Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

# Conservation status of reptile species in the Canterbury Region

Environment Canterbury Science Summary:
R26/20

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# Key messages

- Reptiles are cold-blooded (ectothermic) vertebrates; in Aotearoa New Zealand they include lizards (skinks and gecko), marine turtles, sea snakes and kraits, and the tuatara. Canterbury supports the highest-known reptile diversity of any region, with 40 reptile species, representing more than a quarter of the country's total reptile fauna.

- This report provides a species list and the first regional threat assessment of the conservation status of all reptile taxa that have been recorded in the Canterbury region. Taxa assessed included three marine turtles, one tuatara, 20 skinks and 16 geckos. For 10 reptile species, the regional conservation status indicated a greater level of concern than the national classification. Findings provide councils and other conservation practitioners with up-to-date distribution and threat status information that may guide conservation prioritisation and inform regulatory decision-making.

- Nearly all lizard taxa remaining in Canterbury are of conservation concern. Of the 35 taxa still present in the region, 94% (33 taxa) are classified as Regionally Threatened or At Risk, with only one species - McCann's skink (*Oligosoma maccanni)* - assessed as Regionally Not Threatened. Five species are Regionally Critical, including two Canterbury endemics. Two reptile species are Regionally Extirpated (locally extinct): the tuatara and Tohu gecko. This reflects the historical loss of large-bodied taxa and underscores the continuing vulnerability of Canterbury's remaining reptile fauna.

- Of the five Regionally Critical taxa identified in this assessment, the white-bellied skink (*O. hoparatea*) and the newly recognised northern alpine rock skink (*O. aff. laxa "*alpine rock northern") are the highest-priority species for conservation action, requiring urgent attention.

- Introduced mammalian predators (including mice) remain the primary contemporary driver of lizard declines, with current predator-control approaches often insufficient to enable recovery intensive, sustained mouse suppression.

- Effective conservation of the region's lizard species will require addressing data deficiencies through further survey, protecting key habitats, effective predator management and robust outcome monitoring. These actions are essential to improve the conservation status of Canterbury's diverse and highly threatened lizard fauna.

**Image**: The northern alpine rock skink, *Oligosoma* aff. *laxa* "alpine rock northern"; a recently recognised species endemic to the Canterbury region. *Photo: Marieke Lettink*

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# 1 Introduction and Background

The management and maintenance of indigenous biodiversity in Aotearoa New Zealand requires up-to-date species lists and knowledge of extinction risk on both national and regional scales.

The New Zealand Threat Classification System (NZTCS), established in 2001, is used to assess the national conservation status of species found in the wild in Aotearoa (Molloy et al., 2002; Townsend et al., 2008; Rolfe et al., 2022). It is administered by the Department of Conservation (DOC), which is required to manage indigenous species under the Wildlife Act 1953. National assessments are currently conducted about every 5 years by expert panels in a process facilitated by DOC. The original NZTCS guidelines, categories and criteria (Molloy et al., 2002) were refined in 2007 and 2019 following rigorous expert reviews, resulting in a NZTCS manual that sets out the process and criteria used (Townsend et al., 2008; revised by Rolfe et al., 2022).

National assessments are used to allocate resources for species' inventory, monitoring, research and conservation management; however, they do not provide information on the regional threat status of species. Understanding the regional context is essential for Regional, District and Unitary Councils in New Zealand's 16 geopolitical regions, which have statutory responsibilities for resource management and maintenance of indigenous biodiversity under the Resource Management Act 1991 (RMA).

The need for national consistency in regional assessments of threat status led to the development of a Regional Threat Classification System (RTCS; Crisp et al., 2026) and the compilation of regional species lists for many taxonomic groups (Jarvie & Monks, 2025). The RTCS is essentially an extension of the NZTCS that uses the same threat categories, status rankings and criteria, adjusted to regional scales and with additional qualifiers to capture qualities of regional importance.

Regional assessments can be used to inform local government processes – particularly Assessments of Environmental/Ecological Effects undertaken under the RMA – and allocation of finite resources to species most in need for a myriad of Regional Council-mandated activities (e.g. biodiversity monitoring, pest plant and animal control, protection and management of significant habitats for indigenous fauna). Regional assessments can also help inform national assessments, and vice versa, by utilising local expert knowledge that may not otherwise be available (Crisp et al., 2026).

### *Assessing the national and regional conservation status of reptiles*

The first national assessment of the conservation status of New Zealand reptiles was conducted in 2001 (Hitchmough, 2002), followed by re-assessments in 2005 (Hitchmough et al. 2007), 2009 (Hitchmough et al. 2010), 2012 (Hitchmough et al., 2013), 2015 (Hitchmough et al., 2016a), 2021 (Hitchmough et al., 2021) and 2025 (Hitchmough et al., 2026). To date, regional assessments have been published for reptiles in some regions, including Te Whanganui-a-Tara/Wellington (Crisp, 2020; Crisp et al., 2023), Tāmaki Makaura/Auckland (Melzer et al., 2022) and Otago (Jarvie et al., 2025), with others nearing completion (e.g. Taranaki; H. Jamieson, Taranaki Regional Council; personal communication, 2025).

This report provides a species list and the first assessment of the conservation status of all reptile taxa that have been recorded in the Canterbury region.

# 2 Methodology

The report authors ('Canterbury panel') assessed the regional status of all reptile species recorded in the Canterbury Region during a two-day meeting held in Christchurch on 24–25 September 2025 (with on-line attendance by Rod Hitchmough). The panel contained experts from three government agencies (Environment Canterbury, Christchurch City Council, Department of Conservation), two independent herpetologists who were also members of the 2025 NZTCS reptile assessment panel (Rod Hitchmough and Marieke Lettink), one NZTCS panel observer (Lynn Adams), and a Science Analyst with extensive GIS modelling experience (Miles Burford).

The Canterbury panel meeting was scheduled to occur approximately 6 weeks after the latest national assessment, held in August 2025, to maximise taxonomic alignment and consistency. Publications covering the New Zealand lizard fauna (including national threat status assessments and field guides) are typically outdated prior to their official release due to ongoing revision of cryptic species complexes (particularly for skinks and geckos), frequent discoveries of novel (i.e. new-to-science) taxa, and significant time lags describing such species (on average, 16.5 years from discovery to formal species description; Chapple, 2016)[1]. Of 159 reptile taxa included in the latest (2025) national assessment, 87 (54.7%) were formally described and named at the time of that assessment (Hitchmough et al., 2026).

The Canterbury panel used DOC Herpetofauna Database, iNaturalist and Global Biodiversity Information Facility (GBIF) spatial data, viewed in ArcGIS Pro GIS software. Species distribution maps (some prepared in advance) had known erroneous records removed and suspected erroneous records flagged for subsequent panel discussion. A shapefile of the territorial authority boundaries was used to assess species occurrence in each of 10 Canterbury Districts (listed from north to south): Kaikōura, Hurunui, Selwyn, Waimakariri, Ashburton, Christchurch City, Mackenzie, Timaru, Waitaki (excluding the Otago part of the District), and Waimate; (Figure 2-1), both before and after the year 2000.

[1] This is partly because there is no paid taxonomic herpetologist in New Zealand.

