



Improving the Conservation Prospects of the Priority Species Roseate Tern Throughout of its Range in the UK and Ireland

Layman's Report: Summary of Achievements and Future Perspectives

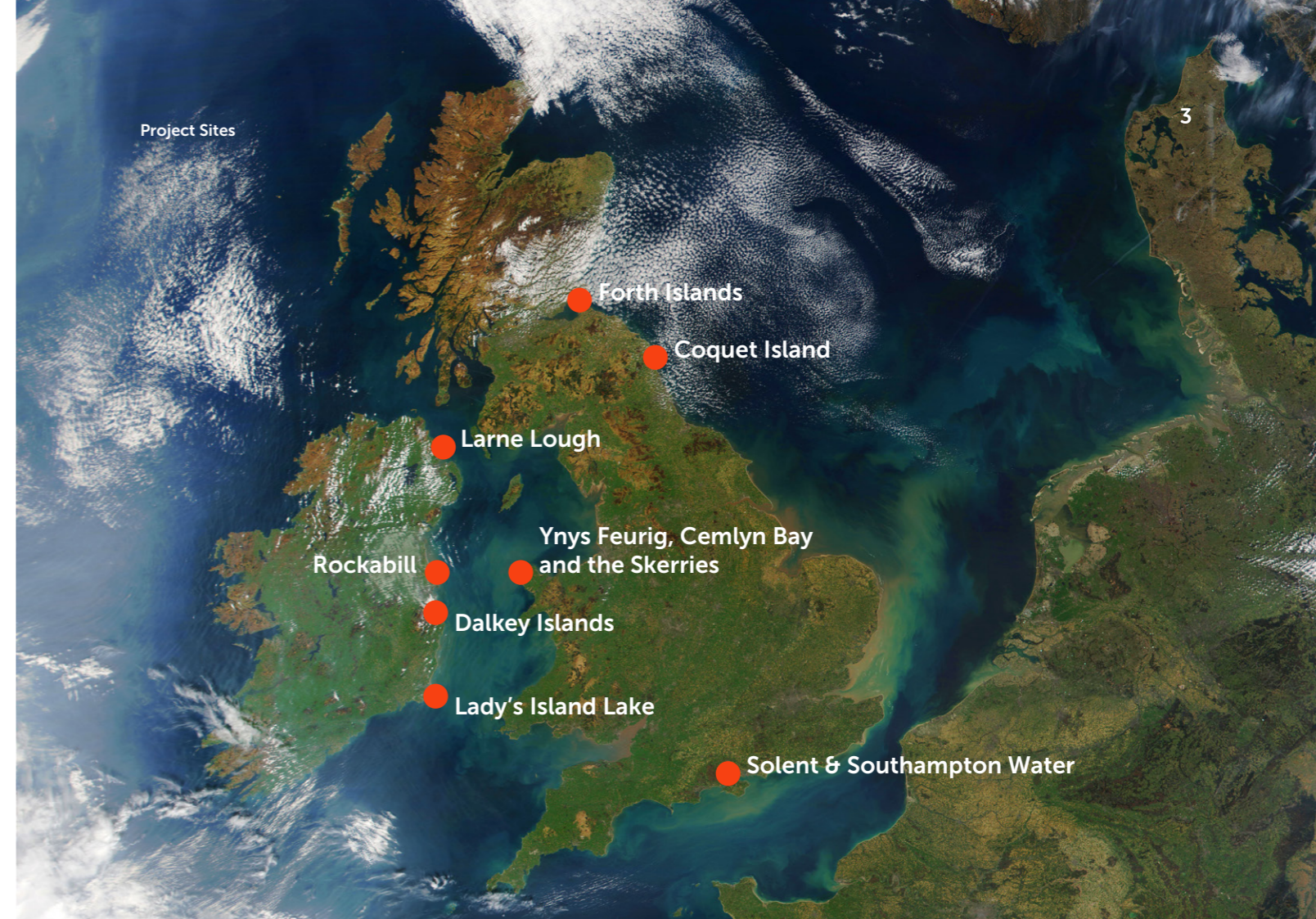
LIFE14 NAT/UK/000394



Project Scope and Objectives

The roseate tern (*Sterna dougalli*) is a small pale grey/white seabird with long tail-streamers, a black cap and a black beak which becomes red at its base in the summer. Its name comes from the characteristic pale pink breast in breeding plumage. Roseate terns return from their wintering grounds in the Gulf of Guinea in May to nest in crevices on rocky or sandy islands that offer some low plant cover. Some twenty years ago, conservationists introduced artificial nest boxes which have been successfully adopted by roseate terns, reducing the need for tall vegetation and improving breeding success. In Western Europe, roseate terns breed among the more aggressive common (*Sterna hirundo*) and Arctic terns (*Sterna paradisaea*), benefitting from their protection against predators. As typical of other tern species, roseate terns will plunge dive to take fish from the surface of the water. Their typical prey species are sandeel, sprat and juvenile herring.

The history of Europe's rarest breeding seabird in Britain and Ireland has been a rocky one. Its plumage was once prized for fashionable hats, driving them to verge of extinction back in the 19th Century. The creation of wildlife laws offered them much needed protection, however their population crashed again in the 1970s, this time probably due to illegal trapping in Africa and the growing competition with large gull