

## THREATENED SPECIES OF THE NORTHERN TERRITORY

### NORTHERN QUOLL *Dasyurus hallucatus*

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#### Conservation status

Australia: Endangered.

Northern Territory: Critically Endangered.

#### Description

The northern quoll is a distinctive carnivorous marsupial. It is the size of a small cat (weight 300-1100 g), with prominent white spots on a generally dark body, with a long sparsely furred tail.



Northern Quoll (Photo: M Armstrong)

#### Distribution

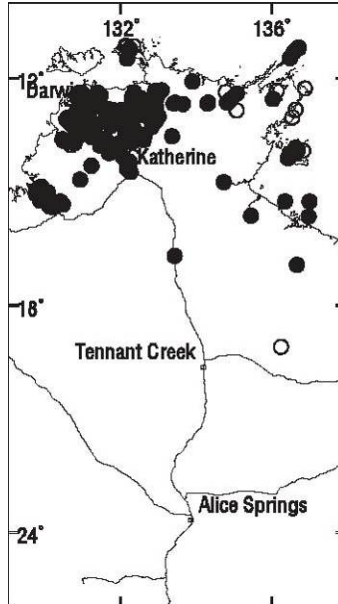
The northern quoll occurs across much of northern Australia, from southeastern Queensland to the southwest Kimberley, with a disjunct population in the Pilbara. It has declined across much of this range (Braithwaite and Griffiths 1994).

In the Northern Territory, it is restricted to the Top End. A 1905 record from Alexandria (Thomas 1906) marks the southern limit of its known Northern Territory distribution, now far from any recent records. It has been recorded from Groote Eylandt and the nearby North-east Island, Marchinbar Island (in the Wessel group), Inglis Island (in the English Company Islands group) and Vanderlin Island (Sir Edward Pellew group). Recently, it has also been translocated to Astell and Pobassoo islands in the English Company island group.

#### *Conservation reserves where reported:*

Kakadu National Park, Litchfield National Park, Garig Gunak Barlu National Park, Mary River National Park, Manton Dam Recreation Area, Nitmiluk National Park, Umbrawara Gorge Nature Park, Fogg Dam Conservation Reserve, Charles Darwin National Park, Black Jungle Conservation Reserve, Tjuwaliyn (Douglas) Hot Springs Park, Berry Springs Nature Park, Limmen National Park, Leaning Tree Lagoon and Howard Springs Nature Park.

## Threatened Species Information Sheet



Known locations of the northern quoll.  
○ = pre 1970; ● = post 1970.

### Ecology

The northern quoll is a generalist predator, consuming a wide range of invertebrates and small vertebrate prey. It dens in hollow logs, rock crevices and caves, and in tree hollows. Most foraging is on the ground, but it is also an adept climber.

It occurs in a wide range of habitats, but the most suitable habitats appear to be rocky areas. It is also common in many eucalypt open forests.

Northern quolls typically have an annual life cycle, with almost all males living for only one year (Oakwood 2000; Oakwood *et al.* 2002). Young are born in the mid dry season (June), and attain independence in the early wet season (November). Mating is highly synchronised, occurring in late May/early June. Males then die.

During the non-breeding season, home ranges are about 35 ha, but this increases to about 100 ha for males in the breeding season (Oakwood 2002).

### Conservation assessment

Broad-scale decline of the northern quoll was described by Braithwaite and Griffiths (1994), but the extent and rate of this decline did not quite reach the relevant threshold values for IUCN threatened status.

Since that review, several studies (e.g. Watson and Woinarski 2003; Oakwood 2004) have suggested rapid collapse to local extinction of northern quoll populations in those parts of Kakadu National Park recently invaded by cane toads *Bufo marinus*. It is likely that cane toads will occur across all of the mainland Top End within the next few years. A similar pattern of decline to that encountered in Kakadu will probably occur elsewhere as cane toads invade new areas. The exact extent of the decline is difficult to estimate and the security of island populations is uncertain. The northern quoll has been classified as **Critically Endangered** (under criterion A3ce) based on an estimated population size reduction of >80% projected for the next 10 years).

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### Threatening processes

Quolls appear to have been declining in the Northern Territory for at least several decades (Braithwaite and Griffiths 1994; Woinarski *et al.* 2001), possibly because of impacts from feral cats, disease or changed fire regimes. However, the spread of cane toads adds a far more catastrophic threat (Van Dam *et al.* 2002). Quolls appear to be particularly susceptible to the poison of cane toads, and are killed when they attempt to kill or consume the toads. Major declines to regional extinction have been reported for quolls following cane toad invasion on Cape York Peninsula (Burnett 1997).

### Conservation objectives and management

There is no current recovery or management plan for this species. In the short to medium term, it is unlikely that any broad-scale control mechanism can be imposed on cane toads, the primary threat to quolls. Given this outlook, the management priority is to secure the existing island populations from colonisation by cane toads. To increase the number of island populations, quolls have recently (2003) been translocated to Astell and Pobassoo Islands.

### Compiler

John Woinarski  
[June 2006]

### References

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

# NORTHERN BRUSH-TAILED PHASCOGALE

## *Phascogale (tapoatafa) pirata*

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### Conservation status

Australia: Not listed.

Northern Territory: Vulnerable.

### Description

The northern brush-tailed phascogale is a carnivorous marsupial about midway in size between the larger northern quoll and the small antechinuses and dunnarts. Its most notable feature is the long dark hairs on the tail, which form a distinctive brush. The hairs can be stiffened when alarmed, giving a bottle-brush appearance. The general body colour is dark grey, the snout is notably pointed and the eyes are large. Body weight is about 150-200 g.



Photo: M. Armstrong  
Northern brush-tailed phascogale

### Distribution

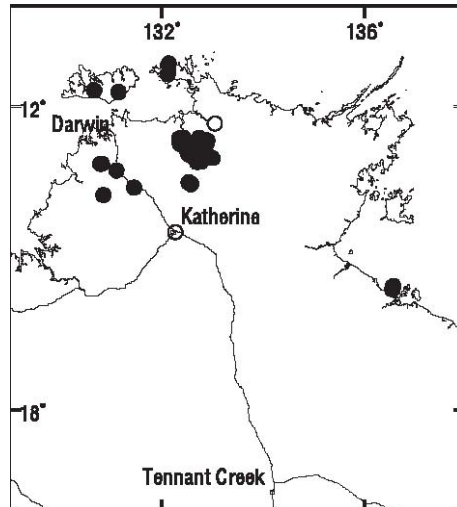
Recent taxonomic studies (Rhind *et al.* 2001, Spencer *et al.* 2001) have suggested that the northern population of brush-tailed phascogale is specifically distinct from that in south-western and south-eastern Australia. As redefined, the northern brush-tailed phascogale is restricted to the Top End of the Northern Territory, and is taxonomically distinct from populations in the Kimberley and Cape York Peninsula.

There are relatively few records in the Northern Territory: the most recent (since 1980) are from the Tiwi Islands, Cobourg Peninsula, West Pellew Island, Kakadu National Park (notably around Jabiru and near Jim Jim ranger station), and Litchfield National Park. There are older records from the Gove and Katherine areas.

### *Conservation reserves where reported:*

Kakadu National Park, Litchfield National Park, Garig Gunak Barlu National Park.

## Threatened Species Information Sheet



Known locations of the northern brush-tailed phascogale.  
o = pre 1970; • = post 1970.

### Ecology

There have been no detailed studies of the northern brush-tailed phascogale, but its ecology is probably similar to that reported for its temperate relatives (Rhind 1998). The diet is predominantly invertebrates with some small vertebrates. It is a nocturnal mammal, feeding both in trees and on the ground. It shelters in tree hollows during the day. Most records are from tall open forests dominated by *Eucalyptus miniata* (Darwin woollybutt) and *E. tetradonta* (Darwin stringybark).

