

**MAMMAL MONITORING,  
BARROW ISLAND NATURE RESERVE  
OCTOBER 2000**

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## 1. INTRODUCTION

Barrow Island, as well as being of considerable nature conservation significance for other reasons, is one of Australia's most important mammal conservation areas. It supports 13 terrestrial mammal species, of which five are listed as threatened pursuant to the *Wildlife Conservation Act 1950* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Table 1). The Barrow Island Mouse, an endemic subspecies, qualifies as Vulnerable under IUCN Red List criteria, but is not currently listed. It was nominated for inclusion as a threatened species under the *Wildlife Conservation Act 1950* in December 2000. Barrow Island has been a producing oil field since the mid-1960s, until recently the operator was West Australian Petroleum Pty Ltd (WAPET); the operator is now Chevron Australia Pty Ltd.

**Table 1. Terrestrial mammals of Barrow Island**

Species	conservation status
Planigale, <i>Planigale</i> sp.	not threatened
Pilbara Pseudantechinus, <i>Pseudantechinus</i> sp.	not threatened
Barrow Island Golden Bandicoot, <i>Isoodon auratus barrowensis</i>	Vulnerable
Northern Brushtail Possum, <i>Trichosurus vulpecula arnhemensis</i>	not threatened
Barrow Island Boodie, <i>Bettongia lesueur</i> (Barrow Island subspecies)	Vulnerable
Barrow Island Spectacled Hare-wallaby, <i>Lagorchestes c. conspicillatus</i>	Vulnerable
Black-flanked Rock-wallaby, <i>Petrogale lateralis lateralis</i>	Vulnerable
Barrow Island Euro, <i>Macropus robustus isabellinus</i>	Vulnerable
Common Sheath-tail Bat, <i>Taphozous georgianus</i>	not threatened
Finlayson's Cave-bat, <i>Vespadelus finlaysoni</i>	not threatened
Rakali (Water-rat), <i>Hydromys chrysogaster</i>	not threatened
Djoorri (Common Rock-rat), <i>Zyromys argurus</i>	not threatened
Barrow Island Mouse, <i>Pseudomys nanus ferculinus</i>	not listed (but nominated as a threatened species)

The Black Flying Fox *Pteropus alecto* and White-striped Mastiff-bat *Tadarida australis* have been reported on Barrow, but these records apparently represent vagrants)

The Interim Management Guidelines (IMG) for Barrow Island Nature Reserve (CALM 1999) recommended that a formal mammal monitoring program be established. The National Parks and Nature Conservation Authority, in reporting on a visit in September 1997, also recommended additional mammal monitoring. The IMG states:

### "6.4 Management Actions

- Establish protocols for terrestrial fauna monitoring on Barrow Island. These need to include:
  - a) monitoring of mammal populations inside and outside the oilfield with a combination of spotlight transects and trapping;
  - b) monitoring fauna recovery where rat eradication was undertaken (south end); and
  - c) monitoring to ensure that feral animals, especially rodents and cats, do not establish.
- Establish protocols for determining the impact, if any, of road kills on mammal populations.
- Monitor the reintroduced population of Boodie *Bettongia lesueur* on Boodie Island.
- Continue monitoring the marine turtle rookeries on the west and east coasts of Barrow Island."

This report covers the third mammal monitoring visit undertaken between 9-18 October 2000.

## 2. OBJECTIVES

The objectives for this visit were:

1. Monitor abundance and condition of native mammals (apart from bats). Euros, Spectacled Hare-wallabies, Brushtail Possums and Boodies were monitored via spotlight runs, while Boodies, Golden Bandicoots, Brushtail Possums, native rodents and small dasyurid marsupials were monitored via trapping. Monitoring of rock-wallabies was not undertaken, although scats were collected at one site (see below).
2. Assess offshore islands and the south end of Barrow Island for presence/absence of Black Rats.
3. Collect tissue for taxonomic assessment of several mammals.

## METHODS

### 3.1 Trapping

Five trapping grids were established in November 1998 and a brief description is included in the report of that trip (Burbidge *et al.* 1998). During this visit the four corner points of each grid were located with GPS for long term future reference and placing on Chevron operational maps, so that disturbance is avoided (Appendix 2).

Sheffield cage traps, medium Elliott traps and pitfall traps were run on all grids for four nights. A summary of the trapping effort is shown in Table 2. Note that trapping was also undertaken on Boomerang Island.

**Table 2. Summary of trapping effort**

DATE	10/10	11/10	12/10	13/10	14/10	15/10	16/10	17/10	Total
M21	25 C	25 C	25 C	25 C					100 C
	25 E	25 E	25 E	25 E					100 E
	25 P	25 P	25 P	25 P					100 P
Landing					25 C	25 C	25 C	25 C	100 C
					25 E	25 E	25 E	25 E	100 E
					25 P	25 P	25 P	25 P	100 P
John Wayne	25 C	25 C	25 C	25 C				-	100 C
	25 E	24 E	25 E	25 E					99 E
	25 P	24 P	24 P	25 P					98 P
Bandicoot Bay		25 C	25 C	25 C	25 C				100 C
		25 E	25 E	25 E	25 E				100 E
		25 P	25 P	25 P	25 P				100 P
S62					25 C	25 C	25 C	25 C	100 C
					25 E	25 E	25 E	25 E	100 E
					25 P	25 P	25 P	25 P	100 P
Boomerang Island						10 C	10 C		20 C
						10 E	10 E		20 E

<b>Total Effort:</b> (# trap-nights)	Cage traps	520	<b>Total trap-nights</b>	1528
	Medium Elliotts	510		
	Pits	498		

Trap success rates for Boodies and Brushtail Possums were calculated on cage trap numbers only, those for Golden Bandicoots on cage and Elliott trap numbers, those for the Pilbara *Pseudantechinus*, Barrow Island Mouse and Common Rock Rat on Elliott and pit trap numbers, and those for the *Planigale* on pit trap numbers only.

### 3.2 Spotlighting

The standard spotlighting transects (one in the largely undisturbed northern end of the island and one within the oilfield towards the southern end of the island) were run on six nights (10/10, 11/10, 12/10, 14/10, 15/10 and 16/10). Each transect is about 30 km long. A 4WD tray-top vehicle is driven at 12 -15 km/h with one spotlihter observing animals. Distance from the centre-line of the transect was recorded for each sighting to enable density calculations. To eliminate observer bias, each spotlighting team records on both runs on consecutive nights and the data from the two nights are combined.

### 3.3 Other island visits

Boomerang Island was visited and trapped for two nights (15-16 October) with cage and Elliott traps. No evidence of Black rats was obtained. Tracks of the Brushtail Possum were seen and three were trapped. A single Golden Bandicoot track was sighted on 16 October. North and South Double Island were visited by helicopter on 11 October, and South Double Island visited again by dinghy on 15 October. Michelle Drew reported a small mammal (cf. *Planigale* in size) on South Double Island but no mammal tracks were found. Turtle hatchling tracks, believed to be Hawksbill Turtle, were found on the west-facing beach on South Double Island and on the south side of Boomerang Island. Hawksbill nesting has not previously been reported on these islands. The southern tip of Barrow Island was visited by helicopter on 15 October. No sign of introduced rats was found.

### 3.4 Tissue collection for taxonomy

Ear tissue samples were collected from *Pseudantechinus* sp., *Planigale* sp., *Zyomys argurus*, *Pseudomys nanus*, *Lagorchestes conspicillatus*, *Isoodon auratus* and *Trichosurus vulpecula* for taxonomic research work being undertaken by Dr Peter Spencer (Perth Zoo/Murdoch University).

## 4. RESULTS

Eight species of native mammal were trapped on the grids and six species identified during spotlight transects. No introduced species was recorded.

### 4.1 Grid trapping

The mean trap success rates for mammals trapped on the five grids in 1998, 1999 and 2000 are shown in Table 3. Trap success rates for each of the grids is shown in Figures 1 – 5, and species trap success rates are shown in Figures 6 – 12. A summary of the trapping results showing individuals trapped is shown in Appendix 1.

The Bandicoot Bay grid (coastal sand dune) was the most diverse with eight species of mammal trapped. Six species were trapped on the John Wayne and Landing grids, and five on the S62 and M21 grids. The *Planigale* was trapped on the Landing and M21 grids for the first time, while the Rock-rat was trapped on the Landing and S62 grids for the first time. Hare-wallabies were trapped on the John Wayne grid for the first time. Previously any hare-wallabies trapped were not weighed and measured, and not included in the monitoring reports. However all hare-wallabies trapped during the 2000 trip were processed and will be included in this and subsequent reports.

Overall trap success rates were similar to the previous two years. Trap success rates for Brushtail Possums have increased significantly since 1998.

