the Seabird Group

NEWSLETTER 141

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Contents

Seabird Group News

Vacancy on the Seabird Group Executive Committee

We are looking for a new **Secretary**! Holly Kirk has been serving on the **Seabird Group Executive Committee** (ExCom) since 2014 and this year she rotates out of her current role as Secretary. We would like to thank Holly for the fantastic job she has done for the group over the past few years.

The ExCom is made up of eleven members who all contribute to different aspects of the day-to-day running of the society. There are three main duties associated with the Secretary's role:

- Administration of the twice-yearly research grants application process and the Census grant applications
- Organisation and administration of the ExComm meetings and the Annual General Meeting
- The main point of correspondence for external contacts and World Seabird Union

Why should you think about joining the SG ExCom? You get to work and network with a great team of diverse people and support the Seabird Group and the wider seabirder community! If you are interested in taking on the Secretary role, or want to know more, please contact Holly via email (**secretary@seabirdgroup.org.uk**).

Research and Census Grants update

A reminder that the next deadline for **Seabird Group research grants** will be **31st October**. Grant application information can be found on the **webpage**.

Congratulations to the successful applicants in the February 2019 research grant round: Dilini Abeyrama (studying speciation of Yellow-nosed Albatross), Kirsty Franklin (expedition to ring Portuguese breeding European Storm Petrel) and Hannah Greetham (tracking the migration of Maltese Yelkouan Shearwaters).

Seabirds Count is ongoing this year, and the Seabird Group are pleased to continue supporting surveys from our legacy funding. In 2019 we have so far provided support for Black Guillemot surveys in East Caithness and a full species survey of the West and North West peninsula of Shetland. We are happy to announce there is still support available within our legacy funds for Seabirds

Count work, which have been boosted by profits from the last Seabird Group Conference (Liverpool 2018). There is no deadline for Seabirds Count Census grant applications, so please apply at any time.

Seabird Journal

We are currently putting together volume 32 of our journal **Seabird**. Over the years, Seabird has published several important monitoring and methodological studies, as well as being a place to record ecology, behaviour and unusual sightings. We are seeking to encourage those early in their careers to develop their paper-writing skills by contributing to our journal, and can offer support and mentoring in helping would-be authors achieve their publishing goals. To facilitate this, we have decided to run a virtual special issue of our journal, Seabird, to highlight research carried out by students. We welcome research articles from work completed during an undergraduate, Masters or PhD project. To qualify, the first author must be a student, or the data must have been collected while the first author was conducting a student project. We will also consider reviews written by students. All articles accepted after peer review will appear in the next issue of Seabird in print and online, as well as in the virtual special issue.

Although we are reaching out to students with our virtual special issue, we also welcome submissions to Seabird 32 from all seabird workers, both with and without an academic affiliation. Please do get in touch if you're interested in contributing to forthcoming issues. Manuscripts must be submitted by **15th September 2019** to appear in Seabird 32 and the virtual special issue. Any questions, please contact Viola Ross-Smith at **journal@seabirdgroup.org.uk.**

Grant report

What we didn't know (but suspected) about Arctic Tern migration in the UK

Chris Redfern, Newcastle University

The **Arctic Tern** (*Sterna paradisaea*) is, in appearance, one of our more-modest seabirds, and a real nuisance to identify out at sea as they fly past headlands and seawatching sites. In its migratory achievements though, it has the accolade of perhaps the longest migratory journey of any species, moving twice a year between breeding colonies in the Arctic or near-Arctic to winter in the Southern Ocean. Antarctic expeditions from the beginning of the last century reported the presence of Arctic Terns in the pack ice, particularly in the Weddell Sea, but also at other locations around the Antarctic continent[1]. Recoveries of ringed Arctic Terns away from breeding colonies are infrequent, but ship-based observations of birds at sea suggested that some Arctic Terns migrate south along the coast of West Africa and across the Indian Ocean before reaching Antarctica[2]. The deployment of geolocators on Arctic Terns breeding in Greenland[3], and in the Netherlands[4], has given insights into the migratory routes of individual Arctic Terns from European colonies, largely confirming broad-scale inferences from observations of Arctic Terns at sea and in the Antarctic[2]. These studies show what can be achieved using small electronic archival tags, but sample sizes were small as a result of low return/recapture rates at hard-to-reach colonies[3], and the estimates of position from light-level profiles were of relatively low resolution.

Figure 1: Arctic Tern (green-40) with geolocator on Inner Farne in 2017. This bird was just about to feed its chick; the nest was on the edge of the path leading to the toilets, but was protected from being trampled by a small chicken-wire enclosure.

[1] Cline, D.R.; Siniff, D.B.; Erickson, A. W. (1969). Birds of the Pack Ice in the Weddell Sea, Antarctica. *Auk* **86**, 701–716.

[2] Salomonsen, F. (1967). Migratory movements of the Arctic Tern (*Sterna paradisaea*) in the Southern Ocean. *Det K. Danske Vidensk. Selsk. Biol. Meddelelser* **24**, 1–42.

[3] Egevang, C., Stenhouse, I. J., Phillips, R. A., Petersen, A., Fox, J. W., & Silk, J. R. (2010). Tracking of Arctic terns *Sterna paradisaea* reveals longest animal migration. *Proceedings of the National Academy of Sciences* **107**(5), 2078-2081.

[4] Fijn, R. C., Hiemstra, D., Phillips, R. A., & van der Winden, J. (2013). Arctic Terns *Sterna paradisaea* from the Netherlands migrate record distances across three oceans to Wilkes Land, East Antarctica. *Ardea* **101**(1), 3-13.

