Otago Regional Council

Conservation status of Orthoptera in Otago

(Wētā, cave wētā, crickets, katydids, and grasshoppers)

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Otago arid grasshopper (*Sigaus childi*), Threatened – Regionally Vulnerable. Photograph by Danilo Hegg.

Southern Alps giant wētā (*Deinacrida pluvialis*), Threatened – Regionally Critical. Photograph by Danilo Hegg.

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Executive Summary

This report provides the first conservation status assessment of all known Orthoptera (wētā, cave wētā, crickets, grasshoppers, and katydids) in the Otago Region. A total of 44 Orthoptera taxa were identified as occurring in Otago. Of these, three were assessed as Regionally Threatened (one Regionally Critical and two Regionally Vulnerable), six as Regionally At Risk (two Regionally Declining and four Regionally Uncommon), 33 as Regionally Not Threatened, and two as Regionally Data Deficient.

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Introduction

Threat classifications play an important role in monitoring biodiversity and informing conservation actions. The New Zealand Threat Classification System (NZTCS) is used to assign threat statuses to candidate taxa (species, subspecies, varieties, and forma) in Aotearoa New Zealand (Rolfe et al. 2022). Developed for terrestrial, freshwater, and marine biota (flora, fauna, and fungi), the NZTCS assesses taxa at the national scale using criteria based on population size, state, and trend, while also considering the impact of threats, recovery potential, and taxonomic certainty.

The Department of Conservation | Te Papa Atawhai (DOC) is responsible for managing nationally selected indigenous species under the Wildlife Act 1953, Reserves Act 1977, Conservation Act 1987, and Native Plants Protection Act 1934. Regional and district councils, however, have statutory obligations to maintain indigenous biodiversity under the Resource Management Act 1991 (RMA). Although the NZTCS is effective at the national level, it can overlook situations where taxa are under greater pressure at regional or local scales.

The need for nationally consistent regional threat assessments led to the development of the Regional Threat Classification System (RTCS; Crisp et al. 2026). The RTCS extends the NZTCS by applying the same threat categories, status rankings, and criteria adjusted to regional scales, with additional qualifiers to capture attributes of regional importance. Regional assessments improve understanding of species' status across the landscape, help local government, iwi, and community groups prioritise conservation actions that complement DOC's work, strengthen regulatory protection for threatened species, and contribute local knowledge to future national conservation assessments.

Regional threat assessments have so far been completed for eight taxonomic groups in Otago: amphibians (Jarvie 2025a), bats (Jarvie et al. 2023), birds (Jarvie et al. 2026a), freshwater fishes (Campbell et al. 2026), indigenous vascular plants (Jarvie et al. 2026b), Onychophora (velvet worms or "peripatus") (Jarvie 2025b), reptiles (Jarvie et al. 2025), and selected mushroom fungi (non-lichenised agarics, boletes, and russuloid fungi; Jarvie and Cooper 2024). This report provides a species list and the first regional threat assessment of the conservation status of all Orthoptera (wētā, cave wētā, crickets, grasshoppers, and katydids) that have been recorded in the Otago Region.

Methods

The report authors ('Otago panel') assessed the regional conservation status of all Orthoptera recorded in Otago during a meeting held in Ōtepoti Dunedin on 6 June 2026. The panel comprised experts from two government agencies (ORC, DOC) and an independent ecologist who was also a member of the 2022 national Orthoptera assessment panel.

Regional assessment outcomes, including conservation status, population size, area of occupancy, population trends, and relevant qualifiers, were recorded in a locally operated dashboard. This dashboard also incorporated relevant data from the latest national assessment of the conservation status of Aotearoa New Zealand Orthoptera (Trewick et al. 2022). Species were assessed using the methods described in the RTCS Manual (Crisp et al. 2026).

The regional threat status categories are shown in Figure 1. In summary, the panel applied RTCS criteria to assign a regional threat status to all nationally Threatened and At-Risk taxa known to occur in Otago based on available information on population size, area of occupancy and/or trend. A National Stronghold qualifier was applied where more than 20% of a species' total population was known or inferred to occur in Otago.

For nationally Not Threatened taxa, a regional scaling threshold of 2,000 mature individuals and/or an area of occupancy of 1,000 ha (10 km^2) was applied to determine whether the RTCS assessment criteria should be used (Crisp et al. 2026). A full explanation of the assessment processes, criteria, and categories used is provided in the latest NZTCS (Rolfe et al. 2022) and RTCS (Crisp et al. 2026) manuals. National (NZTCS) threat categories and criteria are summarised in Appendix 1. National and regional qualifiers are listed and defined in Appendices 2 and 3, respectively. Taxonomic name changes affecting between the publication of Trewick et al. (2022) and this report are noted in Appendix 4.

Information was provided on whether taxa were recorded, or inferred to occur, within territorial authorities or Freshwater Management Units (FMUs). The Clutha Mata-au FMU is further subdivided into five rohe (areas). Occurrence records from the iNaturalist platform were used to inform decisions about the distributions of taxa. Maps of territorial authority and FMU boundaries are shown in Appendices 5 and 6, respectively.

The dashboard and all analyses were run using R version 4.2.2 (R Core Team, 2022) through the RStudio platform (Posit Team, 2023). The primary packages used were *shiny* (Chang et al. 2021), *flexdashboard* (Iannone et al. 2020), and *ggplot2* (Wickham 2016). OpenStreetMap and Esri World Imagery were used as the base map layers for displaying records.

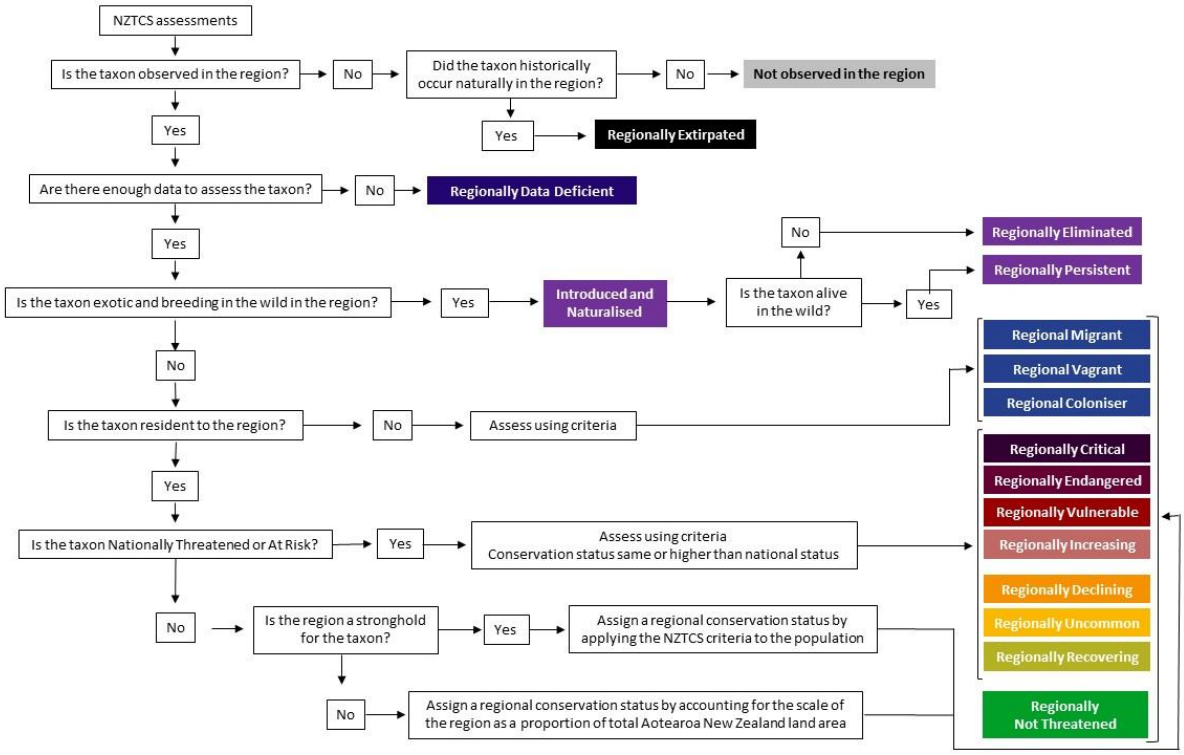

Figure 1: Flow chart for regionally assessing taxa that are found in the wild in Aotearoa New Zealand (reproduced from Crisp et al. 2026).

