A Report on the *Rattus rattus* Eradication Program on Boodie Island

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Introduction

Since 1981, the Department of Conservation and Land Management has been conducting a program of eradicating the introduced rat *Rattus rattus* from islands off the north west coast of Western Australia. The rats are believed to have been introduced to the islands from pearling and fishing boats which frequented the islands in the late 1800 s/early 1900 s. Successful eradications, using oats and Pindone, have been conducted on 5 islands. These range in size from 1 ha to 60 ha and are Bedout Island, north of Port Hedland, and Boomerang, Double (2 islands) and Pascoe Islands, all in the vicinity of Barrow Island. Boomerang Island is the only one on which native mammals occur. Because of its close proximity to Barrow Is (it connects at low tide) it was believed that these mammals travel between the 2 islands. It was similarly thought that *Rattus* may also be present on Barrow Is in the vicinity of Boomerang Is. However an intensive trapping program in this area failed to find any sign of *Rattus rattus*. Following the successful eradication of *Rattus* from Boomerang Is it has been noted that the Northern Brushtail Possum *Trichosurus arnhemensis* still occurs on the island.

Two other *Rattus* infested islands in the vicinity of Barrow Is support isolated populations of rare and endangered native mammal species. Boodie Island supports a population of the Boodie, or Burrowing Bettong *Bettongia lesueur*, and Middle Island supports a population of the Golden Bandicoot, *Isoodon auratus*. Both islands are considerably larger than the other islands previously baited.
This report details the *Rattus* eradication program on Boodie Is.

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Boodie Island has an approximate area of 470ha, and lies 10km south of Barrow Island, and 80km north of Onslow off the Pilbara coast. The island is part of Nature Reserve 38728 which comprises, in addition, Middle Island and Double Island.

Bettongia lesueur once had a large geographic range on the mainland, however is now restricted to populations on Barrow, Boodie, Bernier and Dorre Islands.

The population of *Bettongia* on Boodie Island is restricted to the exposed limestone formation on the south west of the island, an area of approximately 170ha. However *Rattus* are found throughout the island, which apart from the limestone area, consists predominantly of sparsely vegetated sand dunes. Preliminary observations on the island suggested that *Rattus* competed with the *Bettongia* for the use of burrows in the limestone area, and probably also for food. It was estimated that the *Bettongia* population did not exceed 50 individuals.

Consequently as part of the conservation programe for this rare marsupial, funds were obtained from the Australian National Parks and Wildlife Service to conduct a *Rattus rattus* eradication program on Boodie Island.

METHODS.

Boodie Island was baited with oats impregnated with Pindone (2 pivalyl 1,3 - indandione, 0.17mg per oat) between 18-29th May 1985 by personnel (Keith Morris, Phil Fuller and Don Munro) from the Wildlife Research Centre, Department of Conservation and Land Management. Each bait consisted of 150g of impregnated oats contained in a heat sealed plastic bag. Baits were laid throughout the island in an approximate grid pattern with 50m spacing between baits. A total of 2,000 baits were laid at 1200 bait stations. The baits in the limestone area, which were placed at 420 bait sites, were covered with

inverted plastic basins (Willow) with 3 triangular holes cut in the sides of each to allow access to the baits by *Rattus* but excluding *Bettongia*. Some baits needed replenishment on day 5 after initial baiting.

Each night, 3 transects each of approximately 1km in length were walked and searched with the aid of a headtorch. These transects covered the top of the limestone area, the base of the limestone, and the beach. The numbers of *Rattus* and *Bettongia* seen on both the outward and return legs of the transects were recorded. These data are presented in Tables 1 and 2, and Figure 1. Several sandy areas were also swept clear at regular intervals to detect any change in *Rattus* and *Bettongia* activity.

Results and Discussion.

The transect data (Table 1) suggest that *Rattus* were more numerous in the limestone portion of the island. The vegetation diversity in this area is greater than the remaining sandy portion of the island, which is vegetated almost entirely by *Spinifex longifolius*. Over 20 species of plant were recorded in the limestone area. Shelter is also more abundant in the limestone area.

