MANAGING FOR DIVERSITY

At Shark Bay, land managers must care for an incredible diversity of wildlife, habitats and landforms - ranging from the most primitive ecosystem on Earth at Hamelin Pool to the bottlenose dolphin, one of the most highly evolved animals in the world.
How do they do it?

BY RON SHEPHERD

The Department of Conservation and Land Management (CALM) is responsible for managing much of Shark Bay's varied conservation estate. However, if this process is to work, the local shire, pastoralists and the Shark Bay community must all be committed to and involved in caring for their unique region.

Each ecosystem presents special management challenges. At one extreme of the region's biological diversity are the primitive single-celled organisms that flourish in Hamelin Pool. Through forming simple communities and trapping sediment and other particles over thousands of years, the micro-organisms have created a large array of rock-like features, called stromatolites, that lie adjacent to the shoreline. Similar stromatolites occur elsewhere in the world, but nowhere else are they as extensive or as easy to reach. As a result, Hamelin Pool is the best place in the world to view stromatolites and gain an understanding of the beginning of life on Earth. Hamelin Pool was declared a marine nature reserve in 1990 in recognition of its significance and to manage the impact of escalating public interest in the area.

Stromatolites are incredibly fragile, as they are still developing from living microbial communities. Since communities can grow less than one millimetre per year, an embedded footprint may take many years to disappear and a car track could take a human lifetime. CALM aims to develop one site (adjacent to the Historic Telegraph Station) for public access and to construct a boardwalk that will minimise human impact on the stromatolites, while giving people the chance to see them. The challenge is to design a structure that does not damage the stromatolites, overcomes tidal wetting and drying and other engineering problems, and will not have long-term impact on the site.

Stromatolites are not self-explanatory. Visitors to the area are often encountered innocently walking over the stromatolites waiting for something to jump out and identify itself. One couple was said to have spent four hours waiting for the stromatolites to 'come in'. CALM will eventually provide interpretative information along the boardwalk to help all visitors to the Bay enjoy and appreciate the stromatolites. Meanwhile, the old Telegraph Station adjacent to the visitor site has an interesting display on stromatolites.

South of Hamelin Pool is Cooloomia Nature Reserve, one of Shark Bay's earliest conservation reserves. Cooloomia encompasses the transition between two botanical provinces, the Eremaean and the South West, giving it a high botanical diversity. Surrounding Cooloomia are vegetation communities that are not represented in the reserve, and the WA Government intends to expand this reserve to include a greater array of plant associations. Access to the reserve is limited, but the flora can be viewed from the gravel road to Useless Loop between Hamelin and Tamala Stations. In spring, the array of colours along this section of road is impressive.

