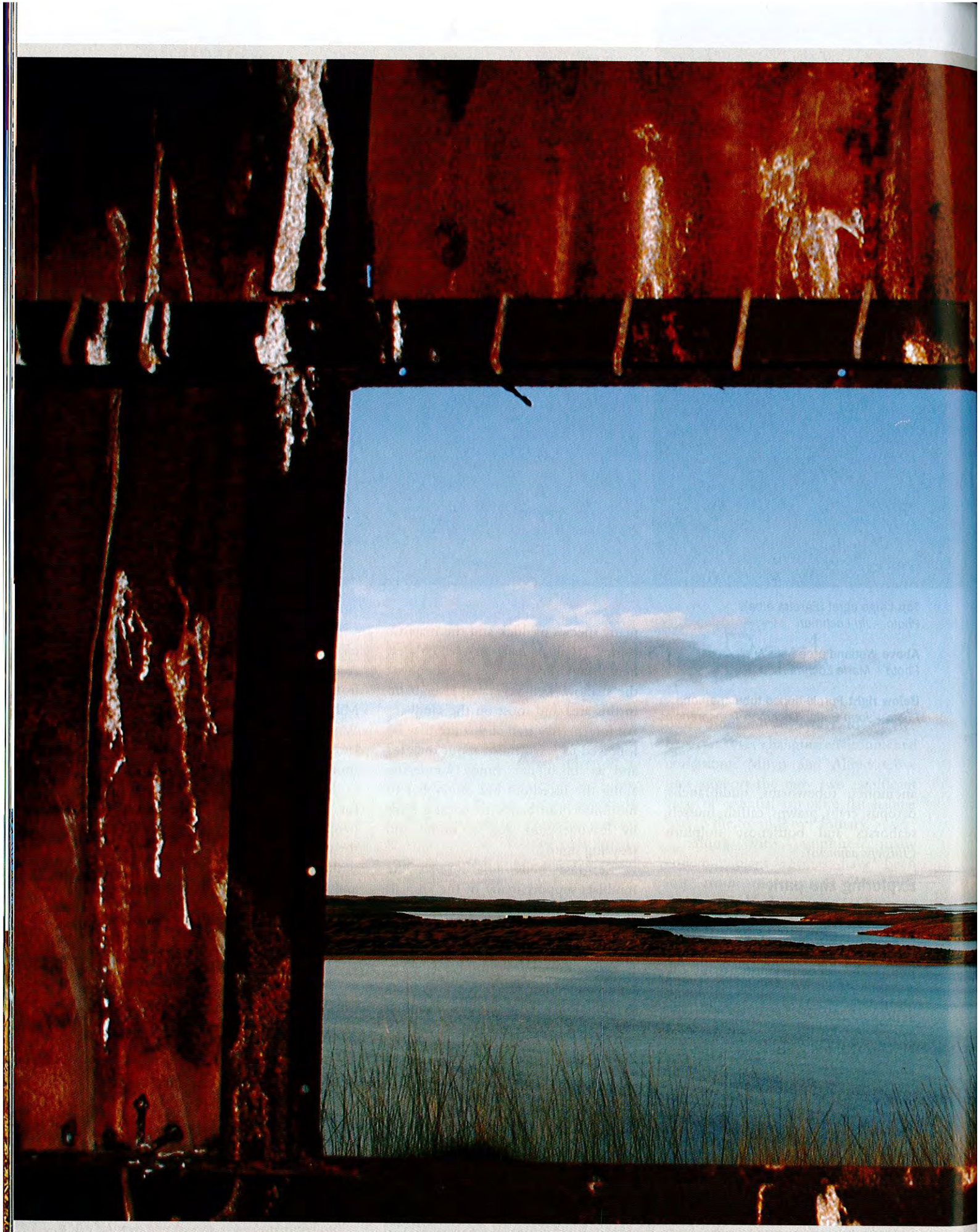


by Brent Johnson

New island home

Few would guess that islands once used to test atomic bombs would become refuges for threatened species. Populations of mammals and birds recently translocated to Hermite Island, in the Montebello Islands group in the state's north-west, are so far thriving in their new homes.

