Indian Ocean Seabird Group

Newsletter n° 14

IOSG NEWSLETTER n° 14

Coordinators / Editors :
Merlène Saunier merlene.saunier@univ-reunion.fr
Matthieu Le Corre lecorre@univ-reunion.fr

EDITO

Dear members,

It is with great pleasure that I present this newsletter, my first as the new co-editor of IOSG, taking over from Sabine Orlowski. I'm truly happy to contribute to sharing the outstanding work that you are accomplishing in the Indian Ocean.

To change things up a little, we'll begin this issue with an overview of the geographical distribution of the projects featured since the very first edition of our newsletter, followed by your article contributions.

Happy reading!

Merlène

MAPPING THE REACH OF THE IOSG NEWSLETTER

Since the creation of the IOSG newsletter in 2007, the results of almost 100 studies conducted at 39 sites (Figure 1) across 11 countries have been published.

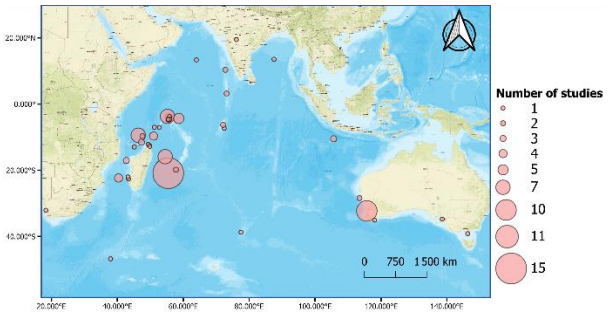

Figure 1 : Location and number of studies described in the IOSG

Leading the list, the Seychelles feature 36 studies described within their territory, closely followed by France with 33 studies (Figure 2). We are delighted to note that research across the whole Indian Ocean is represented in our newsletter, even though a large portion of the studies were carried out in the western part of the region (Figure 1).

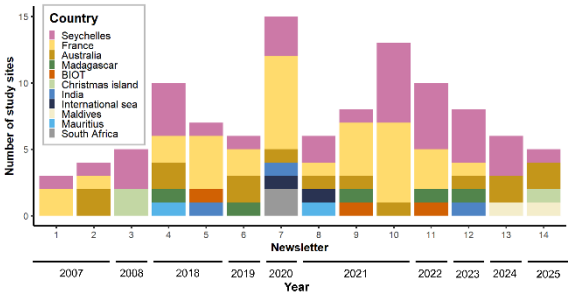

Figure 2 : Number of study site according to the country, since the creation of the IOSG

Regarding the locations of the IOSG members, we are also pleased to see that you are spread across all latitudes and in 17 different countries (Figure 3).

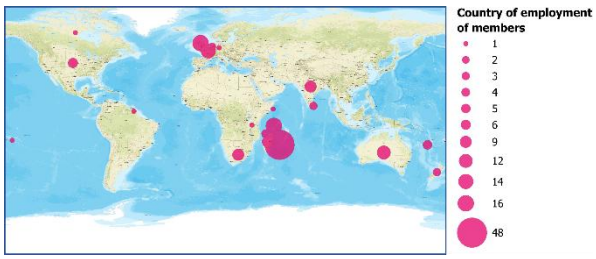

Figure 3 : Country of employment of IOSG members from 2007 to 2025

We hope to continue sharing research in the region thanks to your contributions!

Merlène Saunier (postdoc at ENTROPIE, University of Réunion)

ANNOUNCEMENTS

Final symposium of the CONNECT Project: Birds without borders or isolated islands? Connectivity of western Indian Ocean seabirds - 27-30 April 2026, Réunion Island.

The University of Réunion and the Zoological Society of London are hosting an international, in-person and online symposium (27th-30th April 2026 at University of La Réunion) to mark the end of a 4-year research project, 'Birds without borders or isolated islands? Connectivity of western Indian Ocean seabirds' (CONNECTS). The research and symposium are funded by the Bertarelli Foundation as part of its Marine Science Program. Our research project explores the mechanisms (i.e., causes) that facilitate seabird dispersal across the western Indian Ocean (WIO) and quantifies the level of connectivity via gene flow (i.e., consequences) among seabird colonies in the region. At the symposium we will hear about seabird conservation and research projects from across the WIO, share our project findings and discuss how these may improve our collective understanding of seabird connectivity in the WIO to inform regional conservation and management.

