

Report on mammal survey of the Pellew Islands, October 2003

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1. Introduction

Islands throughout the world hold special values for the protection of wildlife. Over centuries and millennia, their isolation has often led to the development of unusual endemic (that is, restricted) plant and animal species. The isolation of islands also helps protect their plants and animals from factors that may threaten mainland populations.

In Australia, many mammal species that formerly occurred across much of the mainland are now found only on offshore islands. This is most likely because many islands have escaped colonisation by cats, foxes and other feral animals, but it may also be because new diseases may not have reached these islands.

In the Northern Territory, the main island groups are the Tiwi Islands (Bathurst and Melville), the Wessel and English Company Islands (off north-eastern Arnhem Land), Groote Eylandt and its surrounding islands, and the Sir Edward Pellew group. Each of these island groups has substantial conservation values. Parks and Wildlife scientists have conducted extensive wildlife surveys on the Tiwi Islands over the period 1999-2003 and on the Wessel and English Company Islands over the period 1993-96.

The wildlife of the Pellew Islands was documented in surveys by CSIRO over the period July 1966 to December 1967 (CSIRO 1976), and by the Conservation Commission over three weeks in July-August 1988 (Johnson and Kerle 1991). There have been no major terrestrial wildlife surveys or monitoring programs of the Pellew Islands since then, although information on the seabirds and shorebirds on and around the islands has been documented (Chatto 2001, 2003).

The previous surveys of the Pellew Islands noted a number of significant records of native mammal species: carpentarian antechinus, brush-tailed rabbit-rat, canefield rat, northern quoll and brush-tailed phascogale. Information on these species is described in more detail in Appendix A.

The records from these two previous Pellew surveys are now at least 15 years old, and, in many parts of northern Australia, the last few decades have seen the decline and local extinction of many native mammals. Our primary purpose in the present survey was to attempt to re-locate these mammal species, to establish whether they were still present on these islands. We also sought to:

- 1) report on any factors that may threaten the status of these, and other, species on these islands, and in particular to note whether there have been changes in these threats since the previous surveys;
- 2) compile more information on the status and ecology of the carpentarian antechinus, in order to help compile a recovery plan for the species. Given the brevity of previous surveys, there is almost no ecological information known for the species.

- 3) attempt to establish a monitoring program for at least the carpentarian antechinus. Previous information for the species is inadequate to determine long-term trends.
- 4) seek information on the fauna of the Pellew Islands from some of its long-term traditional owners and residents;
- 5) compile further survey records for frogs, reptiles, birds, bats, wallabies and feral mammals to increase the existing documentation of the terrestrial vertebrate fauna of the Pellew group; and
- 6) exchange knowledge between scientists and Aboriginal land managers.

2. Procedures for this survey

This survey was undertaken over the period 14-30 October 2003. The survey team comprised two scientific staff from Parks and Wildlife (Rob Taylor and John Woinarski), three Lianthawirriyarra sea rangers from Mabunji (Dickie Dixon, Allan Charlie and Damien Pracy), and a volunteer (the NSW National Parks and Wildlife scientist, Susanne Rhind, an authority on brush-tailed phascogales). PWS ranger, Ben Senge, assisted with transport between islands and other logistic issues.

For the course of the survey we divided into two groups, with each group spending 4 nights at a base camp. Locations for survey sites were selected mostly on the basis of significant records from previous surveys, and with consent from traditional Aboriginal landowners.

The locations of main camps are listed in Table 1 and shown on Figure 1.

At each site, we trapped for small mammals using aluminium box ("Elliott") traps, and larger wire cage traps. Traps were arranged either in a 7 x 7 trap site grid network (with individual traps 20 metres apart), or with 24 traps placed around the perimeter of a 50m x 50m square ("quadrat"). Traps were left in place over a 3-night period, and checked early each morning. They were baited with a mixture of peanut butter, honey and oats. Trapsites were located mainly to target the carpentarian antechinus, and so placed mostly in rugged rocky habitats. The location of all trapsites was recorded accurately with GPS. Habitat details for all trapsites were recorded in a standard format.

