UNDER The Resource Management Act 1991

IN THE MATTER of the Proposed Otago Regional Policy Statement 2021

STATEMENT OF EVIDENCE OF SCOTT WILLIAM JARVIE

Dated 20 September 2022

ROSS DOWLING MARQUET GRIFFIN
SOLICITORS
DUNEDIN

Telephone: (03) 477 8046
Facsimile: (03) 477 6998
PO Box 1144, DX YP80015

Solicitor: A J Logan

STATEMENT OF EVIDENCE OF SCOTT WILLIAM JARVIE

Qualifications and Experience

1 My full name is Scott William Jarvie.

2 I have a BPE (Physical Education) from Auckland College of Education (2003), and a PGDipWLM (Wildlife Management) (2013) and PhD (Zoology) (2017) from the University of Otago.

3 I am a Biodiversity Scientist at the Otago Regional Council, where I have worked since December 2020.

4 Prior to working at the Otago Regional Council, I was a Postdoctoral Research Fellow at Aarhus University, Denmark, from December 2017 to December 2020.

5 I have published 29 scientific papers in peer-reviewed national and international scientific journals and bulletins. My research has focused on reintroduction biology of rare and threatened species, impacts of climate change on species, ecosystem restoration, and biogeographical and macroecological patterns (including using information contained in national and international threat classification assessments). I continue to remain active in research by publishing scientific papers in collaboration with other scientists in Aotearoa New Zealand and overseas.

6 My research has been presented at over 25 national and international conferences. I have lectured on rare and threatened species at universities in Aotearoa New Zealand and Denmark.

7 I am a member of the Society for Research on Amphibians and Reptiles in New Zealand (including currently being the Treasurer and a Council Member), the New Zealand Ecological Society, the Ornithological Society of New Zealand, the Botanical Society of Otago, the Entomological Society of New Zealand, the New Zealand Plant Conservation Network, and the Royal Forest and Bird Protection Society of New Zealand.

8 I have 18 years of experience with conservation and restoration of indigenous biodiversity in Aotearoa New Zealand. I have extensive experience working and

volunteering in remote locations (e.g., Stewart Island/Rakiura, Fiordland National Park, Raoul Island, Antipodes Island), including with threatened species across taxonomic groups (birds, mammals, plants, reptiles).

9 Since 2011, I have been involved with conservation and restoration of indigenous biodiversity in the Otago region. I provide ecological advice to Orokonui Ecosanctuary/Te Korowai o Mihiwaka, near Dunedin, as a committee member of the Orokonui Knowledge Group. I have assisted with conservation translocations and monitoring of rare and threatened species at Orokonui Ecosanctuary/Te Korowai o Mihiwaka. I have also assisted with conservation translocations, salvage operations of threatened populations, and monitoring of threatened species in the Otago region.

10 In my role as a Biodiversity Scientist at the Otago Regional Council, I routinely use the national threat classification system assessments for species. I am very familiar with the national threat classification system.

Code of Conduct

11 I have read and agree to comply with the Environment Court's Code of Conduct for Expert Witnesses, contained in the Environment Court Practice Note 2014. I have complied with the code in preparing my evidence. Other than where I state that I am relying on the advice of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Scope of Evidence

12 I was asked by Melanie Hardiman in the Policy Team of Otago Regional Council to provide advice on ECO-O1 as notified in the proposed Otago Regional Policy Statement 2021 ("pORPS 21").

13 The wording in the notified pORPS 21 of ECO-O1 – Indigenous *biodiversity* was:

"*Otago's indigenous biodiversity is healthy and thriving and any decline in quality, quantity and diversity is halted.*"

14 The Director-General of Conservation's submission on ECO-O1 sought four new clauses be incorporated into the objective. I was asked to comment on the following two clauses which relate to threatened species:

- there is no worsening of the threat classification of indigenous threatened species in Otago;
- In the term of the RPS the threat classification of threatened species in Otago will be improved.

Specifically, I was asked: "*Does the existing wording of ECO-O1 adequately apply to threatened species?*"

15 My Statement of Evidence addresses:

- the memorandum I produced for the Otago Regional Council with Ciaran Sewell Merrick Campbell, a Freshwater Ecologist at the Otago Regional Council;
- an overview of the term *biological diversity* (biodiversity) in the RMA;
- an overview of threat classifications for species widely used in Aotearoa New Zealand; and
- an overview of why the term indigenous biodiversity applies to threatened species.

16 In preparing this evidence, I have read and considered several documents, all of which are cited where relevant in the text below.

Executive Summary

17 The use of the term indigenous biodiversity in ECO-O1 does apply to threatened species in Otago, because threatened species are a subset of indigenous biodiversity.

18 The two clauses on threat classifications of species sought by the Director-General of Conservation are not desirable for ECO-O1.

Report

19 I, together with Ciaran Sewell Merrick Campbell, prepared a memorandum entitled "*Ecological advice on threatened species for pORPS21 ECO—O1*" dated 9 February 2022. I attach this memorandum as Appendix A to this Statement of Evidence.