**Table 3.** The mean trap success rates ( $\pm$  SE ) for mammals on grids - Barrow Island 1998, 1999 and 2000.

	1998	1999	2000
<b>Golden Bandicoot</b>	25.9 $\pm$ 4.6 %	34.7 $\pm$ 5.4 %	30.9 $\pm$ 4.8 %
<b>Brushtail Possum</b>	6.3 $\pm$ 1.9 %	15.4 $\pm$ 7.0 %	20.0 $\pm$ 6.2 %
<b>Boodie</b>	5.1 $\pm$ 2.9 %	9.2 $\pm$ 3.5 %	8.2 $\pm$ 3.5 %
<b>Spectacled Hare-wallaby</b>	-	-	3.0 $\pm$ 2.2 %
<b>Planigale</b>	0.4 $\pm$ 0.1 %	1.2 $\pm$ 0.1 %	1.8 $\pm$ 0.7 %
<b>Pilbara Pseudantechinus</b>	0	1.0 $\pm$ 0.2 %	0.4 $\pm$ 0.4 %
<b>Barrow Island Mouse</b>	1.9 $\pm$ 0.7 %	1.6 $\pm$ 0.4 %	2.1 $\pm$ 1.0 %
<b>Rock Rat</b>	0.1 $\pm$ 0.1 %	0.1 $\pm$ 0.1 %	0.7 $\pm$ 0.2 %

#### 4.2.1 Golden Bandicoot *Isoodon auratus barrowensis* (Figure 6).

The Golden Bandicoot was again the most common species trapped and trap success rates were similar to that reported in 1999. An average of 33 individuals was caught on each grid, the same as for 1999. This species was most abundant on the John Wayne grid where 60 individuals were trapped. Unlike 1999 when no adult females were recorded carrying pouch young, 20 – 50 % of adult females were carrying pouch young (10-20 mm crown rump length).

#### 4.2.2 Northern Brushtail Possum *Trichosurus vulpecula arnhemensis* (Figure 7).

The Brushtail Possum was trapped on all grids, but is most abundant at John Wayne and S62, areas that are on or adjacent to rocky cliffs. Trap success rates were higher than in 1999 on all grids except for John Wayne. One third of the adult females were carrying pouch young.

#### 4.2.3 Boodie *Bettongia lesueur* (Figure 8).

Trap success rates for Boodies were similar to 1999 and they were again trapped on all grids except John Wayne. Boodies are known to be present at John Wayne but the overall high trap success rate on this grid (85%) may reduce trap availability for this species. The highest trap success rate was again at the Landing, which probably reflects this grid's proximity to a nearby warren. Most females trapped had pouch young of various ages.

Barrow Island Boodies are significantly smaller than those on Bernier and Dorre Island and it has been suggested that they may be different taxa (Ken Aplin, WA Museum pers comm, Pope and King 1997 unpublished). Ear tissue samples were collected and the DNA extracted will be compared with samples from Bernier and Dorre Islands to clarify the taxonomy.

#### 4.2.4 Barrow Island Planigale *Planigale* sp. (Figure 9).

During the 2000 trip Planigales were trapped at M21, John Wayne, Bandicoot Bay and Landing grids, confirming the widespread occurrence of this species. As it is captured only in pitfall traps, it has previously been recorded only rarely. Five of the six females captured were carrying small, unfurred pouch young.

The planigale on Barrow Island has previously been known as *Planigale maculata*, the same species as on the adjacent Pilbara mainland. However, a recent taxonomic review of this genus indicates that *P. maculata* in the Pilbara is replaced by two un-named species, currently known informally as *Planigale* 1 and *Planigale* Mt Tom Price (Blackett *et al.* 2000). This work indicates that the Barrow island *Planigale* is *Planigale* 1, the more widespread of the Pilbara *Planigale* species.

Table 4. Measurements of *Planigale* trapped on Barrow Island in 2000

Sex	Body weight (g)	Head length (mm)	Pes length (mm)	# pouch young	Grid
Male	7.5	23.6	10.1	-	M21
Male	9.5	25.0	9.0	-	M21
Male	9.5	22.9		-	Bandicoot Bay
Female	9.0	22.8	9.6	>4	M21
Female	8.0	21.0	8.0	4	M21
Female	9.0	20.1		>4	John Wayne
Female	7.0	20.2	9.4	4	John Wayne
Female	9.25	23.9	9.2	3	Bandicoot Bay
Female	6.5	21.8	9.5	0	Landing

#### 4.2.5 Pilbara *Pseudantechinus* *Pseudantechinus* sp. (Figure 10).

Only two *Pseudantechinus* were trapped, both at Bandicoot Bay. Measurements are shown in Table 5. On Barrow Island, this species has previously been regarded as *P. macdonnellensis*, however a review of the mainland *Pseudantechinus* indicates that a new Pilbara species is present, *P. roryi* (Cooper *et al.* 2000). While it is presumed that the species on Barrow Island is *P. roryi*, specimens are required to confirm this identification.

Table 5. Measurements of *Pseudantechinus* trapped on Barrow Island in 2000.

Sex	Body weight (g)	Head length (mm)	Pes length (mm)	# pouch young	Grid
F	24	33.0	13.1	4, CR 10 mm	Bandicoot Bay
F	25	34.7	15.1	1, CR 8 mm	Bandicoot Bay

#### 4.2.6 Barrow Island Mouse *Pseudomys nanus ferculinus* (Figure 11).

The Barrow Island Mouse was trapped in low numbers on all grids except M21. This species is more abundant on the white sand at Bandicoot Bay and the red sand at John Wayne than on the brown loams and gravels at S62 and the Landing. This species is probably more abundant than indicated by these trap success rates as disturbance of Elliott traps by bandicoots and possums probably reduces their capture rate. There was no obvious sign of breeding at this time.

This species was locally eradicated by the black rat control program at the south end of Barrow Island in 1990/91 but has since recovered through colonisation from adjacent areas. Ear tissue was collected and a genetic comparison of this taxon with mainland *P. nanus* is currently underway.

#### 4.2.7 Common Rock Rat *Zygomys argurus* (Figure 12).

Previously this species has been trapped at Bandicoot Bay and John Wayne, however in October 2000 it was also trapped at the Landing and S62. Trap success rates are low (0.5 % – 1.5 %) and this is one of the less common species on Barrow Island (1-2 animals per grid). Two of the females trapped had developed teats and may have bred recently.

### 4.3 Spotlighting

Spotlighting data are presented in Table 6. Sufficient data are now available for analysis using the line transect method to produce density estimates. This will be carried out before next year's visit. Table 7 presents mean count data from all years.

Rock-wallaby numbers are not reported in Tables 6 and 7 as they are sighted rarely and only on the north transect; no suitable habitat being traversed on the south transect. Between transect total numbers are probably not significantly different; however, further analyses will be undertaken in 2001.

The spotlight transect counts are not high quality data. This is because of issues related to observer experience and skill, varying visibility and varying animal behaviour related to weather and moon conditions. In addition, on Barrow Island, there are differences in topography and vegetation between the two transects. Most counts in the past have occurred over two nights only. We are now carrying out counts over six nights and this should improve data quality by averaging night-to-night variability.

Differences in species abundance and total mammal abundance between years should be treated with extreme caution, as, in addition to night-to-night variation, counts have been made in different seasons and by different observers. Counts are probably affected by past rainfall and by severe cyclones, which may cause the death of some mammals. Additionally, the vegetation of some areas has become increasingly high and dense as the time since fire increases, and there are now tall *Triodia angusta* along many road verges, even in areas dominated by the low *T. wiseana*, significantly affecting visibility. Thus, the data-set should be used primarily for comparing mammal abundance between the two transects within one trip.

Whatever the shortcomings of spotlight data, the value of these data is that they will pick up major changes in animal abundance within and outside the oilfield, should this occur.

Variations in numbers of some species between the north and south transects are probably due to differences in habitat. More Boobies were recorded for the north transect than the south one—this has also been noted in some, but not by any means all, past counts. This may be due to be more Boobie warrens occurring close the north transect. Higher hare-wallaby numbers in the south have also been noted on many, but not all, previous counts and are probably due to the relatively large area of regenerating borrow pits and other disturbed areas within the oilfield. These provide a greater variety of food plants and allow better visibility away from the edge of the roads.

