

## Quantifying Whenua Hou Diving Petrel recruitment

The Critically Endangered Whenua Hou Diving Petrel (WHDP) is one of the most threatened birds on the planet. The WHDP was once widespread in southern Aotearoa, but following local extirpations due to invasive predators, only one colony (194-208 adults) remains in the dunes of predator-free Whenua Hou. Threats inhibiting recovery of the WHDP have been identified: erosion of their breeding habitat, caused by storms and climate change. While threats have been identified, the applicability of conservation actions, such as translocations, are yet to be assessed. Before the impact and success of such actions can be assessed, WHDP population dynamics need to be quantified. I have compiled historic WHDP data, but this data is of varying quality. As such, I have increased monitoring intensity. Despite all this, only 12 WHDPs banded as chicks have been recaptured as returning adults. These chicks have returned to the colony at ages 1-4 years. The low sample size on returning banded chicks has limited insights into juvenile survival, age-at-first-return, and subsequently (age-dependent) recruitment into the adult WHDP population. A poor understanding of this key parameter results in a poor understanding of overall population dynamics and renders assessments of future conservation measures challenging. In 2020/21, I aim to: 1) Quantify WHDP recruitment, 2) Improve existing population models, 3) Estimating impact and success of a WHDP translocation.

In 2020/21, I will, together with local iwi members, travel to Whenua Hou during two field stints to I) recapture WHDPs that were banded as chicks and are returning as adults to estimate recruitment and age-at-first-return and II) recapture >50% of the banded adult population to further estimate adult survival. The proposed field work will result in a drastic improvement of data quality, even with the intensive monitoring in previous years, as 2020/21 is the first season in which a very large portion (>70%) of WHDPs banded as chicks are expected to return as adults. Once further data on age-at-first-return and juvenile survival has been collected, I will expand the existing population models to include age-dependent recruitment. I will then use these expanded models to simulate the impact of “harvesting” WHDP chicks on the source colony (Whenua Hou), as well as the likelihood of success of a WHDP translocation (i.e., establishment of the recipient colony). By covering transport and accommodation costs associated with two trips to Whenua Hou, the Birds NZ Research Fund 2020 will make a major contribution to ensuring the continued existence of this Critically Endangered endemic.



*Banded Whenua Hou Diving Petrel. Credit: Eric Vanderwerf.*