

INTERIM REPORT ON THE SEA BIRD RECOVERY PROJECT: LUNDY

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ABSTRACT

The UK holds 93% of the world's breeding populations of the Manx shearwater (*Puffinus puffinus*). Lundy's populations of Manx shearwater and the puffin (*Fratercula arctica*), another burrow-nesting seabird, have declined dramatically over the last 100 years. A major factor responsible for these declines is believed to be predation by rats. In 2002 a decision was taken to eradicate rats to benefit Manx shearwaters and puffins. Both the black and brown rat (*Rattus rattus* and *R. norvegicus*) have been recorded on Lundy. Both species are known to be predators of seabirds. This paper on the Seabird Recovery Project, describes the work undertaken to date and how the project will continue into the future. It is not intended to be a detailed account of the project, which will be prepared at a later date.

Keywords: *Manx shearwater, puffin, rat, eradication.*

INTRODUCTION

Traditionally, Lundy has been known as a seabird island holding important populations of cliff and burrow nesting species. These include the Manx shearwater (*Puffinus puffinus*), for which the UK holds 93% of the global breeding population (Stroud *et al.*, 2001), and the puffin (*Fratercula arctica*) from which Lundy gets its name ("lund" is Norse for puffin). Today, Lundy cannot count itself as a spectacular seabird island

when compared to its Welsh neighbours Skomer, Skokholm and Grassholm and the many similar islands off the north and west coast of Scotland.

Research carried out by the Royal Society for the Protection of Birds and Lundy Field Society members has shown that the Manx shearwater and puffin populations have declined enormously, and are at levels far below their potential. In 2001, the island supported just 166 pairs of Manx shearwaters, whilst an estimated 3,500 pairs of puffins in 1939 had declined to just 13 birds in 2000 (Price & Booker, 2001). Whilst it is recognised that a wide range of factors can affect seabird populations, the island's rat population was the greatest concern. It is known that rats can devastate seabird populations on islands and that recovery following rat removal occurs (*e.g.* Micol & Jouventin, 2002). A feasibility study into the practicality of eradicating rats from Lundy was carried out in 2001. The study concluded that, with systematic and comprehensive use of poison bait, eradication was achievable.

Unusually, two species of rat have been recorded on Lundy: the brown rat (*Rattus norvegicus*) which is ubiquitous on the mainland, and the black rat (*Rattus rattus*) which is rare. The black rat was formerly much more abundant, and possibly usurped by the brown rat when this species arrived in Britain and Ireland in the 19th Century. The black rat is now largely confined to four island groups. Both species are globally widespread and abundant (Corbet & Harris, 1991; Twigg *et al.*, in prep.) and known to kill and eat seabirds and their eggs or young (reviewed in Atkinson 1978; Micol & Jouventin, 2002).

METHOD

The primary aim of the Seabird Recovery Project is to remove or reduce the factors preventing the recovery of the populations of the Manx shearwater (and puffin) on Lundy and to return populations to the levels reported in the early 20th Century. The initial objective was to eradicate all rats from Lundy to enable successful breeding of the seabird species. The decision to remove the rats was not taken lightly, in part because of the potential practical difficulties, but also because of the rarity of the black rat in the UK. Use of poison and proposed eradication of both rat species attracted criticism from animal rights groups and those wishing to conserve the black rat, resulting in national and local press coverage.

The logistics of any project on Lundy are always complicated due to the chance of bad weather and cancelled boats. Over the two winters of the project, 57 volunteers have assisted expert contractors with the fieldwork, coming from a wide range of backgrounds including engineers, nurses, policemen and students. Fieldwork was undertaken during the winter when the natural food sources of rats are depleted.

A 50 metre grid of bait stations, 2,100 in total, was established during November 2002 and 2003. All stations were regularly checked (76,000 checks), bait-take noted,

bait replaced or changed and the fabric of the bait station checked. The data were collected on a daily basis to keep an accurate track of project progress. The poison to be used contained the active ingredient difenacoum, a 'second generation' anticoagulant which causes internal haemorrhage after a few meals of bait have been eaten. This poison is routinely used throughout the country in farms and gardens where there are rat infestations, and was similar to the one already in use for many years to control rats in the Village on Lundy.

