ROSEATE TERN

SPECIES RECOVERY PROGRAMME

ISLES OF SCILLY, 2000

This report was prepared by:
Peter Robinson and Steve Colombé
Channel Seabirds
Station Halt
Brampford Speke
Devon EX5 5H

SUMMARY

English Nature has funded a three-year programme to encourage roseate terns to return to breed on the Isles of Scilly. This report presents the results of the first year's work.

In April 2000 a sound-lure system and tern decoys were placed on a traditional tern nesting site on Samson.

The equipment functioned without problems until mid-September.

The first common terns returned to the site by the 26th April. Subsequent to this up to 15 birds were recorded over the site. Birds were observed displaying over and defending the site. Whilst no intact eggs were found, on the 1st June broken common tern eggs were found on the site. It is thought that these had been predated by crows. Later in June common terns were seen defending the site against crows.

No young were produced from the colony, but common terns were thought to have bred or tried to breed on Samson Green Island. There are no data on tern productivity elsewhere in the Scilly archipelago, but it is thought to have been very low.

To date there are only two records of roseate terns for the archipelago both are autumn records.

Crow control is seen as an essential component of the project in 2001.

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Cover photo: Bryan Thomas

Roseate Tern Species Recovery Programme, Isles of Scilly 2000

1 INTRODUCTION

In March 2000 English Nature agreed to fund a project on the Isles of Scilly to try to encourage roseate terns *Sterna dougalli* to return to breed in the area. The species had not bred on the island for five years and it was realised that the longer their absence as a breeding species, the less likely or more difficult it would be for them to return.

Maintaining the breeding range of roseate terns through the protection of extinct colony sites and encouraging birds to return to these is a crucial part of their conservation in Europe. The annual conservation liaison meeting comprising the Isles of Scilly Environmental Trust, English Nature and the Royal Society for the Protection of Birds has made tern conservation on the islands a priority and has agreed a policy of using decoys. This project implements that policy. The importance of tern conservation has also been highlighted in the Isles of Scilly Natural Area Profile published by English Nature. Roseate tern is a Biodiversity Action Plan species with a target of 200 breeding pairs by 2008.

The technique used for this programme was pioneered in the United States, it uses a sound lure combined with decoys to persuade birds to return to historical or 'favourable' breeding sites. Dr Stephen Kress at the Audobon Society has successfully used this technique with roseate terns and other species.

2 TERNS ON THE ISLES OF SCILLY - HISTORICAL INFORMATION

The Isles of Scilly are situated approximately 28 miles (45 kilometres) off the west tip of Cornwall. Although some 200 or so islands and lesser rocks are involved, human habitation is restricted to the five largest, St Mary's, St Agnes, Bryher, Tresco and St Martin's. The sixth largest, Samson (96.3 acres, or 39 hectares – approximate position 6° 22.5W - 49° 56N) was also inhabited up to about 1850.

The islands are designated an area of Outstanding Natural Beauty and are unique as Europe's only example of a Lusitanian semi-oceanic archipelago[1]. A voluntary Marine Park is in operation. An outstanding feature of this fairly recently 'drowned landscape'[2] are the sheltered areas of shallow, clear water overlying extensive stretches of shell sand, mostly in the vicinity of Tresco, Samson and the south side of St Martin's. Historically this has provided an attractive feeding and nesting area for common tern *Sterna hirundo*, Sandwich tern *Sterna sandvicensis* and roseate tern, all of which are recorded as breeding from at least the early 19th century [3,4]. Considerable debate has taken place in recent years regarding the possible former presence of breeding Arctic terns *Sterna paradisaea* also, but the issue remains unresolved. Though they have definitely been absent as breeders for the past fifteen years or more [5].

About 100 to 200 pairs of common terns appear always to have been present within the last 200 years, thought that has recently declined to around 100. And far fewer, but often unspecified numbers of Sandwich terns have been involved. Though c15 pairs laid eggs on Samson as recently as 1991, plus odd pairs elsewhere since that date. Roseate terns have reportedly been present in numbers of from one to 12 pairs since at least 1840, with the last known breeding attempt as recent as 1994. Since that time, however, no pairs are known to have been present in the islands and few birds have been noted on spring or autumn passage. As elsewhere, roseate terns in Scilly have demonstrated a marked preference for breeding among, or in close proximity to, common terns and during the early 1990's responded favourable to the introduction of timber nest boxes.

