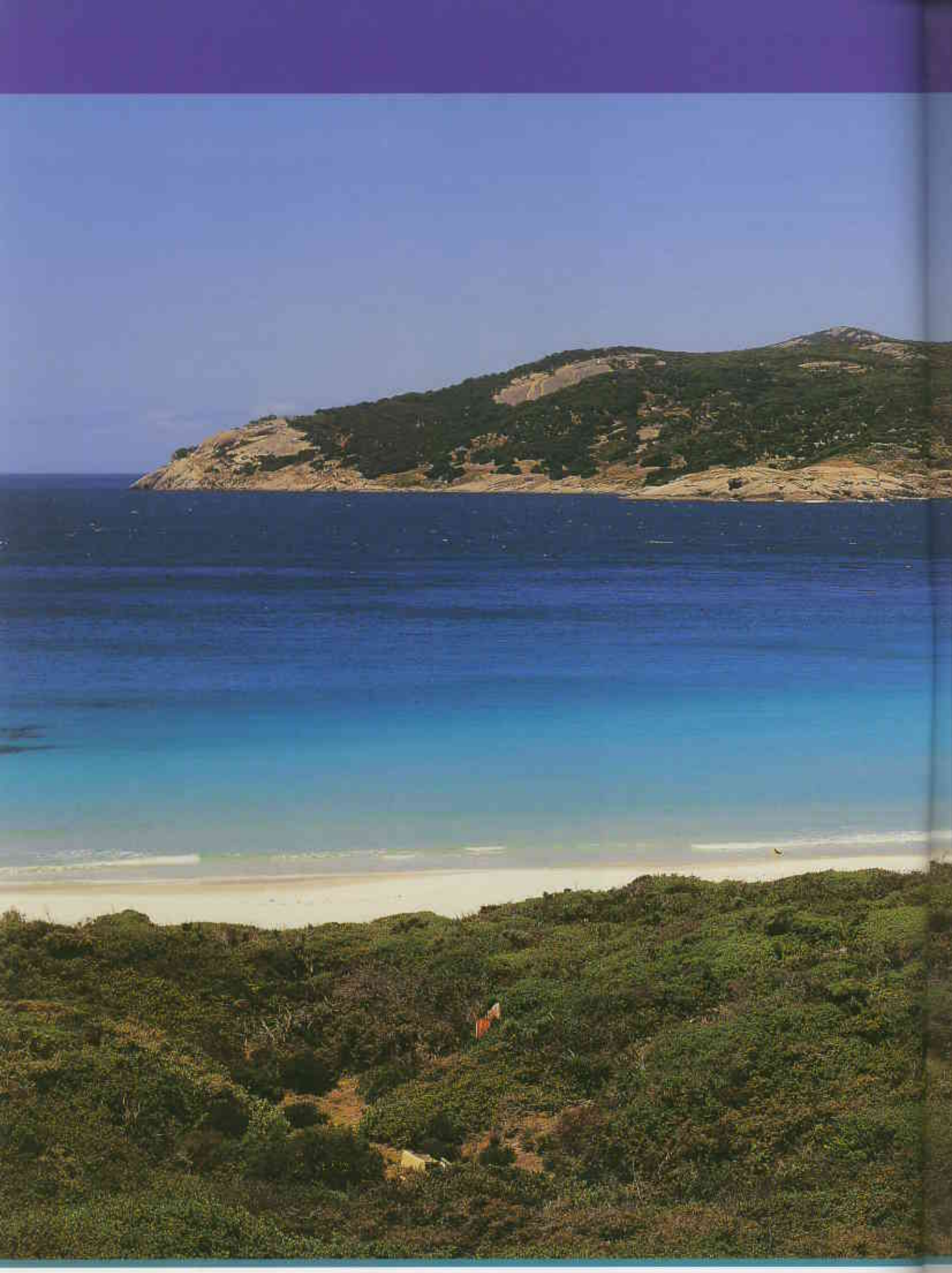