In the UK we have some relatively large Arctic Tern colonies. The Farne Islands has around 2,000 pairs breeding in sites that are accessible, lack (so far) mammalian predators, and the birds are very tolerant of human disturbance. The presence of resident National Trust Rangers and daily human visitors helps to discourage avian predators, and regular ringing and retrapping has shown that the same individual birds return year after year to nest successfully in areas which are very heavily disturbed. Indeed, visitors walking in regular convoys to the toilets and Information Centre on Inner Farne appear to be no discouragement to egg-laying by Arctic Terns only a metre away[5]. These factors make the Farne Islands an ideal site for using geolocators to increase our understanding of Arctic Tern migration and behaviour on their non-breeding grounds. Early in 2015, after a tip-off from David Steel, Head Ranger on the Farne Islands at the time, BBC Springwatch was approached and agreed to fund, with a substantial contribution from the geolocator manufacturer Migrate Technology, the purchase of geolocators for a project on Arctic Terns. These were all attached in the 2015 breeding season and in the following year we were able to retrap 21 of our birds with geolocators; two were trapped the next year and a further bird with a geolocator was seen, but not caught, in 2018, giving an overall return rate of geolocator tagged birds of 85%[6]. Preliminary analysis of the data with the sophisticated FLightR software[7] suggested good accuracy in geolocation, and the high return rate meant that we could begin to ask new questions about the migratory ecology of Arctic Terns.

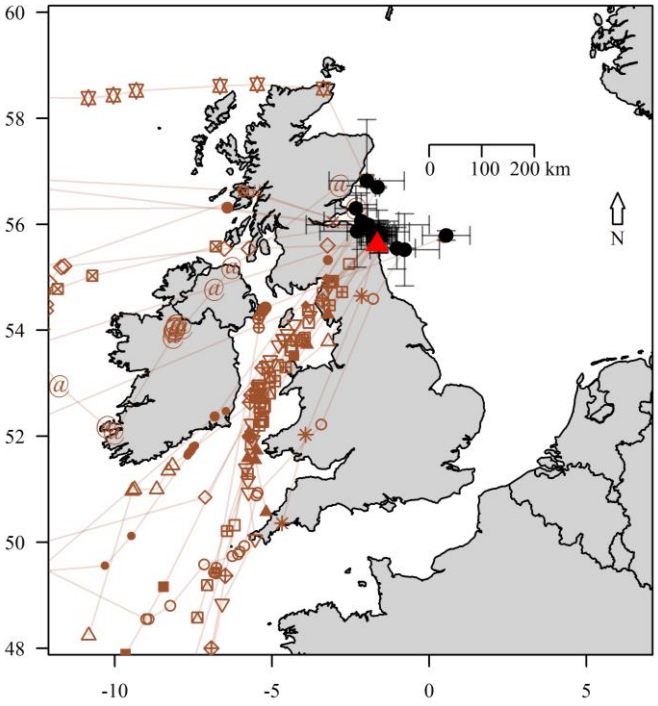


Figure 2. Geolocation points for the departure of Farne Islands Arctic Terns in 2017. The location of the Farne Islands is indicated by a large red triangle. Different symbols (brown) are used for each bird. The location of the mean stationary points in the North Sea immediately before departure for each bird are indicated by filled black circles with errors bars indicating the standard deviations of latitude (ordinate scale, decimal degrees) and longitude (abscissa scale). Thin lines joining geolocation points for each bird only indicate temporal relationships and are not intended to represent movement trajectories.
Data available **here**.

To continue the project, the **Seabird Group** provided a grant contributing to the purchase of additional geolocators. The remaining funds needed to buy a total of 25 geolocators were raised through targeted crowd funding and the generosity of some core members of the Natural History Society of Northumbria, the local organisation that has been instrumental in driving and sustaining ringing and other scientific work on the Farne Islands for many decades. We fitted the new geolocators to Arctic Terns in my study area in 2017 (Figure 1), and recovered 24 the next year, giving an overall return rate of geolocator-tagged birds for the study as a whole of 92.5%, and data for 47 bird/years[6]. Eleven of the birds tagged in 2017 had previously been tagged in 2015 and these are allowing us to examine the repeatability of wintering and migratory strategies of individual Arctic Terns.

Apart from revealing the amazing migratory journeys of our Farnes Arctics, with around a third of the birds traversing the entire Southern Indian Ocean to New Zealand waters before dropping south to the Antarctic, one of the first results to emerge from the data concerned their migratory strategy closer to home. Before looking at the data in any detail I had naïvely assumed that on migration the birds would take a coastal route south via the North Sea and through the English Channel. However, it was clear from the geolocation positions that our Arctic Terns were in the Irish Sea after leaving the Farne Islands and just before returning to the Farne Islands the following spring. This was true for both the 2015 and 2017 cohorts and, together with some geolocation positions that were coincident with some very reasonable inland water bodies, suggested that the birds migrated overland across the UK on both their outward and inward journeys[6]. On the outward journey, birds in the Irish Sea have the option of travelling to the Atlantic south via St George's Channel between Wales and Ireland, or west over the Irish mainland, and both these strategies seem to

[5] Redfern, C.; Kinchin-Smith, D.; Morrison, P. (2019). Little-endian Arctic Tern and Roseate Tern in Northumberland. *British Birds* **112**, 357–361.

[6] Redfern, C. P. F. & Bevan, R. M. (2019). Overland movement and migration phenology in relation to breeding of Arctic Terns *Sterna paradisaea*. *Ibis*

[7] Rakhimberdiev, E., Saveliev, A., Piersma, T. & Karagicheva, J. (2017). FLightR: an R package for reconstructing animal paths from solar geolocation loggers. *Methods in Ecology and Evolution* **8**(11), 1482-1487.

have been used[6]. There was only one bird that had apparently taken a coastal route, and that individual, tagged in 2017, went north, turned left at the north-east tip of the Scottish mainland and headed straight out west into the Atlantic, avoiding the Irish Sea entirely (Figure 2).

