



NEW ZEALAND THREAT CLASSIFICATION SERIES 7

Conservation status of New Zealand freshwater fish, 2013

Jane M. Goodman, Nicholas R. Dunn, Peter J. Ravenscroft, Richard M. Allibone,
Jacques A.T. Boubée, Bruno O. David, Marc Griffiths, Nicholas Ling,
Rodney A. Hitchmough and Jeremy R. Rolfe



Cover: Longfin eel, *Anguilla dieffenbachii*. Photo: Rod Morris

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 under *Publications*, then *Science & technical*.

© Copyright May 2014, New Zealand Department of Conservation

ISSN 2324-1713 (web PDF)

ISBN 978-0-478-15014-8 (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 Technical 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 recognised New Zealand freshwater fish	5
<hr/>	
2.1 Taxonomically determinate	5
Extinct	5
Data Deficient	5
Threatened	6
Nationally Critical	6
Nationally Endangered	6
Nationally Vulnerable	7
At Risk	7
Declining	8
Recovering	8
Relict	8
Naturally Uncommon	9
Non-resident Native	9
Migrant	9
Vagrant	9
Coloniser	9
Not Threatened	10
Introduced and Naturalised	10
2.2 Taxonomically indeterminate	11
Data Deficient	11
Threatened	11
Nationally Critical	11
Nationally Endangered	11
Nationally Vulnerable	11
At Risk	11
Declining	12
Naturally Uncommon	12
Not Threatened	12
3. Acknowledgements	12
<hr/>	
4. References	12
<hr/>	

Conservation status of New Zealand freshwater fish, 2013

Jane M. Goodman¹, Nicholas R. Dunn², Peter J. Ravenscroft³, Richard M. Allibone⁴, Jacques A.T. Boubée⁵, Bruno O. David⁶, Marc Griffiths⁷, Nicholas Ling⁸, Rodney A. Hitchmough⁹ and Jeremy R. Rolfe⁹

- ¹ Science and Capability Group, Department of Conservation, Private Bag 3072, Hamilton 3240, New Zealand. Email: jgoodman@doc.govt.nz
- ² Science and Capability Group, Department of Conservation, Private Bag 4715, Christchurch Mail Centre, Christchurch 8140, New Zealand.
- ³ Ōtepoti / Dunedin Office, Department of Conservation, PO Box 5244, Dunedin 9058, New Zealand.
- ⁴ Golder Associates (NZ) Ltd, PO Box 1087, Dunedin 9054, New Zealand.
- ⁵ National Institute of Water and Atmospheric Research (Ltd), PO Box 11115, Hamilton 3216, New Zealand.
- ⁶ Waikato Regional Council, Private Bag 3038, Hamilton 3240, New Zealand.
- ⁷ Ministry for Primary Industries, PO Box 2526, Wellington 6140, New Zealand.
- ⁸ University of Waikato, Private Bag 3105, Hamilton 3240, New Zealand.
- ⁹ Science and Capability Group, Department of Conservation, PO Box 10420, Wellington 6143, New Zealand.

Abstract

The conservation status of all known New Zealand freshwater fish taxa was assessed using the New Zealand Threat Classification System (NZTCS) criteria. A full list is presented, along with a statistical summary and brief notes on the most important changes. This 2013 list replaces all previous NZTCS lists for freshwater fish.

Keywords: New Zealand Threat Classification System, freshwater fish, conservation status, Anguillidae, Cheimarrichthyidae, Cyprinidae, Eleotridae, Galaxiidae, Geotridae, Gobiidae, Ictaluridae, Microdesmidae, Mugilidae, Percidae, Pleuronectidae, Poeciliidae, Retropinnidae, Salmonidae, Tripterygiidae.

© Copyright May 2014, Department of Conservation. This paper may be cited as:
Goodman, J.M.; Dunn, N.R.; Ravenscroft, P.J.; Allibone, R.M.; Boubée, J.A.T.; David, B.O.; Griffiths, M.; Ling, N.; Hitchmough, R.A.; Rolfe, J.R. 2014: *New Zealand Threat Classification Series 7*. Department of Conservation, Wellington. 12 p.

