Roseate Tern Momentum Webinar – Q&As

Last updated: 8/10/2020

Following the Roseate Terns Momentum Webinar, these Q&As have been put together to help answer your questions that we did not have time to answer during the sessions.

If you have any questions regarding the responses, please email Daniel.piec@rspb.org.uk

Roseate Tern Momentum Webinar Q&As

Question	*Answer*
What do you recommend as the next steps to expand the range of Roseate Terns?	***Daniel Piec (RSPB):*** *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* *Regarding Objective 1:* • *To maintain high productivity rates, we need to have a continued support of statutory agencies/ NGO funding for residential wardens and adequate accommodation and equipment infrastructure*

Question	*Answer*
	• *We need to allow enough time for warden training, vegetation clearance, preparation of terraces and nest boxes and maintenance of anti-predator fences and equipment before the season* • *Biosecurity monitoring needs to be carried out regularly during the winter where high risk of rat incursion exists to act quickly when necessary* • *Vigilance is the key word when it comes to predator management. Every fledged chick matters as it has more than 70% of survival in the first year. This includes creation of gull-free zones, preventing gull roosting near the colony through direct disturbance, laser hazing, audio scarers and maintenance of fences* • *Foraging areas should be protected from disturbance from renewable energy projects, based on tracking studies, for up to 30 km from the colony.* • *Case work should focus on the potential loss of forage fish spawning grounds to the offshore windfarm developments.* • *Monitoring should include provisioning and diet, as well as standardised protocols for predation rates and weather.* • *Intensive ring reading should be launched in France to incorporate French colonies in the next Demography analyses* • *In post-breeding period, monitoring and assessment of staging sites should be intensified.*
Do we know from the productivity at the 3 colonies and their recent growth rates if there is a growing pop of birds floating around looking elsewhere?	***Daniel Piec (RSPB):*** *The productivity at Rockabill has been going down indicating that there are density dependent limitations of the population growth due to, most likely, food competition and thus lower fitness of fledgelings and their survival rates. The metapopulation will therefore slow its growth and we might also observe higher dispersal rates from Rockabill, especially for immature birds. There are sightings of single roseate terns around Britain and Ireland, with mixed pairs cropping up in several places every year however, I don't think the rate of these observations has*

Question	*Answer*
	increased. I think there would need to be more drastic density dependent, environmental or ecological triggers at Rockabill or the other roseate tern colonies for a higher rate of dispersal.
Do sand eels in the Irish sea eat the same plankton? As the Irish sea is warmer has there been a similar affect	***Euan Dunn (RSPB):*** *I'm not aware of any sampling of sandeel stomach contents in the Irish Sea but it's reasonable to assume that the spectrum of their plankton diet is the same as in the more intensively studied North Sea. Certainly the 'regime shift' in the plankton community I described (the receding north of the cold water copepod Calanus finmarchicus) and its replacement, albeit at lower abundance, from the south by the warm water C. helgolandicus) has occurred in the Irish Sea just as in the North Sea (see Fig 6 in http://www.mccip.org.uk/media/2018/15_plankton_2020.pdf). Actually the sea surface temperature in the Irish Sea is not dramatically different from most of the North Sea (see heat map on p. 1 of http://www.mccip.org.uk/media/1371/arc2007.pdf). By far the fastest warming regions are the Celtic Sea, English Channel and southern North Sea.*
If pairs nest in the open it might be worth putting a box on that exact spot the following year?	***Steve Newton (BWI):*** *It would be an interesting experiment to trial in a couple of study areas. Hard to extend this colony wide as we would need to mark 800 locations with something that would survive the ravages of winter storms and regrowth of the Tree Mallow forest. Some open nests are under rocks/boulders where we could not fit a box and a lot of open nests often back onto boxes so it would be hard to squeeze another box into that space. Clearly, we need to record the identity (rings) of the open-nesting adults to see if the pair adopt a box in year 2. I'll let you know after the 2022 season!*
Can you quickly describe the protocol for productivity estimates? Do you follow chicks for X number of days?	***Steve Newton (BWI):*** *Productivity assessments: Roseate chicks in study areas are followed to fledging (or death) whenever possible; occasionally we lose track of a chick for a period before relocating it in an adjacent sub-colony or in a fledgling loafing area. For some, we might assume that survival to day 15 = 'fledged' if there is no evidence of death/predation etc.*