Overland migration by Arctic Terns across the UK in spring has been long suspected[8] and supported by observations of birds arriving on the west coast of the UK in spring. However, the Farnes Arctic Terns seem to migrate over the UK in both spring and autumn. Given the global scale of Arctic Tern migration, a flight of a hundred or so kilometres across the UK is unlikely to be demanding. Geolocation studies of Arctic Terns breeding along the north Pacific coast suggest that these birds may cross the South American Andes, an overland crossing of around 1,000km, to reach wintering areas in the Weddell Sea[9], so the UK is small beer compared to an overland journey of that magnitude.

Although geolocators are small and (relatively) inexpensive devices, important insights into environment and behaviour can be obtained from the measurements recorded, particularly with the more-sophisticated analyses possible with the FLightR software. This is especially relevant for a small seabird which winters in a remote and challenging environment after a global-scale migration. For the Farnes Arctic Terns, the geolocator data are being analysed from several different perspectives and have much to tell us about the migratory and non-breeding season ecology of these inspiring seabirds (surely more charismatic than Arctic Skuas?[10]).

Acknowledgements This project could not have taken place without the support of BBC Springwatch, Migrate Technology, The Seabird Group and Natural History Society of Northumbria (NHSN) members who provided the funding for geolocator purchase, and the National Trust (NT) and their current staff, particularly Harriet Reid and her team on Inner Farne, for their support and encouragement of the study. The NHSN have supported the project in other ways too, and I am grateful to David Steel for his encouragement and contacts which started the ball rolling. Thanks, too, to Richard Bevan, my collaborator in the project, for his support and contributions to the work.

Breeding Season Summaries

Predation of breeding terns on Strangford Lough 2018

Shane Wolsey, Shane Wolsey Consulting (shane.wolsey@btinternet.com)

In 2018 the National Trust funded intensive monitoring of breeding terns in Strangford Lough (Co. Down, Northern Ireland), specifically to assess the productivity of **Sandwich** (*Sterna sandvicensis*), **Common** (*Sterna hirundo*) and **Arctic Terns**, and to identify and quantify the impact of predation. The terns had undergone seven years of poor (but unquantified) productivity and there had been a significant fall in numbers of nesting terns on Strangford Lough. This article focuses on the investigation of predation of breeding terns at Strangford Lough.

During the breeding season 11 visits were made to the most important tern islands in Strangford Lough: Gabbock Island, Swan Island, Dunnyneill Island, Black Rock and Dunsy Rock. Detailed counts of adults and nests (Apparently Occupied Nests, AONs) were conducted on most visits. Monitoring for predation or the presence of potential predators was conducted on every island on every visit, and trail cameras were deployed on all islands for the duration of the season. The presence and activity of predators was looked for by the following methods:

- search for remains of prey, including eggs, chicks and adults;
- search for field signs of predators, including tracks, spraints, pellets, etc.; and
- deployment of trail cameras (one on each island). 31,139 video clips were recorded. Clips were 20 seconds long with a 10 second gap before the next video clip.

Results

Swan Island: Predation on Swan Island was limited to avian predation. A **Common Gull** (*Larus canus*) was seen to take a gull egg. Video surveillance did not show any other predators. **Eurasian Otters** (*Lutra lutra*) are known to be present locally –

[8] Kramer, D. (1995). Inland spring passage of Arctic Terns in southern Britain. *British Birds* **88**, 211–217.

[9] Duffy, D. C., Mcknight, A. & Irons, D. B. (2013) Trans-andean passage of migrating arctic terns over patagonia. *Marine Ornithology* **41**, 155-159.

[10] Humphreys, E.;Calladine, J.; Harris, S.; Thaxter, C.; Agombar, D.; Balmer, D. (2019). The possible demise of one of the UK's most charismatic seafaring birds. *Seabird Group Newsletter* **140**, 5–6.

spraint was found on harbour steps 150m from Swan Island – but there was no evidence, either physical prey items or spraint, nor video evidence, of them on the island.

Gabbock Island: The presence of otter on Gabbock was suspected from the outset when an adult **Herring Gull** (*Larus argentatus*) and three adult Sandwich Terns were found predated – all had been almost wholly eaten with just the wings, feet and tail left. The bones of these had all been snipped off the birds, and prey items had been brought to the same location to be consumed. There were also some predated eggs that appeared to be avian predated.

The presence of otter was confirmed by video evidence, with otter being captured on video on 16 occasions. Review of the thousands of video clips show that the incubating adult Sandwich Terns perceived the threat of danger to come from the landward side of their nesting location – from the tussock grass – rather than from the seaward side. The otter was using the runnels between the tussocks to move about the island, and to approach the nesting terns.

Top: Otter eating Sandwich tern eggs at 23:24 on 24/05/2018 on Gabbock Island.
Bottom: Herring Gull stealing one of the few remaining Sandwich tern eggs on Gabbock.

An adult Herring Gull (it is thought that just one bird was involved) also played a major role in predating eggs from an early stage in the nesting cycle. It systematically predated tern eggs, one at a time, advancing through the colony despite the adult terns trying to defend their nests. The gull took every egg as it worked its way along the colony, until it eventually took all eggs.

The terns became increasingly agitated as a result of the activities of the otter, and simultaneously became more susceptible to the predatory activities of the Herring Gull. On Gabbock Island the Herring Gull only predated during the day, when terns did mob the gull. The otter only predated at night, when terns did not mob it, until the last couple of days by which time most of the terns had deserted.