Table 6. Combined numbers for the three transects, October 2000

Transect	Golden Bandicoot	Brushtail Possum	Boodie	Hare-wallaby	Euro	Rodents/Dasyurids	Total
10-11 Oct N	32	17	17	31	12	0	110
10-11 Oct S	30	12	6	47	6	4	105
12-14 Oct N	43	23	20	42	8	11	148
12-14 Oct S	47	19	4	55	5	9	139
15-16 Oct N	60	28	18	29	0	14	153
15-16 Oct S	42	21	7	42	3	12	127
Mean/night N	22.5	11.3	9.2	17	3.3	4.2	68.5
Mean/night S	19.8	8.7	2.8	24.0	2.3	4.2	61.8

Table 7. Comparable spotlighting data since 1973

Date	# of nights	Golden Bandicoot		Possum		Boodie		Hare-wallaby		Euro		Rodent/Dasyurid		Total	
		N	S	N	S	N	S	N	S	N	S	N	S	N	S
Dec 72	2	7.5	11.0	7.5	15.0	23.0	10.5	51.5	61.5	10.0	5.5	6.0	4.5	106.5	108.0
Jan 75	4	8.5	7.8	4.5	6.3	7.5	5.0	14.3	11.3	5.5	2.0	10.3	2.3	50.5	34.5
Feb 77	2	12.0	7.5	6.5	7.5	3.0	8.5	16.5	17.0	2.0	2.5	3.0	1.5	59.0	72.0
Feb 79	2	6.5	6.5	11.0	20.0	4.0	6.5	17.0	45.0	4.0	1.5	0.5	3.0	43.0	82.5
Feb 81	2	17.0	15.5	9.5	16.0	7.0	6.0	37.5	82.5	5.5	8.0	3.0	6.0	79.5	134.0
Mar 83	2	21.5	23.0	6.0	15.5	4.5	5.0	30.5	37.0	3.5	3.0	5.5	3.0	72.0	86.5
Feb 85	2	13.5	13.5	4.5	10.5	8.5	5.5	43.0	46.5	1.5	1.5	1.5	3.5	72.5	81.0
Nov 85	2	10.0	8.5	6.5	9.0	12.0	7.5	24.0	19.5	3.0	4.5	3.5	3.0	61.0	52.0
May 87	2	9.5	7.0	11.5	6.5	6.5	4.0	32.0	34.0	5.5	5.5	2.0	2.0	67.5	59.0
Mar 89	2	11.0	9.5	12.0	8.5	5.0	5.5	24.5	23.5	3.0	2.0	1.5	1.0	58.5	50.0
Jun 91	2	5.0	7.5	9.0	8.0	2.0	3.0	32.0	37.0	10.0	3.5	4.0	2.5	62.5	61.5
Oct 95	2	8.0	9.5	7.0	6.0	13.0	9.5	31.5	17.0	4.0	1.5	2.0	3.0	65.5	46.5
Sep 97	2	3.5	4.5	8.0	2.0	1.5	4.0	9.0	13.5	8.5	3.5	5.0	3.0	37.0	30.5
Nov 98	6	16.7	19.3	7.7	7.2	6.2	5.8	27.0	28.0	5.3	1.2	2.0	3.7	65.5	65.2
Oct 99	2	19.5	15.5	14.0	7.5	6.0	5.0	16.5	23.0	4.0	2.0	3.5	2.0	63.5	55.0
Oct 00	6	22.5	19.8	11.3	8.7	9.2	2.8	17.0	24.0	4.0	2.3	4.2	4.2	68.5	61.8

#### 4.4 Opportunistic observations

Rock-wallaby (*Petrogale lateralis lateralis*) scats were again collected from the colony near Q21 for David Pearson's study on estimating rock-wallaby abundance from scat accumulations. Three rock-wallabies and two euros were seen sheltering in the cliff. A better estimate of rock wallaby abundance at Q21 is required for this study to be of any value. It is proposed that a spotlighting or trapping program be initiated to more accurately determine numbers of rock wallabies in this area. This species is the least abundant mammal on Barrow Island with a survey in 1993 estimating that the population comprised only about 150 (Hall *et al.* 1993).

## 5. FUTURE WORK

As stated in previous reports, we believe that the grid trapping and spotlighting design described above is the most cost-effective compromise for monitoring Barrow Island terrestrial mammals. The spotlighting has the added advantage of being comparable with data collected every two to three years since 1973. In 1998, we recommended that mammal monitoring, utilising the trapping grids and spotlight runs, should be undertaken each year for five years by CALM and Chevron staff and the frequency of work reviewed at the end of that period. However, because of delays in setting up complete grids (pit traps had to be blasted in 1999 and some were not finished until after the 1999 visit), the 2000 trip provided the first complete dataset. Thus, yearly visits may need to be extended until 2004.

With visits to Double and Boomerang Islands this trip, as well as a visit to the south end of Barrow, we have now inspected all areas that previously harboured Black Rats and which were subject to rat eradication programs from 1983 - 1991. It is very pleasing to note that all remain rat-free. We believe that these areas should be inspected again in two to three years. During the rat eradication program, the Barrow Island Mouse was locally eradicated from the South End. We know it has recovered at Bandicoot Bay and Narrow Neck however the south end has not been trapped since December 1993 and it would be useful to include this in the 2001 program. Also, South Double Island should get special attention and pit trapping for the mammal reported this year.

Improved monitoring of rock-wallabies is needed, especially as they are the rarest of the terrestrial mammals on Barrow. We will discuss possible techniques with rock-wallaby experts in CALM and attempt to set up standardised techniques in 2001. A longer visit may be necessary to achieve this.

The next visit is recommended for late October 2001. CALM will contact Chevron in mid-2001 to finalise dates.

## ACKNOWLEDGMENTS

Chevron arranged our visit and paid all travel, vehicle and accommodation costs. We received assistance from many Chevron and contract staff. We would like to thank Stephan Fritz for arranging the visit. We also thank those who filled the positions of vehicle drivers during spotlighting transects: Les McClements, Brad Jones, Patrick Ho, Michael Ho, Ken Nankervis, Joe Simpson, Alan Beesley, Gary Coulter, Ian Templeton and Alby de Groot. Michael Hughes and Jeff Richardson, CALM Pilbara Region, assisted with trapping. Bristow Helicopters provided transport to Double Island and the south end of Barrow Island. Eddie Cound arranged the use of a dinghy for access to Boomerang Island.

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**Figures 1 – 12**

**Appendices 1 and 2**

## APPENDIX 1

BARROW ISLAND TRAPPING SUMMARY  
OCTOBER 2000

## JOHN WAYNE GRID

	G Bandicoot (200 trapnights)			BT Possum (100 trapnights)			Boodie (100 trapnights)			Hare-wallaby (100 trapnights)			Planigale (100 trapnights)			Pseudantech (100 trapnights)			BI Mouse (200 trapnights)			Rock Rat (200 trapnights)		
	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt
<b>Total captures</b>	22	38	37	10	3	16	0	0	0	2	0	0	2	0	0	0	0	0	5	0	0	2	0	0
<b>Total individuals</b>	60			13			0			0			2			0			5			2		
<b>% trap success</b>	48.5			29.0			0.0			2.0			2.0			0.0			2.5			1.0		

## BANDICOOT BAY GRID

	G Bandicoot (200 trapnights)			BT Possum (100 trapnights)			Boodie (100 trapnights)			Hare-wallaby (100 trapnights)			Planigale (100 trapnights)			Pseudantech (100 trapnights)			BI Mouse (200 trapnights)			Rock Rat (200 trapnights)		
	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt
<b>Total captures</b>	11	6	26	3	1	4	5	3	5	6	1	5	2	0	0	1	1	0	7	2	3	1	0	2
<b>Total individuals</b>	17			4			8			7			2			2			9			1		
<b>% trap success</b>	21.5			8.0			13.0			12.0			2.0			2.0			6.0			1.5		

N = new animal capture

R = recapture animal from previous trappings

Rt = retrap animal from this trapping

Total individuals = N + R

% trap success = [(N + R + Rt) / # trapnights] x 100

## S 62 GRID

	G Bandicoot (200 trapnights)			BT Possum (100 trapnights)			Boodie (100 trapnights)			Hare-wallaby (100 trapnights)			Planigale (100 trapnights)			Pseudantech (100 trapnights)			BI Mouse (200 trapnights)			Rock Rat (200 trapnights)		
	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt
<b>Total captures</b>	23	17	27	6	11	21	4	1	2	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0
<b>Total individuals</b>	40			17			5			0			0			0			1			1		
<b>% trap success</b>	33.5			38.0			7.0			0.0			0.0			0.0			1.0			0.5		

## M 21 GRID

	G Bandicoot (200 trapnights)			BT Possum (100 trapnights)			Boodie (100 trapnights)			Hare-wallaby (100 trapnights)			Planigale (100 trapnights)			Pseudantech (100 trapnights)			BI Mouse (200 trapnights)			Rock Rat (200 trapnights)		
	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt
<b>Total captures</b>	9	15	26	5	0	0	1	1	0	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0
<b>Total individuals</b>	24			5			2			1			4			0			0			0		
<b>% trap success</b>	25.0			5.0			2.0			1.0			4.0			0.0			0.0			0.0		

LANDING GRID

	G Bandicoot (200 trapnights)			BT Possum (100 trapnights)			Boodie (100 trapnights)			Hare-wallaby (100 trapnights)			Planigale (100 trapnights)			Pseudantech (100 trapnights)			BI Mouse (200 trapnights)			Rock Rat (200 trapnights)		
	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt	N	R	Rt
<b>Total captures</b>	14	9	29	5	4	11	3	8	8	0	0	0	1	0	0	0	0	0	2	0	0	1	0	0
<b>Total individuals</b>	23			9			11			0			1			0			2			1		
<b>% trap success</b>	26.0			20.0			19.0			0.0			1.0			0.0			1.0			0.5		

APPENDIX 2

BARROW ISLAND MAMMAL TRAPPING GRID GPS LOCATIONS

A1, A5, E5, and E1 are the trap points at the south west, north west, north east and south east corners respectively of the trapping grids.