20 I use the term '*species*' to be consistent with the Director-General of Conservation submission. I note that that usage of '*species*' by the Director-General of Conservation appears to be synonymous with the term '*taxa*' in the New Zealand Threat Classification System (NZTCS) when referring to Aotearoa New Zealand's

species, subspecies, varieties, and forms, regardless of formal taxonomic status[1]. The NZTCS is administered by the Department of Conservation – Te Papa Atawhai (DOC) to assess the threat status of Aotearoa New Zealand's species. The International Union for Conservation of Nature (IUCN) Red List of Threatened Species is similar to the NZTCS but shows trends in extinction risk for species globally. Taxa included on the IUCN Red List include global assessments for species, subspecies, varieties (only for plants), and geographically separate subpopulations. There can be discrepancies between species listed in the NZTCS and IUCN, with the NZTCS being more comprehensive for indigenous species in Aotearoa New Zealand.

Indigenous Biodiversity

21 The Resource Management Act 1991 (RMA) defines biological diversity as

> *the variability among living organisms, and the ecological complexes of which they are part, including diversity within species, between species, and of ecosystems*[2].

The term "*biodiversity*" is derived from "*biological diversity*"; and in practice the two terms are used synonymously. While the RMA does mention *"indigenous biological diversity"*, the term for indigenous is not defined in Act. "*Indigenous*" is commonly referred to as native to a particular area or region.

Tools widely used in Aotearoa New Zealand to assess the threat status of species

22 The NZTCS is the most used tool to assess the risk of population decline and extinction risk of biota (flora and fauna) found in the wild in Aotearoa New Zealand. The NZTCS was produced in 2001 by DOC and external conservation scientists to complement the IUCN Red List of Threatened Species[3]. The NZTCS follows a DOC-led process where experts assign a threat of extinction status at the national scale for Indigenous (Native) and Introduced and Naturalised species.

23 The IUCN Red List system shows trends in extinction risk for species globally, with assessments carried out by members of the IUCN Species Survival

[1] Townsend AJ, de Lange PJ, Duffy CAJ, Miskelly CM, Molloy J, Norton DA 2007. New Zealand Threat Classification System manual. Department of Conservation, Wellington. 35 p.
[2] Resource Management Act 1991
[3] Molloy J, Bell B, Clout M, de Lange P, Gibbs G, Given D, Norton D, Smith N, Stephens T 2002. Classifying species according to threat of extinction. A system for New Zealand. Threatened Species Occasional Publication 22. Department of Conservation, Wellington. 26 p.

Commission, appointed Red List Authorities, Red List Partners, specialists working on IUCN-led assessment projects, or anyone who has sufficient knowledge of a species and submitted to IUCN for consideration.

24 The categories and criteria of the NZTCS bear some resemblance to those of the IUCN system but differ in that they consider the relatively small size of Aotearoa New Zealand, the period over which recent declines have occurred, and the large number of species with naturally restricted ranges and small populations sizes.

25 The NZTCS methodology was refined in 2007 with the resulting manual published in 2008[4]. Additional changes have been made to the NZTCS with alterations to categories, criteria, and qualifiers proposed in a technical review in 2018–2019[5] and published in 2021[6,7]. Species are currently classified in the NZTCS into the conservation statuses of Extinct, Data Deficient, Nationally Critical, Nationally Endangered, Nationally Vulnerable, Nationally Increasing, Declining, Recovering, Naturally Uncommon, Not Threatened, Vagrant, Migrant, Coloniser, and Introduced and Naturalised. In the NZTCS, the 'threatened' category, as of 2021, includes the four conservation statuses of Nationally Critical, Nationally Endangered, Nationally Vulnerable, Nationally Increasing. The species assessed in the IUCN Red List are currently divided into the nine categories of Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Near Threatened, Least Concern, Data Deficient, and Not Evaluated. There are three 'threatened' categories in the IUCN Red List, namely Critically Endangered, Endangered and Vulnerable. Consequently, threatened species in both the NZTCS and IUCN threat classifications are a subset of the total number of species assessed.

26 ECO-O1 applies to threatened species. Threatened indigenous species are a subset of indigenous biodiversity.

[4] Townsend AJ, de Lange PJ, Duffy CAJ, Miskelly CM, Molloy J, Norton DA 2008. New Zealand Threat Classification System manual. Department of Conservation, Wellington. 35 p.
[5] Rolfe JR 2019. Decisions from 2019 technical review of NZTCS. Unpublished Department of Conservation file DOC-5890296.
[6] Rolfe J, Makan T, Tait A 2021. Supplement to the New Zealand Threat Classification System manual 2008: new qualifiers and amendments to qualifier definitions, 2021. Department of Conservation, Wellington. 7 p.
[7] Michel P 2021. Amendment to the New Zealand Threat Classification System manual 2008: revised categories 2021. Department of Conservation, Wellington. 5 p.