At precisely 8am on 3 October 1952, a momentous flash and closely following roar shattered the tranquility of a little-known island group 120 kilometres off the Pilbara coast in northern Western Australia. After one second, the mushroom cloud had reached 500 metres into the sky and after about four minutes had billowed past 3,000 metres. Following the massive impact of the supersonic pressure wave, large amounts of sand, water and solid fragments of warship fell across much of the nearest island. To most observers, this was a unique and awe-inspiring event:

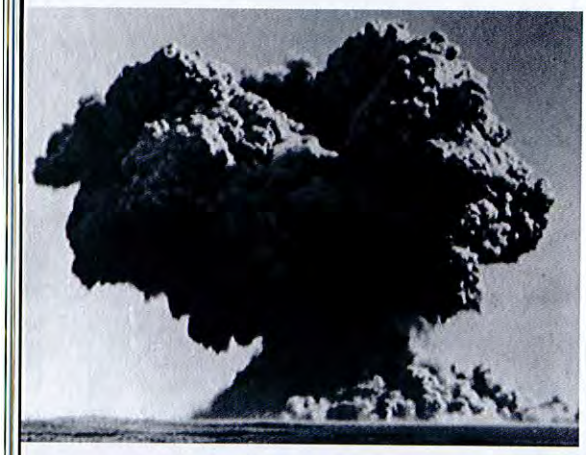
"At the end of the countdown, there was a blinding electric blue light, of such an intensity I had not seen before or ever since. I pressed my hands hard to my eyes, then, realised my hands were covering my eyes. This terrific light power, or rays, were actually passing through the tarpaulin, through the towel, and through my head and body, for what seemed ten to twelve seconds, it may have been longer. After that, the pressure wave [hit], which gave a feeling such as when one is deep underwater. This was then followed by a sort of vacuum suction wave, to give a feeling of one's whole body billowing out like a balloon."

Anonymous observer

The first British atomic bomb test, codenamed 'Hurricane', had just been conducted on Australian soil. Great Britain was now a nuclear power as it strived for equal footing on the world stage with the USA and Russia.

Blasted to fame

This virtually unknown island group was now front-page news and the name Montebello would become well known to that cold war generation following two more tests, codenamed 'Mosaic' in May and June 1956.



While the Hurricane test had involved the atomic weapon being placed below the waterline in HMS *Plym*, an aging British Navy frigate, the Mosaic devices were mounted on towers situated on Trimouille and Alpha islands, within the Montebello Islands group. The later explosion officially yielded 60 kilotons (an explosive force equal to that of 60,000 tonnes of TNT), with some estimates of up to 98 kilotons, and created a 15,000-metre-high mushroom cloud. It was the largest atomic test in Australia and was about five times bigger than the devastating atomic bomb dropped on Hiroshima in 1945.

After these tests, the Montebello Islands remained a prohibited area and the frenetic military activity and tumultuous events faded into history, allowing the area to slowly recover with little human intrusion. In 1992, the Commonwealth Government decided to hand control back to the WA authorities as radiation hazard assessments had given assurances that residual radiation levels had fallen and most of the islands were safe for human visitation. It was considered the ground zero areas should have ongoing limited access.

The intervening years had seen the islands visited mainly by commercial and recreational fishing boats and pearl

Previous page
Main The ruin of the British atomic testing observatory stands sentinel over the islands.
Photo – Judy Dunlop/DEC

Above left The Hurricane test of 1952 was the first of three atomic detonations at the Montebellos.
Photo – courtesy British Government archives

Left Montebello Islands.
Photo – David Bettini

farm operators. The area's isolation, lack of facilities and landing restrictions confined most visitors to boat-bound activities. Cyclonic activity also is a seasonal consideration for visitors. In recent times, cruising yachts and charter vessels have become a more familiar sight in the numerous calm anchorages.

There has also been a dramatic increase in interest and activity in gas and oil exploration throughout the surrounding area. The islands lie within the Northwest Shelf oil and gas production zone and are now surrounded by industry infrastructure that supports this highly valuable industry.

