Montebellos **thriving**

Four years after locally extinct mammals and birds were reintroduced from Barrow Island Nature Reserve to Hermite Island there are some very encouraging results. A conservation-introduced newcomer, the boodie, is also making incredible bounds on Alpha Island.

by Sean Garretson

Our long-sleeved shirts and pants stick to us like wet dish rags, far from living up to their 'breathable' sales claim. Nor are they 'tough' or 'protective' when matched against the dreaded spinifex grass spines that inevitably penetrate from every angle. But the reality of the harsh Pilbara sun and menacing vegetation does little to deter those who hunger to work on this beautiful island ark; those who long to contribute to history in the making by lending a helping hand as part of the Department of Parks and Wildlife's *Western Shield* fauna recovery program initiative – Montebello Renewal (see 'Montebello Renewal', *LANDSCOPE*, Summer 1996–97 and 'New island home', *LANDSCOPE*, Summer 2010–11). This project aims to right the wrongs of the past by re-establishing long-lost populations of animals with physiological characteristics and adaptive behaviours honed to this environment. They are, afterall, the rightful residents of the Montebello Islands.

In September 2013, the team – made up of six experienced Parks and Wildlife staff from across the State – trudges onward. We each haul several bulky Thomas traps, hessian trap covers and Sheffield cage traps up the hillside to one of two predefined trapping grids on Hermite Island. We wedge the traps amongst spinifex clumps or in the shade of an *Acacia coriacea* thicket, doors ajar, in the hope that a nocturnal marsupial will be lured by the odiferous morsels of freshly chopped apple and carrot or gooey golf-ball-sized peanut butter and oat bait placed in the back of the trap.

THE LATEST CHECKUP

Hermite Island is in the Montebello Islands Conservation Park, 130km west-north-west of Dampier and 20km north of Barrow Island along the Pilbara coast. Since translocations were carried out in 2010 and 2011, specialist teams have been visiting to check on the once-locally-extinct and now threatened golden bandicoot (*Isoodon auratus barrowensis*), spectacled hare-wallaby (*Lagorchestes conspicillatus conspicillatus*) and two birds – the Barrow Island black and white fairy-wren (*Malurus leucopterus edouardi*) and the more common and widespread spinifexbird (*Eremiornis carteri*), which were reintroduced to the 1020ha island as part of the Gorgon gas development offset-funded fauna translocation program (see 'Giant steps: industry and conservation make history through Gorgon', *LANDSCOPE*, Winter 2010). The mammals owed their disappearance in the early 20th century to black rats (*Rattus rattus*) and feral cats (*Felis catus*), which likely arrived with pearlers who operated on the islands in the 1890s. The two bird species persisted until the early 1950s when they became locally extinct likely due to a combination of black rats, cats and the three British atomic weapons tests undertaken on the island group in 1952 and 1956. Now, in a new era with decades of hindsight and a greater understanding of the natural processes that occur there, we are actively reconstructing the fauna in the island group and helping to ensure the survival of these species against a multitude of threatening processes. With cat and black rat eradication efforts successfully undertaken in the 1990s, rejuvenation has begun (see 'Isle of cats', *LANDSCOPE*, Autumn 2000).

MAMMAL MONITORING ON HERMITE ISLAND

One of the objectives of our September 2013 trip to Hermite Island was to capture and then release a number of golden bandicoots and spectacled hare-wallabies to assess the overall health of these populations. We set 105 traps, consisting of Elliott, Sheffield cage and Thomas traps, for four nights at each of the two trapping sites. Each morning we checked the traps and collected and compared precise measurements and annotations such as animal weight, body condition, age classification, reproductive status, head and foot length, and ectoparasite load. We also collected a small ear tissue sample for genetic analysis and inserted a unique passive integrated

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Main Montebello Islands.
Photo – David Bettini
Inset Parks and Wildlife staff gently release a spinifexbird with a leg identification band onto Hermite Island.

Above Abundant spinifex grass (*Triodia* species) on Hermite Island.
Photos – Sean Garretson/Parks and Wildlife

Above right Golden bandicoot.
Photo – Judy Dunlop/Parks and Wildlife

Right Parks and Wildlife staff prepare to measure a golden bandicoot with pouch young.
Photo – Brad Daw/Parks and Wildlife

"To our delight, more than 40 per cent of traps contained one of the mammals each morning"

transponder (or PIT tag), about the size of a grain of rice, under the skin of the animals to provide a permanent way of identifying them.

When compared with data previously collected over successive months and years, this information can help us identify trends and develop a better understanding of the health of the populations and the variables that affect the animals.