Results

A total of 44 Orthoptera taxa (wētā, cave wētā, crickets, grasshoppers, and katydids) were assessed in Otago (Table 1; Figure 1). These comprised 21 cave wētā, 10 wētā, eight grasshoppers, three crickets, and two katydids. Of the assessed taxa, three were classified as Regionally Threatened, six as Regionally At Risk, 33 as Regionally Not Threatened, and two as Regionally Data Deficient. Otago was identified as a National Stronghold (supporting >20% of the national population) for 25 of the 44 resident taxa (56.8%) (Table 1), including six regional endemics.

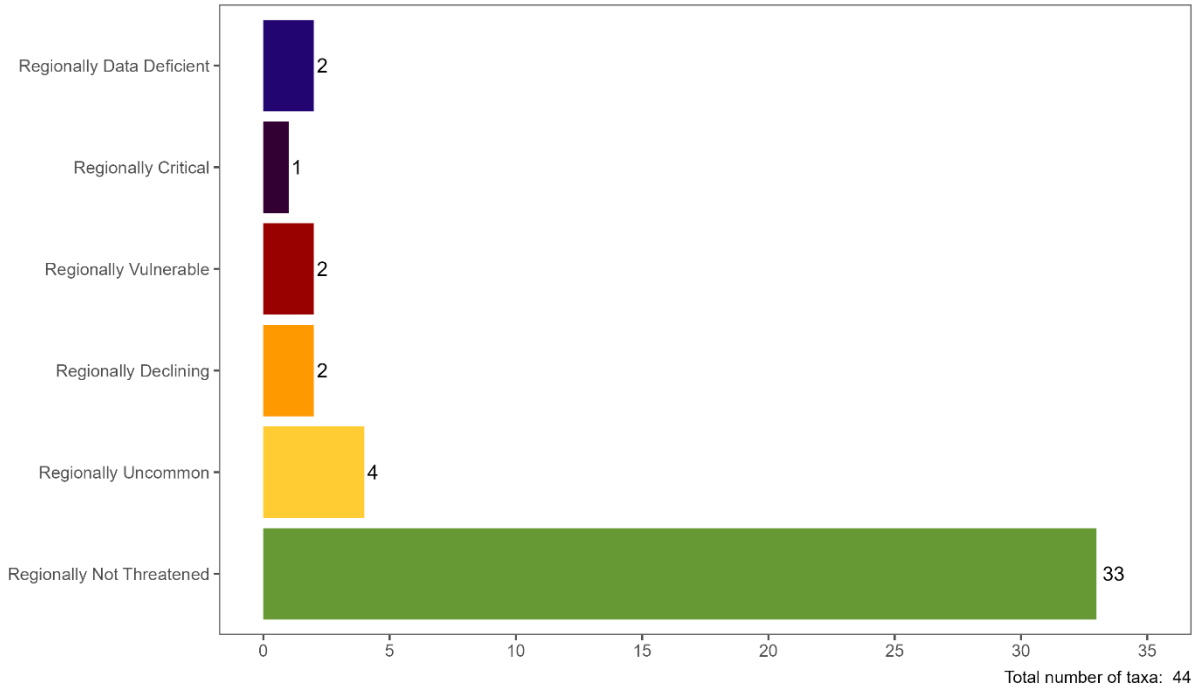

Figure 2: Conservation status of Orthoptera in the Otago Region.

Five species have more elevated conservation statuses regionally than nationally, reflecting their greater conservation concern within the region. *Deinacrida pluvialis* is assessed as Regionally Critical compared with Nationally Endangered, while *Anderus pipiwai*, *Hemiandrus johnsi*, *Pleioplectron caudatum*, and *Pleioplectron flavicorne* are Regionally At Risk–Uncommon despite being classified as Nationally Not Threatened (Table 1).

Of the three Regionally Threatened taxa in Otago, one is classified as Regionally Critical (Southern Alps giant wētā, *Deinacrida pluvialis*) and two as Regionally Vulnerable (Otago arid grasshopper, *Sigaus childi*, and *Hemiandrus* (CMNZ 2000.121.21115) "Cromwell"; Table 1). Otago is home to one confirmed (and actively monitored) population of the Regionally Critical Southern Alps giant wētā, with one possible additional population pending verification. The head of the Matukituki River West Branch in Mt Aspiring National Park was once thought to be the species' national stronghold, but the local population of *D. pluvialis* appears to have gone extinct sometime after 2014 (Hegg 2026). The species appears to be experiencing a rapid decline throughout its geographic range. Both Regionally Vulnerable taxa, the Otago arid grasshopper and *Hemiandrus* (CMNZ 2000.121.21115) "Cromwell", are regional endemics.

The Region was recorded as having six Regionally At Risk taxa: two had the regional conservation status Regionally Declining and four Regionally Uncommon (Table 1). Of the two taxa that were

Regionally Declining, both were identified as having national strongholds in the region (*Phaulacridium otagoense*, *Sigaus campestris*).

None of the four Regionally Uncommon taxa have national strongholds in Otago; all four taxa are common and widespread in adjacent regions and make it into Otago just across the regional boundary. Three of these taxa (*Hemiandrus johnsi*, *Pleioplectron caudatum*, and *Pleioplectron flavicorne*) reach their southern natural range limits within the region. The fourth Regionally Uncommon taxon is *Anderus pipiwai*.

Thirty-three taxa were assessed as Regionally Not Threatened in Otago (Table 1). Of these, 19 were identified as having national strongholds within the Region, including two regional endemics (*Pharmacus notabilis* and *Pharmacus senex*).

The two Regionally Data Deficient taxa were *Hemiandrus mataitai* and *Pharmacus vallestris*, both of which are regional endemics (Table 1). No Orthoptera taxa in Otago were assessed as Introduced and Naturalised or Nationally Extinct.

Table 1: Conservation status of Orthoptera in the Otago Region

Regional and national qualifiers are abbreviated as follows: CD = Conservation Dependent; CI = Climate Impact; CRN = Conservation Research Needed; DPR = Data Poor Recognition; DPS = Data Poor Size; DPT = Data Poor Trend; DE = Designated; FR = Former Range; INC = Increasing; NR = Natural Range Limit; NStr = National Stronghold; OL = One Location; PD = Partial Decline; PF = Population Fragmentation; RE = Regional Endemic; RR = Range Restricted; Sp = Biologically Sparse; TL = Type Locality; TO = Threatened Overseas. Other abbreviations are: DEC = declining; MATIND = mature individuals. National threat categories and criteria are summarised in Appendix 1 (see also Rolfe et al. 2022 and https://nztcs.org.nz). Qualifiers are defined in Appendices 2 (national qualifiers; Rolfe et al. 2022) and 3 (regional qualifiers; Crisp et al. 2026)

Name and Authority	Common Name	Māori Name	National Conservation Status	Regional Criteria	National Stronghold	Regional Endemic	Regional Population	Regional Area	Regional Trend	Regional Confidence Population	Regional Confidence Trend	Regional Qualifiers	National Qualifiers
REGIONALLY DATA DEFICIENT (2)													
Taxonomically determinate (2)													
Hemiandrus mataitai Trewick & Morgan-Richards 2026 (known in national assessment as *Hemiandrus* "Rocklands")	ground wētā	wētā	Data Deficient		Yes	yes						NR, NStr, OL, RE, RR, TL	
Pharmacus vallestris Hegg, Morgan-Richards and Trewick, 2022	cave wētā	tokoriro	Data Deficient		Yes	yes						NR, NS, NStr, OL, RE, TL	OL
REGIONALLY THREATENED (3)													
REGIONALLY CRITICAL (1)													
Taxonomically determinate (1)													
Deinacrida pluvialis Gibbs, 1999	Southern Alps giant wētā	wētā punga	Nationally Endangered	C					DEC: >70 %	Medium	High	CI, CR, DPS, PF	DPS, DPT, PF
REGIONALLY VULNERABLE (2)													
Taxonomically determinate (1)													
Sigaus childi Jamieson, 1999	Otago arid grasshopper	kōwhitiwhiti	Nationally Vulnerable	D (3)	Yes	Yes		≤ 1,000 ha	DEC: 30-50 %	Low	Low	CR, DPR, DPS, DPT, NR, NStr, OL, RE, RR, Sp, TL	Sp, DPS, DPT, RR
Taxonomically unresolved (1)													
Hemiandrus (CMNZ 2000.121.21115) "Cromwell"	ground wētā	wētā	Nationally Vulnerable	C (3)	Yes	Yes		≤ 100 ha	DEC: 10-30 %	Low	Low	DPS, DPT, NR, NStr, OL, RE, RR	DPS, DPT, RR

