

A B R O L H O S

Diving on SCUBA is like being the fish in the goldfish bowl. It's you all the spectators are looking at. James Stoddart recalls a close encounter of the seal kind on a coral reef research expedition to the Houtman Abrolhos Islands, about 50 km off Geraldton.

Diver Down



The Abrolhos Islands are largely undisturbed by humans for almost nine months of the year, but between mid-March and the end of June they are scenes of frantic activity as the lucrative rock-lobster fishing industry swings into gear.

Surrounding the islands lies a rich blend of tropical and temperate ecosystems (see *LANDSCOPE*, Spring 1990). The waters around each of the four island groups are essentially coral reef ecosystems: systems not usually noted for their ability to sustain fisheries. Yet the Abrolhos reefs are extremely productive for lobsters, yielding more than 1 100 tonnes in 1986 - worth an estimated \$15 million. This productivity seems to result from an interaction between coral and macroalgal (seaweed) communities which may be unique to the Abrolhos.

Managing the fragile balance of this relationship requires constant vigilance for early warnings of impending change. That's the reason for my visit to the Easter group of islands with researchers from the Department of Conservation and Land Management (CALM): we wish to establish sites for monitoring the health of these reefs.

Normally, the summer face of the Abrolhos is anything but the benign millpond people associate with coral reefs.



More than 80 per cent of winds blow between the south-west and south-east, almost half at over 17 knots. But on this trip the weather is calm; as our small 'tinny' sets out from one of Rat Island's many ramshackle wooden jetties, the sea is barely ruffled.

Passing the low stone jetty at the northern limit of the channel fringing the lee side of the island, we note a resident family of ospreys converting the roofs of empty huts into dining tables for their young with fish caught that morning. The ospreys are long-time island residents and co-exist well with the fishing

Western rock-lobsters clustered together in crevices of table corals.
Photo - Robert Garvey ▲

Large schools of herbivorous fish typical of the Abrolhos are rarely seen elsewhere in coral reefs.
Photo - Robert Garvey ▼

Opposite page: Corals.
Photo - Gerhardt Sauracker
Australian sea lion.
Photo - Jiri Lochman ◀





Well-developed plate corals at the top of a reef slope.
Photo - Gerhardt Saueracker / Lochman Transparencies ◀

Small coral cay. Its surrounding reef flat drops to a rich coral slope.
Photo - Robert Goodale ▼

community, which goes to great pains to ensure that the birds' nesting sites are not disturbed.

North of Rat Island, a small sand cay, barely substantial enough to include a central covering of low green plants, is the beginning of the White Banks area, which stretches north-west into an expanse of shallow patch-reefs known as Kakka Flats - a 'kakka' being the term given to a lobster below the legal minimum size.

It's the lush coral gardens on the eastern slopes of the reefs of White Banks that attract us. As a rule, the presence of macroalgae sounds the death knell for coral reefs. Both need adequate amounts of sunlight to survive, and normally corals, which are unable to compete with the tremendous growth rate of macroalgae, lose out. Extensive coral reefs usually occupy areas too nutrient-poor for algal growth.

In the Abrolhos, the macroalgal communities - largely dominated by fleshy kelps such as *Ecklonia radiata* - are best developed on the western slopes of the atolls. Oceanic swells and wind-driven currents drive the detritus, which algal beds shed constantly, into the coral-dominated lagoons where it provides the basis for a chain which is ultimately consumed by the rock-lobsters.

En route to our dive site, our attention is diverted by a number of dark shapes sprawled over the small rubble-strewn beach surrounding the cay - they turn out to be Australian sea lions (*Neophoca cinerea*), another temperate invader of these coral isles. John Mokrzycki, a

photographer from *The West Australian*, is keen to get a closer look at the two bulls and two cows basking in the sun. Annoyingly for him, the tide is too low to allow the boat to approach close enough to the cay, and the fringing coral reefs are too fragile to support the passage of a cameraman with a very expensive land camera, so we abandon the attempt and continue to our dive site some hundreds of metres away.