Historically, tern breeding populations in Scilly are subject to frequent same-year and between-year inter-site movements, resulting in fragmentation of total numbers and rendering individual groups vulnerable to failure from a range of causes. These sites are spread over a number of inhabited and uninhabited islands and causes of failure include human disturbance, tidal flooding, and the effects of extreme weather and rat, gull and/or cat predation.

Three or four small isolated and bare rocks are particularly favoured by common terns, but hold too few pairs for successful defence against gull predation. These same sites also involve frequent loss of eggs and, presumably, young during heavy rain or high winds. In order to improve breeding success at these sites a programme of pre-season 'sanding' in the early 1990's successfully increased breeding numbers to around 40 pairs per site. However this merely resulted in increased gull predation of exposed young. Attempts to counter this through provision of small rock shelters proved unsuccessful and 'sanding' was abandoned; aesthetic considerations prohibit use of simple systems that have proved successful elsewhere, e.g. provision of old car tyres for sheltering young.

Importantly, the frequency of same-year, between-site movements has annually meant that meaningful attempts at estimating total numbers of pairs involved, or assessing productivity, can only be achieved by equally frequent attempts to locate and count pairs/nests. In past years this work has been facilitated by the English Nature's provision of the launch Melza with an experienced local boatman.

2.1 Previous Tern Management on Samson

Since summer 1991 the North Hill site has been roped off for protection from human disturbance. In 1992 about 15 timber nest boxes were constructed and provided for the possible future use by roseate terns. Though roseate terns here have not used these particular boxes (owing to their absence) the species has successfully utilised them on Tresco Green (Skirt) Island and one of the small bare rocks.

In 1997 and again in 1998, 12 dummy incubating common terns placed in position among the nest boxes. This had the effect of attracting a few

breeding pairs in each year but no young were reared. Problems were encountered with breeding lesser black-backed gulls *Larus fuscus* encroaching into the area and this was eventually resolved through the persistent removal of the nests, including frequent repeat clutches. Dummy terns were constructed from the comparatively soft Potter's plaster and a small number were attacked and partly damaged, presumably by large gulls, though carrion crows *Corvus corone*, a pair or two of which are in the area, may also have been responsible. One to two crows were seen on the ground within the breeding area in 1998 and predated tern eggs subsequently found. On one occasion two crows were seen walking about the area as if searching for nests (PR). Overall tern productivity was generally low throughout the islands in both years.

In 1999 up to 60 common terns and 11 nests were recorded on Samson. Greater numbers of nests were recorded at three other sites, but Samson recorded the second highest productivity with 11 large young. Eleven young and 55 adults were present on the 28th July and 12 birds were still defending the site on the 12th August 1999.

3 THE PROJECT

3.1 Location

The project was located on Samson, this decision was based on the fact that it is a historical site, above the high-tide level, relatively free from human disturbance and with easy access by boat.

Samson is situated near the centre of the archipelago. It comprises two hills, North Hill (35m AOD) and South Hill (42m AOD). A flat, sandy, vegetated isthmus separates the two hills. The are a number of pre-historic burial chambers on the summits of both hills. These have been excavated, but retain importance as archaeological sites. Both hills have an extensive covering of bracken, but the western summit of North Hill is dominated by area of a waved heath and lichen-covered low heather. Several additional seabird species breed on Samson, some of which, e.g. Shag, have colonised since the removal of rats. Most relevant to the terns are approximately 1,000 pairs of Lesser Black-backed Gulls, a few of which breed in close proximity to the North Hill tern site.

Within the past 10 to 15 years the North Hill site, (OS NGR SV87961312) has been consistently favoured by breeding terns, with some 60-80 pairs of common terns present in 1991, together with about15 pairs of Sandwich and at least three pairs of roseate terns. All laid eggs but regrettably the site then failed due to the actions of Brown Rats, though this had not previously been appreciated as a problem associated with seabird breeding failures on this island.