Name and Authority	Common Name	Māori Name	National Conservation Status	Regional Criteria	National Stronghold	Regional Endemic	Regional Population	Regional Area	Regional Trend	Regional Confidence Population	Regional Confidence Trend	Regional Qualifiers	National Qualifiers
REGIONALLY AT RISK (6)													
REGIONALLY DECLINING (2)													
Taxonomically determinate (2)													
Phaulacridium otagoense Ritchie & Westerman, 1984	short-horned grasshopper	kōwhitiwhiti	Declining	C (2)	Yes			> 10,000 ha	DEC: 10-30 %	Low	Medium	DPR, DPT, NR, NStr, Sp	Sp

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Conservation status continued

Name and Authority	Common Name	Māori Name	National Conservation Status	Regional Criteria	National Stronghold	Regional Endemic	Regional Population	Regional Area	Regional Trend	Regional Confidence Population	Regional Confidence Trend	Regional Qualifiers	National Qualifiers
Sigaus campestris Hutton, 1898	short-horned grasshopper	kōwhitiwhiti	Declining	C (2)	Yes			> 10,000 ha	DEC: 10-30 %	Low	Low	DPS, DPT, NStr, Sp	DPS, DPT, Sp
REGIONALLY UNCOMMON (4)													
Taxonomically determinate (4)													
Anderus pipiwai Trewick & Morgan-Richards, 2025 (known in national assessment as *Hemiandrus* (CMNZ 2005.56.717) "madisylvestris")	ground wētā	wētā	Not Threatened						STABLE +/- 10%	Medium	Low	DPT, NS, RR	
Hemiandrus johnsi Trewick & Morgan-Richards, 2026 (known in national assessment as *Hemiandrus* (CMA 2005.56.840) "Timaru")	ground wētā	wētā	Not Threatened						STABLE +/- 10%	Low	Low	DPS, DPT, NR, NS	
Pleioplectron caudatum Hegg et al., 2019	cave wētā	tokoriro	Not Threatened						STABLE +/- 10%	Medium	Low	DPT, NR, NS	
Pleioplectron flavicorne Hegg et al., 2019	cave wētā	tokoriro	Not Threatened						STABLE +/- 10%	Medium	Low	NS	
REGIONALLY NOT THREATENED (33)													
Taxonomically determinate (33)													
Anderus maculifrons (Walker, 1869) (known in national assessment as *Hemiandrus maculifrons* Walker, 1869)	ground wētā	wētā	Not Threatened					> 100,000 ha	STABLE +/- 10%	Medium	Low	DPT	
Bobilla bigelowi Swan, 1972	small field cricket		Not Threatened					> 100,000 ha	STABLE +/- 10%	High	Medium		
Bobilla nigrova Swan, 1972	field cricket		Not Threatened					> 100,000 ha	STABLE +/- 10%	High	Medium		
Caedicia simplex Walker, 1869	garden katydid	kikipounamu	Not Threatened					> 100,000 ha	STABLE +/- 10%	Low	Low	DPS, DPT	
Conocephalus bilineatus Erichson, 1842	field katydid		Not Threatened					> 100,000 ha	STABLE +/- 10%	Medium	Low	DPT, NS	
Deinacrida connectens Ander, 1939	scree wētā	wētā punga	Not Threatened		Yes			> 1000 ha	STABLE +/- 10%	High	Low	DPT, NS, NStr	DPT
Hemiandrus focalis Hutton, 1897	ground wētā	wētā	Not Threatened		Yes		> 2000 MATIND	> 1000 ha	STABLE +/- 10%	Medium	Low	DPT, NS, NStr	
Hemiandrus maia Taylor-Smith, Morgan-Richards & Trewick, 2013	good mother ground wētā	wētā	Not Threatened		Yes		> 2000 MATIND	> 1000 ha	STABLE +/- 10%	Medium	Low	DPT, NS, NStr, TL	
Hemideina maori Pictet & Saussure, 1891	mountain stone wētā	wētā	Not Threatened		Yes			> 1000 ha	STABLE +/- 10%	Medium	Low	DPT, NR, NS, NStr	

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Conservation status continued

Name and Authority	Common Name	Māori Name	National Conservation Status	Regional Criteria	National Stronghold	Regional Endemic	Regional Population	Regional Area	Regional Trend	Regional Confidence Population	Regional Confidence Trend	Regional Qualifiers	National Qualifiers
REGIONALLY NOT THREATENED (33)													
Isoplectron armatum Hutton, 1897	cave wētā	tokoriro	Not Threatened					> 100,000 ha	STABLE +/- 10%	Medium	Low	DPT, NS, TL	
Isoplectron pallidum (Richards, 1972) (known in national assessment as *Setascutum pallidum* Richards, 1972)	cave wētā	tokoriro	Not Threatened		Yes		> 2000 MATIND	> 1000 ha	STABLE +/- 10%	Medium	Low	DPT, NR, NS, NStr, TL	
Maotoweta virescens Johns & Cook, 2014	green moss wētā	tokoriro	Not Threatened				> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Low	Low	DPT	
Miotopus richardsae Fitness et al., 2018	Aola Richards' cave wētā	tokoriro	Not Threatened				> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Medium	Low	DPT	
Notopolectron brewsterense (Richards, 1972)	cave wētā	tokoriro	Not Threatened				> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Medium	Low	DPT, DPR, NS, TL	
Pharmacus cochleatus cochleatus (Karny, 1935)	alpine cave wētā	tokoriro	Not Threatened		Yes			> 1000 ha	STABLE +/- 10%	Medium	Low	DPR, DPT, NR, NS, NStr	
Pharmacus cochleatus fiordensis Hegg, Morgan-Richards and Trewick. 2022	black tumbling cave wētā	tokoriro	Not Threatened					< 100,000 ha	STABLE +/- 10%	Medium	Low	DPT, NS	
Pharmacus cochleatus rawhiti Hegg, Morgan-Richards and Trewick, 2022	cave wētā	tokoriro	Not Threatened		Yes		> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Medium	Low	DPT, NR, NS, NStr, TL	
Pharmacus concinnus Hegg, Morgan-Richards and Trewick, 2022	elegant sorcerer alpine cave wētā	tokoriro	Not Threatened		Yes			> 1000 ha	STABLE +/- 10%	Medium	Low	DPT, NR, NS, NStr, TL	RR
Pharmacus notabilis Hegg, Morgan-Richards and Trewick, 2022	Remarkables alpine cave wētā	tokoriro	Not Threatened		Yes	Yes	> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	High	Low	DPT, NR, NS, NStr, RE, RR, TL	RR
Pharmacus senex Hegg, Morgan-Richards and Trewick, 2022	old sorcerer alpine cave wētā	tokoriro	Not Threatened		Yes	Yes	> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	High	Low	CI, DPT, NR, NS, NStr, RE, RR, TL	CI, RR
Phaulacridium marginale Walker, 1870	short-horned grasshopper	kōwhitiwhiti	Not Threatened					> 10,000 ha	STABLE +/- 10%	High	Low	DPT	
Pleioplectron simplex Hutton, 1896	cave wētā	tokoriro	Not Threatened		Yes		> 2000 MATIND	> 1000 ha	STABLE +/- 10%	Medium	Low	DPT, NStr	
Pleioplectron thomsoni (Chopard, 1923)	Thomson's cave wētā	tokoriro	Not Threatened		Yes		> 2000 MATIND	> 1000 ha	STABLE +/- 10%	Medium	Low	DPT, NR, NS, NStr	
Praecantrix saxicola Hegg, Morgan-Richards & Trewick, 2024	cave wētā	tokoriro			Yes		> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Low	Low	DPT, NR, NS, NStr	
Praecantrix silvatica lutea Hegg, Morgan-Richards & Trewick, 2024	cave wētā	tokoriro			Yes		> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Medium	Low	DPT, NS, NStr, TL	

