Seabird tracking data to inform marine conservation

Tammy Davies, Maria Dias, Carolina Hazin

@BirdLifeMarine
BirdLife International

Climate Change
Invasive Alien Species
Migratory Birds & Flyways

Forests of Hope
Local Engagement and Empowerment
Preventing Extinctions

Sites & Habitats (IBAs and KBAs)
Marine
Capacity Development

Sea change for the oceans

BirdLife International Marine Programme

Giving nature a home

Maria Dias  Carolina Hazin  Ana Carneiro  Tammy Davies  Lizzie Pearmain  Jono Handley  Beth Clark

Martin Beal  Marie-Morgane Rouyer
Seabird population declines

Wandering albatrosses on South Georgia Island (Credit: BAS/Richard Phillips)
Seabird population declines

Grey-headed Albatross colony on Bird Island © John Croxall / British Antarctic Survey
Bycatch

Bycatch = the accidental capture of non-target species

Pelagic vessels deploy lines up to 80 miles (130 km) long, each with thousands of baited hooks

>1 billion hooks each year are set by the world's longline fleets
Not only albatrosses...

- 30% of all seabird species (n=100/359) *
- 12 families

- >160k (320k ?) birds/yr in longline fisheries**
- >100k-200k birds/yr in gillnets***

* Dias et al. 2019: Biol Cons
** Anderson et al. 2011. Endang Species Res
*** Žydelis et al. 2009. Cons Biol
Not only bycatch....

Each species: **3 threats** on average
50% of species: **1 marine threat**

Dias et al. 2019: Threats to seabirds: 
a global assessment; Biol Cons
Growth in tracking data
What can tracking data tell us?

Juvenile wandering albatross (Bird Island, South Georgia) after fledging
What can tracking data tell us?

Adult Cory’s shearwater (Selvagem Grande, Madeira) during incubation
The Seabird Tracking Database

http://seabirdtracking.org
The Seabird Tracking Database

Species: 131
Tracks: 28,887
Points: >15 million
Colonies: > 360
The Seabird Tracking Database

- **Species:** 131
- **Tracks:** 28,887
- **Points:** >15 million
- **Colonies:** >360
- **Contributors:** 220

![Graph showing trends in number of species and points over time](image)
Conservation outputs
Using seabird tracking data
Important Bird & Biodiversity Areas (IBAs)

• IBAs = globally important sites for the conservation of bird populations, based on internationally agreed set of criteria
• Since 1970s
• >13,000 IBAs identified worldwide
  ➢ largest global network of sites of significance for biodiversity

Donald et al. 2019

• Important Plant Areas; Important Marine Mammal Areas
• Harmonised approach across all taxa: Key Biodiversity Areas KBAs; www.keybiodiversityareas.org
• ~5,000 seabird and marine IBAs identified

https://maps.birdlife.org/marineIBAs
Different types of marine IBAs

Seabird colony (terrestrial IBA)

Seaward extension to a colony: identified by foraging range

Pelagic area: identified from tracking data (Lascelles et al. 2016)
EBSAs

> 600 marine IBAs included within EBSAs

www.cbd.int/ebsa

- Clipperton Fracture Zone Petrel Foraging Area
- Pycroft’s petrel (VU)
Marine IBAs

- Designated as Special Protected Areas (SPA) under EU Birds Directive
NACES MPA

- North Atlantic Current and Evlanov Seamount (NACES) MPA
  - High seas MPA (OSPAR)
  - Identified from seabird tracking data
But it’s in the middle of nowhere

Indications of an important site around the Mid Atlantic Ridge from single species tracking studies

South Polar Skua
Kopp et al. 2011

Sooty Shearwater
Hedd et al. 2012

Cory’s Shearwater
Dias et al. 2012

Northern Fulmars
Edwards et al. 2013
NACES MPA

- 21 species
- Up to 5 million birds
- 16 jurisdictions
- Year round
- 66 contributors

Black-legged Kittiwake: 1.3M in winter (Norway, Iceland, UK, Faroe, Denmark)

Atlantic Puffin: 1M in winter (Iceland, UK, Ireland)

Cory’s shearwater: 60k in winter

Bulwer’s petrel: 1.3k winter + breeding (Portugal, Spain)

Little Auk: 2.3M in winter (Greenland)

Long-tailed Jaeger: 46k in migration (stopover) (Denmark [Greenland], Norway, Sweden)

Great Shearwater: 1.8M (Tristan da Cunha)
• **If this site is designated:**
  • First high seas MPA identified from seabird tracking data
  • Protect important migratory connectivity
  • Non-breeding distributions
  • Address an important gap for seabirds
Plastics and petrels

• Risk of encountering marine plastic
• 76 species; 148 populations

Climate change

Projected migrations of southern Indian Ocean albatrosses as a response to climate change

- Non-breeding distribution
- Categorized by size and colony
- Model matched to tracking data
- Coarse-scale distribution
Projected migrations of southern Indian Ocean albatrosses as a response to climate change

Marcus Somervile, Mara P. Doss, Hein Wielemaker, Tammy E. Daines

First published: 21 July 2020 | https://doi.org/10.1111/ecog.0566

Large albatrosses, Amsterdam
Large scale distribution

• Combined tracking, demographic, and phenological data from all major life-history stages to estimate robust density distributions of seabird populations
Large scale distribution

- Adult-only distribution maps underestimated fisheries bycatch risk by 18-42% compared to our framework
Bycatch mitigation

- Work with governments and RFMOs to reduce bycatch
- Albatross Task Force
  - Bird scaring lines
  - Night setting
  - Line weighting

@AlbyTaskForce
Seabird recovery?

Source: British Antarctic Survey/Richard Phillips
Management implications of migratory behavior: Cory’s shearwater

Breeding Season (~April to October)
During the breeding season, Cory’s shearwaters move through the waters of many European and African countries to forage and find food for their chicks.

5/5 tuna commissions now requiring seabird bycatch mitigation measures

8 out of 10 hotspot fisheries for seabird bycatch introduced new regulations to protect seabirds in the last decade

99% reduction in albatross killed in South African hake trawl fishery

Seabird Sentinels will help mitigate bycatch

What can albatrosses tell us about their interaction with fishing vessels? With this new technology, we’ll find out.
Many thanks:

Ana Carneiro
Lizzie Pearmain
Jonathan Handle
Martin Beal
Marie-Morgane Rouyer
Cleo Small
Rory Crawford
Stephanie Winnard
Nina da Rocha
Esteban Frere
Ross Wanless
Karen Baird
Oli Yates
Marguerite Tarzia
Richard Phillips
Steffen Oppel
Paulo Catry
José Pedro Granadeiro
Ewan Wakefield
Morten Frederiksen
Børge Moe
John Croxall
