REMOTE REFUGES:

Pilbara inshore islands

Threatened species paradise

The remote inshore islands of the Pilbara coast provide a haven for a number of threatened and protected species. Until recently, little was known about these precious ecosystems, but a comprehensive survey into their natural values and the pressures they face will help guide future management to ensure they are protected.

BY CAROLYN WILLIAMS AND FELICITY KELLY

Located off the Pilbara coast extending from Exmouth Gulf to just north of Cape Preston, lies a chain of 93 small island nature reserves. Many of these remote inshore islands are less than 20 hectares in size and make up a total area of 8506 hectares. Together, they have a span of 244 kilometres of coastline, comprising sandy beaches, rocky shores, and mangrove forests.

These inshore islands are fragile habitats, moulded by summer cyclones, but they are relatively free from disturbance and other pressures associated with the mainland, including introduced predators such as the fox. Although remote, they are surrounded by industrial development. They have high conservation values as they play an important role in the life cycle of many threatened and protected species, and support marine turtles, shorebirds, seabirds and the last remaining populations of some mammal species that are no longer found on the mainland.

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Main Ruddy turnstones are present on most islands all year.
Photo – Bill Belson/Lochman Transparencies
Inset top Middle Mary Anne Island.
Inset centre Mangrove communities, Potter Island.
Inset below Loggerhead turtle.

Above DBCA's Scott Whiting and Steve Breedveld measuring a green turtle on South Muiron Island.

Right Muiron Islands Marine Management Area.
Photos – DBCA

MORE TO DISCOVER

Between 2013 and 2018, DBCA's Pilbara Region islands reserve officers, funded by offsets associated with Chevron's Wheatstone Gas Project, conducted an intensive island nature reserve program to better understand the values and threats. Biological values of three islands – Thevenard, Airlie and Varanus – are well known from environmental studies that have been carried out by industry bodies. But, to date, few of the remaining islands have been studied in detail (see 'East of the Gulf', *LANDSCOPE*, Summer 1992–93), if at all.

So, a series of extended field trips to 52 of the islands was carried out. These visits helped to gain a better understanding of the importance of these islands and how they are being impacted by recreation and other human pressures. Information collected through aerial monitoring, remote camera surveys, acoustic recordings, turtle tagging and track counts, fauna trapping and opportunistic observations, flora and social surveys has informed the development of the draft *Pilbara Inshore Islands Nature Reserve Management Plan*. Once finalised, this plan will set out a strategy to best manage these islands in the future. A key collaboration with the Gorgon Barrow Island Net Conservation Benefit Project *Island Decision Support System* led by DBCA research scientist Cheryl Lohr resulted in hundreds of records added to the Pilbara Islands Species Database.