The total sampling effort for this survey (4042 trapnights) was comparable with that of the surveys undertaken in 1966-67 (2664 trapnights) and 1988 (4025 to 4602 trapnights – tallies differ between the Tables 6.1 and 6.4 in the Johnson and Kerle (1991) report).

Small samples of tail tip and attached hair were collected from individual antechinus. These will be used for subsequent genetic analysis to examine the relationships of the Pellews animals with those from Queensland. That work will also clarify relationships of the carpentarian antechinus with the related species, sandstone antechinus *Pseudantechinus bilarni* and fat-tailed antechinus *P. macdonnellensis*.

Table 1. Sampling sites for 2003 mammal survey of Pellew Islands. Trapping grids were placed at various sites within a 2 km radius of the latitude and longitude given.

site	latitude	longitude	dates	personnel
WEST ISLAND – SE	15.631	136.591	14-18 Oct	Rob, Susan
SOUTH WEST ISLAND – Sam Evans' outstation	15.679	136.659	14-18 Oct	John, Damien, Alan, Richard
NORTH ISLAND – Mud Bay	15.630	136.837	18-22 Oct	John, Susan
NORTH ISLAND – Paradise Bay	15.541	136.855	18-22 Oct	Rob, Damien, Alan, Richard
VANDERLIN ISLAND – Kedge Point	15.640	136.978	22-26 Oct	John, Damien, Alan, Richard
VANDERLIN ISLAND – Victoria Bay	15.723	136.946	22-26 Oct	Rob, Susan
CENTRE ISLAND – Clarke Bay	15.736	136.812	26-30 Oct	Rob, Damien, Alan, Richard
CENTRE ISLAND – Survey Bay	15.710	136.794	26-30 Oct	John, Susan

