THE LUNDY SHIP RAT EXPEDITION 1991

By

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INTRODUCTION

In a recent survey carried out by the Mammal Society, the ship rat, *Rattus rattus,* was found to have declined in numbers and distribution throughout the United Kingdom (Twigg, 1992). It now appears to exist in only a few localities and, with no large populations left, there is small chance of it remaining in the United Kingdom. This makes the continued presence of a small population of ship rats on Lundy all the more interesting.

Ship rats have been on Lundy for several hundred years, Willcox (1988), for example, stating that they were "plentiful on Lundy in 1630". The first individuals were probably rats which scrambled ashore from ship wrecks. On the mainland, populations of ship rats (which are now largely restricted to ports) have always been subject to a continual influx of new individuals from incoming cargo ships. This is unlikely to have occurred on Lundy although it is possible that new individuals were added to the population from time to time as further ships became wrecked. The current population, therefore, is essentially an isolated gene pool. Presumably this population has become adapted to an existence outside of buildings, unusual for ship rats in this country, and in direct competition with other mammals, including the brown rat, *Rattus norvegicus.*

All three of the previous studies of rats on Lundy — the Oxford Lundy Expedition (1963), Perrin and Gurnell (1971) and Smith (1985) — have recorded both species of rat. The three colour morphs of *Rattus rattus* have also been found on the island. There has been some suggestion that over the last thirty years ship rats have been declining on Lundy (Taylor, 1990). However, since there has never been a proper monitoring programme established, it is difficult to know whether this has indeed been the case.

In April 1991 an expedition was made to Lundy to re-examine the status and distribution of ship rats on the island. In addition it was hoped that further information could be gained on how ship rats were apparently co-existing with brown rats. As such, this was a follow up to a previous study (Smith 1985) in which the two species were found to be active in overlapping areas.

METHOD

The whole island was surveyed for signs of rat activity. Evidence of burrows, droppings and tracks was searched for around buildings, along the dry stone walls and in open country. Figure 1 shows the area covered. Tracking boards were also put in position in the hope that signs of rat activity could be detected. Bledorberry live traps were positioned at sites that showed signs of rat activity or in areas where ship rats had previously been recorded (Smith 1985 and Lundy Warden pers. comm.). Traps were baited with mixed grain and raw potato and checked twice daily. Captured ship rats were