species on their breeding grounds, with only 467 pairs remaining by 1989. Although long-term conservation efforts in North West Europe (Ireland, France and the UK) have resulted in the population increase, the species is still severely restricted in both range and population size as in 2020 there were only four viable colonies supporting a total of 2082 pairs. ↓



In 2015, the RSPB, BirdWatch Ireland and North Wales Wildlife Trust formed a partnership with the EU LIFE Programme to secure further recovery of the species in the UK and Ireland. The project was implemented at eight Special Protection Areas (SPAs) designated for the roseate tern, including the three viable colonies i.e. Rockabill and Lady's Island Lake in the Republic of Ireland and Coquet Island in Northumberland, England (Fig. 1). ↑

The main objectives of the LIFE Recovery Project was to enhance the habitat and predator management at the three existing colonies to increase the overall roseate tern population in Britain and Ireland, while improving the conditions at the five historical sites to increase a prospect of the future recolonisation. The colony management was underpinned by several studies aiming at understanding key issues affecting the species at both their breeding and wintering areas and informing the long-term management strategy in the context of predicted impacts of climate change. These outputs were shared during numerous networking events and informed the development of best practice guidance and the East Atlantic Roseate Tern Action Plan.



Roseate tern in flight
by Brian Burke



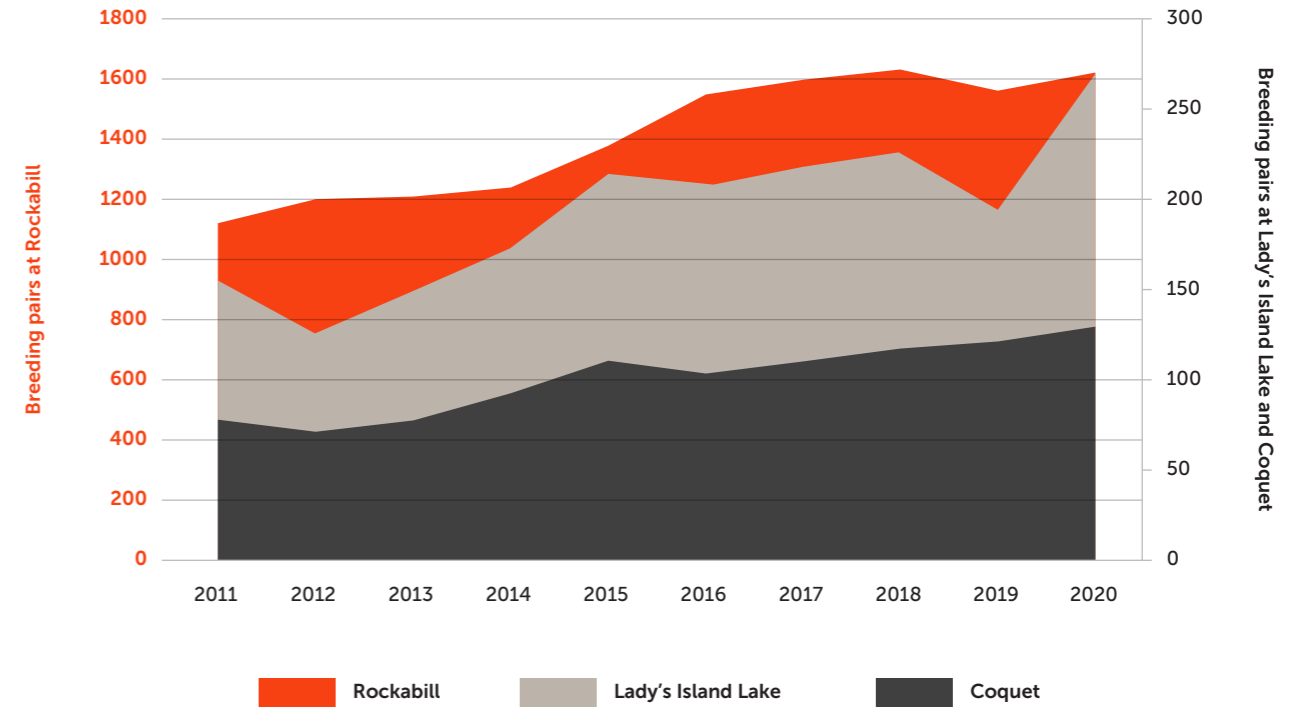
Roseate tern with a sandeel
by Brian Burke