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Conservation status continued

Name and Authority	Common Name	Māori Name	National Conservation Status	Regional Criteria	National Stronghold	Regional Endemic	Regional Population	Regional Area	Regional Trend	Regional Confidence Population	Regional Confidence Trend	Regional Qualifiers	National Qualifiers
REGIONALLY NOT THREATENED (33)													
Praecantrix silvatica silvatica Hegg, Morgan-Richards, Trewick, 2024	cave wētā	tokoriro			Yes		> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Medium	Low	DPT, NR, NS, NStr	
Sigaus australis Hutton, 1898	short-horned grasshopper	kōwhitiwhiti	Not Threatened		Yes		> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Medium	Low	DPT, NR, NS, NStr, TL	
Sigaus dugdali (Bigelow, 1967)	Dugdale's grasshopper	kōwhitiwhiti	Not Threatened		Yes		> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Medium	Low	DPT, NR, NStr, TL	
Sigaus nivalis (Hutton 1897)	snow grasshopper	kōwhitiwhiti	Not Threatened					> 10,000 ha	STABLE +/- 10%	Medium	Low	DPT, NS	
Sigaus tumidicauda (Bigelow 1967)	short-horned grasshopper	kōwhitiwhiti	Not Threatened		Yes		> 2000 MATIND	> 10,000 ha	STABLE +/- 10%	Medium	Low	DPT, NR, NStr, TL	
Talitropsis chopardi (Karny, 1937)	cave wētā	tokoriro	Not Threatened		Yes		> 2000 MATIND	> 1000 ha	STABLE +/- 10%	Medium	Low	DPR, DPT, DPR, NR, NS, NStr	
Talitropsis sedilloti Bolívar, 1883	cave wētā	tokoriro	Not Threatened					> 10,000 ha	STABLE +/- 10%	High	Low	DPT, NS	
Trigonidium maoricum (Walker, 1869)	New Zealand trig		Not Threatened					> 10,000 ha	STABLE +/- 10%	Low	Low	DPS, DPT, NR	

Orthoptera have been recorded in all territorial authorities in Otago (Table 3). Queenstown Lakes District has the highest species richness, with 35 taxa, followed by Central Otago District (25), Dunedin City (21), Clutha District (17), and the Otago portion of Waitaki District (16). Orthoptera have also been recorded in all FMUs or rohe (Table 4). The Upper Lakes Rohe has the highest species richness (34 taxa), followed by the Dunstan Rohe (25), Taiari FMU (20), Manuherekia Rohe (19), Dunedin & Coast FMU and Roxburgh Rohe (17 each), North Otago FMU (15), and Lower Clutha Rohe and Catlins FMU (12 each).

Table 3: Presence of Orthoptera taxa by territorial authority in the Otago Region

Name and Authority	Central Otago District Council	Clutha District Council	Dunedin City Council	Queenstown Lakes District Council	Waitaki District Council (Otago part only)
REGIONALLY DATA DEFICIENT (2)					
Hemiandrus mataitai Trewick & Morgan-Richards 2026			Yes		
Pharmacus vallestris Hegg, Morgan-Richards and Trewick, 2022				Yes	
REGIONALLY THREATENED (3)					
REGIONALLY CRITICAL (1)					
Deinacrida pluvialis Gibbs, 1999				Yes	
REGIONALLY VULNERABLE (2)					
Hemiandrus (CMNZ 2000.121.21115) "Cromwell"	Yes				
Sigaus childi Jamieson, 1999	Yes				
REGIONALLY AT RISK (6)					
REGIONALLY DECLINING (2)					
Phaulacridium otagoense Ritchie & Westerman, 1984	Yes			Yes	
Sigaus campestris Hutton, 1898	Yes	Yes	Yes	Yes	Yes
REGIONALLY UNCOMMON (4)					
Anderus pipiwai Trewick & Morgan-Richards, 2025				Yes	
Hemiandrus johnsi Trewick & Morgan-Richards, 2026			Yes		Yes
Pleioplectron caudatum Hegg et al., 2019				Yes	
Pleioplectron flavicorne Hegg et al., 2019				Yes	
REGIONALLY NOT THREATENED (33)					
Anderus maculifrons (Walker, 1869)		Yes	Yes	Yes	

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Presence of Orthoptera taxa in a territorial authority continued

Name and Authority	Central Otago District Council	Clutha District Council	Dunedin City Council	Queenstown Lakes District Council	Waitaki District Council (Otago part only)
Bobilla bigelowi Swan, 1972	Yes	Yes	Yes	Yes	Yes
Bobilla nigrova Swan, 1972	Yes	Yes	Yes	Yes	Yes
Caedicia simplex Walker, 1869			Yes		Yes
Conocephalus bilineatus Erichson, 1842	Yes	Yes	Yes	Yes	Yes
Deinacrida connectens Ander, 1939	Yes			Yes	
Hemiandrus focalis Hutton, 1897	Yes		Yes	Yes	
Hemiandrus maia Taylor-Smith, Morgan-Richards & Trewick, 2013	Yes	Yes	Yes	Yes	Yes
Hemiandrus mataitai Trewick & Morgan-Richards 2026			Yes		
Hemideina maori Pictet & Saussure, 1891	Yes	Yes	Yes	Yes	
Isoplectron armatum Hutton, 1897			Yes	Yes	Yes
Isoplectron pallidum (Richards, 1972)	Yes		Yes	Yes	Yes
Maotoweta virescens Johns & Cook, 2014		Yes		Yes	
Miotopus richardsae Fitness et al., 2018		Yes		Yes	
Notopolectron brewsterense (Richards, 1972)				Yes	
Pharmacus cochleatus cochleatus (Karny, 1935)	Yes			Yes	
Pharmacus cochleatus fiordensis Hegg, Morgan-Richards and Trewick. 2022				Yes	
Pharmacus cochleatus rawhiti Hegg, Morgan-Richards and Trewick, 2022	Yes	Yes		Yes	
Pharmacus concinnus Hegg, Morgan-Richards and Trewick, 2022				Yes	
Pharmacus notabilis Hegg, Morgan-Richards and Trewick, 2022				Yes	
Pharmacus senex Hegg, Morgan-Richards and Trewick, 2022	Yes				
Pharmacus vallestris Hegg, Morgan-Richards and Trewick, 2022				Yes	

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Presence of Orthoptera taxa in a territorial authority continued

Name and Authority	Central Otago District Council	Clutha District Council	Dunedin City Council	Queenstown Lakes District Council	Waitaki District Council (Otago part only)
Phaulacridium marginale Walker, 1870	Yes	Yes	Yes	Yes	Yes
Phaulacridium otagoense Ritchie & Westerman, 1984	Yes			Yes	
Pleioplectron simplex Hutton, 1896	Yes	Yes	Yes	Yes	Yes
Pleioplectron thomsoni (Chopard, 1923)	Yes	Yes	Yes		Yes
Praecantrix saxicola Hegg, Morgan-Richards & Trewick, 2024	Yes				
Praecantrix silvatica lutea Hegg, Morgan-Richards & Trewick, 2024		Yes	Yes		Yes
Praecantrix silvatica silvatica Hegg, Morgan-Richards, Trewick, 2024				Yes	
Sigaus australis Hutton, 1898	Yes		Yes	Yes	Yes
Sigaus dugdali (Bigelow, 1967)	Yes	Yes	Yes	Yes	Yes
Sigaus nivalis (Hutton 1897)	Yes			Yes	
Sigaus tumidicauda (Bigelow 1967)	Yes			Yes	
Talitropsis chopardi (Karny, 1937)	Yes	Yes	Yes	Yes	
Talitropsis sedilloti Bolívar, 1883		Yes	Yes	Yes	Yes
Trigonidium maoricum (Walker, 1869)	Yes			Yes	

Table 4: Presence of Orthoptera taxa in freshwater management units (FMU) in the Otago Region. The Clutha Mata-au FMU has been further subdivided into five rohe (areas)