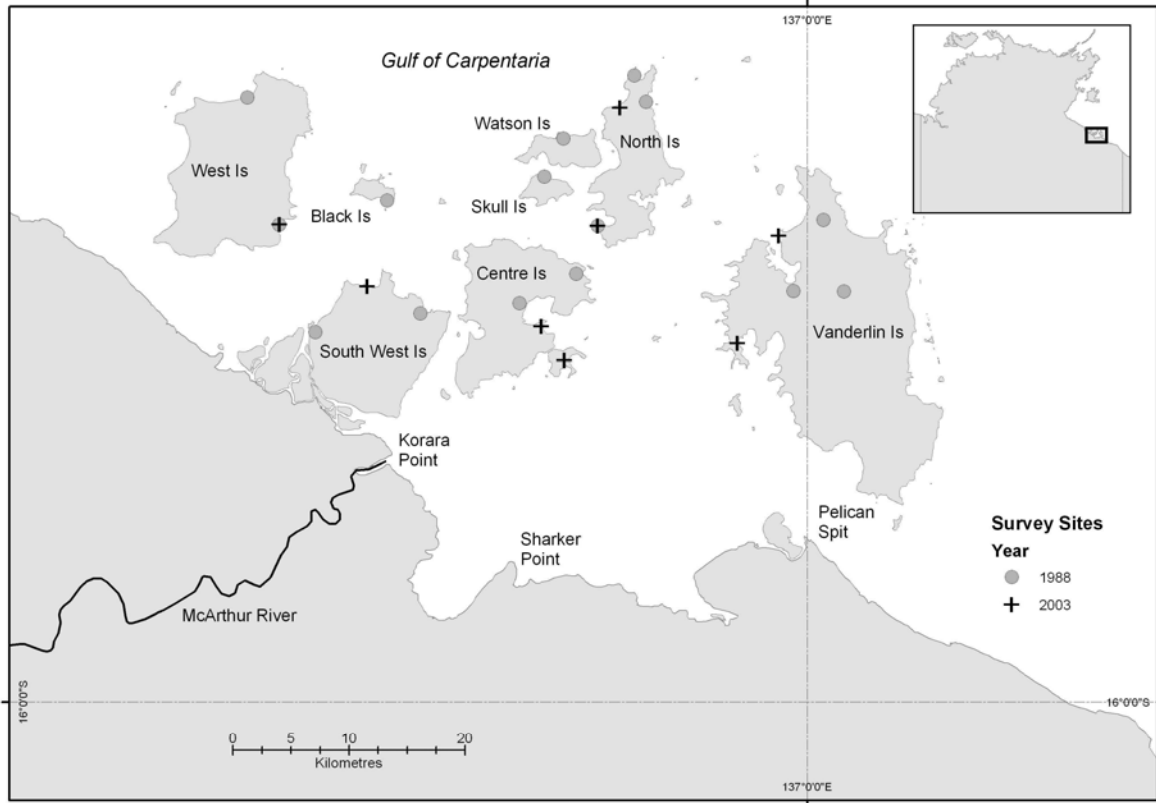


Figure 1. Location of main survey sites during this survey (crosses) and the 1988 survey (dots).

3. Results from this survey

The capture results for mammals in this survey are summarised in Table 2. Records of other mammals observed (e.g. macropods), reptiles, birds, and frogs are presented elsewhere (in an excel spreadsheet available from John Woinarski).

Of the species that we were seeking in particular, we caught four carpentarian antechinus (one on North and three on Vanderlin islands, the latter not previously recorded as having this species) and five northern quolls (on Vanderlin Island), but no brush-tailed phascogales, brush-tailed rabbit-rats or canefield rats.

Table 2. Mammal species recorded during this survey. Values are the number of captured animals (note that because of recaptures, this may be more than the total number of different individuals captured). “no. trap-nights” is a measure of trapping effort, for example 20 traps set for 3 nights = 60 trapnights.

Abbreviations: carp. ant. = carpentarian antechinus; nth quoll = northern quoll; com. rockrat = common rock-rat *Zyomys argurus*; pale field-rat *Rattus tunneyi*; long-hair rat = long-haired rat *R. villosissimus*; bandicoot = northern brown bandicoot *Isodon macrourus*; del. mouse = delicate mouse *Pseudomys delicatulus*; grass. melom. = grassland melomys *Melomys burtonis*.

site	no. trap-nights	carp ant.	nth quoll	com. rockrat	pale field-rat	long -hair rat	bandi coot	del. mouse	grass. melom
WEST ISLAND – SE	495	0	0	0	0	0	0	0	0
SOUTH WEST ISLAND – Sam Evans’ outstation	521	0	0	1	0	0	0	0	1
NORTH ISLAND – Mud Bay	604	0	0	34	0	1	0	0	0
NORTH ISLAND – Paradise Bay	453	2*	0	13	0	10	0	0	0
VANDERLIN ISLAND – Kedge Point	504	0	5	60	0	0	0	3	0
VANDERLIN ISLAND – Victoria Bay	546	4*	0	70	0	0	0	0	0
CENTRE ISLAND – Clarke Bay	405	0	0	13	15	0	0	0	4
CENTRE ISLAND – Survey Bay	514	0	0	28	14	0	1	0	2
Total	4042	6	5	219	29	11	1	3	7

* These include a recapture of one individual

Although there were some differences in methods and time of year, we can compare our results with the two previous wildlife surveys of the Pellew Islands. These are presented for total mammals caught (per 100 trapnights) for each of the main islands, in the graph (Figure 2) below. Note that it is not possible to break down the total captures for 1966-67 and 1988 by species, because these data were not reported in the reports of those surveys. The total capture rate in 2003 was markedly less than that reported in either of the two previous surveys, for each sampled island and for all islands combined.

