

Divorce rates are stronger predictors of breeding success in little penguins compared to foraging behaviour and environmental factors

Matthew Simpson¹, Ashton Laura Dickerson², André Chiaradia³, Lloyd Davis⁴, and Richard Reina¹

¹Monash University

²Leibniz-Institute of Freshwater Ecology and Inland Fisheries in the Forschungsverbund Berlin eV

³Phillip Island Nature Parks

⁴University of Otago

September 03, 2024

Abstract

Factors affecting breeding success in seabirds result in indices that can be useful for predicting population reproductive output, without the need for invasive and intensive monitoring. Such factors include environmental conditions that affect prey availability and distribution, leading to variation in behaviours related to foraging effort, such as foraging trip duration. Further, social factors, such as divorce, may offer an opportunity for birds to seek a more suitable partner to enhance long-term reproductive success, but may negatively impact success in the short term. The relative importance of environmental, behavioural and social predictors on reproductive output is unclear, as these factors have seldom been examined in tandem. In this study, we investigated environmental factors at differing scales, alongside foraging trip duration and divorce rate, to examine the consequences on reproductive success over 13 breeding seasons in an inshore foraging seabird, the little penguin (*Eudyptula minor*). Population divorce rate proved to be the most useful predictor of reproductive success, with years of lower divorce associated with higher hatching and fledging success. Shorter foraging trip durations were associated with higher fledging success, but longer trips led to more successful hatching rates. After controlling for the effect of divorce, marine environmental conditions were not a strong predictor of breeding success in this study. Therefore, we propose that the divorce rate can be a powerful index and a valuable tool for predicting population level reproductive success for seabirds facing similar environmental and foraging pressures as little penguins.

Hosted file

Simpson-Dickerson et al_Divorce rates - 2024.docx available at <https://authorea.com/users/827257/articles/1221985-divorce-rates-are-stronger-predictors-of-breeding-success-in-little-penguins-compared-to-foraging-behaviour-and-environmental-factors>