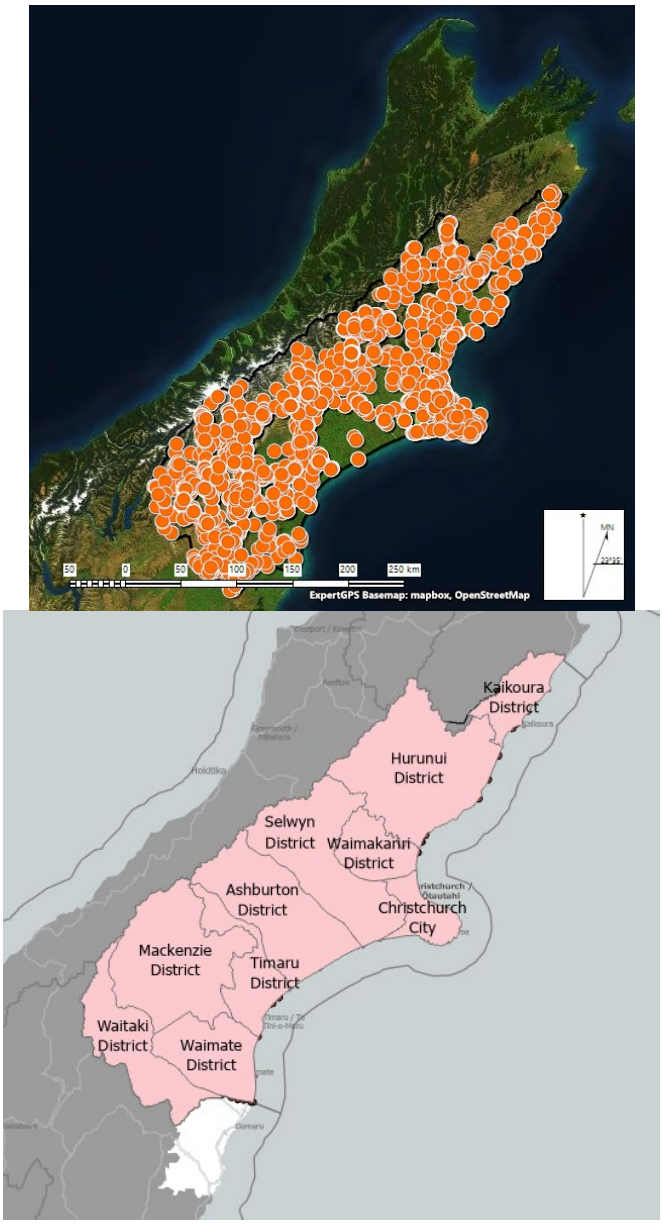


**Figure 2-1: A snapshot of reptile species occurrence data for the Canterbury Region (left: DOC Herpetofauna Database records with regional boundary shown in black) and territorial authority boundaries (right). The Waitaki District spans two regions (Otago part shown in white; this area was excluded from the assessment).**

An Envirolink Project Excel spreadsheet containing peer-reviewed lists of reptile species by region (Knox & Hitchmough, 2025) provided a useful starting point for generating a list of taxa recorded in the Canterbury Region. Consultation with experts external to the panel in the weeks following our assessment led to several putative taxa being added to the species list while others were removed (see Results).

Regional assessment outcomes (including regional conservation status, population size, area of occupancy and/or trend and qualifiers) were recorded in an Excel spreadsheet that also contained relevant data from the most recent (2025) assessment of the conservation status of New Zealand reptiles (Hitchmough et al., 2026). Species were assessed following the methods described in the RTCS Manual (Crisp et al., 2026).

The regional threat status categories are depicted in Figure 2-2. Briefly, the panel first designated nationally extant taxa that are no longer present in Canterbury as Regionally Extirpated (locally extinct).

The NZTCS criteria were then used to assign a regional threat status to all Nationally Threatened and At Risk taxa resident in Canterbury based on available information on population size, area and/or trend (including unpublished data held by panel members). A National Stronghold qualifier was added if more than 20% of the total population was known or inferred to be present in Canterbury, except for regional endemics (i.e. species found only in Canterbury).

For nationally Not Threatened taxa, a regional scaling threshold (3,000 mature individuals and/or an area of occupancy of 1,500 ha (15 $km^2$) was used to determine whether to use the NZTCS and/or RTCS assessment criteria (Crisp et al., 2026). Non-resident native species (marine turtles) were assessed using NZTCS criteria. For a full explanation of the assessment processes, criteria and categories used, refer to 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 Appendix 2 and 3, respectively.

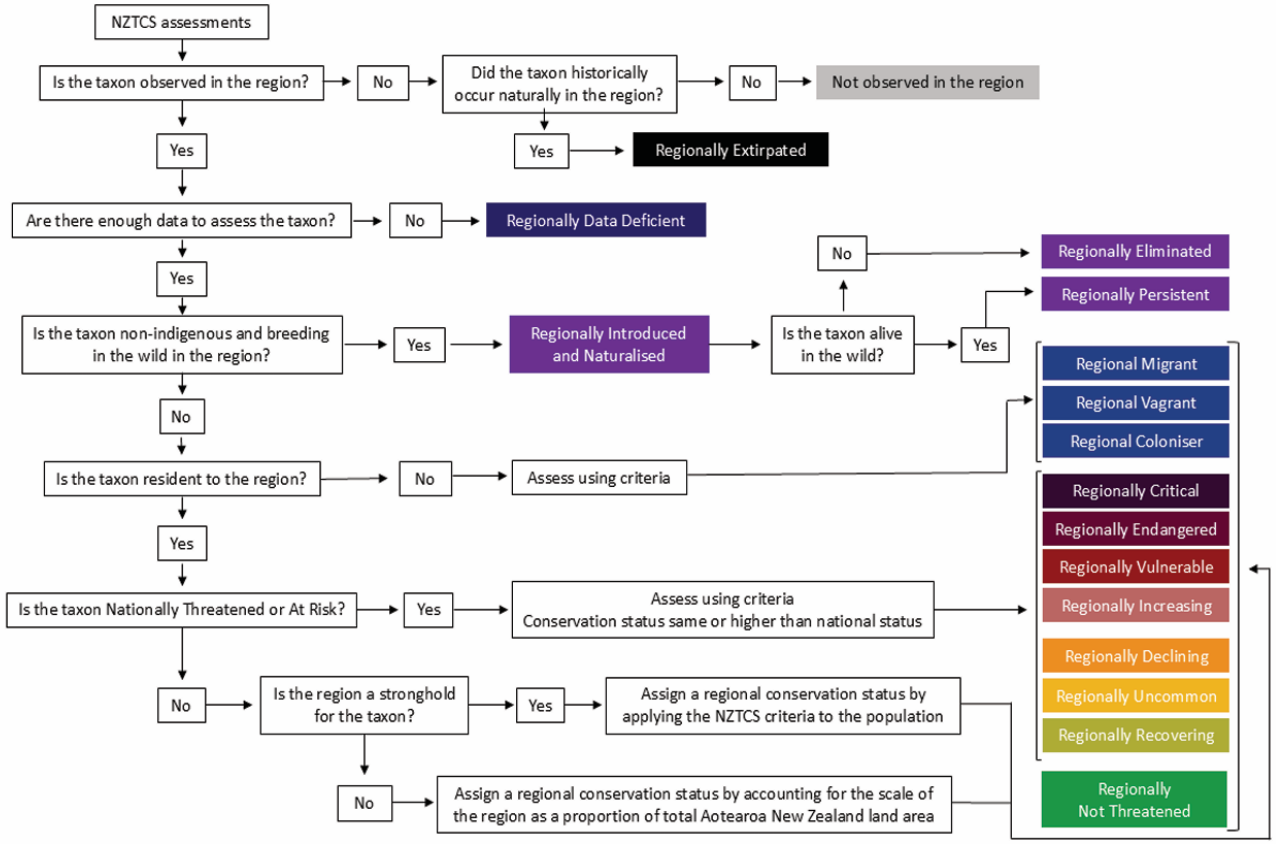


**Figure 2-2: Flow chart for regionally assessing taxa that are found in the wild in Aotearoa New Zealand (reproduced from Crisp et al., 2026).**

# 3 Results

Forty taxa were assessed, consisting of three marine turtles, one tuatara, 20 skinks and 16 geckos (Tables 1 & 2; Attachment 1[2]). Two nationally extant species known only from sub-fossil records in Canterbury were designated Regionally Extirpated: tuatara (*Sphenodon punctatus*) and Tohu gecko (*Hoplodactylus tohu*; a recently-recognised species comprising the southern populations of what was formerly known as Duvaucel's gecko, *H. duvaucelli;* Scarsbrook et al., 2023). One skink species (long-toed skink, *O. longipes*) was designated Regionally Data-Deficient, and more than half of all species were assigned one or more Data Poor qualifiers. There were no Introduced and Naturalised species.

The plague skink (*Lamphropholis delicata*) is currently not known to be established or breeding in Canterbury and was therefore omitted from the regional species list. This egg-laying Australian skink is the only reptile species to have established and become invasive in Aotearoa. However, we note that an undetected breeding population could be present in the region, given regular incursions of lone individuals in Christchurch, population establishment at other South Island sites[3], and the species' propensity for human-assisted dispersal (Chapple et al., 2013). Climate modelling suggests that Canterbury offers suitable environmental conditions for its reproduction (Peace, 2004); thus, it is presumably a matter of time before it becomes established in Canterbury (if not already present).

