BIRDSCARIBBEAN SEABIRD WORKING GROUP NEWSLETTER

May 2022

- Updates from the Islands - Recent and future seabird projects
- Seabird Fest and 2023 census update
- Seabirder Spotlight - Patricia Bradley
- Research Highlight - Diverse foraging strategies in Caribbean boobies

BirdsCaribbean

Table of contents

Prepared by: Seabird Working Group, BirdsCaribbean, 841 Worcester St. #130, Natick, MA 01760-2076, USA.
Website: www.birdscaribbean.org Email: info@birdscaribbean.org. (cover page photo: R. Austin).
Translations of this newsletter are also available in Spanish and French.

About the Seabird Working Group

The Seabird Working Group (SWG) was formed in 1998 to understand the big picture driving seabird communities in the region. Since then, the group has been composed of managers, conservationists, researchers, and educators working together to help study and protect populations of breeding and migratory seabirds in the Caribbean.

The aims of the group are to:

- Connect People - Bring together people working on, and interested in, Caribbean seabirds
- Share Knowledge - Share information about research, monitoring, management, and conservation of seabirds in the Caribbean
- Promote Conservation - Seek new opportunities to expand conservation and research activities on Caribbean seabirds, and support those working towards this goal
- Advocate for Seabirds - Respond to crises and threats that may impact Caribbean seabirds and their habitats

The SWG is currently managed by a committee of three co-chairs (below), helped by Jennifer Wheeler, Natalia Collier, and Lisa Sorenson. We are always looking for additional committee members to help lead SWG initiatives: if you have any questions or are interested in joining us, do not hesitate to contact us!

Dr Ann Sutton
Contact: asutton<at>cwjamaica.com

Dr Rhiannon Austin
Contact: R.E.Austin<at>liverpool.ac.uk; Twitter: @RhiAustin
Website: caribbeanseabirds.weebly.com / seguliverpool.wixsite.com

Yvan Satgé
Contact: ysatge<at>clemson.edu; Twitter: @YvanSatge
Website: atlanticseabirds.org

Survey of people interested in Caribbean seabirds

In 2020, we initiated a survey of people interested in seabird conservation, education, and research in the region. The results of this survey can be found in our 2021 Newsletter but if you haven't responded yet, we are still interested in hearing from you. You can fill out the questionnaire at the following address: https://forms.gle/ykNMAfUYQVDmJKTw9. We welcome any new- or late-comers!

Communications ↑

Website

In the SWG pages on the BirdsCaribbean website, you will find links to background information on the working group, active seabird projects, seabird resources, and our seabird blog posts. We would love to hear from you if you are keen to get further involved in any of our work! www.birdscaribbean.org/caribbean-birds/seabirds

Social platforms

Groups.io community

The SWG has a listserv with Groups.io: https://birdscaribbean.groups.io/g/SeabirdWG. Anyone interested can become a member and start interacting via email or through the Groups.io webpages. This platform will be the main communication tool for SWG co-chairs to share information with the whole Caribbean seabird community, but it is open to anyone to share knowledge, post questions, and list information on recent publications, jobs, events, grant opportunities, etc. that may be of interest to all. Visit the Groups.io webpage for details on how to join.

Facebook group

Members of our community have started a Facebook group (Caribbean Seabird Group) to provide an informal network for those who regularly use Facebook, and are interested in Caribbean seabirds and related topics. It complements the BirdsCaribbean Facebook page where regular updates on all Caribbean birds can be found. The Groups.io listserv will remain our main communication tool but we will do our best to relay information to and from the Facebook group as well.

Twitter

Twitter has a very active and welcoming seabird community. If you have a Twitter account, we encourage you to join the conversation! Show your interest in Caribbean seabirds by sharing pictures and updates on your seabird work, or posing questions to regional and global seabirders. Don't forget to tag your tweets with #CaribSeabirds, #Seabirds, #Seabirders and/or #SeabirderSaturday.

From 3-5 May 2022, you may also want to tune into #WSTC8 (accessible without a Twitter account) to follow the 8th World Seabird Twitter Conference. This is an opportunity to learn about seabird monitoring, conservation, research, and art and science communication from around the world, from the comfort of your home, office, or field station.

Please note that we have a no-tolerance policy for group members that undertake any actions that compromise these platforms from being the safe, equitable, and productive place that they were designed to be.

Seabird Fest Update and 2023 Census

Overview

The SWG's Seabird Fest was held remotely on Zoom on 2 December 2021. The objectives were to generate interest in seabird monitoring, update information of the status of seabird monitoring in the region, and assess interest in a pan-Caribbean seabird census in 2023. It was organized by the SWG Co-chairs and other members of a core planning committee.

The Fest was attended by about 60 persons. It included 22 presentations from the insular Caribbean and Bermuda as well as from surrounding continents (Mexico, Belize, Venezuela). The following table lists the presentations and elements of the agenda.

Image: Map of nations who presented at SeabirdFest (in green).

Seabird researchers and conservationists from across the region were invited to summarize seabird information from their island or island group in just three minutes. Presenters reported on the status and conservation of seabirds, including the number of colonies, their locations, breeding species and colony sizes, to the degree known. The dates of most recent surveys, and plans or aspirations for monitoring in coming years, were shared. Finally, we asked that presenters comment on the challenges they face in monitoring seabirds and what might be needed to overcome these challenges.

It should be noted that coverage of the region was incomplete. Seven Caribbean nations were not represented (most notably The Bahamas, which is known to host extensive seabird populations), or information available to the presenter was limited to a particular area (e.g. the north coast of Cuba). Also, given the time constraints on presenters, not all were able to provide a full account. However, considering the presentations as a whole, we gained important insights into the state of seabird monitoring across the region. The conclusions reinforce the information obtained by the seabird practitioners' survey last year (see [March 2021 Newsletter](#)).