1. Summary

The conservation status of 77 New Zealand freshwater fish taxa was assessed using New Zealand Threat Classification System (NZTCS) criteria (Townsend et al. 2008). This list replaces the 2009 list published by Allibone et al. in 2010. The categories, criteria and process were identical between the two listings and many of the panel members (the authors of Allibone et al. 2010 and this document) were the same.

The New Zealand Freshwater Fish Database (McDowall & Richardson, 1983; <https://nzffdms.niwa.co.nz/>, retrieved May 2, 2013) and unpublished Department of Conservation survey and monitoring data were the primary sources of information used to examine the distribution and abundance of freshwater fish taxa.

Table 1 provides a summary of the number of taxa in each category listed in Allibone et al. (2010) and this document. A summary of status changes between the 2009 and 2013 lists is presented in Table 2. More comprehensive information on the status of individual taxa, the qualifiers that apply to each, and the criteria that triggered the taxon to be placed in a category, is outlined in section 2.

Current understanding of the taxonomic status of all non-migratory Galaxias taxa was determined at a Department of Conservation (DOC) convened workshop held prior to the meeting of the New Zealand freshwater fish threat classification panel. Participants at this workshop included geneticists, taxonomists, and conservation managers (DOC unpubl. data). Four participants at the workshop were also members of the current threat classification panel.

Fourteen native entities are listed as taxonomically indeterminate and are awaiting formal description; they have been assigned tag names in this list (hereafter they are referred to as taxonomically indeterminate taxa). Two parallel lists have been produced, one for taxonomically determinate taxa and one for taxonomically indeterminate taxa.

Two species name change have occurred since the 2009 list was published (Allibone et al. 2010; Table 3). The subspecies status of *Anguilla australis schmidtii* is no longer recognised based on Dijkstra & Jellyman (1999); and *Grahamina nigripenne* has been reassigned as *Forsterygion*

Table 1. Statistical summary of the status of New Zealand freshwater fish species assessed in 2009 (Allibone et al. 2010) and 2013 (this document).

CATEGORY	TOTAL 2009	TOTAL 2013
Extinct	1	1
Data Deficient	0	1
Threatened—Nationally Critical	4	5
Threatened—Nationally Endangered	3	6
Threatened—Nationally Vulnerable	7	10
At Risk—Declining	13	14
At Risk—Recovering	0	0
At Risk—Relict	1	0
At Risk—Naturally Uncommon	6	5
Non-resident native—Migrant	0	0
Non-resident native—Vagrant	0	0
Non-resident native—Coloniser	3	3
Not Threatened	17	12
Introduced and Naturalised	20	20
Total	75	77

Table 2. Summary of status changes of freshwater fish between 2009 (Allibone et al. 2010) and 2013 (this document). Bold numbers are the 2013 status totals with the previous status listed below.

CONSERVATION STATUS 2013	CONSERVATION STATUS 2009	DETERMINATE	INDETERMINATE	TOTAL
EXTINCT		1	0	1
	Extinct	1	0	1
DATA DEFICIENT		0	1	1
	Not listed	0	1	1
THREATENED		12	9	21
Nationally Critical		2	3	5
	Nationally Critical	2	2	4
	Nationally Vulnerable	0	1	1
Nationally Endangered		3	3	6
	Nationally Endangered	2	1	3
	Nationally vulnerable	1	1	2
	Not listed	0	1	1
Nationally Vulnerable		7	3	10
	Nationally Vulnerable	3	1	4
	Naturally uncommon	0	1	1
	Declining	3	0	3
	Not threatened	1	1	2
AT RISK		16	3	19
Declining		12	2	14
	Declining	9	1	10
	Naturally Uncommon	1	0	1
	Not threatened	1	1	2
	Relict	1	0	1
Naturally Uncommon		4	1	5
	Naturally Uncommon	3	1	4
	Not Threatened	1	0	1
NON-RESIDENT NATIVE		3	0	3
Coloniser		3	0	3
	Coloniser	3	0	3
NOT THREATENED		11	1	12
	Not Threatened	11	1	12
INTRODUCED AND NATURALISED		20	0	20
	Introduced and Naturalised	20	0	20
TOTAL		63	14	77

nigripenne following Jawad (2008). Family names now adhere to Eschmeyer (2014), as does spelling, resulting in several minor changes in spelling of species names compared with the 2009 list (Allibone et al. 2010).