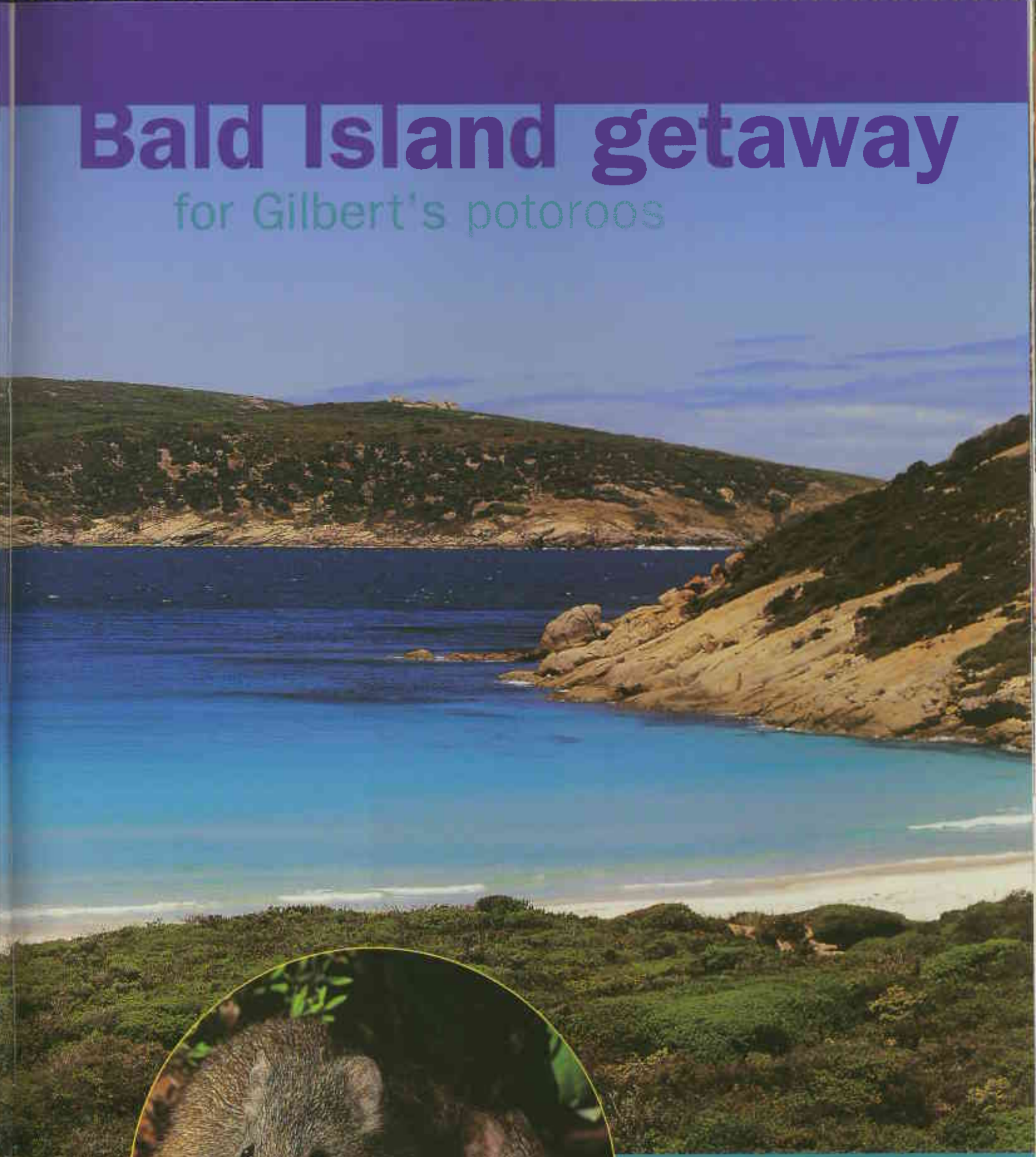