Question	*Answer*
	We try to keep this to a minimum. Remember, nests in study areas are checked at least once daily.
You say that the visual tracking is non-invasive - how is this measured?	***Richard Berridge (ECON):*** *During each tracking bout we monitor the focal birds behaviour for anything suggestive of disturbance. E.g. agitated calling, evasive flight patterns, reduced foraging, etc. It is generally obvious if a tern is disturbed by the following vessel, but this is extremely rare. Terns will frequently fish and fly very close to the vessel. We tend to keep a distance directly behind of 50-100m. However my use of the term non-invasive was more in relation to the lack of any intervention to birds (e.g. capture for tagging) and also no need for us to enter (disturb) a colony.*
Do you have any concerns about the environmental credentials of boat-based tracking? It must use a lot of fuel!	***Richard Berridge (ECON):*** *Yes, we use a lot of fuel. However, the data is of a very high quality, it cannot be collected by another method, and we believe is of vital importance to conservation.*
I have seen in the video a wind farm. Do you monitor the deaths of RT caused by the infrastructure?	***Richard Berridge (ECON):*** *We did not observe any tern collisions with OWF structures over the many years we tracked sandwich terns at Sheringham Shoal OWF. We are yet to track roseates in an OWF.*
Wouldn't a combination of sea watches and geolocators with accelerometers be less invasive/ hard on observers?	***Richard Berridge (ECON):*** *I would consider attaching tags to be highly invasive. Sea watching data is restricted from land-based vantage points. You could only watch a tiny fraction of an offshore foraging bout.*
Hi Richard. Have you noticed any competition for food between the two species or do they use different areas/ foraging strategies?	***Richard Berridge (ECON):*** *At Rockabill common and roseates seem to occupy different niches, with some overlap. Tracking common terns would really let us get to the bottom of this. They seem to forage along the coastline more frequently.*
Do you have a feeling for the bias caused by not being able to use boat tracking in windy weather?	***Richard Berridge (ECON):*** *My only feeling is that I don't get any feeling that we are missing anything significant. We have tracked up to force 5-6,*

Question	*Answer*
	and wind speeds beyond that are not really typical or frequent in the breeding season anyway.
Is there any ambition to eradicate rats from islands on a larger scale on the Azores? e.g. a whole island	***Marria Magalhães (DRAM):*** *The LIFE Project (07 NAT/P/000649) entitled "Safe Islands for Seabirds" (2009-2012) investigate the feasibility of performing an eradication programme on the smallest island of the Azores, Corvo, with ca 400 inhabitants spread in a single village. Although the results of the project indicated that, a rat eradication was feasible (Hervias et al. 2012) no attempt was made. Many islands inhabited by humans have agricultural lands, and it is often impossible to prevent rodent access to the feeding pens of domestic animals (Oppel et al., 2011), as it is likely to be the case in Azores. These alternative food sources for invasive mammals are present year round, and may reduce attractiveness of bait and thus increase the probability of failure of the eradication. Moreover and despite rats have impacts on Cory's shearwater breeding success the impact of cats in nest survival is much higher (Hervias et al. 2013), cats were introduced as predators to decrease the numbers of rodents, consequently rats removal is likely to increase cats' detrimental effect on breeding seabirds. Hence, the simultaneous removal of trophically linked invasive mammal species in a single operation may increase the probability of achieving ecological and economic goals. In short and to our knowledge, no attempt to eradicate rats in an entire island has been made or is programmed and any future proposal needs to include the eradication of trophic related invasive predators (eg. cats) to achieve an improvement in population size of seabird breeding species.*
What methods are used to control lizards and ants?	***Marria Magalhães (DRAM):*** *Signs of storm petrel predation by introduced lizard (Lacerta dugesii) were found in 2010 (Bried & Neves 2015; Neves et al. 2017). Researchers highlight that this may be an emerging behaviour with only some individuals being specialized in predating seabirds. Nonetheless and given the longevity of the lizards, this incidences can have a big impact on nesting seabirds (Neves et al. 2017). On the other hand, the two ant species identified in Praia islet (Lasius grandis and Monomorium*