Dunnyneill Island: During the early season video evidence showed the Sandwich Terns remarkably settled throughout the day and night. However, by the third week the situation was dramatically different. Storm Hector (on 14/06) destroyed 69% of the common and Arctic Tern nests, and there was a cache of 8 dead, predated adult Sandwich Terns all killed by otter. This animal was caught on video on 5 occasions, including while it predated the young of Common and Sandwich terns and a gull chick. After the appearance of the otter the Sandwich Terns became exceedingly agitated, particularly through the night, lifting from their nests increasingly often, and for increasingly longer periods of time. By 23/06 nearly all nests of terns had been predated, and by 03/07 all nests were gone, and the adults had deserted the island altogether. The otter was using the cover of the island vegetation to approach nesting terns, and as a safe place to consume prey. On Dunnyneill it did not appear that predation by gulls played a major part in the failure if the colony. It is believed that no tern of any species fledged from Dunnyneill, and thus the productivity for all three species was zero.

Black Rock: At the beginning of July there were over 420 AON of terns. However, on the afternoon and evening of 03/07 the terns became exceptionally agitated, at times exploding off nests at minute intervals. This agitation continued into dusk, and then from 21:44 the Sandwich terns stayed away from their nests until after dawn. At 22:16 a **Great Black-backed Gull** (*Larus marinus*) arrived and could be seen predating egg after egg. This predation continued through the dark hours of the night for this and two more nights.

When the Great Black-backed Gull returned during daylight hours on 04/07 it was agressively mobbed by terns, but still managed to predate chicks. By dawn on 05/07 all the Sandwich Terns had deserted and did not return.

It is thought that just one Great Black-backed Gull was involved in this predation but it is also thought that some other factor was involved in making the terns extremely agitated. The terns, during daylight hours were not frightened by the great black-

backed and were, on many occasions, capable of chasing the gull away with intense mobbing. The object of their concern was to the right of the camera area and was therefore not recorded on video. The end result, whatever the mix of causal factors, was a complete failure of breeding on Black Rock. It is thought that not a single young tern fledged.

Dunsy Rock: This island gained a significant number of breeding terns late in the season, after they had left other sites within Strangford Lough. By 03/07 there were over 150 AON. There was also extensive evidence of the presence of otter – spraints and runnels through the tussock, and smaller holes in the tussock that were too small for otter and **American Mink** (*Neovison vison*), and too big to be **Brown Rat** (*Rattus norvegicus*). Within 10 days over 95% of the tern nests had been predated. The camera deployed did not capture any predation before the batteries failed. During the subsequent period, with a camera overlooking just two nests, a pair of Great Black-backed Gulls were caught predating the eggs and young. On Dunsy Rock it is certain that Great Black-backed Gulls were important agents on the failure of the colony. However, it is also known that otters were present, and indeed there may have been other agents, although no evidence of the presence of mink or brown rats was found. Tern productivity on Dunsy Rock was zero in 2018.

Great Black-backed Gull on Black Rock, on the evening of 03/07 just as it started to predate Sandwich tern eggs. Over 3 nights it predated every egg in the colony.

Summary

The main predators of tern eggs, chicks and adults were otter and large gulls. Otters had major negative impacts on Gabbock and Dunnyneill Islands, and were known to be present and may have had a role to play on Black Rock and Dunsy Rock. Herring Gull, benefiting from otter disturbance, had a major negative impact on Gabbock, while Great Black-backed Gull had major negative impacts on Black Rock and Dunsy Rock, where otter may also have been causing disturbance. There was some insignificant predation by other avian predators. It was notable that despite extensive searching, no evidence of predation by other mammalian predators (e.g. rats, mink) was found on any island.

In reading this account of predation on breeding terns on Strangford Lough it should be kept in mind that these results relate to only one year's monitoring. It is certain that all the factors that influence breeding tern productivity will not have been recognised during this one year of monitoring, and, indeed, factors that impact tern breeding productivity are likely to vary between islands and years. Further details of this project and of the tern populations of Strangford Lough can be found in the **Northern Ireland Seabird Report 2018**.

Acknowledgments: Thanks to the National Trust for commissioning and funding this work, and particularly Andrew Upton and Hugh Thurgate for enabling this work. Thanks also to Ron Price and Ashley Buchanan for their unstinting support in the field throughout the season.

Manx Shearwater census on Skomer, Skokholm and Middleholm 2018

Richard Brown and Giselle Eagle, Wildlife Trust of South and West Wales

A stay on Skokholm or Skomer is a must for any seabird fanatic. The cliffs and coastal slopes are lined with **Common Guillemots** (*Uria aalge*), **Razorbills** (*Alca torda*) , **Atlantic Puffins** (*Fratercula arctica*) and **Fulmars**, the plateaus are home to large numbers of nesting gulls and the walls and boulder slopes contain **European Storm Petrels** (*Hydrobates pelagicus*). However it is the sheer quantity of **Manx Shearwaters** (*Puffinus puffinus*) which is truly remarkable. Dark nights are filled with their raucous caterwauling and hundreds of birds litter the paths as guests wend their way back to their accommodation. Assessing exactly how many of these burrow-nesters return to the islands to breed has proven to be something of a challenge, with fragile ground, complex colonies, the sheer number of birds present and their nocturnal habits all making for a problematic survey.

Although various estimates had been made previously, the first inter-island survey was made in 1998. This exceedingly labour-intensive study involved a winter count of all of the burrows on the islands, an incubation period tape-playback visit to at least 5% of the burrows sampled across the islands and an assessment of response rate to allow for an extrapolation to be made. The conclusion was that Skomer held in the region of 102,000 pairs, Skokholm 46,000 and Middleholm 3000, although the

confidence intervals were unsurprisingly large[11]. A 2011 Skomer census and a 2012-2013 Skokholm census used tape-playback in 314m^2 circles positioned randomly in every hectare, an assessment of what proportion of each hectare square fell on land and another burrow-check calibration of response rate to put the estimates at 316,065 (95% CI: 83,534) for Skomer and 63,564 (95% CI: 15,943) for Skokholm[12,13].