The transect results also suggest that *Rattus* numbers significantly declined following this baiting program. This decline was first observed 4 days after the baits had been laid, and this coincided with the finding of the first dead *Rattus*. Several dead rats, ranging in weight from 135-205g, were subsequently found. The females examined were not pregnant however some males had descended testes, suggesting that breeding was about to commence. All the *Rattus* examined had full stomachs, and were bleeding from either the nose or anus. Although 2 rats were seen on the last night 11 days after the baits were laid, one was obviously affected by the baiting and was subsequently killed.

The number of fresh *Rattus* tracks on the swept areas did not decline until day 7 following the baiting. However by day 11 no fresh tracks were detected on the swept areas.

The response of the *Bettongia* (Table 2) to the baiting is not as clear as for the *Rattus*. Numbers seen during the transects varied considerably from a maximum of 9 individuals to 1 individual, and it is difficult to be certain if the low number seen on the last few nights was a result of baiting or not. The individuals sighted on these last nights did appear in good condition, unlike the *Rattus*. The bait covers were partially effective in excluding *Bettongia* from the baits, however it was found that the *Bettongia* were able to reach the baits after the *Rattus* had dragged them to the openings. A few *Bettongia* were seen feeding on the poison baits, and a modification of the entrances will be required if this type of operation is repeated. Most *Bettongia* were seen in the thickets of the native hibiscus *Abutilon leucopetalum*, feeding on leaves of this plant. *Bettongia* tracks were also still abundant on the swept areas after day 11.

An inspection of Boodie Is. was undertaken in September 1985 to ascertain the success of this baiting program. Unfortunately *Rattus* were still abundant, especially in the sand dune portion of the island, and many of the baits were untouched. *Bettongia* were also still present, although 2 carcasses of young animals were found suggesting that the baiting may have affected the juvenile members of the population.

It appears that when the baiting was undertaken in May, *Spinifex longifolius* was seeding and offered an alternative food source to the oat baits.

It will be necessary to repeat the baiting of Boodie Is., probably in September/October 1986 when *S. longifolium* seeds are not as abundant.

TABLE 1. The numbers of *Rattus rattus* and seen during Transects on Boodie Island.

Transect	top of limestone		base of limestone		beach		TOTALS	
Date	Out	In	Out	In	Out	In	Out	In
18/5/85	17	22	4	1	1	0	22	23
19/5/85	30	23	2	1	1	1	33	25
20/5/85	29	18	3	2	1	0	33	20
21/5/85	14	11	1	2	1	0	16	13
22/5/85	10	18	1	3	3	0	14	21
23/5/85	13	15	1	0	1	0	15	15
24/5/85	2	6	0	0	1	0	3	6
25/5/85	4	4	0	0	0	0	4	4
26/5/85	2	4	0	0	0	0	2	4
27/5/85	1	2	0	0	0	0	1	2
28/8/85	1	2	0	0	0	0	1	2
29/5/85	0	1	0	1	0	0	0	2

TABLE 2. The numbers of *Bettongia lesueur* seen during transects on Boodie Island.

Transect	top of limestone		base of limestone		beach		TOTALS	
Date	Out	In	Out	In	Out	In	Out	In
18/5/85	0	4	0	0	0	0	0	4
19/5/85	3	6	0	0	0	0	3	6 *
20/5/85	1	0	0	0	0	0	1	0
21/5/85	0	1	0	0	0	0	0	1
22/5/85	5	2	0	0	0	0	5	2
23/5/85	1	3	0	0	0	0	1	3
24/5/85	2	3	0	0	0	0	2	3 **
25/5/85	4	3	0	0	0	0	4	3 ***
26/5/85	1	0	0	0	0	0	1	0
27/5/85	2	2	0	0	0	0	2	2 ****
28/5/85	1	2	0	0	0	0	1	2
29/5/85	0	1	0	0	0	0	0	1

* 9 different animals

** 4 different animals

*** 7 different animals

**** 4 different animals.

Figure 1. The maximum number of *Rattus rattus* and *Bettongia lesueur* seen during transects on Boodie Island.