Roseate Tern Population in the UK and Ireland

Throughout the LIFE Project, the population of roseate terns continued to grow with Rockabill recording its second highest number of 1615 breeding pairs in 2020. The other two sites both broke their records, with 273 pairs at Lady's Island Lake and 130 pairs on Coquet Island. ↓

In direct terms, the UK/Ireland metapopulation has grown during the project 7% from 1869 pairs in 2016 to 2028 pairs in 2020. However, a comparison of the 5-year means provide a much better picture of the population performance as it flattens sometimes large year-to-year fluctuations. During the project (2016-2020) Rockabill population grew 29%, Lady's Island Lake 37% and Coquet 36%, compared to the 2011-15 mean. →

Roseate Tern Population Growth in the UK and Ireland



Aerial view of Coquet Island by David Wootton

Population expansion: Although it is too early to confirm the establishment of new roseate tern colonies; Larne Lough, Northern Ireland continued to retain its single breeding pair, while successful breeding was recorded on the Skerries, Wales in both 2018 and 2019. In addition, mixed roseate and common tern pairs bred on the Isle of May, Leith Docks and Long Craig Island, confirming that the Forth Islands in Scotland is still an area of interest to target conservation work. ←



Roseate tern incubating by Brian Burke



Tern terraces at Rockabill by Brian Burke

Management of Tern Colonies

Funding from the LIFE project secured additional wardening capacity during the breeding season to improve management and monitoring of the sites. On islands, the funds were used to enhance living standards and provide essential utilities and equipment for residential wardens staying throughout the season in lighthouse quarters. We also improved monitoring methods to reduce disturbance and provided new hides required for the monitoring. ↓

New monitoring hide being
transported in Wales by Ian Sims



Creation of new tern terraces
on Coquet by Paul Morrison



Roseate tern by Brian Burke



Reprofiling the tern islands
at Cemlyn by Chris Wynne



The habitat management of roseate terns focused on increasing the optimal area for nesting. Rampant vegetation growth was reduced through either removal by hand, suppressing it with textile material or trialling pesticides. Nestboxes provided shelter from predators and elements improving breeding success. Throughout this project, wardens continued to build new terraces and additional nestboxes. Tern decoys and nestboxes were also distributed across the historical sites to attract prospecting terns (e.g. Skerries and Dalkey).

Habitat restoration and creation was a key aspect of the Project across the historical sites. The largest habitat restoration subproject was to restore the outer rock armour of Blue Circle Island at Larne Lough. The rock armour eroded causing flooding of up to a third of the island. The project was supported by Tarmac, which contributed funds and transferred the ownership of the island to the RSPB. Similar restoration of tern islands was carried out at Cemlyn Bay by the project partner North Wales Wildlife Trust. ↑→

Tern decoys and nest boxes
on the Skerries by Ian Sims



Management of Tern Colonies (continued)

In Western Solent, England, we trialled recharging shingle cheniers on saltmarshes where common, little (*Sternula albifrons*) and Sandwich terns (*Thalasseus sandvicensis*) nest. These habitats are threatened by flooding due to the sea level rise and needed to be elevated above the spring high tide level. To provide alternative nesting sites, we built artificial bunds on top of a breakwater and deployed tern rafts with mixed results. As the cheniers continued to erode during the project, we restored nesting habitats and improved predator fencing at Normandy Lagoon, which is located behind the seawall to provide a safer long term nesting site for birds.