Two proposed novel skink taxa were included, with permission, based on the preliminary findings of an unpublished genomic study of the scree (*O. laxa*, formerly *O. waimatense*)-alpine rock skink complex (S. Davis & L. Dutoit, University of Otago, Dunedin; personal communication, 2025). These are listed here as *Oligosoma* aff. *laxa* "Central Canterbury" (Central Canterbury scree skink) and *O.* aff. *laxa* "alpine rock northern" (northern alpine rock skink). Both are known only from Canterbury. For both taxa, the Canterbury panel rankings were subsequently adopted in the 2025 national assessment (Hitchmough et al., 2026).

Another putative novel skink taxon listed for the first time in 2025 (Hitchmough et al., 2026) is *Oligosoma* aff. *prasinum* "Ashburton Lakes" (Ashburton Lakes spotted skink). It is closely related to Mackenzie skink (*O. prasinum*) but c. 3% divergent in mitochondrial (ND2 gene) sequence with some distinctive morphological features, including an unusually long intact tail (G. Patterson, Wellington; personal communication, 2025). It appears to be endemic to the Ashburton Lakes area in the mid-Canterbury high country (alternatively, the distinctive local morphology and mitochondrial sequence divergence represent within-population variation in Mackenzie skink; Lettink, 2025).

Of the 35 lizard taxa that are still present in Canterbury, one could not be assigned a threat status due to insufficient data (i.e. is Regionally Data Deficient), 19 (54.3%) were assessed as Regionally Threatened, 14 (40%) as Regionally At Risk, and one (2.9%) as Regionally Not Threatened (Tables 3-1 & 3-2). Just over half (18) had been formally described at the time of the assessment (Table 3-2).

Lizards occur in every territorial authority in Canterbury, with a maximum of 16 taxa recorded from the Hurunui District and a minimum of five taxa known from the Waimakariri District (Table 3-3). Each of the 10 Canterbury Districts contained a unique lizard species assemblage.

The three marine turtles are non-resident native species that occasionally visit Canterbury coastal waters. One was assessed as a Regional Migrant (leatherback turtle, *Dermochelys coriacea*) and two others as Regional Vagrant (loggerhead turtle, *Caretta caretta*; green turtle, *Chelonia mydas*). A fourth species, the olive ridley turtle (*Lepidochelys olivacea*) – included on the Canterbury reptile species list compiled by Knox & Hitchmough (2025) – was omitted because it is likely too cold for its survival south of Cook Strait (D. van Winkel, Bioresearches, Auckland; personal communication, 2025). While not recorded in Canterbury, dead beach-washed specimens have been found in Otago[4] and Southland, presumably after suffering cold shock and being carried south in ocean currents (D. van Winkel personal communication, 2025).

[2] Attachment 1 is available on request and contains the reptile assessment, associated tables and notes.

[3] Established in Nelson, Charleston and Blenheim. Incursions at Picton and Havelock appear to have been eradicated.

[4] We note that it was included in the assessment of the Otago reptiles (based on dead specimens found at Kaka Point), along with a suggestion that it might survive there in the future under climate change (Jarvie et al., 2025).

**Table 3-1: Summary of Canterbury reptile taxa by regional status, assessed using the Regional Threat Classification System (Crisp et al., 2026, adapted from Rolfe et al., 2022).**

| Regional Category / Regional Status | Regionally Extirpated | Regionally Data Deficient | Regionally Threatened | | | Regionally At Risk | Regionally Not Threatened | Regional Non-resident | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Regionally Critical | Regionally Endangered | Regionally Vulnerable | Regionally Declining | | Migrant | Vagrant | |
| Skinks | | 1 | 2 | 4 | 5 | 7 | 1 | | | 20 |
| Geckos | 1 | | 3 | 2 | 3 | 7 | | | | 16 |
| Tuatara | 1 | | | | | | | | | 1 |
| Turtles | | | | | | | | 1 | 2 | 3 |
| **Total** | **2** | **1** | **5** | **6** | **8** | **14** | **1** | **1** | **2** | **40** |

**Table 3-2: Regional conservation status of Canterbury reptiles.**

Where a species has a more threatened regional conservation status than its national threat classification, the regional status is shown in bold. 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: SUBPOP = sub-populations; 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 Appendix 2 (national qualifiers; Rolfe et al., 2022) and 3 (regional qualifiers; Crisp et al., in press2026).

| Name & Authority | Common name | National Conservation Status 2025 | Regional Conservation Status 2025 | National Stronghold | Regional Endemic | Regional Trend | Regional Trend Confidence | Regional Population or Area | Regional Population or Area confidence | Regional Qualifiers | National Qualifiers |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **REGIONALLY EXTIRPATED** | | | | | | | | | | | |
| *Taxonomically determinate (2)* | | | | | | | | | | | |
| *Hoplodactylus tohu* Scarsbrook et al. 2023 | Tohu gecko/te mokomoko a Tohu | Nationally Increasing | **Regionally Extirpated** | | | | | | | | CD, Rel |
| *Sphenodon punctatus* (Gray, 1842) | tuatara | Uncommon | **Regionally Extirpated** | | | | | | | | CI, CD, RR, Rel |
| **REGIONALLY DATA DEFICIENT** | | | | | | | | | | | |
| *Taxonomically determinate (1)* | | | | | | | | | | | |
| *Oligosoma longipes* Patterson, 1997 | long-toed skink | Data Deficient | Regionally Data Deficient | Yes | | | | | | CI, DPR, DPS, DPT, PF, RR, NR, NStr | CI, DPR, DPS, DPT, PF, RR |
| **REGIONALLY THREATENED (19)** | | | | | | | | | | | |
| **REGIONALLY CRITICAL (5)** | | | | | | | | | | | |
| *Taxonomically determinate (3)* | | | | | | | | | | | |
| *Mokopirirakau galaxias* Knox et al., 2021 | hura te ao gecko | Nationally Vulnerable | **Regionally Critical** | | | DECR 30-50% | Low | SUBPOP 2, MATIND < 200 | Low | CI, DPS, DPT, NR, CR | CI, DPT, PF, RR |
| *Mokopirirakau granulatus* (Gray, 1845) | forest gecko | Declining | **Regionally Critical** | | | DEC 30-50% | Low | MATIND <250 | Low | CI, CR, DPT, DPS, OL, NR | CI, CR, DPT, PD, PF |
| *Oligosoma hoparatea* Whitaker et al., 2018 | white-bellied skink | Nationally Critical | Regionally Critical | Yes | Yes | DECR > 70% | Medium | MATIND <250 | High | Sp, RR, CI, CR, NR, RE, NStr, TL | Sp, RR, RE |
| *Taxonomically unresolved (2)* | | | | | | | | | | | |
| *Mokopirirakau* "Roys Peak" | orange-spotted gecko | Nationally Vulnerable | **Regionally Critical** | | | DECR 30-50% | Low | MATIND <250 | Low | CI, DPT, DPS, PF, OL, NR | CI, DPT, PF, RR |