### Conservation assessment

Conservation assessment is hampered by the lack of precise information on range, population size and trends. Decline is evident from variation between historic statements about status and current assessments: most notably Dahl (1897) reported that “on the rivers Mary and Katherine it was frequently observed. In fact nearly everywhere inland it was very constant, and on a moonlight walk one would generally expect to see this little animal”. This is certainly no longer the case. Biodiversity surveys across the Top End over the last decade have resulted in fewer than 10 captures of brush-tailed phascogales in more than 350,000 trap-nights. However this meagre tally may also partly reflect some degree of trap-shyness. Recent attempts to relocate the species on West Island have been unsuccessful (Taylor *et al.* 2004).

It best fits the status of **Vulnerable** (under criteria C2ai) based on:

- population size estimated to number fewer than 10,000 mature individuals;
- a continuing decline, observed, projected or inferred, in numbers of mature individuals; and
- no subpopulations estimated to contain more than 1000 mature individuals.

### Threatening processes

There are no data available to evaluate threatening processes. The apparent decline to coastal areas and especially islands suggests either exotic predators (cats) or disease. Other factors potentially involved may include vegetation change due to altered fire regimes and/or pastoralism. As a predator of small vertebrates, this species may be

## ***Threatened Species Information Sheet***

affected by the arrival of cane toads, but there is no relevant information available to assess the likelihood of this potential threat.

### **Conservation objectives and management priorities:**

There is no existing explicit recovery plan or management program for this species. In the interim, the major priority is to firm up knowledge of the distribution, abundance, habitat requirements and trends for this species. This will require a detailed autecological study and a distributional survey.

### **Compiled by**

John Woinarski  
[May 2006]

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

### CARPENTARIAN ANTECHINUS

#### *Pseudantechinus mimulus*

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#### Conservation status

Australia: Vulnerable.

Northern Territory: Endangered.

#### Description

The carpentarian antechinus is a mouse-sized dasyuid marsupial, with large ears, and rufous-cinnamon fur behind the ears. When an individual is in good condition the tail is swollen to carrot-shaped. It is similar in appearance to the other *Pseudantechinus* species from the Northern Territory: *P. bilarni*, *P. ningbing* and *P. macdonnellensis*, but is typically smaller than these (<18 g cf >18g). *Pseudantechinus mimulus* may overlap in distribution with *P. bilarni* (Fisher *et al.* 2000).



Carpentarian Antechinus (Photo: K Brennan)

#### Distribution

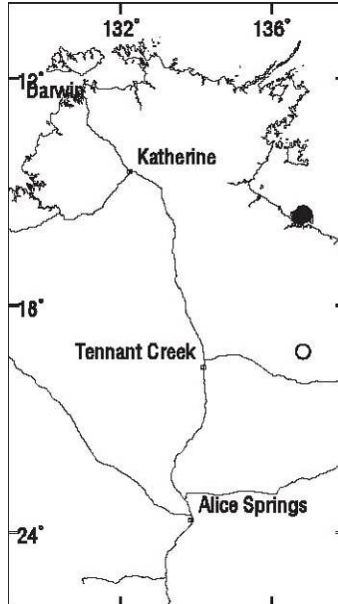
This species was described from one specimen collected in 1905 at “Alexandria” (a then broad geographic area including part of the Barkly Tableland). There were no further records until it was rediscovered on North Island in the Sir Edward Pellew group in 1967 (Kitchener 1991). Subsequently, it has also been reported from South-West, Centre and Vanderlin Islands in the Pellew group (Johnson and Kerle 1991; Taylor *et al.* 2004). There has also been an unconfirmed recent record from the Gulf mainland (Museum and Art Galleries of the NT).

Beyond the Northern Territory, there has been a small number of recent records from near Mt Isa (Woinarski 2004).

*Conservation reserves where reported:*

Barranyi (North Island) National Park.

## Threatened Species Information Sheet



Known locations of the Carpentarian antechinus.  
○ = pre 1970; ● = post 1970.

### Ecology

As with most other pseudantechinuses, the carpentarian antechinus occurs in a range of vegetation types, but always with a high cover of rocks, boulders and crevices. The type specimen from Alexandria appears to be anomalous, in that the Barkly Tablelands does not appear to be suitable habitat. However, no detail was given of the habitat in which it was found there, and the locality may be very imprecise.

Its diet comprises mostly invertebrates, but it may also take small vertebrates.

### Conservation assessment

In the Northern Territory, it is presently known from only four islands, with a total area of 499 km<sup>2</sup>. There is no information available on its population size on these islands, but trap success has generally been low. Despite considerable survey effort, there have been no confirmed records from the Barkly region (or indeed, the Territory mainland) since 1906. Hence it appears to have declined substantially in range. However, the timing and currency of any such decline is unknown.

It fits **Endangered** (under criteria B2ab(i,ii,iii,iv,v)) based on:

- area of occupancy estimated to be <500 km<sup>2</sup>;
- severely fragmented or known to exist at no more than five locations; and
- continuing decline, observed, inferred or projected

Within this set, the qualification for decline is based largely on the absence of any records from the mainland NT since the collection of the type specimen.

### Threatening processes

There are no clear threatening processes that may have accounted for the apparent decline of this species. It may have been affected by predation from feral cats (that have recently spread to most of the large islands in the Pellew group: Taylor *et al.* 2004), although its association with rugged rocky areas would have provided some protection

## **Threatened Species Information Sheet**

against this threat. Cane toads have invaded most of the large islands in the Pellew group since 2000, but their impact on this species is unknown.

The Carpentarian antechinus may also be affected by changed fire regimes, and particularly by an apparent increase in hot extensive late dry season fires.

### **Conservation objectives and management**

A recovery plan for this species (Woinarski 2004) has recently been developed.

Research priorities are to:

- (i) establish a monitoring program, preferably integrated with an assessment of fire management preferences, and
- (ii) sample the nearby mainland for additional populations.

Management priorities are to:

- (i) work with Aboriginal landowners to control feral cats (and other exotic species) from islands in the Pellew group;
- (ii) evaluate options for conservation agreements with Aboriginal landowners;
- (iii) based on monitoring results, implement a favourable fire regime.

### **Compiled by**

John Woinarski.

[May 2006]

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

### BUTLER'S DUNNART

#### *Sminthopsis butleri*

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#### **Conservation status**

Australia: Vulnerable.

Northern Territory: Vulnerable.

#### **Description**

Butler's dunnart is a small (about 15 g) dunnart ("marsupial mouse"), distinguished from other dunnarts of the Top End by a combination of lack of rufous markings on the face, relatively small size, and the patterning on the soles of the hindfeet (relatively hairy, with the interdigital pads fused at the base and with conspicuously enlarged unstriated apical granules) (van Dyck *et al.* 1994).

When first described (in 1979) this species was considered to extend to Cape York Peninsula and New Guinea, and hence named as the "carpentarian dunnart". Subsequently, specimens from those areas have been split off, as *S. archeri* (the chestnut dunnart).