Three native freshwater fish taxa have been added to the 2009 list (Allibone et al. 2010) (Table 4); two are indeterminate taxa that have been split from *Galaxias* “species D” due to recent taxonomic research (DOC unpubl. data). The third taxon was ranked in 2009 but not published in Allibone et al. (2010).

Fifty-four of the 77 taxa listed are resident natives. Of the 54 resident native taxa, 40 (74%) are considered to be Threatened or At Risk, compared with 34 of 52 (65%) resident native taxa in the 2009 list (Allibone et al. 2010). One taxon, the grayling (*Prototroctes oxyrinchus*) is classified

Table 3. Name changes affecting New Zealand freshwater fish between the publication of Allibone et al. (2010) and this document.

SCIENTIFIC NAME AND AUTHORITY IN ALLIBONE ET AL. (2010)	SCIENTIFIC NAME IN THIS DOCUMENT (BASED ON ESCHMEYER (2014))	FAMILY
<i>Anguilla australis schmidtii</i> Richardson 1841	<i>Anguilla australis</i> Richardson 1841	Anguillidae
<i>Grahamina nigripenne</i> Valenciennes 1836	<i>Forsterygion nigripenne</i> (Valenciennes 1836)	Tripterygiidae

Table 4. Taxa included in this document that were not listed in Allibone et al. (2010).

NAME	FAMILY
<i>Galaxias</i> "lower Clutha"	Galaxiidae
<i>Galaxias</i> aff. <i>paucispondylus</i> "Southland"	Galaxiidae
<i>Galaxias</i> "Pomahaka"	Galaxiidae

as Extinct. Twelve taxa are Not Threatened and one taxon was assigned to the Data Deficient category. The remaining 23 of 77 freshwater taxa are either listed as Non-resident native—Colonisers (3 taxa) or Introduced and Naturalised (20 taxa).

Fourteen of the resident native taxa (26%) have a higher threat classification in 2013 than in 2009; 6 (11%) were moved because of observed declines in abundance and distribution and 8 (15%) because of improved knowledge. Five resident native taxa (9%) have moved from being classified as Not Threatened to either At Risk or Threatened. Changes to the conservation status of these taxa are for one or more of the following reasons: a more accurate estimate of their population size and/or area of occupancy; loss and/or degradation of habitat due to land use intensification; competition and/or predation by introduced species; or increased genetic knowledge.

2. Conservation status of all recognised New Zealand freshwater fish

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. 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.

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
S?O	Overseas security uncertain
Sp	Sparse
St	Stable
TO	Threatened Overseas

2.1 Taxonomically determinate

Extinct (1)

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.

SCIENTIFIC NAME AND AUTHORITY	COMMON NAME	FAMILY
<i>Prototroctes oxyrhynchus</i> Günther 1870	Grayling	Retropinnidae

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).

No taxonomically determinate freshwater fish taxa are listed in this category.

Threatened (12)

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

Nationally Critical

Criteria for Nationally Critical:

A—very small population (natural or unnatural)

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

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

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

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

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

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

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

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

C Predicted decline >70%

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Galaxias cobitinis</i> McDowall & Waters 2002	Lowland longjaw galaxias (Kakanui River)	Galaxiidae	A(1)	CD, EF, OL
<i>Neochanna burrowsius</i> (Phillipps 1926)	Canterbury mudfish	Galaxiidae	C	CD, RR, Sp

Nationally Endangered

Criteria for Nationally Endangered:

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

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

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

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

B—small stable population (unnatural)

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

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

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

C—moderate population and high ongoing or predicted decline.

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

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

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

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Galaxias anomalus</i> Stokell 1959	Central Otago roundhead galaxias	Galaxiidae	C(3/1)	EF
<i>Galaxias eldoni</i> McDowall 1997	Eldon's galaxias	Galaxiidae	A(3/1)	
<i>Galaxias pullus</i> McDowall 1997	Dusky galaxias	Galaxiidae	A(3/1)	CD

Nationally Vulnerable

Criteria for Nationally Vulnerable:

A—small, increasing population (unnatural)

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

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

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

B—moderate, stable population (unnatural)

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

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

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

C—moderate population, with population trend that is declining

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

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

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

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

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

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

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

E—large population, and high ongoing or predicted decline.

