

and that extracted from sub-fossil bones collected on mainland St Helena may resolve the origin of this bird, if sufficient phylo-geographic structure exists among populations within the Atlantic.

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Roseate Terns *Sterna dougallii* successfully rearing a young Sandwich Tern *S. sandvicensis*

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Isle aux Dames in the Bay of Morlaix, northern Brittany (48°41'N 3°53'W), holds one of the largest mixed tern colonies in France, with Sandwich Terns *Sterna sandvicensis*, Roseate Terns *S. dougallii* and Common Terns *S. hirundo*, and this island has been the main French Roseate Tern colony since the 1980s (Cadiou *et al.* 2004; Le Nevé 2005). Annual surveys are conducted to obtain data on breeding numbers and productivity. In 2007 the census of the colony was carried out on 12 June by a team of eight experienced and inexperienced people. Different teams covered different areas of the colony, counting nests, using different colour of small paper marks put inside to avoid double-counting, and reporting nest-contents.



Figure 1. The Roseate Tern *Sterna dougallii* nest with an egg of Roseate Tern (left) and an egg of Sandwich Tern *S. sandvicensis* (right) on 12 June 2007 (the small orange piece of paper was used during the census of the colony to mark the nest). © Bertrand Rivoal.

Results of the count were 864 apparently occupied nests (AON) of Sandwich Terns, 74 AON of Common Terns and 48 AON of Roseate Terns (Quemmerais-Amice & Cadiou 2007). Amongst the Roseate Tern nests there was one with a Roseate Tern egg and one larger egg. Fortunately, the observer had the foresight to photograph this 'strange nest', and the larger egg was subsequently identified as that of a Sandwich Tern (Figure 1). The nest was located under vegetation cover (Sea Beet *Betta maritima*) outside the main area occupied by Sandwich Terns, approximately 5 m distant, thus excluding the possibility that the egg had rolled accidentally from a neighbouring Sandwich Tern's nest. Observations, made from a vantage point from late May to late June, confirmed that the nest (numbered HE01) was occupied by a pair of incubating Roseate Terns. No Sandwich Tern was seen in the vicinity of the nest.

The first Roseate Tern chicks probably hatched in the colony around 25 June, and a chick was seen in nest HE01 on 27 June. Based on sightings of adults carrying fish, the presence of a second chick was suspected, but only one was seen on 2 July. Ringing of chicks was planned for 4 July, and the first

chick of the day was found in nest HE27, close to HE01 where only one egg was recorded (on that day we had forgotten about the occurrence of a mixed clutch in this nest). This was the first apparent Roseate Tern chick we had ever handled and ringed, and wing length and weight were recorded as 33.5 mm and 70.5 g respectively, as well as age class 2A (about one week old) according to Nisbet & Drury (1972). However, the chick was very heavy compared to the average growth curve that we had envisaged, and we suspected a problem with the digital balance, which had been used for the first time that day. Three other Roseate Tern chicks were ringed on 4 July without any concern over their weights (wing length and weight: 32.5 mm and 56.5 g, 55.0 mm and 55.5 g, 63.5 mm and 72.8 g respectively).

As the chick developed, we became aware that it was not a Roseate Tern but a Sandwich Tern. It looked rather like a young Common Cuckoo *Cuculus canorus* when it's foster parents fed it (Figure 2), and we then realised why the chick was much heavier than the other Roseate Tern chicks ringed on 4 July, and that there was no problem with the digital balance. The chick was seen

close to nest HE01 until 16 July, and afterwards on the shore of Isle aux Dames with its 'parents' on 29 July, 31 July and 1 August (Figure 2), and finally on the shore of neighbouring Sable Island on 6 August, with an adult Roseate Tern bringing back a fish and feeding it. The chick was considered to have been reared to fledging by the pair of Roseate Terns. The mistake at ringing was due to the fact that only Roseate Terns occupied the area where the chick was found, and that young Sandwich Tern chicks look superficially like Roseate Tern chicks.

We conclude that a female Sandwich Tern clearly chose to lay in a nest of Roseate Terns. We hypothesised that the nest probably already contained one egg, and that the only chick to hatch was the Sandwich Tern chick, which was reared by the pair of Roseate Terns. The course of events seemed to indicate that the Sandwich egg hatched first, which would normally indicate that it was also laid first. But the Roseate egg may not have been properly incubated due to the presence of the larger Sandwich egg. The reverse seemed much more unlikely, i.e. a pair of Roseate Terns settling in a nest of Sandwich Terns. Another nest containing two Sandwich

Terns eggs was found on 12 June, outside the area occupied by this species and where a pair of Roseate Terns was regularly seen, but the fate of this clutch was unknown.

Such behaviour of a female laying an egg in the nest of another bird of the same species or of a different species is called egg-dumping, and interspecific brood parasitism has been reported in different avian families: waterfowl (Anseriformes), Galliformes and others (Cannell & Harrington 1984; Saylor 1992; Krakauer & Kimball 2009). Interspecific feeding has also been reported in different bird species and mixed clutches were one of the main identified causes of such behaviour (Shy 1982). Although Shy (1982) did not mention Charadriiformes, cases of hatching and interspecific adoption have been reported in this group, involving Eurasian Oystercatcher *Haematopus ostralegus*, Black-winged Stilt *Himantopus himantopus*, Pied Avocet *Recurvirostra avosetta*, Piping Plover *Charadrius melodus*, Northern Lapwing *Vanellus vanellus*, Herring Gull *Larus argentatus*, Common Tern and Least Tern *Sternula antillarum* (Dickson 1977; Triplet & Sueur 1983; Midura *et al.* 1991; Dougall 1996; Suttie 2001; Paz & Eshbol 2002).



Figure 2. The young Sandwich Tern *Sterna sandvicensis* on the shore of Isle aux Dames in late July 2007, begging for food to one of his foster Roseate Tern *S. dougallii* parents. © Yann Jacob.

A similar case of a mixed clutch with one egg of Roseate Tern and one egg of Sandwich Tern has occurred at least once before in Brittany (J.-Y. Monnat pers. comm.), but Ratcliffe *et al.* (2004) did not mention interspecific rearing, nor mixed clutches, between Sandwich and Roseate Terns. In mixed tern colonies in Puerto Rico, Sandwich Terns nest in dense groups and Roseate Terns nest at the periphery, but the presence of an egg of Sandwich Tern in a nest of Roseate Tern has not been recorded (J. Saliva pers. comm.). In the West Indies, Norton (1988) reported the presence of a Roseate Tern egg in an active nest of a Bridled Tern *Onychoprion anaethetus* on Kalkun Cay, St. Thomas, U. S. Virgin Islands. In the USA, at Bird Island, Massachusetts, a pair of Common Terns reared a Roseate Tern chick after a high tide had gently pushed two eggs from a Roseate Tern nest close to a nest of Common Terns, which took these eggs into their nest and incubated a total of four eggs; one Common Tern chick and one Roseate Tern chick hatched but only the Roseate Tern chick fledged (I. C. T. Nisbet pers. comm.).

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