During winters 1991/92 and 1992/93 an active programme of rat clearance was undertaken on Samson and the island has remained rat free since that time; clearance work was carried out by the Isles of Scilly Seabird Group using grant money provided by RSPB, English Nature and Birding

Southwest. However, since then the majority of terns appear to have lost interest in the site. This may be because they used it as an alternative to the nearby and more favoured Samson Green Island where there were frequent failures due to tidal inundation. Nevertheless, given the recent history of tern breeding site failures in Scilly, particularly on Green Island, Samson is still thought to offer the greatest probability of a safe and productive multi-species tern-breeding site within these islands. Being free from tidal flooding, the effects of heavy rain and free from mammalian predators. There is also ground cover for young birds and the ability to easily control human disturbance. The site also offers reasonable prospects of access for management purposes during bad weather. To that end there is multi-agency (IOS Environmental Trust, RSPB, English Nature) agreement that all necessary efforts should be made to encourage and promote this site as the main tern colony in Scilly.

3.2 Sound equipment and decoys

In summer 2000 a self-contained audio system was installed at the Samson North Hill. The system comprises a portable CD player combined with a custom build 10-watt amplifier. It is powered by an 80-watt solar panel using three 12V 40W lead-acid-gel batteries. The CD was custom recorded using a desktop PC CD-writer and calls provided by the British Sound Library. Two 15W waterproof boat-speakers were placed 50cm above the ground on opposite sites of the colony area. The batteries and other electronic equipment were contained in a lightweight fibreglass box that was padlocked and fixed permanently to the solar panel.

The sound system was left running 24 hrs a day. It mat seem strange to play the calls during the hours of darkness, but Stephen Kress has advised that this has been found to be the most successful method in the US. It does mean that power requirements are higher compared to playing only during daylight hours, but this is offset by the electronic complications associated with switching the system on and off.

The system was installed on Samson on 7th April, although a further visit was required on 8th to resolve a minor problem with the CD disc. Following this the unit operated without fault until early September when it was turned off. Whilst Scilly is one of the sunniest places in the UK, a lowering of volume was noticeable following several days of foggy weather. A total of 12 common, 12 roseate and 6 Sandwich tern dummies were placed in different configurations around the 'colony'.

The site was visited on a regular basis throughout the season, to monitor the response of the terns and to check that the equipment was still functioning.

4 RESULTS

4.1 Tern Response

Visits were then made to the island on approximately a weekly basis during the main likely breeding period. No terns were noted in the area of the site on

7th-8th April but by 26th 2-3 common terns were calling overhead in defence of the site, and in one case flying low and slow over the dummies. This activity coincided with the main return of common terns to the island, and suggests they were quick to find and respond to the site. At this stage the Lesser Black-backed Gulls were not yet breeding.

During subsequent visits up to 15 common terns were consistently flying overhead and calling in defence of the site, often coming to meet visitors as they walked up the hill at 2-300 metres distance. On May 5th birds were displaying high over the site with others on the ground. No eggs were found, but on 1st June David Mawer (IOSET) found what he presumed were hatched tern eggshells among the heather. However the site had been checked thoroughly on 20th May, when no eggs had been located. From this it must be assumed that what DM found were the shells of predated eggs. Indeed, on 23rd June DM witnessed the terns defending the site against two crows and it has been confirmed that the shell fragments in question were those of common tern.

An unknown number of common terns are thought to have bred on nearby Samson Green Island but in the absence, of an English Nature boat, no information is available for this or any other island on numbers pairs and species involved, or on productivity. But the general impression is that common terns suffered extremely low productivity this year, with few pairs breeding anywhere.

Lesser black-backed gull nests and contents were destroyed in the proximity of the tern site (Table 1). It is not known how many of the 'destructions' involved repeated nest attempts.

Table 1

Numbers of lesser black-backed gull nests destroyed at the Samson North Hill Tern Site 2000

Date	Nests Destroyed
May 5th	10 – no eggs
May 13th	10 – no eggs
May 20th	8 – 3 with eggs
June 1st	13 – all with eggs
June 13th	10 – 4 with eggs
June 24th	1 – with eggs

To date we have only two records of roseate terns for the archipelago both are autumn records. In the absence of full-time field survey on Samson, it is unlikely that any meaningful records of roseate terns will be obtained.