If you would like to attend the symposium (remotely or in-person) or find out more, please contact Matthieu Le Corre (lecorre@univ-reunion.fr) and Malcolm Nicoll (Malcolm.Nicoll@ioz.ac.uk). We look forward to hopefully seeing you next year. We look forward to possibly meeting you at this symposium.

Matthieu & Malcolm

MEMBERS CONTRIBUTION

(1) Abbott's booby migration

Johannes Chambon, Luca Börger, Henri Weimerskirch, Janos C. Hennicke

For years, the migratory patterns and non-breeding behaviour of the Abbott's booby (*Papasula abbotti*) (Figure 4), one the world's most threatened seabirds - breeding only on Christmas Island in the Eastern Indian Ocean (c. 2,500 pairs) - remained largely unknown, leaving gaps in our understanding of its life cycle. Our recently published study revealed the hidden journey of migrating Abbott's boobies, providing vital information that could help protect this rare seabird.

Figure 4 : Abbott's booby (Papasula abboti) in Christmas island. © Janos Hennicke

From 2007 to 2014, 22 adult Abbott's boobies were tracked with geolocator-immersion loggers, uncovering some fascinating new insights. Unlike many other tropical sulids, these seabirds embark on long migrations, traveling an average of 2,500 km east from their breeding ground on Christmas Island to the Banda Sea in Indonesia. Most of the species core area during migration is in Indonesia (89%).

The birds migrated between November and April, a period which coincides with the Indonesian-Australian monsoon. This season is marked by a reversal of the prevailing winds and a resulting reduction of the regional oceanic productivity. These seasonal changes might drive the birds' departure from their breeding grounds while helping them reach their non-breeding range.

Interestingly, we didn't record any bird in migration from mid-May to late October, suggesting that the entire adult population is on Christmas Island during this period. Our results

also show that while migrating, these birds spend minimal time on the water, and they display a preference for marine habitats with a narrow range of sea surface salinity (32.5–34.5 PSU), rugged seafloor topography, and temperatures above 28°C.

Unlike many seabird species that migrate to remote areas of the high seas, Abbott's boobies travel to a populated archipelago, home to human communities that rely heavily on marine resources. This proximity may increase the risk of harmful interactions with human activities, including competition with fisheries, incidental bycatch, and even the targeted capture of Abbott's boobies.

In summary, our findings highlight the key region where potential threats, including interactions with fisheries and the impact of climate change on the species' marine habitats, should be investigated.

Citation of the entire study: Chambon J, Börger L, Weimerskirch H, Hennicke JC (2024) Migratory movements, distribution, habitat preference, and activity patterns of the endangered Abbott's booby Papasula abbotti. Mar Ecol Prog Ser 743:75-96. https://doi.org/10.3354/meps14660

(2) Red-footed booby population at Aldabra soars past 45,000 pairs: results from SIF's (Seychelles Islands Foundation) latest drone and boat surveys

Michelle Risi, Chris Jones and Nancy Bunbury

In 2022 and 2023, we carried out the first comprehensive population survey of red-footed boobies (*Sula sula*) (Figure 5) at Aldabra Atoll in more than two decades, and the results were remarkable. Using a combination of boat-based counts and Uncrewed Aerial Vehicle (UAV) surveys, we estimated that at least 45,817 breeding pairs currently nest at Aldabra, confirming it as the largest known colony in the Indian Ocean and potentially the world.

Figure 5 : Red-footed boobies (Sula sula) on Aldabra. © Chris Jones

Historical estimates suggested 6,500 breeding pairs of red-footed boobies in 1969 and around 10,000 in 2000. To update and fine-tune these, we first monitored five sub-colonies across the atoll over a full year to determine peak breeding times in both the wet and dry seasons. We then conducted two atoll-wide boat surveys (Figure 6) during these peaks, recording a total of 36,720 active nests.

Furthermore, to assess the potential of drones for seabird monitoring, we used UAVs to survey mangrove areas that were inaccessible by boat. These aerial surveys not only closely matched shoreline counts but also revealed extensive inland colonies that had previously gone undetected, adding 5,574 nests to the wet season total alone. Based on these findings, we estimated that, if inland colonies occur in the same areas and at similar proportions during the dry season, at least another 3,523 inland nests would be expected. This brings the total estimated annual breeding population to over 45,000 pairs.