To our delight, more than 40 per cent of traps contained one of the mammals each morning (representing 342 captures). Captured animals of both species were overwhelmingly classified as healthy and represented all age groups, as was the case with trapping endeavors in previous years. Furthermore, 86 per cent of all individual adult female golden bandicoots and 86 per cent of spectacled hare-wallabies captured showed signs of recent reproduction. Many animals of both species were captured and recorded for the first time, demonstrating successful breeding on the island probably due to adequate food and refuge availability. This was further indicated by the dramatic increase in average adult bandicoot weight – more than 31 per cent (with a peak increase of nearly 43 per cent) – since 165 founding animals were introduced to the island in 2010. Based on the available information, we now estimate the golden bandicoot population exceeds 1400 individuals.

There was also a considerable increase in average adult spectacled hare-wallaby

Left Buttercup Island.
Photo – Sean Garretson/Parks and Wildlife

Below left The sandbar between Hermite and Buttercup islands at low tide enables golden bandicoots to travel between the two islands.
Photo – Judy Dunlop/Parks and Wildlife

weight of more than 20 per cent (with a peak increase of more than 28 per cent) since the reintroduction. Interestingly, two female and two male spectacled hare-wallabies captured in September 2013 were members of the original 111 spectacled hare-wallabies reintroduced to Hermite Island in 2010. We are pleased to report that both females had pouch young, three of the four individuals had gained considerable weight since release onto the island, and all were in good condition.

SELF-COLONISING BUTTERCUP ISLAND

There was considerable excitement in October 2011 when we initially detected golden bandicoot tracks on Buttercup Island – a 6ha area located 250m south-east of Hermite Island along Fish Lagoon. Presumably the bandicoots were driven by a curious desire to explore new territory in search of resources and mates, or by the need to escape an incoming tide while foraging on the intertidal sand flats that often join the two islands during low spring tides. Either way, monitoring has demonstrated they are thriving on Buttercup Island.

The September 2013 monitoring on Buttercup Island employed 15 Elliot and Sheffield cage traps set in a transect along the island for four nights. While only one marked bandicoot has been recorded travelling back and forth between Hermite and Buttercup islands, the number of individuals captured on Buttercup each year has increased dramatically from five in October 2011, 13 in September 2012, to 19 in September 2013. Four of the animals captured in 2011 were previously unrecorded, compared with 10 in 2012 and 13 in September 2013. Interestingly, none of the individual golden bandicoots captured in 2011 were female, compared to four in 2012, and 12 in 2013. Of the individual adult females captured, two were carrying pouch young in 2012, while nine showed signs of recent breeding in 2013. Over time, a proportional decrease in new individuals and breeding females may indicate that the golden bandicoot population on the relatively small Buttercup Island is approaching the carrying capacity, based on the availability of resources and competition. However, the available data, including the excellent health of all the bandicoots captured on Buttercup in 2013, suggests the current residents are finding ample food and shelter. To date, no signs of spectacled hare-wallabies have been detected on the island.

MYSTERIES OF THE ELUSIVE SPECTACLED HARE-WALLABY

While golden bandicoots are clearly flourishing on Hermite and Buttercup islands, the health and distribution of the spectacled hare-wallaby population is not as clearly understood because of low capture rates. This is exacerbated by the fact that traps capable of capturing hare-wallabies are often quickly occupied by bandicoots, which overwhelmingly

Above left Parks and Wildlife staff release a spectacled hare-wallaby after early-morning processing.
Photo – Judy Dunlop/Parks and Wildlife

Above A spectacled hare-wallaby surveys the area after being released.
Photo – Brad Daw/Parks and Wildlife

outnumber the hare-wallabies. As a result, we have trialed additional methods to help provide more accurate occupancy and relative abundance estimates for hare-wallabies on the island. In one such trial in September 2012 we set up 12 unbaited camera traps along the southern half of Hermite Island for eight nights. While the cameras yielded many images of hare-wallabies, some photographing multiple animals of varying age classes at once, the scope of the trial was very limited. We plan to more than triple the number of camera traps used and set them up across the whole island for two months in late 2014 (see 'Camera traps: paparazzi in the bush', *LANDSCOPE*, Summer 2010–11).

In addition to camera trapping, we have carried out annual track and scat surveys at a number of beach, foredune and inland areas on Hermite Island since 2010. These surveys have consistently demonstrated that both spectacled hare-wallabies and golden bandicoots have radiated out from their initial release sites and now likely occupy all suitable habitat across the island. Furthermore, while spectacled hare-wallaby captures are relatively infrequent at trapping sites, several individuals were inadvertently flushed from relatively distant refuges across the island nearly every day during monitoring sessions in 2011, 2012 and 2013.