By improving or creating safe alternative nesting opportunities at these sites, we hope that the population of common and other species of terns will increase allowing for potential recolonisation of roseate terns in the future. ↓



Port Edgar tern raft by Chris Knowles



Breakwater bund in the Solent by Daniel Piec



Blue Circle Island restored at Larne Lough by Daniel Piec



Surveying the islands to develop the biosecurity plans by Daniel Piec



Wax block to detect mammalian presence by Daniel Piec

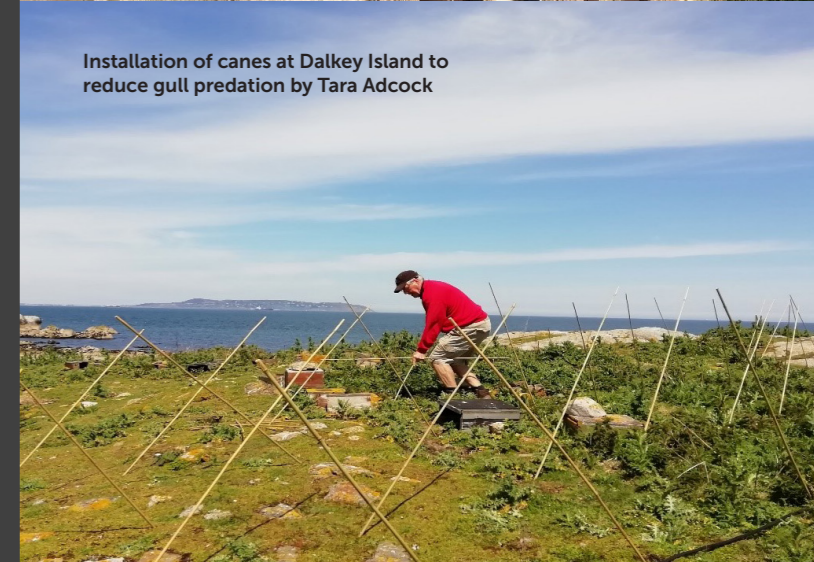
We purchased rapid response equipment, developed biosecurity protocols and trained site managers of island-based sites against a potential incursion of invasive non-native species. Wardens on Coquet Island – the only viable roseate tern colony in the UK, experienced a rat incursion first hand and were able to respond promptly to remove the rat prior to the breeding season. In Ireland, one of the former colonies on Dalkey Islands is located only a short distance from the mainland and the risk of rat recolonisation is high. At this site we focused on rat control to remove the rodents from the islands over winter in order to improve tern productivity. ←

To mitigate mammalian predation, fencing was installed on Coquet, Cemlyn and Larne Lough. This was successful in increasing nesting success and reducing conflict with other protected species such as otters. In conjunction with fencing, wardens also undertook night shifts to reduce fox predation at land accessible sites. →

However, avian predators, especially larger species of gulls are the biggest threat to chicks at tern colonies. We trialled new non-lethal techniques across all the sites such as laser hazing, audio scarers and cane grids to discourage settlement of gulls in tern nesting areas and reduce predation through the nesting season. →



Fencing installed at Coquet by Paul Morrison



Installation of canes at Dalkey Island to reduce gull predation by Tara Adcock

Research

A key objective of the LIFE project was to understand the issues affecting roseate terns at both their nesting and wintering sites. Our scientists produced several scientific papers including the analyses of ringing and resighting data of roseate tern chicks over the period of 1996–2016. The study revealed that the population growth at Coquet has been supported in that time by immigration from Rockabill, whereas the growth of the Irish colonies was driven more by high breeding success and survival of juveniles and adults. In recent years though, the survival of Coquet's juveniles has increased and this coincides with recent population increase resulting in the colony becoming self sustaining. ↓

Rockabill Island by Brian Burke



Roseate terns foraging by Pete Morris



We applied visual (boat) tracking surveys to study roseate tern foraging range and ecology from Rockabill, which confirmed that the birds can forage up to 30 km from the colony and that roseate terns actively search for bird aggregations initiated by auks or marine mammals driving the fish to the surface. This information has helped inform our long term management of these colonies. ↑

We also carried out literature reviews on tern diet and prey fish species ecology and threats from climate change and fisheries. We concluded that climate change is negatively affecting sandeels abundance and fitness, which pointed out the importance of having multiple forage fish species available near tern colonies. This led to the development of prey hotspot areas for future colony management in our efforts to extend the roseate tern range.