To evaluate whether such a large increase could be explained by natural population growth, we developed a population model using demographic parameters from other tropical seabird studies. Our results suggest that the observed growth since 1969 is plausible through intrinsic growth alone, assuming the 2000 survey underestimated numbers at the time. Despite lower breeding success in some sub-colonies, particularly where frigatebirds *Fregata minor* and *Fregata ariel* nest or where feral cats (*Felis catus)* are present, the population appears to be not only self-sustaining, but thriving.

Our findings underline Aldabra's global importance as a seabird sanctuary and underline the value of using UAVs to monitor remote or logistically challenging colonies. In our surveys, drones improved count accuracy, reduced field effort, and created a permanent

visual record for future comparisons. We recommend UAVs as a standard tool for surveying large seabird species in low-lying mangrove colonies like Aldabra.

Figure 6 : Part of the fieldwork team on Aldabra island. © Chris Jones

The paper has been accepted for publication in the journal Oryx:
Risi, M.M., Jones, C.W., Oppel, S., Bristol, C.A., O'Brien, M., Fleischer-Dogley, F. & Bunbury, N. (In press). Red-footed booby population thriving at globally significant Aldabra Atoll: insights from Uncrewed Aerial Vehicle surveys. Oryx.

(3) Bird study across Western Australia

Chris Surman

Dr Chris Surman (Figure 8) of Halfmoon Biosciences has been studying long-term trends in seabird community ecology across Western Australia since 1991.

Figure 8 : Chris Surman with a Wedge tailed shearwater (Ardenna pacifica)

His projects include sites between Ashmore Reef and the Houtman Abrolhos and cover 2000 km. Significantly the research conducted into seabird demographics, community ecology and behavioural responses to ENSO driven oceanographic change is the longest of its kind in Australia and covers some of the largest breeding populations of seabirds, including the iconic Lesser Noddy (*Anous tenuirostris*) as well as Brown Noddies (*Anous stolidus*) and Sooty Terns (*Onychoprion fuscatus*). Since 2014 he has been studying the inter- and intra-annual variation in foraging areas of both noddies, shearwaters and terns focusing on seabird foraging Key Biodiversity Areas using Track2KBA. More recently he has collaborated with Matthieu Le Corre of the Université de La Réunion in the *Connects Project* investigating the interrelatedness of Indian Ocean terns and shearwaters. Currently new projects include the prevalence and identification of marine debris recovered from seabird and Osprey nests (Figure 7).

https://www.halfmoonbiosciences.com/

Figure 7 : Osprey in a nest with plastic

(4) Little Penguin studies on islands in Southwest Western Australia identify weeds and microplastics as threats.

Belinda Cannell

Little Penguins (*Eudyptula minor*) are found on the southern coast of Australia, from Western Australia (WA) to New South Wales, and in New Zealand. Penguin Island (Figure 9), 50 km south of Perth (the capital of WA), was home to the largest colony of Little Penguins in WA,

until recently. This colony, representing the penguins' range-edge distribution in WA, has reduced by more than 90% since 2011. This has been largely attributed to a reduction in local fish abundance due to a 2010/2011 marine heatwave and generally warmer than average waters since then. However, other threats including high mortality due to collisions with watercraft and hyperthermia, also contribute to their decline.

Figure 9 : Location of Little Penguin (Eudyptula minor) colonies on islands in Western Australia where research has been conducted.

Given that a warming climate will very likely result in a contraction of the range of penguins in WA, it is imperative that we understand the presence, breeding ecology and threats of Little Penguins elsewhere. In WA, Little Penguin colonies are only found on islands from Perth to the WA border, and there are 170 islands in this region. However, more than half have no information regarding the presence of penguins, and only 43 are thought to have penguins nesting on the island. Unfortunately, these data are dated – the surveys were undertaken from the 1970s-1990s. Furthermore, the surveys predominantly were of short duration, and primarily established the fauna and, often, the flora of each island.

The closest colonies to Perth are found in southwest WA, a global biodiversity hotspot, and in 2020 I began research on what was thought to be the next closest colony of (historical) comparable to size to Penguin Island. This was on Breaksea Island (Figure 9), 12 km south-east of Albany, a major regional port city. A student, a Department of Biodiversity, Conservation and Attractions (DBCA) staff member and I conducted randomized transects to locate penguin burrows, complete a vegetation habitat map, and determine a likely population estimate based on the availability of suitable habitat. I also introduced some nestboxes and camera traps, in the hope that penguins would start using the boxes, making it easier to then do tracking and diet studies.

