

Optimising non-invasive faecal sampling for assessing kororā (*Eudyptula minor*) health: Enhancing long-term management strategies at the Pōhatu/Flea Bay Colony, Horomaka, Banks Peninsula

Lucy Howell¹ (lucy.howell@pg.canterbury.ac.nz), Rachel Hickcox², Elissa Cameron¹, Tammy Steeves¹

¹Te Kura Pūtaiao Koiora | School of Biological Sciences, Te Whare Wānanga o Waitaha | The University of Canterbury

²Helps Pōhatu Conservation Trust

Kororā (*Eudyptula minor*) are listed as At Risk – Declining under New Zealand’s Threat Classification System, yet only a small proportion of global research has focused on New Zealand populations. The white-flipped morphotype, found primarily in Canterbury, was recently identified as highly vulnerable to climate change in a national climate risk assessment. Pōhatu/Flea Bay, on Banks Peninsula, is home to one of the largest mainland colonies of kororā in Aotearoa, thanks to decades of conservation work by the Helps family. Despite this, the colony has experienced recent declines in active nests, and the 2022/23 breeding season saw high chick mortality and widespread nest abandonment. These events have raised concerns about local food availability and colony resilience. The last study on diet at this site was conducted fifteen years ago, and updated data, collected through non-invasive approaches, is now needed to understand the current pressures faced by the colony.

Thanks to support from the David Medway Scholarship and Birds New Zealand, this PhD research will investigate the diet of the Pōhatu kororā colony across three breeding seasons, 2022/23, 2023/24, and 2024/25, and explore how diet relates to overall colony health. The study forms part of a broader programme of collaborative research and monitoring underway at Pōhatu. With this work we aim to shed light on changes in local marine ecosystems and highlight any warning signs for future breeding seasons. Using DNA metabarcoding of faecal samples, collected during weekly monitoring by the Helps Pōhatu Conservation Trust, volunteers, and students, we will identify key prey species, examine gut microbiome composition, and track changes over time. By pairing genetic methods with ongoing breeding records from the monitoring programme, we can explore relationships between diet, microbiome, the timing of breeding, and fledging success across seasons. The results will support the development of non-invasive tools for long-term monitoring. This work will provide an updated picture of dietary patterns and local ecosystem conditions, helping to inform future conservation planning at the colony.



Kororā. Photo credit: Lucy Howell