MARINE ANIMAL ECOLOGY GROUP

Factors determining Red-billed Tropicbird population success on small Caribbean islands

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Motivation

Seabirds are decreasing worldwide and are now among the most threatened groups, with approximately 80% of 346 species in decline. Seabirds exhibit typical and extreme life history traits: long lifespans, low fecundity, and high survival, which makes them susceptible to threats that increase adult mortality. These threats can lead to demographic declines and ultimately mortality of whole island populations. This can give rise to 1) reduced reproductive success resulting in ageing of the bird population; 2) increased exposure to threats such as invasive vertebrates as a consequence of behavioral traits; 3) changes in foraging patterns; and 4) reduced genetic diversity and an increase in genetic stochasticity, such as inbreeding and population bottlenecks. This study contributes to overall knowledge of Red-billed Tropicbird (*Phaethon aethereus mesonauta*) ecology in the Caribbean. Currently, only basic information exists from a small number of locations. This research will help conservationists and other stakeholders assess the relevance and effectiveness of Important Bird Areas and Marine Protected Area in relation to tropicbird populations.

Aims and Objectives

The aim of this study is to understand the factors that determine tropicbird population success on small Caribbean islands. Diet and satellite telemetry studies can reveal critical information about overall marine ecosystem health. The genetic structure and variation component will provide key information into the long-term viability of tropicbird populations on small islands.

Method

Specifically, this research will determine which factor(s) influence the daily survival rates of tropicbird eggs and chicks on St. Eustatius by modeling nest survival in combination with environmental variables. Generalized linear models will allow us to test the influence of breeding success, breeding failure, clutch type and season on nest mate and cavity fidelity of tropicbirds on St. Eustatius and Saba. GPS data will allow us to examine the behavior of traveling and foraging tropicbirds in relation to oceanographic variables. Finally, DNA analysis will allow us to determine the genetic structure of tropicbirds on small Caribbean islands, compared with large populations from Mexico.

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