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

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

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Galaxias depressiceps</i> McDowall & Wallis 1996	Taieri flathead galaxias	Galaxiidae	C(3/1)	CD
<i>Galaxias gollumoides</i> McDowall & Chadderton 1999	Gollum galaxias	Galaxiidae	B(2/1)	DP
<i>Galaxias macronasus</i> McDowall & Waters 2003	Bignose galaxias	Galaxiidae	C(3/1)	RR
<i>Galaxias prognathus</i> Stokell 1940	Upland longjaw galaxias (Canterbury, West Coast)	Galaxiidae	C(1/1)	DP
<i>Galaxias postvectis</i> Clarke 1899	Shortjaw kokopu	Galaxiidae	D(1/1)	De, DP
<i>Geotria australis</i> Gray 1851	Lamprey	Geotriidae	C(3/1)	S?O
<i>Neochanna heleioides</i> Ling & Gleeson 2001	Northland mudfish	Galaxiidae	D(3/1)	RR

At Risk (16)

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

Declining

Taxa that do not qualify as ‘Threatened’ because they are buffered by large population size and/or a slower rate of decline than the trigger points.

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 \leq 1000 ha (10 km²), predicted decline 10–30%

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

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

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

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

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

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

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Anguilla dieffenbachii</i> Gray 1842	Longfin eel	Anguillidae	C(2/1)	CD
<i>Cheimarrichthys fosteri</i> Haast 1874	Torrentfish	Cheimarrichthyidae	C(1/1)	
<i>Galaxias argenteus</i> (Gmelin 1789)	Giant kokopu	Galaxiidae	B(1/1)	PD
<i>Galaxias brevipinnis</i> Günther 1866	Koaro	Galaxiidae	C(1/1)	PD
<i>Galaxias divergens</i> Stokell 1959	Dwarf galaxias (West Coast)	Galaxiidae	B(2/1)	DP, RR
<i>Galaxias gracilis</i> McDowall 1967	Dwarf inanga (North Kaipara Head dune lakes)	Galaxiidae	A(2/1)	EF, RR
<i>Galaxias maculatus</i> (Jenyns 1842)	Inanga	Galaxiidae	C(1/1)	CD, SO
<i>Galaxias vulgaris</i> Stokell 1949	Canterbury galaxias	Galaxiidae	A(2/1)	DP
<i>Neochanna apoda</i> Günther 1867	Brown mudfish	Galaxiidae	C(1/1)	PD
<i>Neochanna diversus</i> Stokell 1949	Black mudfish	Galaxiidae	C(2/1)	DP
<i>Gobiomorphus hubbsi</i> (Stokell 1959)	Bluegill bully	Eleotridae	C(1/1)	DP
<i>Gobiomorphus huttoni</i> (Ogilby 1894)	Redfin bully	Eleotridae	C(1/1)	PD

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 \leq 100 ha (1 km²), and predicted increase >10%

B 5000–20 000 mature individuals or total area of occupancy \leq 1000 ha (10 km²), and predicted increase >10%

No taxonomically determinate freshwater fish 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:

Criteria for Relict:

- 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)).

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 freshwater fish 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.

NAME AND AUTHORITY	COMMON NAME	FAMILY	QUALIFIERS
<i>Galaxias paucispondylus</i> Stokell 1938	Alpine galaxias (Canterbury, Marlborough, West Coast)	Galaxiidae	RR
<i>Gobiomorphus alpinus</i> Stokell 1962	Tarndale bully	Eleotridae	RR
<i>Neochanna rekohua</i> (Mitchell 1995)	Chatham Island mudfish	Galaxiidae	RR, St
<i>Stokellia anisodon</i> (Stokell 1941)	Stokell's smelt	Retropinnidae	RR

Non-resident Native (3)

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).

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 freshwater fish 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.

No taxonomically determinate freshwater taxa are listed in this category.

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.

NAME AND AUTHORITY	COMMON NAME	FAMILY	QUALIFIERS	IUCN STATUS
<i>Anguilla reinhardtii</i> Steindachner 1867	Australian longfin eel	Anguillidae	SO	Not assessed
<i>Gobiopterus semivestitus</i> (Munro 1949)	Glass goby	Gobiidae	DP, OL, SO	Not assessed
<i>Parioglossus marginalis</i> Rennis & Hoese 1985	Dart goby	Microdesmidae	SO	Not assessed

Not Threatened (11)

Resident native taxa that have large, stable populations.

