

THREATENED SPECIES OF THE NORTHERN TERRITORY



SOUTHERN MARSUPIAL MOLE ITJARITJARI *Notoryctes typhlops*

Conservation status

Australia: Endangered.

Northern Territory: Vulnerable.

Description

Marsupial moles comprise their own order within the marsupials; the Notoryctemorphia (Johnson and Walton 1989). The order contains the southern marsupial mole or Itjaritjari (*N. typhlops*) and the northern marsupial mole or Kakarratul (*N. caurinus*). The southern marsupial mole consists of a southern and northern form that differ in morphology and genetics. The taxonomic implications of these differences are not fully understood.

The southern marsupial mole is a small animal (body mass 30-60 g, head and body length up to 140 mm) that is highly distinctive in shape and appearance (Johnson 1995). Key characteristics include a tubular body shape, lack of external ears, heavily keratinized skin on the snout, a short, cylindrical, stumpy tail and short, dense fur. Body colour ranges from almost white through pinkish cinnamon to rich golden red. The limbs are short and powerful. The third and fourth digits of the forefoot are greatly enlarged and bear large, triangular claws that form a cleft spade or scoop. The remaining three digits of the forefoot are small, but the first and second bear claws and are opposed to the third and fourth. The middle three digits of the hind foot also possess an enlarged claw. The female has a distinct pouch that, as in other burrowing marsupials, opens posteriorly.

The eyes are vestigial, measure 1 mm in diameter, and are hidden under the skin. There is no lens or pupil, and the optic nerve to the brain is reduced.



Southern marsupial mole

Distribution

The southern marsupial mole occurs in the sandy deserts of central Western Australia (Pearson and Turner 2000), northern South Australia (apart from records from the Fowlers Bay area near the SA coast) and the Northern Territory. Within the Territory, it has been recorded from locations concentrated in the south-western quarter but has been collected as far north as Barrow Creek (21° 53' S). It does not appear to occur in the Simpson Desert. The few records of marsupial moles from the northwestern Tanami Desert approach the known range of the northern marsupial mole, which has not yet been confirmed from the NT (Benshemesh 2006).

Conservation reserves where reported:

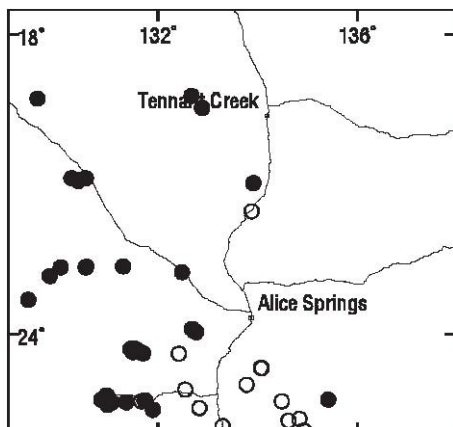
Uluru Kata Tjuta National Park,
Watarrka National Park.



Northern Territory Government

Department of Natural Resources, Environment and the Arts

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Known locations of the southern marsupial mole
o = pre 1970; • = post 1970

Ecology

Southern marsupial moles are found in the sandy deserts where they occupy dunes, sandy plains, and river flats. Underground sign is most common on well-vegetated dunes (Benshemesh 2006). Aboriginal people have indicated that marsupial moles require soft sand and cannot tunnel through hard or loamy substrates that occur in swales between widely spaced dunes. This view is supported by the results of surveys of underground sign (Benshemesh 2006).

Food of marsupial moles includes various insects (adults, larvae, pupae and eggs), other invertebrates and geckoes (Winkel and Humphrey-Smith 1988).