A 2018 survey of Skomer, Skokholm and Middleholm, funded in part by the Seabird Group, was conducted as part of 'Seabirds Count'. In Wales 'Seabirds Count' is being co-ordinated and driven by Natural Resources Wales (NRW), who also made a significant financial contribution to the 2018 work on Skomer and Skokholm. The methodology followed that established by Perrins (2012)[12], although the male-only cassette-tape recording used during previous surveys was changed to a Waveform Audio File Format recording of a dueting pair. This dual-sex recording technique followed Perkins et al. (2017)[14] and achieved a higher and less variable response rate. Although the higher response rate should not influence the population estimate, it does reduce the level of uncertainty around it.

Manx Shearwater census on Skokholm.

Between the 1st and 20th June teams of experienced volunteers, led by Wildlife Trust of South and West Wales staff, visited over 400 314m^2 plots. Studies over many years have shown this period to be when the majority of pairs are incubating eggs in Pembrokeshire. At the same time the response rate to the dual-sex recording was established over ten visits to 109 study burrows fitted with access hatches. Over 15,000 burrows were visited and over 5000 responses elicited, meaning that the teams were collectively listening to the constant calls of shearwaters for nearly two straight days! The same estimates of land area used during the 2011-2013 surveys were used, but the resulting population estimates had increased.

We now believe the Skomer Manx Shearwater population to be in the region of 350,000 pairs, that on Skokholm to be 90,000 and on Middleholm 16,000, although it should be stressed that the confidence intervals remain large (over 90,000 for Skomer and approximately 22,000 for Skokholm). It thus seems likely that over half of the world's Manx Shearwaters breed on these Pembrokeshire islands. It also now seems likely that Skokholm is the second largest colony in the world (Rum was estimated at 76,000 in 2001[15]. Middleholm quite probably holds more than 1% of the world population.

The 2018 survey will be reported upon fully in due course, but for now we would like to say a huge thank you to the Seabird Group and to the fantastic team of volunteers who made the survey a reality. The Wildlife Trust of South and West Wales would like to thank Natural Resources Wales, The Seabird Group and The National Trust for funding, whilst The National Trust, University of Gloucestershire and University of Oxford contributed to the delivery.

[11] Smith, S., Thompson, G. & Perrins C.M. (2001). A census of the Manx Shearwater on Skomer, Skokholm and Middleholm, West Wales. *Bird Study* **48**, 330-340

[12] Perrins, C.M., Wood, M.J., Garroway, C.J., Boyle, D., Oakes, N., Revera, R., Collins, P. & Taylor, C. (2012). A whole-island census of the Manx Shearwater *Puffinus puffinus* breeding Skomer Island in 2011. *Seabird* **25**, 1-13

[13] Perrins, C.M., Wood, M.J., Gilham, J., Brown, R., Eagle, G. & Taylor, C. (2017). Manx Shearwater census on Skokholm Island 2012 and 2013. *Report to Wildlife Trust for South and West Wales.*

[14] Perkins, A.J., Douse, A., Morgan, G., Cooper, A. & Bolton, M. (2017). Using dual-sex calls improves the playback census method for a nocturnal burrow-nesting seabird, the Manx Shearwater *Puffinus puffinus*. *Bird Study* **64,** 146-158

[15] Murray, S., Shewry, M.C., Mudge, G.P. & Spray, S. (2003). A survey of Manx Shearwaters *Puffinus puffinus* on Rum, Inner Hebrides in 2001. *Atlantic Seabirds* **5**, 89-100

The formation of a new WSU Specialist Committee: Seabirds and Plastic Pollution

Stephanie Avery-Gomm (chair), Alex Bond, Stephanie Borrelle, Elisa Bravo Rebolledo, Sjúrður Hammer, Mark Mallory, Susanne Kühn, Jennifer Lavers, Jennifer Provencher, and Jan van Franeker.

In 2018, the **World Seabird Union** approved the formation of a **Specialist Committee on Seabirds and Plastic Pollution**. Plastic pollution is an emerging issue of concern, which is attracting increasing attention. Although the impacts of plastic pollution may, for many species, pale in comparison to threats associated with bycatch, invasive species, and climate change, an increasing number of species are found to ingest plastic, with yet unknown consequences. The members of this committee are a group of international seabird researchers collaborating on research regarding seabird plastic ingestion. We represent world experts on the issue across North America, Europe and Australia/New Zealand.

To find out who we are, visit our **WSU website**.

Current projects

The purpose of this committee is to foster a community of practice for researchers studying plastic pollution and seabirds. This is not exclusive to plastic ingestion, although that is the primary focus of the work currently underway. The committee publishes peer-reviewed papers that standardize and guide research aiming to understand the impacts of plastic pollution on seabirds. In 2017, the first collaborative project under the umbrella of the Specialist Committee a general methods paper was published by Jennifer Provencher and many committee colleagues[16], where we describe common practices on how plastics have been extracted from marine megafauna stomachs and the processing of these plastic samples. General recommendations of data processing and reporting were given. To gain more insight into the extent of potential harm of plastic on seabirds, standardized methods are essential to compare data on a large scale. During our second project we provided guidance on field methods for data collection, specifically for seabirds, whereby reporting data uniformly is one of the key messages[17]. Those two articles are published as open access articles.

The benefit of collaboration

The benefit of collaborating and using standardized methods has been impressively shown by group members even before the Specialist Committee on Seabirds and Plastic Pollution was founded. Data on plastic ingestion by **Northern Fulmars** (*Fulmarus glacialis*) have been collected since the 1980s, first in the North Sea area but soon expanding to the species' entire distribution: the North Atlantic, the Arctic and the North Pacific. As all contributing scientists collected and published their data uniformly, plastic ingestion could be linked to regional differences in plastic pollution and allowed a large-scale comparison of data. As data is available from many locations, policy makers in the North Sea (under the OSPAR Agreement) and European governments agreed in the Marine Strategy Framework Directive to use the Fulmar data to monitor plastic pollution in the North Sea and to aim for a substantial reduction in plastic mass ingested by Fulmars. This example shows how cooperation in science can lead to action within policymakers.