Subsequently, the numerous islands and islets that comprise the group have become Montebello Islands Conservation Park and the surrounding waters a marine park (see 'Montebello and Barrow Islands Marine Conservation Reserves', *LANDSCOPE*, Winter 2004). The islands are vested with the Conservation Commission of Western Australia, and the marine reserves with the Marine Parks and Reserves Authority. All are managed by the Department of Environment and Conservation (DEC). The terrestrial and marine reserve areas are managed in a complementary way, involving close cooperation between agencies, including DEC and the Department of Fisheries.

Above Intertidal mudflats can link some islands at low tide.
Photo – Judy Dunlop/DEC

Right Alpha Island was the site of the largest atomic test conducted on Australian soil.
Photo – Brent Johnson/DEC

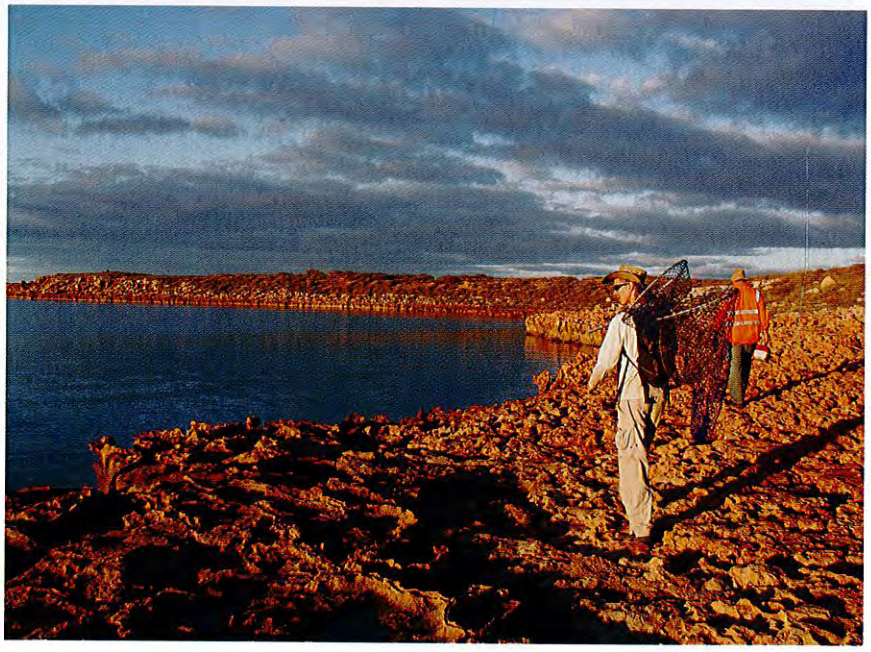
Conservation beginnings

Long before the atomic testing, the original mammal fauna of the islands had suffered local extinction or severe declines due to the introduction of feral cats (*Felis catus*) and black rats (*Rattus rattus*). In 1912, the Montague expedition to describe the natural history of the islands had predicted such extinctions when they detected the presence of cats on the islands. Black rats have been implicated in declines of breeding sea and land birds on islands throughout the world. It is thought both these destructive species arrived with the pearling vessels that visited the islands in the late 19th and early 20th century. Amazingly, they appeared to survive the atomic testing later on.

Those native animals that survived the nuclear weapons testing and introduction of exotic mammals included 21 terrestrial reptile species and more than 50 bird species. Despite anecdotal evidence that they suffered considerable population loss from radiation contamination, green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) turtles also commonly nest on the northern islands.

The then Department of Conservation and Land Management (CALM), one of DEC's predecessor departments, commenced the *Montebello Renewal* project in 1994, part of the statewide *Western Shield* fauna recovery program. The project for the Montebello Islands group was aimed at removing the threats to native fauna and ultimately returning some of the original species to the islands.

The first step was to eradicate the introduced black rats from every island. This involved coordinating materials, staff, helicopters and boats on a considerable scale. CALM *Montebello Renewal* project leader Dr Andrew Burbidge was responsible for this enormous planning and logistical task and, by 2001, the islands were declared rat free (see 'Montebello Renewal', *LANDSCOPE*, Summer 1996–97). During this period it was discovered that feral cats had persisted only on Hermite Island, the largest in the group. The last feral cat was removed from this island in 1999 following an intensive eradication program undertaken by DEC's Science Division.