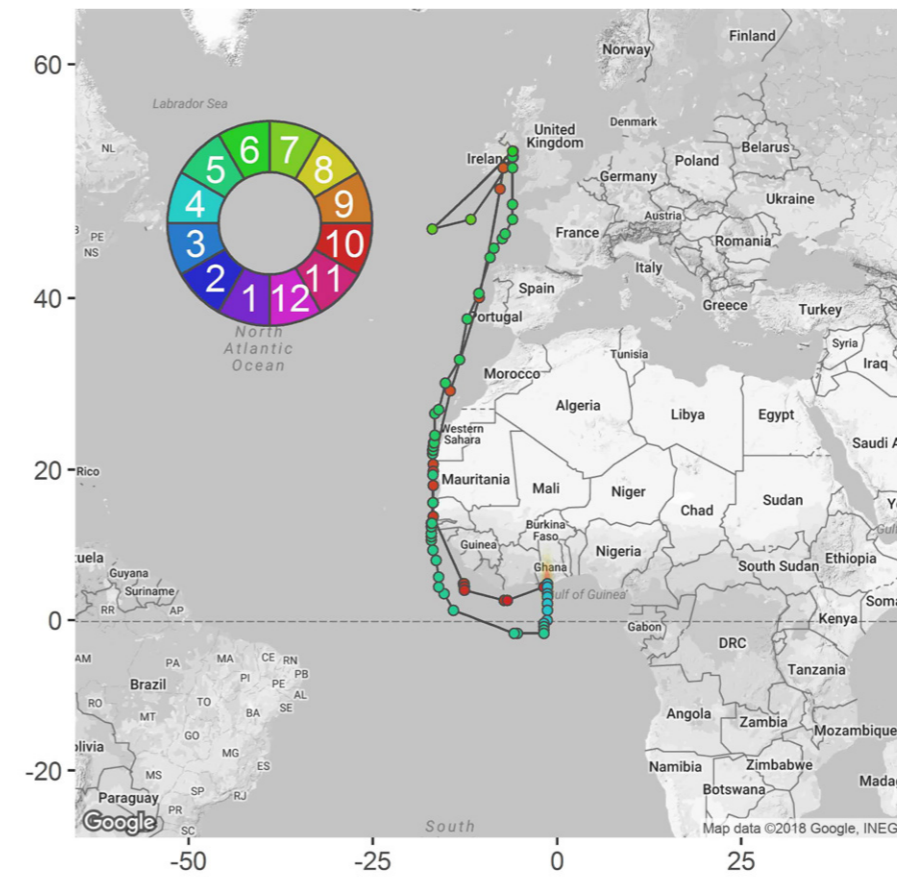
Research (continued)

With technological advances we were also able to study roseate tern migration patterns. We attached small tracking devices that measure and store daylight duration, called geolocators, to roseate terns from Rockabill and Coquet to map their migration routes. Experienced ringers, licensed by the British Trust for Ornithology, fitted the devices to colour rings and recovered them the subsequent spring after the birds returned to nest. This was done without apparent impact on terns and their breeding success. Initial results concluded that the wintering location of the Gulf of Guinea is consistent, with the majority of the tagged birds wintering in coastal Ghana while others in Sierra Leone and Liberia. ↓