| Name & Authority | Common name | National Conservation Status 2025 | Regional Conservation Status 2025 | National Stronghold | Regional Endemic | Regional Trend | Regional Trend Confidence | Regional Population or Area | Regional Population or Area confidence | Regional Qualifiers | National Qualifiers |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Oligosoma* aff. *laxa* "alpine rock northern" | northern alpine rock skink | Nationally Critical | Regionally Critical | Yes | Yes | DECR 30-50% | Low | SUBPOP 2, MATIND < 200 | Low | CI, CR, DPR, DPT, DPS, RR, RE | |
| **REGIONALLY ENDANGERED (6)** | | | | | | | | | | | |
| *Taxonomically determinate (4)* | | | | | | | | | | | |
| *Mokopirirakau kahutarae* (Whitaker, 1985) | black-eyed gecko | Nationally Vulnerable | **Regionally Endangered** | | | DEC 30-50% | Low | SUBPOP 3-5, MATIND 200-300 | Low | Sp, CI, DPS, DPT, RR, CR, NR, NStr, TL | Sp, CI, DPS, DPT, RR |
| *Naultinus rudis* (Fischer, 1882) | rough gecko | Nationally Endangered | Regionally Endangered | Yes | | DECR 50-70% | High | SUBPOP 6-15, MATIND 300-500 | Low | Sp, CI, CR, DPS, DPT, PF, NR, NStr | Sp, CI, CR, DPS, DPT, PF |
| *Oligosoma elium* Melzer et al., 2017 | south Marlborough spotted skink | Nationally Endangered | Regionally Endangered | Yes | | DECR 50-70% | Low | MATIND 1000-5000 | Low | CI, CD, DPS, DPT, PD, PF, NR, TL, NStr | CI, CD, DPS, DPT, PD, PF |
| *Oligosoma lineoocellatum* (Duméril & Duméril, 1851) | Canterbury spotted skink | Nationally Endangered | Regionally Endangered | Yes | Yes | DECR 50-70% | Medium | MATIND 1000-5000 | Medium | CI, CD, PD, PF, RE | CI, CD, PD, PF |
| *Taxonomically unresolved (2)* | | | | | | | | | | | |
| *Oligosoma* aff. *chloronoton* "West Otago" | Lakes skink | Nationally Vulnerable | **Regionally Endangered** | Yes | | DEC 30-50% | Low | SUBPOP 3-5, MATIND 200-300 | Low | DPS, DPT, PF, NStr | DPS, DPT, PF |
| *Oligosoma* aff. *laxa* "Marlborough" | Marlborough scree skink | Nationally Endangered | Regionally Endangered | Yes | | DECR 50-70% | Low | SUBPOP 6-15, MATIND 300-500 | Low | Sp, CI, DPS, DPT, PF, NR, NStr | Sp, CI, DPS, DPT, PF |
| **REGIONALLY VULNERABLE (8)** | | | | | | | | | | | |
| *Taxonomically determinate (4)* | | | | | | | | | | | |
| *Naultinus tuberculatus* (McCann, 1955) | West Coast green gecko | Nationally Vulnerable | Regionally Vulnerable | | | DEC 30-50% | Low | AREA 10000-100000ha | Low | BNS, CI, DPS, DPT, NR, CR | CI, DPS, DPT, PF |

| Name & Authority | Common name | National Conservation Status 2025 | Regional Conservation Status 2025 | National Stronghold | Regional Endemic | Regional Trend | Regional Trend Confidence | Regional Population or Area | Regional Population or Area confidence | Regional Qualifiers | National Qualifiers |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Oligosoma laxa (Hutton, 1872) | Scree skink | Nationally Vulnerable | Regionally Vulnerable | Yes | | DEC 30-50% | Low | MATIND 1000 - 5000 | Low | CI, DPT, DPR, PF, DPS, CR, NStr, NR | CI, DPT, PF |
| Oligosoma prasinum Melzer et al., 2017 | Mackenzie skink | Nationally Vulnerable | Regionally Vulnerable | Yes | Yes | DEC 30-50% | Low | SUBPOP 6-15, MATIND 300-500 | Low | CI, DPT, DPS, PF, RR, RE, TL | CI, DPT, PF, RR |
| *Woodworthia maculata* (Gray, 1845) | Raukawa gecko | Not Threatened | **Regionally Vulnerable** | | | DECR 30-50% | Low | AREA 100 - 1000ha | Low | CR, DPT, DPR, DPS, NR | CD, PD |
| *Taxonomically unresolved (4)* | | | | | | | | | | | |
| *Oligosoma* aff. *chloronoton* "eastern Otago" | Otago green skink | Declining | **Regionally Vulnerable** | | | DEC 30-50% | Low | AREA 100-1000ha | Low | CI, DPS, DPT, PF, NR | CI, CD, DPS, DPT, PF |
| *Oligosoma* aff. *laxa* "Central Canterbury" | Central Canterbury scree skink | Nationally Vulnerable | Regionally Vulnerable | Yes | Yes | DEC 30-50% | Low | MATIND 1000 - 5000 | Low | CI, DPT, DPR, CR DPS, PF, RE | |
| *Oligosoma* aff. *prasinum* "Ashburton Lakes" | Ashburton Lakes spotted skink | Nationally Vulnerable | Regionally Vulnerable | Yes | Yes | DEC 30-50% | Low | MATIND 1000-5000 | Medium | DPR, PF, DPT, CR, RE | DPR, PF, RR |
| *Woodworthia* "Kaikōura" | Kaikōura gecko | Declining | **Regionally Vulnerable** | Yes | | DEC 10-30% | Low | AREA 10-100ha | Low | CI, CR, DPR, OL, DPS, NR, DPT, NStr | DPR, DPS, DPT, RR |
| **REGIONALLY AT RISK (14)** | | | | | | | | | | | |
| **REGIONALLY DECLINING (14)** | | | | | | | | | | | |
| *Taxonomically determinate (4)* | | | | | | | | | | | |
| *Naultinus gemmeus* (McCann, 1955) | jewelled gecko | Declining | Regionally Declining | Yes | | DEC 10-30% | Medium | MATIND 20000-100000 | Low | NStr, NR, PF, DPS | CI, PD, PF |
| *Oligosoma chionochloescens* Jewell, 2022 | southern grass skink | Declining | Regionally Declining | Yes | | DEC 10-30% | High | AREA >100000ha | High | DPR, NR, NStr | CI, DPR |

| Name & Authority | Common name | National Conservation Status 2025 | Regional Conservation Status 2025 | National Stronghold | Regional Endemic | Regional Trend | Regional Trend Confidence | Regional Population or Area | Regional Population or Area confidence | Regional Qualifiers | National Qualifiers |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Oligosoma eludens* Knox et al., 2024 | rockhopper skink | Declining | Regionally Declining | Yes | | DEC 10-30% | Low | AREA 100 - 1000ha | Low | CI, DPR, DPT, DPS, RR, NStr | CI, DPR, DPT, RR |
| *Oligosoma toka* Chapple et al., 2011 | Nevis skink | Declining | Regionally Declining | | | DEC 10-30% | Low | AREA 100 - 1000ha | Low | CI, DPT, DPS, DPR, OL, CR, NR | Sp, CI, DPT |
| *Taxonomically unresolved (10)* | | | | | | | | | | | |
| *Oligosoma* aff. *longipes* "southern" | southern long-toed skink | Declining | Regionally Declining | Yes | Yes | DEC 10-30% | Low | AREA 10000-100000ha | Medium | RE, RR, DPT, DPR | DPR, DPT, PF, RR |
| *Oligosoma* aff. *polychroma* Clade 2 | Waiharakeke grass skink | Declining | Regionally Declining | Yes | | DEC 10-30% | Medium | MATIND >100000 | Medium | DPR, NStr, NR | CD, DPR, PD, RR |
| *Oligosoma* aff. *polychroma* Clade 3 | South Marlborough grass skink | Declining | Regionally Declining | Yes | | DEC 10-30% | Medium | MATIND >100000 | Medium | DPR, NStr, NR | DPR, DPS, DPT |
| *Oligosoma* aff. *polychroma* Clade 4 | Canterbury grass skink | Declining | Regionally Declining | Yes | | DEC 10-30% | High | AREA >100000ha | High | DPR, NR, NStr | DPR |
| *Woodworthia* cf. *brunnea* | Waitaha gecko | Declining | Regionally Declining | Yes | | DEC 10-30% | Medium | MATIND>100000 | High | PD, PF, NStr, NR | PD, PF |
| *Woodworthia* "pygmy" | pygmy gecko | Declining | Regionally Declining | Yes | | DEC 10-30% | Low | MATIND > 100000 | High | NStr, NR, DPT, DPR | DPT |
| *Woodworthia* "Marlborough mini" | minimac gecko | Declining | Regionally Declining | Yes | | DEC 10-30% | Low | MATIND>100000 | Medium | DPR, DPT, NStr, NR | DPT |
| *Woodworthia* "Otago/Southland large" | kōrero gecko | Declining | Regionally Declining | | | DEC 30-50% | Medium | AREA 10000 - 100000 | High | CI, NR | CI, PD |
| *Woodworthia* "Southern Alps" | Southern Alps gecko | Declining | Regionally Declining | Yes | | DEC 10-30% | Medium | MATIND>100000 | High | NStr, NR | |