Butler's Dunnart (Photo K Brennan)

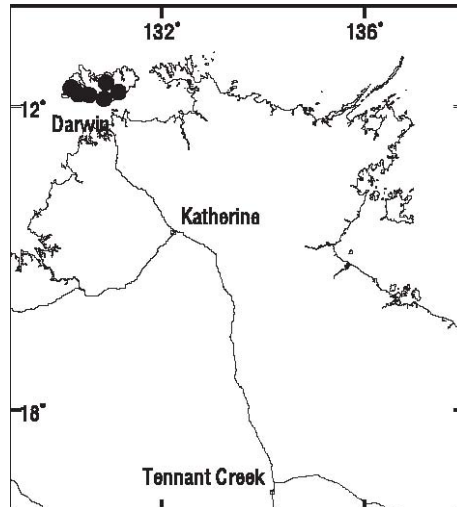
#### **Distribution**

There are remarkably few records of Butler's Dunnart. It was described from three specimens collected at Kalumburu (north Kimberley) between 1965 and 1966. It has not been recorded from Western Australia since. Subsequently, five individuals have been caught from Bathurst and Melville Islands, and a previously-misidentified record from Melville Island in 1913 has been re-assigned to this species (Woinarski *et al.* 1996, 2003).

*Conservation reserves where reported:*

None.

## Threatened Species Information Sheet



Known locations of the Butler's dunnart.

• = post 1970

### Ecology

Very little is known of the ecology of this species. The few records are associated with a range of habitats (Woinarski *et al.* 1996, 2003; Woinarski 2004), including eucalypt open forest (dominated by *Eucalyptus tetradonta* and *E. miniata*), *Melaleuca* woodland, and “blacksoil sandplain ... heavily vegetated with eucalypt and grass” (Archer 1979). It is terrestrial, and shelters under logs and other cover.

As with other dunnarts, the diet of this species probably comprises invertebrates, and possibly some small vertebrates.

### Conservation assessment

The status of Butler's dunnart is difficult to evaluate, given the few records and lack of any information on trends in abundance. It can be reasonably inferred that it is uncommon in its only known Northern Territory location, the Tiwi Islands. These have now been subject to a substantial biodiversity survey effort since 1991, but this sampling has produced only five individuals. This population can be considered to be likely to decline based on loss of large areas of suitable habitat (300-1000 km<sup>2</sup> from a total Tiwi Islands area of about 7400 km<sup>2</sup>) associated with a forestry plantation project. It may also decline with increasing abundance of feral cats on the Tiwi Islands.

Consequently, Butler's dunnart fits the status of **Vulnerable** (under criteria B1ab) based on:

- extent of occurrence estimated to be <20,000 km<sup>2</sup>;
- severely fragmented or known to exist at no more than 10 locations; and
- continuing decline, observed, inferred or projected.

### Threatening processes

The immediate threat to the population is the loss of large areas of suitable habitat on Melville Island because of vegetation clearance for plantation forestry.

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Butler's dunnart may also be affected by predation from feral cats, and vegetation change associated with altered fire regimes, weeds and/or feral animals.

### **Conservation objectives and management**

A recovery plan for this species (Woinarski 2004) has recently been developed.

Research priorities are to:

- (i) undertake sampling to more precisely define the range and status;
- (ii) undertake a specific study to provide more information on the ecological requirements of, and threatening factors affecting, this species.

Management priorities are to:

- (i) ensure the retention of sufficient areas of preferred habitat on the Tiwi Islands, especially around the few sites of known occurrence.

### **Compiled by**

John Woinarski.  
[May 2006]

### **References**

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

### GOLDEN BANDICOOT

#### *Isoodon auratus*

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#### Conservation status

Australia: Vulnerable.

Northern Territory: Endangered.

#### Description

This species is a small bandicoot weighing up to 600 g. It is superficially similar to the more common northern brown bandicoot *Isoodon macrourus*, from which it can be distinguished in the field by its smaller size, the shape of its hairs and by its flatter and more elongate head shape.



Golden bandicoot (Photo: K. Brennan.)

#### Distribution

In the Northern Territory, the golden bandicoot is now known from only one location, Marchinbar Island on the Wessel chain, northeastern Arnhem Land (Fisher and Woinarski 1994). Beyond the Territory, the same subspecies *I.a. auratus* also occurs on a small portion of the mainland of the northwestern Kimberley (WA) and from two nearby islands, Augustus and Uwins. Another subspecies, *I.a. barrowensis* occurs on Barrow and nearby Middle Islands off the Pilbara coast (Maxwell *et al.* 1996).

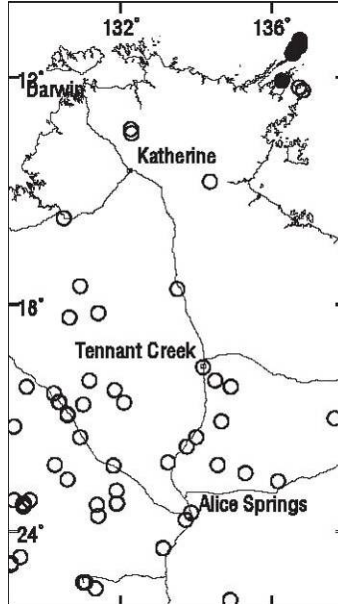
The taxonomic position of these forms is currently under review. A recent study (Pope *et al.* 2001) has suggested that golden bandicoots may be conspecific with the southern brown bandicoot *I. obesulus*, with very similar genetic composition albeit some marked morphological differences. The conservation status of the taxon within the Northern Territory is unaffected by the resolution of this taxonomic issue.

The golden bandicoot formerly occurred across most of northern, central and western Australia, extending to south-western New South Wales, and across a very broad variety of habitats. However, it declined precipitously within decades of European settlement, and disappeared from the central deserts between the 1940s and 1960s (Finlayson 1961; Parker 1973; Burbidge *et al.* 1988). The last specimen from the mainland NT was

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from The Granites (northwest Tanami) in 1952. There have been very few specimen records from the Territory mainland north of the Tanami, but these have included the Roper River area (in 1911) and South Alligator River (around 1900) (Parker 1973; Johnson and Southgate 1990). There are also more recent records (1950s to 1980s) from mainland northeastern Arnhem Land that are probably referable to this species (Lyne and Mort 1981; I. Morris *unpubl.*).

*Conservation reserves where reported:*  
None.



Known locations of the golden bandicoot.  
○ = pre 1970; ● = post 1970.

### Ecology

Most information on the ecology of the golden bandicoot is from a single short-term study on Marchinbar Island (Southgate *et al.* 1996). There it occurs mainly in heathland and shrubland on sandstone or sandsheets, and avoids vegetation with greater tree cover. Individuals maintain overlapping home ranges of from 12-35 ha. Their diet comprises a broad range of invertebrates.



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Preferred habitat on Marchinbar Island - heathland on sandstone.

### **Conservation assessment**

In 1994-95, the total population at its single known NT site was estimated at around 1400 individuals, occurring across most of the 210 km<sup>2</sup> extent of Marchinbar Island (Southgate *et al.* 1996). A brief re-survey of Marchinbar Island was undertaken in October 2004 and the population levels appeared to be similar to the 1994-95 estimates.

The decline in the mainland population and range generally occurred earlier than relevant to IUCN status designation criteria (i.e. >10 years or 3 generations ago), although the status of the population, if any, on mainland northeast Arnhem Land remains unresolved.

Conservation categorisation is problematical, however, it can be reasonably inferred that there is some likelihood that this population may be exposed in the future to the same factor(s) that have so effectively extirpated populations elsewhere. Given this premise, the species qualifies as **Endangered** (under criteria B1ab+2ab; C2) based on:

- extent of occurrence <5,000 km<sup>2</sup>;
- known to exist at <5 locations;
- continuing decline, observed, inferred or projected;
- area of occupancy <500 km<sup>2</sup>;
- population size <2,500 mature individuals; and
- >95% of mature individuals in one subpopulation.

### **Threatening processes**

No single factor has been demonstrated to have caused the decline of golden bandicoots, but the extent of loss on the mainland and the maintenance of some island populations suggests that it is not due to land-use factors but rather to either disease or exotic predators. The most likely causal factor is predation by feral cats.

