

David Medway Memorial Scholarship: OSNZ – Brief Article

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Given that 29% of seabird species are threatened with extinction their protection is a global conservation priority. Seabird conservation efforts, such as the removal of predators from islands, have contributed to many seabird conservation successes. However, a major challenge in evaluating these actions and achieving long-term conservation and research objectives for seabirds is a lack of monitoring capacity, due to resource limitations and the remoteness of many seabird islands.

Seabirds deposit marine derived nutrients to their terrestrial breeding grounds, which affects the nutrient status, composition and structure of island plants. My research is investigating the use of remote sensing technology to monitor remote seabird colonies, using canopy spectral reflectance as a proxy for colony density. The structural and chemical constituents of plant tissues dictate how much light is absorbed and at what wavelength of the electromagnetic spectrum. Consequently, plant biochemical properties can be evaluated using multispectral sensors. I will be examining the relationship between seabird burrow density, canopy level nitrogen, and spectral reflectance of the canopy using a comparative analysis of islands in the Mercury group, with low numbers of seabirds to islands with high numbers of seabirds. Using these data I will be creating 3D models of the island, which will allow me to use spatial correlation statistical methods to investigate how topography, exposure and climatic variables may influence canopy spectral reflectance in relation to seabird burrow density.

Developing remote sensing methods for evaluating canopy nutrient content in relation to seabird nesting density means that monitoring seabird islands should become less labour-intensive, time consuming and expensive, but also be possible over larger spatial scales.