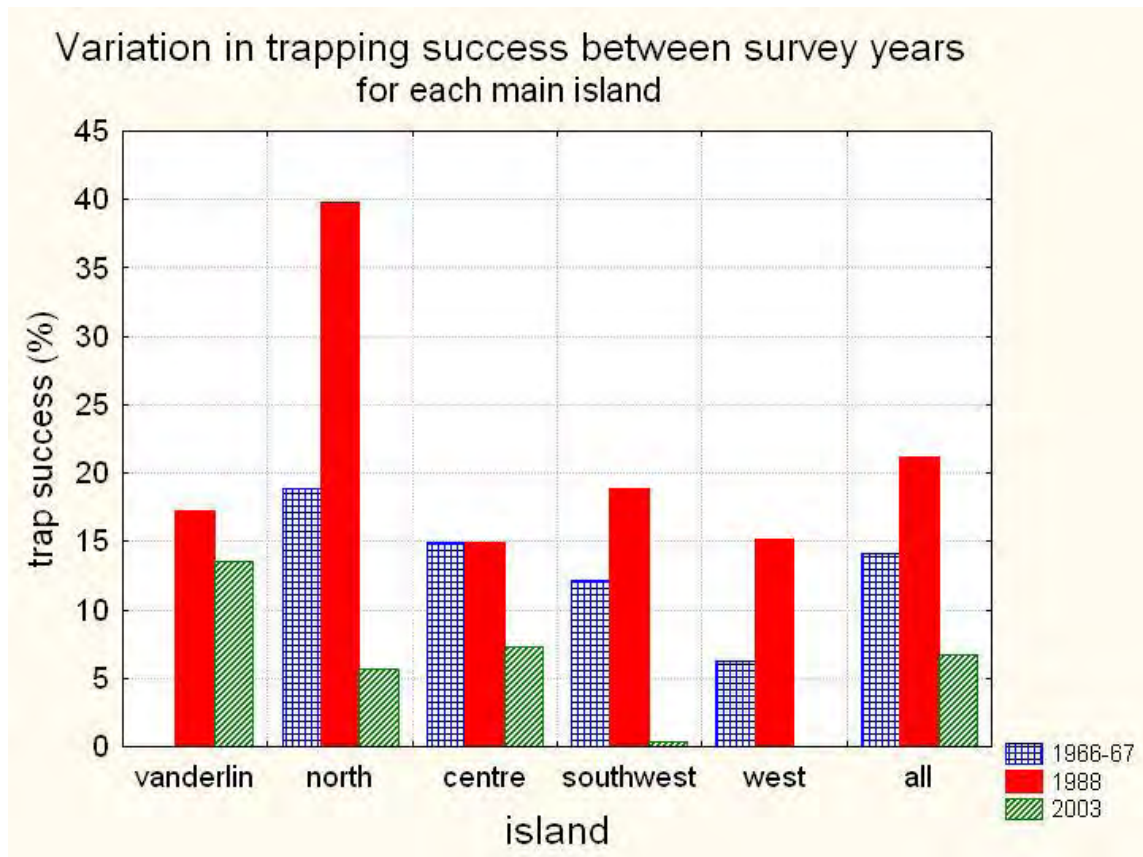


Figure 2. Relative trapping success for each island, and over all islands combined, for the 1966-67, 1988 and 2003 surveys. Note that Vanderlin Island was not sampled in 1966-67.

4. Threatening processes

Cane toads *Bufo marinus* were present on all of the islands that we surveyed. All traditional owners that we spoke to stated that toads arrived on floodwaters and debris in the major flood of the McArthur River in the late wet season of 2001/02 (i.e. about 20 months before our sampling).

Arrival of cane toads is known to result in the at least short-term decline of some native predatory animals, including northern quoll, goannas and snakes (van Dam *et al.* 2002), that are poisoned when they attempt to eat toads. Toads may similarly affect carpenterian antechinus and brush-tailed phascogale. The extent and duration of any such impacts is not known with certainty. Island populations of native species may be particularly vulnerable, because the total number of individuals is typically relatively small, there is little chance of recolonisation of species that may suffer initial major impacts, and there may be relatively few areas that are likely to be distant from any toads.

Archie Johnston reported seeing at least 8 dead goannas in the months since toads arrived on north Vanderlin Island, and far fewer goannas around his outstation. Quolls were still present, at the nearby site we used for trapping, and

around Steve Johnston's settlement in the south of Vanderlin Island, demonstrating at least short-term persistence following the arrival of cane toads. However, Steve Johnston reported that, while quolls had previously been common up until last year, they were less common in 2003, and that, in the few months before our visit, he had noticed two dead quolls without any sign of predation (evidence typical of poisoning by toads). In our opinion, most, if not all, quolls will be lost when the next batch of juvenile quolls meets the next batch of juvenile cane toads, during the wet season of 2003/04.