NAME AND AUTHORITY	COMMON NAME	FAMILY	QUALIFIERS
<i>Aldrichetta forsteri</i> (Valenciennes 1836)	Yelloweye mullet	Mugilidae	
<i>Anguilla australis</i> Richardson 1841	Shortfin eel	Anguillidae	Inc
<i>Galaxias fasciatus</i> Gray 1842	Banded kokopu	Galaxiidae	
<i>Gobiomorphus basalis</i> (Gray 1842)	Cran's bully	Eleotridae	
<i>Gobiomorphus breviceps</i> (Stokell 1939)	Upland bully (East Coast South Island)	Eleotridae	
<i>Gobiomorphus cotidianus</i> McDowall 1975	Common bully	Eleotridae	
<i>Gobiomorphus gobioides</i> (Valenciennes 1837)	Giant bully	Eleotridae	DP
<i>Forsterygion nigripenne</i> (Valenciennes 1836)	Estuarine triplefin	Tripterygiidae	
<i>Mugil cephalus</i> Linnaeus 1758	Grey mullet	Mugilidae	SO
<i>Retropinna retropinna</i> (Richardson 1848)	Common smelt	Retropinnidae	
<i>Rhombosolea retiaria</i> Hutton 1874	Black flounder	Pleuronectidae	DP

Introduced and Naturalised (20)

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

NAME AND AUTHORITY	COMMON NAME	FAMILY
<i>Ameiurus nebulosus</i> (Lesueur 1819)	Brown bullhead catfish	Ictaluridae
<i>Arenigobius bifrenatus</i> (Kner 1865)	Bridled goby	Gobiidae
<i>Carassius auratus</i> (Linnaeus 1758)	Goldfish	Cyprinidae
<i>Cyprinus carpio</i> Linnaeus 1758	Koi carp	Cyprinidae
<i>Gambusia affinis</i> (Baird & Girard 1853)	Gambusia	Poeciliidae
<i>Leuciscus idus</i> (Linnaeus 1758)	Orfe	Cyprinidae
<i>Oncorhynchus mykiss</i> (Walbaum 1792)	Rainbow trout	Salmonidae
<i>Oncorhynchus nerka</i> (Walbaum 1792)	Sockeye salmon	Salmonidae
<i>Oncorhynchus tshawytscha</i> (Walbaum 1792)	Chinook salmon	Salmonidae
<i>Perca fluviatilis</i> Linnaeus 1758	Perch	Percidae
<i>Phalloceras caudimaculatus</i> (Hensel 1868)	Caudo	Poeciliidae
<i>Poecilia latipinna</i> (Lesueur 1821)	Sailfin molly	Poeciliidae
<i>Poecilia reticulata</i> Peters 1859	Guppy	Poeciliidae
<i>Salmo salar</i> Linnaeus 1758	Atlantic salmon	Salmonidae
<i>Salmo trutta</i> Linnaeus 1758	Brown trout	Salmonidae
<i>Salvelinus fontinalis</i> (Mitchill 1814)	Brook char	Salmonidae
<i>Salvelinus namaycush</i> (Walbaum 1792)	Mackinaw	Salmonidae
<i>Scardinius erythrophthalmus</i> (Linnaeus 1758)	Rudd	Cyprinidae
<i>Tinca tinca</i> (Linnaeus 1758)	Tench	Cyprinidae
<i>Xiphophorus helleri</i> Heckel 1848	Swordtail	Poeciliidae

2.2 Taxonomically indeterminate

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

Data Deficient (1)

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).