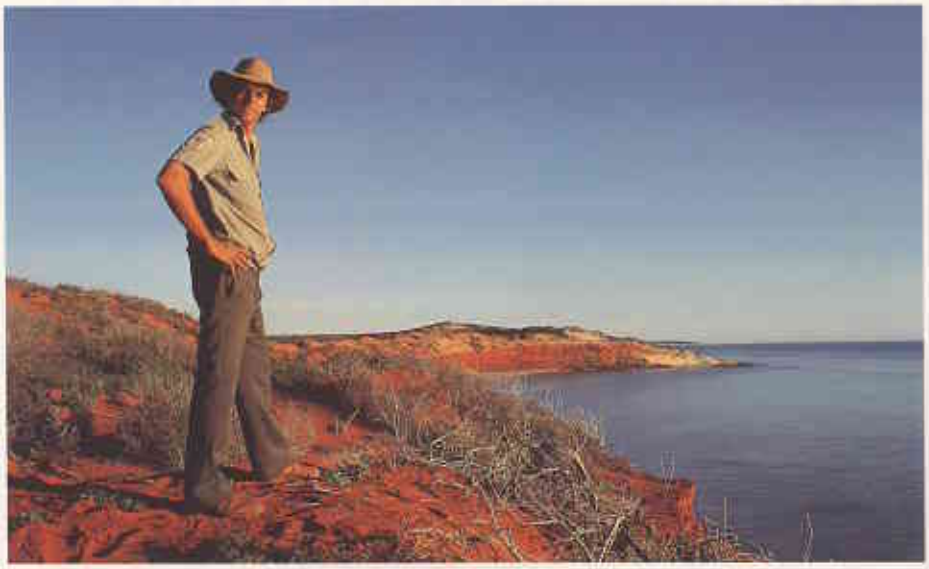
LANDSCAPE OF ATTRACTIONS

Peron Peninsula is a landscape of attractions. The rolling red sand dunes and dense acacia shrublands afford four-wheel-drive visitors a wilderness experience. Small birds and reptiles are abundant amongst the wattle. The coastline provides a contrast of colour and stunning scenery, from red vertical cliffs to sweeping white beaches. A unique geological feature on Peron is the series of gypsum-filled hollows known as birridas. Most birridas were land-locked saline lakes when sea levels were much higher than at present, and gypsum was deposited on the floors of these lakes. Big Lagoon, dissecting the Peninsula, is essentially a birrida that has been flooded by the ocean.

Peron Peninsula was run as a pastoral lease from the early 1900s. However, pastoral activities ceased in 1990 after the State Government purchased the land to establish François Peron National Park on the northern end of the Peninsula. Converting the area from a station to a national park was a mammoth job. More than 15 000 domestic stock had to be mustered and trapped during the hot summer months, with a second clean-up being required this summer. About 100 kilometres of fenceline was dismantled and the massive accumulation of rubbish in the homestead and camping areas was removed. Without the stock, the park's vegetation has already begun to regenerate and return to a more pristine condition. Many of the pioneering pastoral features, such as the homestead block which is the gateway to the Peninsula, will be maintained and

Previous page: One of the Monkey Mia dolphins.
Photo - Robert Garvey

Big Lagoon is a 'birrida', or gypsum-filled hollow that has been swamped by the ocean.
Photo - Bill Bachman



National park ranger Lyndsay Brown at Cape Peron in the François Peron National Park.
Photo - Carolyn Thomson

The burrowing sandhill frog lives without access to water.
Photo - Jiri Lochman

Above right: The Zuytdorp Cliffs, near the site of the Dutch wreck after which they were named.
Photo - Pat Baker

Right: Beard's eucalypt is a small tree or mallee that grows from the Murchison River to Shark Bay.
Photo - Greg Keighery

developed as a key contact point for visitors.

Because camping is popular along the Peron coastline, facilities will be provided for offshore recreational fishers and visitors seeking wilderness experiences. However, the facilities will be managed so that the acacia shrublands are not damaged.

Edel Land Peninsula lies across the Bay to the west of Peron. Like Peron, it offers a wilderness experience to hardy four-wheel-drivers, but with a distinctly different landscape. Edel Land is dominated by large undulating white sand dunes, extensive sand drifts, and a vegetation community with a large number of species from the South West botanical province. The Zuytdorp Cliffs, on the east coast, provide stunning scenery, but are a hazard to boaters - as the early Dutch traders discovered. Steep Point is a popular cliff fishing destination.

Edel Land also has a rich fauna of small birds and reptiles and is home to one of the most unusual frogs - the rotund sandhill frog, which lives without access to water. Its eggs are laid in the sand and the tadpole stage occurs within the egg. Edel Land is the only area where the sandhill frog is common.

Access on Edel Land is a significant management problem. The large sand dunes and extensive sand drifts are highly unstable and prone to erosion. In the past, tracks have become impassable in a relatively short time, with a sequence of new ones being established. In recent years, many of the resulting spider webs of tracks have been closed to allow regeneration. Negotiations with the pastoral company currently managing the area are under way, in an attempt to attain national park status for the Peninsula.