Feral cats are now present on most of the large islands of the Pellew group. We were not able to provide clear measures of their abundance, nor be definite about their presence on some islands. The timing of arrival and incidence of cats on different islands in the Pellew group is far less certain than for the cane toads. In both previous surveys (1966-67 and 1988) it was noted that feral cats were not present on North, Centre, West or South West Islands. Information from Samuel Evans and Archie Johnston suggests that cats were probably introduced to South West and West Island about 10-20 years ago. In our talks with them, both Steve and Archie Johnston said that cats were no longer common on Vanderlin. Steve Johnston stated that he had killed all "pet" cats and shot feral cats. We saw some evidence, but not conclusive, that cats were also now present on Centre Island: we found no evidence for the presence or absence of cats on North Island.

Feral cats have affected small mammals across much of Australia, and are known to have caused the local extinctions of some mammal species in constrained areas such as islands and imperfectly fenced sanctuaries. Their spread to islands in the Pellew group will be bad news for some small mammals, but we cannot predict whether they will kill off any species on any islands.

There are other exotic animals on some islands in the Pellew group. Goats were taken to Vanderlin Island long ago, and were introduced to West Island and Black Craggy Island more recently. The 1991 fauna survey report (Johnson and Kerle 1991) did not record goats on West Island. Samuel Evans reported to us that many of the goats on West were sick with meliodosis, and that the feral goat colony on Black Craggy Island had died out.

Cattle are common on Vanderlin Island, but a translocated population on Black Craggy Island had died out before 1988 (Johnson and Kerle 1991).

Horses are common on Vanderlin Island, and donkeys have also been reported there (CSIRO 1976). Goats, cattle, horses and donkeys may all affect the environment, especially if they are in large numbers, and some environments (in particular wetlands) may be most vulnerable to their impacts. Goats may be likely to cause the most damage to biodiversity and environmental values because they are less reliant on water, can build up to very high numbers, and because they browse and graze a very broad range of plant types.

Agile wallabies are now common on Vanderlin Island, and were apparently introduced there over the last 30-50 years (Johnson and Kerle 1991). Because

of this abundance, Steve Johnston suggested that they may have had a substantial impact on some environments.

Steve Johnston stated that some grassland areas on Vanderlin Island have become overgrown with wattles and other scrub over the last few decades. Such change may be related to grazing (by wallabies and/or stock) and/or changes in the fire regimes; but this has also occurred in many mainland areas, and may reflect global climate change. Botanists in the 1988 wildlife survey noted that the fire regimes across much of the Pellew Islands were characterised by relatively few, “cool” and patchy fires, and that because of this there were good stands of native cypress-pine *Callitris intratropica*, with plentiful recruitment, and healthy pockets of monsoon rainforest (Johnson and Kerle 1991). Many plants and animals are favoured by such relatively infrequent or small-scale fires. The extent of young pine growing up seems to be a good indicator of healthy country and the extent of dead cypress-pine without new young ones is a good indicator of country that has not been well managed for fire.

5. Discussion, monitoring, and recommendations for further work

There has been a marked decline in trapping success from the two previous surveys to our survey, at least for South West and West Islands. This may be caused by the introduction or increase, since 1988, of some threatening factor, and/or to some “natural” fluctuation.

The evidence is not sufficiently strong to state whether the reduced abundance is part of a “natural” cycle or is instead due to some factor causing populations to decline. The evidence is weak because:

- (1) there were so few captures of brush-tailed phascogale (two individuals) and brush-tailed rabbit-rat (two individuals) in the first two surveys that our result of no captures of these two species in 2003 was not unexpected and by no means necessarily implies a decline in abundance for these particular species;
- (2) there were substantial differences in the procedures, location, timing and duration of the three surveys (even though we attempted to re-visit some of the previous survey sites). The observed reduction in trapping success from previous surveys to our survey may have been influenced by any of these factors. In particular, we sampled only one location on West Island, and this site may have been unrepresentative of the mammal populations on this island more generally. However, our sampling site was the same location as one of the two sites sampled on the Island in 1988, and was the site where phascogales were reported then. Our time of sampling also coincided with the time of year when most mammal dasyurids (quolls, phascogales and antechinus) had just experienced their annual male die-off, with the population halved to comprise only (pregnant) females. Further, our

sampling concentrated particularly on one habitat type (sandstone outcrops) because it targeted particularly areas of habitat suitable for carpentarian antechinus. Thus, biases against capture of mammal species favouring other habitat types may have occurred in our sampling.

