

Quantifying the effect of bycatch mitigation efforts on the population dynamics of a long-lived seabird

Bycatch in commercial fisheries is a known threat to seabird populations worldwide. Recently, the implementation of simple bycatch mitigation measures such as bird-scaring lines, line weighting, and night setting have been shown to effectively eliminate this source of seabird mortality on individual vessels. While effective, adoption rates of seabird bycatch mitigation measures in high-risk fisheries remain generally low. To date, no analyses have demonstrated whether current levels of bycatch mitigation efforts have translated into population-level benefits for seabirds. In this study, we used long-term population count and mark-recapture data in an integrated population model to estimate the population trajectory and underlying demography of the Endangered Atlantic Yellow-nosed Albatross (*Thalassarche chlororhynchos*)—a species commonly killed in trawl and longline fisheries in the South Atlantic Ocean. We analyzed over 30 years of data from Gough Island, an important breeding area for this species, while accounting for unobservable birds at sea. We investigated the effects of fishing effort and bycatch mitigation adoption rates for high-risk fisheries (i.e., pelagic longline, demersal longline, and demersal trawl) in core foraging areas on juvenile and adult survival. Preliminary results suggest that there is insufficient evidence to show that the expected reductions in mortality in some fisheries have translated to increases in survival at the population level. Results also suggest that the population has remained relatively stable, despite large fluctuations in fishing effort in the South Atlantic. Our study provides an important framework that has applications for assessing the population-level impacts of bycatch mitigation efforts on seabird populations worldwide. Moreover, the results of this study motivate continued effort towards increasing the adoption rate of bycatch mitigation measures in South Atlantic fisheries.