Prior to the completion of these tasks, two native species had already been introduced to the Montebellos. Both Trimouille and North West islands had been cleared of rats in the first eradication work in 1996. Two years later, 30 mala, or rufous hare-wallabies (*Lagorchestes hirsutus*), were flown 1,500 kilometres from the Tanami Desert and released onto Trimouille Island and soon after, in 1999, djoongari, or Shark Bay mice (*Pseudomys fieldi*), were released onto North West Island. Subsequent monitoring of these two species has confirmed both colonies are thriving in their new environment and, in doing so, are providing excellent insurance for the ongoing wellbeing of these two threatened mammal species. It is expected these colonies may also provide source populations for more translocations.

Gorgon—the great Barrow airlift

The start of the Gorgon gas project on nearby Barrow Island, the biggest industrial development in Australia's history, was highly publicised (see 'Giant steps: industry and conservation make history through Gorgon', *LANDSCOPE*, Winter 2010). Well before approval was given for the project, negotiations were under way for the preparation of a Threatened Species Translocation and Reintroduction Program that would form part of the environmental conditions for final approval. Included in this were proposals to return the golden bandicoot (*Isoodon auratus*) and spectacled hare-wallaby (*Lagorchestes conspicillatus*) to Hermite Island in the Montebello group, along with two bird species that had also become locally extinct.

Top left This spinifexbird was fitted with an identification band prior to release on Hermite Island.

Centre left The use of helicopters was critical to the success of the translocations.

Left DEC officers Sean Garretson and Brent Johnson begin an early morning search for the released mammals.
Photos – Judy Dunlop/DEC

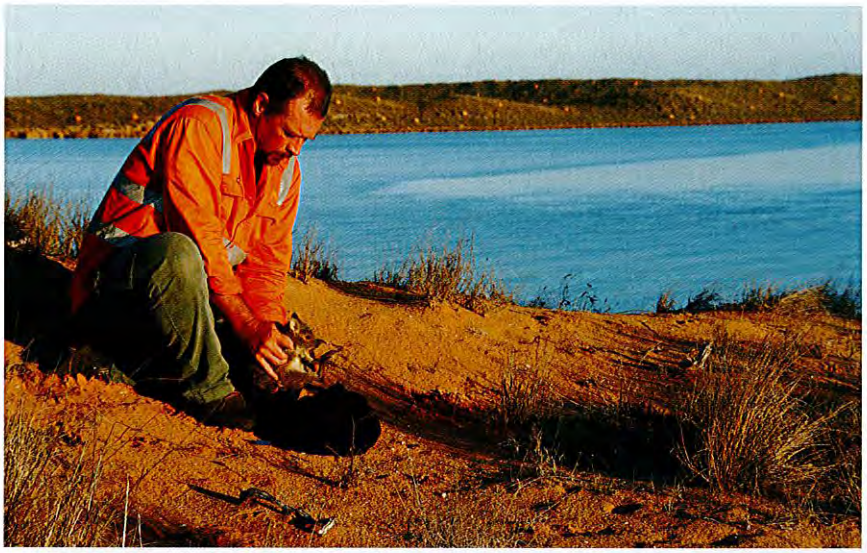
Hermite Island is just 20 kilometres from Barrow Island. The islands are within the same biogeographical region and have very similar habitat. The two birds—the spinifexbird (*Eremiornis carteri*) and black and white fairy-wren (*Malurus leucopterus leucopterus*)—along with golden bandicoots and spectacled hare-wallabies, are all abundant on Barrow Island and removal of the relatively small numbers required to start the translocation would have little detrimental impact on those populations.

At 1,020 hectares, Hermite Island is the largest island in the Montebello group and all four species were known to exist there before the arrival of cats and black rats. The island has a highly convoluted coastline, rugged terrain and no vehicle access. There is no fresh water, it has a low rainfall with occasional downpours from episodic cyclones and is very hot for much of the year. Much of the vegetation is low-lying spinifex with clumps of taller *Acacia*. Introduced buffel grass (*Cenchrus ciliaris*) is also present in areas disturbed by the British military in the 1950s. Good quality mangrove stands exist in some intertidal zones.