Marsupial moles dig with the aid of flattened claws. It is not known whether they build nests or form permanent burrows (Benshemesh 2006). Although marsupial moles were previously considered to swim through the sand, recent investigations indicate that they are actually tunnellers that back-fill as they move along. Joe Benshemesh has used this behaviour to develop a survey methodology for marsupial moles; a major breakthrough in attempts to understand their distribution and patterns of occurrence. The method

involves digging a steep- and smooth-sided trench and then counting the sand-filled tunnels that arose from previous passage of marsupial moles, visible in cross-section. Most tunnels occur between 20 and 100 cm below the surface with some more than 2 m below the surface (Benshemesh 2006).

The marsupial mole occasionally comes to the surface and seems more inclined to do so after rain in the cooler seasons. A characteristic three furrow track in the sand is made by the mole's spade-like feet and the stumpy tail. Marsupial moles typically remain above the surface only for a short distance (usually a few metres).

Little is known about reproduction by marsupial moles, although single and twin pouch young have been reported.

Conservation assessment

It is difficult to assign a category to *N. typhlops* because of conflicting interpretation of the available information. Some authors have interpreted anecdotal information, mainly from Aboriginal informants (Burbidge *et al.* 1988), as demonstrating that they are reasonably common but infrequently observed. Alternatively data on the rates of acquisition of specimens by museums (Johnson and Walton 1989) suggest a decline in abundance especially considering that human activities within the species range (mining exploration, road building, tourism) have increased significantly over recent decades. The results of recent surveys carried out by Joe Benshemesh indicate that southern marsupial moles are very common in places.

The southern marsupial mole is currently classified as **Vulnerable** (under criterion C1) based on:

- population size estimated to be fewer than 10,000 mature individuals; and



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- an estimated continuing decline of at least 10% within 10 years or three generations, whichever is longer.

Threatening processes

So little is known about the southern marsupial mole's current conservation status that it is highly speculative to describe threats. Predation by feral cats, European foxes and dingoes of marsupial moles when they are above ground (Paltridge 1998), and soil compaction by stock movements or by vehicles, may be potential threats to the long-term survival of the species. Other threats that may change the abundance of ants, insect larvae and termites, such as altered fire regimes and grazing, may also be important.

Conservation objectives and management

A national Recovery Plan for both the southern and northern marsupial moles has been established (Benshemesh 2006).

Key actions in the plan that include work in the Northern Territory are to:

- (i) understand distribution and relative abundance;
- (ii) monitor population trends;
- (iii) assess the threats imposed by fire, grazing and predation;
- (iv) describe activity and ranging behaviour;
- (v) prepare for captive individuals; and
- (vi) co-ordinate and manage the recovery process.

Compiled by

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References

- Benshemesh, J. (2006). *Marsupial mole recovery plan*. (Northern Territory Department of Natural Resources, Environment and the Arts, Alice Springs.).
- Burbidge, A.A., Johnson, K.A., Fuller, P.F. and Southgate, R.I. (1988). Aboriginal knowledge of animals of

- the central deserts of Australia. *Australian Wildlife Research* **15**, 9-39.
- Johnson K. A. (1995). Marsupial mole, *Notoryctes typhlops*. In *The Mammals of Australia* (ed R. Strahan.) pp. 409-411. (Australian Museum, Sydney).
- Johnson K. A., and Walton D.W. (1989). Notoryctidae. In *Fauna of Australia: Volume 1B Mammalia* (eds D.W. Walton and B.J. Richardson). pp 591-602. (Australian Government Publishing Service, Canberra.)
- Paltridge, R. (1998). Occurrence of marsupial mole (*Notoryctes typhlops*) remains in the faecal pellets of cats, foxes and dingoes in the Tanami Desert, N.T. *Australian Mammalogy* **20**, 427-429.
- Pearson, D.J., and Turner, J. (2000). Marsupial mole pops up in the Great Victoria and Gibson deserts. *Australian Mammalogy* **22**, 115-119.
- Winkel, K. and Humphrey-Smith, I. (1988). Diet of the marsupial mole, *Notoryctes typhlops* (Stirling 1889) (Marsupialia: Notoryctidae). *Australian Mammalogy* **11**, 159-161.