Roseate tern with geolocator attached by Chris Redfern



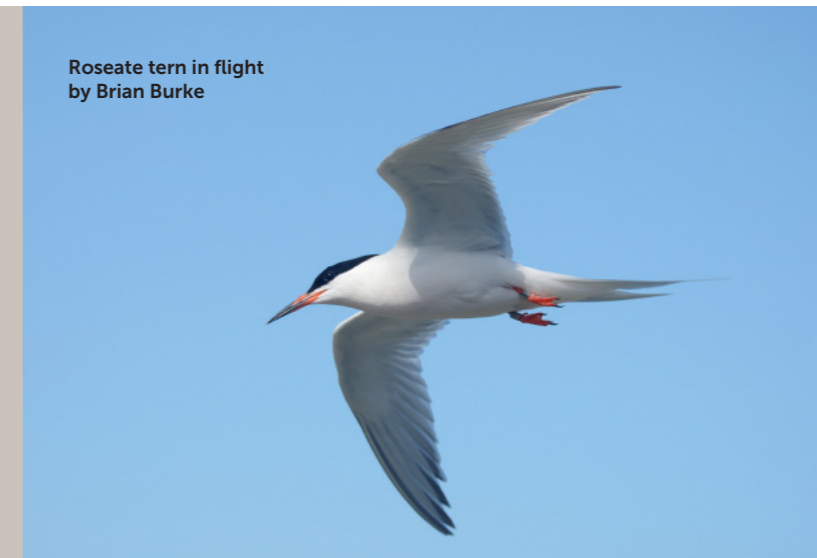
Map showing the movement of a tracked tern by Chris Redfern



As roseate terns will fly over 6000 km to their wintering grounds, the tags also recorded important stopover sites where terns refuel in cold water upwellings of the Canary Current Large Marine Ecosystems off Senegal, Guinea-Bissau, Mauritania and the Canary Islands. Interestingly some of Coquet birds were recorded going across land to the Irish Sea before heading south on migration. ↑

Away from the nesting grounds, we surveyed key coastal sites in Ghana in collaboration with the Centre for African Wetlands to check if tern trapping has continued. This revealed that although tern trapping has been made illegal, it is still occurring albeit not as systematically as in 1980s. We concluded that the next step would be to work on a targeted educational program together with our BirdLife colleagues in Ghana. →

Roseate tern in flight by Brian Burke



Evidence of tern trapping at the wintering grounds by RSPB



Public Engagement

During the LIFE project, we have organised or participated in approx. 300 different events which consisted of talks, tern watching session, guided tours with almost 13,000 attendees. Interpretative materials were produced including leaflets, roller banners, online interactive infographics, school activity booklet and information signs. The project website (www.roseatetern.org) successfully provided updates from various sites and acted as a platform for sharing documents included the best practice guidance. Although the LIFE project has ended, this website will continue allowing tern colleagues from multiple organisation access the resource documents. ↓



Primary seven pupils unveiling their 'Treasures of the Sea' poster to mark their participation in seabird projects by St. MacNissi's Primary School

Project website www.roseatetern.org



Virtual reality system bringing Coquet Island to the public by Paul Morrison



Roseate tern chicks caught on Coquet's summer webcams

As the roseate tern colonies are not accessible to the public, a virtual reality experience of Coquet Island was developed and an online live streaming webcam was set up to reach a wider audience. There are two cameras; one showing both the terns (and occasional puffins) on the terraces and the second following a roseate tern pair within a nestbox and the early stages of a chick before fledging. This has been incredibly popular with 375,000 views in the summer of 2020. In addition, a roseate tern beer was produced with Credence Brewery and From the Notebook where some of the proceeds went to managing the Coquet site. ←↓