Question	*Answer*
	carbonarium; Verónica Neves, unpublished data) are both native species (Wetterer et al. 2004), and the accurate impact on seabirds is still being evaluated. During LIFE IP Azores Natura project, we intent to measure the impact of these predators' species in breeding success of roseate terns and if necessary implement a protocol to control its abundance.
Topo islet is the largest YL gull colony in the Azores with over 600 pairs. Why would you plan to install tern artificial nests there and promote roseate tern breeding there when historically a roseate tern was never detected there?	***Marria Magalhães (DRAM):*** *According to our records, roseate terns (min. 1; max. 17) bred on Topo islet on 6 occasions (2000; 2002; 2004; 2006; 2008; 2018). One major target of LIFE IP Azores Natura is the acquisition of the islet land property and its restoration. Further on, we plan to install shelters for roseate and common terns, not to actively promote breeding, but to provide shielding (extreme weather events and/or predation) for chicks, if necessary.*
Are the ants introduced?	***Marria Magalhães (DRAM):*** *According to Wetterer et al. (2004) there are 14 ant species known on the Azores, and despite earlier researchers regarded all ant species as introduced, Wetterer and colleagues consider 6 to be native, including the 2 species found in Praia islet.*
Predation by starlings was mentioned in this interesting presentation - are there plans for monitoring/control?	***Marria Magalhães (DRAM):*** *Neves et al. (2011) documented predation by starlings as the main reason to hatching failure in one of the historical main colonies for the species (Vila Islet). Since then, this incidence has been seen in other tern colonies. An integrated monitoring program will be established and the BS determined in 4 colonies (Ponta do Burguilhão, Praia islet, Contendas and Vila islet). If the predation by starlings persist, we intend to implement a protocol to control the predation. A taste aversion technique was used with no success in the past (Neves et al. 2011), underlining that lethal control might be necessary despite the negative issues that it brings. In brief, a control protocol needs to be carefully designed and direct exclusively at individuals predating tern eggs.*
Do birds from the Azores overwinter in the same places off Africa, and is there any exchange between birds from Britain/Ireland and the Azores?	***Marria Magalhães (DRAM):*** *Roseate terns ringed in the Azores winter in the coast of Africa (Ghana), with other tern populations (Monteiro et al. 1996). In 2000, during the breeding season, a trap session allowed the recapture of 20 roseate terns, 3 of which ringed outside the Azores, suggesting the possibility of some gene flow between colonies (Hays et al.*

Question	*Answer*
	2002). Even though, to our knowledge, no further recaptures of birds ringed elsewhere have been reported here in Azores, nor birds ringed here have been reported in other colonies. Moreover, in a recent study, Seward et al. (2018) referred that immigration and emigration into and out of the NW Europe metapopulation (UK, Ireland and France) is rare. *References from **Marria Magalhães (DRAM):*** *Bried J & VC Neves (2015) Habitat restoration on Praia Islet, Azores Archipelago, proved successful for seabirds, but new threats have emerged. Airo 23: 25-35* *Hays H, V Neves and P Lima (2002) Banded Roseate Terns from different continents trapped in the Azores. J. Field Ornithol. 73(2):180 – 184* *Hervías S, C Silva, T Pipa, N Oliveira, A Henriques, P Geraldes, S Mealha, E Diaz, I Bravo, S Oppel and FM Medina, (2012) Invasive mammal species on Corvo Island: is their eradication technically feasible? Airo 22: 12-28* *Hervías S, A Henriques, N Oliveira, T Pipa, H Cowen, JA Ramos, M Nogales, P Geraldes, C Silva, R Ruiz de Ybánez and S Oppel (2013) Studying the effects of multiple invasive mammals on Cory's shearwater nest survival. Biol Invasions 15: 143 –155* *Monteiro LR, JA Ramos, RW Furness and AJ Del Nevo (1996) Movements, Morphology, Breeding, Molt, Diet and Feeding of Seabirds in the Azores. Colonial Waterbirds 19(1): 82-97* *Neves VC, S Panagiotakopoulos and N Ratcliffe (2011) Predation on roseate tern eggs by European starlings in the Azores. Arquipelago. Life and Marine Sciences 28: 15-23.*

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