Table: Agenda - Caribbean Seabird Fest, 2 December 2021

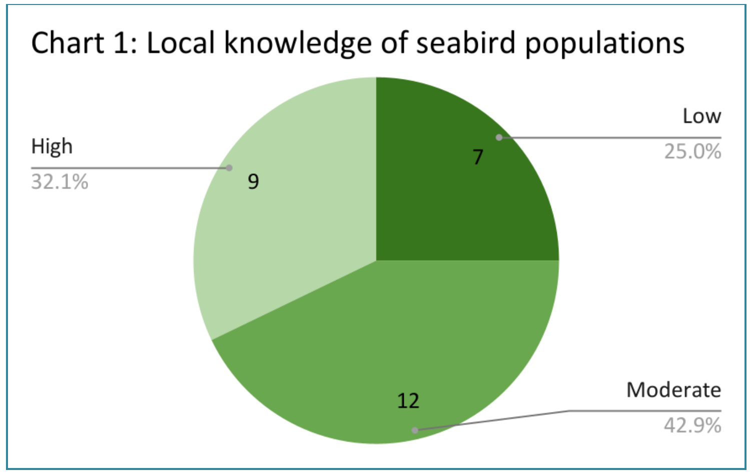
Time	Topic	Affiliation / Island	Representative/Presenter/Moderator
12:05	Welcome	BirdsCaribbean	Lisa Sorenson
12:15	Background to the Caribbean Seabird Census	BirdsCaribbean	Rhiannon Austin
12:35	Updates from the Islands on their seabird population monitoring activities and capacities	Cayman Islands	Rhiannon Austin
12:40		Yucatan Peninsula, Mexico	Jonathan Nochebuena Jaramillo
12:45		Arrecife Alacranes National Park, Mexico	Melgar Tabasco
12:50		Cuba	Antonio Garcia Quintas
12:55		Bermuda	Jeremy Mardeiros
13:00		Jamaica	Ann Sutton
13:05		Dominican Republic	Miguel Angel Landestoy
13:10		Puerto Rico	Luis Ramos
13:15		Virgin Islands (British + US)	Paige Byerly
13:20		Turks and Caicos Islands	Naqqi Manco/Rhiannon Austin
13:25		Anguilla	Farah Mukhida/Rhiannon Austin
13:30		Sint Eustatius & Saba	Hannah Madden
13:35		St Kitts and Nevis	Lynelle Bonaparte
13:40		Montserrat	Ajhermae White
13:45		Antigua, Barbuda and Redonda	Shanna Challenger
13:50		French OT	Antoine Chabrolle
13:55		Dominica	Jennifer Wheeler on behalf of Bertrand Jno Baptiste
14:00		Saint Lucia	Pius Haynes
14:05		SVG and Grenada	Juliana Coffey
14:10		Trinidad and Tobago	Shivam Mahadeo
14:15		Venezuela	Juan Carlos Fernandez Ordonez
14:20		Belize	Dominique Lizama
14:25	Break-out group discussions		Ann Sutton
14:55	Wrap Up	BirdsCaribbean	Ann Sutton
15:00	End		

Results

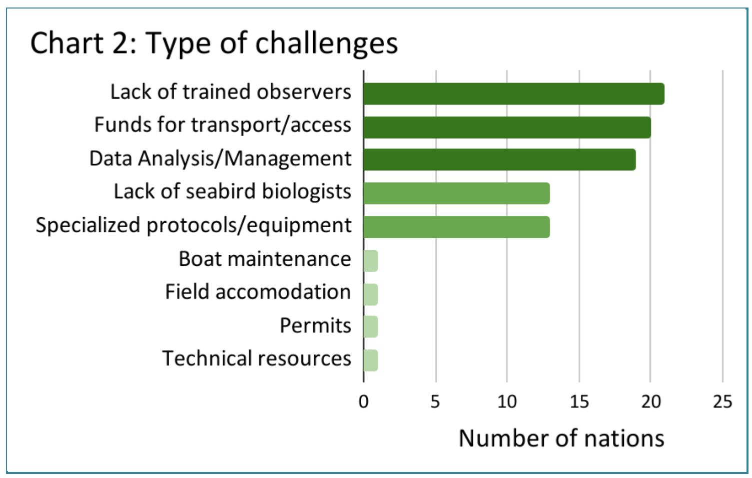
It appears seabirds are declining throughout the region. The presentations showed how widespread and serious the crisis is – as well as how it is underappreciated, partly because of shifting baselines. Pressures on seabirds, including development on seabird islands, increasing number and severity of hurricanes, invasive species, and sea level rise are accelerating the decline. Evidence of this decline is urgently needed to support conservation planning for individual colonies, as well as to raise awareness of the crisis across the region.

In about half of the presentations (15/29), government entities were represented or named as responsible for seabird monitoring. That non-government agencies or research institutions have taken the lead in so many countries implies a lack of awareness, capacity, or political will on the part of the agencies responsible for natural resource management. As noted in discussions following the presentations, a seabird awareness campaign is needed and more individuals should be encouraged to join the SWG, in particular from natural resource agencies not yet involved in seabird monitoring.

Across the region, the state of knowledge about the status of seabirds varies, as expected. Based on the presentations, organizers judged the state of knowledge to be "low" for 7 countries, moderate for 12, and high for 9 (Chart 1). Reviews of cross-Caribbean seabird information (e.g., Schreiber and Lee 2002, Bradley and Norton 2009) in past decades have demonstrated this variation. This illustrates the difficulty of producing a comprehensive regional picture of seabird populations in a region made of countries with diverse geographies, economic and political situations.



Thirteen of 29 presenters acknowledged a lack of seabird biologists in place in-country (Chart 2); building a program would require basic training and advice. This supports the development and dissemination of basic seabird monitoring training components. In countries where capacity is almost completely lacking, monitoring in the short-term might be best achieved by "sending in" experts to do the work, though this is less desirable than building in-country capacity.

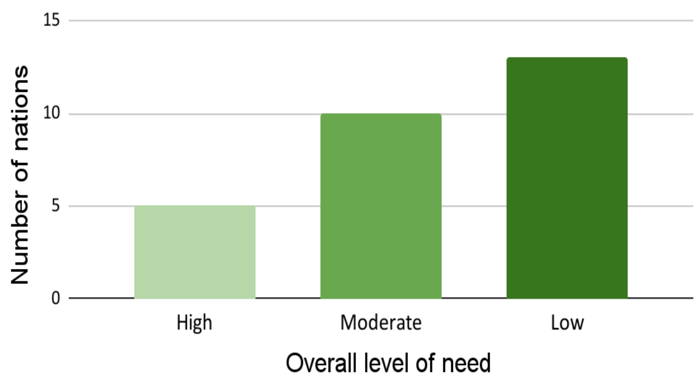


The majority of presenters (20/29) noted the need for funds, primarily for boats and fuel to provide transportation to more remote offshore islands (Chart 2). For some islands (7/29), it would seem that recruiting private boat owners (pleasure cruisers) to assist with transportation might be feasible, given that the islands lie within popular cruising itineraries.

The availability of trained observers is a limiting factor across the majority of countries (Chart 2): 21/29 presenters mentioned the need for training for staff or volunteers, even if a trained biologist is present in-country. Ten presenters noted that funds were needed to pay staff or provide stipends to volunteers. In nine cases, the possibility of bringing in volunteers (including paying volunteers) from outside the region was noted as a way to address this gap. In addition to field methods, training is also needed in survey design and the analysis and application of data for monitoring, and protected area design.

Based on the state of seabird knowledge, and needs identified by presenters, the organizers of Seabird Fest judged the relative level of need in each country (Chart 3): a good number of countries (13) have low needs, are well-funded, and have relatively high existing capacity – these are typically U.S. or European-linked territories. 10 countries have a moderate level of need but have a functional monitoring presence and likely sources of funding. A few countries (5) have a high level of need, with low existing capacity and little to no functioning seabird monitoring capacity.

Chart 3: Overall level of help needed to organize a 2023 seabird survey



The presentations were followed by discussions in breakout groups. The talking points for the breakout groups were to determine 1) if participants thought that a coordinated Caribbean seabird survey in 2023 was a good idea, and 2) what would the Seabird Working Group need to make a 2023 survey happen in as many islands as possible. Overall, several groups – those with high or moderate capacity – are already planning seabird monitoring for 2023. With coordination, a 2023 survey seems achievable – people are eager to participate in one. The role and expectations of the SWG was reiterated as follows:

- Provide workshops and training sessions in 2022 to address fundamental monitoring needs (Seabird ID and survey design) for those partners lacking capacity
- Develop and agree on methodologies and a timeframe of monitoring to make the information gathered across the region in 2023 as compatible and useful as possible
- Develop recommendations for data management and sharing
- Assist in fundraising wherever possible
- Maintain communication via quarterly meetings and monthly talks to maintain interest, and explore other means (possibly short seabird videos)

Given the excellent participation, the information shared in presentations, and the outcomes of the discussion, organizers of Seabird Fest can conclude that the objectives of Seabird Fest were met. The event generated interest in seabird monitoring, provided updated information of the status of seabird monitoring in the region, and demonstrated that there is a strong interest in a pan-Caribbean seabird census in 2023 and long-term seabird monitoring in general.