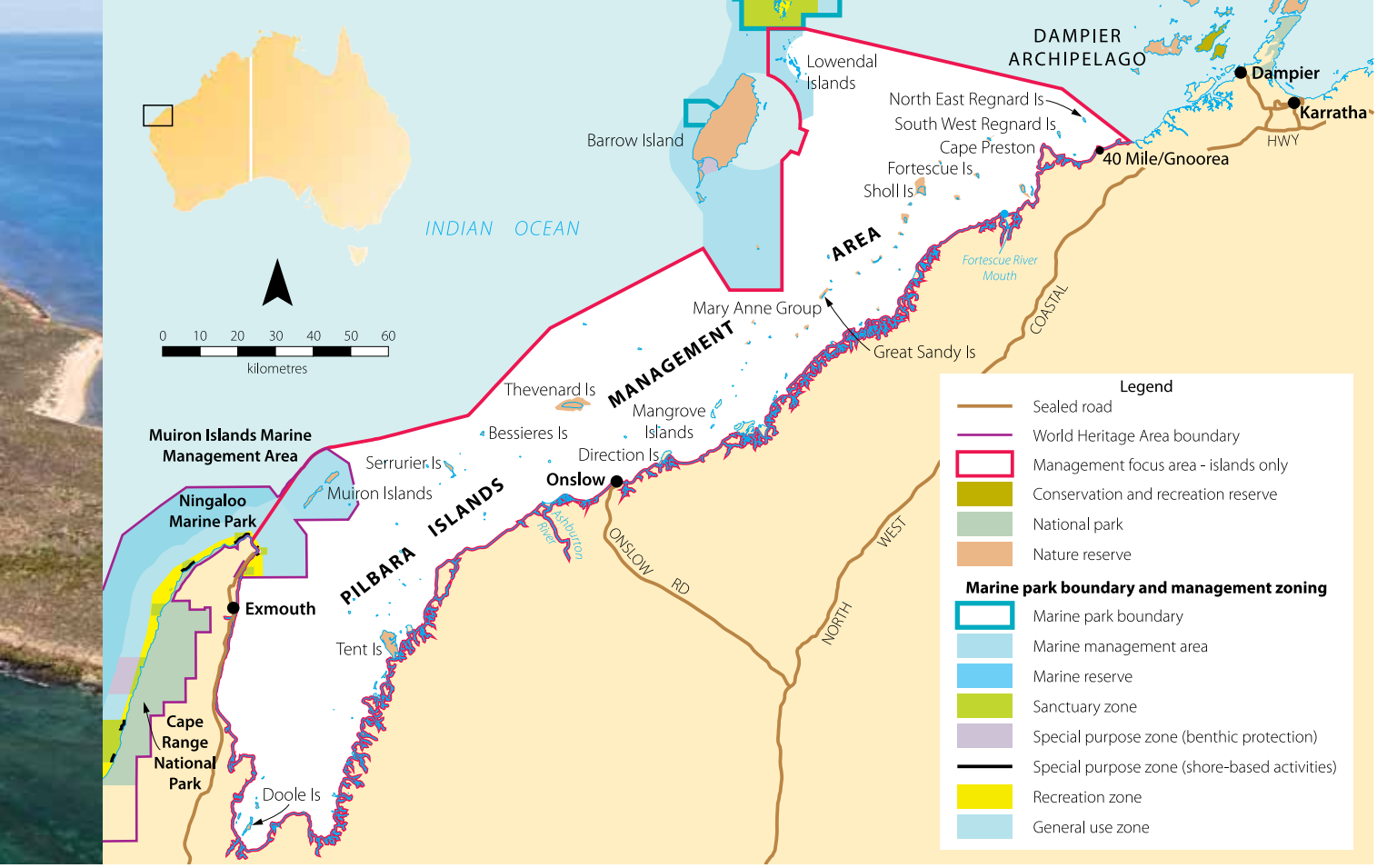
"These inshore islands are fragile habitats, moulded by summer cyclones ..."

The field work was facilitated through a number of internal collaborations, involving staff from the WA Herbarium and from DBCA's marine and terrestrial Biodiversity and Conservation Science programs. It also relied on a range of external partnerships, including with geologists from Curtin University who studied the island profiles and how they were formed, and archaeologists from The University of Western Australia and the WA Museum who guided the process of documenting the cultural history of both Aboriginal and post-European settlement of the islands. Traditional owners also made a significant contribution to the study, with members of the Yaburara and Coastal Mardudhunera Aboriginal Corporation joining northern islands field trips, and representatives of Gnulli joining southern islands field trips. This provided the opportunity for two-way knowledge sharing.

Volunteers also played an invaluable role, with 10 volunteers contributing 581 hours, providing specialist knowledge through mapping migratory shorebird high tide roosts and identifying preferred nesting islands for seabirds, including a colony of 6000 roseate terns on Stewart Island. Pilbara flora expert Vicki Long provided guidance in identifying vegetation associations and producing maps for high priority islands.