Name and Authority	Taieri FMU	North Otago FMU	Dunedin & Coast FMU	Catlins FMU	Clutha Mata-au FMU				
					Manuherekia Rohe	Roxburgh Rohe	Upper Lakes Rohe	Dunstan Rohe	Lower Clutha Rohe
REGIONALLY DATA DEFICIENT (2)									
Hemiandrus mataitai Trewick & Morgan-Richards 2026	Yes								
Pharmacus vallestris Hegg, Morgan-Richards and Trewick, 2022							Yes		
REGIONALLY THREATENED (3)									
REGIONALLY CRITICAL (1)									
Deinacrida pluvialis Gibbs, 1999							Yes		
REGIONALLY VULNERABLE (2)									
Hemiandrus (CMNZ 2000.121.21115) "Cromwell"								Yes	
Sigaus childi Jamieson, 1999						Yes			
REGIONALLY AT RISK (6)									
REGIONALLY DECLINING (2)									
Phaulacridium otagoense Ritchie & Westerman, 1984					Yes	Yes		Yes	
Sigaus campestris Hutton, 1898	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
REGIONALLY UNCOMMON (4)									
Anderus pipiwai Trewick & Morgan-Richards, 2025							Yes		
Hemiandrus johnsi Trewick & Morgan-Richards, 2026		Yes	Yes						

Continued on next page

Presence of Orthoptera taxa in a FMU or rohe continued

Name and Authority	Taieri FMU	North Otago FMU	Dunedin & Coast FMU	Catlins FMU	Clutha Mata-au FMU				
					Manuherekia Rohe	Roxburgh Rohe	Upper Lakes Rohe	Dunstan Rohe	Lower Clutha Rohe
Pleioplectron caudatum Hegg et al., 2019							Yes		
Pleioplectron flavicorne Hegg et al., 2019							Yes		
REGIONALLY NOT THREATENED (33)									
Anderus maculifrons (Walker, 1869)			Yes	Yes			Yes		
Bobilla bigelowi Swan, 1972	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bobilla nigrova Swan, 1972	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Caedicia simplex Walker, 1869	Yes	Yes	Yes						
Conocephalus bilineatus Erichson, 1842	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deinacrida connectens Ander, 1939	Yes				Yes		Yes	Yes	
Hemiandrus focalis Hutton, 1897	Yes				Yes	Yes	Yes	Yes	
Hemiandrus maia Taylor-Smith, Morgan-Richards & Trewick, 2013	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hemideina maori Pictet & Saussure, 1891	Yes				Yes		Yes	Yes	Yes
Isoplectron armatum Hutton, 1897		Yes	Yes				Yes	Yes	
Isoplectron pallidum (Richards, 1972)	Yes	Yes	Yes		Yes	Yes	Yes	Yes	
Maotoweta virescens Johns & Cook, 2014				Yes			Yes		
Miotopus richardsae Fitness et al., 2018				Yes			Yes		
Notopolectron brewsterense (Richards, 1972)							Yes		

Continued on next page

Presence of Orthoptera taxa in a FMU or rohe continued

Name and Authority	Taieri FMU	North Otago FMU	Dunedin & Coast FMU	Catlins FMU	Clutha Mata-au FMU				
					Manuherekia Rohe	Roxburgh Rohe	Upper Lakes Rohe	Dunstan Rohe	Lower Clutha Rohe
Pharmacus cochleatus fiordensis Hegg, Morgan-Richards and Trewick. 2022							Yes		
Pharmacus cochleatus rawhiti Hegg, Morgan-Richards and Trewick, 2022							Yes	Yes	Yes
Pharmacus concinnus Hegg, Morgan-Richards and Trewick, 2022							Yes		
Pharmacus cochleatus cochleatus (Karny, 1935)							Yes	Yes	
Pharmacus notabilis Hegg, Morgan-Richards and Trewick, 2022							Yes	Yes	
Pharmacus senex Hegg, Morgan-Richards and Trewick, 2022						Yes		Yes	
Phaulacridium marginale Walker, 1870	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pleioplectron simplex Hutton, 1896	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pleioplectron thomsoni (Chopard, 1923)	Yes	Yes	Yes		Yes	Yes		Yes	
Praecantrix saxicola Hegg, Morgan-Richards & Trewick, 2024	Yes				Yes			Yes	
Praecantrix silvatica lutea Hegg, Morgan-Richards & Trewick, 2024		Yes	Yes	Yes					
Praecantrix silvatica silvatica Hegg, Morgan-Richards, Trewick, 2024						Yes			
Sigaus australis Hutton, 1898	Yes	Yes	Yes		Yes	Yes	Yes	Yes	
Sigaus dugdali (Bigelow, 1967)	Yes					Yes	Yes		Yes
Sigaus nivalis (Hutton 1897)	Yes				Yes		Yes	Yes	
Sigaus tumidicauda (Bigelow 1967)					Yes	Yes	Yes	Yes	

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Presence of Orthoptera taxa in a FMU or rohe continued

Name and Authority	Taieri FMU	North Otago FMU	Dunedin & Coast FMU	Catlins FMU	Clutha Mata-au FMU				
					Manuherekia Rohe	Roxburgh Rohe	Upper Lakes Rohe	Dunstan Rohe	Lower Clutha Rohe
Talitropsis chopardi (Karny, 1937)	Yes		Yes		Yes		Yes	Yes	Yes
Talitropsis sedilloti Bolívar, 1883	Yes	Yes	Yes	Yes			Yes		Yes
Trigonidium maoricum (Walker, 1869)					Yes	Yes	Yes	Yes	

Discussion

This report provides the first assessment of the conservation status of Orthoptera in the Otago Region. It contributes to the growing number of regional conservation assessments published by councils across Aotearoa New Zealand for a range of taxonomic groups, including amphibians, bats, birds, freshwater fishes, indigenous vascular plants, reptiles, mushroom fungi, and velvet worms. It is the first assessment of an insect order completed through a regional threat classification process anywhere in Aotearoa New Zealand.

The assessment provides Otago's Councils with an up-to-date understanding of Orthoptera distributions and identifies taxa of greatest regional conservation concern. This information can directly support council decision-making, including assessments of potential ecological effects and significance during resource consent processes, and the prioritisation of surveys or research for taxa requiring further information (e.g., those assessed as Regionally Data Deficient or with Data Poor qualifiers).

A total of 44 Orthoptera taxa have been recorded in Otago, representing just over one-quarter (27.1%) of the 162 orthopteran taxa currently assessed under the NZTCS (Trewick et al., 2022). Otago is a species-rich region for Orthoptera in Aotearoa New Zealand, reflecting its: (1) relatively large land area; (2) generally favourable climate for ectotherms (animals whose body temperature is largely influenced by environmental conditions), with much of the region lying in the rain shadow of Kā Tiritiri o te Moana / the Southern Alps; (3) presence of species whose core distributions occur outside Otago but extend into the region; and (4) diverse range of habitats and ecological niches, including forests, shrublands, grasslands, wetlands, rocklands, and alpine environments, across an elevation gradient exceeding 2000 m. Within Otago, Orthoptera occur from sea level to 3000 m above sea level.

Consistent with the most recent assessment of the conservation status of Aotearoa New Zealand Orthoptera (Trewick et al., 2022), a relatively high proportion of Otago's orthopteran taxa are Threatened or At Risk of extinction (9 of 44 taxa; 20.5%). Five taxa have a higher regional threat status than their national classification.

The Southern Alps giant wētā was assessed as Regionally Critical in Otago, compared with its national classification of Nationally Endangered (Trewick et al. 2022). Populations of this species have disappeared from sites where they were previously recorded, including the Matukituki River West Branch, Rob Roy Stream, and Rainbow Stream in Mount Aspiring National Park (Hegg 2026). Predation by introduced mammals, habitat loss and weed invasion are primary threats to Regionally Threatened and Regionally At Risk – Declining orthopterans in Otago (Trewick et al. 2022).

The remaining four taxa were assessed as Regionally Uncommon, despite being classified nationally as Not Threatened, because Otago represents only the peripheral extent of their distributions. These taxa are *Anderus pipiwai*, *Hemiandrus johnsi*, *Pleioplectron caudatum*, and *Pleioplectron flavicorne*.

Thirty-three taxa were classified as Regionally Not Threatened in Otago (Table 1). Nineteen of these taxa have national strongholds within the region, including two regional endemics: *Pharmacus notabilis* and *Pharmacus senex*.

The two taxa assessed as Regionally Data Deficient were *Hemiandrus mataitai* and *Pharmacus vallestris*, both of which are regional endemics and are currently known from one location only (Table 1).