Marchinbar Island has no feral cats, although feral dogs have been present for around 30-50 years, and these are known to take some bandicoots. Bandicoots on Marchinbar Island are hunted occasionally by Aboriginal landowners. Golden bandicoots may be affected by fire regimes, and appear to prefer areas which have been burnt relatively recently (2-5 years previously) and within a fine-scale mosaic. The maintenance of such a fire regime is dependent upon management by Aboriginal landowners.

The greatest threat to the Marchinbar population is the deliberate or inadvertent introduction of cats to the island, either by visiting Aboriginal landowners, by visiting fishermen or yachties, or by refugee boat-people.

### **Conservation objectives and management**

A national recovery plan for this species has recently been established (Palmer *et al.* 2003).

Management priorities are:

- (i) to better safeguard the existing population through improved communication of the need to keep the island cat-free, through encouragement of traditional Aboriginal burning practices, and through the implementation of a monitoring program;

## **Threatened Species Information Sheet**

(ii) to translocate (and thence manage) populations to at least one other nearby island through expansion of the captive population and investigation of suitability of other islands in the Wessel and English Company Islands groups; and  
(iii) to investigate whether populations persist on the mainland of northeast Arnhem Land.

The Parks and Wildlife Service and the Gumurr Marthakal Rangers of northeastern Arnhem Land will be undertaking a collaborative program from 2006 to monitor the known population, survey for additional populations, and evaluate opportunities for translocations.

### **Compiled by**

Carol Palmer  
John Woinarski.  
[May 2006]

### **References**

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

### BRUSH-TAILED RABBIT-RAT

### BRUSH-TAILED TREE-RAT

### *Conilurus penicillatus*

---

#### Conservation status

Australia: Not listed.

Northern Territory: Vulnerable.

#### Description

The brush-tailed rabbit-rat is a moderately large (about 150 g) partly arboreal rat, with long brush-tipped tail (with the distal third either black or white), long ears. The fur colour is relatively uniformly coloured brown above, and cream below. It is distinctly smaller than the two other long-tailed tree-rats in the Northern Territory.



Brush-tailed rabbit-rat (Photo: K Brennan)

#### Distribution

In the Northern Territory, this species has been recorded from near-coastal areas from near the mouth of the Victoria River in the west to the Pellew Islands in the east, and including Bathurst, Melville, Inglis and Centre Islands and Groote Eylandt (Parker 1973; Kemper and Schmitt 1992; Woinarski 2000). There are no recent records from much of this historically recorded range, and it is currently (post 1970) known to persist in the Northern Territory only on Cobourg Peninsula, Bathurst, Melville, and Inglis Islands, Groote Eylandt, and a small area within Kakadu National Park.

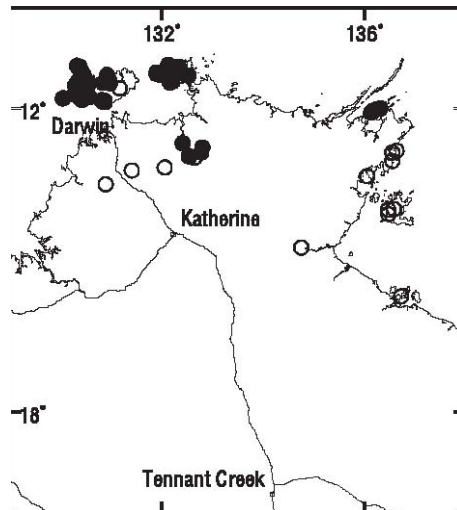
Two weakly-defined subspecies are recognised from the Northern Territory: *C. p. melibius* from the Tiwi Islands, and *C. p. penicillatus* from all other Australian areas (Kemper and Schmitt 1992).

Beyond the Northern Territory, the species also occurs from higher rainfall, near-coastal areas of the north Kimberley, Bentinck Island (Queensland) and a small area of southern New Guinea.

*Conservation reserves where reported:*

Kakadu National Park, Garig Gunak Barlu National Park.

## Threatened Species Information Sheet



Known locations of the brush-tailed rabbit-rat. o = pre 1970; • = post 1970.

### Ecology

The preferred habitat of the brush-tailed tree-rat is eucalypt tall open forest, often with a relatively dense tall shrubby understorey (Firth *et al.* in press, a). However, at least on Cobourg Peninsula, it also occurs on coastal grasslands (with scattered large *Casuarina equisetifolia* trees, beaches, and stunted eucalypt woodlands on stony slopes (Frith and Calaby 1974; Firth *et al.* in press, b).

It shelters in tree hollows, hollow logs and, less frequently, in the crowns of pandanus or sand-palms (Firth *et al.*, in press, b). Most foraging is on the ground, but it is also partly arboreal. The diet comprises mainly seeds (especially of grasses), with some fruits, invertebrates and leaves and grass (Firth *et al.* 2005).

### Conservation assessment

Conservation assessment is hampered by lack of knowledge concerning the timing, extent and currency of geographic decline, and the lack of a comprehensive recent assessment of their status on Groote Eylandt and Centre Island. Relatively brief recent (2003-2005) surveys failed to re-locate the species on Centre Island (Taylor *et al.* 2004; S. Ward *pers. comm.*), but reported one individual on Groote Eylandt (D. Milne *pers. comm.*). Its range and population size in the Northern Territory has probably declined by well over 50% since European settlement, but this decline cannot be dated with any assurance. Certainly, its current status no longer matches that reported more than 100 years ago: “in Arnhem Land is everywhere common in the vicinity of water” (Dahl 1897), “numerous all over Arnhem Land, and in great numbers on the rivers of the lowlands” (Collett 1897). There is some suggestion of a decline within the last 20 years at Kakadu National Park, but this is based on very few records (Woinarski *et al.* 2001).

Current research will provide some assessment of the population size (or at least an index of abundance, whose assessment can be consistently repeated) on Bathurst and Melville Islands, Cobourg Peninsula and Kakadu. A recent study (PWCNT 2001) found very high population density (>6 individuals/ha) in at least two locations on Cobourg Peninsula.

## Threatened Species Information Sheet

Its status best fits **Vulnerable** (under the criteria B1ab(i,ii,iii,iv,v) based on:

- extent of occurrence estimated to be <20,000 km<sup>2</sup>;
- severely fragmented or known to exist at no more than 10 locations; and
- continuing decline, observed, inferred or projected.

Within this set, the estimate of extent is most arguable, as the islands where it is present are widely scattered. The total area of the islands known to be occupied is 11813 km<sup>2</sup>, and that of Cobourg Peninsula is 2207 km<sup>2</sup>. Elsewhere on the Territory mainland it is known to persist only in a small area (<20 km<sup>2</sup>) within Kakadu National Park.

The Tiwi Island subspecies *C. p. melibius* unequivocally meets this set of criteria (with total extent of occurrence of about 8300 km<sup>2</sup>). The other subspecies *C. p. penicillatus* would meet the set of criteria B2ab(i,ii,iii,iv,v).

### Threatening processes

No single factor has been demonstrated to have caused the decline of brush-tailed tree-rats, but the extent of loss on the mainland and the maintenance of some island populations suggests that it is probably not due to land-use factors but rather to either disease or exotic predators. The most likely causal factor is predation by feral cats.

However, it is possible that broad-scale habitat change may have contributed to the apparent decline. Changed fire regimes, weeds and grazing by livestock and feral animals may have changed the availability of preferred or vital food resources (e.g. seeds or stems from particular grass species), and more frequent hot fires may have reduced the availability of hollow logs, tree hollows and the tall fruit-bearing understorey shrubs (Woinarski *et al.* 2004).