Contact: Jennifer Wheeler, BirdsCaribbean (jennifer.Wheeler<at>birdscaribbean.org)

Seabird Webinar Series ↑

In May, the SWG will begin a series of webinars focusing on the techniques required to survey seabirds in the Caribbean.

Juliana Coffey and **Hannah Madden** will be developing and delivering a series of webinars focused on a variety of seabird topics. The intent is to help practitioners around the region prepare for engagement in the 2023 regional census. Since level of expertise varies, the first webinars will start with the basics – why is a regional census needed, understanding the ways in which seabirds are unique, and an overview of the seabird species that occur in the Caribbean.

Even if you are a seasoned pro, you will enjoy the basic webinars. During these sessions you will be able to meet and learn from renowned seabird specialists who will be sharing their knowledge and experience. There will be interactive quizzes to test your new-found knowledge, and of course question and answer sessions at the end of each event. And fun facts – Have you always wanted to know why Magnificent Frigatebirds steal fish? Perhaps you're curious about the color of a booby's feet? Why is a Laughing Gull called a Laughing Gull? All will be revealed!

Over time, webinars will build in complexity, as we are keen to help interested parties learn as much as possible. The topics for these webinars are essentially the elements of the *Caribbean Seabird Monitoring Manual*. That is: design, preparation, logistics, and protocols of seabird surveys; data management; and other needed skills for monitoring seabirds. Our focus is daytime colony counts, but more advanced topics (e.g. specialized protocols, methods) will also be explored.

The sessions will be recorded to ensure all interested participants have access to these learning resources. And of course, we welcome input on the topics you would like to be covered!

Contact: Juliana Coffey (juliana<at>grenadinesbirds.com) and **Hannah Madden** (hannah.madden<at>cnsi.nl)

Photo: Nesting Masked Boobies on Monito Island, Puerto Rico. (L. Ramos-Vázquez).

Updates from the Islands

A wide range of activities involving seabirds are taking place throughout the Caribbean, including those focused on monitoring, research, conservation, and education. Below we showcase some of the inspiring and important ongoing projects on the islands.

Projects

Least Tern colony restoration on Curaçao

Located in the northeast of Curaçao, the Koral Tabak area is a well-known historical nesting site for Least Terns *(Sternula antillarum)*, with ≅ 100 nests (including renesting). However, reliable and/or continuous yearly data on the number of breeding pairs is scarce.

During 2020 and 2021, the environmental consulting company Ecovision monitored Least Terns breeding at Koraal Tabak. In 2020, breeding success was strongly impacted by predation from feral cats and rats. Therefore, during the 2021 breeding season, Ecovision attempted to keep cats and rats out of the main breeding location by concentrating breeding Terns into an area protected by electric fencing. Colony restoration was complemented with social attraction, by means of decoys and by playing recordings of Least Tern calls. This setup also prevented human disturbance.

Due to Covid restrictions, Ecovision was not able to properly monitor the colony in 2021, though it appears that only one bird started breeding in the fenced area while all other birds continued breeding outside the fenced area. Therefore, making use of lessons learned in 2021, a new protected area will be tested during the 2022 breeding season.

Contact: Robert Kelder, EcoVision (consultants<at>ecovisionnv.com)

Photo: Least Tern carrying an egg shell at a fenced colony near Koraal Tabak, Curaçao (R. Kelder).

Successful eradication of rats in Cayo Lobo, Culebra National Wildlife Refuge

Located in the east part of Puerto Rico, Cayo Lobo is a small rocky island within the Culebra National Wildlife Refuge, administered by the U.S. Fish and Wildlife Service (USFWS). It is recognized as an Important Bird Area for seabirds, such as the Audubon's Shearwater *(Puffinus lherminieri*), Red-billed Tropicbird (*Phaethon aethereus*), and White-tailed Tropicbird (*P. lepturus*), among others.

In September and October 2018, the USFWS, Puerto Rico's Department of Natural and Environmental Resources, and Effective Environmental Restoration (EER) Inc. initiated a rat eradication project to benefit bird, reptile, invertebrate, and plant life. This was followed by a long-term study of the overall effects of rat eradication on biodiversity. A total of 39 bait stations were placed upland and along the shoreline of the cay, with visits carried out daily for 18 days. During the last two days of the campaign, no signs of live rats or consumption were detected.

However, evidence of rat survival was observed during a trip in January 2019: infrared cameras and chewing tags showed that a small number of rats had survived the initial eradication campaign. We organized a second campaign, with visits conducted every two weeks during the initial months of January, February, and March 2019, then monthly during the following months. To this day, no signs of rats have been recorded on the island, whether on infrared cameras or in the chewing sticks. We can therefore confirm that Cayo Lobos has been free of rats for three years.

This project was funded by the USFWS, Southeast Region Inventory and Monitoring Branch. EER wishes to thank Adieren Villanueva for her leadership in carrying out this project. The project also received support from the following collaborators: Ricardo Sivael, Jorge Gutierrez, José Valentín, and Misael Feliciano.

Contact: Eduardo Ventosa, Effective Environmental Restoration (eerestoration<at>gmail.com)

Photo: Aerial view of Cayo Lobo, Puerto Rico (E. Ventosa).

Seabird surveys on Monito Island, Puerto Rico[1]

Monito Island, Puerto Rico, has long harbored an important seabird population but only a handful of researchers have visited the island to survey avifauna.

In May 2014, the USFW Caribbean Ecological Services Field Office and Puerto Rico Department of Natural and Environmental Resources (PRDNER) completed a trip to Monito, which included a one-day count focused on Brown (*Sula leucogaster*), Red-footed (*S. sula*), and Masked Boobies (*S. dactylatra*), and the Magnificent Frigatebird (*Fregata magnificens*). Adult counts for these species were 430 Brown and 430 Masked boobies, 290 Red-footed Boobies, and 79 Magnificent Frigatebirds. Juveniles of all four species were also seen.

During 2021 and 2022, two USFWS-funded surveys supported by Island Conservation used a systematic approach to count seabirds on Monito Island. This work included establishing rodent biosecurity measures to try to prevent rodent reinvasion. Preliminary data from the May-June 2021 survey resulted in adult/juvenile counts of 140/81 Brown Boobies, 172/33 Red-footed Boobies, 245/85 Masked Boobies, and 22/256 Magnificent Frigatebirds. In addition, 71 adult Bridled Terns (*Onychoprion anaethetus*), 42 adult Laughing Gulls (*Leucophaeus atricilla*), ≥ six adult Brown Noddies (*Anous stolidus*), and six adult White-tailed Tropicbirds were counted. One observation worth noting is the absence since 2014 of the Sooty Tern (*Onychoprion fuscatus*) breeding colony originally reported in 1978.

Since counts are relative to the methods used, effort, and season, the team will evaluate if certain comparisons can be made between all these surveys. Nevertheless, results suggest that Monito Island continues to provide suitable roosting and breeding habitat for seabird species in the Caribbean as has been historically documented. In addition, black rats have not been detected since an eradication campaign by the PRDNER in 1999.