The results of these surveys are promising, but we still face significant challenges in our effort to effectively assess the health of the spectacled hare-wallaby population on the island.

BIRD MONITORING

Monitoring black and white fairy-wren and spinifexbird populations on Hermite Island and exploratory surveys on several nearby islands were undertaken by Parks and Wildlife bird specialists and experienced volunteers each year from 2010 to September 2013 following their translocation from Barrow Island in 2010 and 2011. Observers used aural and visual cues to detect these semi-cryptic species, sometimes using recorded calls in the hope of evoking a vocal or physical response from the target species. Following species identification, observers relied on binoculars to determine if the bird was marked with a metal leg band. Since each of the 37 black and white fairy-wrens and 47 spinifexbirds translocated to Hermite Island received a permanent leg band before being released, those without bands are new to the population. While variations in breeding plumage and bill color can enable observers to determine the sex and approximate age of fairy-wrens (mature males are glossy black with a white patch on the wings and females and immature males are pale brown), no similarly conspicuous distinction exists among spinifexbirds, whose plumage retains a reddish-brown colour across both sexes.

The latest monitoring confirmed that both species have expanded their range well beyond their release sites and now occupy most of the suitable habitat across Hermite Island. In addition, spinifexbirds have self-colonised nearby Renewal Island which is separated from Hermite by a narrow channel in the archipelago's south-east. At least 27 separate groups of black and white fairy-wrens and more than 150 spinifexbirds were detected. At least 80 per cent of fairy-wrens observed, and 96 per cent of spinifexbirds, were not banded, indicating that both species are successfully breeding.

BOODIES HIT ALPHA ISLAND

By the mid-20th century, boodies or burrowing bettongs (*Bettongia lesueur*) were likely driven to extinction on the Australian mainland by predation from foxes (*Vulpes vulpes*) and feral cats. The Barrow Island boodie subspecies

Above Conducting a health check on a male Barrow Island black and white fairy-wren prior to translocation.
Photo – Neil Hamilton/Parks and Wildlife

Above left Spinifexbird.

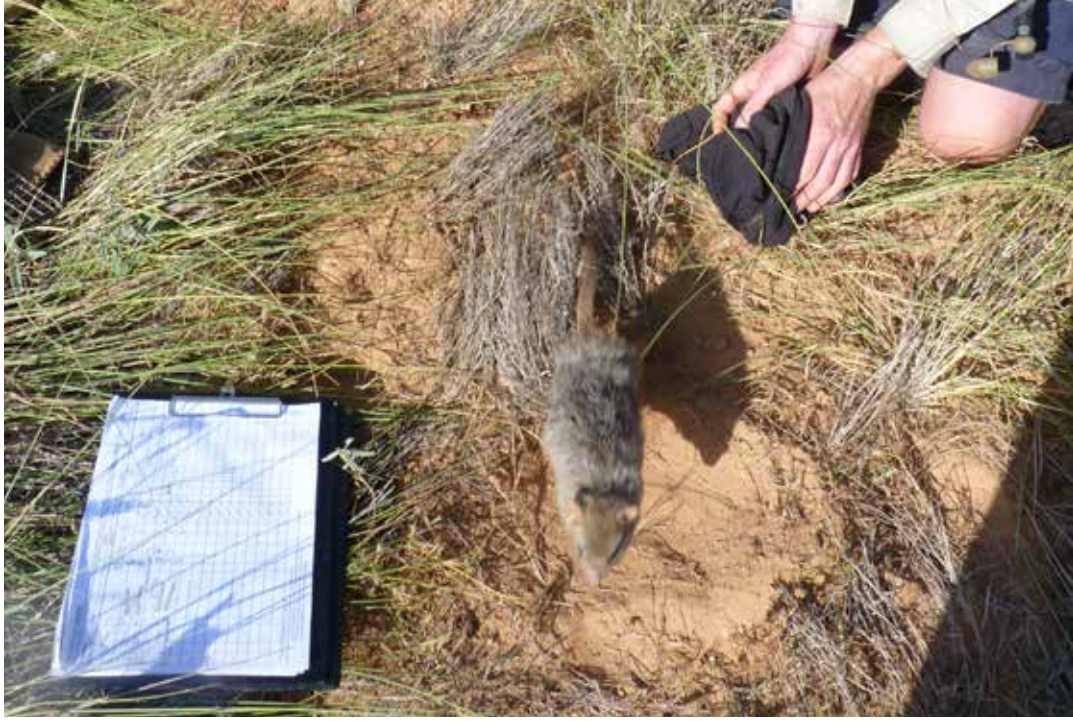
Left Parks and Wildlife staff prepare to release birds onto Hermite Island following a short helicopter ride from Barrow Island.
Photos – Judy Dunlop/Parks and Wildlife