Grid	A1		A5		E5		E1	
	Northings	Eastings	Northings	Eastings	Northings	Eastings	Northings	Eastings
LANDING	7706870	50 340730	7706910	50 340661	7706971	50 340735	7706913	50 340798
JOHN WAYNE	7703892	50 329414	7703947	50 329364	7703997	50 329432	7703936	50 329481
S62	7703329	50 329535	7703277	50 329492	7703318	50 329430	7703373	50 329474
M21	7698561	50 334180	7698485	50 334194	7698468	50 334101	7698546	50 334089
BANDICOOT BAY	7690985	50 325712	7691060	50 325720	7691055	50 325807	7690987	50 325784

Figure 1. Mammal trap success rates on the Bandicoot Bay grid, Barrow Island

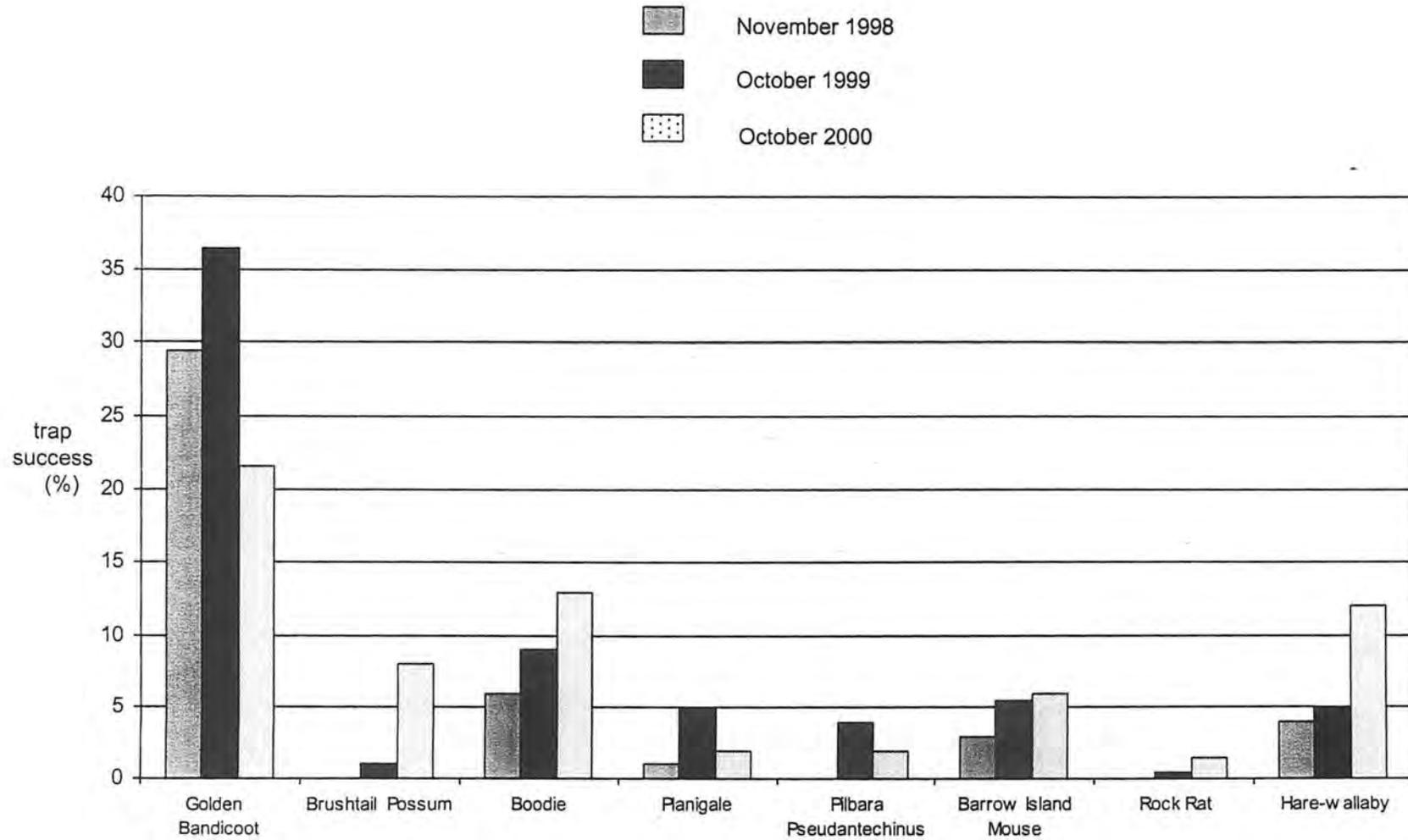


Figure 2. Mammal trap success rates on the John Wayne grid, Barrow Island

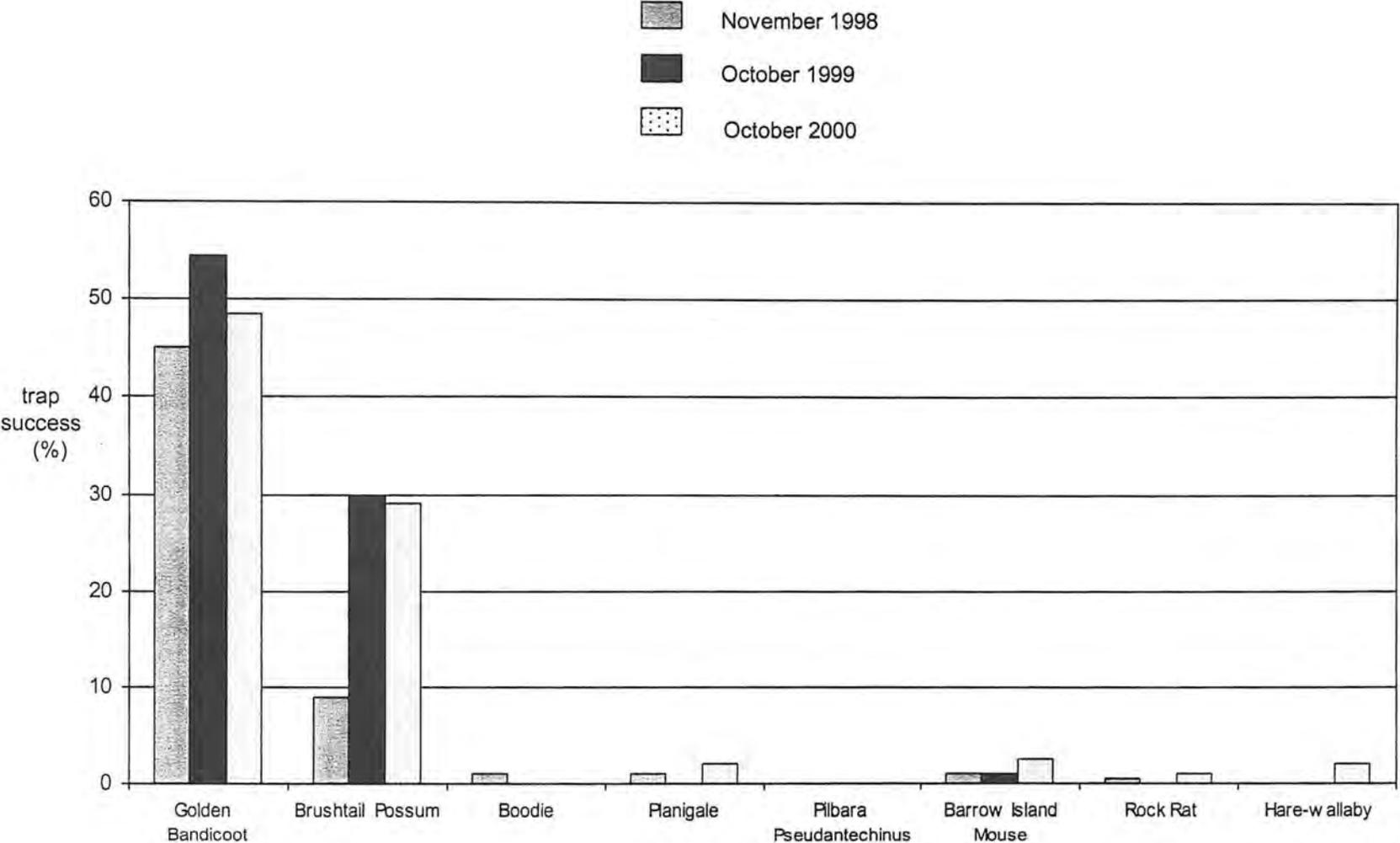


Figure 3. Mammal trap success rates on the Landing grid, Barrow Island

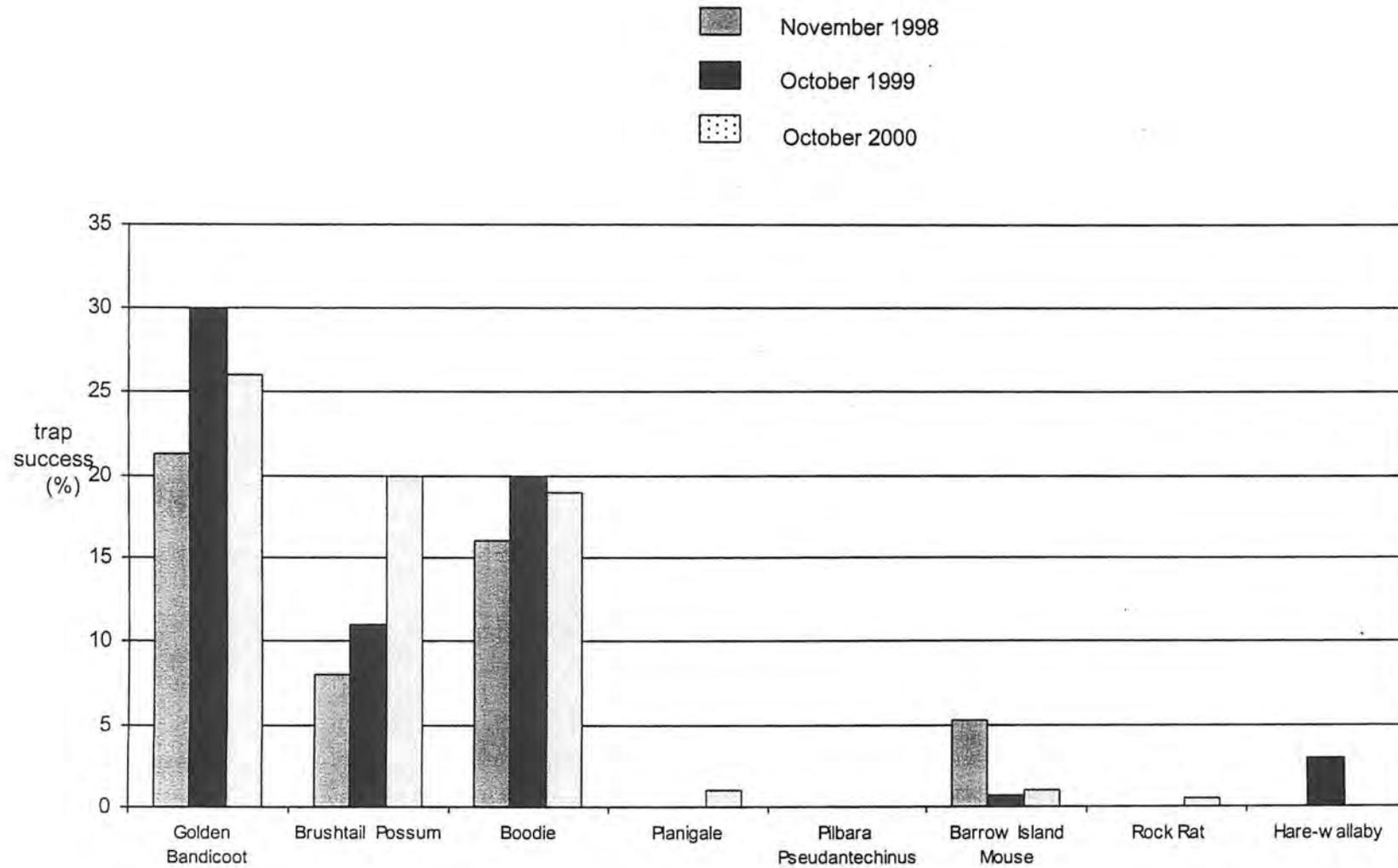


Figure 4. Mammal trap success rates on the M21 grid, Barrow Island

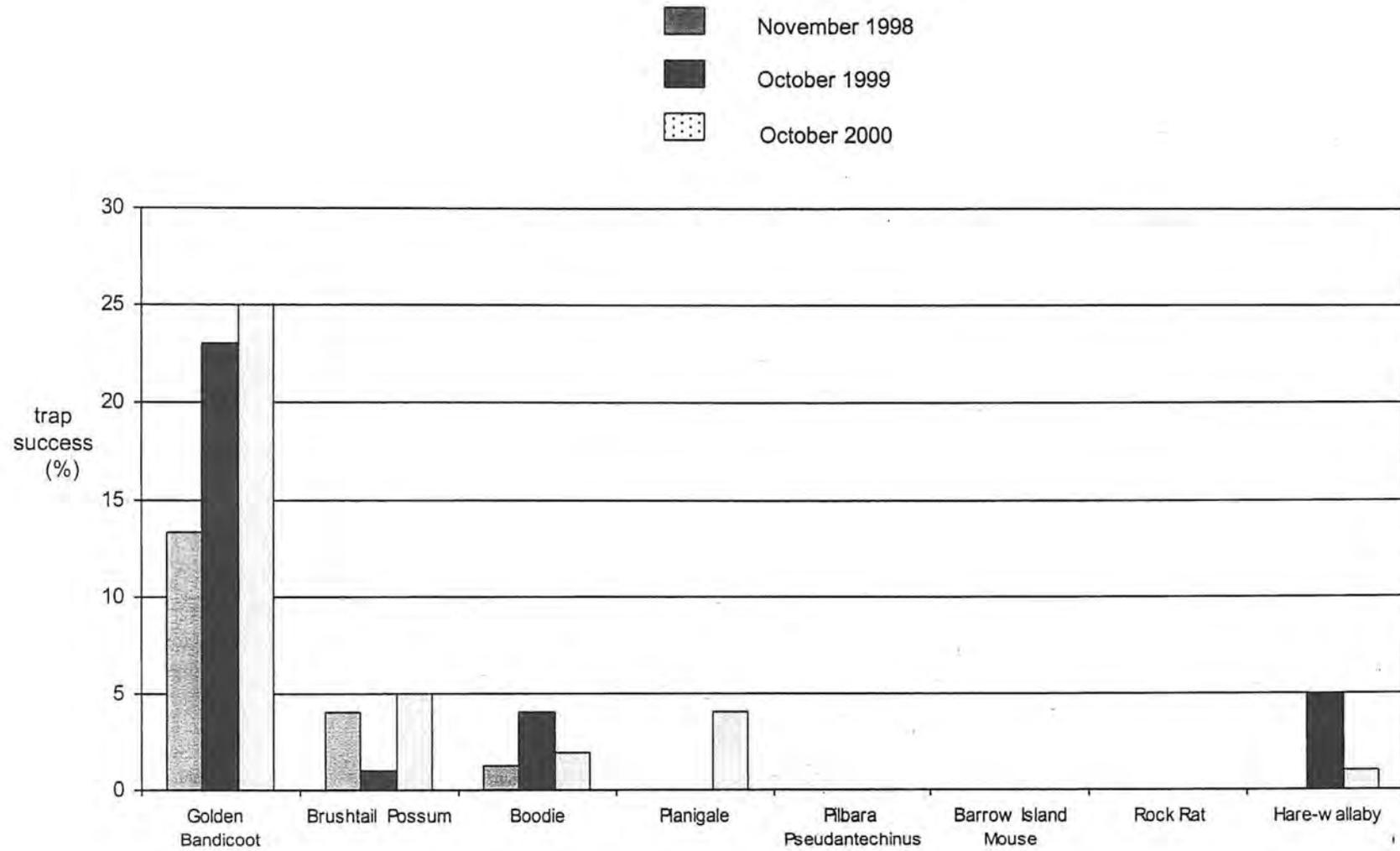


Figure 5. Mammal trap success rates on the S62 grid, Barrow Island.