The next Monito Island seabird survey is scheduled for May 2022, and a poster will be presented at the AOS-BC Joint Conference in Puerto Rico (27 June - 2 July 2022) with updated results.

Contact: Jan P. Zegarra, USFWS-Caribbean Ecological Services Field Office (jan_zegarra<at>fws.gov)
Photo: Researchers survey a Magnificent Frigatebird colony on Monito Island, Puerto Rico (J. Zegarra).

[1] The findings and conclusions are those of the authors and do not necessarily represent the views of the US Fish and Wildlife Service.

Red-billed Tropicbird research on Saba, Caribbean Netherlands

Measuring just 13 km^2, Saba is one of the smallest Caribbean islands but one of the most important breeding sites globally for Red-billed Tropicbirds. Its rocky cliffs actually support a much larger breeding population than neighboring St. Eustatius, the only Tropicbird colony in the region to be actively monitored. With a breeding population of circa 1,500 pairs, Saba supports over 35% of the Caribbean population.

In 2021 and 2022, Lara Mielke and Hannah Madden deployed GPS loggers on Tropicbirds nesting in the largest colony on the island, Old Booby Hill. Fieldwork activities were complicated by difficult access to the site, which involves a strenuous hike, but they managed to retrieve data from 23 GPS loggers in total.

Tropicbirds on Saba flew south-west and north-east/west, whereas individuals that were tracked between 2016-2020 on St. Eustatius traveled primarily in a southerly direction. The little overlap observed may be due to competition for food among colonies during the breeding season. In both cases, however, some birds traveled hundreds of kilometers in a single foraging trip, crossing multiple political boundaries and marine protected areas.

Based on the diet samples, it appears that Red-billed Tropicbirds on Saba enjoy a varied diet of mainly flying fish and squid, but also fish species from the Jack family and a Flying Gurnard.

This project was supported by Birdlife Netherlands, Prins Bernhard Culture Fund, the US Geological Survey South Carolina Cooperative Fish and Wildlife Research Unit at Clemson University, and received help from Saba Conservation Foundation staff, the local people on Saba, and many volunteers who assisted with fieldwork, especially: Helena Boehm, Michiel Boeken, Martijn Terpstra, Eva de Vries, Gina Conley, Laura Meinecke, Rosa Buchholz, Tom Wijers, Djan Mattijssen, Hester van Haalen and Wynona Wilms.

Contact:
Hannah Madden, Caribbean Netherlands Science Institute (hannah.madden<at>cnsi.n)
Lara Mielke (laramielke<at>gmx.net)

Photo: Researchers on their way to a Tropicbird colony on Saba (N. Rijsemus).

Seabird surveys on Montserrat

In 2021, the Montserrat Government's Department of Environment (DoE) conducted seabird surveys for the first time since 2009, to gather information on existing seabird populations on the island, and map the locations of nesting sites. This work, and ongoing monitoring activities in 2022, is funded by the UK Government's Darwin Plus scheme, under a regional project led by the University of Liverpool. The DoE has been a collaborator since the project's start in April 2019, and recent seabird surveys arose after being flagged as a priority action during an early seabird-focused workshop in Anguilla in 2020.

Between April and June 2021, the team of surveyors conducted ground surveys at selected locations within Montserrat's safe zone, and three locations within the exclusion zone. These were chosen based on previous knowledge of nesting sites, and within potentially suitable habitat. In addition, the island's coastline was surveyed by boat on three occasions, including during night surveys.

Eight species of seabirds were recorded during surveys: the Magnificent Frigatebird, Brown Booby, Brown Pelican (*Pelecanus occidentalis*), Audubon's Shearwater, Red-billed Tropicbird, Laughing Gull, Least Tern, and Royal Tern (*Thalasseus maximus*). Of these species, two were recorded breeding: Shearwaters and Tropicbirds. One previously known Shearwater nesting site was confirmed to be active, and four new nesting sites were discovered during boat surveys. Shearwater responses to playback calls were also heard at four additional sites during night surveys. For Tropicbirds, six hotspots of activity were located, one within the exclusion zone. Hotspots were defined as areas where at least five nests were located and/or at least six tropicbirds were observed circling.

In October - November 2021, Tropicbirds were observed back at nesting areas, prompting the DoE to start planning a new schedule of monitoring for 2022. This will begin with surveys for Shearwaters and Tropicbirds in April and May, followed by targeted searches for Tern and Frigatebird nesting areas in June - July, with further additional monitoring planned for the winter 2022 and spring 2023.

Late in 2021, illegal hunting was reported at one of the documented tropicbird nesting sites, prompting the DoE to remind residents that seabirds are protected in Montserrat under the Conservation and Environmental Management Act.

Contact: Ajhermae White, Montserrat Department of Environment (whitea<at>gov.ms)

Photo: Magnificent Frigatebirds on Pinnacle Rock (A. White).

Least Tern study in southern Puerto Rico

Between May and August 2021, Luis Ramos, a Master's student at the University of Puerto Rico-Mayaguez, collected reproductive data on Least Terns nesting at an old shrimp farm in the town of Peñuelas, Puerto Rico. Luis monitored all nests found (using camera traps when necessary), described the nesting habitat, and documented disturbance events (e.g. flooding and predation).

The Least Tern nesting season was a very active one. Fifty-seven nests and 102 eggs were found, of which 33 eggs hatched. Overall, the hatching percentage was low (32%) and there were no fledglings. In fact, the average survival age was 4 days.

During the nesting season, flooding, disturbance, and predation were documented. Flooding caused the birds to abandon their nests. Additionally, evidence of dogs was documented on the periphery of the study area, but disturbance and predation by a Yellow-crowned Night-Heron (*Nyctanassa violacea*) resulted in the abandonment of the nests. In camera-trap recordings, a Yellow-crowned Night-Heron was observed harassing adults and preying on a chick during the night.

These preliminary data are descriptive but highlight the different factors that impact the Least Tern population in southern Puerto Rico, and offer the first preliminary data on reproductive biology of Least Terns on the island.

Contact: Luis Ramos Vázquez, MS Student, University of Puerto Rico-Mayaguez (iceramos<at>gmail.com)

Photo: Least Tern chick (L. Ramos Vázquez).

Seabird and marine litter surveys in the Grenadines

In the Grenadines of Grenada, the Birds of the Grenadines team partnered with local organizations Ocean Spirits, Kipaji Development Initiative Inc. and Natural Mystic Tours and Expeditions to visit a series of islands in the archipelago by sailing yacht. During a two-week expedition, they documented seabird breeding activity, assessed marine anthropogenic litter, and documented habitat types and sensitive biodiversity at these sites.

Ten seabird species were recorded, including the first Franklin's Gull (*Leucophaeus pipixcan*) record for Grenada. Red-billed Tropicbirds were starting to nest, while Brown Boobies already had mid-sized chicks. Interestingly, more than twenty Masked Boobies were observed at sea between Grenada and Carriacou – the highest known count for the nation, where they are thought to be extirpated as a breeding species. Migrant Royal, Sandwich (*Thalasseus sandvicensis*) and Common Terns (*Sterna hirundo*), and Brown Pelicans were also observed.