(Bettongia lesueur unnamed subsp.) is now listed as rare or likely to become extinct, but remains locally abundant on several offshore islands in WA, including Barrow Island, and within a 1100ha predator-proof fenced enclosure at Lorna Glen proposed conservation reserve. In June 2011, department staff translocated 40 boodies from Barrow Island to the 110ha Alpha Island, which is located in the northern half of the Montebello archipelago. While there is no evidence that boodies previously occupied Alpha Island, it was considered a suitable introduction site because it lies within the same biogeographical region as Barrow Island and its habitat is consistent with other areas that support established wild boodie populations. The habitat on Alpha is made up of vast areas of spinifex, *Acacia* coriacea thickets, sandplains dominated by buffel grass (Cenchrus ciliaris) and calcrete, and limestone outcrops, which the gregarious and nocturnal boodies excavate into vast and complex underground warrens.

Since the release, we have monitored the island twice a year and all evidence suggests the boodies are well on their way to successfully establishing on Alpha. Of the 46 individuals known to be alive in September 2013, 34 were new and six were founders, of which four were females and two were males. Furthermore, the average adult boodie weight had increased more than five per cent (with a peak increase of more than 12 per cent) and recent breeding was evident with 16 of the adult females carrying pouch young. All animals were in good condition.

WARREN MAPPING AND MONITORING

Additional work has been done to assess how Alpha Island is being colonised by boodies and to determine whether warren usage can be used to more accurately estimate the occupancy and relative abundance of boodies on the island. In April and September 2013, we systematically walked across the island identifying and mapping 90 potential warren systems comprising 301 entrances, each displaying some degree of recent excavation. Following the September survey, we deployed 20 unbaited camera traps in positions capable of monitoring all known entrances to three of the larger



Right A boodie bounds away after close examination on Alpha Island.
Photo – Brad Daw/Parks and Wildlife

Below Parks and Wildlife staff descend through spinifex on Alpha Island.
Photo – Judy Dunlop/Parks and Wildlife

and more recently discovered warrens. Surprisingly, only several images captured from a single camera demonstrated that a boodie sheltered in one of the three warrens during the day. Although a plethora of superficial activity existed at many of these recently discovered warrens, as evidenced by large, freshly excavated debris mounds, boodie tracks and heavily-used pathways, the exercise suggests boodies are not yet regularly using these warrens for shelter. It remains unclear whether this is due to the particular warren conditions being unsuitable, the possibility that a high degree of superficial activity does not necessarily equate to warren use, the relative abundance of human activity in the area during the monitoring session, or a combination of these and other unknown factors. As a result, more extensive and possibly varied monitoring techniques will be considered later this year.

HOPE FOR THE FUTURE

It is hoped that, given the chance to establish, these thriving island populations will, one day, follow the success of the mala or rufous hare-wallaby (*Lagorchestes hirsutus* central Australian subsp.) on Trimouille Island and djoongari or Shark Bay mouse (*Pseudomys fieldi*) on North West Island in the northern half of the archipelago, which were introduced in 1998 and 1999, respectively. After the mala and djoongari were established, their flourishing island populations were used to source reintroductions to Lorna Glen in 2011 and 2012. The progeny of those animals will likely play a major role in restoring biological diversity and ecosystem health to nearly 600,000ha of rangelands in the north-eastern Goldfields as part of the ongoing *Operation Rangelands Restoration* program. Likewise, it is hoped that one day some of the other threatened mammal and bird species of the archipelago will provide stable and healthy source populations for other island and mainland sites. Additionally, the success of these translocations to the Montebellos may pave the way for a future reintroduction of the rakali or native water rat (*Hydromys chrysogaster*) and translocations of other threatened and priority species to the archipelago.

While the current course of action proves invaluable to future translocation efforts through the development and refinement of techniques, and scientific knowledge and experience gained, it also provides some insurance against known and unforeseen dangers which threaten these species. Simultaneously, these species will likely improve ecosystem health and the mammals will return some of the ecological processes associated with their grazing and digging on the islands.

So, as we climbed aboard the pickup charter, weary, but satisfied, we could not help but feel optimistic for the future of the species now returned home.

Sean Garretson is a Parks and Wildlife technical officer who has been involved in various animal research programs undertaken throughout Western Australia since 2007 and has provided critical support to fauna translocation and island eradication efforts since 2010. He can be contacted on 0439 947 924 or by email (sean.garretson@dpaw.wa.gov.au).