Bald Island getaway

for Gilbert's potoroos



An island interlude for two critically endangered Gilbert's potoroos has given new hope for the recovery of the species.

by Tony Friend, Stephanie Hill and Tim Button

The Gilbert's potoroo (*Potorous gilbertii*) is one of the world's most endangered mammals, existing in only one population of 30 to 40 individuals. Since the species was rediscovered in 1994 at Two Peoples Bay Nature Reserve east of Albany, surveys along the south coast have failed to find any more populations. The population on the slopes of Mount Gardner is very vulnerable to a catastrophe such as a wildfire, so the establishment of another population is an urgent priority.

While research into means of breeding enough potoroos to set up another population is underway, it is important to evaluate possible reintroduction sites. An island has advantages over a mainland site, both in terms of protection from foxes and cats, and because precious animals released on the island are naturally contained. With so few potoroos available, a translocation to a mainland site like nearby Mount Manypeaks would require the construction of an enclosure, fire protection and regular inspection and maintenance of the fence.

Islands have played a special role in the conservation of Western Australia's mammals. Larger islands like Barrow, Bernier and Dorre have preserved suites of mammals that are now very rare or extinct on the mainland following the introduction of foxes, cats and altered land management practices. Other islands have the potential, as a last resort, to support colonies of highly threatened species facing extinction on the mainland. In recent years, there have been conservation introductions of mala to Trimouille Island in the Montebellos, dibblers to Escape Island off Jurien Bay and Shark Bay mice to North West Island in the Montebellos.

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Main Bald Island, from the mainland near Cheyne Beach.
Inset A Gilbert's potoroo (*Potorous gilbertii*) with its young.

Below left Gilbert's potoroos are known from only one population at Two Peoples Bay near Albany.
Photos – Jiri Lochman

Bald alternative

Bald Island—the largest island off the south coast of WA—is an obvious candidate for a translocation of Gilbert's potoroos. This 809-hectare granite island, off Cheyne Beach, rises steeply from the sea on all sides to an altitude of 310 metres. It is separated from the mainland by a 1.5-kilometre-wide channel, and there is no easy landing.

Although the island's geology and soils are very similar to the adjacent mainland, the vegetation is very different, due mainly to the long time that has elapsed since a fire. Impressive stands of Rottnest tea-tree (*Melaleuca lanceolata*), up to 12 metres tall, occur on limestone on the more protected north-easterly slopes of the island, and some very large Bald Island marlocks (*Eucalyptus conferruminata*) grow on the granite slopes. Extensive stands of peppermint (*Agonis flexuosa*) occur on the sheltered side, near the top of the main ridge, mainly open beneath with grass and sedge tussocks. Most of the island, however, is covered with an open heath of variable composition, or a low closed heath dominated by small-leaved tea-tree (*Melaleuca microphylla*). Large granite surfaces make up much of the main ridge and the exposed southern and western slopes.

The sandy soils in the northern half of the island provide breeding areas for great-winged petrels, which raise their young in burrows. From dusk to dawn through autumn and winter, the calls of these colonial birds create a constant and not particularly restful background noise. Noisy scrub-birds were introduced to Bald Island from Two Peoples Bay in 1992 and have now established there. Fifteen other species of land bird, five lizards and a burrowing frog are known from the island, but there were some discrepancies in the lists of mammals recorded in previous surveys.

