

Understanding the speciation in yellow-nosed albatross using the at-sea distribution of the two species

As their names suggest, the Atlantic and Indian yellow-nosed albatrosses are found in two different ocean basins- the Atlantic and Indian Oceans. The two species have a lot of similarities including breeding on a limited number of remote, oceanic islands, large at-sea distributions, and epic voyages across the ocean. The two species are hard to differentiate based on appearances as they have few, subtle morphological differences. Both species are listed as endangered due to their limited number of breeding sites, and threats from introduced diseases and predators and fishing mortality. We used genetic markers to assess levels of diversity within these two species and determine if we can use these markers to help identify what species, and hopefully the island of origin, are being killed in fisheries. We analysed 354 samples from four breeding islands (Atlantic: Nightingale, Inaccessible, and Gough; Indian: Amsterdam) and bycatch samples from South Africa and New Zealand. Both nuclear and mitochondrial markers differentiated the two species. Microsatellite and Occa9 nuclear markers revealed two genetically distinct groups within Atlantic yellow-nosed albatross, grouping birds from Nightingale and Inaccessible Islands together and separating birds from Gough Island. Nuclear markers confirmed that all bycatch samples were Indian yellow-nosed albatrosses, however, the bycatch birds from South Africa and New Zealand were distinct from each other and from birds breeding on Amsterdam Island, suggesting colony specific dispersal at-sea. Both species have distinct at-sea distributions. Within both species differences in at-sea distribution might also have resulted in genetic differentiation, but there is currently no evidence of intraspecific differences. As such, our results contribute to conservation and management plans for the two endangered species and suggest the need for separate management of genetically distinct groups of Atlantic and Indian yellow-nosed albatrosses breeding at different islands. Our study also shows the possibility of using

bycatch samples to track the at-sea distribution of seabirds which are not monitored using conventional methods.



Figure 1: A photo of an Atlantic-yellow-nosed albatross on flight. Photo Credit Peter G. Ryan

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