In 2020, a student began similar research on Mistaken Island, 5 km SE of Albany (Figure 9). Additionally, she located Great-winged petrel burrows and determined the timing of annual breeding for both species. During her research, she found a section of the island was covered by a dense, tall, perennial, strappy weed-*Chasmanthe floribunda*, previously not recorded on the island. This grows up to 1.5 m high from May-November, coinciding with penguin breeding, and dies back over summer, with the long leaves lying flat and covering the ground. It was thought to likely preclude penguins from using this area. Therefore, the next student project was to investigate the presence of burrows along transects within this area and determine burrow-site characteristics. Half of the transects were then sprayed by DBCA with herbicide, and penguin use of the area along the treated and control transects was determined. Penguin activity increased along the sprayed transects. A third project has subsequently determined the efficacy of weed suppression by treating it once, or twice (the following year), as well as the site characteristics of more burrows. Not surprisingly, both studies found that active burrows had zero to low density of *C. floribunda* at the front.

In 2022, a vegetation habitat map, habitat characteristics of penguin burrows and a penguin population estimate, was developed for Cheyne Island, 90 km east of Albany. Here, another weed, *Pelargonium capitatum*, was found to be present on 80% of the island, and to inhibit penguin use of much of the island.

In addition to the land-based threats discovered on these islands, microplastics have been found in the majority of faecal samples collected from penguins at Mistaken, Cheyne, Penguin and

Garden islands. We currently don't understand what threat this poses to the penguins.

Next steps include placing nestboxes on the islands for tagging and diet studies, and using new technology to automatically alert when penguins are using the boxes. The data collected will help develop strategies for the ongoing management of the islands for continued presence of penguins in an increasingly warming world.

(5) First national assessment of common breeding and migratory birds in the Maldives

Sebastian Steibl, Ifham Hassan Zare, Hulwa Khaleel, Michael Fox, Hassan Nidha[3], Irthisham Hassan Zareer, Ahmed Leevan, Yoosuf Rilwan, James C. Russel

The Maldives constitutes the largest island archipelago in the Indian Ocean, contributing roughly 1,200 of the basin's estimated 2,000 oceanic islands. Although seabirds are deeply embedded in Maldivian local ecological knowledge, folklore, and culture, there has been no comprehensive published survey of their distribution and abundance across the archipelago. As a result, international awareness of the Maldives' importance to Indian Ocean seabirds – and underlying conservation needs and urgency – has been limited. To address this gap, the Joint Nature Conservation Committee of the UK funded a collaboration between the University of Auckland, Maldivian social scientists (Isles Consulting Pvt Ltd), and Environmental Protection Agency Maldives to conduct the first nation-wide assessment of common breeding and migratory birds in the Maldives.

The study targeted 29 species, comprising 13 seabird species, ten herons-and-allies, three waterbirds, one wader, and two land birds. Distribution data for each species were gathered through standardized interviews with 37 local knowledge holders and community members on each of the 20 administrative atolls. A subsequent validation phase with local regional experts confirmed high reliability and consistency of the information collected.

Ten seabird species were confirmed breeding on the Maldivian atolls. While some species, such as White Tern (*Gygis alba*), are locally confined to the southern atolls, others –including White-tailed Tropicbird (*Phaethon lepturus*), Tropical Shearwater (*Puffinus bailloni*) or Black-Naped Tern (*Sterna sumatrana*) – are breeding throughout the Maldives, often in populations of several hundreds to thousands of birds per atoll (Figure 10).

