STATEMENT OF JOHN FENTON COCKREM

Dated 4 August 2024

Introduction

1 My name is John Fenton Cockrem.

2 I hold a BSc (Hons) from Massey University and a PhD from the University of Bristol.

3 I am a Director of Kororā Ornithology Ltd and also hold a Professor Emeritus position at Massey University, Palmerston North. The current evidence is presented in my capacity as an independent ecologist.

4 I have more than 40 years of experience in research and field studies with animals in all vertebrate groups in a wide range of habitats, in particular birds in Aotearoa. I have published 118 refereed journal articles, two e-books, and six refereed book chapters, and have more than 170 other publications.

5 Written and oral evidence has been provided at hearings of the Environmental Protection Authority, the High Court, and the Environment Court, and for resource consent applications.

6 I have worked with Ngāi Te Rangi in the Tauranga region and with Ngāti Toa Rangatira in the Wellington region on projects funded by the Vision Mātauranga Capability Fund of the Ministry of Business, Innovation and Employment.

7 Further details of my qualifications and experience are provided in Appendix 1.

Scope of evidence

a) Classification of the Northland brown kiwi (*Apteryx mantelli*)
b) Northland brown kiwi habitat, foraging behaviour and diet
c) Threats to Northland brown kiwi

Classification of the Northland brown kiwi (*Apteryx mantelli*)

8 The North Island brown kiwi is one of five species of kiwi. There are four geographical forms based on genetic differences (four taxa) recognised for the North Island brown kiwi (Colbourne *et al.*, 2020). These forms are the Northland, Coromandel, Eastern and Western brown kiwi. The Northland brown kiwi is slightly larger and heavier than the other brown kiwi taxa, and differs in its genetic makeup, behaviour and ecology (Craig *et al.*, 2011).

Northland brown kiwi habitat, foraging behaviour and diet

9 Northland brown kiwi habitat includes damp gullies in indigenous and plantation forest, dense shrubland, wetlands, gorse-dominant shrubland, and pasture (Craig *et al.*, 2011). Northland brown kiwi are nocturnal, and generally have multiple daytime shelters within their territory. Shelters can be burrows, fallen nīkau fronds, hollow logs, and dense vegetation (McLennan *et al.*, 1987; Taborsky and Taborsky, 1995).

10 Kiwi diet predominantly consists of invertebrates such as insect larvae, wēta, crickets, centipedes, moths and earthworms (Dixon, 2015; Kleinpaste and Colbourne, 1983). Northland brown kiwi forage in pasture[1][2][3] (Cunningham and Castro, 2011; Dixon, 2015), and may roost during the day in pasture[4] (Fraser *et al.*, 2023).

11 Cunningham and Castro (2011) found prey capture rates to be significantly higher in pasture than forest, suggesting a greater availability of prey in pasture than forest. This was confirmed by Dixon (2015) who found that invertebrate abundance was consistently higher in pasture than forest, scrub or swamp habitats. Invertebrate abundance varied seasonally, with seasonal changes in abundance greater in pasture than in other habitats. Invertebrate abundance in pasture was markedly higher in January, February, and March than in other months. Surface invertebrates in pasture, including

[1] https://www.doc.govt.nz/nature/native-animals/birds/birds-a-z/kiwi/brown-kiwi/
[2] https://www.backyardkiwi.org.nz/useful-information/faqs
[3] https://kiwicoast.org.nz/farmers-respond-to-call-of-kiwi/
[4] https://kiwicoast.org.nz/self-isolating-kiwi-burrows-vs-nests/kiwi-burrow-in-middle-of-paddock-rolf-feb-2016/

Scarabaeidae (grass grub) adults and field crickets, were a greater proportion of the kiwi diet in summer than in other seasons, indicating that pasture was seasonally important for kiwi feeding (Dixon, 2015).

Threats to Northland brown kiwi

12 The main threats to Northland brown kiwi are habitat loss and predation by introduced mammals, especially dogs, ferrets, stoats, and cats. Kiwi in Northland are also vulnerable to other threats including vehicle strikes, capture in possum traps (if set on the ground), and falling into water troughs (Department of Conservation, 2018)

13 Predation by dogs has been identified as the largest issue for Northland brown kiwi (Colbourne *et al.*, 2020; Craig *et al.*, 2011; Germano *et al.*, 2018), especially in areas where kiwi habitat overlaps with or is close to human populations. There are frequent reports of kiwi killed by dogs in Northland[5][6].

14 The Department of Conservation's Taxon Plan for Northland Brown Kiwi (Craig *et al.*, 2011) reported that:

> "habitat loss and predation by introduced mammalian predators - in particular dogs (*Canis familiaris*), stoats (*Mustela erminea*), cats (*Felis catus*), and ferrets (*Mustela putorius*) - remain ongoing threats to kiwi recovery. In Northland, predation remains the primary cause of decline in all unmanaged populations (Pierce et al. 2006)."
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> "All dogs are a threat to kiwi, regardless of breed, temperament, and training. The most effective way of preventing a dog from attacking a kiwi is to ensure it never comes into contact with kiwi, and the easiest way to achieve this is to keep dogs out of kiwi habitat at all times."