GETTING DOWN TO BUSINESS

Coral reefs are renowned for their sudden steep 'drop-offs', and the Abrolhos are no exception. The greens, grey-browns and yellows of the staghorn and plate corals bounding the upper few metres of

the White Banks reefs plunge steeply into a blue-green distance, where they finally reach a sandy floor at about 18 m depth.

Kim Nardi, CALM's operations officer from Geraldton, and I lay out the 20 m tape measure we use to record the abundance and type of organisms which make up the reef's living cover, while Mokrzycki, partnered by work experience student Veronica Campagna, floats around us taking photographs.

Within minutes, my world has narrowed to a blue-tinged sphere about 50 cm in radius from my diving mask. As I record the changes in reef cover onto a slate of waterproof paper and listen to the rhythmic sounds of my air regulator, the office where these notations will be





An inquisitive seal circles the diver and comes in to take a nip at his flippers.

Photos - James Stoddart ▲

Though the species is occasionally seen at Shark Bay, the Australian sea lion is at the northernmost limit of its distribution in the Abrolhos Islands.

Photo - Eva Boogaard / Lochman
Transparencies ▶▲



entered onto a computer and become part of an overall statistical picture seems remote.

After 15 minutes and about half-way along the tape, Mokrzycki brings me back to the real world with a tap on the head. It takes several seconds before I realise his gestures are not to set up a posed photo, but to make me look over my shoulder. It appears that while our attempt to observe the sea lions was unsuccessful, they have had no such difficulty in returning the interest - one is watching me intently while resting less than half a metre from my right shoulder.

Five metres down in the clear waters at the edge of the drop-off, the two sea lion cows circle us. They are curious about everything: the slates, the tape, the divers' fins, mouthpieces that release clouds of bubbles, and especially the cameras and their flashes.

After their initial curiosity begins to wane, the sea lions test their acrobatics, flying line-astern between divers, or coming to abrupt stops a centimetre or two from a diver's faceplate. Their graceful actions inspire mimicry, but mere humans cannot compare with these acrobats.

Finding us lacking in their manoeuvring ability, and rapidly losing interest in our equipment, the sea lions begin to invent games of their own. Worryingly, these games seem to involve a good deal of nipping behaviour from jaws which resemble those of a giant labrador; Australian sea lion cows weigh 80-90 kg, with bulls growing to more than 250 kg. Veronica's long floating

hair is a favourite target, as are camera flashes.

As the games become more vigorous, I'm reminded of the damage to human flesh that sea lion mothers guarding calves on offshore islands further south can give, and decide to call an end to the games. On our retreat to shallower water where the top of the reef is exposed, one seal takes particular delight in worrying Kim's large fins. Veronica returns to the boat and the rest of us sit around the top of the reef with our cameras well out of the water.

Faced with such a sulky response, the sea lions soon lose interest in us and disappear to find more tractable companions. Left to our own devices, we resume our laborious passage along the tape with only an occasional sideways glance. But the sea lions do not return. We carry on, half-wishing they would, until we finish our minute recordings, retrieve the tape measure and return to our base at Rat Island.

The data we have collected will provide a useful snapshot of the reef's state when incorporated into numerical models, but will retain little of the pleasure we had collecting it. ☐

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Visitors from around Australia are discovering what those who live nearby already know - D'Entrecasteaux...C'est Magnifique. Turn to page 10.



Seabirds nest on Pelsaert Island in the Houtman Abrolhos by the million. See page 17.

LANDSCOPE

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There's more to invertebrates than slugs, maggots and spiders. Turn to page 28 to find out just why invertebrates are so important.



What has happened to Fitzgerald River National Park since the 1989 wildfire? See page 34.



Explore the Dampier Archipelago, a group of rocky islands with a violent past and a wealth of wildlife. Turn to page 48.

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C O V E R

Invertebrates play an important role in the ecosystem of WA's jarrah forest. Earthworms, termites and ants fragment leaf litter and mix organic matter. Some soil and litter invertebrates stimulate plant growth. Soil insects such as larval beetles feed on roots, stimulating the plants' growth rate. Our cover illustration is Philippa Nikulinsky's impression of this process at work in the jarrah forest.



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