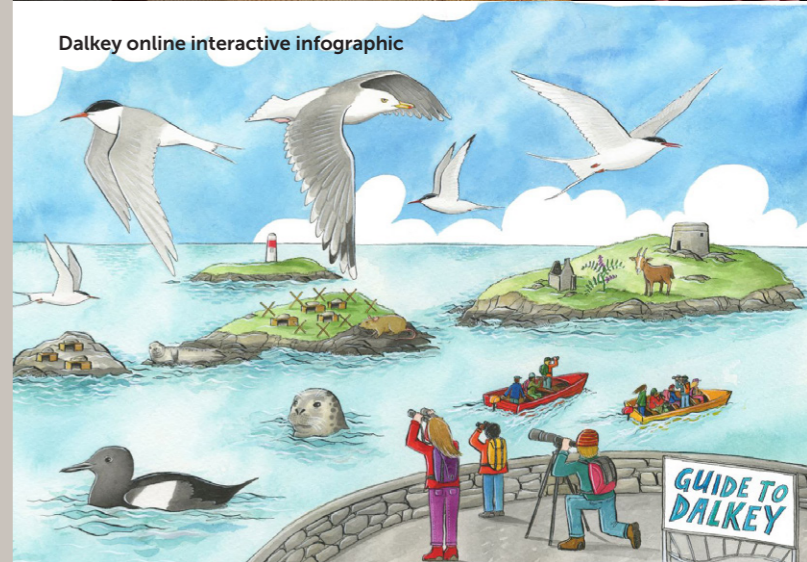


Chris Packham meeting Coquet Site Manager Paul Morrison during BioBlitz by Paul Morrison

We had celebrated the successes at our project sites to the wider public by producing approximately 400 media stories with radio, TV interviews, blogs as well as magazine articles. Examples include Chris Packham interviewing wardens at Cemlyn and Coquet during the BioBlitz, BBC radio interviews and footage covering the island restoration work at Larne Lough and roseate tern success at the Skerries. The LIFE Project was also a 2019 and 2020 Natura 2000 finalist promoting the importance of international collaboration. Social media (Facebook and Twitter @RoseateTernLIFE) was used to further disseminate this information. ←



From the Notebook & Credence Brewery's Roseate Tern beer by Daniel Piec



Dalkey online interactive infographic

Networking

From a metapopulation management point of view and in the context of potential recolonisation, we had a key objective to improve the communication between tern colony managers across countries in North West Europe. We engaged with the regional tern forums such as the Irish Sea, the Norfolk Tern Forum, South Coast, Forth Islands, Cumbria and Northumberland groups. Our networking activities included organising site visits and workshops where we shared the information on best practice tern colony management across multiple organisations. As terns are not restricted by country borders, it was essential to work together for the population to continue to grow. ↓

LIFE networking trip to the Azores meeting national park staff and government officers



1st Irish Seas Tern Network Meeting by Chantal Macleod-Nolan

The LIFE Project also developed links with other roseate tern colleagues in France, the Netherlands and the Azores, where management approaches were shared. International visits and meetings allowed colleagues to better understand the threats and pressures the individual sites encountered. An outcome was that Bretagne Vivante created their first nest box terraces on Ile aux Moutons and the Project continued to further develop these relationships in order to produce a comprehensive European Roseate Tern Action Plan. ↑→↓



Bretagne Vivante creating tern terraces on Ile aux Moutons by Daniel Picc



Roseate Tern LIFE colleagues visiting Rockabill by Usna Keating



Bretagne Vivante visit to Coquet in 2017 by Yann Jacob

In a global perspective, we restarted the Annual International Newsletter which encouraged information sharing between both sides of the Atlantic Ocean (USA, Canada, Bermuda and the Caribbean) and even the Pacific Ocean (Japan). This resulted in co-organising (with USA & Canada) the first North Atlantic Webinar, which enabled discussions on management practices, policy and renewable work related to roseate terns.