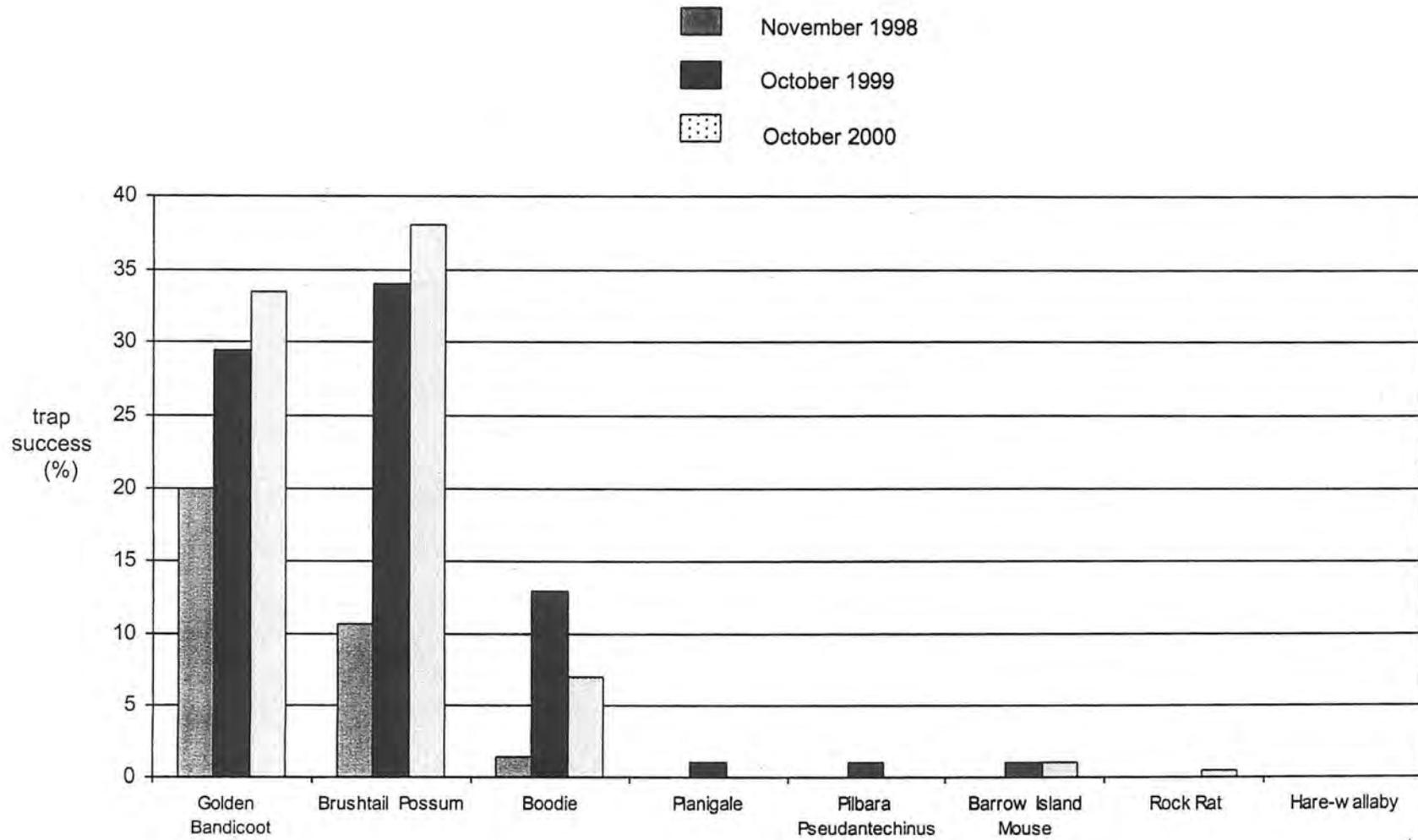


Figure 6. Grid trap success rates for the Golden Bandicoot on Barrow Island

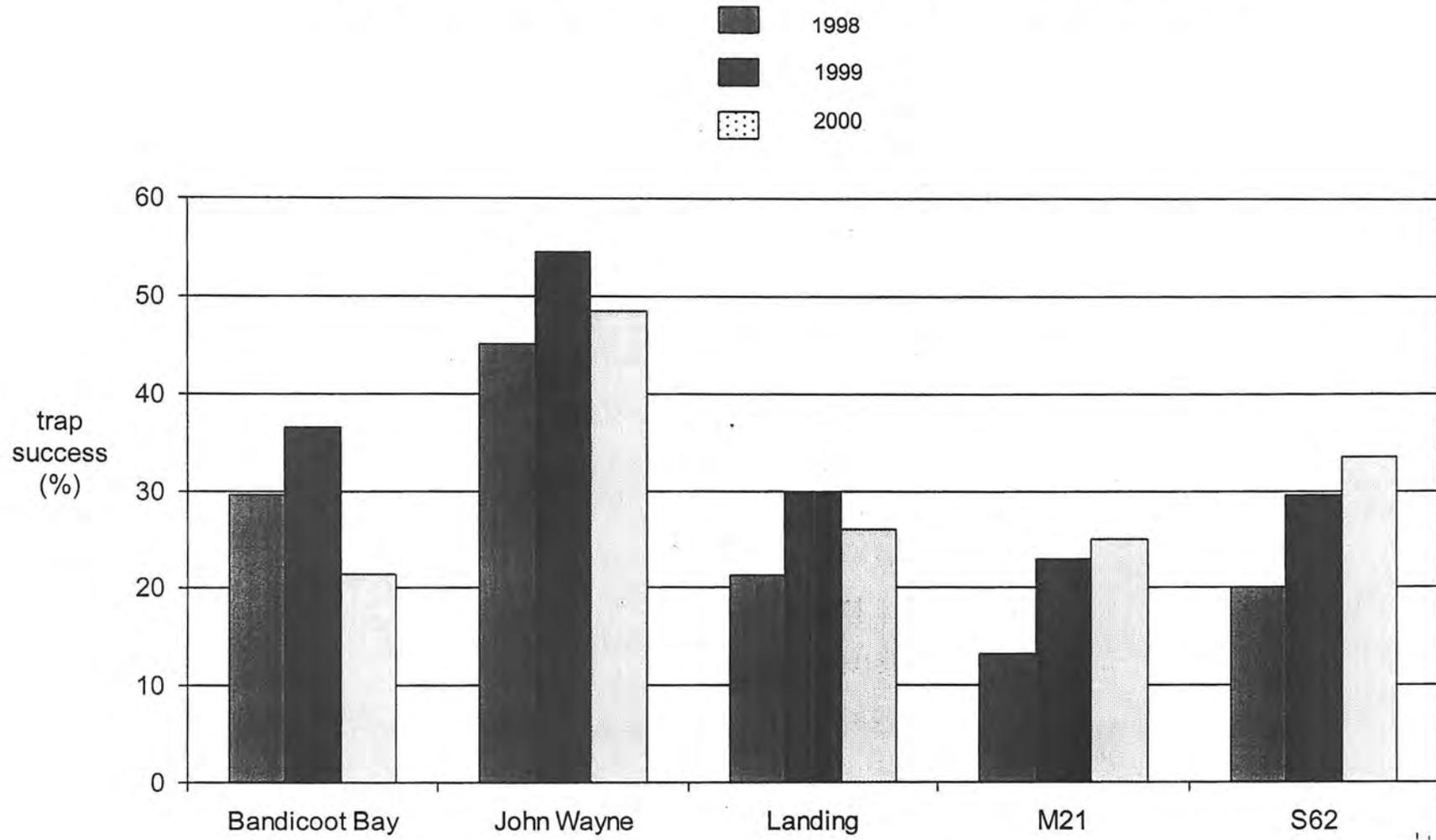


Figure 7. Grid trap success rates for the Brushtail Possum on Barrow Island

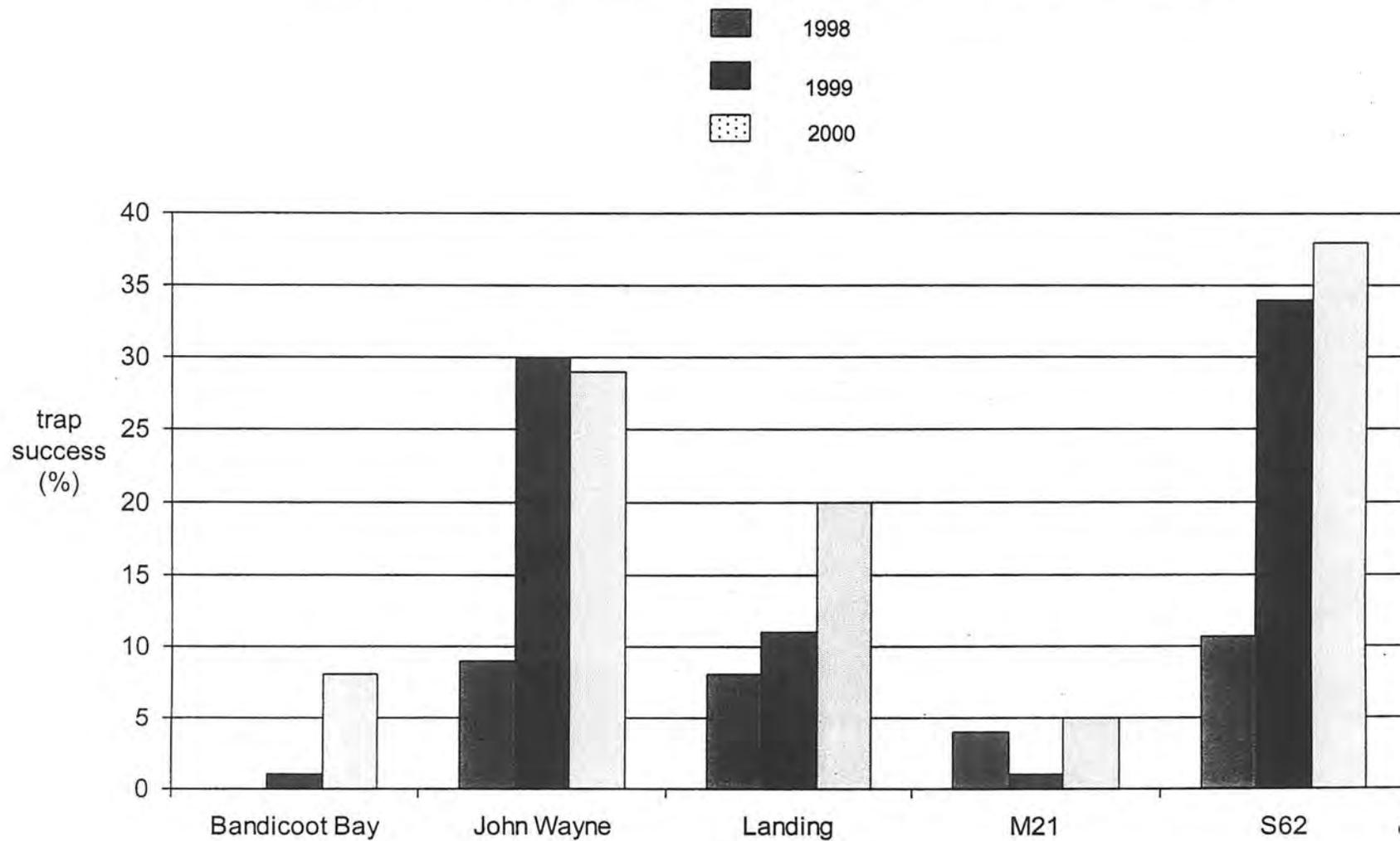