Photo: Northern Fulmar (*Fulmarus glacialis*) nibbling on a piece of plastic, Susanne Kühn.

[16] Provencher, J. Bond, A., Avery-Gomm, S., Borrelle, S., Bravo Rebolledo, E., Hammer, S., Kühn, S., Lavers, J., Mallory, M., Trevail, A., & van Franeker, J. (2017). Quantifying ingested debris in marine megafauna: a review and recommendations for standardization. *Analytical Methods* 9, 1454–1469.

[17] Provencher, J.F, Borrelle. S.B., Bond, A.L., Lavers, J.L., van Franeker, J.A., Kühn, S., Hammer, S., Avery-Gomm, S. & Mallory, M.L. (2019). Recommended best practices for plastic and litter ingestion studies in marine birds: collection, processing, reporting. *FACETS* **4**, 111-130.

This link between science and policy however is rare as a third paper, led by specialist committee member, Stephanie Avery-Gomm[18], emphasizes. So far there have been many scientific articles on the number of individuals within a population that ingested plastics but usually, the potential impact on populations or species is unclear and the link to species conservation is often missing.

Future plans

As collaboration has shown to be able to overcome these issues the Specialist Committee on Seabirds and Plastic Pollution was established and we hope for future collaboration on many projects! Currently a horizon scan for research priorities is being prepared by group members. We also submitted a workshop proposal for the third World Seabird Conference in 2020 in Hobart, titled: 'Expanding indicators of plastic pollution at a global scale'.

On a longer term we will provide up-to-date information at our WSU website, where:

- a global collection of data regarding plastic-ingesting seabirds would be available
- crucial articles about plastic pollution in seabirds are highlighted
- a Frequently Asked Question (FAQ) section will be established to inform interested people about the most recent developments in research
- an easy-to-find, globally distributed expert panel is provided where scientists working on plastics can seek information on method and analysis details
- collaboration on more scientific work takes place, highlighting the advantages of globally standardized research methods and applications for plastic ingestion in seabirds

In the meantime, members of the Specialist Committee are happy to field queries and provide advice to researchers around the world, and can be contacted via **www.seabirds.net**.

Seabird bycatch in the demersal Norwegian gillnet fishery

Kim Magnus Bærum, Tycho Anker-Nilssen and Signe Christensen-Dalsgaard, Norwegian Institute for Nature Research

Seabird populations have declined worldwide during the last decades, increasing the conservation concern for this species group. Although multiple factors are interacting to cause the observed trends, mortality from incidental bycatch in fisheries has proven to be important for many species. However, the bulk of published knowledge is derived from longline fisheries, whereas bycatch in gillnet fisheries is less studied and even overlooked in some areas. In 2013, Žydelis and colleagues estimated that on a global scale, 400,000 seabirds were killed as bycatch in gillnets annually, of which almost 200,000 were taken in the North-East Atlantic. This has raised substantial conservation concerns related to the level of bycatch of especially diving seabird species in gillnets.

In a recent study, researchers from the Norwegian Institute for Nature Research and Institute of Marine Research aimed to fill the knowledge gap on seabird bycatch in gillnet fisheries in Norwegian coastal waters. In the study, we utilized data from the Norwegian Reference Fleet, a group of Norwegian fishing vessels contracted by the Institute of Marine Research to provide detailed information about their fishing activity and catches, including bycatch of marine mammals and seabirds. A 10-year time series combining gillnet fishery data and seabird bycatch data was obtained and analysed to estimate bycatch rates and explore spatio-temporal patterns of the bycatch, and the extent to which these patterns were associated with the type and use of fishing equipment. The data represent a large fleet of small vessels fishing with gillnets along the Norwegian coast — a large area and fishery with no prior estimates of seabird bycatch.

Figure 1: Gillnet bycatch, Kim Magnus Bærum.

[18] Avery-Gomm, S., Borrelle, S.B. & Provencher, J.F., (2018). Linking plastic ingestion research with marine wildlife conservation**.** *Science of the Total Environment***, 637** 1492-1495.

The study documented overall quite high rates of incidental bycatch, but with large variation among years. The estimated total annual bycatch in the fisheries involved ranged between 1,580 and 11,500 (95% CI) birds (Fig. 1). A surprisingly high percentage (43%) were surface-feeding seabirds, with Northern Fulmar being the most common species taken. This contradicts the general perception of surface-feeding birds not being as susceptible to bycatch in bottom-set gillnets as diving species. Considering the world-wide use of gillnets, our results make it reasonable to question if surface-feeding seabirds are under-represented in the international literature on bycatch in gillnet fisheries. Among the diving seabirds caught, Common Guillemot was most numerous. These findings suggest that coastal gillnet fisheries represent a more general threat to a wider range of seabird populations, as opposed to longline fisheries where surface-feeding seabird species seem to dominate the bycatch.

Apparently, the bycatch of seabirds in Norwegian gillnet fisheries varies in time, between areas, and with fishing depth and distance from the coast, but no clear differences between types of gillnets used were found. The temporal variation revealed elevated bycatch in winter with highest predicted bycatch rates between November and January, whereas bycatch rates were lowest in May and June. The bycatch rate was highest in northeastern Norway, in particular where the nets were set close to the shore and at minimum fishing depth. Identifying such spatio-temporal trends in seabird bycatch, allows for the development and implementation of more specific mitigation measures. While specific time closures might be an efficient option to reduce bycatch for diving seabirds, measures such as gear modification and reduction in release of wastewater during fishing operation are probably a more effective mitigation approach for reducing bycatch of surface-feeding seabirds. An important continuation of the ongoing research project will be to infer possible impacts of the bycatch numbers on the affected seabird populations.

