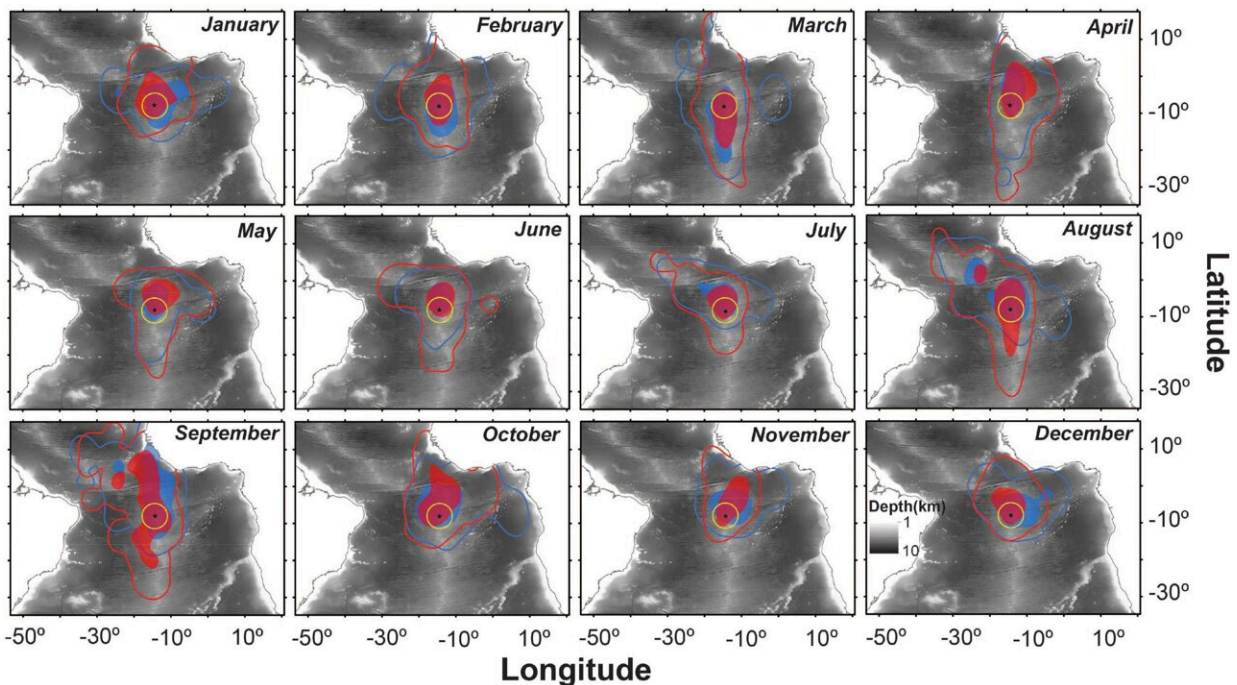


Extent of migration of sooty terns presents conservation challenges

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Monthly 50% (filled polygons) and 95% (line) kernel utilization distributions (UDs) of female (red) and male (blue) sooty terns from Ascension Island carrying GLS tags between 2011 and 2015. The yellow circle represents the MPA that extends 200 nautical miles around Ascension Island. Ocean depth is represented in the background. Credit: DOI: 10.3389/fmars.2021.744506

Sooty terns' wide-ranging migration patterns present big challenges for conservationists working to understand and address a sharp population

decline, according to scientists.

The team—led by the University of Birmingham and including the University of Exeter—used GLS ('geolocator') tracking data to show the migration patterns of sooty terns from the largest breeding population of terns in the Atlantic, based on Ascension Island in the southern Atlantic Ocean.

They found that birds ranged up to 2,900 km from their breeding colonies and covered some 47,000 km during an eight-month migratory period.

Ascension Island was designated a Marine Protection Area (MPA) in 2019.

The MPA covers some 443,000 square km (170,000 square miles) with Ascension Island at its heart.

The new study, published in *Frontiers in Marine Science*, is one of the first to examine the potential conservation benefits of this new MPA.

The research, led by Dr. Jim Reynolds, based in the School of Biosciences at the University of Birmingham, focused on the movements and behaviors of sooty terns that are valuable bioindicators of the overall health of the marine ecosystem by virtue of their far-ranging migratory behavior.

Tern populations have declined from several million in the mid-20th century, to much-reduced population sizes that have remained relatively stable over the past 30 years.

The huge migratory area defined by data from GLS tags carried by terns takes them mainly out into open waters beyond the boundaries of the

MPA.

Sooty terns feed on smaller live prey driven to the surface by foraging marine animals such as dolphins and tuna.

This complex multi-species relationship across such vast distances suggests that studies of other marine species are urgently needed to inform effective conservation activities.

Dr. Reynolds said: "The Marine Protection Area represents a fantastic opportunity to improve wildlife conservation—but this is about more than just drawing a line on a map.

"In order for the MPA to be effective we need more research to inform conservation programs in the area, accompanied by a focused drive to monitor their effectiveness.

"It might be many years before we obtain a full and accurate assessment of how successful these measures have been."

In the study, the research team used global location sensing (GLS) tags on both male and female sooty terns over a five year period, from 2011–2015.

In total, 90 tags were deployed, 30 of which were retrieved allowing downloading of positional data for analysis.

During the non-breeding season, researchers found the birds migrated over periods of about 8 months, during which time they flew incredibly long distances.

They spent the vast majority of the day and night in flight, probably sleeping 'on the wing' and only touching down on the ocean surface to

feed.

Because the birds are traveling such long distances on migration, the researchers predict that the benefits of the MPA will be much more limited during the non-breeding season.

Dr. Reynolds explains: "We found that sooty terns may be some of the most aerial of all bird species. One of the reasons for that could be because of diminishing stocks of tuna, which the terns rely on for their food sources. The MPA will limit tuna fishing, but we don't yet know what the benefits of this to both breeding and non-breeding terns will be."

He added: "Other [bird species](#) that breed on Ascension, particularly brown and masked boobies, which spend much more of their time within the MPA are likely to benefit more from its protection, but again, we need more research to be clear about these benefits."

Dr. Sam Weber, of the Centre for Ecology and Conservation on Exeter's Penryn Campus in Cornwall, said: "The Ascension Island Marine Protected Area is one of the largest in the world, similar in area to the entire land coverage of the UK.

"However, it is clear from tracking species such as sooty terns that even this impressive reserve will not deliver blanket protection for many highly-mobile and migratory top predators.

"Studies like this highlight the pressing need for multilateral action to improve fisheries management and protected area coverage in the high seas."

More information: S. James Reynolds et al, Year-Round Movements of Sooty Terns (*Onychoprion fuscatus*) Nesting Within One of the

Atlantic's Largest Marine Protected Areas, *Frontiers in Marine Science* (2021). [DOI: 10.3389/fmars.2021.744506](https://doi.org/10.3389/fmars.2021.744506).
www.frontiersin.org/articles/10.3389/fmars.2021.744506/full

Provided by University of Exeter

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