



Marsupial mole, northern Australia - (c) Parks Australia

Common Name	Scientific Name	Aboriginal Name
Northern marsupial mole	<i>Notoryctes caurinus</i>	Karkarratul
Southern marsupial mole	<i>Notoryctes typhlops</i>	Itjaritjari

Introduction and Physiology

The northern and southern marsupial moles were among the very first species nominated by Humane Society International for protection under federal law almost two decades ago. Listed as Endangered, they remain two of the most elusive animals in Australia due to their rarity, remote habitats, and extraordinary habits. They are not closely related to any other taxa and comprise their own unique marsupial order, which may have branched off from other lineages as far as 64 million years ago.

Most small- to medium-sized animals in the desert spend time sheltering underground due to wildly fluctuating temperatures, but marsupial moles have taken this behaviour to the extreme and seem able to live their entire lives there, feeding on insects and their eggs, larvae and pupae, and having such modest oxygen requirements that they can subsist by breathing the air between sand grains.

Their physiology displays a number of special adaptations to underground living: vestigial eyes with no trace of an optic nerve; a lack of external ears; a calloused, shield-like nose; rear opening pouch; and scoop-shaped hands featuring spade-like claws to force the sand beneath the mole's body as it moves forward.

Threats and Habitat

Marsupial moles' preferred habitat is shrubby, sandy dunes, often associated with spinifex grasses. Such habitat is typical of the sandy deserts, and the range of both species aligns closely with the sandy soils of Australia's central desert region, including the Tanami, Gibson, Great Sandy, Little Sandy, western Simpson and Great Victoria Deserts.

Due to their elusive nature there is a degree of uncertainty regarding threats to marsupial moles, but the presence of remains in scats of foxes and feral cats indicates such species apply pressure, and is particularly alarming considering how rarely live individuals are sighted in the wild. When occasionally surfacing (perhaps in times of heavy rain when oxygen flow is disrupted) marsupial moles face much increased vulnerability to a range of predators such as birds of prey, snakes and goannas.

Trampling and habitat impacts caused by cattle and camel populations are also thought to be a threat to marsupial moles, while altered fire and grazing regimes have the potential to greatly modify the vegetation of habitats, and thus the availability of prey species such as ants, insect larvae and termites.

Consequences of Listing

As a direct consequence of HSI's nominations, a Recovery Plan for Marsupial Moles was developed in 2006 and both species were importantly included in various Commonwealth species management documents. The Recovery Plan earmarked a total of \$959,100 to be invested in marsupial mole recovery over 5 years, including \$148,500 to monitor population trends and \$76,000 to conduct pilot studies on the effects of predators, fire and grazing on marsupial mole abundance.

Karkarratul and Itjaritjari were also included in the EPBC Act *Survey Guidelines for Australia's threatened mammals*, produced in 2011 with the purpose of providing assessors with guidelines for surveying Australia's threatened mammals, and thus help to determine the likelihood of a species presence or absence at a particular site. This is an essential component of protecting threatened species and demonstrates the worth of nominations for listings under federal law.

A similarly important document, the 1996 *Action Plan for Australian Marsupials and Monotremes*, was commissioned to review the conservation status of 209 species and subspecies of Australian monotremes and marsupials,

and allotted “Action Scores” reflecting the lack of knowledge and conservation management for each taxa. Both the northern and southern marsupial moles received the maximum score, a concerning sign following more than 19 years of Commonwealth protection.

HSI is proud to have initiated proceedings that have seen funding made available to better understand and recover populations of these enigmatic examples of Australian wildlife, but it is clear more needs to be done. Without detailed knowledge of their behaviours and conservation status, the danger that we are unwittingly sending marsupial moles towards extinction remains.