The team used drones and collected over 1,200 individual pieces of marine litter along beach transects to determine the amount, type and origins (where possible) of litter. Many shorelines – especially the Atlantic ones – were highly contaminated with marine litter originating from both local and distant sources, such as Brazil, Suriname, French Guiana – and even from the west coast of Africa.

Biodiversity assessments focused on avian, reptilian, and invertebrate species, as well as general habitat types. Several new island records of invertebrates and regionally endemic reptile species were documented, enhancing the overall conservation rationale of islands hosting seabird breeding colonies.

This project was funded by Specially Protected Areas and Wildlife (SPAW-RAC) and Birds of the Grenadines to address data deficiency of uninhabited offshore islands for the multi-year CANARI National Ecosystem Assessment (NEA) being conducted for Grenada and the Grenadines.

Contact: Juliana Coffey, Birds of the Grenadines (juliana<at>grenadinesbirds.com) (www.archipelagics.org)

Photos (J. Coffey): Top: Franklin's Gull in Saint George's, Grenada; Bottom: Marine litter surveys at Isle de Ronde, Grenada.

Elsewhere in the region ⇧

- In **Cuba**, Antonio García-Quintas and colleagues at IRD-MARBEC are developing a new approach to assess the reproductive habitat selected by Larids. Using deep learning on openly accessible satellite images, they are able to predict the suitability of islands and cays for nesting Gulls, Terns, and Noddies. **Contact: Antonio García-Quintas** (antonio<at>ciec.cu).

- In the **Cayman Islands**, a new biosecurity project started at the end of 2021, funded by the Darwin Plus scheme, and led by the RSPB (UK) in collaboration with the CI Department of Environment. The project focuses on invasive species on Little Cayman and Cayman Brac, and how to safeguard seabird colonies and reptiles for the future. Annual surveys (some using drones) were also carried out for Brown Boobies, Red-footed Boobies, Magnificent Frigatebirds, and White-tailed Tropicbirds in 2022. Tracking work on the population of Magnificent Frigatebirds as part of a regional project led by the University of Liverpool, also continued in December 2021, this time focused on tagging juvenile birds (1 year +).

- In **Puerto Rico**, the Avian Ecology and Conservation Project of the University of Puerto Rico, Aguadilla, led by Adrianne Tossas, found an active Brown Pelican breeding colony on the coast of Aguadilla. Located on a steep cliff bordering an urban road, but inaccessible to pedestrians, this site totalled 52 nests. Up to 33 juveniles were present in 35 monitored nests. The group also continued monitoring White-tailed Tropicbirds at their only breeding site on the main island of Puerto Rico. With an average of 80 Tropicbirds, the number of individuals recorded in 2022 has remained similar to surveys conducted between 2018 - 2021. **Contact: Adrianne Tossas** (Adrianne.tossas<at>birdscaribbean.org).

- In the **Dominican Republic**, Miguel Angel Landestoy is conducting seabird and shorebird surveys in Las Dunas de las Calderas, a Natural Monument and BirdLife Important Bird Area. In 2021, he located the first land-based colony of Brown Pelicans in the area, and monitored nesting in Least and Gull-billed (*Gelochelidon nilotica*) Terns. Miguel Angel's work is supported by BirdLife's Conservation Leadership Programme. **Contact: Miguel Angel Landestoy** (mango_land<at>yahoo.com).

- On **Anguilla**, Sombrero Island has been declared free of mice after an intensive mouse eradication effort in June-July 2021. This is the fourth Anguillan island to be restored, following the successful removal of Black Rats from Dog Island in 2012, and Brown Rats from Prickly Pear East and Prickly Pear West in 2018. **Contact: Anguilla National Trust** (antadmin<at>anguillanet.com).

- On **Antigua and Barbuda**, 23 offshore islands were surveyed in May-June 2021 by the Environmental Awareness Group (EAG) using ground and boat counts for 12 seabird species. EAG also trained over 30 volunteers to conduct surveys as citizen scientists. On Redonda, the annual wildlife monitoring visit was conducted in November 2021 and included counts of six seabird species. Following rat eradication in 2017, the increase in the number of trees has boosted populations of tree-nesting seabird species. The distribution of ground-nesting Boobies has also expanded across the islands. **Contact: Shanna Challenger** (shanna.eag<at>gmail.com).

- In the **French Antilles**, the Ligue pour la Protection des Oiseaux, the Muséum National d'Histoire Naturelle, and local partners are finalizing an Atlas of Breeding Seabirds of French Overseas Islands. **Contact: Antoine Chabrolle** (antoine.chabrolle<at>mnhn.fr).

  In **Guadeloupe**, Jérémy Delolme conducts yearly seabird breeding surveys at Pointe des Châteaux, Guadeloupe's second largest seabird breeding site. In 2020, Covid lockdown had seen an expansion of the areas used by breeding seabirds but the reopening of natural areas to human recreation has had a negative impact on seabird populations, with more than 300 nests abandoned following the end of restrictions. **Contact: Jérémy Delolme** (jeremy.delolme<at>hotmail.fr).

- In the **Mexican** Caribbean, two groups have been continuing their seabird activities during 2021-2022. In **Arrecife Alacranes National Park**, north of the Yucatan Peninsula, the Comisión Nacional de Áreas Naturales Protegidas has initiated a survey of breeding populations of Masked, Brown, and Red-footed Boobies. Visits were conducted in July and September 2021, and February 2022. Biologists resighted banded Boobies and are looking for information about Booby banding programmes in the Caribbean. **Contact: Melgar Tabasco** (ecovaquero<at>hotmail.com);

  On **Isla Contoy**, a small island off the northeast coast of the Yucatan Peninsula, a new seabird tracking project, run by a collaborative group from AMCAH, Amigos de Isla Contoy, and the University of Liverpool (UK) finally took off in February-March 2022. This year, the project began tracking adult and juvenile Magnificent Frigatebirds with GPS-GSM loggers, to gain information on at-sea distribution and behavior. These data will contribute to a wider regional project involving all six Caribbean United Kingdom Overseas Territories. AMCAH plans to initiate a tern banding scheme in Quintana Roo in 2022, and the team are seeking funds for longer-term conservation monitoring work. **Contacts: Jonathan Nochebuena Jaramillo** (jonathan_nochebuena<at>hotmail.com) / **Rhiannon Austin** (R.E.Austin<at>liverpool.ac.uk).

- The **International Black-capped Petrel Conservation Group** finalized its update of the action plan for the conservation of the Diablotin Black-capped Petrel. The document reviews relevant information gathered on the species over the previous decade and lays out strategies for its conservation. **Contact: Jennifer Wheeler** (jennifer.wheeler<at>birdscaribbean.org).

We want to hear about your seabird projects, particularly if we missed you in these pages! Please send updates about your work to our co-chairs, and we will feature them in our next newsletters, as well as in the list of Active Seabird Projects on our webpage.

Seabirder Spotlight

Patricia Bradley: Conserving seabirds of the Cayman Islands… and the whole Caribbean

The BirdsCaribbean blog recently included an [interview of Patricia Bradley by Jennifer Wheeler](). This is Patricia's 40th year in the Cayman Islands and 50th year living in the Caribbean. Among her many conservation contributions, several focused on Caribbean seabirds, including serving as past co-chair of the SWG. Relevant portions of the interview are excerpted here.