The population on the Tiwi Islands will be substantially reduced by a forestry enterprise that will clear between 30,000 and 100,000 ha of the preferred habitat (tall eucalypt open forests) and replace this with plantations of fast-growing exotic *Acacia* species.

### Conservation objectives and management

There is no existing recovery plan or management program for this species.

In the interim, management priorities are to:

- (i) maintain a monitoring program in at least two sites, which can also measure responses to management actions. The baseline for this monitoring has now been established, with recent studies on Cobourg Peninsula, the Tiwi Islands and in Kakadu National Park.
- (ii) work with Aboriginal landowners to maintain effective quarantine actions for island populations, most particularly relating to maintaining at least some of these islands cat-free.
- (iii) develop effective captive population breeding programs, and evaluate the possibility of establishing translocated populations (either to currently uninhabited islands or to appropriately managed conservation reserves). Such a program is currently being undertaken through the Territory Wildlife Park.

**Compiled by**  
John Woinarski

## Threatened Species Information Sheet

[May 2006]

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

### GOLDEN-BACKED TREE-RAT

#### *Mesembriomys macrurus*

---

#### Conservation status

Australia: Vulnerable.

Northern Territory: Endangered.

#### Description

The golden-backed tree-rat is a large rodent (about 300 g), midway in size between the Territory's other two semi-arboreal species, the smaller brush-tailed tree-rat and the larger black-footed tree-rat. Distinctive features include a long slightly brush-tipped tail that is white for at least the distal half, white feet, and a broad chestnut-gold stripe along the back from the crown to the base of tail.



golden-backed tree-rat (Photo: I Morris)

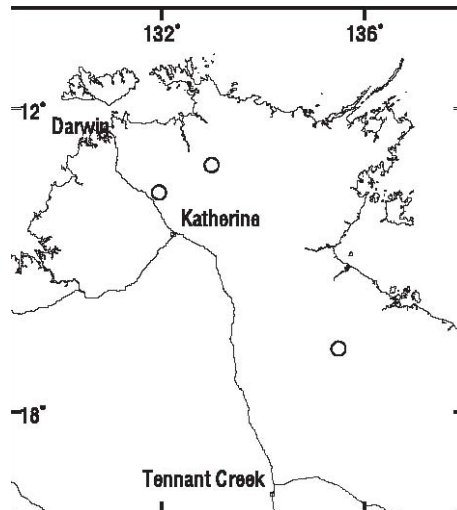
#### Distribution

In the Northern Territory, the golden-backed tree-rat is known from only three definite records (Parker 1973): at "Balanbrinni" (probably Balbarini) in the upper McArthur in 1901; from Nellie Creek (in the upper Mary) in 1903; and from Deaf Adder Gorge in 1969. The species has not been confirmed elsewhere despite many large surveys across much of the Top End over the last 30 years. These surveys have included some limited sampling at the Deaf Adder Gorge site (C. Palmer *pers. comm.*), and sampling in the general vicinity of the other two sites.

There have been several unconfirmed records based on possible sightings and hair samples (Woinarski 2000), but these remain unconfirmed and in at least some cases unlikely.

Beyond the Territory, it occurs in some coastal areas of the north Kimberley, and five offshore islands there (Carlia, Conilurus, Hidden, Uwins, and Wollaston) (Abbott and Burbidge 1995; Palmer *et al.* 2003). Its range has declined substantially in Western Australia. It appears to have become regionally extinct from the Pilbara, and in at least the more arid southern margins of the Kimberley (McKenzie 1981). For example, Dahl (1897) reported that "*the houses of settlers (around Broome) are always tenanted by (this species)*", but it has not been reported from there subsequently.

## Threatened Species Information Sheet



Known locations of the golden-backed tree-rat. o = pre 1970.

*Conservation reserves where reported:*  
Kakadu National Park.

### Ecology

There is very little known of the ecology of this species. The only information from the Northern Territory is that all three records were from riverine vegetation. In the Kimberley, it has been recorded from a broad range of vegetation types, including eucalypt open forests with tussock grass understorey, rainforest patches on a variety of landforms and soils, eucalypt woodlands with hummock grass understorey, rugged sandstone screes, beaches, and blacksoil plains with pandanus. It roosts in tree hollows or, less commonly, in loosely woven nests under the spiky crown of pandanus. Its diet includes seeds, fruits, invertebrates, grass and leaves, and it forages both on the ground and in trees (Palmer *et al.* 2003).

### Conservation assessment

The remarkably few records from the Northern Territory provide a poor base for assessing status. A decline can be inferred based on the lack of recent records despite substantial survey effort, but it is not possible to say when the decline occurred, or if it is ongoing. The scarcity of historic records suggests that it was already rare in the Northern Territory at the onset of European settlement, or that it declined extremely rapidly thereafter. Historic and ongoing decline in the Territory population and range can be reasonably inferred from the marked decline evident in the more substantial set of records from north Western Australia.

The Northern Territory status can be considered to be **Critically Endangered** (under criteria B2ab(i,iv,v); C2a(i)) based on:

- Area of occupancy estimated to be less than 10 km<sup>2</sup>;
- population size estimated to number <250 mature individuals;
- severely fragmented or known to exist at no more than five locations;
- a continuing decline, observed, projected or inferred; and
- no subpopulation estimated to contain more than 50 mature individuals.

## Threatened Species Information Sheet

### Threatening processes

No single factor has been demonstrated to have caused the decline of golden-backed tree-rats, but the extent of loss on the mainland and the maintenance of some island populations (in WA) suggests that it is probably not due to land-use factors but rather to either disease or exotic predators. The most likely causal factor is predation by feral cats.

However, it is possible that broad-scale habitat change may have contributed to the apparent decline. Changed fire regimes, weeds and grazing by livestock and feral animals may have changed the availability of preferred or vital food resources (e.g. seeds from particular grass species), and more frequent hot fires may have reduced the availability of hollow logs, tree hollows and the tall fruit-bearing understorey shrubs.

### Conservation objectives and management

A recently developed recovery plan (Palmer *et al.* 2003) describes research and management priorities for this species across its range; and its research and management priorities in Kakadu National Park are described in Woinarski (2004).

Research priorities include:

- (i) to sample more systematically and intensively the three known locations to determine whether any of these populations have persisted, and to attempt to confirm its presence at the few other sites with recent unconfirmed records; and
- (ii) to examine the ecology of the species at any sites where populations persist, and attempt to define limiting factors.

Until more information is known about the species in the Northern Territory, it is impossible to prescribe any specific management priorities.

### Compiled by

John Woinarski  
Carol Palmer  
[May 2006]

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

### NORTHERN HOPPING-MOUSE

#### *Notomys aquilo*

---

#### Conservation status

Australia: Vulnerable.

Northern Territory: Vulnerable.

#### Description

The northern hopping-mouse is a small (25-50 g) rodent of unmistakable appearance within its range. It has an extremely long tail (around 140-150% head-body length) tipped with a tuft of longer dark hairs, large ears and eyes, and very long (35-40 mm) narrow hind-feet. It is sandy-brown above and white below.

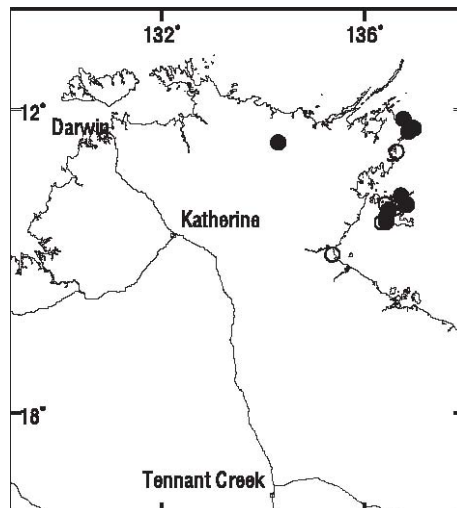
It is the only hopping-mouse in the Top End of the Northern Territory. The spinifex hopping mouse *N. alexis* extends north to the Barkly Tableland, and is generally of similar morphology.