Select Regional Qualifiers Discussion

Qualifiers provide additional context to a taxon's threat status. The following section explains the rationale for selected qualifiers to Orthoptera taxa in Otago.

Regional Endemics, National Strongholds and One Location

Otago has 25 taxa assigned the National Stronghold qualifier, indicating that more than 20% of their national populations occur within the Region (Table 1). Six of these taxa are regional endemics, being native to and breeding only in Otago: *Hemiandrus* (CMNZ 2000.121.21115) "Cromwell", *Hemiandrus mataitai*, *Pharmacus notabilis*, *Pharmacus senex*, *Pharmacus vallestris*, and *Sigaus childi* (Jarvie 2025c). Of these regional endemics, four are known from One Location only: *Hemiandrus* (CMNZ 2000.121.21115) "Cromwell", *Hemiandrus mataitai*, *Pharmacus vallestris*, and *Sigaus childi*.

Type Locality and Taxonomic Name Changes

Fourteen species have type localities in Otago (Table 1; Jarvie 2025d). Of these, 13 are represented by holotypes and one by a syntype. Two of these have been formally described since the national assessment: *Hemiandrus* "Rocklands", now recognised as *Hemiandrus mataitai*, and *Praecantrix silvatica lutea*, which was not included in the previous national assessment. Three species with type localities in Otago have undergone taxonomic name changes since the national assessment (Appendix 4): *Setascutum pallidum* is now *Isoplectron pallidum*, *Paprides dugdali* is now *Sigaus dugdali*, and *Alpinacris tumidicauda* is now *Sigaus tumidicauda*.

An additional five species have undergone taxonomic name changes (Appendix 4). These include *Brachaspis nivalis*, now recognised as *Sigaus nivalis*; *Hemiandrus maculifrons*, now *Anderus maculifrons*; *Hemiandrus* (CMA 2005.56.840) "Timaru", now *Hemiandrus johnsi*; *Hemiandrus* (CMNZ 2005.56.717) "madisylvestris", now *Anderus pipiwai*; and *Metioche maorica*, now *Trigonidium maoricum*. In addition, *Praecantrix saxicola* and *Praecantrix silvatica silvatica* were only recently described and were not included in the national assessment.

Data Poor Trend

Thirty-nine taxa were assigned the Data Poor Trend qualifier (Table 1). This qualifier was used for 88.6%because of the lack of data on population trend. The five exceptions include the Regionally Critical species *Deinacrida pluvialis*, because the population trend of greater than 70% loss has been documented from multiple locations; two taxa assessed as Regionally Not Threatened, *Bobilla bigelowi* and *Bobilla nigrova*, because they are common, widespread, and have shown to adapt to highly modified habitats, which gives us a high level of confidence that their populations are stable; and two taxa assigned Regionally Data Deficient, *Hemiandrus mataitai* and *Pharmacus vallestris*.

Summary

This report presents the first regional assessment of the conservation status of indigenous Orthoptera in the Otago Region. Regional conservation assessments provide information on the status of indigenous taxa at a scale relevant to regional planning and management. They can also help identify conservation priorities and strengthen the evidence base for decision-making.

The key outcomes and benefits of undertaking regional conservation assessments are to:

- improve understanding of the distribution and conservation status of taxa within a region;

- inform the prioritisation of conservation management by regional councils, territorial authorities, community groups, iwi, and other stakeholders, in a manner that complements the work of DOC;
- support the protection of indigenous taxa through regional policy, planning, and regulatory processes; and
- contribute to regional data and knowledge to inform and strengthen national conservation status assessments.

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Appendices

Appendix 1: List of regional criteria, categories and statuses from the Regional Threat Classification System (Crisp et al. 2026)

The RTCS classifies organisms using a set of categories derived from the NZTCS as shown in Fig. A1. Three categories are used in the regional system only, Not Observed in Region, Regionally Introduced and Naturalised, and Regionally Extirpated. The NZTCS category Extinct is assigned to a taxon that is extinct nationally and the RTCS category Regionally Extirpated is assigned to a taxon that is extinct regionally because regionally extinct taxa could be reintroduced to the region.

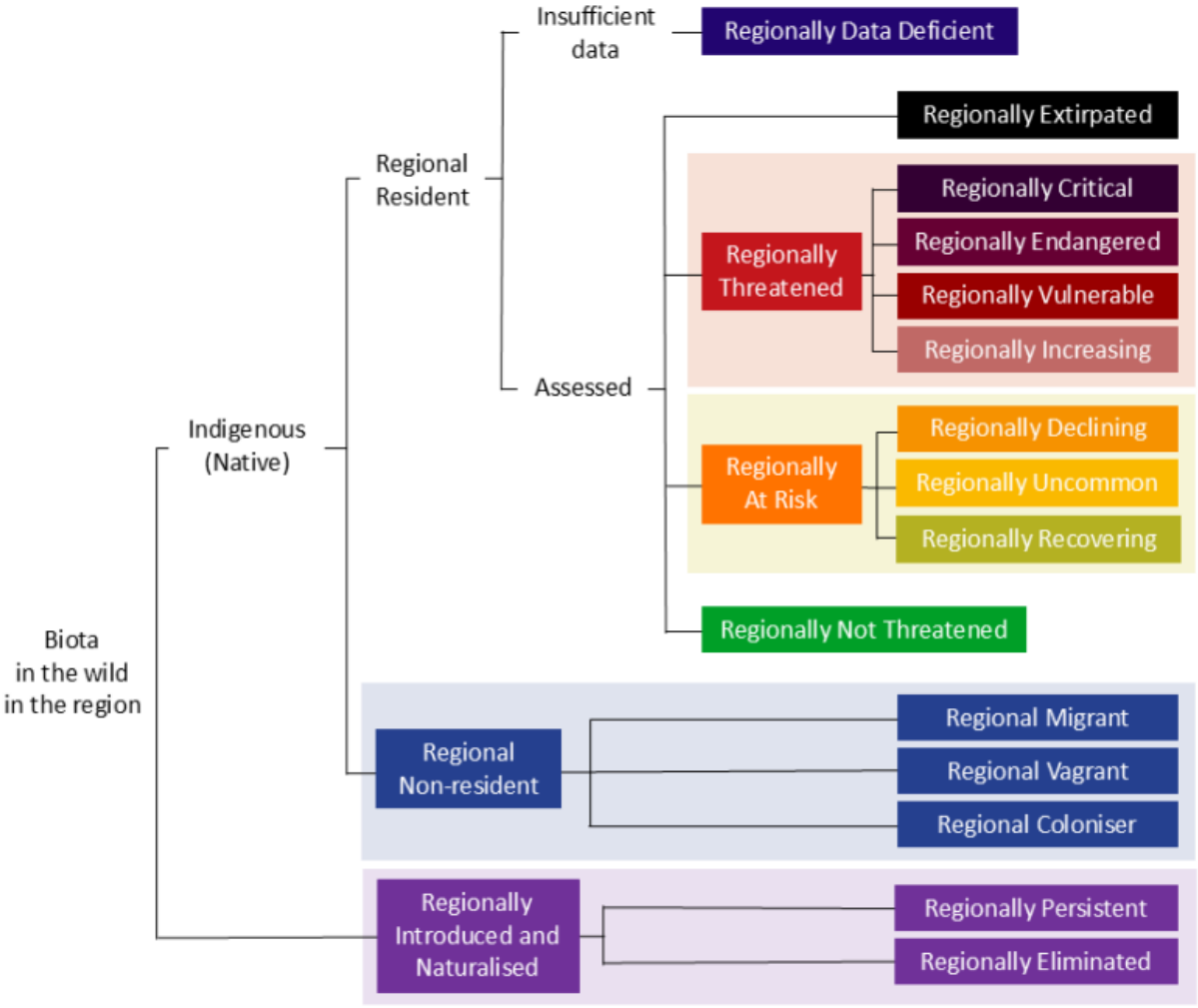

Figure A1: Regional Threat Classification System structure adapted from Rolfe et al. (2022).

All NZTCS criteria and definitions apply to the regional assessments when the region is the stronghold for the assessed taxon. Regional scaling thresholds are used when the region is not the national stronghold of the assessed taxon. Population trend is estimated from ongoing and forecasted changes in population size (number of mature individuals or area of occupancy / area of breeding habitat) over the longest of three generations or 10 years, up to a maximum of 100 years.