Accommodation and storage facilities were established on Hermite in the early 1990s for departmental staff working on the islands, although cyclones and corrosion have caused serious deterioration in recent times. Following refurbishment, these facilities were ideally suited to become the headquarters for the translocation program and ongoing management of the area.

Following the rapid mobilisation of qualified staff and equipment, fauna translocation teams proceeded to their assigned locations and tasks in late January 2010. The team on Barrow Island worked tirelessly during the four-week period capturing, selecting and processing mammal species found on the soon-to-be-cleared gas plant site. Golden bandicoots and spectacled hare-wallabies were transported by helicopter to Hermite Island at regular intervals throughout this period. By the end of this phase, some 161 bandicoots and 111 hare-wallabies had arrived safely at Hermite.

Then, each evening, the DEC fauna team on Hermite Island carried the new arrivals out to selected areas



Above right DEC researcher Brent Johnson prepares to release a spectacled hare-wallaby on Hermite Island.
Photo – Judy Dunlop/DEC

Right Spectacled hare-wallabies quickly found food and refuge upon release.
Photo – Adrian Wayne/DEC

Below Golden bandicoots have rapidly increased in number and colonised areas some distance from release sites.
Photo – Judy Dunlop/DEC

Above Dawn breaks over new beginnings at the Montebello Islands.
Photo - Brent Johnson/DEC

Below right Hermite Island.
Photo - Judy Dunlop/DEC

and, following another check on their wellbeing, released them into their new habitat. There were no deaths or injuries recorded during the transportation and release phase and all the mammals quickly started exploring their new surroundings.

The second phase, in May 2010, involved the capture and translocation of the two bird species. This was undertaken by DEC bird specialists and involved the capture and selection of suitable spinifexbirds and black and white fairy-wren individuals on Barrow Island followed by a short helicopter ride to Hermite. More than 30 individuals of each species were translocated in this first phase and follow-up monitoring will determine whether they establish populations on the Montebellos.

New life on Hermite

The released mammals were monitored throughout February and on subsequent visits, and, by a major monitoring session in May 2010, all radio-collars had been removed. Trapping of individuals showed significant weight gain by the two species, extremely high survivorship and strong breeding activity. Weight gains in particular have been remarkable. Many golden bandicoots doubled their body weight in the first three months. The population average weight of this species upon release was 240 grams and, by May 2010, had increased to 430 grams, an 80 per cent increase.

Members of the bandicoot family and several other native mammals are known to be excellent ecosystem engineers, creating soil disturbance and improving water nutrient recycling which is highly desirable for landscape productivity. The long-undisturbed topsoil of Hermite Island quickly showed signs of such activity, with tracks, droppings and diggings becoming apparent within weeks. Some animals explored considerable distances while others stayed within the vicinity of their release site. Both species have been recorded in all habitat types present on the island, except mangroves. All these indicators suggest that there is abundant food on the island and almost no competitors for resources. Likewise, predators are limited to native species such as goannas and raptors and these appear to have had little or no impact at this stage.

Renewal

While these translocations are still in their infancy, early evidence suggests that they will be successful. Should some catastrophe befall populations on Barrow Island, Hermite Island should provide additional secure populations of spectacled hare-wallabies, golden bandicoots and the two bird species.

The translocation also fulfills the responsibility to return native species to parts of their former range once all threats have been removed and the habitat allowed to sufficiently recover. It is hoped that the species' integral roles in landscape productivity and natural cycles will help in the complete restoration of the Hermite Island ecosystem.

The Montebello Islands have endured some of the greatest impacts of any place on Earth, and yet the cycle of recovery and renewal is no longer a vision but a reality.

Brent Johnson is a Department of Environment and Conservation (DEC) principal technical officer undertaking fauna conservation on the Montebello Islands. He can be contacted at DEC's Wildlife Research Centre in Woodvale on (08) 9405 5106 or by email (brent.johnson@dec.wa.gov.au).

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