#### Distribution

There are remarkably few documented records of the northern hopping-mouse (Woinarski *et al.* 1999; Woinarski 2004). In the Northern Territory, it is known from Groote Eylandt and coastal north-eastern Arnhem Land, with unvouchered records from a few hundred kilometres further south, west and inland; and one specimen from inland central Arnhem Land (Dixon and Huxley 1985; Woinarski *et al.* 1999). Beyond the Northern Territory, it has also been recorded from Cape York Peninsula (one specimen with an imprecise locality record from the last half of the nineteenth century).

*Conservation reserves where reported:*

Nanydjaka (Cape Arnhem) Indigenous Protected Area.



Known locations of the northern hopping mouse.

o = pre 1970; ● = post 1970.

## ***Threatened Species Information Sheet***

### **Ecology**

The northern hopping-mouse is largely restricted to sandy substrates, particularly those supporting floristically diverse heathlands and/or grasslands (Woinarski *et al.* 1999). It constructs elaborate communally-used burrow systems, whose vertical entrances may be obscured by a thin layer of sand (Johnson 1964; Dixon and Huxley 1985). It is active at night, and it forages entirely on the ground. Its diet comprises mainly seeds, but also some other vegetative material and invertebrates. The species appears to be trap-shy and may be most readily detected by its characteristic hopping tracks.

### **Conservation assessment**

Conservation assessment is hampered by the lack of precise information on range, population size and trends, to such an extent that it may qualify best as Data Deficient. However, in the Northern Territory, it can be assigned the status of **Vulnerable** (under criteria B2ab) based on:

- area of occupancy estimated to be <2000 km<sup>2</sup>;
- severely fragmented or known to exist at no more than 10 locations; and
- continuing decline, observed, inferred or projected.

This assignment rests on a presumption that:

- only a small proportion of the Top End sandsheet environments is suitable for (and/or occupied by) the species;
- that feral cats may be increasing predation levels; and
- that a range of factors (including spread of weeds, changed fire regimes, and grazing by domestic and feral stock) are operating to reduce habitat quality.

### **Threatening processes**

There is no detailed information on threatening processes. It is plausible that there are increased numbers of feral cats across much of its range, and that these are affecting population numbers. Fire regimes have changed across its range, notably to a higher incidence of extensive hot late dry season fires, with consequent reduction in floristic diversity. This may be to the detriment of this species, although such a link has not yet been established.

### **Conservation objectives and management priorities**

A recovery plan for this species has been prepared recently (Woinarski 2004).

The main research priorities are to better define the distribution and status of this species and to assess the impacts of a range of putative threatening processes. Such information is needed before management prescriptions can be formulated appropriately.

A collaborative project between the NT Department of Natural Resources, Environment and the Arts and the Anindilyakwa Land Council commenced in 2006, aimed at improving knowledge of its status, and developing management and monitoring programs.

### **Compiled by**

John Woinarski

[May 2006]

## **Threatened Species Information Sheet**

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

### CANEFIELD RAT

#### *Rattus sordidus*

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#### Conservation status

Australia: Not listed.

Northern Territory: Vulnerable.

#### Description

The canefield rat is a typical moderately large rodent (up to 250 g), in the Northern Territory most like the long-haired rat *R. villosissimus* and the dusky rat *R. colletti*. It has dark golden-brown coarse almost spiny fur, with long guard hairs on the rump. The ears are light grey (cf. *R. colletti* that has dark brown ears, and *R. villosissimus* that are dark grey). *Rattus villosissimus* is also typically more grey in colour, and has even longer guard hairs distributed across more of the back.

The taxonomic status of some native *Rattus* in northern Australia is somewhat uncertain. The identity of the Territory canefield rat specimens was corroborated by chromosomal analysis (Johnson and Kerle 1991).



canefield rat (J Gould © Museum Victoria)

#### Distribution

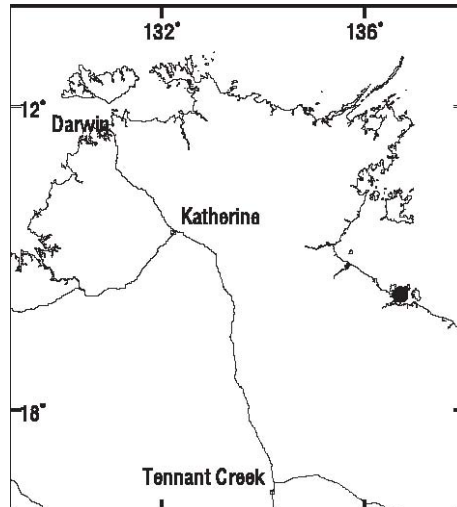
In the Northern Territory, the canefield rat is known only from South-West Island in the Sir Edward Pellew group.

Elsewhere, it occurs widely in coastal areas of north-eastern Australia, as far south as far north-eastern New South Wales, and west to at least Normanton (Watts and Aslin 1981).

*Conservation reserves where reported:*

None.

## Threatened Species Information Sheet



Known locations of the cane field rat.

● = post 1970

### Ecology

The NT records are all from coastal dunes: “sandy low-lying open woodland with a grassy understorey” (Johnson and Kerle 1991). In north-eastern Australia it occurs mostly in grasslands, typically in areas with friable soil and with a close ground-cover of grasses, sedges and herbs, and often occurs around swamps or on the grassy verges of closed forests (Watts and Aslin 1981). It is also very abundant in sugar cane crops.

It is a colonial species. It constructs extensive relatively shallow (typically <40 cm deep) burrows for shelter and breeding, and runways through dense vegetation.

Its diet consists mainly of grass, but also includes some invertebrates and seeds.

### Conservation assessment

In the Northern Territory, the species has been recorded from only one site during one field survey (in 1988). A more recent survey of several islands in the Pellew Group in 2003 failed to trap any cane field rats (Taylor *et al.* 2004) and noted that the success of mammal trapping generally was lower than on two previous mammal surveys of the islands (in 1966-67 and in 1988). The trapping success was particularly low on South West Island, and was generally low for other ‘true’ rat species, *Rattus tunneyi* and *Rattus villosissimus*, across the islands. In the 1988 survey cane field rats were recorded only in the dune communities of South West Island, which cover only a small proportion of the total 95 km<sup>2</sup> area of the island, so the population of cane field rats there is probably small (<2000 individuals). Taking a precautionary approach, failure to trap any individuals in the most recent survey is evidence of a decline, and the species should be classified as **Vulnerable** in the Northern Territory (under criteria B1ab(i,ii,v) and B2ab(i,ii,v)).

Note that this species is common and considered a pest across most of the rest of its range.

### Threatening processes

Feral cats apparently reached South-West Island around 1990 (Taylor *et al.* 2004), and the highly restricted and colonial population of cane field rats there may have been susceptible to predation by these cats. Cane toads reached the island between 2000

## ***Threatened Species Information Sheet***

and 2002; but there is no prior evidence to suggest that canefield rats would be affected by cane toads, and indeed the two species co-occur in extensive areas of Queensland. Fire regimes have changed on the Pellew Islands over the last century, due to less intensive Aboriginal land management. Such changes would have altered vegetation structure and floristics, and hence habitat quality for canefield rats, but it is not yet clear whether such change would have been beneficial or detrimental.