| Name & Authority | Common name | National Conservation Status 2025 | Regional Conservation Status 2025 | National Stronghold | Regional Endemic | Regional Trend | Regional Trend Confidence | Regional Population or Area | Regional Population or Area confidence | Regional Qualifiers | National Qualifiers |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Woodworthia* "Southern Alps northern" | greywacke gecko | Declining | Regionally Declining | Yes | | DEC 10-30% | Medium | AREA>100000ha | High | CI, DPR, NR, NStr | CI |
| **REGIONALLY NOT THREATENED (1)** | | | | | | | | | | | |
| *Taxonomically determinate (1)* | | | | | | | | | | | |
| *Oligosoma maccanni* (Patterson & Daugherty, 1990) | McCann's skink | Not Threatened | Regionally Not Threatened | | | STABLE +/-10% | High | MATIND>100000 | High | DPR | |
| **REGIONALLY NON-RESIDENT NATIVE (3)** | | | | | | | | | | | |
| **REGIONAL MIGRANT (1)** | | | | | | | | | | | |
| *Taxonomically determinate (1)* | | | | | | | | | | | |
| *Dermochelys coriacea* (Vandelli, 1761) | leatherback turtle | Migrant | Migrant | | | | | | | TO | TO |
| **REGIONAL VAGRANT (2)** | | | | | | | | | | | |
| *Taxonomically determinate (2)* | | | | | | | | | | | |
| *Caretta caretta* (Linnaeus, 1758) | loggerhead turtle | Vagrant | Vagrant | | | | | | | TO | TO |
| *Chelonia mydas* Linnaeus, 1758 | green turtle | Vagrant | Vagrant | | | | | | | TO | TO |

**Table 3-3: Presence of reptile taxa (excluding marine turtles) by territorial authority, Canterbury.**

Table symbology: ● taxon recorded since 2000; ○ taxon recorded before 2000; ? uncertainty over taxon occurrence (pre- or post-2000) in a territorial authority that could not be resolved (see footnotes).

| Name and Authority | Common Name | Waitaki District | Mackenzie District | Waimate District | Timaru District | Ashburton District | Selwyn District | Christchurch City | Waimakariri District | Hurunui District | Kaikoura District |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Hoplodactylus tohu* Scarsbrook et al., 2023 | Tohu gecko | | | ○ | ○ | | | | | ○ | |
| *Mokopirirakau galaxias* Knox et al., 2021 | hura te ao gecko[5] | ● | | ? | | | | | | | |
| *Mokopirirakau granulatus* (Gray, 1845) | forest gecko | | | | | | | | | ○ | |
| *Mokopirirakau kahutarae* (Whitaker, 1985) | black-eyed gecko | | | | | | | | | | ● |
| *Mokopirirakau* "Roys Peak" | orange-spotted gecko | ○ | | | | | | | | | |
| *Naultinus gemmeus* (McCann, 1955) | jewelled gecko | ● | ● | ● | ● | ● | ● | ● | ● | | |
| *Naultinus rudis* (Fischer, 1882) | rough gecko | | | | | | | | | ● | ● |
| *Naultinus tuberculatus* (McCann, 1955) | West Coast green gecko | | | | | | | | | ● | |
| *Oligosoma* aff. *chloronoton* “eastern Otago” | Otago green skink | ● | | ● | | | | | | | |
| *Oligosoma* aff. *chloronoton* “West Otago” | Lakes skink | ● | ○ | | | | | | | | |
| *Oligosoma elium* Melzer et al., 2017 | Marlborough spotted skink | | | | | | | | | ● | ● |
| *Oligosoma* aff. *longipes* “southern” | southern long-toed skink | | ● | | ● | ● | ● | | | | |
| *Oligosoma hoparatea* Whitaker et al., 2018 | white-bellied skink | | | | | ● | | | | | |

[5] There is a credible record of “black-eyed gecko”, presumed here to be hura te ao gecko, from the Waimate District (Whitaker 1985).

| Name and Authority | Common Name | Waitaki District | Mackenzie District | Waimate District | Timaru District | Ashburton District | Selwyn District | Christchurch City | Waimakariri District | Hurunui District | Kaikoura District |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Oligosoma* aff. *polychroma* Clade 2 | Waiharakeke grass skink | | | | | | | | | | ● |
| *Oligosoma* aff. *polychroma* Clade 3 | South Marlborough grass skink | | | | | | | | | ● | ● |
| *Oligosoma* aff. *polychroma* Clade 4 | Canterbury grass skink | | | | | ● | ● | | ● | ● | |
| *Oligosoma chionochloescens* Jewell, 2022 | Southern grass skink | ● | ● | ● | ● | ● | ● | ● | | | |
| *Oligosoma* aff. *prasinum* "Ashburton Lakes Basin" | Ashburton Lakes spotted skink | | | | | ● | | | | | |
| *Oligosoma* aff. *laxa* "alpine rock northern" | northern alpine rock skink | ● | ● | | | | | | | | |
| Oligosoma aff. waimatense “Marlborough” | Marlborough scree skink | | | | | | | | | | ○ |
| *Oligosoma eludens* (Knox, Chapple & Bell, 2024) | Rockhopper skink | ● | | | | | | | | | |
| *Oligosoma laxa* (Hutton, 1872) | Scree skink[6] | ● | ● | ? | | | | | | | |
| *Oligosoma lineoocellatum* (Duméril & Duméril 1851) | Canterbury spotted skink | | | | ● | ● | ● | ● | | ○ | |
| *Oligosoma prasinum* Melzer et al., 2017 | Mackenzie skink | | ● | | ○ | ● | | | | | |
| *Oligosoma longipes* Patterson, 1997 | long-toed skink | | | | | | | | | ● | |
| *Oligosoma maccanni* (Patterson & Daugherty, 1990) | McCann's skink[7] | ● | ● | ● | ● | ● | ● | ● | | ? | |

[6] Part of a cryptic species complex that requires further taxonomic research and DNA sampling to determine distribution limits, including occurrence in Waimate District.
[7] At least some and possibly all records of McCann’s skink from the Hurunui District (DOC Herpetofauna Database and iNaturalist) are misidentified grass skinks. The panel examined a subset “Research Grade” i-Naturalist records of McCann’s skinks from North Canterbury and concluded all were southern or Canterbury grass skinks.

| Name and Authority | Common Name | Waitaki District | Mackenzie District | Waimate District | Timaru District | Ashburton District | Selwyn District | Christchurch City | Waimakariri District | Hurunui District | Kaikoura District |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Oligosoma toka* (Chapple et al., 2011) | Nevis skink | ● | | | | | | | | | |
| *Oligosoma* aff. *laxa* "Central Canterbury" | Central Canterbury scree skink | ● | ● | ● | | ● | ● | | | ● | ● |
| *Sphenodon punctatus* (Gray, 1842) | tuatara | ○ | ○ | ○ | ○ | ○ | | ○ | | ○ | ○ |
| *Woodworthia* cf. *brunnea* | Waitaha gecko | | | | | ● | ● | ● | ● | ● | |
| *Woodworthia* " Kaikōura " | Kaikōura gecko | | | | | | | | | | ● |
| *Woodworthia maculata* (Gray, 1845) | Raukawa gecko | | | | | | | | | | ● |
| *Woodworthia* "Marlborough mini" | Minimac gecko | | | | | | | | | ● | ● |
| *Woodworthia* "Otago/Southland large" | Kōrero gecko | ● | | | | | | | | | |
| *Woodworthia* "pygmy" | pygmy gecko | | | | | ● | | | | ● | ● |
| *Woodworthia* "Southern Alps northern" | greywacke gecko | | | | | ● | ● | | ● | ● | ● |
| *Woodworthia* "Southern Alps" | Southern Alps gecko | ● | ● | ● | ● | ● | ● | | | | |

# 4 Discussion

This report provides the first assessment of the conservation status of reptiles in the Canterbury Region. It adds to a growing number of regional assessments now published for New Zealand reptiles (Crisp 2020, 2023; Melzer et al., 2022; Jarvie et al., 2025). The assessment provides Canterbury's Regional and District councils with the most up-to-date broad understanding of where species occur and the taxa of highest regional conservation concern. This information can directly inform council decision-making. For instance, informing assessments of potential effects and ecological significance during resource consenting processes, or highlighting species in need of additional surveys or research (as indicated by a threat status of Regionally Data Deficient or Data Poor qualifiers).

