

100 years of biodiversity data put to work



Protecting the fragile biodiversity of Western Australia's islands isn't all about being out in the field. A new project will compile 100 years of existing but disparate biodiversity data on the Pilbara islands into a single computer database to help guide future management of these precious refuges for threatened and endemic plants and animals.

by Cheryl Lohr

More than 3,700 islands line the Western Australian coast, ranging in size from small rocky outcrops to Dirk Hartog Island, the largest at 58,640 hectares. Many of these islands are the last refuge for threatened and endemic species such as the Shark Bay mouse (*Pseudomys fieldi*) and the rufous hare-wallaby or mala (*Lagorchestes hirsutus*), which have become extinct on the mainland from the effects of introduced predators such as cats and foxes. Many islands also have relatively undisturbed communities of plants and habitat types, including mangroves and sandplains, that are



spared the frequent bushfires or increasing pressure from development seen on the mainland. Such habitats can provide critical breeding sites for seabirds and sea turtles that usually only come on land to breed.

Humans are a major source of dispersal for invasive species. Insects and seeds get in our luggage, rodents hide in cargo containers, and cane toads (*Rhinella marina*) hitch rides in vehicles. Some of WA's islands have been colonised by invasive species such as buffel grass (*Cenchrus ciliaris*), mice (*Mus musculus*), and black rats (*Rattus rattus*) (see 'The mysterious case of the black rat on Sunday Island', *LANDSCOPE*, Winter 2013).

100 years of data

Along the Pilbara coastline, between Exmouth and Eighty Mile



Beach, there are more than 550 islands including the Dampier Archipelago, the Mary Anne Passage islands and the Barrow–Montebello islands group. Scientists have been visiting these islands for nearly 100 years to record the species of animals and plants living on them. The first detailed biological descriptions of islands came from Hermite Island in 1912, one of the Montebello Islands approximately 75 kilometres from the WA coast. Since then, dozens of scientists and field naturalists from government agencies, universities and private companies have visited the Pilbara islands to

record data. Today, global biodiversity databases contain tens of thousands of records of plants and animals for the Pilbara islands alone. And that is not all of it. A lot of data has not been entered into electronic databases and is instead printed in books or reports and filed away in overflowing filing cabinets left behind when a biologist retires.

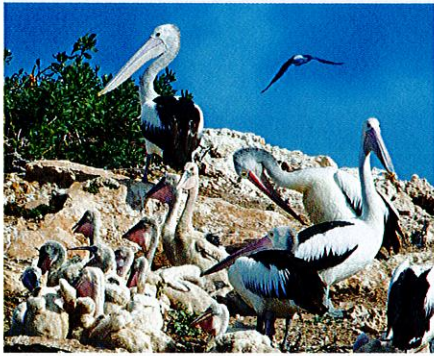
Managing islands

With the huge number of islands in the Pilbara alone, it is essential for the Department of Parks and Wildlife to have a system that helps managers prioritise management and protection

Main Montebello Islands.
Inset Flatback turtle hatchlings.
Photos – David Bettini

of the islands. Many management actions, such as the Montebello Renewal rodent eradication project in the 1990s, cost hundreds of thousands of dollars (see 'Montebello Renewal', *LANDSCOPE*, Summer 1996–97). As such, the department needs to ensure that management actions are prioritised so the most conservation benefit is gained for the least cost.

Over the next five years, a team of scientists from the department's



Top Nesting pelicans.
Photo – David Bettini



Above Rufous hare-wallaby.
Photo – Jiri Lochman

Right Northern quoll habitat on Dolphin Island, Dampier Archipelago.
Photo – Keith Morris/DPaW



Science Division and James Cook University (Townsville, Queensland) will compile 100 years of existing data into a single resource. They will then build a software package that will enable land managers to maximise the number of conservation goals they can achieve. The biodiversity data will tell us where the high priority species are, and whether they are threatened by invasive species. It will enable us to compare islands and management tasks objectively, and work to conserve our native species efficiently. Expert knowledge regarding the cost of implementing management tasks and the social acceptability and the effectiveness of each management option will also contribute, as will new data designed to fill the gaps in our knowledge that remain after 100 years of data collection.

By compiling the knowledge in such a way, the department will be in a position to best conserve the islands and their fragile biodiversity in a way that maximises conservation at the least cost.

Five-year collaboration—what will it achieve?

This research project will influence conservation management actions on islands in Western Australia by developing:

- 1) A single comprehensive database on WA island characteristics, fauna, flora, and threats.
- 2) Operational decision-making software for island management.
- 3) Training to develop the ability of Department of Parks and Wildlife staff to apply the software in managing islands.
- 4) Accountable and cost-effective decisions that aid the conservation of WA's native species.
- 5) A strong partnership with Queensland island researchers and managers.

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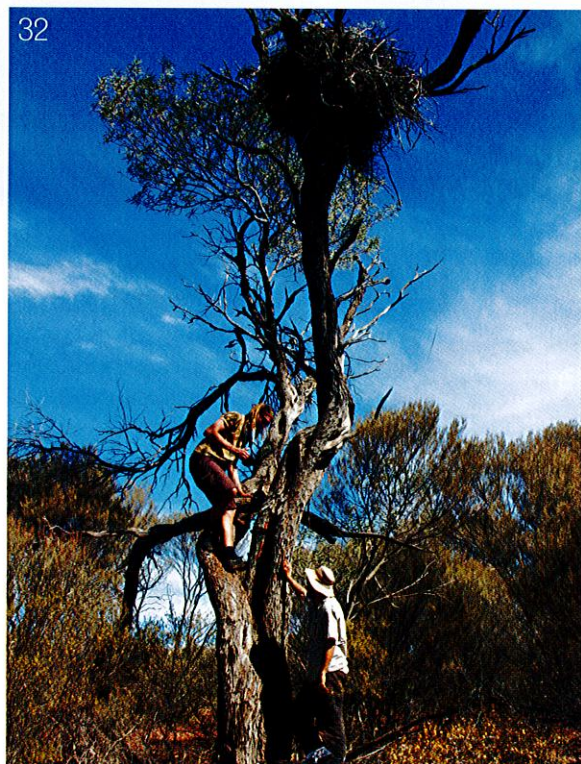
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