Bald Island is the only island apart

Above The main ridge of Bald Island features granite outcrops interspersed with closed-heath vegetation.
Photo – Tony Friend/CALM

Right Noisy scrub-birds were introduced to Bald Island from Two Peoples Bay in 1992.
Photo – Babs and Bert Wells/CALM

Below right Like Rottnest Island, Bald Island harbours a thriving quokka population.
Photo – Jiri Lochman

from Rottnest with a quokka population, but there were suggestions that other mammals might also be present. Previous trapping surveys had concentrated on the northern part of the island near the easiest landing point. One report suggested that diggings frequently found on the island may have been made by bandicoots. In addition, a specimen of the bush rat in the WA Museum was listed as being collected from Bald Island. There had also been speculation that the island might have a remnant population of the Gilbert's potoroo and, in 1976, a limited trapping survey for potoroos was carried out.

The Gilbert's Potoroo Recovery Team supported the idea of assessing Bald Island as a possible introduction site for Gilbert's potoroos. The first phase of our evaluation involved a hair-arch (small arches of flexible plastic sheeting held in shape by bent fencing wire through which animals move, leaving

Left Tony Friend releases the male potoroo after it was recaptured to monitor its health and condition.
Photo – Stephanie Hill/CALM

Below left The animals were radio-tracked every day for five weeks.
Photo – Tim Button/CALM

Below Nest site locations were recorded and mapped by GPS.
Photo – Tony Friend/CALM

behind hairs that reveal their identities) to resolve questions about the mammals on the island (see 'Gilbert's potoroo eight years on', *LANDSCOPE*, Autumn 2003). A visual assessment of the habitats available, and searches for underground fungi were also undertaken. During the second phase, we planned to temporarily release a small number of potoroos onto the island and then monitor them intensively to determine whether they could find food and suitable habitat and maintain themselves for four to six weeks. Temporary releases were proposed in winter and in summer. It was our intent to carry out the winter trial first, followed by a summer trial (when less food would be available) if it went well.

During 2004, we conducted a mammal survey using baited hair-traps spread widely around the island in dense vegetation associations. As these surveys revealed only the presence of quokkas, it seems likely that the early record of the bush rat was collected on the mainland opposite Bald Island.

Most of our trips to the island had been during dry periods, and no truffles had been found. However, fungal spores were present in scats collected from quokkas in winter.

The vegetation was less dense at ground level than habitat used by Gilbert's potoroos on Mount Gardner. There were, however, extensive areas of *Lepidosperma* sedges, particularly downslope from large granite surfaces. A release site was chosen in one of these dense areas.

Potoroo pioneers

The trial release of potoroos on Bald Island was approved in February 2005 following a devastating wildfire at Mount Manypeaks in the previous month. Because this fire had highlighted the potoroo's precarious status, should a similar wildfire take hold at Mount Gardner, it was decided to carry out the first release in summer, giving the potoroos the tough test first. A male and female potoroo were captured on Mount Gardner and taken into captivity for a few days, so they could be wormed and have external parasites removed, and enable them to pass fungal spores out of their bodies so they would not introduce alien species of fungi to the island.

We shifted our equipment, camping gear, food and water from Cheyne Beach by helicopter and established camp on 17 February 2005. Two of us would be on the island at any one time to monitor the potoroos, with a Zodiac—skilfully piloted by Fauna Conservation Officer Peter

Right As the trial progressed, the potoroos became less willing to go into the traps.
Photo – Tony Friend/CALM

Collins—taking us to and from the island. Early the next day, the two potoroos were flown from the captive facility at Two Peoples Bay Nature Reserve to the landing site near our camp. Here, we attached transmitters to their tails with sticking plaster. Late in the afternoon we carried them a kilometre to the release site. At 6.00 pm, both animals were released into the dense sedges and moved off. We radio-tracked them until 9.00 pm, by which time the male had started to move off across the island, while the female remained nearby.

We had planned for all eventualities. An activity sensor, incorporated into the circuitry of the transmitters, was programmed to change the signal to a faster beat if the transmitter did not move for six hours. This could occur if the animal died or if the transmitter fell off. Should an animal die, we would need to get to it quickly and send it for a post-mortem to determine the cause of death.