RECOLONISING THE PRONG

To the east of Edel Land is the small peninsula known as Heirisson Prong. This site is a classic example of how cooperation between community groups can achieve outstanding conservation results. The local Useless Loop community has teamed up with the town's mining company, local school, CSIRO and Government departments to conduct a scientific project on the Prong. The aim of the project is to establish a population of endangered boodies from Bernier Island on Heirisson Prong, and will involve the local school children throughout.

A vermin-proof fence was built and large-scale vermin eradication is under way. The company managing the pastoral lease has agreed to relinquish Heirisson Prong to create a conservation reserve that will provide security for establishing populations of endangered mammals. The local community continues to help manage the reserve, particularly in supervising access and recreational activities on the Prong. The main challenge will be to prevent feral animals, such as foxes and rabbits, from recolonising. This will require regular maintenance of the barrier fence and periodic baiting to remove residual feral populations. If the boodie successfully establishes itself, it is likely that other species will be reintroduced to the Prong.

A second area on the mainland that could be used for reintroductions is Point Petit, north of Nanga, which may become a nature reserve in the near future. A shorter barrier fence at the narrow neck of the Peninsula will create an 'island' effect, as at Heirisson Prong. On Point Petit there are bluebush plains, not found elsewhere in Shark Bay, that provide an additional habitat type not represented in other conservation reserves.

MARINE LIFEBLOOD

The jewel in Shark Bay's conservation crown is the newly declared Shark Bay Marine Park. The Bay's waters are rich and prolific, but it is the extensive seagrass assemblages that are the lifeblood of this underwater haven. They are nursery grounds for the array of fish and crustaceans on which commercial and recreational fisheries rely. They also provide food for the abundant and unique wildlife such as dugongs and marine turtles. Coral outcrops occur in a number of areas, providing a habitat where temperate and sub-tropical fish species co-exist.

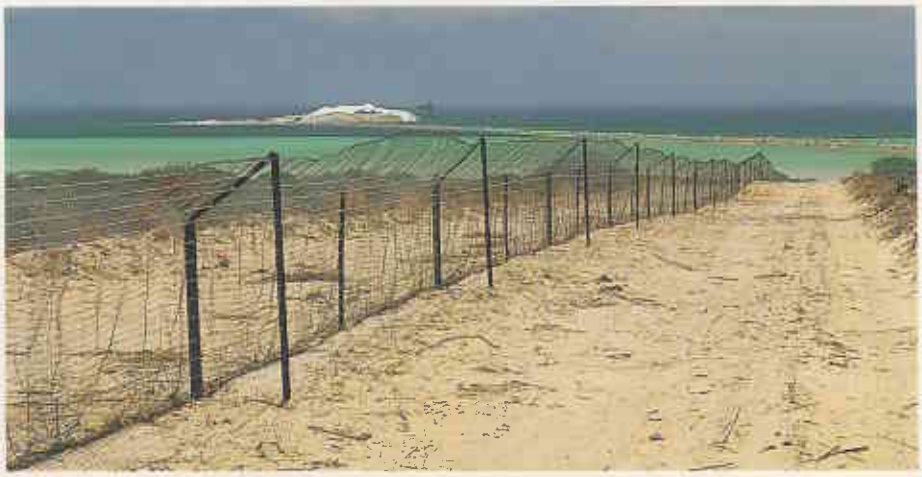
The Marine Park was established to protect and manage this unique marine environment. Monitoring the ocean life is essential to managing the park. CALM will identify zones in the marine park that help separate and manage conflicting uses. Different zones provide for varying levels of recreational and commercial use and may also protect special areas from exploitation. Scientists will identify sanctuary zones to provide important benchmark information. People will be asked to 'look but not take' in sanctuary zones. For instance, most of Big Lagoon, an important nursery ground for fish species and other marine life, would make a good sanctuary zone.