DISCOVERING NATURAL VALUES

Many of the islands provide nesting habitat for marine turtles and have been



Right DBCA volunteer Laurinda Timmins on Doole Island.
Photo – DBCA

Far right The critically endangered eastern curlew prefers the solitude of islands close to the mainland.
Photo – Nigel Jackett

identified as habitat critical to the survival of four species of marine turtle. Islands of significance include coastal islands from Locker Island to Cape Preston for flatback turtles (*Natator depressus*), Serrurier and Thevenard islands for green turtles (*Chelonia mydas*), Sholl Island and the Lowendal Islands for hawksbill turtles (*Eretmochelys imbricata*) and the Muiron Islands for loggerhead turtles (*Caretta caretta*).

The team recorded 64,000 birds including 24 species of migratory shorebird, seven species of resident shorebird and 13 species of seabird that use the islands for resting, feeding and nesting. The critically endangered eastern curlew (*Numenius madagascariensis*) along with the grey-tailed tattler (*Tringa brevipes*), ruddy turnstone (*Arenaria interpres*), pied oystercatcher (*Haematopus longirostris*), sooty oystercatcher (*Haematopus fuliginosus*), bridled tern (*Onychoprion anaethetus*), crested tern (*Thalasseus bergii*) and roseate tern (*Sterna dougallii*) have been observed in internationally significant numbers on the Pilbara inshore islands, which has led to the recognition of three key biodiversity areas being identified – Exmouth Gulf Mangroves, Sunday Island and the Lowendal Islands. The islands are included in the Hamersley-Pilbara National Biodiversity Hotspot and specifically mentioned as "refuges for vulnerable species that are rare or extinct on the mainland".

About one million wedge-tailed shearwaters (*Ardenna pacifica*) occupy the Pilbara islands for most of the year with significant breeding colonies on seven islands and minor colonies on 12 others.

Fauna surveys have observed 17 terrestrial mammal species present on the islands, including two species that have disappeared on the adjacent Pilbara mainland habitat: the western chestnut mouse (*Pseudomys nanus*) and the pale field rat (*Rattus tunneyi*).

Above left Western chestnut mouse.
Photo – Jiri Lochman

Top Aboriginal artefacts have been recorded on many islands.

Above *Tephrosia* sp, Tent Island.

Below A fairy tern nest at Sholl Island.
Photos – DBCA

Vegetation surveys have found 252 species of flora from 54 families present on the islands. These include five Priority flora (the Priority 2 *Tephrosia* sp. *North West Cape*, and the Priority 3 *Corchorus congener*, *Gymnanthera cunninghamii*, *Lepidium biplicatum* and *Carpobrotus* sp. *Thevenard Island* and one Priority Ecological Community *Coastal dune native tussock grassland dominated by Whiteochloa airoides*.

IT TAKES A VILLAGE

Aerial surveys, on-ground observations, comments, books and social surveys have shown that while the islands are valued for social and recreation purposes, the level of use is very low. Fishing and diving around the islands, camping, day visits, picnics and nature walks are among the activities people enjoy while going ashore. However, light pollution; some recreation activities, including camping; boat landings on small islands; and marine debris, can cause disturbance to the nesting, resting and feeding behaviours of shorebirds, seabirds and marine turtles. The impacts of recreational visitors seem most severe on islands that are less than 100 hectares in size.

Parks and Wildlife Service Exmouth District staff have been working with residents and visitors from Exmouth, Onslow, Karratha and further abroad to raise awareness of threatened species and the importance of these island habitats. They are also working to promote positive behaviour that will minimise impacts on threatened species and safeguard sensitive habitats. A number of measures are in place to promote these messages, including the installation of interpretative signage at major boat launching facilities, the development of publications, a curriculum-based *Threatened and protected species of Western Australia's marine and coastal habitats* education manual and other activities for schools, shorebird and turtle workshops and community festivals. Protection of these precious islands will require support from the entire community and the involvement of key stakeholders. But the future of these islands already looks brighter, thanks to a greater understanding of their importance.

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Chevron Australia Pty Ltd funded a number of offset projects and further information can be obtained from DBCA science coordinator Kelly Waples (08) 9219 9796.
For more information on the Pilbara Inshore Islands visit parks.dpaw.wa.gov.au/park/pilbara-inshore-islands
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