Jennifer Wheeler: In 2003, you and Robert Norton commenced *'An Inventory of the Breeding Seabirds of the Caribbean' (Bradley and Norton 2009)*. Do you have a special interest in seabirds?

Patricia Bradley: Yes, I adore seabirds [...], they are so majestic, independent, and free, and yet so vulnerable. Rob and I were focused on sea level rise and the effects of tropical storms, which combined with habitat loss are major threats to seabirds. Also, my mentor, John Croxall (a foremost expert in seabird conservation globally) was working in the Antarctic on fisheries and albatross and he shared with me what the international community was doing for seabird protection.

Thinking about the plight of seabirds, especially given regional climate change threats, we realized that assessing seabird health across the Caribbean was essential. We needed a comprehensive snapshot of the state of things – recent population numbers, threats and declines – so we could begin to understand the changes that were occurring. The Inventory of Breeding Caribbean Seabirds was finally finished in 2009, building on the works of both van Halewyn and Norton 1984 and Schreiber and Lee 2000.

[…]JW: Chapter 30 of the Inventory presents Conservation Issues and Proposals. Some of these have progressed nicely, some not at all. How are you feeling about the state of things?

PB: Yes, well, conservation activities often wax and wane, depending on opportunities, funding, crises like hurricanes, social unrest, and of course, Covid. Unfortunately, the effects of climate change – rising seas, changes in ocean chemistry and prey base – are increasing. The state of Caribbean seabirds is alarming. Reports estimate that many populations have decreased in the last 20 years. In the Cayman Islands, we seem to have lost 50% of what was one of largest colonies of Red-footed Boobies in the region. Preliminary results indicate that food shortages contributed to decreased breeding success, plus cat predation.

That's why the Seabird Working Group's promotion of a region-wide census is so critical. Previously, lack of continuity has been a major issue, with data collection dependent on one individual who either moved country or lost funding. I hope the 2023 census will change that, to go beyond the census to establish a regional monitoring database updated regularly, to allow a rapid response to threats that need to be addressed.

[…] JW: What's your advice for the BirdsCaribbean Seabird Working Group for the regional Caribbean Seabird Census push?

PB: Keep pushing! It's not easy coordinating the efforts across a region as diverse as the Caribbean. I know this and it often takes lots of persuasion! Take advantage of the people that have become trained and confident in seabird monitoring to encourage and coach others to assist in surveys. This should help to forge a new generation who will continue the work. And figure out a way to fill some of the gaping holes – it's shocking how little attention the seabirds on the offshore cays in Cuba and the Bahamas are receiving. We know costs are prohibitive with thousands of cays to census, but somehow we have to get creative to fund people to get out there! Additionally, the crisis that Caribbean seabirds are facing must be elevated at national levels so that monitoring becomes a government responsibility, as has occurred in Cayman since 2016, and in the U.S. islands for generations. However, where government support and funds are not forthcoming, international NGOs and BirdsCaribbean will need to continue their search for funding to ensure that this brilliant initiative does not stall.

Find the full interview here.

Books by Patricia Bradley:

Birds of the Cayman Islands. 1995. By Patricia Bradley and Yves-Jacques Rey-Millet. World Publications.

An Inventory of Breeding Seabirds of the Caribbean. 2009. Edited By: Patricia E. Bradley and Robert L. Norton. Florida University Press.

A Photographic Guide to the Birds of the Cayman Islands. 2013. By Patricia E. Bradley and Yves-Jacques Rey-Millet. Bloomsbury Publishing.

Birds of Cuba: A Photographic Guide. 2020. By Arturo Kirkconnell, Patricia E. Bradley, and Yves-Jacques Rey-Millet. Cornell University Press.

Research Highlight

Recent research describes the drivers of diverse foraging in Caribbean boobies

Three of the world's seven species of Boobies, the Red-footed Booby *Sula sula*, Brown Booby *S. Leucogaster,* and Masked Booby *S. dactylatra*, breed in the Caribbean. Like most seabirds, they are threatened by a range of human activities in marine and coastal environments (e.g. habitat destruction and predation from introduced mammals), and many populations are in decline. Therefore, improving our understanding of the distributions, behaviour, and ecology of these species is of particular importance for their conservation. Here, we delve into the findings of two scientific articles published in 2021 that reveal new insights into the ecology of Boobies in the Caribbean.

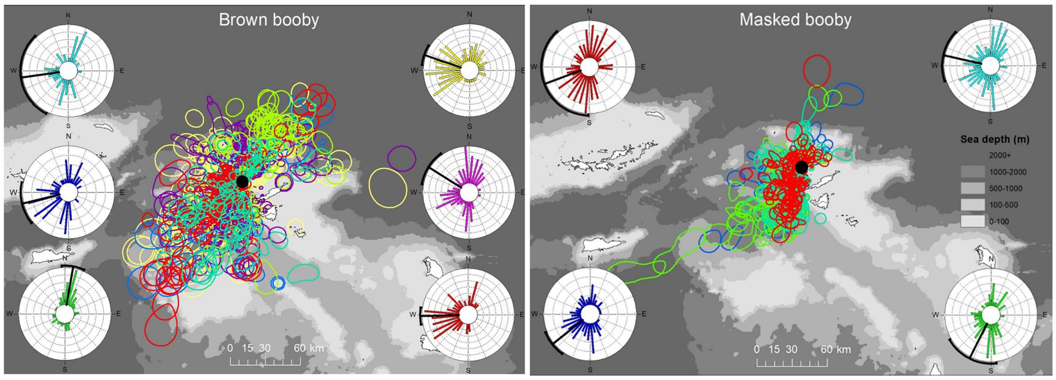
In Anguilla, foraging behaviours are linked to breeding strategies

Masked and Brown Boobies on Anguilla, and the team at work (L. Soanes).

In Anguilla, Dr. Louise Soanes, a researcher with the University of Roehampton and the Anguilla National Trust, and colleagues started investigating the relationship between foraging and breeding strategies of tropical seabirds in 2012. Through this work, they discovered strong differences in foraging behaviours of the two co-existing Booby populations, Brown and Masked Boobies.

It is thought that tropical seabirds typically respond to the lack of predictable patterns in tropical oceans by showing foraging behaviours that are much less predictable than those of temperate seabirds. Tropical seabirds also exhibit considerable variability in their breeding strategies, believed in part to be because the tropical marine environment shows limited changes through the year. Louise and her colleagues wanted to understand why some tropical seabirds, like Brown Boobies, breed throughout the year while others, like Masked boobies, show seasonal breeding. For this, they tracked 172 Brown Boobies and 79 Masked Boobies between 2012 and 2016 (recording 770 and 596 foraging trips, respectively).

The study found that Brown Boobies foraged less predictably than Masked Boobies. This was indicated by larger foraging areas, lower levels of foraging area overlap between individuals, and more variability between breeding periods. The predictability of foraging behaviour appeared to be related to breeding strategy, with populations that breed seasonally (Masked Boobies) exhibiting more predictable foraging behaviour than those that breed in an aseasonal manner (Brown Boobies). These results highlight the variability that exists in both breeding and foraging strategies of tropical seabirds: the foraging behaviour of tropical seabirds is not always less predictable than that of temperate seabirds — but it may be more complex.



