

# TRIAL SURVEY APPROACHES FOR LUNDY STORM PETRELS

by

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The Lundy Seabird Recovery project eradicated brown and black rats from the island between 2002 and 2004 (Appleton *et al.* 2006). Staggering increases in the numbers of breeding Manx Shearwaters, the project's key target for recovery, have followed with a tenfold increase in ten years from 300 to almost 3,500 pairs (Booker & Price 2014). Puffin numbers have also increased dramatically from near extinction to numbering in their hundreds (Beccy MacDonald pers. comm. 2016). The increase in both of these burrow-nesting species looks set to continue. A third burrow/crevice nester, and therefore also highly vulnerable to rat predation, is Storm Petrel, which has been seemingly absent from the island as a breeding species since records began in the 1930s (Perry 1940). The species was probably wiped out by rats, though this cannot be proven. Playback surveys have found no evidence of breeding (Webb 1991, Price 2002, Booker & Townend 2010). A 2004 habitat assessment showed that Lundy does offer suitable conditions for breeding birds, but natural recolonisation may take very many years (Bolton 2004).

Recently, ringers have caught Storm Petrels, without the aid of a sound lure, on 6 June 2013 (R. Taylor) and on 26 June 2016 (D. Price), both in the same area. This on its own was not proof of breeding until, in October 2014, the Manx Shearwater ringing team discovered a down-covered juvenile Storm Petrel outside a burrow on Lundy's West Side (Taylor 2014). This was in the same area as the previous ringing captures and was a hugely exciting development. In the following year, on 15/16 July, singing was heard close by, but over the edge of the cliff (Beccy MacDonald & Tony Taylor pers. comm.). A playback survey of 100 burrows on the slope in this area on 15 July 2015 produced no responses (Tony Taylor pers. comm.).

Storm Petrels are tiny birds, about the size of a House Sparrow, and so occupy small nesting holes and crevices in boulders and coastal slopes. On Lundy this makes surveying a challenge, as much of the suitable natural habitat is 'over the edge' from the safely navigable terrain. Lundy's extensive network of stone walls and its quarry scree also offer some habitat where the boulder size and general site conditions are suitable. Previous survey attempts have concentrated on these areas.

With the return of breeding Storm Petrels, working out how to survey them effectively on Lundy is a challenge. Standard survey methods are similar to that for Manx Shearwater, using call playback in suitable habitat, though response rates are low (Ratcliffe *et al.* 1998, Bolton *et al.* 2011). However, given the location of the juvenile discovered in 2014, a new survey approach was needed to identify areas of occupancy around the island from which more intensive survey could follow.

We decided on two methods: trialling the use of infra-red CCTV cameras at the location of the discovered juvenile, and counting the number of birds in flight illuminated by a torch beam over areas of suitable habitat (Bolton *et al.* 2014) at a time when they are most active (from two hours after sunset, Scott 1970). We visited the island from 21–23 June 2016 to test both these approaches.

The infra-red cameras had been used successfully on Mousa, Shetland, the UK's largest Storm Petrel colony, for research into Storm Petrel monitoring methods (RSPB unpublished). Since the cameras were no longer needed there, with the arrival of Storm Petrels on Lundy, this presented a good opportunity to trial them on the island.

Four cameras were set up at the Old Light Manx Shearwater colony in the area where the juvenile Storm Petrel was discovered in 2014. The cameras were positioned to cover as much of the slope as possible, each with a range of approximately 15 m. The cameras were set up on the evening of 21 June, with a digital recording box *in situ* to continuously record between 11pm and 1.15am. The camera set-up involved a considerable amount of equipment. Each camera required a mounting pole and block, guy ropes and tent pegs. Long wires connected the cameras to the recording unit, which was housed in a waterproof case. Each camera and the recording unit were powered by a portable battery. See the series of photos in the colour section (Plate 13).

