



Hermite Island Fauna Reconstruction

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Background

As part of the environmental offset provisions for the development of the Gorgon gas project on the Barrow Island Nature Reserve, a threatened and priority species translocation and reintroduction program is moving a small proportion of selected fauna species from Barrow Island to secure island and mainland sites. This program provided the opportunity to reconstruct the fauna of Hermite Island, in the nearby Montebello archipelago. This 1020 hectare island formerly supported populations of the now threatened golden bandicoot (*Isoodon auratus barrowensis*), spectacled hare-wallaby (*Lagorchestes conspicillatus conspicillatus*) and the black and white fairy-wren (*Malurus leucopterus edouardi*), and the more common and widespread spinifexbird (*Eremiornis carteri*). All these species are relatively abundant on Barrow Island but were at some risk from land clearing and other activities associated with the Gorgon gas development. Golden bandicoots and spectacled hare-wallabies occurred on Hermite Island until the early 20th century, disappearing from the island after black rats (*Rattus rattus*) and feral cats (*Felis catus*) were introduced by the pearling industry. The black and white fairy-wren and the spinifexbird occurred as recently as the early 1950s but disappeared possibly due to a combination of rats, cats and the British atomic weapons tests undertaken on the island group between 1952 and 1956. By 2001, rats and cats had been successfully eradicated from Hermite Island and on the other approximately 180 islands in the Montebello group.



Spectacled hare-wallaby

Trapping and Translocation

The mammal translocation program commenced in January 2010 and was completed by the end of February. The trapping effort focused on the liquefied natural gas (LNG) construction footprint and adjacent areas, but additional trapping of hare-wallabies was undertaken around the Barrow Island airport to augment translocated numbers. A total of 165 bandicoots and 111 hare-wallabies were successfully trapped and translocated to Hermite Island.

All mammals were implanted with a PIT tag to provide an individual identity number. Weight, head and foot length, age, gender and reproductive status were also recorded. Biological samples (tissue, blood and scats) and ectoparasites were collected from a sub-set of each to provide a pre-translocation health and genetic reference. The mammals were individually bagged and labeled with sex, PIT number and other information such as presence of pouch young. Bags were placed either singly (hare-wallabies) or up to four individual bandicoots per pet-pack and were tied to the inside corners of the packs to prevent animals becoming entangled within the bag, rolling onto each other



during transit and to enhance air flow around the bagged animals. A helicopter that complied with the strict Barrow Island quarantine conditions was chartered to transport animals from Barrow Island to Hermite Island; all mammals were released successfully within 24 hours of their initial capture.

The bird translocation program was undertaken in May 2010 and again in July 2011. Some focused mist-netting was undertaken within the LNG development site, but disturbance was high and there was little bird activity. As a result, the majority of birds were caught in the southern and western parts of Barrow Island. All 37 fairy-wrens



Spinifexbird. Photo: Ryan Ellis

and 47 spinifexbirds that were translocated were marked with metal leg bands, and morphometric measurements and blood samples taken. Birds were held in specially constructed cardboard boxes, given supplementary water and feed (live termites). All birds were transported to Hermite Island via helicopter, and released within 48 hours of their initial capture. Monitoring of the translocated species commenced immediately and has been undertaken regularly since their release.

Findings

All translocated species have established on Hermite Island. Bandicoots now occupy all of Hermite Island and regularly cross to Buttercup Island, which is connected to Hermite at low tide. Monitoring undertaken in September 2013 showed that the number known to be alive on the monitoring grids was 261 individuals and they continued to maintain body weight (Figure 1). It is estimated that there are in excess of 1400 golden bandicoots on Hermite Island. Nineteen bandicoots were trapped on Buttercup Island.

Monitoring of hare-wallabies has been problematic due to trap saturation by bandicoots. Only thirteen individual hare-wallabies were captured during September 2013. However, males were on average 24% and females 27% heavier than their release weights, and 75% of captured females either had pouch young or were lactating. Track surveys indicate that the hare-wallabies have radiated out from release sites and now occupy most of Hermite Island.

Annual monitoring has shown that both bird species have expanded their ranges well beyond the release sites, and spinifexbirds have made their way to nearby Renewal Island. At least 27 separate groups (minimum average group size = 2) of fairy-wrens and more than 150 spinifexbirds have been detected. At least 80% of fairy-wrens observed, and 96% of spinifexbirds, were not banded indicating that both species are breeding and surviving well.

Management Implications

This work has demonstrated the value of islands for fauna conservation in WA, and that chances of successful translocations are greatly improved once threats (in this case predation and competition by cats and black rats) have been controlled or eradicated. It is important that biosecurity protocols are developed and implemented to ensure that pest animals (and additional weeds) are not again introduced to the Montebello Islands. The reconstruction of the fauna on Hermite Island has also resulted in the establishment of additional populations of three threatened fauna species and a reduction in the risk of their extinction. These species will return some of the ecological processes associated with digging and grazing to Hermite Island and improve the resilience of the island's habitats. This project has also provided an opportunity to develop more effective means of monitoring translocated populations in remote areas. The natural spread of the birds around the archipelago will also be monitored and provide information on the natural rate of spread for mobile species in archipelagos. Recent assessment of the genetic diversity of golden bandicoots on Hermite Island (Ottewell *et al.* 2014) shows that there is likely to be erosion of genetic diversity over time and that supplementation of the population with additional animals from Barrow Island will be required.

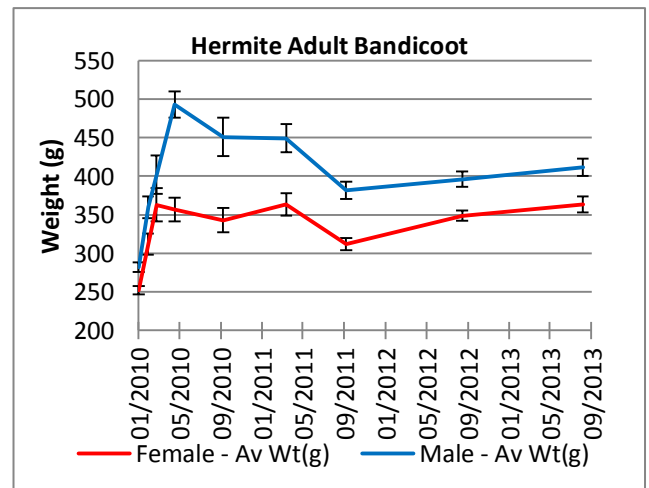


Figure 1: Average adult body weight (\pm SE) of golden bandicoots on Hermite Island since initial reintroduction.

Ottewell K, Dunlop J, Thomas N, Morris K, Coates D, Byrne M (2014). Evaluating success of translocations in maintaining genetic diversity in a threatened mammal. *Biological Conservation* 171: 209-219.