The main foraging areas of Brown and Masked Boobies from Dog Island, Anguilla. Radial plots show foraging trip directions. Colours = breeding periods. Black circles = colony locations. Reproduced from Soanes et al. 2021, with permission. See original article for details.

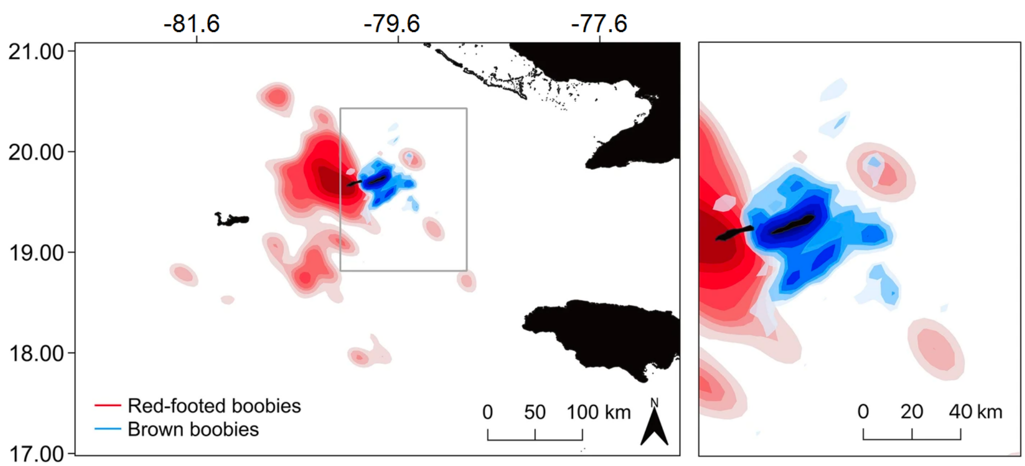
In the Cayman Islands, foraging strategies may be influenced by social influences such as competition within and between species — including from scavenging Frigatebirds.

The Cayman Islands study sites, bio-logging devices and team at work (R. Austin).

In the Cayman Islands, where Red-footed Boobies replace Masked Boobies as the Brown Booby's counterpart, an internationally important population of Red-footed Boobies breeds near a small and declining population of Brown Boobies.

Dr. Rhiannon Austin, a researcher at the Universities of Liverpool and Heriot-Watt, has been working with the Cayman Islands' Department of Environment (DoE) since 2016, to improve knowledge of and conservation actions for the six seabird species that nest on the islands. To compare the foraging strategies of the two resident Booby species, the team tracked breeding adults between 2016 and 2019, including with miniaturised video-cameras. They also collected dietary samples and stable isotopes to help compare differences in foraging.

This work revealed notable differences in foraging tactics of the Red-footed and Brown Boobies: the two populations had a similar diet but used different foraging areas. Larger-bodied Brown Boobies tended to forage close to shore, while Red-footed Boobies (which are smaller in size) roamed more widely and remained at sea for longer. Differences in the ways in which males and females foraged also varied between the two species: male and female Brown Boobies showed differences in habitat use, trip characteristics, and diet. Females (the larger of the two sexes) were more likely to remain in coastal waters where they are regularly attacked by Magnificent Frigatebirds who attempt to steal their food. In comparison, males (which are smaller) and were not targeted by frigatebirds traveled further offshore, presumably into habitats where the risk of encountering kleptoparasitic Frigatebirds is lower. In the smaller-bodied Red-footed Boobies, where females and males are similar sizes, almost no sex differences were seen. Rhiannon and colleagues suspect that density-dependent pressures from their larger population, coupled with avoidance of Frigatebirds, may be more important in influencing the movements of both sexes in this species.



Foraging areas of Red-footed and Brown Boobies from the Cayman Islands. Mapped kernel density distributions vary from 20% (core area; darkest colours) to 90% (home range; lightest colours). Reproduced from Austin et al. 2021, with permission.

By better understanding foraging of coexisting species, studies like these help to predict how future environmental change may impact species distributions and the structure of communities, and thus their vulnerability. Much of this work has been spearheaded by funding provided through the UK Government's Darwin Plus grant scheme (see project website here).

References

- Interspecific and intraspecific foraging differentiation of neighbouring tropical seabirds (2021) Rhiannon E. Austin, Federico De Pascalis, Stephen C. Votier et al. *Movement Ecology* 9:21
- Linking foraging and breeding strategies in tropical seabirds (2021) Louise M. Soanes, Jonathan A. Green, Mark Bolton et al. *Journal of Avian Biology* e02670

Contact: Dr Rhiannon Austin, Universities of Liverpool and Heriot-Watt (rhiannoneaustin<at>gmail.com)
Dr Louise Soanes, University of Roehampton and Anguilla National Trust (ls.axatrust<at>gmail.com).

Recent Seabird Publications and Resources

Interspecific and intraspecific foraging differentiation of neighbouring tropical seabirds (2021) Rhiannon E. Austin, Federico De Pascalis, Stephen C. Votier et al. *Movement Ecology 9:21* Using simultaneous data from animal-borne data loggers, dietary samples, and stable isotopes, this study investigates interspecific and intraspecific differences in foraging of Red-footed and Brown Boobies, two closely-related Boobies, from neighbouring colonies on the Cayman Islands. Observed foraging differences within and between species are discussed with respect to the influence of size dimorphism, competition, and kleptoparasitic pressure from Magnificent Frigatebirds .

Conservation genomics reveals low connectivity among populations of threatened Roseate Terns in the Atlantic Basin (2021) Paige Byerly, R. Terry Chesser, Robert Fleischer, et al. *Research Square (preprint) 123:1-15* The authors evaluated the structure of Roseate Tern (*Sterna dougallii*) populations in North America, the Caribbean, and the Azores. They found significant genetic differentiation among all 3 populations and evidence for moderate emigration from the Caribbean to the Azores. Within the Caribbean metapopulation, they found high rates of emigration from the Virgin Islands to Florida. These results suggest that loss of genetic diversity within populations is unlikely to be compensated by immigration from other populations.

Colony characteristics influence nest survival of Caribbean Roseate Terns (2021) Paige A Byerly, Susan Zaluski, Daniel Nellis, Paul L Leberg. *Ornithological Applications 123:1-15* This study evaluates the reproductive success of a declining population of Roseate Terns in the United States and British Virgin Islands. Predation was the primary cause of nest failure. Both hatch and nest success increased with colony size, and neither nest survival nor predation probability was influenced by individual nest site characteristics.

Mobilizing citizen scientists for biodiversity monitoring and mitigation of threats at remote Grenadine islands (2021) Kate Charles, Juliana Coffey, Kenrith Carter, et al. *Unpublished report for SPAW-RAC.* Authors report on a project aimed at mobilizing existing, and training additional, citizen scientists for monitoring biodiversity and assessing threats to sea turtle nesting sites, seabird colonies, and native flora and fauna of the Grenadine islands, particularly the presence of introduced predators such as rats and mice.

Introduced mammals threaten the Grenadines transboundary tropical seabird hotspot (2021) Juliana Coffey and Natalia Collier. *Journal of Caribbean Ornithology 34: 61-74* This paper presents a contemporary inventory of non-native mammal species on islands in the Grenadines, with a particular focus on breeding seabirds and protected areas, and explores the wider implications of complex sociocultural barriers to conservation.