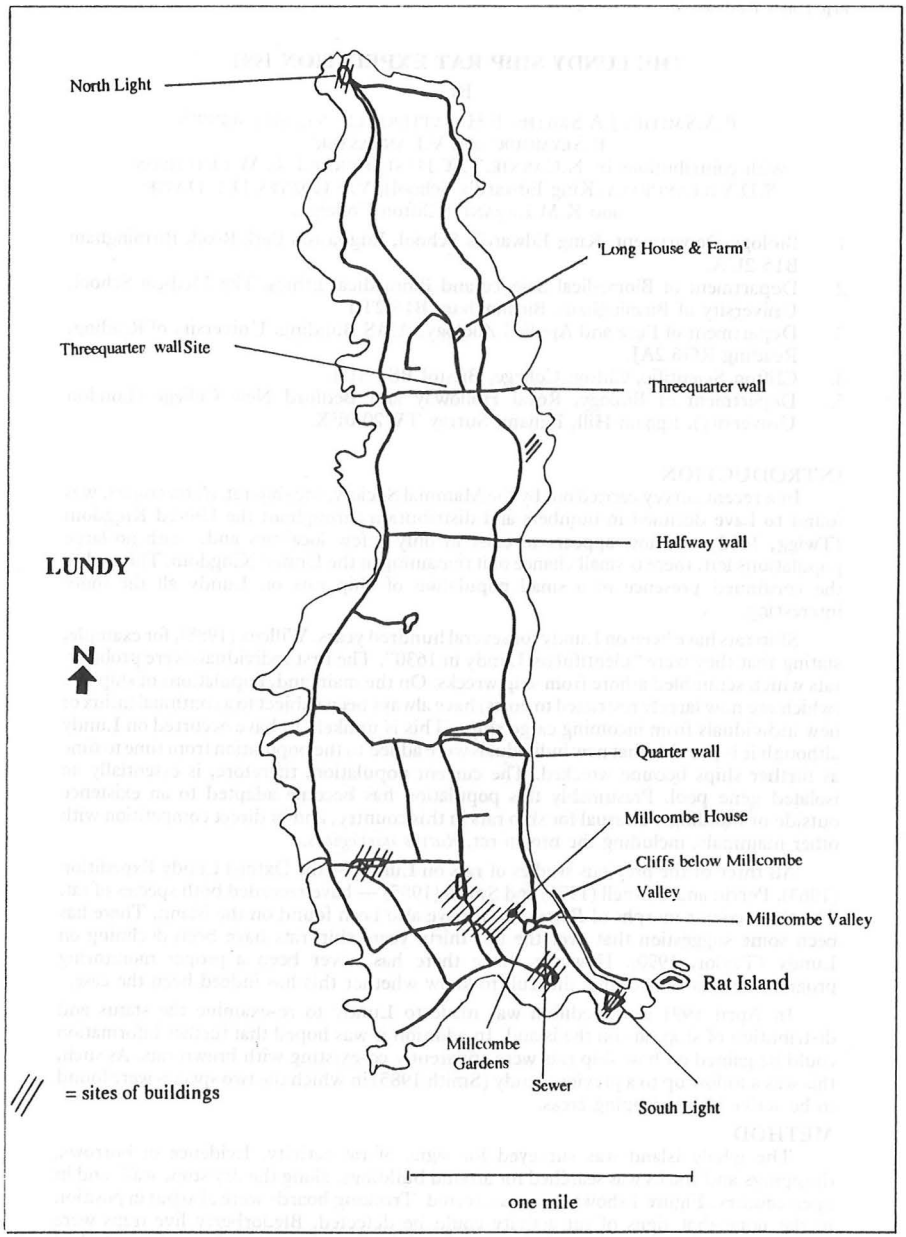

Figure 1: Sketch map to show location of trap sites. The whole island was surveyed for signs of rat activity: tracks, burrows and faecal pellets. The major paths and dry stone walls that were searched are shown in bold.

anaesthetised, fitted with radio collars (173 MHz) and radio tracked for up to eight days. Tracking was carried out on a rota system for 24 hours a day with members of the expedition team stationed at Millcombe Gardens and on the Landing Beach road immediately above the cliffs.

RESULTS

The "rat situation" on Lundy in 1991 was markedly different from that found in 1983 (Smith 1985). Evidence of rat activity was difficult to find and it took a week to capture the first rat. It was clear that the numbers of brown rats were significantly lower, presumably due to the success of various poisoning programmes, which had intitially become necessary as a result of large numbers in 1986 (Lundy Field Society, 1986 and 1989). In total ten rats were caught, four of which were ship rats. Table 1 gives details of the trap sites and captures. (For a more detailed account of individual rat captures and activity patterns see Smith *et al.*, in press.) All of the captured ship rats were radio tracked and three burrow sites finally located. These were found to be in rocky outcrops either on the reasonably sheltered cliffs or within close vicinity of them. The rats were active at night, mainly on the cliffs, although at low tide they were probably foraging on the sea shore: one individual was in fact captured in the splash zone. On two occasions, ship rats released from traps were observed to feed on navelwort, *Umbilicus rupestris*.

Table 1: Trap sites and Captures

Trap site[1]	**Trap nights** (No. of traps x No. nights)	**Captures**	**Sex**	**Mass** g
Millcombe House	67	—	—	
Millcombe Gardens	82	*R.rattus* (*rattus* morph)	male scrotal	195
Millcombe Valley	26	*R.norvegicus*	female perforate	140
		R.norvegicus	male scrotal	122
		R.norvegicus	female perforate	124
		R.norvegicus	female perforate	108
South Light	16	—	—	
'Long House & Farm'	20	—	—	
Threequarter Wall	10	—	—	
Cliffs below Millcombe Valley	103	*R.rattus* (*rattus* morph)	female perforate lactating	194
		R.rattus (*rattus* morph)	male scrotal	240
		R.rattus (*alexandrinus* morph)	male scrotal	240
		R.norvegicus	juvenile	escape
		R.norvegicus	female perforate	156
Sewer	4	—	—	

Total number of trap nights = 328

Efficiency (Number of captures per trap night) = 3% (4% including recaptures)

N.B. All traps were baited with mixed grain and raw potato.

FOOTNOTE 1: For location of trap sites see Figure 1.

DISCUSSION

This study shows that in 1991 ship rats were still present on Lundy, probably restricted to the south eastern part of the island. The burrows of ship rats were located in and amongst rocky crevices within the relatively sheltered cliffs below Millcombe. It is likely that the sheltered aspect and presence of the gulf stream are contributory factors which have enabled the rats to survive here. The rats almost certainly forage on the rocky shore and Landing Beach but are also able to feed higher up on the cliffs. It is possible that changes in the tide and weather force ship rats up on to the island 'proper', where they overlap with brown rats. No fully grown adult brown rats were caught so it was not possible to radio track this species. It is not known whether there were burrow sites of brown rats located in the cliffs, although they were found along the stream in Millcombe valley. In a previous study (Smith 1985) burrows of brown rats were found well away from the cliffs and it is possible that spatial segregation of burrow sites could help to explain how both species of rat coexist on Lundy. However, further work is required to establish whether *Rattus norvegicus* also lives on the cliffs. It is likely that diet also plays a role in the segregation but since few faecal pellets were found, a detailed analysis was not possible.

It is possible that it will never be established how both species coexist on Lundy, since there is now an active campaign to remove all rats from the island. Whilst control of brown rats can be understood, especially when their numbers reach high levels, it is perhaps unfortunate that the ship rat should also be "tarred with the same brush". The precarious standing of this species in the British Isles makes the eradication of the unique Lundy population all the more worrying; the low numbers and restricted distribution of ship rats on Lundy makes it seem unlikely that these animals will cause significant damage either to property or nesting birds. It can only be hoped that a means of selective rodent control can be pursued which might enable control of nuisance rats whilst maintaining a viable population of *Rattus rattus*.

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