[5] Dogs number one predator of Northland brown kiwi. 27 February 2021. https://www.rnz.co.nz/news/national/437296/dogs-number-one-predator-of-northland-brown-kiwi
[6] Sharp increase in number of kiwi killed by dogs in Bay of Islands, data shows. 19 September 2023. https://www.rnz.co.nz/news/national/498314/sharp-increase-in-number-of-kiwi-killed-by-dogs-in-bay-of-islands-data-shows

> "Dogs are currently the single biggest threat facing Northland kiwi, surpassing even the impact of unmanaged stoat populations (Miller & Pierce 1995; Hugh Robertson, unpubl. data). Dogs can cause massive and rapid localised reductions in kiwi populations, and are able to kill kiwi at all life stages. Their being able to kill adults is of particular concern, as the loss of adults greatly reduces population recruitment. At present, it is domestic (pet, farm or hunting) dogs that are responsible for kiwi deaths."

15 Dogs of all sizes, breeds and training are attracted to the smell of kiwi, and any dog can kill a kiwi (Department of Conservation, 2018). Kiwi deaths due to dogs are the main cause for the average kiwi life expectancy of 14 years in Northland compared with life expectancies of 30 to 40 years elsewhere in the North Island (Germano *et al.*, 2018).

16 The greatest mortality of kiwi ascribed to a single dog occurred in Waitangi State Forest in 1987, with an estimated 500 kiwi killed over several months (Taborsky, 1988). Kiwi had been killed but not eaten and it was suggested that the dog could have killed up to 10 to 15 kiwi each night.

17 Prolonged droughts reduce foraging opportunities for kiwi, and periods of drought in 2019 and 2020 may have caused an increase in mortality of Northland brown kiwi (Craig, 2021).

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Appendix 1

John Cockrem qualifications and experience

18 I hold a BSc (Hons) from Massey University and a PhD from the University of Bristol.

19 I am a Director of Kororā Ornithology Ltd and also hold a Professor Emeritus position at Massey University, Palmerston North. The current evidence is presented in my capacity as an independent ecologist.

20 I have more than 40 years of experience in research and field studies with animals in all vertebrate groups in a wide range of habitats, in particular birds in Aotearoa. In recent years I have conducted field studies of breeding and foraging ecology, and habitat enhancement, for kororā (little penguins).

21 I have worked with Ngāi Te Rangi in the Tauranga region and with Ngāti Toa Rangatira in the Wellington region on projects funded by the Vision Mātauranga Capability Fund of the Ministry of Business, Innovation and Employment. Other work has included reviews of published studies and the provision of expert advice relating to adverse effects of dogs on native birds.

22 Written and oral evidence has been provided at hearings of the Environmental Protection Authority, the High Court, and the Environment Court, and for resource consent applications.

23 Avian management plans have been written and implemented for coastal construction projects in the Hawkes Bay, Wellington, Tasman, and Golden Bay regions. I wrote and oversaw the implementation of a marine mammal plan for a construction project at Port Tarakohe in Golden Bay.

24 I have worked on-site with construction teams for projects in the Hawkes Bay, Tasman Bay, and Golden Bay. For example, I designed and built the kororā

sanctuary at Napier Port which is the leading example in the country for the transformation of an industrial site into breeding habitat for birds.

25 I have published 118 refereed journal articles, two e-books, and six refereed book chapters, and have more than 170 other publications. I have more than 5200 citations in Google Scholar, with 10 papers that have more than 100 citations. My most highly cited first author paper has 521 citations in Google Scholar. I have given 110 seminars and invited lectures, and 37 community talks to a wide range of groups.

26 Elsevier is one of top five international academic publishing companies. Elsevier has a database of citation scores calculated from Scopus records for publications over the last 200 years. Citation scores "focus on impact (citations) rather than productivity (number of publications) and also incorporate information on co-authorship and author positions".

27 The Elsevier citation scores indicate the impact of each scientist on their research field. My citation score is in the top 1% of the more than 9 million scientists in the database.

28 I have been a visiting scientist in the United Kingdom, Sweden, Japan, and the United States. International consultancy work has been performed for the United States Navy Office of Naval Research and for the National Commission for Wildlife Conservation and Development in Saudi Arabia. National consultancy work has been performed for the Ministry of Primary Industries and the Department of Conservation.

29 Invited plenary lectures, conference papers and lectures have been given in New Zealand and in 20 other countries.

30 Awards and distinctions that I have received include:

- 2022 Massey University Research Medal for Exceptional Research Citizenship (Whaowhia Ngā Kete o Te Wānanga

- I was elected as an Honorary Fellow of the American Ornithologists' Union (AOU) in 2011. The membership category of Honorary Fellow of the AOU is defined as: "Honorary Fellows shall be limited to 100. They shall be chosen for exceptional ornithological eminence and must at the time of their election be residents of a country other than the United States or Canada".
- In 2010 I was elected as a member of the Executive Committee of the International Ornithologists' Union (IOU). The nomination letter from the President of the IOU stated: "Your election was based on the nomination and recommendation of the Past-President of the IOU, on the excellence of your scientific work, and on your involvement in promoting ornithology".

31 I am a Trustee of the Mohua Golden Bay Penguin Trust and am the Patron of the Tasman Bay Blue Penguin Trust.

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