### **Conservation objectives and management**

There is no existing explicit recovery plan or management program for this species.

In the interim, research priorities are to:

- (i) confirm the continued existence of this population, and establish a monitoring program, preferably integrated with an assessment of fire management preferences.
- (ii) sample the nearby mainland for additional populations; and
- (iii) further resolve the taxonomy of *Rattus* in northern Australia.

Management priorities are to:

- (i) work with Aboriginal landowners to control feral cats (and other exotic species) on the Pellew Islands;
- (ii) evaluate options for conservation agreements with Aboriginal landowners;
- (iii) based on monitoring results, implement a favourable fire regime.

### **Compiled by**

John Woinarski.

[May 2006]

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

# FALSE WATER-RAT WATER MOUSE

***Xeromys myoides***

---

### **Conservation status**

Australia: Vulnerable.

Northern Territory: Data Deficient.

### **Description**

The false water-rat is a small (35-50 g) rodent of unmistakable appearance. The most distinctive external features are a broad relatively short face, and very short sleek fur. Fur colour is pale grey above and white below. The eyes and ears are relatively small.



false water-rat.

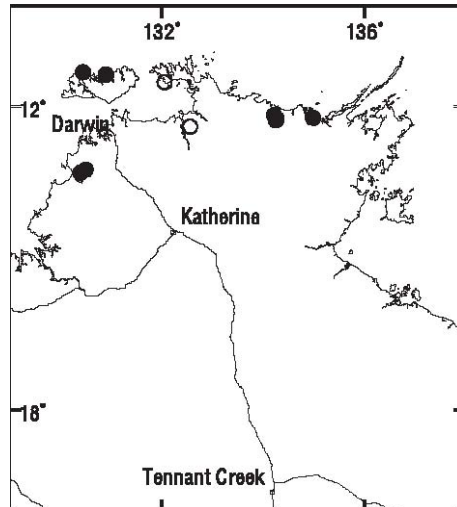
### **Distribution**

In the Northern Territory, it is known from only 10 records at 6 sites (South Alligator River in 1903, Daly River floodplain in 1972, two sites on the Tomkinson River in 1975, Melville Island in 1975 and Glyde River floodplain in 1998 and 1999) (Redhead and McKean 1975; Magnusson *et al.* 1976; Woinarski *et al.* 2000). Beyond the Northern Territory, it is also known from several sites in coastal south-eastern Queensland and one site in New Guinea.

### *Conservation reserves where reported:*

Kakadu National Park (but this record is from 1903, well pre-dating the Park's establishment).

## Threatened Species Information Sheet



Known locations of the false water-rat  
o = pre 1970; ● = post 1970.

### Ecology

The ecology of the species is reasonably well known from a detailed study on North Stradbroke Island, Queensland (Van Dyck 1996). The false water rat is a nocturnal predator eating mainly marine and freshwater invertebrates, especially including crabs, pulmonates and molluscs. It forages entirely on the ground, and is an adept swimmer. It builds and shelters in either burrows or substantial earthen mounds. Its habitats comprise mangrove forests, freshwater swamps and floodplain saline grasslands (Woinarski *et al.* 2000).

### Conservation assessment

In the Northern Territory, the species can potentially be assigned the status of Vulnerable on the set of criteria B2ab

- area of occupancy less than 2000km<sup>2</sup>;
- known to exist at no more than 10 locations; and
- continuing decline, observed, inferred or projected in area of occupancy, area, extent and/or quality of habitat, and number of locations or subpopulations.

However, conservation assessment is hampered by the lack of precise information on range, population size and trends, to such an extent that it may qualify best as **Data Deficient**.

It is not known what proportion of the Territory's mangroves and floodplains is suitable for (and/or occupied by) the species or what impact a range of factors (including saltwater intrusion, spread of weeds (especially *Mimosa pigra*, olive hymenachne and para grass) and grazing of the floodplains by domestic and feral water buffalo and cattle) are having on habitat quality.

### Threatening processes

There is insufficient information available to assess the impacts of possible threatening processes. There may be some predation by feral cats. However, the most plausible threatening processes relate to broad-scale habitat changes, especially those due to

## ***Threatened Species Information Sheet***

saltwater intrusion, spread of weeds and impacts of grazing. However, it is not clear that these changes necessarily reduce habitat quality for this species, and they are unlikely to diminish the extent of mangrove communities.

### **Conservation objectives and management**

The main priorities are to better define the distribution and status of this species and to assess the impacts of a range of putative threatening processes. Such information is needed before management prescriptions can be formulated appropriately.

### **Compiled by**

John Woinarski  
[May 2006]

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

### ARNHEM ROCK-RAT

#### *Zyzomys maini*

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#### Conservation status

Australia: Vulnerable.

Northern Territory: Vulnerable.

#### Description

The Arnhem rock-rat is a large (100-150 g) rat distinguished from most other Northern Territory rodents by its large whiskers, typically swollen tail (especially at the base), the long hairs towards the tip of the tail, and the characteristic roman nose. It shares these features with the co-occurring but much smaller (30-70 g) common rock-rat *Z. argurus*, from which it can be separated by its larger size, colour (typically more grey than brown), and higher density of long hairs on the tail.

The rock-rats have fragile tails and fur, and many individuals may have no or greatly reduced tails, presumably as a consequence of predator attack.

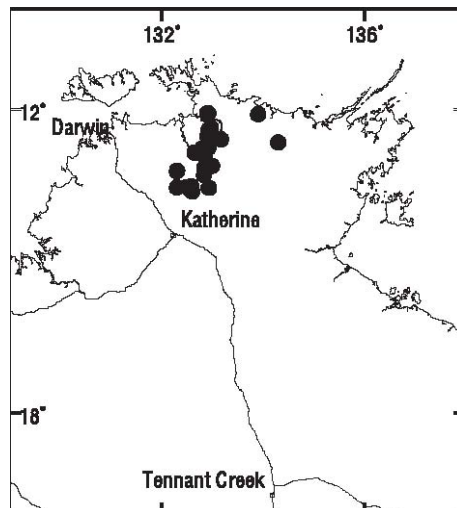
#### Distribution

The Arnhem rock-rat is endemic to the sandstone massif of western Arnhem Land. This area encompasses about 34,000 km<sup>2</sup>, but a very high proportion of this comprises habitat that is unsuitable for this species.

Until recently, it was considered conspecific with the Kimberley rock-rat *Z. woodwardi*, from the north Kimberley (Kitchener 1989).

*Conservation reserves where reported:*

Kakadu National Park.



Known locations of the Arnhem rock rat.

○ = pre 1970; ● = post 1970.

## Threatened Species Information Sheet

### Ecology

The ecology of the Arnhem rock-rat is relatively well known from a series of studies at Little Nourlangie Rock (Nawurlandja) in Kakadu National Park (Begg and Dunlop 1980, 1985; Begg 1981; Begg *et al.* 1981). It is an entirely terrestrial, nocturnal species, restricted to areas with large sandstone boulders or escarpment with fissures and cracks. It occurs in these areas very patchily, being restricted mostly to monsoon rainforest patches, notably in gullies and along creeklines, or in fire-protected refugia. This is a much narrower habitat than that occupied by the common rock-rat. The Arnhem rock-rat's diet comprises mainly seeds, fruit and some other vegetable matter. The seeds eaten include those from many species of rainforest tree. Large seeds may be cached, or at least moved to be eaten at relatively safe sites, resulting in distinctive piles of chewed hard seeds in rock fissures or under large overhangs (Begg and Dunlop 1980).

On the basis of its known response to a single large fire, the Arnhem rock-rat appears to be unusually fire-sensitive, with substantial decline for at least 1-2 years post-fire (Begg *et al.* 1981). A high frequency of fire will result in diminution of its preferred sandstone monsoon rainforests (Russell-Smith *et al.* 1993, 1998).