NAME	COMMON NAME	FAMILY	QUALIFIERS
<i>Galaxias</i> "lower Clutha"	Lower Clutha galaxias (Clutha River)	Galaxiidae	RR

Threatened (9)

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

Nationally Critical

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Galaxias</i> aff. <i>cobitinis</i> "Waitaki"	Lowland longjaw galaxias (Waitaki River)	Galaxiidae	C	CD, RR
<i>Galaxias</i> "species D"	Clutha flathead galaxias (Clutha River)	Galaxiidae	C	
<i>Galaxias</i> "Teviot"	Teviot flathead galaxias (Teviot River)	Galaxiidae	A(3)	RR

Nationally Endangered

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Galaxias</i> aff. <i>paucispondylus</i> "Manuherikia"	Alpine galaxias (Manuherikia River)	Galaxiidae	A(3/1)	OL, DP
<i>Galaxias</i> "Nevis"	Nevis galaxias (Nevis River)	Galaxiidae	A(3/1)	DP, RR
<i>Galaxias</i> "Pomahaka"	Pomahaka galaxias (Pomahaka River)	Galaxiidae	A(3/1)	RR

Nationally Vulnerable

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Galaxias</i> aff. <i>paucispondylus</i> "Southland"	Alpine galaxias (Southland)	Galaxiidae	C(3/1)	
<i>Galaxias</i> aff. <i>prognathus</i> "Waitaki"	Upland longjaw galaxias (Waitaki River)	Galaxiidae	C(1/1)	DP, RR, Sp
<i>Galaxias</i> "northern"	Northern flathead galaxias (Marlborough, Nelson, West Coast)	Galaxiidae	C(3/1)	RR

At Risk (3)

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

Declining

NAME AND AUTHORITY	COMMON NAME	FAMILY	CRITERIA	QUALIFIERS
<i>Galaxias</i> aff. <i>divergens</i> “northern”	Dwarf galaxias (Nelson, Marlborough, and North Island)	Galaxiidae	A(2/1)	DP
<i>Galaxias</i> “southern”	Southern flathead galaxias (Southland, Otago)	Galaxiidae	A(1/)	DP, RR

Naturally Uncommon

NAME AND AUTHORITY	COMMON NAME	FAMILY	QUALIFIERS
<i>Galaxias</i> “dune lakes”	Dune lakes galaxias (Kai Iwi lakes)	Galaxiidae	EF, RR

Not Threatened (1)

Resident native taxa that have large, stable populations.

NAME AND AUTHORITY	COMMON NAME	FAMILY	QUALIFIERS
<i>Gobiomorphus</i> aff. <i>breviceps</i>	Upland bully (West Coast South island, North Island)	Eleotridae	DP

3. Acknowledgements

The authors would like to thank Sjaan Bowie, Ciaran Campbell, Shannan Crow, Daniel Jack, Tania King, Lan Pham, Graham Wallis and Jon Waters for their valuable contributions to defining the distribution, threats to and genetic status of non-migratory galaxiids at a workshop prior to the New Zealand threat classification meeting.

Santiago Bermeo-Alvear, Bill Chisholm, Jan Clayton-Green, Gavin Collis, Dave Eastwood, Paul Fisher, Tom Kroos, Michael Lake, Mike McGlynn, Michael Pingram, Ricky Olley, Alton Perrie, Martin Rutledge, Graham Surrey, Manna Warburton and Dave West provided comments, submissions or data on the distribution and status of New Zealand freshwater fish. Anna Paltridge provided helpful editing advice.

4. References

- Allibone, R.M.; David, B.O.; Hitchmough, R.; Jellyman, D.J.; Ling, N.; Ravenscroft, P.; Waters, J.M. 2010: Conservation status of New Zealand freshwater fish, 2009. *New Zealand Journal of Marine and Freshwater Research* 44: 271–287.
- Dijkstra, L.H.; Jellyman, D.J. 1999: Is the subspecies classification of the freshwater eels *Anguilla australis australis* Richardson and *A. a. schmidtii* Phillipps still valid? *Marine and Freshwater Research* 50: 261–263.
- Eschmeyer, W. N. (ed.): Catalog of Fishes: genera, species, references. (<http://research.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>). Electronic version accessed 20 January 2014.
- Jawad, L.A. 2008: Second revision of the New Zealand triplefin genus *Forsterygion* Whitley and Phillips, 1939 (Pisces: Tripterygiidae). *Journal of Natural History* 42: 2943–2989.
- McDowall, R. M.; Richardson, J. 1983. The New Zealand freshwater fish database—a guide to input and output. Fisheries Research Division Information leaflet 12, Ministry of Agriculture and Fisheries, Wellington.
- NIWA (National Institute of Water and Atmospheric Research): New Zealand Freshwater Fish Database. Retrieved May 2, 2013, from <https://nzffdms.niwa.co.nz/>.
- 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.