The observed reductions are broadly consistent with many other studies in the Top End, that have also demonstrated decline of many native mammal species over the last few decades (Woinarski *et al.* 2001). Nonetheless, island populations of mammals are known to exhibit marked natural fluctuations, in response to variable climate, fire, cyclones and other disturbances, so it may be misplaced to seek some “unnatural” cause for the low abundance of most mammal species during our survey period. It will require further monitoring to determine whether the population change that we observed is a temporary part of a “natural” cycle or whether it is because the animals are in a more permanent decline in response to a new threat..

Some corroboration of declines, at least for the rat *Rattus* species, comes from the observations of fishermen who have visited North Island almost every year over at least the last decade. They told us that, whereas rats were normally very common and “troublesome” around Paradise Bay, this year (2003) there were remarkably few.

If the reduced trap success that we recorded is due to a population decline of some mammal species because of a new or increased threatening process, the most likely causes are cane toads and cats. Of course, it is not necessarily only one factor that will affect all native mammals, so several causes may be implicated.

Cane toads are most likely to affect carnivorous mammals, such as the northern quoll, carpentarian antechinus and common planigale (van Dam *et al.* 2002). Our data, however, suggested no decline in the first two of these species, and there were too few records of the common planigale in the first two surveys to determine trends for this species. It is possible that some rodents, such as the long-haired rat and pale field-rat, may also be affected by cane toads (through occasional predation on juvenile toads), but there is no evidence from other studies that this is the case.

Based on recent results from studies elsewhere (Watson and Woinarski 2003; Oakwood 2004), we consider that the apparent persistence of northern quolls at Vanderlin Island is transitory. It is probable that there will be very marked decline (and probable extinction) of quolls over the next 2-3 years, particularly at those times of the seasonal cycle when the populations of both quolls and toads are mainly juveniles (i.e. December-January). There is far less evidence from studies of *Pseudantechinus* species elsewhere about likely longer-term impacts of cane toads on carpentarian antechinus.

Management

As with the previous two wildlife surveys of the Pellew Islands, our survey was brief and provided little information on population size, habitat requirements and ecology for most species. Our survey left many questions unanswered. In our opinion, management of the conservation values on these islands would be improved substantially by some more intensive research and monitoring on key issues. The priority research and monitoring projects are:

- 1) monitoring of the fate of northern quolls on Vanderlin Island, given the recent arrival of cane toads. Such a study could be coordinated by Mabunji, and should seek to include observations from the Vanderlin Island residents, Archie and Steve Johnston and their families.
- 2) more detailed and substantial study, and monitoring, of carpenterian antechinus, focused on 1 or 2 main sites. Possibly the most suitable such site would be at the Parks & Wildlife base on North Island. The detailed research may be most effectively undertaken as a postgraduate study, with ongoing monitoring based on information from this site being conducted by rangers from Parks and Wildlife and/or Mabunji.
- 3) more substantial search for, and study of, brush-tailed phascogale (on West Island) and brush-tailed rabbit-rat (on Centre Island). The historic records of these two threatened species on the Pellew Islands represent significant outliers from the current range, and their persistence on the islands may offer some conservation security. We were unable to re-locate these species in our relatively limited trapping of suitable habitat on these two islands. We consider that at least 4-8 weeks of intensive sampling would be required to gain enough information to assess the status of these populations and to derive any management guidelines. Any search for the brush-tailed phascogale may be helped by the use of nest boxes, that have elsewhere been shown to be an efficient way to locate this species (Rhind 2002). As noted in the Appendix, this sampling should be coordinated with additional searches of the Gulf mainland.
- 4) ongoing monitoring of the abundance of the long-haired rat, pale field-rat and canefield rat; that is the species associated with non-rocky habitats. It is the reduced abundance of these three *Rattus* species during our survey that contributed the most to the apparent decline of mammals since the two previous surveys.
- 5) ongoing assessment of the status of feral cats on all islands, based on recording information from traditional owners and residents, and regular monitoring for tracks. This project could be coordinated by Mabunji and/or local Parks and Wildlife rangers.