In total, 40 reptile taxa have been recorded in Canterbury, comprising just over a quarter (25.2%) of the New Zealand reptile fauna (currently 159 taxa; Hitchmough et al., 2026). Canterbury is the most speciose region for reptiles in Aotearoa (for regional species lists see Knox & Hitchmough 2025). Canterbury's high reptile diversity reflects its: (1) relatively large land area (approximately 4.52 million hectares); (2) generally favourable climate for ectotherms (most of the region is in the rain shadow of Kā Tiritiri o te Moana Southern Alps); (3) considerable number of species whose primary distributions lie outside Canterbury but extend marginally into the region (e.g. at the Otago boundary; Jarvie et al., 2025); and (4) variety of niches and habitats (forests, shrublands, grasslands, wetlands, rocklands) present over an elevation gradient of 2000+ m, particularly for saxicolous (rock-dwelling) lizards. Within Canterbury, lizards are found from sea level to at least 2,200 m a.s.l. and occur in all but the most modified environments (DOC Herpetofauna Database).

For 10 reptile species, the regional conservation status indicated a greater level of concern than the national classification. Two reptile species (tuatara and Tohu gecko) are no longer present (Regionally Extirpated) in Canterbury. Unsurprisingly, these are the two largest species of the region's land-dwelling reptiles. Body size (in addition to geographic range size and habitat specialisation) is one of the strongest predictors of extinction risk in New Zealand lizards (Tingley et al., 2013). Consistent with the latest national assessment, a very high proportion of Canterbury's remaining lizard fauna (33 of 35 taxa; 94.3%) is Threatened or At Risk of Extinction. The exceptions are long-toed skink (Regionally Data Deficient; although unable to be assigned a regional threat status we note its true state will be in one of these categories) and McCann's skink (Regionally Not Threatened). Surveys of montane rockland habitats in North Canterbury and Marlborough are required to assess the distribution and status of long-toed skink.

Of the five Regionally Critical taxa identified in this assessment, the (Nationally Critical) white-bellied skink (*O. hoparatea*) is of greatest conservation concern. This Canterbury endemic was discovered in two small (≤2 ha) scree gullies on Mt Harper in 2004 (Whitaker et al. 2018). It has not been seen since in one gully and is now barely detectable in the other, with predation by introduced mammals thought to be the main threat. Surveys have located just two other populations on another mountain range despite considerable effort (Lettink, 2025). Attempts to manage the best population - estimated at a few dozen individuals – are hampered by the challenge of suppressing mammalian predators to the low densities required for species recovery (particularly for mice; a generic issue for New Zealand lizards on the mainland; Hitchmough et al., 2016b). DOC management outcomes for this species will help inform management for other alpine rock-dwelling lizards.

The second-highest priority (Regionally and Nationally Critical) species in Canterbury is northern alpine rock skink. First encountered in alpine scree on a ski field in the Mackenzie Basin during a 2020 survey by one of the report authors (ML), it was not confirmed as a novel taxon until 2025, based on the preliminary results of a sophisticated genomic analysis that revealed cryptic diversity in the scree-alpine rock skink complex in Canterbury and Otago (A. Davis & L. Dutoit, University of Otago). It requires survey, taxonomic research, and urgent consideration of management options.

Three other Regionally Critical species (forest gecko, *Mokopirirakau granulatus*; orange-spotted gecko, *M.* "Roys Peak" and hura te ao gecko, *M. galaxias*) have distributions that just extend into Canterbury with most of their populations residing outside of the region, and are thus of lesser conservation concern (as reflected by a national threat status of Nationally Vulnerable for orange-spotted and hura te ao geckos, and Declining for forest gecko). While outside the scope of this document to provide specific

recommendations for all Regionally Threatened and At Risk species, all would benefit from surveys to improve understanding of distribution, abundance and threats, population trend monitoring, and full consideration of feasible management options. Species-specific information, including notes on the known and inferred threats, is provided in the latest assessment of the New Zealand reptiles[8].

***Barriers and options for improving the conservation status of Canterbury reptiles***

Habitat loss and predation are the main drivers of reptile population declines on the New Zealand mainland (Hitchmough et al., 2026). Protection of key habitats - particularly those under threat of inappropriate development - and effective management of invasive mammalian predators (including mice) are therefore required. In order of effectiveness, the latter may be achieved by translocation to predator-free islands, re-introduction to mainland "predator-free" sanctuaries, and intensive control (via trapping and/or poisoning) of introduced mammalian predators including mice. Mice are notoriously difficult to suppress to the low levels needed for lizard recovery (Norbury et al. 2023) but must not be neglected; they have been seen attacking adults of the largest skink species in the South Island (Otago skink,*O. otagense*) in broad daylight (Norbury et al., 2014a). Mainland lizard populations subjected to long-term monitoring and predator trapping have mostly failed to recover (Hoare et al., 2007; Norbury et al., 2013; Dumont, 2015; Nelson et al., 2016; Lettink, 2023; Monks et al., 2024; but see Reardon et al., 2012), likely due to inadequate predator suppression and unforeseen changes in mammalian predator guilds.

Translocation of reptiles to predator-free islands – by far the most successful conservation strategy for tuatara and lizards in Aotearoa New Zealand (Romijn & Hartley, 2016; Towns et al., 2016) – is rarely an option in Canterbury. In contrast to some other regions (e.g. Wellington and Auckland), Canterbury has almost no islands that are naturally without mammalian predators (exceptions include the 2.7-hectare Motunau Island in North Canterbury, and islets and rock stacks off Banks Peninsula, all within easy swimming distance of stoats; King, 2025) or islands where mammalian predators can be eradicated with the reinvasion risk managed to provide relatively-secure sanctuaries for reptiles. There could perhaps be options for lizard re-introductions to the most distant hydro-lake islands (e.g. Motuariki Island in Lake Tekapo). However, such islands are small, lack suitable habitats (e.g. alpine screes, indigenous forest), and would require on-going removal of exotic conifers and pest mammals.

The second-best option is a pest-fenced mainland sanctuary with effective suppression or exclusion of mice. Re-introduction of New Zealand lizards to sites with commercially-available "predator-proof" fences began in 2005 (Romijn & Hartley, 2016). While fenced sanctuaries have benefited many endemic bird populations (Innes et al., 2024), recovery of terrestrial invertebrates and lizards is often stymied by resident mouse populations that can irrupt following the removal of larger mammalian predators and increased food availability (Nelson et al., 2016; Watts et al., 2022). To date, only three fenced sanctuaries nation-wide have remained largely or completely mouse-free[9], and some support high densities of unmanaged mice, thereby negating their conservation value for reptiles. Some large, fenced sanctuaries (e.g. Zealandia in Wellington, Orokonui near Dunedin) have smaller internal mouse-barrier fences to protect translocated tuatara, frog and/or lizard populations.

There are currently no large predator-fenced sanctuaries in Canterbury. There is a small predator-proof fence at Riccarton Bush (a 7-8 ha podocarp forest remnant) in Christchurch, but its value for reptiles is diminished by its resident rodent (mouse and rat) populations, small size and lack of non-forest habitats. A smaller (2.5-ha) predator fence on the Kaikōura Peninsula, constructed in 2010 to protect a new (translocated) colony of Hutton's shearwater (*P. huttoni*), could potentially benefit lizards if mice are managed. Another small (<0.5-ha) fence built to protect the last mainland colony of sooty shearwater/tītī (*Puffinus griseus*) on Banks Peninsula supports the largest-known population of the (Nationally and Regionally Endangered) Canterbury spotted skink. A feasibility study considering the creation of a much larger fenced sanctuary on the Port Hills near Christchurch[10] provides potential opportunities for the local reptiles, given effective mouse management.

[8] Available at https://nztcs.org.nz/home.

[9] These are: (1) 230-ha Rotokare Scenic Reserve in South Taranaki, which has regular but managed mouse incursions; (2) 15-ha Mokomoko Dryland Sanctuary in Central Otago, which has infrequent but managed mouse incursions; and (3) Kapitia Scientific Reserve near Hokitika, which has not had any mouse incursions to date.

