidae			No change
Leiopelma waitomoensis Worthy, 1987	Waitomo frog	Leiopelmatidae			No change
THREATENED (5)					
NATIONALLY CRITICAL (2)					
Taxonomically determinate (1)					
Leiopelma hamiltoni McCulloch, 1919	Hamilton's frog	Leiopelmatidae	C	CD, CI, RR	Worse
Taxonomically unresolved (1)					
Leiopelma aff. *hochstetteri* "Otawa" sensu Newman et al. (2013)	Hochstetter's frog "Otawa"	Leiopelmatidae	A(1)	CD, CI, CR, OL	No change*
NATIONALLY VULNERABLE (3)					
Taxonomically unresolved (3)					
Leiopelma aff. *hochstetteri* "Great Barrier" sensu Newman et al. (2013)	Hochstetter's frog "Great Barrier"	Leiopelmatidae	D(1)	CI, CR, RR	Worse*
Leiopelma aff. *hochstetteri* "Waikato" sensu Newman et al. (2013)	Hochstetter's frog "Waikato"	Leiopelmatidae	D(1)	CD, CI, CR, DPS, DPT, PD, RR	Worse*
Leiopelma aff. *hochstetteri* "Whareorino" sensu Newman et al. (2013)	Hochstetter's frog "Whareorino"	Leiopelmatidae	B(1)	CD, CI, CR, DPT, OL	Worse*

Continued on next page

Table 5 continued

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS	STATUS CHANGE
AT RISK (8)					
DECLINING (8)					
Taxonomically determinate (2)					
Leiopelma archeyi Turbott, 1942	Archey's frog	Leiopelmatidae	C(1)	CI, CR, DPT, RR, Sp	No change
Leiopelma hochstetteri Fitzinger, 1861	Hochstetter's frog	Leiopelmatidae	B(1)	CI, CR, DPT	No change
Taxonomically unresolved (6)					
Leiopelma aff. *hochstetteri* "Central / South Coromandel" sensu Newman et al. (2013)	Hochstetter's frog "Central / South Coromandel"	Leiopelmatidae	B(1)	CI, CR, DPT	No change*
Leiopelma aff. *hochstetteri* "Eastern Raukūmara" sensu Newman et al. (2013)	Hochstetter's frog "Eastern Raukūmara"	Leiopelmatidae	C(1)	CI, CR, DPT	No change*
Leiopelma aff. *hochstetteri* "Kaimai" sensu Newman et al. (2013)	Hochstetter's frog "Kaimai"	Leiopelmatidae	A(1)	CI, CR, DPT, RR	No change*
Leiopelma aff. *hochstetteri* "Northland" sensu Newman et al. (2013)	Hochstetter's frog "Northland"	Leiopelmatidae	A(1)	CI, CR, DPS, DPT, RR	No change*
Leiopelma aff. *hochstetteri* "Waitākere" sensu Newman et al. (2013)	Hochstetter's frog "Waitākere"	Leiopelmatidae	A(1)	CI, CR, DPT, RR	No change*
Leiopelma aff. *hochstetteri* "Western Raukūmara" sensu Newman et al. (2013)	Hochstetter's frog "Western Raukūmara"	Leiopelmatidae	C(1)	CI, CR, DPT	No change*
INTRODUCED AND NATURALISED (4)					
Taxonomically determinate (4)					
Ichthyosaura alpestris apauna (Laurenti, 1768) Gray, 1850	Italian alpine newt	Salamandridae			No change
Litoria ewingii Duméril & Bibron, 1841	brown tree frog	Hylidae			No change
Ranoidea aurea (Lesson, 1829)	green and golden bell frog	Hylidae			No change
Ranoidea raniformis (Keferstein, 1867)	southern bell frog	Hylidae			No change

* The status changes for the 10 Hochstetter's frog taxa that were considered taxonomically indistinct in 2017 and reclassified in 2024 are in comparison to their conservation statuses in 2013 when they were last assessed.

3.2 NZTCS categories, criteria and qualifiers

Full details of the criteria and qualifiers included in Table 5 can be found in Rolfe et al. (2021) or at https://nztcs.org.nz. Summary definitions for the categories are presented below.

Data Deficient

Taxa that cannot be assessed due to a lack of current information about their distribution and abundance. It is hoped that listing such taxa will stimulate research to find out the true category (for a fuller definition, see Townsend et al. (2008)).

Extinct

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

Threatened

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

NATIONALLY CRITICAL

A – very small population (natural or unnatural)

A(1) The total population size is < 250 mature individuals; or

A(2) There are ≤ 2 sub-populations and ≤ 200 mature individuals in the larger sub-population; or

A(3) The total area of occupancy is ≤ 1 ha (0.01 km^2)

B – small population with a high ongoing or predicted decline of 50–70%

B(1) The total population size is 250–1000 mature individuals; or

B(2) There are ≤ 5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population; or

B(3) The total area of occupancy is ≤ 10 ha (0.1 km^2)

C – population (irrespective of size or number of sub-populations) with a very high ongoing or predicted decline of > 70%

NATIONALLY VULNERABLE

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

A(1) The total population size is 250–1000 mature individuals; or

A(2) There are ≤ 5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population; or

A(3) The total area of occupancy is ≤ 10 ha (0.1 km^2)

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

B(1) The total population size is 1000–5000 mature individuals; or

B(2) There are ≤ 15 sub-populations *and* ≤ 500 mature individuals in the largest sub-population; or

B(3) The total area of occupancy is ≤ 100 ha (1 km^2)

C – moderate population and population trend that has a low to high ongoing or predicted decline of 10–50%

C(1) The total population size is 1000–5000 mature individuals; or

C(2) There are ≤ 15 sub-populations *and* ≤ 500 mature individuals in the largest sub-population; or

C(3) The total area of occupancy is ≤ 100 ha (1 km^2)

D – moderate to large population and moderate to high ongoing or predicted decline of 30–70%

D(1) The total population size is 5000–20 000 mature individuals; or

D(2) There are ≤ 15 sub-populations *and* ≤ 1000 mature individuals in the largest sub-population; or

D(3) The total area of occupancy is ≤ 1000 ha (10 km^2)

E – large population and high ongoing or predicted decline of 50–70%

E(1) The total population size is 20 000–100 000 mature individuals; or

E(2) The total area of occupancy is ≤ 10 000 ha (100 km^2)

At Risk

DECLINING

A – moderate to large population and low ongoing or predicted decline of 10–30%

A(1) The total population size is 5000–20 000 mature individuals; or

A(2) The total area of occupancy is ≤ 1000 ha (10 km^2)

B – large population and low to moderate ongoing or predicted decline of 10–50%

B(1) The total population size is 20 000–100 000 mature individuals; or

B(2) The total area of occupancy is ≤ 10 000 ha (100 km^2)

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

C(1) The total population size is > 100 000 mature individuals; or

C(2) The total area of occupancy is > 10 000 ha (100 km^2)

Introduced and Naturalised

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

4. Acknowledgements

We thank the people, groups and organisations who made submissions to inform this assessment. We also thank Karina Radley (University of Waikato) and Kate Richardson (Department of Conservation) for their help in undertaking frog surveys in the southern Waikato region.

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