Caribbean Pelagic Seabird Map Project: September 2020 status report (2021) A.O. Debrot, N.H.B.M. Kaag, M.F. Leopold, et al. *Wageningen Marine Research.* This report compiles many old but as-yet unpublished seabird records around the Dutch Caribbean islands, the eastern Caribbean as well as many poorly accessible seabird records for the waters off the coasts of Colombia and Venezuela.

Influence of rainfall on foraging behaviour of a tropical seabird (2021) Federico De Pascalis, Rhiannon E. Austin, Jonathan A. Green et al.. *Behavioural Ecology* *arab134* This study represents one of the few published quantitative investigations of the effect of rainfall on foraging behaviour of seabirds, and one of the first in tropical environments. The authors tracked chick-rearing Magnificent Frigatebirds from a population on the Cayman islands. They found no evidence that birds avoid rainfall, however there was some evidence that rain influences fine-scale foraging, as Frigatebirds reduced foraging time and increased roosting time in response to rain.

Estimating population size and ecological implications of a *Sula sula* colony on Mona Island (2021) Walter Espíndola Cáceres. *Master's Thesis, Pennsylvania State University.* This thesis is focused on estimating the population size of the Red-footed Booby colony in Mona Island and the direct and indirect effects on the terrestrial ecosystem. Walter Espíndola Cáceres estimated the Mona population of Red-footed Boobies at approximately 5,500 birds and determined the most adequate survey time. In addition, he showed that drone photography can provide a cost-effective alternative to ground surveys. Walter also found that nitrogen inputs from the Booby population have positive bottom-up effects by locally increasing the productivity of plants, and the density and activity of animals.

Persistence of Audubon's Shearwater (Puffinus lherminieri) and Bridled Tern (Onychoprion anaethetus) in cave breeding refugia on Mona Island, Puerto Rico (2021) Cielo E. Figuerola-Hernández, Rickard S. Toomey III, Patricia Kambesis, et al. *Journal of Caribbean Ornithology* *34:81-84* This article reports the persistence of two breeding seabirds (the Audubon's Shearwater and Bridled Tern) in northern caves of Mona Island, off the west coast of Puerto Rico. These remnant populations could play a critical role in seabird recovery on Mona, and could contribute to the conservation status of these birds in the Caribbean.

Identifying key biodiversity areas as marine conservation priorities in the greater Caribbean (2021) Michael S. Harvey, Gina M. Ralph, Beth A. Polidoro et al. *Biodiversity and Conservation* *30:4039-4059* Authors tested the feasibility of Key Biodiversity Area (KBA) population metrics in the Greater Caribbean marine region using occurrence and population data and threat statuses for 1669 marine vertebrates. They identified 90 geographically unique potential KBAs, 34 outside and 56 within existing protected areas, as well as areas of possibly intact marine wilderness. This provides starting points for local conservation managers to verify that KBA thresholds are met and to delineate site boundaries.

The use of social attraction techniques to restore seabird colonies on Desecheo Island, Puerto Rico (2021) Jose-Luis Herrera-Giraldo, Cielo E. Figuerola-Hernández, Coral A. Wolf et al. *Ecological Solutions and Evidence* *2021;2:e12058* Authors report on a social attractant experiment on Desecheo Island, a former breeding site for 15 species of seabirds off Puerto Rico. During 2 years of monitoring, seven new Bridled Tern nests were detected, and Audubon's Shearwaters were recorded near sound systems. Although no evidence of Brown Noddy nesting was found, authors conclude that social attractants are a feasible method to aid seabird recolonization on Desecheo.

Revising the marine range of the endangered black-capped petrel *Pterodroma hasitata*: occurrence in the northern Gulf of Mexico and exposure to conservation threats **(2021) Patrick G. R. Jodice, Pamela E. Michael, Jeffrey S. Gleason, et al.** *Endangered Species Research. 46:49-65* Authors reported on observations of Black-capped Petrels during vessel-based surveys throughout the northern Gulf of Mexico from 2010–2011 and 2017–2019. They suggest that the species' marine range be modified to include the northern Gulf of Mexico. To date, it remains unclear which nesting areas are linked to the Gulf of Mexico.

First coastal record of the White-tailed Tropicbird *Phaethon Lepturus* in Costa Rica **(2021) Kas Koenraads, Pablo Elizondo.** *Marine Ornithology 45:57-58* This note presents the first documented record of a White-tailed Tropicbird on the coast of continental Costa Rica, in April 2013. This is likely to be a wandering individual visiting the coast for feeding or a vagrant blown inland by high winds.

Status of seabirds, habitat, and invasive species in the Cordillera Reef Nature Reserve, Puerto Rico **(2021) Luis A. Ramos-Vázquez, Nahíra Arocho-Hernández, Cielo Figuerola-Hernández, et al.** *Journal of Caribbean Ornithology 34:1-11* Authors conducted a seabird survey in April 2018 in the Cordillera Reef Nature Reserve (CRNR) off Puerto Rico. Terrestrial point counts and boat surveys on Icacos, Ratones, Lobos, La Blanquilla, and Diablo cays recorded 5 seabird species, including a pair of Audubon's Shearwaters (the first record of this species for the Reserve).

Non-native rats detected on uninhabited southern Grenadine islands with seabird colonies **(2021) Wayne A. Smart, Natalia Collier, Virginie Rollandt.** *Ecology and Evolution 11:4172–4181* The objective of this study was to determine whether non-native rats are present on five southern Grenadine islands that harbor seabird colonies, during May–July, 2014–2017. Les Tantes East and Lee Rocks were the only islands where cameras detected Black Rats (*Rattus rattus*). The low detection probability and small number of nests prevented any inference about rat impact on seabirds.

Linking foraging and breeding strategies in tropical seabirds **(2021) Louise M. Soanes, Jonathan A. Green, Mark Bolton et al.** *Journal of Avian Biology e02670* To test whether seabird foraging behaviour is related to breeding strategy, authors tracked Brown Boobies and Masked Boobies, two closely-related species that breed on the same island off Anguilla yet show markedly differing breeding strategies. They found that Brown Boobies forage less predictably than Masked Boobies, in line with their less consistent asynchronous breeding schedules. Results highlight the variability in foraging and breeding strategies in tropical seabirds, and challenge the view that foraging in tropical seabirds is always less predictable than their temperate and polar counterparts.

Sea surface temperature, rather than land mass or geographic distance, may drive genetic differentiation in a species complex of highly dispersive seabirds **(2021) Lucas Torres, Eric Pante, Jacob González-Solís, et al.** *Ecology and Evolution 11:14960–14976* The authors conducted a genetic study on the widespread little shearwater species complex, which includes the Audubon's Shearwater in the Caribbean. They found sharp differentiation among populations separated by the African continent, and proposed that Atlantic populations likely originated from the Indian Ocean. Authors suggest that the differentiation mostly resulted from variation in sea surface temperatures.

Conservation Update and Action Plan: Conserving the Diablotin (2021) Jennifer Wheeler, Yvan Satgé, Adam Brown, et al. *International Black-capped Petrel Conservation Group*. The International Black-capped Petrel Conservation Group proposes an updated action plan for the conservation of the Diablotin Black-capped Petrel. This document reviews relevant information gathered on the species over the previous decade and lays out strategies for its conservation.

Breeding Magnificent Frigatebirds and Red-footed Boobies on Monito Island, Puerto Rico (J.P. Zegarra)