- 6) ongoing communication with landowners and residents about the possible impacts of moving exotic animals (particularly goats and cats) to islands in which they do not currently occur.
- 7) assessment of the distributions of cane toads on the islands, particularly North. If it was the case that they were restricted to certain areas due to limited suitable breeding sites, then it may be possible to eradicate them.

6. Thanks

We thank Ben Senge for his help and care in moving us around the islands, and for his assistance with other organisation; Mark Hanlon for transport and information about wildlife; Samuel Evans and Kelly Martin for hospitality and help at South West Island, and for information about wildlife; Felicity Chapman for organising the involvement of Mabunji in this work, arranging for consultations with traditional owners to seek permission to undertake this work, and help with its logistics; Archie Johnston for hospitality on Vanderlin Island and for sharing with us his detailed knowledge of wildlife; Steve Johnston for sharing with us his knowledge of wildlife of Vanderlin Island; and Ken Johnson for advice and comments on this report.

We thank Graham Friday and all traditional owners for their permission to undertake for this work.

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Gallery of photographs depicting mammal species captured, habitats, personnel and procedures.

Captured Carpentarian Antechinus inside holding bag.



Damien Pracy and Rob Taylor weighing and marking a captured Carpentarian Antechinus before releasing it



Typical coastal rocky habitat of Carpentarian Antechinus



Typical coastal rocky habitat of Carpentarian Antechinus



Typical coastal rocky habitat of Carpentarian Antechinus



Ranger Ben Senge transported us to the Islands



Setting up field camps: John Woinarski and Rob Taylor on North Island (top); Allan Charlie, Richard Dixon, Damien Pracy and Rob Taylor on Centre Island (bottom)



Susan Rhind taking a small sample of ear tissue for genetic analysis from northern brown bandicoot, Centre Island



Richard Dixon and Damien Pracy with a captured common rock-rat, Vanderlin Island



John Woinarski with a captured northern quoll, Vanderlin Island (top), and mixing bait for the mammal traps (at Samuel Evans' outstation, South West Island) (bottom)



Setting mammal traps: in dunes on Vanderlin Island (top), and with the help of Samuel Evans and his tractor on South West Island (bottom)



Indicators of fire regimes: a very long unburnt Livistona (sand palm) on Centre Island (top), and fire-killed cypress pine at Amos Point, South West Island, with Samuel Evans and Damien Pracy (bottom).



Coastal dune field on West Island: Rob Taylor (top)



Swamp in coastal swale, West Island



Monsoon rainforest patch, with large fig, Vanderlin Island



Cane toads colonised all the larger islands in the wet season of 2001/02



A well-marked ridge-tailed monitor Varanus acanthurus



APPENDIX A: Notable native mammal species on the Pellew Islands

Carpentarian antechinus *Pseudantechinus mimulus*

This small carnivorous marsupial was described scientifically from a specimen collected near Alexandria station (Barkly Tablelands) in 1905. It was not recorded again until three individuals were captured on North Island in 1967. The next records were of eight more individuals reported from North, Centre and South West Islands in 1988. Until the current (2003) survey, there were no further records from the Northern Territory, however it has been recorded from two locations in north-western Queensland, in 1997 and 2002.

The carpentarian antechinus is listed as Vulnerable at both the Northern Territory and national level.

Little is known of its ecology, but it is associated particularly with sandstone outcrops and boulder-fields.

We recorded two individuals from North (Paradise Bay) and two from Vanderlin (Victoria Bay) Island during the 2003 survey. It had not previously been reported from Vanderlin. All animals captured were females that had enlarged teats, indicating that they were either suckling large young in a den or had recently weaned young, suggesting a synchronised breeding season, with male die-off.

More monitoring and management guidelines for this species are presented in Woinarski (2004).