For NZTCS and RTCS definitions and criteria, refer to Rolfe et al. (2022) and Crisp et al. (2026), respectively. Appendices 2 and 3 summarise the national and regional qualifiers, respectively.

Appendix 2: List of National Qualifiers reproduced from Rolfe et al. (2022)

National qualifiers can be used as additional regional qualifiers according to the RTCS (Crisp et al. 2026; see Appendix 3 for more details).

Qualifiers are an integral part of the NZTCS, as they provide critical additional information about a taxon's assessment, status, and management.

The qualifiers are listed below in thematic groups relating to the NZTCS assessment process, biological attributes of the taxon, pressures on the taxon and management of these, population state, and population trend.

Code	Qualifier	Description
Assessment Process Qualifiers		
DPR	Data Poor: Recognition	A taxon is given the Data Poor: Recognition qualifier when confidence in the assessment is low because of difficulties in determining the identity of the taxon in the field and/or laboratory. Taxa with this qualifier will also often be given the qualifiers Data Poor: Size and Data Poor: Trend, in which case they are most likely to be Data Deficient.
DPS	Data Poor: Size	The Data Poor: Size qualifier indicates that confidence in the assessment is low because of a lack of data on population size.
DPT	Data Poor: Trend	Confidence in the assessment is low because of a lack of data on population trend. The Data Poor: Trend qualifier indicates that confidence in the assessment is low because of a lack of data on population trend.
De	Designated	A taxon is given the Designated qualifier when the expert panel has assigned it to what they consider to be the most appropriate status without full application of the criteria. For example, a commercial fish stock that is being fished down to the biomass maximum sustainable yield (BMSY) may meet the criteria for Declining but could be designated as Not Threatened if the expert panel believes that this better describes its risk of extinction.
Biological Attribute Qualifiers		
Sp	Biological Sparse	The Biologically Sparse qualifier is used when a taxon naturally consists of small and widely scattered sub-populations. It can apply to any Threatened or At Risk taxon.
IE	Island Endemic	The Island Endemic qualifier is given to a taxon whose natural distribution is restricted to one island archipelago (e.g. the Auckland Islands) and is not found on the North or South Islands of New Zealand or Stewart Island/Rakiura. A taxon cannot be given this qualifier if it is Secure Overseas (SO, SO? or S?O) or Threatened Overseas (TO, TO? or T?O).

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List of national qualifiers

Code	Qualifier	Description
NS	Natural State	A taxon is given the Natural State qualifier if it has a stable or increasing population that is presumed to be in a natural condition (i.e. it has not experienced a historical human-induced decline). This qualifier is equivalent to the 'natural' population state value in the NZTCS database
RR	Range Restricted	A taxon that is naturally confined to a specific substrate or habitat or a geographic area of less than 100,000 ha (1000 km2) is given the Range Restricted qualifier. This is assessed by taking into account the area of habitat that is occupied by each sub-population and summing these areas where there is more than one sub-population. Examples of such taxa include Chatham Island forget-me-not (*Myosotidium hortensia*) and Auckland Island snipe (*Coenocorypha aucklandica aucklandica*). This qualifier can apply to any Threatened or At Risk taxon. However, it is redundant if a taxon is confined to one location (see above).
Code	**Qualifier**	**Description**
Pressure Management Qualifiers		
CD	Conservation Dependent	A taxon that is likely to move to a worse conservation status over the longer of the next 10 years or three generations (maximum 100 years) if current management ceases is given the Conservation Dependent qualifier. The term 'management' can include indirect actions that benefit taxa, such as island biosecurity. A taxon is only considered conservation dependent if cessation of the management would result in a worse conservation status, and the influence of the benefits of management on the total population must be considered before using this qualifier. The benefit of managing a single sub-population may not be adequate to trigger this qualifier but may trigger Partial Decline. Furthermore, taxa that are qualified as Conservation Dependent may also be given the Partial Decline qualifier if only one or a few sub-populations have benefitted from management.

Continued on next page

List of national qualifiers

Code	Qualifier	Description
CI	Climate Impact	The Climate Impact qualifier is used when a taxon is adversely affected by long-term climate trends and/or extreme climatic events. Variations from 'normal climatic conditions' may include extended periods (e.g. a month, season or year) of higher-than-normal rainfall or below-normal sunshine hours, a short duration extreme (i.e. rare) event such as an intense tropical storm or 10-day cold spell, or gradual long-term changes to sea level or average temperature due to climate change. The adverse effects of climate change may be direct (e.g. the impact of extreme weather on populations) or indirect (e.g. increased impacts from predators that have benefitted from environmental changes caused by climate change). The following questions provide a guide to using the Climate Impact qualifier: • Is the taxon adversely affected by long-term changes in the climate, such as an increase in average temperature or sea-level rise? o If NO, no qualifier is given but monitoring and periodic re-evaluation are needed because projected changes to the average climate and sea-level rise may adversely affect the taxon (including via changes to the distribution and prevalence of pests, weeds, and predators) in the future. o If YES, the Climate Impact qualifier is given. • Is the taxon adversely affected by extreme climate events, such as a drought, storms, or heatwaves? o If NO, no qualifier is given but monitoring and periodic re-evaluation are required because projected changes to the climate are likely to increase the frequency and/or severity of these events in the future. o If YES, the Climate Impact qualifier is given. Use of the Climate Impact qualifier indicates the need for more in-depth research, ongoing monitoring of climate impacts and potentially a climate change adaptation plan for the taxon.
CR	Conservation Research Needed	A taxon is given the Conservation Research Needed qualifier if the causes of its decline and/or solutions for its recovery are poorly understood and research is required.
PF	Population Fragmentation	The Population Fragmentation qualifier is used where gene flow between sub-populations is hampered as a direct or indirect result of human activity. It should be noted that naturally disjunct populations are not considered to be fragmented.

Continued on next page

List of national qualifiers

Code	Qualifier	Description
RF	Recruitment Failure	The Recruitment Failure qualifier is used where the age structure of the current population of a taxon is such that a catastrophic decline is likely in the future. It should be noted that a failure to produce new progeny or the failure of progeny to reach maturity can be masked by apparently healthy populations of mature specimens.
Pressure Trend Qualifiers		
EW	Extinct In the Wild	A taxon that is known only in captivity or cultivation or has been reintroduced to the wild but is not self-sustaining is given the Extinct in the Wild qualifier. Assessment of a reintroduced population should be considered only when it is self-sustaining, which requires both of the following criteria to have been fulfilled: • It is expanding or has reached a stable state through natural replenishment and at least half the breeding adults are products of the natural replenishment • It has been at least 10 years since reintroduction
EF	Extreme Fluctuations	A taxon that has an increased threat of extinction due to extreme unnatural population fluctuations or natural fluctuations overlaying human-induced declines is given the Extreme Fluctuations qualifier. When ranking taxa with extreme fluctuations, the lowest estimated number of mature individuals should be used for determining population size, as a precautionary measure. However, annual population fluctuations that are a natural function of a taxon's life cycle should not be considered.
INC	Increasing	The Increasing qualifier is used when a taxon has an ongoing or forecast increase of > 10% in the total population, taken over the longer of the next 10 years or three generations (maximum 100 years). Note that this qualifier is redundant for taxa ranked as Recovering.
PD	Partial Decline	A taxon that is declining over most of its range but has one or more secure populations (such as on offshore islands) is given the Partial Decline qualifier. An example of a Partial Decline taxon is North Island kākā (*Nestor meridionalis septentrionalis*), which is declining towards a small, stable population. The Relict qualifier may be appropriate when the population has stabilised.