RESULTS

During winter 2002/2003, following reduction in the rat population, bait-take declined. Monitoring stations within the bait grid which held 'chewsticks' - wooden pegs soaked in oil, candles or soap, all of which rats routinely chew revealing their characteristic incisor marks - provided a further means of detecting rat presence. Throughout monitoring during February and March 2003, a significant decrease in the rat population was noted. However, it became apparent that 'hot spots' of rat presence remained. With the exception of one rat, these hotspots were directly linked to habitation and farming on the island. This led to the intensification of effort in these areas with a decreased grid size to target the remaining rats.

Although a concerted effort was made to remove the last rats during the spring of 2003, by the end of May the monitoring showed that rats were still being detected in the hotspot areas. At this stage, because of increased natural food sources and reduced likelihood of rats eating bait combined with the impending holiday period, the project was largely suspended with monitoring continuing over the summer.

Following the decision to largely suspend baiting, the management group investigated the risks associated with leaving the island with a small rat population or completing the eradication the following winter. As the objective was to remove rats from the island and long term predator control was considered neither sustainable nor desirable, a decision was taken to complete the eradication. This decision meant that the entire island had to be re-baited and monitored in the winter of 2003/4. Over the summer very few rats were detected at any of the monitoring points. In November 2003 the bait and monitoring grid was re-established over the entire island. Bait-take occurred at a small number of locations during December 2003 and January 2004. No sign of rats was detected at monitoring stations during the winter, indicating that once bait-take had stopped, the rats had been killed.

The final bait-take was noted during February 2004 and no evidence of rats has been recorded since then and up to the completion of this report in May 2004. Monitoring to detect rats will continue on Lundy indefinitely with weekly checks of bait stations being carried out for the remainder of 2004 and then monthly checks until the end of 2005. In the wild, very few rats live for more than a year (Corbett & Harris, 1991). It

is important that Lundy cannot be considered rat free until at least two years of monitoring has been carried out with no sign of rats.

CURRENT SITUATION

Eradication of rats is not an end in itself. Monitoring will also focus on the burrow nesting seabirds and their ability to successfully breed and fledge young from the island. Shearwaters and puffins are both long-lived species, with young reaching breeding maturity at 5-8 years of age when they should return to nest (Brooke, 1990). This long life cycle means a measurable change in the breeding population will take many years. It should be stressed that the Seabird Recovery Project cannot be considered a success unless there is a recovery in the population of these birds.

It is likely that rats were also having a considerable impact on many other species on the Lundy. For this reason, prior to the baiting programme, surveys of invertebrates, vegetation, mammals and birds were carried out. Monitoring will be continued following the programme to detect any positive or negative changes as a result of the removal of the rats.

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REFERENCES

- Atkinson, I.A.E., 1978. Evidence for effects of rodents on the vertebrate wildlife of New Zealand islands pp 7-32. In P.R. Dingwall, I.A.E. Atkinson & C. Hay (eds), *The Ecology and Control of Rodents in New Zealand Nature Reserves*. Information Series No 4. Wellington, New Zealand: Dept of Lands and Survey.
- Brooke, M., 1990. *The Manx Shearwater*. London: Poyser.
- Corbett, G.B. & Harris, S., 1991. *The Handbook of British Mammals*. Third edition. Oxford: Blackwell Scientific Publications.

- Micol, T. & Jouventin, P., 2002. Eradication of rats and rabbits from Saint-Paul Island, French Southern Territories. In C.R. Veitch & M.N. Clout (eds), *Turning the Tide: the Eradication of Invasive Species*, 199-295. Gland Switzerland and Cambridge UK: IUCN SSC Invasive Species Specialist Group.
- Price, D. & Booker, H., 2001. Manx Shearwaters on Lundy: report on the results of a breeding survey in May 2001. *Annual Report of the Lundy Field Society* 51, 95-103.
- Stroud, D.I., Chambers, D., Cook, S., Buxton, N., Fraser, B., Clement, P., Lewis, P., Mclean, I., Baker, H. & Whitehead, S., 2001. *The UK SPA Network: its Scope and Content*. Peterborough. Joint Nature Conservation Committee.
- Twigg, G.I., Buckle, A. & Bullock, D.J. (*in prep.*). The black rat. In S. Harris & G.B. Corbett (eds), *The New Handbook of British Mammals*. Oxford: Blackwell Scientific Publications.