Figure 8. Grid trap success rates for the Boodie on Barrow Island

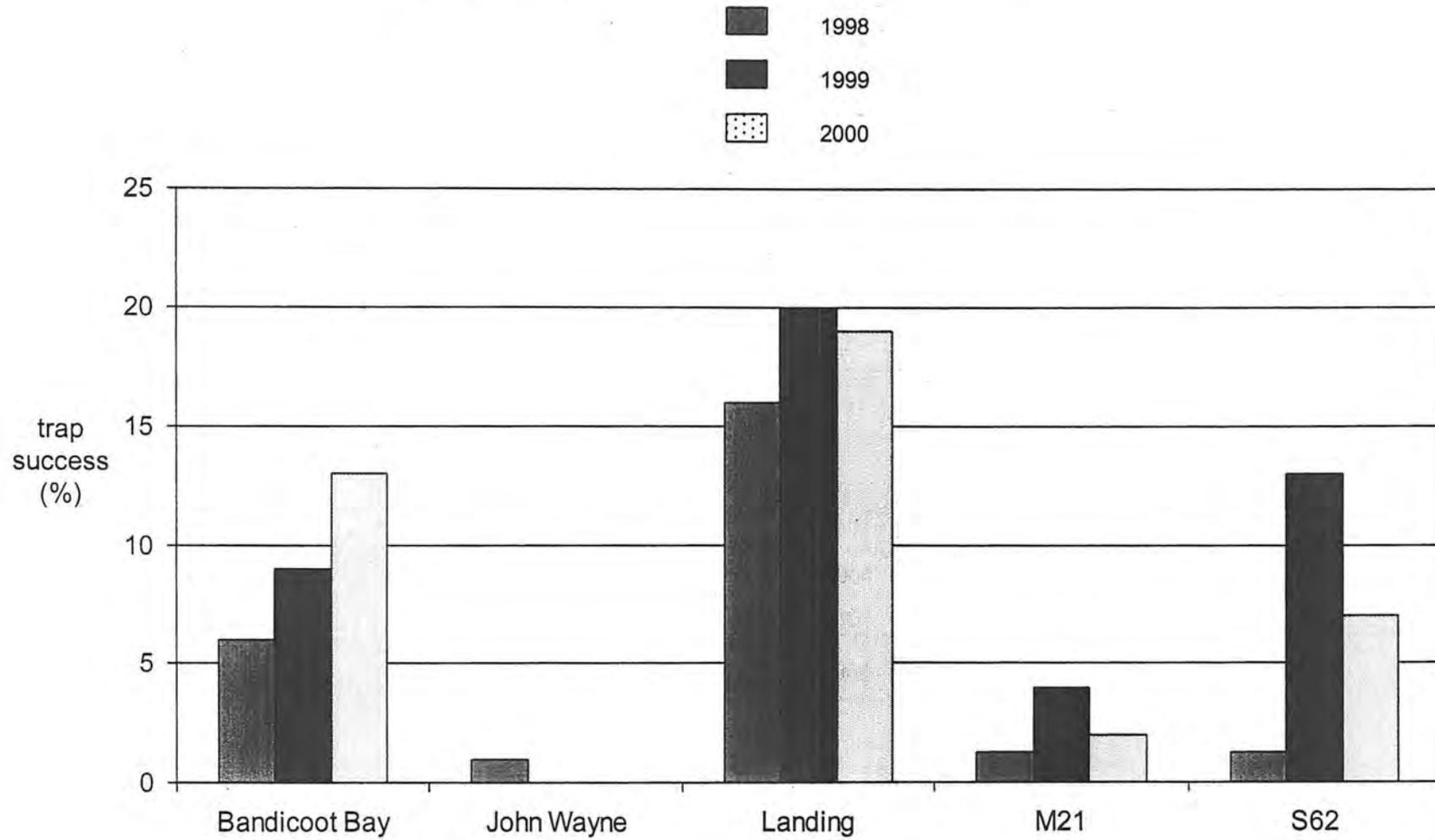


Figure 9. Grid trap success rates for the Planigale on Barrow Island

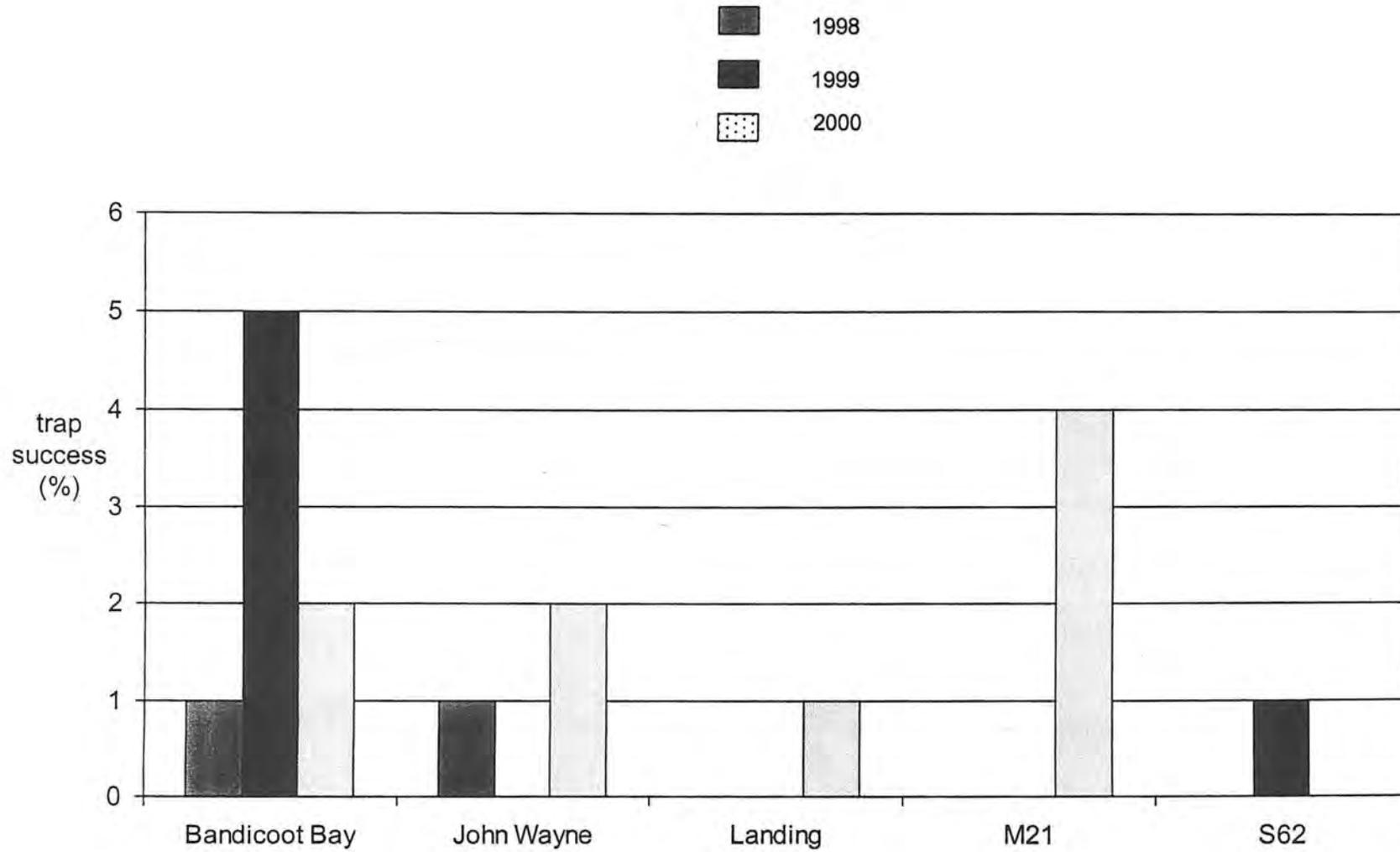


Figure 10. Grid trap success rates for the Pilbara Pseudantechinus on Barrow Island