Continued on next page

List of national qualifiers

Code	Qualifier	Description
PE	Possibly Extinct	A taxon that has not been observed for more than 50 years but for which there is insufficient evidence to support declaring it extinct is given the Possibly Extinct qualifier. This qualifier may apply to several Data Deficient and Nationally Critical taxa.
Population State Qualifiers		
NO	Naturalised Overseas	A taxon that is endemic to New Zealand but has been introduced (deliberately or accidentally) by human agency to another country and has naturalised there is given the Naturalised Overseas qualifier. An example of such a taxon is Olearia traversiorum in the Republic of Ireland.
OL	One Location	The One Location qualifier is used where a taxon is found at one location (geographically or ecologically distinct area) in New Zealand that is less than 100,000 ha (1000 km2), so a single event (e.g. a predator irruption or fire) could easily affect all individuals of the taxon. Examples of such taxa include L'Esperance Rock groundsel (*Senecio esperensis*) and Open Bay Island leech (*Hirudobdella antipodum*). This qualifier can apply to all Threatened, At Risk, Non-resident Native – Coloniser and Non-resident Native – Migrant taxa, regardless of whether their restricted distributions in New Zealand are natural or human induced. Resident native taxa that have restricted distributions but for which it is unlikely that all sub-populations would be threatened by a single event (e.g. because water channels within an archipelago are larger than known terrestrial predator swimming distances) should be qualified as Range Restricted.
Rel	Relict	The Relict qualifier is given to a taxon whose population has declined since human arrival to less than 10% of its former range but has stabilised. The range of a relictual taxon takes into account the area currently occupied as a ratio of the taxon's former extent. Reintroduced and self-sustaining populations within or outside the former known range of a taxon should be considered when determining whether a taxon is relictual. This definition is modified from the definition of the At Risk – Relict category provided in Townsend et al. (2008). The main difference is that trend is no longer included in the qualifier definition, allowing the qualifier to be applied to any taxon that has experienced severe range contraction, regardless of whether that contraction continues or has been arrested. This qualifier may replace the Partial Decline qualifier once a taxon's population has stabilised within a reduced area.
SO	Secure Overseas	The Secure Overseas qualifier is used when a taxon is secure in the parts of its natural range outside New Zealand.
SO?	Secure Overseas?	Use of the Secure Overseas? qualifier indicates that it is uncertain whether a taxon of the same name that is secure in the parts of its natural range outside New Zealand is conspecific with the New Zealand taxon. An example of such a taxon is the bidibidi *Acaena minor* var. *antarctica*.
S?O	Secure? Overseas	Use of the Secure? Overseas qualifier indicates that it is uncertain whether the taxon is secure in the parts of its natural range outside New Zealand. An example of such a taxon is the New Zealand bull kelp *Durvillaea antarctica*.

Continued on next page

List of national qualifiers

Code	Qualifier	Description
TO	Threatened Overseas	The Threatened Overseas qualifier is used when the taxon is threatened in the parts of its natural range outside New Zealand.
TO?	Threatened Overseas?	Use of the Threatened Overseas? qualifier indicates that it is uncertain whether a taxon of the same name that is threatened in the parts of its natural range outside New Zealand is conspecific with the New Zealand taxon.
T?O	Threatened? Overseas	Use of the Threatened? Overseas qualifier indicates that it is uncertain whether the taxon is threatened in the parts of its natural range outside New Zealand. An example of such a taxon is the aquatic beetle *Gyrinus convexiusculus*.

Appendix 3: List of Regional Qualifiers reproduced from Crisp et al. (2022)

National qualifiers can also be used as regional qualifiers according to the RTCS (Crisp et al. 2026; see Appendix 2 for more details).

Code	Qualifier	Description
BNS	Benchmarked Against National Status	The regional data for population size / area of occupancy and trend indicate that the taxon has a less threatened conservation status than its national status
CInt	Conservation Introduction	Establishment of a taxon for the purposes of conservation outside its recorded distribution but within an appropriate habitat and ecogeographical area. Two types of Conservation Introductions are recognised: a) Assisted migration is the intentional movement and release of an organism outside its indigenous range to avoid extinction of populations of the focal species, and b) Ecological replacement is the intentional movement and release of organism outside its indigenous range to perform a specific ecological function
FR	Former Resident	Breeding population (existed for more than 50 years) extirpated from the region but continues to arrive as a regional vagrant or migrant.
IN	Introduced Native	The taxon was introduced to the region, though is not known to have previously occurred in it.
IR	Indigenous Range Limit	The inferred range (extending in any direction) of the taxon in pre-human times meets its natural limit in the region. The range limit can be north/south and/or east/west, depending on the regional council boundaries.
NR	Natural Range Limit	The known range (extending in any direction) of the taxon meets it natural limit in the region. The range limit can be north/south and/or east/west, depending on the regional council boundaries.
NStr	National Stronghold	More than 20% of the national population breeds or is resident for more than half the taxon's life cycle in the region.
PR	Population Reinforcement	Translocations from other regions have been carried out to boost the population numbers of the taxon.
RC	Regional Coloniser	Taxa that have arrived in the region without human assistance and have been successfully breeding in the wild since 1950.
RE	Regional Endemic	Known to be native and breed only in the region.
RM	Regional Migrant	A minimum of 15 individuals of a New Zealand native taxon are known to visit the region as part of their normal life cycle, but do not breed in the region.
RN	Reintroduction	Taxa that have been reintroduced to the region after having previously gone extinct there.
RR	Range Restricted	To be Range Restricted, a taxon must be naturally confined to a specific substrate, habitat, or geographical area less than the regional threshold areas.
RV	Regional Vagrant	Aotearoa New Zealand native taxa that have sporadic or transitory occurrences in the region with fewer than 15 individuals visiting per annum.

Continued on next page

List of regional qualifiers

Code	Qualifier	Description
TL	Type Localities	The type locality of the taxon is within the region. (Ignore if the taxon is or has ever been regionally extinct). TLH Holotype A holotype is the one specimen on which a species name is based. TLI Isotype An isotype is a duplicate specimen of the holotype. TLL Lectotype A lectotype is a specimen later selected to serve as the single type specimen for species originally described from a set of syntypes. In zoology, a lectotype is a kind of name-bearing type TLN Neophyte A neotype is a specimen later selected to serve as the single type specimen when an original holotype has been lost or destroyed or where the original author never cited a specimen. TLS Syntype A syntype is any one of two or more specimens that is listed in a species description where no holotype was designated.

Appendix 4: Taxonomic name changes affecting Orthoptera taxa found in the Otago Region between the publication of Trewick et al. (2022) and this report

Name and authority in Trewick et al. 2022	Name and authority in this report
Alpinacris tumidicauda Bigelow, 1967	*Sigaus tumidicauda* (Bigelow 1967)
Brachaspis nivalis Hutton, 1897	*Sigaus nivalis* (Hutton 1897)
Hemiandrus maculifrons Walker, 1869	*Anderus maculifrons* (Walker, 1869)
Hemiandrus (CMA 2005.56.840) "Timaru"	*Hemiandrus johnsi* Trewick & Morgan-Richards, 2026
Hemiandrus (CMNZ 2005.56.717) "madisylvestris"	*Anderus pipiwai* Trewick & Morgan-Richards, 2025
Hemiandrus "Rocklands"	*Hemiandrus mataitai* Trewick & Morgan-Richards 2026
Metioche maorica Walker, 1869	*Trigonidium maoricum* (Walker, 1869)
Paprides dugdali Bigelow, 1967	*Sigaus dugdali* (Bigelow, 1967)
Setascutum pallidum Richards, 1972	*Isoplectron pallidum* (Richards, 1972)
	Praecantrix saxicola Hegg, Morgan-Richards & Trewick, 2024
	Praecantrix silvatica lutea Hegg, Morgan-Richards & Trewick, 2024
	Praecantrix silvatica silvatica Hegg, Morgan-Richards, Trewick, 2024



Appendix 5: Map of Territorial Authorities or Coastal Marine Area in the Otago Region

Otago has five Territorial Authorities, including Central Otago District, Clutha District, Dunedin City, Queenstown Lakes District and Waitaki District (Otago part only). The Coastal Marine Area extends from mean high-water springs out to the 12 nautical mile (22.2 kilometre) limit of the territorial sea, from the Waitaki River in the north to Wallace Beach in the south. See Appendix 6 for map of Freshwater Management Units in Otago.



Appendix 6: Map of Freshwater Management Units in the Otago Region

Otago has been divided into five Freshwater Management Units (FMUs), including the Clutha Mata-au, Catlins, Dunedin & Coast, North Otago and Taiari. The Clutha Mata-au FMU has been further subdivided into five rohe (areas), including the Upper Lakes, Dunstan, Manuherekia, Roxburgh and Lower Clutha. See Appendix 5 for a map of Territorial Authorities or Coastal Marine Area in Otago.



For more information

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Otago Regional Council