In addition to breeding species, large numbers

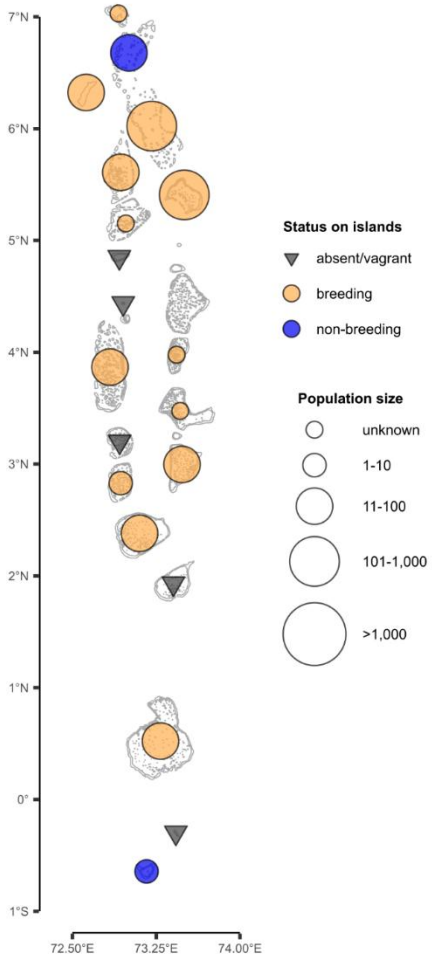

Figure 10 : Distribution map of Roseate Tern (Sterna dougallii) across the Maldivian archipelago. For 25 of the shortlisted 29 species, 13 of which seabirds, these atoll-level distribution maps were generated to produce the first-ever nation-wide record of common breeding and migratory species distribution in the Maldives.

of seabirds migrate to the Maldives during their non-breeding season, including Lesser Noddy (*Anous tenuirostris*) or Lesser Frigatebird (*Fregata ariel*). Their arrival coincides with the

northeast monsoon ("Iruvai": Dec-Apr) and local ecological knowledge links their occurrence to favorable fishing conditions.

Besides the documentation of seabird distribution throughout the Maldives, interviewees consistently reported declines in seabird populations. Principal threats include rapid island development, destruction of nesting sandbanks from sand-mining, deforestation, egg and bird poaching for the pet trade, and direct disturbance by island visitors. Ongoing research by the University of Auckland has also documented widespread invasive rat and shrew presence on many islands, including known seabird breeding sites.

To counter these declines and establish secure seabird nesting havens in the Maldives, the University of Auckland and the Environmental Protection Agency Maldives have entered a formal memorandum of understanding in December 2024 to jointly work on seabird and island restoration. The two key objectives are (1) a better understanding of seabird movement, phenology, and occurrence throughout the archipelago (Figure 11), and (2) to establish predator-free seabird sanctuaries (https://www.youtube.com/watch?v=OGc5o7TVnQA).

Figure 11 : Joint seabird ringing and geolocator deployment fieldwork trip by the University of Auckland and EPA Maldives team in December 2024. EPA staff has received training for handling and ringing seabirds.

The full 200-page report has been published both in English and Dhivehi languages, and the English version can be accessed and downloaded freely here: https://hub.jncc.gov.uk/assets/b0086517-40a1-42bc-b3d9-eaf8e39c48c6

A special thanks to the contributors of this issue:

Cover page picture: Arthur Chœur – A white tern (*Gygis alba*) chick on Tromelin Island

Articles

1) Johannes Chambon[1], Luca Börger[1], Henri Weimerskirch[2], Janos C. Hennicke

[1] Department of Biosciences, Swansea University, Swansea SA2 8PP, UK
[2] Centre d'Etudes Biologiques de Chizé, CNRS La Rochelle Université, France
[3] Department of Ecology and Conservation, University of Hamburg, Hamburg, Germany
Contact: johannes.chambon@hotmail.fr

2) Michelle Risi[1], Chris Jones[1] and Nancy Bunbury[1]

[1] Seychelles Islands Foundation, Seychelles
Contact: mish.risi22@gmail.com

3) Chris surman[1]

[1] Halfmoon Biosciences, Australia
Contact:
halfmoon.biosciences@westnet.com.au

4) Belinda Cannell[1]

[1] Oceans Institute and School of Biological Sciences, University of Western Australia
Contact : belinda.cannell@uwa.edu.au

5) Sebastian Steibl[1,2], Ifham Hassan Zareer[3], Hulwa Khaleel[3], Michael Fox[1], Hassan Nidham[3], Irthisham Hassan Zareer[3], Ahmed Leevan[4], Yoosuf Rilwan[4], James C. Russell[1]

[1] University of Auckland, Auckland, New Zealand
[2] Naturalis Biodiversity Center, Leiden, Netherlands
[3] Isles Consulting Pvt Ltd, Hulhumale, Republic of Maldives
[4] Environmental Protection Agency Maldives, Male, Republic of Maldives
Contact: sebastian.steibl@auckland.ac.nz

Call for contributions: You can send your articles for the next issue of the newsletter to Merlène or Matthieu from now!
merlene.saunier@univ-reunion.fr
lecorre@univ-reunion.fr

Guidelines: articles sent should be around **300-400** words, written in English, with at least one photo or figure (**with credits and legend**) to illustrate. Please indicate the author(s) and **affiliation(s)**, and the **e-mail address** of the contact author. If your article is linked to a scientific publication, you can also include a reference of the paper at the end of the article