Island interlude

Each day for the rest of the trial we located both animals in their daytime refuges, using a GPS to record the position of their nest sites, and we then documented the plant species there. Every day they chose to nest amongst sedges, generally beneath a low canopy of vegetation. On one occasion the male could not be found, although he reappeared that night. He may have moved down one of the steep slopes toward the sea, so that his signal was blocked.

At first, the animals moved around separately, establishing nesting areas about 700 metres apart. The female was less settled than the male, however, and after a week and a half she moved about a kilometre to a new site toward the southern end of the island. The next day the male moved over to the same area and, on most days after that, the two potoroos nested close together.

For the first week we really didn't know what to expect. Our experience of potoroos in captivity had indicated that they were easily upset and didn't react well to change. Would these wild animals be able to adapt to the massive change? Each day, the normal slow signal from the transmitters reassured us that the animals were still alive. The critical test, however, was to catch them and check on their condition. We set cage traps near the male's nest site a week after the release and he obligingly entered a trap on the first night. He was three per cent down on his release weight, quite acceptable considering the circumstances. The female, however, was not so cooperative. We set traps near her nest each night for a week before she deigned to go in. By then, she had lost seven per cent of her release weight but this was still within acceptable limits. By the time they were trapped again, both pioneer potoroos had returned to their release weight.

Truffle banquet

During our earlier surveys, we had found diggings for underground fungi made by quokkas at specific sites in many parts of the island. Within days of the potoroos' release, we began to find fresh diggings near their nest sites. These diggings were often much deeper than those of quokkas. Beside some were the discarded shells of the sporocarp (fruiting body) of an underground fungus. These remains were all similar, and when Tim Button made an excavation near one of these diggings he found a large aggregation of these 'truffles'.

Fungi expert Neale Bougher later identified them as *Mesophellia brevispora*, one of the 'stone truffles'. They are so named because the outer coat accumulates small stones from the soil as the sporocarp grows. Stone truffles last for quite a long time in the soil, and are eaten all year round by Gilbert's potoroos at Two Peoples Bay. Their dense nutritious core also provides a food source for other fungus feeders

Above Discarded crusts from stone truffles (*Mesophellia brevispora*) at a Gilbert's potoroo feeding site on Bald Island.

Above left Tim Button unearths some stone truffles near a potoroo digging beside a cage trap.

Left Both potoroos crossed this deep gully from time to time to nest on the ridge overlooking the ocean.
Photos – Tony Friend/CALM

like long-nosed potoroos and woylies. The presence of these truffles on Bald Island indicates that a source of food for potoroos is likely to be present throughout the year. Potoroo scats were taken from the traps for comprehensive dietary analysis. This will allow us to gain a better appreciation of the food sources available to the potoroos on the island in autumn.

Things seemed to be going well when, after four weeks, the male's signal switched to 'mortality mode'. This gave us some anxious moments until we located his transmitter on the ground in the area where both potoroos were nesting. From this time, we set traps every night near the female's nest, hoping to recapture the male. Morning after morning we walked the two kilometres from camp to check them, to find traps set off, or quokkas and King's skinks waiting in the cage traps for us. We tried a wide range of baits, including avocado, cashews and even some of the precious stone truffles. Finally, after a week of trying, we captured both the male and the female. They were in good condition and, given that they had become so difficult to lure into traps, we decided not to release them again. Although it was a week short of the proposed six weeks for the trial, it was quite possible that we wouldn't be able to recapture the animals if they were released again, so they were taken back to the breeding facility at Two Peoples Bay.

Next moves

Given that the potoroos survived and regained their release weight at probably the hardest time of year, the exercise was considered a success. We also identified an important food source for potoroos, documented their favoured habitat on the island, showed that Gilbert's potoroos tend to group together and even managed to recapture them. As a result, a full translocation to Bald Island—involving several releases over three years—is being proposed. The first release, involving one female and two males, went ahead in early August. Gilbert's potoroos now inhabit their own island home.

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