The cameras were dismantled at around 1.20am on 22 June and stored on site ready for collection in daylight. We went through part of the camera footage later that day, and the remainder once back on the mainland. The images were difficult to interpret owing to the considerable glare from the infra-red beam and the rapid flight of the birds. Wings became blurred and the glare made size and distance difficult to determine, such that distinguishing between bird species, and even between birds and flying insects, became a challenge. However, the cameras recorded at least four petrels, but potentially a maximum of twelve; three of the four were recorded from the camera looking down to the break of slope at the 'inlet'. The cameras also picked up 117 Manx Shearwaters, though some of these are likely to be the same birds recorded by different cameras as they flew across the site, as well as two Rabbits and a Pygmy Shrew.

Three other areas of the island were checked for signs of Storm Petrels, based on the suitable habitat identified in 2004 (Bolton 2004): the scree area below the rail line at the North Light (21 June), quarry spoil on the East Side, and the south-west corner north of Shutter Point (22 June).

We arrived at North Light just before midnight on 21 June and, using an 85-lumen torch, scanned for birds flying above the suitable habitat over a period of 15 minutes. The beam had an arc of about 20 degrees and a range of approximately 30 m. Manx Shearwaters and Storm Petrels were active and their flight caught in the beam. No birds were heard calling, but in the relatively short period of observation we observed ten Storm Petrels flying below us.

The following evening, 22 June, we visited the East Side quarries and suitable habitat in the south-west corner. We adopted the same approach, scanning with the torch over suitable habitats for around 15 minutes. No Storm Petrel activity was recorded at either site.

## CONCLUSIONS

Combined with the ten birds recorded at North Light, between 14 and 22 Storm Petrels were seen during this brief visit, which looked at a limited area of suitable habitat. Based on these observations and knowledge of Storm Petrels elsewhere, the Lundy population is estimated to be between at least ten and 100 pairs, but could be considerably higher. Further effort is needed to refine this estimate and track what is likely to be a rapidly growing population.

The amount of equipment needed for the cameras, the low density of birds and the difficulty in analysing the footage led us to the conclusion that cameras are not currently the best approach for surveying this species on Lundy. However, further searches of suitable habitat at night with

torches does merit further effort. Follow-up visits to areas identified as having suitable habitat, and the Old Light Manx Shearwater colony, are worth a series of timed checks at night with a torch between 11pm and 1am between late June and late July.

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## REFERENCES

- Appleton, D., Booker, H., Bullock, D.J., Cordrey, L. & Sampson, B. 2006. The Seabird Recovery Project: Lundy Island. *Atlantic Seabirds* 8(1/2): 51–60.
- Bolton, M. 2004. European Storm Petrel habitat assessment and feasibility of colonisation on Lundy following rat eradication. Unpublished RSPB report.
- Bolton, M., Brown, J. G., Moncrieff, H., Ratcliffe, N. & Okill, J.D. 2011. Playback re-survey and demographic modelling indicate a substantial increase in breeding European Storm-petrels *Hydrobates pelagicus* at the largest UK colony, Mousa, Shetland. *Seabird* 23: 14–24.
- Bolton, M., Stanbury, A., Baylis, A.M.M. & Cuthbert, R. 2014. Impact of introduced house mice (*Mus musculus*) on burrowing seabirds on Steeple Jason and Grand Jason Islands, Falklands, South Atlantic. *Polar Biology* 37: 1659–1668.
- Booker, H. & Price, D. 2014. Manx shearwater recovery on Lundy: population and distribution change from 2001 to 2013. *Journal of the Lundy Field Society* 4: 105–116.
- Booker, H. & Townend, C. 2010. Lundy storm petrel survey 2010. RSPB unpublished report, Exeter.
- Perry, R. 1940. *Lundy, Isle of Puffins*. Drummond, London.
- Price, D. 2002. Lundy Island. Storm petrels: survey of potential breeding habitat. Unpublished report.
- Ratcliffe, N., Vaughan, D., Whyte, C. & Shepherd, M. 1998. Development of playback census methods for Storm Petrels *Hydrobates pelagicus*. *Bird Study* 45: 302–312.
- Scott, D.A. 1970. The breeding biology of the Storm Petrel. Unpubl. D. Phil. thesis, University of Oxford.
- Taylor, A.M. 2014. Storm Petrel: first confirmed breeding record for Lundy and Devon. *LFS Annual Report* 64: 66–68.
- Webb, A. 1991. Report on survey of burrow-nesting seabirds on Lundy, 1–5 June 1991. Internal report for JNCC.