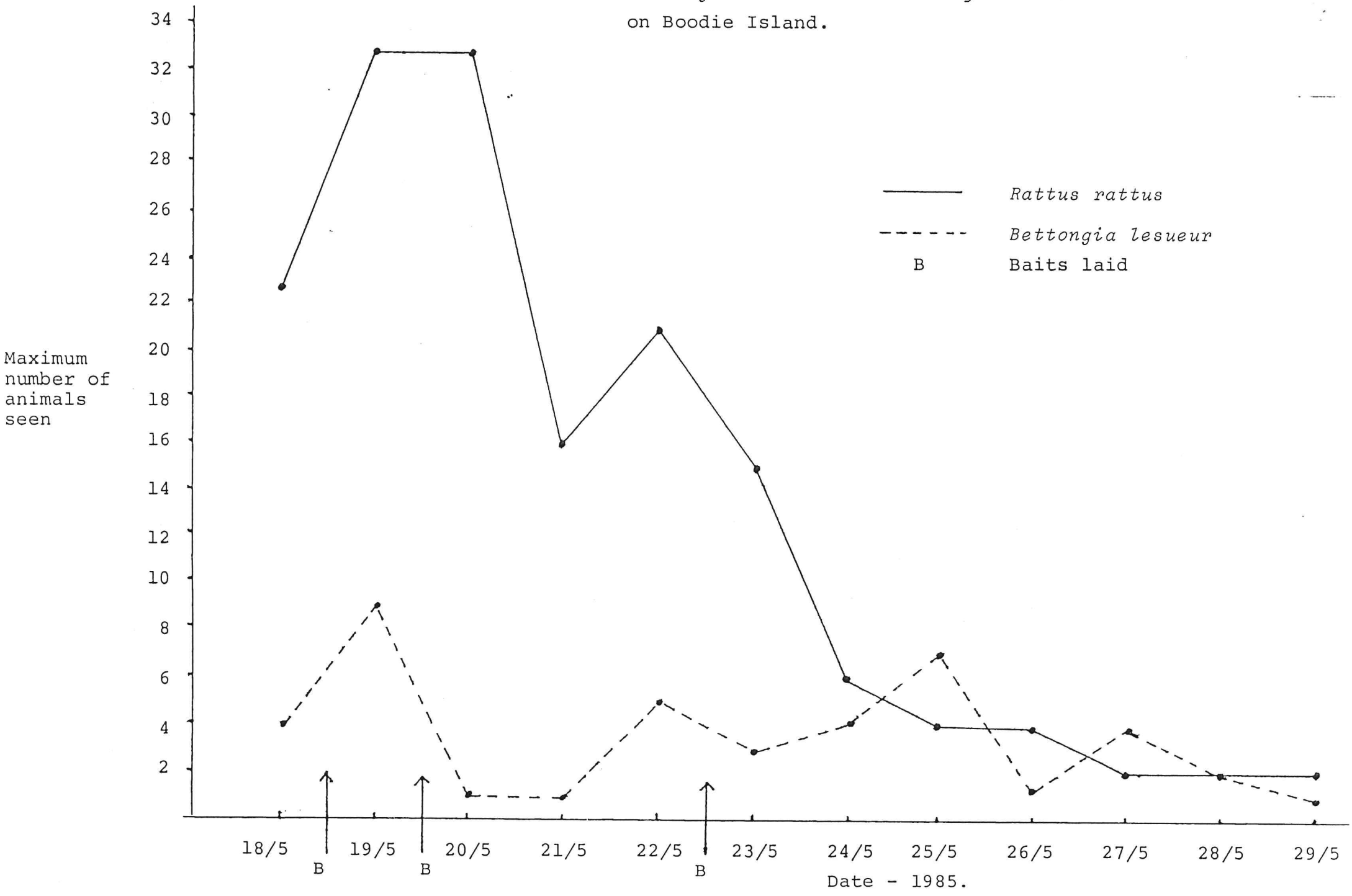

TABLE 3. Boodie Island *Rattus* eradication program - Expenditure.

Honda 1.9 kva generator	$ 750.00
Pindone and Oat baits	900.00
Engel fridge	420.00
Vessel Charter	2,500.00
Tent and other field equipment	1,172.00
Bowls (bait covers)	680.00
Travel Allowances	2,550.00
Miscellaneous	255.00
Vehicle (F100) fuel	250.00
TOTAL	$ 9,477.00
ANPWS Allocation	$ 9,600.00