4.2 Vegetation Control

As part of the existing management plan for Samson, IOSET carried out bracken cutting during early spring along the lower western edge of the tern site, above a main gull breeding concentration. This appeared effective in limiting numbers of encroaching gull nests in that immediate area, though some pairs still built inside the cut area, using large boulders as cover. This year no more than 2-3 pairs of gulls built nests in the unmanaged low vegetation comprising the preferred tern nesting area, unlike previous years when perhaps as many as 10 pairs have done so. It is assumed this was at least partly influenced by the early spring bracken cutting, but is perhaps also due to persistence with gull-nest 'management' in recent past years.

4.3 Access to Samson

Transport to and from Samson was provided by charter boats.

4.4 English Nature Visit to Site

On 3rd July PR visited the site together with Andy Brown, EN, Peterborough. Andy took photographs and video footage of the installed equipment and appeared to view the situation favourably, regardless of the presence of just 3-4 terns and the lack of breeding success this year.

5 DISCUSSION

The reliability of the equipment was a major success. Similar equipment has been (and is being) used on a project on Chesil Beach. Here wind generators are used instead of solar power. It was not known whether the solar panel would be able to maintain sufficient supply. The majority of the power consumption is by the amplifier, apart from decreasing the volume there is little that can be done to reduce consumption from it. The CD player provides the next major loss. Consideration has been given to developing a 'memory chip' based system with no moving parts, but the cost would probably be excessive. Another avenue being explored is to use a light sensor to reduce the volume at night-time.

5.1 Volume

Most visitors to the site, felt there was scope for increasing output volume, which often gave the impression of coming from some distance way. Despite this it could nonetheless often be heard from a distance of 2-300 m, particularly downwind.

There maybe sufficient slack in the budget to install an additional solar panel and battery to the existing installation. This would provide additional generating and storage capacity and therefore allow a higher volume.

5.2 Crows

Whilst we do not have conclusive evidence that carrion crows actually cause the terns to desert, they are certainly in the vicinity and are therefore

considered to be a very strong candidate. They may be more of a problem at the Samson tern site than large gulls, though the latter may well prove problematical should terns hatch young. Crow control is relatively easy and may be crucial to the future success of the project. There is little point in attracting terns if their eggs are predated.

Crows are not known to breed on Samson but do breed on nearby Tresco and Bryher. They also breed further away on St Mary's. The RSPB are looking at the possibility of using Controlled Taste Aversion in just such cases, but are encountering difficulties in perfecting the technique. On the face of it shooting might appear the simple answer but crows have a long history of being shot at and have learned to cope with that situation. Though tenacity often does bring results. Crow traps would be legally permissible but have the legal disadvantage of requiring daily visits.

Siting a crow trap on Samson is therefore not a realistic consideration. It would be much more realistic to tackle the problem on Tresco and Bryher. The possibility of crow control on these islands is being explored

5.3 Alternative Samson Sites

It is sometimes difficult to understand what attracts terns to the top of Samson North Hill. Particularly when it is compared to Samson Green Island, which is a low rocky island with numerous hiding places for young birds and no breeding gulls. Unfortunately it floods almost completely on spring tides. There are at least two further Samson sites that appear even more suitable, both in terms of structure and distance from Green Island.

The first site is among grass and other low vegetation on the south-east corner of the isthmus. Some 500 metres from Green Island but slightly out of the line of vision. This site is well above high tide but has small numbers of lesser black-backed gulls breeding close by. It has the advantage of being slightly away from those areas most frequented by day visitors to Samson.

The second site appears even more suitable. It is an area of compacted boulder beach on the east-side of South Hill and only 250 metres from, and in direct sight of Green Island. This too is above the reach of high tides and is well vegetated, thus providing ample cover for unfledged young terns. Although it may well be necessary to control human access at both these sites, this already occurs at the North Hill site without any problems. This particular site is also relatively free from the attentions of large gulls.

It would be unwise to relocate the existing sound and decoy system. Further funds would therefore be required to construct and install a second system.

6 WORK PROGRAMME FOR 2001

- Continue the use of sound lure and decoys on North Hill Samson,
- carry out crow control on Tresco and Bryher,
- purchase additional solar panel and battery for existing system to enable volume to be increased,
- to design and build a light-sensitive volume control for the amplifier (subject to funding),
- seek funding for a second sound/decoy system

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