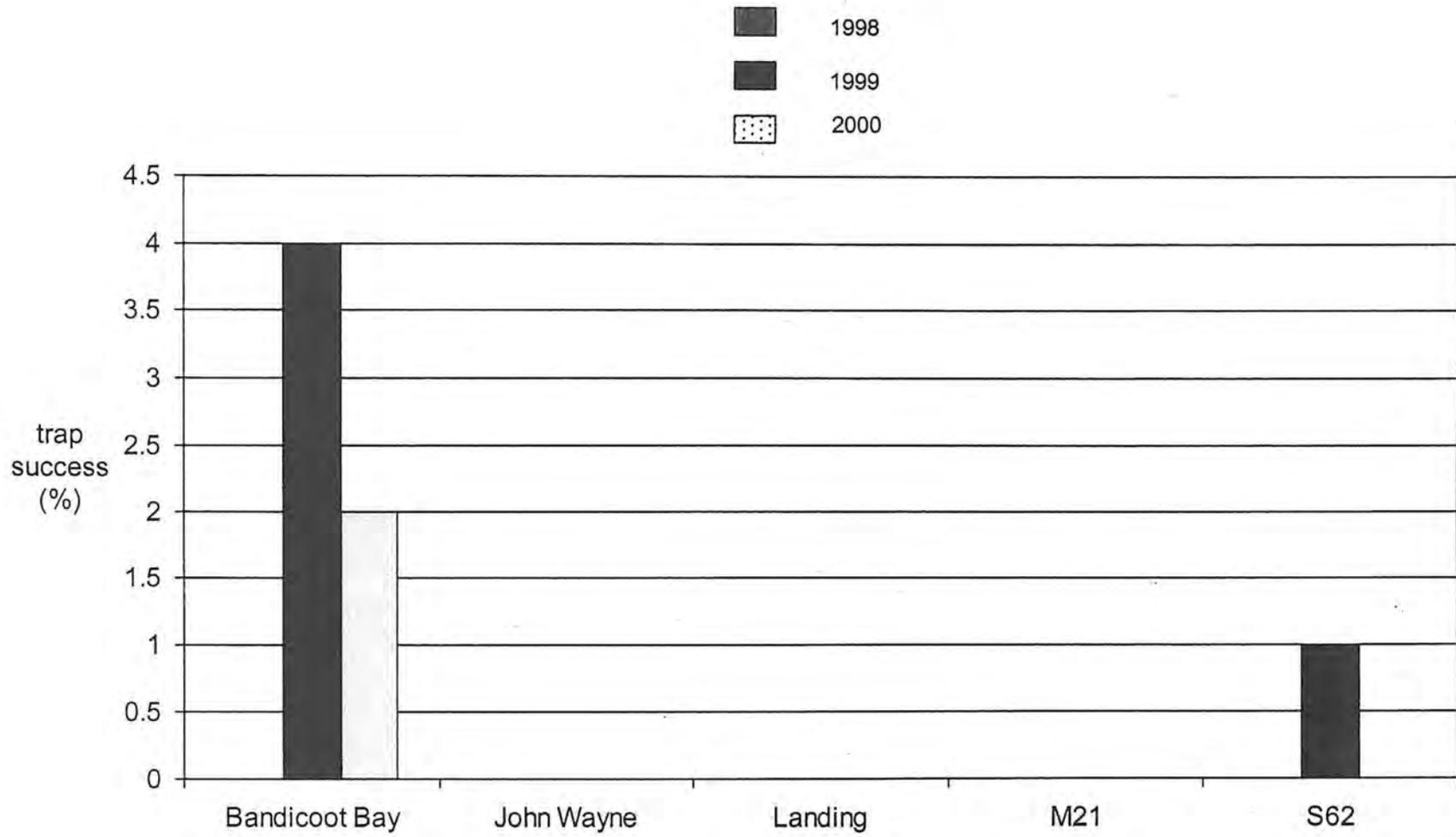


Figure 11. Grid trap success rates for the Barrow Island Mouse on Barrow Island

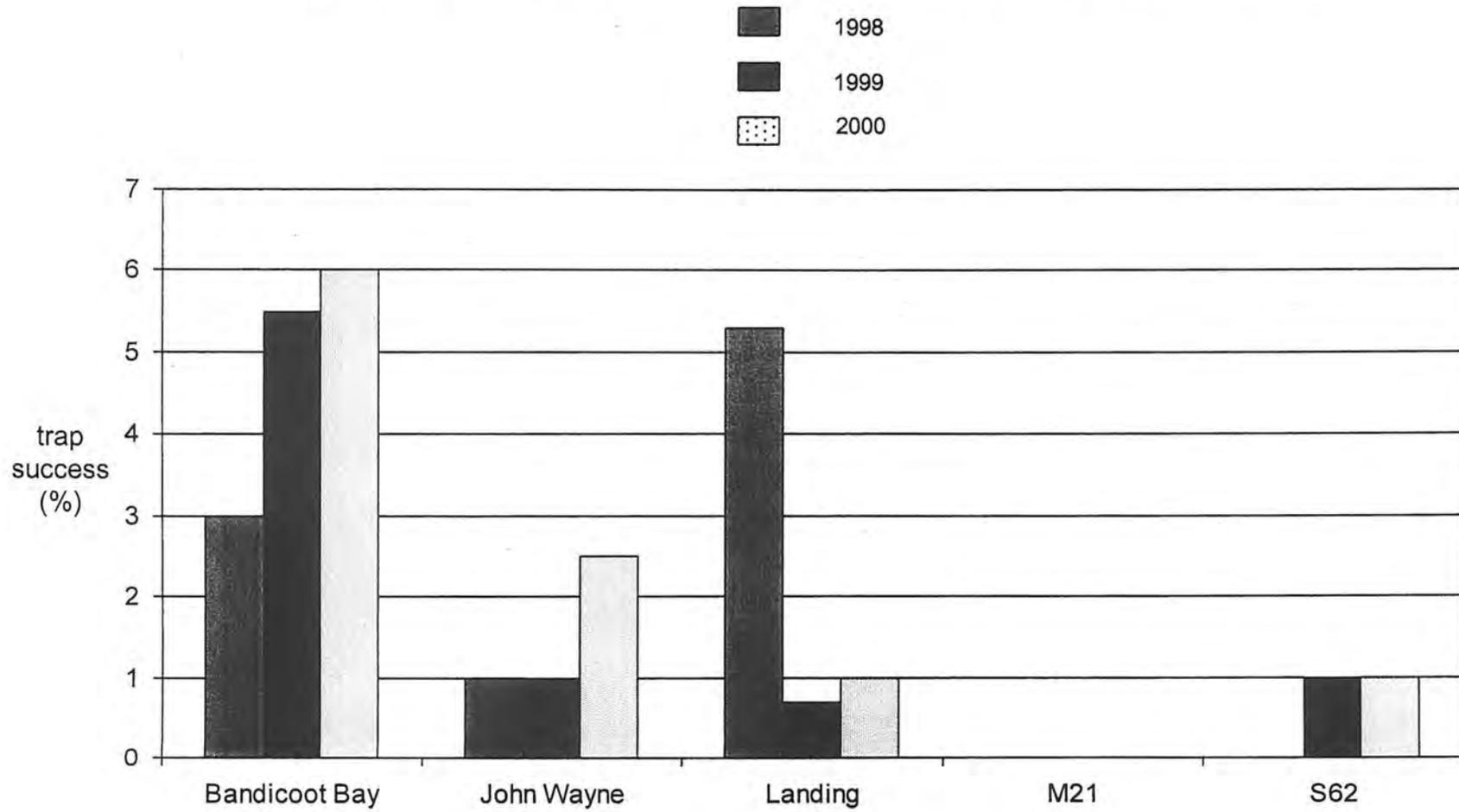


Figure 12. Grid trap success rates for the Rock Rat on Barrow Island