[10] See https://livingsprings.co.nz/living-springs-embarks-on-eco-sanctuary-feasibility-study/.

Small (≤15 ha) pest-exclusion fences can make a significant contribution to lizard conservation (e.g. Mokomoko Dryland Sanctuary in Central Otago[11]) and are cheaper to build and defend from pest-mammal incursions than larger fenced areas (Norbury et al., 2014b). However, fence construction is sometimes prohibited by the terrain (e.g. alpine screes or bluffs), leaving fewer options available for conservation management of Canterbury's saxicolous lizards.

Mouse-barrier fences (i.e. shorter fences designed to exclude mice, which are eradicated post-construction) may also have merit but require further evaluation to assess their long-term efficacy and costs compared to commercially-available (full) predator-proof fence designs. Environment Canterbury has constructed two such fences to protect Canterbury spotted skink populations: a 0.3-ha fence enclosing a tiny remnant population at McLeans Island in 2022, and a 0.65-ha fence for a (translocated) population on Kaitōrete Spit in 2025. Both have remained mouse-free to date with on-going monitoring to assess skink recovery. A similar fence design has stayed mouse-free for 6 years post-construction and allowed recovery of highly threatened skinks near Hokitika on the West Coast.

To date, predator control has mostly failed to protect lizard populations on the Aotearoa mainland. Canterbury is no exception: in two long-term (≥10 year) studies conducted in Canterbury, intensive small-scale predator control that included mice did not permit population recovery of Canterbury spotted skink on the Port Hills near Christchurch (but did benefit two smaller skink species of lesser conservation concern; Lettink & McClure, 2023) and appears to have caused a decline in a jewelled gecko population monitored on Banks Peninsula over 14 years (Lettink, 2023). Perverse outcomes of predator trapping on lizards include meso-predator release of mice (Norbury et al., 2013, 2023; Monks et al., 2024), competitor release of weasels when stoats are trapped to low levels (Lettink & McClure, 2023), and for diurnal green (*Naultinus*) geckos, increased predation by birds via avian release (Lettink, 2023). Thus, predator control is not recommended for conservation of Canterbury lizards unless it includes sustained and effective mouse control, is done in perpetuity, and includes outcome monitoring to assess lizard response and potential perverse outcomes.

Other, indirect means of reducing predator impacts on Canterbury's lizards include restoring vegetation to a state of indigenous dominance (Norbury et al., 2013), increasing habitat complexity (e.g. by adding rock piles and planting divaricating shrubs and vines; Herbert et al., 2025), removing exotic cover favoured by mammalian predators (e.g. feral cats), and judicious grazing (where appropriate; Norbury, 2017). These strategies require in-depth knowledge of the habitat use of the target (lizard and predator) species. Research testing the relative efficacy of predator versus habitat manipulation on lizard survival (e.g. Lettink et al., 2010) is also required, particularly in a mitigation context. Artificial refuges (e.g. Turner et al., 2025) and constructed rock piles (Lennon, 2021; Herbert et al., 2023) are increasingly used to mitigate habitat loss, yet benefits of engineered wildlife refuges are rarely demonstrated (Cowan et al., 2021). While more research is clearly needed, protecting key lizard habitats at representative sites is the first and foremost step to improving the conservation status of Canterbury's rich, diverse and highly threatened lizard fauna.

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[11] See https://www.mokomokosanctuary.com/.

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# Appendix 1: NZTCS Categories

Full details of the criteria and categories can be found in Rolfe et al. (2022). Summary definitions for the categories are presented below (reproduced from Hitchmough et al., 2026).

## A1.1 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 Rolfe et al. (2022).

## A1.2 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.

## A1.3 Threatened

Taxa that meet the criteria specified by Rolfe et al. (2022) for the conservation statuses Nationally Critical, Nationally Endangered and Nationally Vulnerable, and Nationally Increasing.

### A1.3.1 Nationally Critical

Criteria for Nationally Critical:

- Very small population (natural or unnatural) regardless of the trend
  - The total population size is fewer than 250 mature individuals; or
  - The total area of occupancy is less than 1 ha (0.01 $km^2$); or
  - There are 2 sub-populations *and* fewer than 200 mature individuals in the largest sub-population
- Small population that is forecast to decline 50–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–1,000 mature individuals; or
  - The total area of occupancy is 1–10 ha (0.01–0.1 $km^2$); or
  - There are 3-5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population
- Population that is forecast to decline > 70% over the longer of 10 years or three generations (maximum 100 years), irrespective of the size or number of sub-populations

### A1.3.2 Nationally Endangered

Criteria for Nationally Endangered:

- Small population that is forecast to remain stable ± 10% (unnatural or unknown)
  - The total population size is 250–1,000 mature individuals; or
  - The total area of occupancy is 1–10 ha (0.01–0.1 $km^2$); or
  - There are 3-5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population
- Small population that is forecast to decline 10–50% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–1,000 mature individuals; or
  - The total area of occupancy is 1–10 ha (0.01–0.1 $km^2$); or
  - There are 3-5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population
- Moderate population that is forecast to decline 50–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 1,000–5,000 mature individuals; or
  - The total area of occupancy is 10–100 ha (0.1–1 $km^2$); or
  - There are 6-15 sub-populations *and* ≤ 500 mature individuals in the largest sub-population

### A1.3.3 Nationally Vulnerable

Criteria for Nationally Vulnerable:

- Small population (unnatural) that is forecast to increase by 10% or more, over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–1,000 mature individuals; or

  - The total area of occupancy is 1–10 ha (0.01–0.1 km$^2$); or
  - There are 3- 5 sub-populations *and* ≤ 300 mature individuals in the largest sub-population
- Moderate population (unnatural) that is forecast to remain stable ± 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 1,000–5,000 mature individuals; or
  - The total area of occupancy is 10–100 ha (0.1–1 km$^2$); or
  - There are ≤ 15 sub-populations *and* ≤ 500 mature individuals in the largest sub-population
- Moderate population that is forecast to decline of 10–50% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 1,000–5,000 mature individuals; or
  - The total area of occupancy is 10–100 ha (0.1–1 km$^2$); or
  - There are 6-15 sub-populations *and* ≤ 500 mature individuals in the largest sub-population
- Moderate to large population that is forecast to decline 30–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 5,000–20,000 mature individuals; or
  - The total area of occupancy is 100–1,000 ha (1–10 km$^2$); or
  - There are 6-15 sub-populations *and* ≤ 1,000 mature individuals in the largest sub-population
- Large population that is forecast to decline 50–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 20,000–100,000 mature individuals; or
  - The total area of occupancy is 1,000–10,000 ha (10–100 km$^2$)

#### A1.3.4 Nationally Increasing

*This is a new name and category for At Risk – Recovering (criterion A) of Townsend et al. (2008).*

- Small population that has experienced previous decline (or for which it is unknown whether it has experienced a previous decline) *and* that is forecast to increase > 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 1,000–5,000 mature individuals; or
  - The total area of occupancy 10–100 ha (1–10 km$^2$); or
  - There are 6-15 sub-populations *and* 300–500 mature individuals in the largest sub-population.

*Note:* Taxa that have an increasing trend but whose populations are smaller than the size criteria listed here should be classified as Threatened – Nationally Critical or Threatened – Nationally Vulnerable.

### A1.4 At Risk

Taxa that meet the criteria specified by Rolfe et al. (2022) for Declining, Recovering and Uncommon.

#### A1.4.1 Declining

*This conservation status replaces Chronically Threatened – Serious Decline and Chronically Threatened – Gradual Decline of Molloy et al. (2002).*

- Moderate to large population that is forecast to decline 10–30% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 5,000–20,000 mature individuals; or
  - The total area of occupancy is 100–1,000 ha (1–10 km$^2$); or
  - There are 6–15 sub-populations *and* 500–1,000 mature individuals in the largest sub-population
- Large population that is forecast to decline of 10–50% over the longer of 10 years or three generations (maximum 100 years)
  - The total populations size is 20,000–100,000 mature individuals; or
  - The total area of occupancy is 1,000–10,000 ha (10–100 km$^2$)
- Very large population that is forecast to decline 10–70% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is > 100,000 mature individuals; or
  - The total area of occupancy > 10,000 ha (100 km$^2$)

### A1.4.2 Uncommon

*This conservation status combines the conservations statuses At Risk – Naturally Uncommon and At Risk – Relict of Townsend et al. (2008), and replaces the conservation statuses At Risk – Range Restricted and At Risk – Sparse of Molloy et al. (2022).*

Any taxon with a distribution that is confined to a specific substrate (e.g. ultramafic rock), habitat (e.g. high alpine fellfields, hydrothermal vents) or geographic area (e.g. subantarctic islands, seamounts) or that occurs within small and widely scattered populations is classified as Uncommon.