The results of this study emphasize the need for a holistic, spatio-temporal assessment of the effects of bycatch on a wide range of seabird species across multiple types of fisheries and fishing gear to evaluate the cumulative impact of the fishing activity. In the Norwegian case discussed here, the clear spatio-temporal trends regardless of net type used make it likely that management would benefit from a stronger focus on general mitigation measures, rather than separating between fisheries defined by their target species.

The research is published open access in **PLOS ONE**.

5th World Seabird Twitter Conference

Agnes Olin, #WSTC5 chair

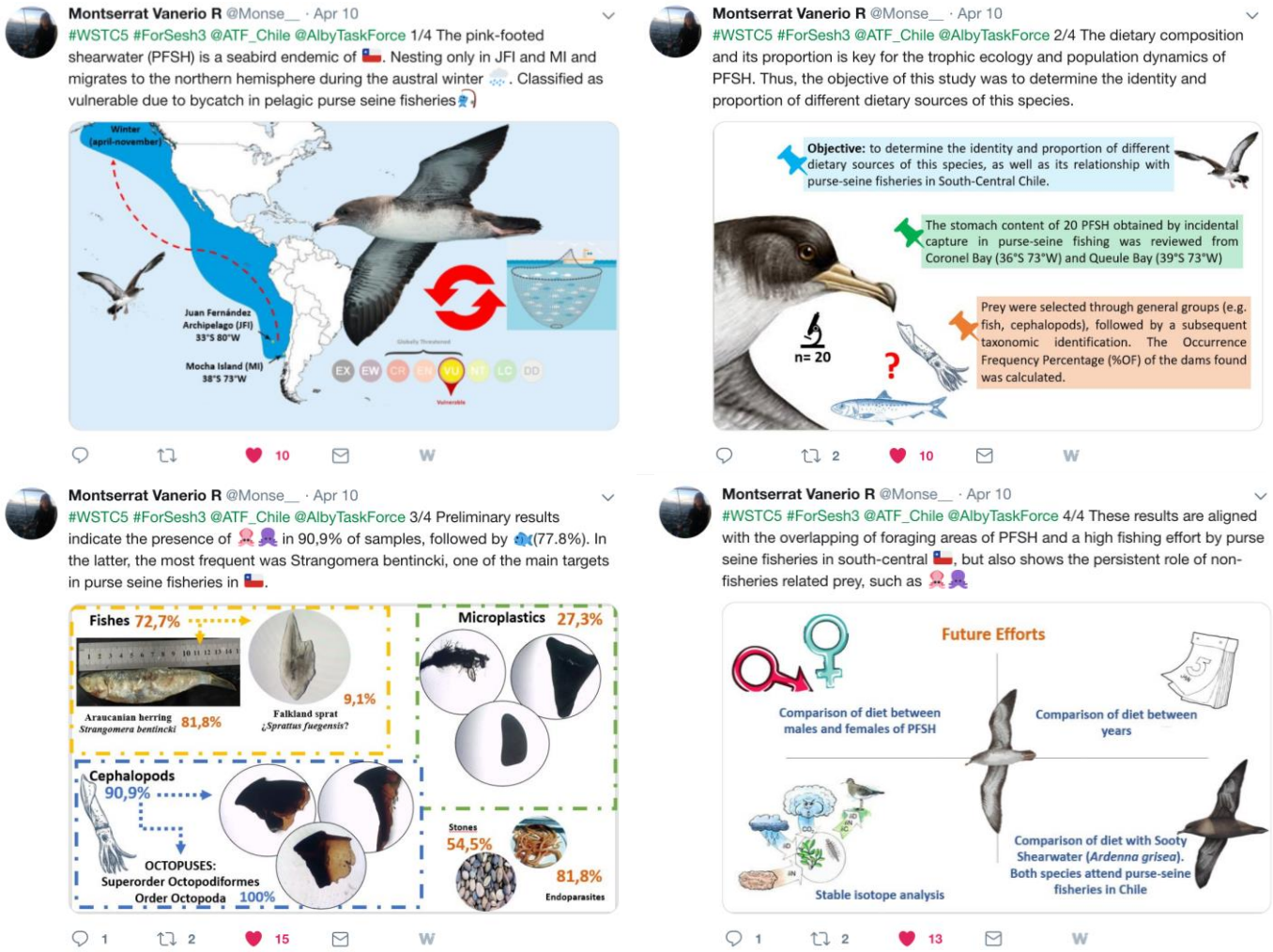
Another year, another **World Seabird Twitter Conference**! Running for the 5th time, the conference, which takes place entirely on **Twitter**, ran from the 11th until the 13th of April under the hashtag #WSTC5 and again had a huge following. During the conference, the hashtag #WSTC5 was used 3,400 times by 700 contributors, with a potential reach of over 1.3 million users (try fitting that into a conference hall!). We had over 100 presenters tweeting about their work from over 20 countries, spread all around the globe, and we even had people presenting in multiple languages. In addition to the presenters we also had people getting involved from all around the world by asking questions, re-tweeting and following the presentations (have a look at this **map**), making it a truly global event. The great thing is that even though people took part from all over the world, it involved none of the emissions or costs normally associated with conference travels, making the conference inclusive and environmentally friendly.

