

# Island refuges – last bastion of threatened mammals

## Importance of islands for conservation

Western Australia has some 3,400 islands and many have high to very high conservation value. Ten species of native mammal that were formerly widespread on mainland Australia, now survive only on islands. In addition,



islands contain many endemic taxa.

Bernier and Dorre Islands in Shark Bay and Barrow Island off the north-west coast of Western Australia are particularly important as refuges for threatened mammals. These islands harbour species of mammal that now occur nowhere else. These include species of macropods (burrowing bettong, rufous hare-wallaby, banded hare-wallaby), bandicoot (western barred bandicoot) and native mice (Shark Bay mouse). Other species of mammal on at least one of these islands include a dwarf species of euro, spectacled hare-wallaby, black-flanked rock-wallaby, golden bandicoot, brush-tailed possum, western chestnut mouse, water rat (all on Barrow Island) and sandy inland mouse (on Bernier and Dorre Islands).

Many species have high conservation value, being accorded either endangered or threatened status under State and Federal legislation.

Islands appear to have retained many elements of the fauna lost from the mainland due to a lesser level of disturbance and because often exotic species, such as foxes, cats, rats, and stock, have not become established.

## Source of animals for return to the mainland

If the cause of loss of mammals from the mainland could be effectively diagnosed and remedied, then species could be reintroduced if suitable source stock persisted on islands. Potential candidates for this were the mammals of Bernier and Dorre Islands in Shark Bay. However, before

that could occur some baseline data on the distribution, abundance and status of the species was required.

## Status of remnant mammal populations

### Surveys of Dorre and Bernier Islands at Shark Bay

Dorre and Bernier Islands are 60 km off the coast of Shark Bay and this remoteness and their aridity has provided protection against development. Until recently, it had also deterred systematic survey of the islands, despite the established importance of their mammal populations.

The first systematic information on the distribution and abundance of four species of Australia's most threatened mammals was collected by CSIRO in the late 1980s and early 1990s. These provided estimates of abundance and the the dynamic change in numbers in response to drought.

Populations varied from 9,700 animals in the case of banded hare wallabies to c. 4,000 in the case of western barred bandicoot. Populations showed marked fluctuation in the face of drought, with declines of up to 75% for one species. This volatility in numbers suggested the need to establish

other populations. Importantly, populations on the island were large enough in good years to sustain an offtake for reintroduction to the mainland.

### Surveys of Barrow Island

The development of an oilfield on Barrow Island in the late 1960s and a recent proposal to site a gas processing plant on the island potentially threaten the natural values of the island and the refuge status of the island for threatened mammals.

CSIRO surveys provided baseline information on the distribution and abundance of threatened mammals. This work also provided a testing of ideas on the reason for loss of these mammal species from the adjacent mainland.

### Ecology of island species

Information on the basic ecology of species now confined to Dorre, Bernier and Barrow Islands had been limited due to the isolation, scale, and inhospitality of the islands. CSIRO conducted detailed studies of the ecologies of threatened mammals on these islands as a precursor to mainland reintroductions to Shark Bay.

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### Postscript

Reintroduction of many island mammals to the mainland were instigated through the 1990s. An increasing understanding of the pivotal role of exotic predators in the decline of many mammal species encouraged scientist to develop fox- and cat-free sites, such as Heirisson Prong at Shark Bay. This was the site for the successful reintroduction of burrowing bettong in 1992 and western barred bandicoots in 1996.



### Key references

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