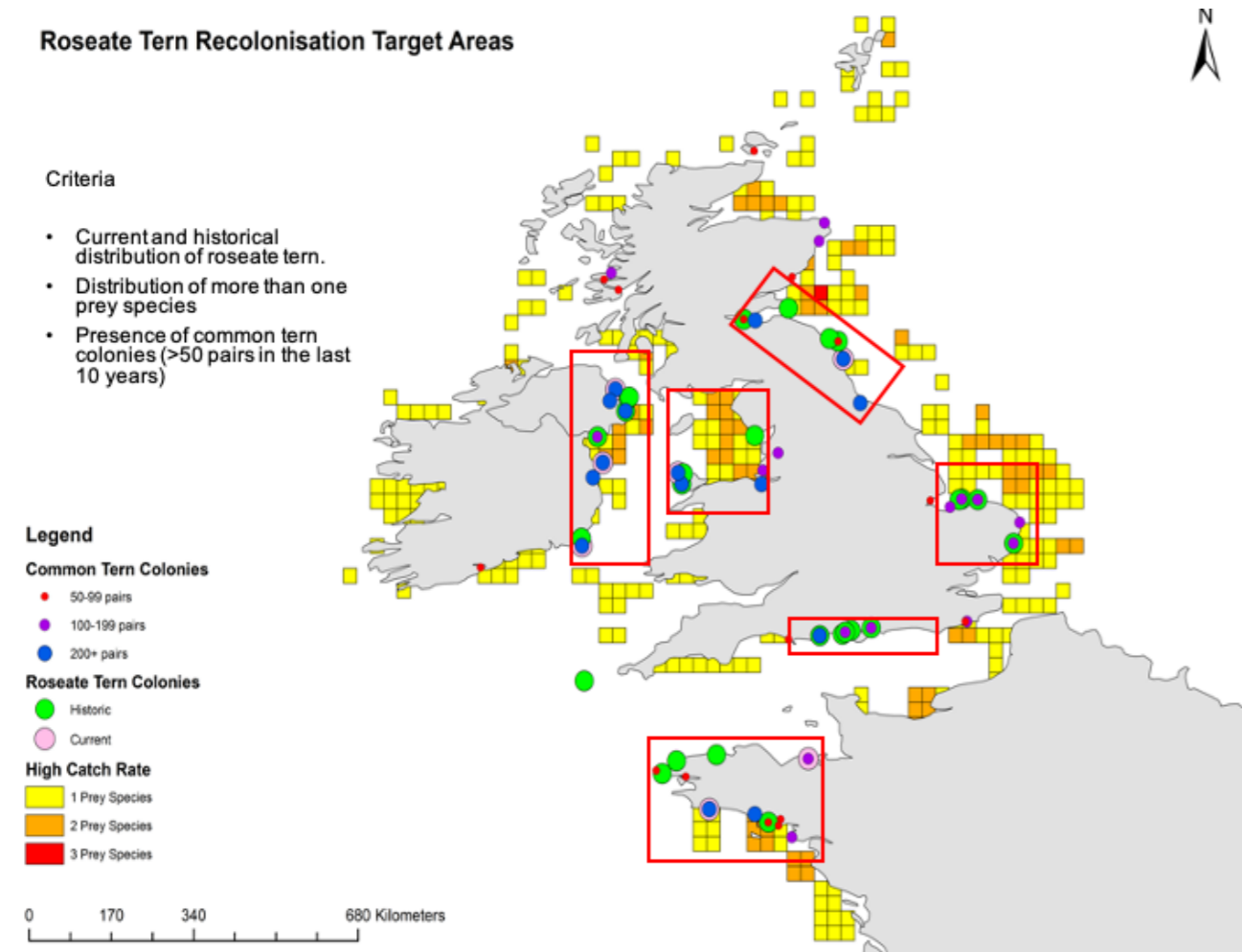


LIFE Project network visit to French roseate tern colonies by Yann Jacob

Future Perspective/ Long-Term Strategy

Target areas for roseate tern colonisation were identified guided by the current and historic distribution of roseate and common terns and the location of prey hotspots. This led to the development of the East Atlantic Roseate Tern Action Plan which will be implemented under the EU framework. There are three broad objectives for the future recovery of the roseate tern.

1. Maintain the high productivity (breeding success) at the extant colonies
2. Make the largest common tern colonies within the target areas safe from flooding, predation and disturbance in anticipation of the range expansion
3. Maintain survival rates on wintering grounds and along migratory routes



Roseate tern by Brian Burke



Roseate tern by Chris Gomersall



Although the LIFE funding is ending, it has laid the foundation for recolonization of roseate terns once the main colonies exceed capacity. The roseate terns will naturally start dispersing, visiting other sites and it is imperative to maintain the current and potential breeding sites in good condition. Further investigation is needed into the importance of staging areas and working internationally across borders will continue to restore the roseate tern metapopulation.

Roseate terns by Tim Melling





Project Name

Improving the conservation prospects of the priority species roseate tern throughout of its range in the UK and Ireland

LIFE14 NAT/UK/000394 Roseate Tern

Partners

The Royal Society for the Protection of Birds
BirdWatch Ireland
North Wales Wildlife Trust

Advisory Partners

National Parks and Wildlife Service (Ireland)
Bretagne Vivante (France)

Start date: 1/10/2015

End date: 31/12/2020

Budget

3,229,020 EUR with 75% support from the EU

Co-financing

Tarmac

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September 2020