Brush-tailed rabbit-rat *Conilurus penicillatus*



This medium-sized rodent occurs in the Top End of the Northern Territory and Kimberley. It is also known from two records in New Guinea, and in Queensland only from Bentinck Island (in the Wellesly-Mornington Island group). It roosts in tree hollows, hollow logs and pandanus, and feeds mostly on the ground on seeds and fruits.

It has declined substantially in range and abundance over the last century, and is now listed in the Northern Territory as Vulnerable, but is not listed as threatened at the national level.

On the Pellew Islands, it has been reported from only two specimens collected in 1966-67 on Centre Island. It has not been recorded on the nearby mainland, with the closest records being near Ngukkur in 1959.

We did not record this species during the 2003 survey.

Canefield rat *Rattus sordidus*

The canefield rat is a medium-sized (weight 50-250g) ground-dwelling rodent. The species is common, indeed sometimes considered a pest, in parts of eastern Queensland, extending as far west as Normanton. Prior to the 1988 survey of the Pellews, there were no records of it from the Northern Territory. However, that survey recorded canefield rats from sandy low-lying open woodland with grassy understorey on South West Island, a distance of about 450 km from the nearest known population.

The canefield rat is one of nine rodents (including three superficially similar “true rats” *Rattus* species) known from the Pellew Islands, and genetic analyses may be required to tell specimens apart from the closely related pale field-rat *Rattus tunneyi*.

Northern quoll *Dasyurus hallucatus*

The northern quoll is a medium (small cat) sized carnivorous marsupial. Its appearance is distinctive, with a dark body and conspicuous paler spotting. It is active at night, feeding mainly on the ground. During the day it shelters in caves, rock piles, fallen logs, tree hollows and, occasionally, in buildings.

It was formerly common across northern Australia from the Pilbara to near Brisbane, but has declined from much of this area over the last century. In the Northern Territory, this decline has been hastened by the spread of cane toads over the last two decades. For example, in the period from 2001 to 2004 (coinciding with the arrival of cane toads), its population in Kakadu National Park has declined from about 60,000 individuals to 0. The quoll appears to be particularly susceptible to the poison of cane toads, and will die within minutes of attempting to kill and consume a toad. Largely because of this decline associated with cane toads, the northern quoll is now listed as Vulnerable in the Northern Territory.

In the Gulf country, quolls are now very rare. There have been some records in rocky areas, such as Wollogorang, in the last few decades, but we know of no other recent Gulf mainland records.

In the Pellew Islands, the northern quoll is known only from Vanderlin Island. The 1988 survey recorded it from "woodlands surrounding Lake Eames and the sandy areas fringing Barbara Cove". In our 2003 survey, we recorded quolls in rocky areas, eucalypt woodlands, monsoon rainforest patches and beach dunes around Kedge Point, and both Archie and Steve Johnston noted that they were (or had been until recently) common around their outstations.

(northern) brush-tailed phascogale *Phascogale tapoatafa*

The brush-tailed phascogale is a small to medium-sized carnivorous marsupial. It is active at night, and mostly forages in trees. During the day it shelters in tree hollows. Its appearance is distinctive, with a long “bushy” dark tail, grey body and sharply pointed face. In northern Australia, it occurs mainly in taller eucalypt forests. Phascogales typically have large home ranges, are solitary and shy – hence they are rarely seen.

Brush-tailed phascogales occur in south-western Australia, eastern Australia from Victoria to Cape York Peninsula, and northern Australia from the Kimberley to the NT Gulf. Recent genetic analyses demonstrate that populations in the Northern Territory are significantly different from all other Australian populations, and are likely to be soon recognised as a distinct species.

In the Territory, bush-tailed phascogales have declined over the last century, and are now known from only a relatively few areas of tall forests, generally north of Katherine. From the Pellew Islands, the only records are of two individuals captured on West Island in 1988. There are no published records from the Gulf mainland, with the nearest previous record being from Yirrkala in 1946. However, following consultations for this survey, Frazer Baker reported seeing a phascogale in January 2004 2 km towards Borroloola from Caranbirini Conservation Reserve (information reported by F. Chapman). Further survey to establish the status of this species on West Island and on the mainland would be desirable.