

Exploring plastic ingestion by Toanui on Ohinau

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Plastic pollution affects a diverse array of animals globally including seabirds. Seabirds can be affected by plastic where they can become entangled in it or ingest it leading to mortality. Seabirds have highly developed sensory systems allowing them to carry out behaviors such as foraging and finding their mates in crowded colonies. Previous research suggests that plastics in the ocean emit similar chemical odours to the seabird's foraging source, mistaking the odours of the plastic with a foraging benefit. There has been some studies which research the plastic colour ingested in seabirds, however there are few studies which explore how the seabird perceives the colour of the plastic, and whether it looks like the colour of prey.

Our study species was the Toanui/flesh-footed shearwater, *Ardenna carneipes*, a native New Zealand seabird which breeds predominantly across New Zealand's north island. Previous research in Australia as well as on Ohinau Island, with work by Wildlife Management International Limited (WMIL), found that many Toanui have been ingesting and regurgitating pieces of plastic. The aims of this project were to quantify plastic ingestion and colour preferences of Toanui on Ohinau Island and to explore if the plastic colour resembles the colour of prey items.

In 2022 and January 2023, any plastics regurgitated by Toanui or found across Ohinau were collected and categorised into seven different plastic colour categories (white/clear, red, blue, green, brown, yellow/gold and black). Using an ocean optics spectrometer, we measured the spectral reflectance of the plastics and prey items including an arrow squid, an Atlantic salmonid, a New Zealand sprat and crustacea. These spectral reflectance were modelled into the vision of a wedge-tailed shearwater to see how visually different the plastics looked compared to the seabird's prey.

Only white, blue, red and green plastics were found on Ohinau. White plastic was the most abundant colour. White plastics looked the most similar to the prey which could explain why white plastic was more abundant. However, green plastic also looked similar to prey but was not as abundant. Other factors could also be influencing seabird plastic ingestion such as plastic shape, and size.

We would like to thank the BirdsNZ Research Fund for funding the charter boat to go to Ohinau and collect extra plastics. This helps provide valuable research on plastic colour preference in Toanui and exploring plastic ingestion from the seabird's sensory perspective, an understudied topic.

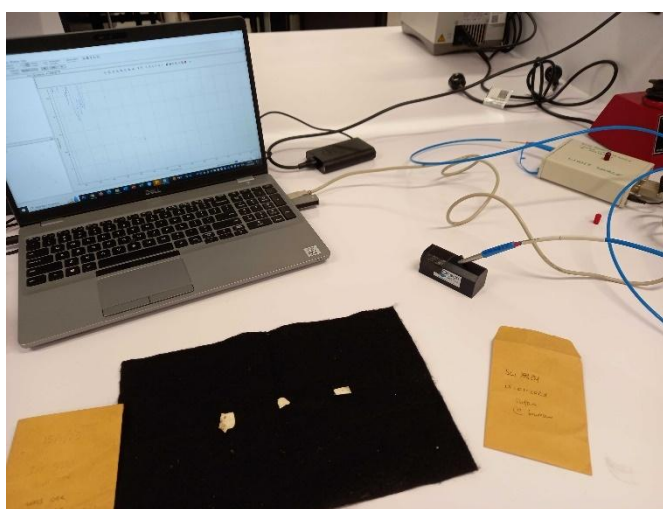


Image 1: Measuring the spectral reflectance of plastics obtained from Ohinau.