We had three fantastic plenaries this year. The first day we had Dr Rachael Orben (**@RachaelOrben**) present on the topic of "A sense of scale: connecting the dots of seabird movement ecology", which gave an impressive overview of how the development of advanced tracking techniques have helped to provide us with much better knowledge of seabird space-use and foraging behaviour, from the scale of individuals to populations, and how important this knowledge is in the context of spatial variability in for example by-catch risk and exposure to contaminants. The second day we had Professor Jacob González-Solís (**@SeabirdEcology**) give a presentation on "Conserving the double life of seabirds in Cape Verde islands", describing an impressive body of work on understanding the multiple threats to this rich seabird community, which include several endemic species. For our final plenary on the third day we had Dr Nic Rawlence (**@nic_rawlence_nz**) give a presentation on "Sentinels of change: Ancient DNA shows seabirds are key indicators of a dynamic world", which covered how DNA samples from museum specimens and other sources can be used to understand past population changes, showing results from some very unique and interesting projects on shags and penguins.

In addition to the plenaries we of course also had other fantastic presentations. These covered a huge diversity of topics, ranging from the behaviour of urban gulls to the effect of light pollution on seabirds, via citizen science data collection and even some species name etymology! While all the presentations were amazing, we could only select three to be awarded with one of our

prizes. The **Seabird Group** sponsored a special ECR prize, which was awarded to Federico De Pascalis (**@fdepa1**) for his presentation "Sex and wind conditions influence foraging tactics in a dimorphic seabird". Federico used incredible animated slides and videos to illustrate his work on **Scopoli's Shearwater** (*Calonectris diomedea*) foraging behaviour. In addition to this, we had a special Pacific prize sponsored by the Pacific Seabird Group, which was awarded to Montserrat Vanerio (**@Monse__**) for her presentation "Diet of the **Pink-footed Shearwater** (*Ardenna creatopus*): Natural and fisheries-related prey in south-central Chile". Montserrat used beautiful graphics to illustrate her tweets and impressively tweeted the content both in English and Spanish! Finally, the World Seabird Union's "Best Sci-Comm"-prize was awarded to Anicee Lombal (**@Anicee_Lombal**) for her presentation "Historical and physical dominate biotic processes as determinants of seabird genetic differentiation", which included fantastic animations. We are incredibly grateful for the sponsorship given by The Seabird Group, The Pacific Seabird Group and the World Seabird Union and we also want to acknowledge the support given by the British Ornithological Union, providing useful resources and great help in increasing the reach of the conference. As chair, I also want to acknowledge all the incredible work done behind the scenes - The World Seabird Twitter Conference is run entirely by volunteers, most of who are early-career researchers, and they have all made a huge effort organising, advertising and running the conference.

The good thing about Twitter conferences is that you can catch up on the presentations afterwards, so if you happened to miss the conference you can use the hashtag **#WSTC5** to look back on all the tweets. Just because the conference is over the discussions don't have to be – you can still get in touch with the presenters and ask questions. You can also have a look at our session summaries which include all the presentations in each session neatly lined up together with the post-presentation discussions, all of which can be found **online**. If you are craving more seabird tweets you will be glad to hear that plans for the 6th Twitter conference are already underway. Taking place in 2020, it will be chaired by Virginia Morera-Pujol (**@sk8sbd**) and Elodie Camprasse (**@ECamprasse**). If you follow them on Twitter, together with **@Seabirders**, you will be sure to be kept up to date. If you want to get involved with **#WSTC6**, or if you have any questions or comments at all, you can always reach us on **wstc.seabirds@gmail.com**.



Montserrat Vanerio's award-winning presentation on the "Diet of the Pink-footed Shearwater *Ardenna creatopus*: Natural and fisheries-related prey in south-central Chile".

Website: **www.seabirdgroup.org.uk**

Facebook: **www.facebook.com/pages/TheSeabirdGroup/**

Twitter: **www.twitter.com/TheSeabirdGroup (@TheSeabirdGroup)**

Registered charity No. 260907

The Seabird Group promotes and helps co-ordinate the study and conservation of seabirds. Members also receive the journal *Seabird*. The Group organises regular conferences and provides small grants towards research.

CURRENT SEABIRD GROUP COMMITTEE

Current retirement dates (at AGM) are shown in brackets:

Chairman	Stephen Votier (2019)	**S.C.Votier@exeter.ac.uk**
Secretary	Holly Kirk (2019)	**secretary@seabirdgroup.org.uk**
Treasurer	Ian Cleasby (2022)	**ian.cleasby@rspb.org.uk**
Membership Secretary	Danni Thompson (2022)	**membership@seabirdgroup.org.uk**
Seabird Editor	Viola Ross-Smith (2023)	**journal@seabirdgroup.org.uk**
Newsletter Editor	Katherine Booth Jones (2022)	**newsletter@seabirdgroup.org.uk**
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Ordinary Members:

Assistant Newsletter Editor	Vivienne Booth (2020)	**Vivienne.Booth@rspb.org.uk**
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Social Media	Saskia Wischnewski (2022)	**saskia.wischnewski@rspb.org.uk**
Assistant Membership Secretary	Zoe Deakin (2022)	**DeakinZ@cardiff.ac.uk**

Current membership rates	
Standing Order	£20
Concession	£15
Institution	£35
International:	£21
Life	£300

The Newsletter is published three times a year. The Editor welcomes articles from both members and non-members on issues relating to seabird research and conservation. We aim to provide a forum for readers' views so that those provided in the Newsletter are not necessarily those of the Editor or Seabird Group.

Submissions for the newsletter should be emailed to the newsletter editor: newsletter@seabirdgroup.org.uk. We recommend a maximum of 1500 words and ask that photographs and figures are sent as separate files and with full credits, where appropriate. **Deadlines are: 15th January (February edition); 15th May (June edition); and, 15th September (October edition).** Every effort is made to check the content of the material that we publish. It is not, however, always possible to check thoroughly every piece of information back to its original source as well as keeping news timely. If you have any concerns about any of the information or contacts provided, please contact the Newsletter Editor.