The distribution may be natural or unnatural (i.e. the result of human-induced change) and populations may be stable or increasing.

- Naturally small population that is forecast to increase > 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–20,000 mature individuals; or
  - The total area of occupancy is 1–100,000 ha (0.01–1,000 $km^2$)
- Unnaturally small area of occupancy that is forecast to increase > 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total area of occupancy is 1,000–100,000 ha (10–1,000 $km^2$)
- Naturally small population that is forecast to remain stable ± 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–20,000 mature individuals; or
  - The total area of occupancy is 1–100,000 ha (0.01–1,000 $km^2$)
- Unnaturally small population that is forecast to remain stable ± 10% over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 250–20,000 mature individuals; or
  - The total area of occupancy is 100–100,000 ha (1–1,000 $km^2$)
- Naturally or unnaturally moderate to large population that has a small to moderate area of occupancy that is forecast to increase > 10% or remain stable over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is 20,000–100,000 mature individuals *and* the area of occupancy is < 100,000 ha (1,000 $km^2$); or
  - The total population size is > 100,000 mature individuals *and* the area of occupancy is < 100,000 ha (1,000 $km^2$)

  Minimum area of occupancy limits apply, which vary according to the state and trend of the population. If the area of occupancy is lower than the minimum limits listed below, the taxon should be classified as Threatened or At Risk – Recovering:
  - Natural, stable or increasing: minimum 1 ha (0.01 $km^2$); or
  - Unnatural, stable: minimum 100 ha (1 $km^2$); or
  - Unnatural, increasing: minimum 1,000 ha (10 $km^2$)
- Naturally or unnaturally small to moderate population that has a large area of occupancy that is forecast to remain stable over the longer of 10 years or three generations (maximum 100 years)
  - The total population size is < 20,000 mature individuals *and* the area of occupancy is > 100,000 ha (1,000 $km^2$)

  Minimum population size limits apply, which vary according to the state of the population. If the population size is lower than the minimum limits listed below, the taxon will be assessed as Threatened:
  - Natural: minimum 250 mature individuals; or
  - Unnatural: minimum 5,000 mature individuals

### A1.4.3 Recovering

- Moderate to large population that has (or may have) experienced a previous decline (within the last 1,000 years) and that is forecast to increase by ≥ 10% over the longest of the next 10 years or three generations (maximum 100 years)
  - The total population size is 5,000–20,000 mature individuals; or
  - The total area of occupancy is 100–1,000 ha (1–10 $km^2$); or
  - There are 6-15 sub-populations *and* 500–1,000 mature individuals in the largest sub-population.

## A1.5 Not Threatened

- Naturally or unnaturally large population that is forecast to increase > 10% or remain stable ± 10% over the longer of 10 years or three generations (maximum 100 years)
  – The total population size is greater than 20,000 mature individuals; *and*
  – The total area of occupancy is greater than 100,000 ha (1,000 $km^2$)

## A1.6 Non-Resident Native

Taxa whose natural presence in Aotearoa 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).

### A1.6.1 Migrant

Taxa that predictably and cyclically visit Aotearoa 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.

### A1.6.2 Vagrant

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

## A1.7 Introduced and Naturalised

Taxa that have become naturalised in the wild after being deliberately or accidentally introduced into Aotearoa New Zealand by human agency. To be considered naturalised, a taxon must have established a self-sustaining population in the wild over at least three generations and must have spread beyond the site of initial establishment.

# Appendix 2: National qualifiers (reproduced from Rolfe et. al., 2022)

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.

## A2.1 Assessment process qualifiers

### A2.1.1 Data Poor: Recognition (DPR)

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.

### A2.1.2 Data Poor: Size (DPS)

The Data Poor: Size qualifier indicates that confidence in the assessment is low because of a lack of data on population size.

### A2.1.3 Data Poor: Trend (DPT)

The Data Poor: Trend qualifier indicates that confidence in the assessment is low because of a lack of data on population trend.

### A2.1.4 Designated (De)

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.

## A2.2 Biological attribute qualifiers

### A2.2.1 Biologically Sparse (Sp)

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.

### A2.2.2 Island Endemic (IE)

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).

### A2.2.3 Natural State (NS)

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.

### A2.2.4 Range Restricted (RR)

A taxon that is naturally confined to a specific substrate or habitat or a geographic area of less than 100,000 ha (1000 $km^2$) 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).

## A2.3 Pressure management qualifiers

### A2.3.1 Conservation Dependent (CD)

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.

### A2.3.2 Climate Impact (CI)

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?
  - 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.
  - If YES, the Climate Impact qualifier is given.
- Is the taxon adversely affected by extreme climate events, such as a drought, storms or heatwaves?
  - 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.
  - 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.
Additional questions that can be used to analyse climate impacts are provided in Appendix 2.

### A2.3.3 Conservation Research Needed (CR)

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.

### A2.3.4 Population Fragmentation (PF)

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.

### A2.3.5 Recruitment Failure (RF)

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.

## A2.4 Population trend qualifiers

### A2.4.1 Extinct in the Wild (EW)

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

### A2.4.2 Extreme Fluctuations (EF)

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.

### A2.4.3 Increasing (Inc)

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.

### A2.4.4 Partial Decline (PD)

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.

### A2.4.5 Possibly Extinct (PE)

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.

## A2.5 Population state qualifiers

### A2.5.1 Naturalised Overseas (NO)

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.

### A2.5.2 One Location (OL)

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 $km^2$), 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.

### A2.5.3 Relict (Rel)

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 range but has stabilised.

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.

### A2.5.4 Secure Overseas (SO)

The Secure Overseas qualifier is used when a taxon is secure in the parts of its natural range outside New Zealand.

### A2.5.5 Secure Overseas? (SO?)

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*.

### A2.5.6 Secure? Overseas (S?O)

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*.

### A2.5.7 Threatened Overseas (TO)

The Threatened Overseas qualifier is used when the taxon is threatened in the parts of its natural range outside New Zealand.

### A2.5.8 Threatened Overseas? (TO?)

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.

### A2.5.9 Threatened? Overseas (T?O)

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: Regional qualifiers (reproduced from Crisp et al., 2026)

Additional qualifiers were developed to provide context about the regional occurrences of taxa.

## A3.1 BNS Benchmarked against national status

The regional data for population size/area of occupancy and trend indicates that the taxon has a less threatened conservation status than its national status.

## A3.2 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.

## A3.3 FR Former Resident

Breeding population (existed for more than 50 years) extirpated from region but continues to arrive as a regional vagrant or migrant.

## A3.4 IN Introduced Native

The taxon was introduced to the region, though not known to have previously occurred in it.

## A3.5 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.

## A3.6 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.

## A3.7 NStr National Stronghold

More than 20% of the national population breed or are resident for more than half their life cycle in the region.

## A3.8 PR Population Reinforcement

Translocations from other regions have occurred to boost the population numbers of the taxon.

## A3.9 RC Regional Coloniser

Taxa that have arrived in the region without human assistance and have been successfully breeding in the wild since 1950.

## A3.10 RE Regional Endemic

Taxa known to breed only in the region.

## A3.11 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 don't breed in the region.

## A3.12 RN Reintroduction

Taxa that have been reintroduced to the region after having previously gone extinct there.

## A3.13 RV Regional Vagrant

New Zealand native taxa that have sporadic or transitory occurrences in the region with fewer than 15 individuals visiting per annum.

## A3.14 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.

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

*Taking action together to shape a thriving and resilient Canterbury, now and for future generations.*

*Toitū te marae o Tāne, toitū te marae o Tangaroa, toitū te iwi.*

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