### Conservation assessment

Conservation assessment is hampered by the lack of precise information on range and population size. Decline can be presumed on the basis of the current high frequency of fire across much of the western Arnhem Land plateau (Russell-Smith *et al.* 1998), and resultant decline in its preferred habitat, monsoon rainforests, there (Russell-Smith and Bowman 1992; Russell-Smith *et al.* 1993, 1998). More explicitly, major declines of this species have been reported from all monitoring sites in Kakadu NP (Woinarski 2004): at Little Nourlangie Rock, from a mean trap success of 0.36 in 1977-79, 0.92 in 1980 to 0 in 2002; at Jabiluka from a mean of 0.48 in 1979-81 to 0.15 in 2003; and in the Mary River district of Kakadu (263 sites) from a mean of 0.24 in 1988-90 to 0.04 in 2001.

It best fits the status of **Vulnerable** (under criteria B2ab(ii,ii,iv,v)) based on:

- area of occupancy estimated to be <2,000km<sup>2</sup>;
- severely fragmented or known to exist at no more than 10 locations; and
- continuing decline, observed, inferred or projected.

### Threatening processes

The major threatening process appears to be reduction in habitat suitability and/or extent due to increased frequency of extensive hot late dry season fires.

### Conservation objectives and management priorities

There is no existing explicit recovery plan or management program for this species.

In the interim, management priorities are:

- (i) to reduce the incidence of extensive, hot late dry season fires; and
- (ii) to maintain a program for monitoring the status of at least one subpopulation, but preferably more, and preferably in association with a range of fire management practices, in order to help refine best management practice.

## Threatened Species Information Sheet

### Compiled by

John Woinarski  
[May 2006]

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## THREATENED SPECIES OF THE NORTHERN TERRITORY

# CARPENTARIAN ROCK-RAT

## *Zyzomys palatalis*

### Conservation status

Australia: Endangered.

Northern Territory: Critically Endangered.

### Description

The Carpentarian rock-rat is a large rock-rat (average weight 120 g) with distinctly fattened tail base. The tail is generally longer than the head-body length but is often broken off to form a stump. Its fur is brown above and pale to white below. The feet are white above.



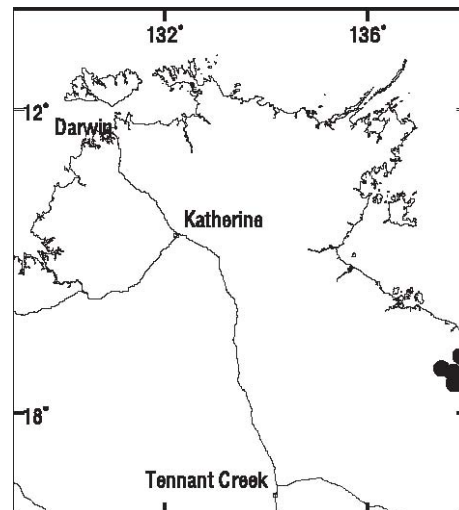
Carpentarian rock-rat.

### Distribution

The Carpentarian Rock-rat is known only from Wollogorang Station in the Gulf of Carpentaria hinterland where it was discovered in 1986 (Kitchener 1989). Nothing is known of its former distribution. It is known from five locations (gorges and escarpments) on Wollogorang (Banyan Gorge, Camel Creek, Moonlight Gorge, McDermott Springs and Rebank Mine) and all are within a radius of 35 km (Churchill 1996; Puckey 2003). Extensive surveys (including in 47 additional monsoon

rainforest patches) in apparently suitable habitat in the region have not expanded its known range (Trainor *et al.* 2000).

*Conservation reserves where reported:* None.



Known locations of the Carpentarian rock-rat. • = post 1970

### Ecology

The species is restricted to sandstone gorges and escarpments containing a core of dry or wet rainforest vegetation, mixed with broadleaf woodland, scree slopes and permanent water, surrounded by savanna woodlands.

Carpentarian rock-rats may breed all year round with a peak in the early to mid dry season when their dietary items of large fleshy or woody fruits and seeds are most abundant (Trainor 1996a).

Based on a radio-tracking study of 21 individuals, Puckey *et al.* (2004) calculated a mean home range size of

## Threatened Species Information Sheet

1.1 ha, found that individuals may move up to 2 km in one night, and showed that while most activity occurred within monsoon rainforests, at least some individuals would also forage within nearby areas of savanna woodland, although no animals moved more than 80 m away from the rainforest edge.

### Conservation assessment

The population of Carpentarian Rock-rats has been estimated to be 696 at Moonlight Gorge and 450 at Banyan Gorge (Trainor 1996b). No estimates for the other two sites have been made but it is expected that the total population is fewer than 2000 individuals. Based on modeling of home range sizes, home range overlaps and availability of putatively suitable habitat, Bowman *et al.* (2006) estimated that there may be 782 home ranges for Carpentarian rock-rats across their known sites.

The species qualifies as **Critically Endangered** (under criteria B1ab(iii)+2ab(iii)) based on:

- extent of occurrence <100 km<sup>2</sup>;
- area of occupancy estimated to be less than 10 km<sup>2</sup>;
- severely fragmented; and
- continuing decline, observed, inferred or projected.

Note that information relevant to the last criterion is limited and inconclusive. Until the very recent (2005) establishment of a monitoring program, there was no information available to assess trends in population. Until recently, it was considered that suitable habitat for Carpentarian rock-rats was probably declining and limited by fire (Puckey *et al.* 2001; Brook *et al.* 2002). Recent analysis of current and historic imagery instead suggests that monsoon rainforests and their margins may be increasing on this property (Bowman *et al.* 2006), however, the extent to which

Carpentarian rock-rats have increased in range in association with such vegetation change remains unknown.

### Threatening processes

The major conservation problem for the Carpentarian rock-rat is its extremely limited range (and hence population), and its apparent dependence upon a core monsoon rainforest habitat.

Population modeling (Brook *et al.* 2002) has indicated that fire is a major threat, as it may degrade, diminish or alter the composition of its core monsoon rainforest patches (Trainor *et al.* 2000), a general concern for monsoon rainforest patches throughout the Northern Territory (Russell-Smith and Bowman 1992).

Cattle grazing may also detrimentally affect rainforest patches and their associated springs and creeks. However, the known sites are currently in areas of the property that are not stocked.

Feral cats are known to occur in the areas supporting Carpentarian Rock-rat populations. However their impact is unknown.

### Conservation objectives and management

A management program has been developed for Carpentarian Rock-rats with the aim of improving the long-term conservation status of the species and its habitat in the Northern Territory. The program has been implemented under a recently revised national Recovery Plan (Trainor and Woinarski 1996; Puckey *et al.* 2001).

Priorities of the current management plan are:

(i) to declare known sites as areas of essential habitat under section 73 of the *Northern Territory Parks and Wildlife*

## Threatened Species Information Sheet

Conservation Act 2000 and to manage these sites to eliminate threatening processes;

(ii) to continue to maintain a captive breeding colony at the Territory Wildlife Park as a safeguard against the decline of wild populations;

(iii) to carry out an experimental release program using individuals from the captive breeding colony; and

(iv) to continue scientific research to improve our understanding of the species ecology and its management.

Two trial translocation programs have been attempted recently, in apparently suitable habitat at Limmen National Park, but neither was successful. Brook *et al.* (2002) used population viability models to prioritise management actions for this species, and considered that the most effective conservation action would be to enhance fire management, with some further potential gain from strategic translocations.

### Compiled by

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[May 2006]

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