Additional clauses for ECO-O1

27 I now discuss reasons why the Director-General of Conservation's submission to incorporate the two clauses referencing changes to threat classification are not desirable for ECO-O1.

28 The threat status for each species in the two threat classifications widely used in Aotearoa New Zealand are assessed at a national scale in the NZTCS, or for a species global range in the IUCN Red List. For species whose indigenous range include Otago and extend beyond the region's boundary, a change in threat classification may occur due to an improvement, such as from conservation measures, or conversely from worsening of extinction risk, such as from increased threats which are not necessarily related to the Otago region. This means the threat status for indigenous species in Otago may not depend on what happens in Otago.

29 The threat status of a species is also subject to change through amendments and/or versions in the two threat classifications widely used in Aotearoa New Zealand. For example, the NZTCS[8] was revised in 2007[9], with new qualifiers and amendments to qualifier definitions[10] and revised categories[11] to the process in 2021. There have also been several versions of the IUCN Red List, dating from 1991, including Version 1.0 (1991), Version 2.0 (1992), Version 2.1 (1993), Version 2.2 (1994), Version 2.3 (1994), Version 3.0 (1999), and Version 3.1 (2001), although all new IUCN assessments since 2001 have used version 3.1 of the categories and criteria. Changes to threat classification may therefore not necessarily reflect changes to the threat of extinction a species faces, rather a new process is being followed by the expert panel for the NZTCS or the assessors for the IUCN Red List. This means that changes in threat classification may not depend on what happens in Otago.

30 The threat status of a species in threat classifications may be affected by taxonomic revisions. Along with new species being added to threat classifications, existing species regularly undergo taxonomic revisions. For

[8] Molloy J, Bell B, Clout M, de Lange P, Gibbs G, Given D, Norton D, Smith N, Stephens T 2002. Classifying species according to threat of extinction. A system for New Zealand. Threatened Species Occasional Publication 22. Department of Conservation, Wellington. 26 p.
[9] Townsend AJ, de Lange PJ, Duffy CAJ, Miskelly CM, Molloy J, Norton DA 2008. New Zealand Threat Classification System manual. Department of Conservation, Wellington. 35 p.
[10] Rolfe J, Makan T, Tait A 2021. Supplement to the New Zealand Threat Classification System manual 2008: new qualifiers and amendments to qualifier definitions, 2021. Department of Conservation, Wellington. 7 p.
[11] Michel P 2021. Amendment to the New Zealand Threat Classification System manual 2008: revised categories 2021. Department of Conservation, Wellington. 5 p.

example, a particular species could be split into several species each with smaller ranges, population sizes, etc., or it could be merged with other species so the range, population size, etc. are now larger than they were previously. In the latest reassessment for reptiles in the NZTCS, a total of 13 of the 18 species (72.2%) assessed for the time were split due to taxonomic revisions or a re-examination of the type specimen, rather than being new discoveries (5 of the 18 species; 27.8%)[12]. Such revisions could affect threat statuses of species in Otago.

31 The advice provided in the memorandum entitled "*Ecological advice on threatened species for pORPS21 ECO-O1*" indicated our points were not an exhaustive list of why national threat classifications are not appropriate for ECO-O1. An additional example is below:

32 Threat assessments for each taxonomic group in the NZTCS and for each species in the IUCN Red List are planned for regular intervals. The NZTCS was initially planned to be updated every 3 years[13], although information on the DOC website now states panels of experts assess the status of each species group over a 5-year cycle[14]. However, for many species groups, expert panels meet at longer intervals. For example, for the species group Fungi, the first assessment was in 2005, with the report published in 2007. The next reassessment for Fungi was 15 years later in 2020 according to the New Zealand Threat Classification System website[15], with publication currently "*In press*" as of September 20, 2022. For the IUCN Red List threat classification, the Rules of Procedure recommend species be reassessed at least once every ten years, or preferably once every five years[16]. Like the NZTCS, reassessments for the IUCN Red List are often at longer intervals. For example, for assessments of reptiles completed between 1996 and 2020, 1503 of the 9820 species with assessments were completed before 2011, thus 15% were considered outdated. With long and potentially irregular intervals between reassessments, updates to threat status for species may not correspond to the duration of the RPS.

[12] Hitchmough RA, Barr B, Knox C, Lettink M, Monks JM, Patterson GB, Reardon JT, van Winkel D, Rolfe J, Michel P 2021. Conservation status of New Zealand reptiles, 2021. New Zealand Threat Classification Series 35. Department of Conservation, Wellington. 15 p.
[13] Townsend AJ, de Lange PJ, Duffy CAJ, Miskelly CM, Molloy J, Norton DA 2007. New Zealand Threat Classification System manual. Department of Conservation, Wellington. 35 p.
[14] Department of Conservation – New Zealand Threat Classification Series website
[15] New Zealand Threat Classification website
[16] IUCN 2016. Rules of Procedure for IUCN Red List Assessment 2017 – 2020. Version 3.0. Approved by the IUCN SSC Steering Committee in September 2016. 37 p.

Scott William Jarvie

20 September 2022

Date