Monkey Mia lies within the Marine Park. Here, bottlenose dolphins come to the beach each day to interact with people. The dolphins are at the other end of the biological scale to the stromatolite builders. Their high intelligence and complex social organisation calls for innovative management. Within the last decade, the number of visitors at Monkey Mia has increased from 10 000 to 100 000 a year. CALM and the Shire Council, who jointly manage the area, have responded with greater public supervision to prevent the dolphins from being 'loved to death'. In other places around the world, interaction between people and dolphins has ended in doom for the dolphins. At Monkey Mia the public, local community and CALM have the challenge of ensuring that this scenario is not repeated.

Because of the dolphins' high intelligence, a flexible management style is needed to respond to individual changes in behaviour and physiology, and the population's altering social structure. Routines cannot be rigid, as the dolphins learn and respond to standard procedures. The animals' health is checked regularly and, despite normal calf losses, no adult has had any significant problem for over two and a half years. The amount of fish given to the dolphins is set at a level that ensures they continue to forage naturally and maintain their wild instincts. The water at Monkey Mia is also tested regularly to check for contamination that could harm the dolphins.

Public awareness of the uniqueness and diversity of Shark Bay's natural environment is mushrooming. Fortunately, the complex system of conservation reserves that is proposed should protect the Bay's natural values, while allowing our generation to use and appreciate these features.

Seasnakes and corals at Shark Bay Marine Park.
Photo - Eva Boogaard, Lochman Transparencies



An anti-vermin fence was built to allow the reintroduction of endangered mammals to Heirisson Prong.
Photo - Jiri Lochman

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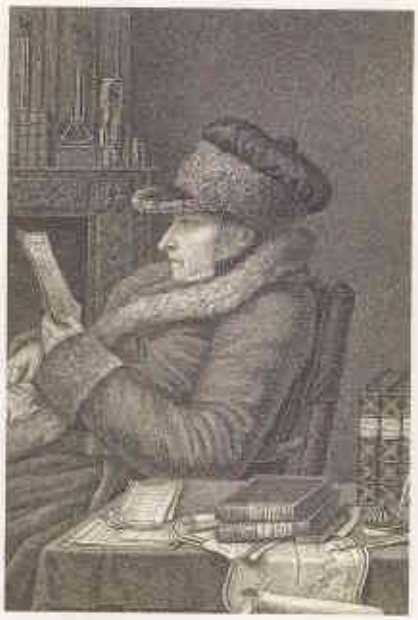


LANDSCOPE

VOLUME SEVEN NO.2 SUMMER EDITION 1991-92

When European scientists first set foot on our shores they found a bewildering array of animals and plants. Péron the Explorer *takes an intimate look at the French scientist whose name lives in Western Australia's newest national park. See page 20.*

This tour of the Gascoyne's desert coast guides you through Shark Bay and WA's newest national park. See page 10.

Close to where the fictional Gulliver is believed to have been shipwrecked lives one of the world's oldest organisms. Lilliput's Castles, *on page 34, describes the creatures and the ecosystem they have built.*

Seagrass covers 3 700 square kilometres of the ocean floor around Shark Bay. Grasses of the Sea, *on page 42, takes us on a journey through these underwater meadows.*

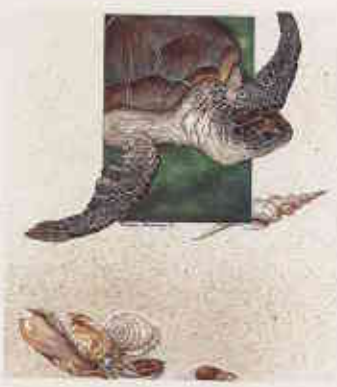
At first glance, Shark Bay is dry, arid and inhospitable. But if you look more closely you discover its Hidden Treasures. *See page 16.*

FEATURES

REGULARS

COVER

Green turtles (Chelonia mydas), *the commonest turtles found along our coast, begin to congregate in the waters of Shark Bay from the end of July. The Bay is the southernmost nesting area for these long-lived animals. During summer, female green turtles lay their eggs on the white sandy beaches of Bernier, Dorre and Dirk Hartog Islands, and occasionally at the northern tip of Peron Peninsula. Illustration by Philippa Nikulinsky.*



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