Discovering

Shark Bay Marine Park and Monkey Mia

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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DISCOVERING SHARK BAY MARINE PARK AND MONKEY MIA

by Carolyn Thomson

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

SHARK BAY MARINE PARK

The many bays, inlets and islands in the Shark Bay region support a profusion of aquatic life. Turtles, whales, prawns, scallops, sea snakes, fish and sharks are common. Communities of corals, sponges and other invertebrates, together with a unique mix of tropical and temperate fish species, have formed in some areas. The wide intertidal flats on the shores of Shark Bay support a unique community of burrowing molluscs, hermit crabs and other invertebrates. But the very foundation of Shark Bay's ecosystem is the seagrass - meadows and meadows of it!

Shark Bay has the largest area of seagrass and the largest number of seagrass species ever recorded in one place in the world. Elsewhere, one or two species cover large geographic areas. For example, there is only one species of seagrass in most of North America and Europe. But in Shark Bay there are 12 species, and, in some places in the Bay, nine can be identified in a square metre.

The marine park and its prominent seagrass banks form an integral part of the Shark Bay World Heritage Area. The marine embayments of Shark Bay Marine Park offer many shallow, but highly recommended, diving and snorkelling sites.

Dugongs and marine turtles are frequently seen in the bay. Individual turtles can be seen in Shark Bay all year round and congregations of turtles may be seen from the end of July, though the start of the breeding season is usually later. Traditionally, turtles and dugongs formed an important part of the diet of Aboriginal people but in Shark Bay these animals are not subject to as much hunting pressure as in other parts of the world.

Denham, on the shores of the Shark Bay Marine Park, is 400 kilometres by road from Geraldton and 330 kilometres from Carnarvon. Boating, diving, snorkelling, watching marine life, fishing (outside sanctuary zones), windsurfing and swimming are popular and there are numerous boat ramps.

Photo - Jeremy Colman

MONKEY MIA

Imagine meeting friendly dolphins on a white sandy beach, in an astounding World Heritage Area. You can do this at Monkey Mia, where several bottlenose dolphins regularly visit.

In the 1960s, fisherfolk began feeding dolphins when they returned with their catch. Over the years, the association continued. News of the phenomenon travelled by word of mouth and visitors now come from far and wide to see the dolphins. These dolphins are wild animals that come to the beach of their own free will to interact with people and accept fish from them.

Seven or eight dolphins are now regular visitors and the habit has been passed from mother to young, so that the beach visitors now span three generations. They belong to a much larger local group that lives further out in the Bay. Researchers can recognise more than 100 individuals that live in the waters of Shark Bay and are studying bottlenose dolphin behaviour: finding out about the social relationships among the group members by watching what they do all day.

Monkey Mia Reserve is 23 kilometres from the town of Denham. The rangers carefully regulate all feeding activities to ensure that the dolphins don't become too dependent on handouts and continue to forage normally in the wild. The dolphin information centre is a good place to learn more about the dolphins and other marine animals. You can also enjoy fishing, swimming, boating and beachwalking. Facilities include barbecues, shelters, lawns, a boat ramp and jetty and there is a range of accommodation from resort-style to budget. There are shops and a caravan park. Entry fees apply.

A three kilometre walktrail meanders across the coastal dunes to the red sandhills and a lookout over the bay, passing a historic grave site, bird hide, Aboriginal cave shelter and a quiet beach (see page 48).

Photo - Jiri Lochman

BOTTLENOSE DOLPHIN

(Tursiops truncatus)

Bottlenose dolphins abound in the waters of Shark Bay, and you often see these magnificent creatures riding on the bow wave created by boats, surfing waves or leaping playfully into the air.

DESCRIPTION: The bottlenose dolphin has a grey back but its belly is a light grey colour. Bottlenose dolphins have prominent dorsal fins, which can be seen slicing through the water. This fin is slightly hooked and set midway along the body. This playful mammal is also easily recognised by its melon-shaped head and short, wide and rounded beak. The flippers are broad at the base and taper to a point. Bottlenose dolphins are very variable in size, depending on where they are found. Average length is three metres and calves are about a metre at birth. However, bottlenose dolphins from Shark Bay are smaller than average.

STATUS AND DISTRIBUTION: This species is common in cold, temperate and tropical seas all over the world. It is often seen close inshore in estuaries, even entering rivers, and an offshore form is found in the open ocean.

LIFE HISTORY: Bottlenose dolphins have a complex yet fascinating social structure. Within a population, they form small subgroups which inhabit a defined home range. Members of a group, however, may change from time to time and they assist each other in activities such as fish herding and calf rearing. Even mating is a group activity - the males co-operate to herd a female in reproductive condition and take turns to mate with her. They also try to prevent rival groups from having access to her. A calf is generally born 12 months later. The species lives for 25 to 30 years and females begin to breed from about six years of age, calving every two or three years. The calves suckle for up to 18 months. Bottlenose dolphins eat a wide variety of fish, squid and octopuses. The offshore form may be able to dive to depths of more than 600 metres.

Photo - Jiri Lochman

STRANDING HISTORY: Bottlenose dolphins often strand, either singly or in small groups. Strandings should be reported to the Department of Conservation and Land Management (CALM).

HUMPBACK WHALE

(Megaptera novaeangliae)

Humpbacks are the fifth largest of the great whales and are noted for their haunting songs. Named because of the distinct "hump" that shows as the whale arches its back when it dives, humpbacks are more coastal than most of the other large baleen whales. When in a playful mood, they may put on spectacular displays: breaching, rolling, slapping their pectoral fins and generally having a "whale" of a time.

DESCRIPTION: Humpbacks have knobby heads, very long flippers with knobs on the front edge, and a humped dorsal fin. They are blackish, with white undersides and sides. Males average 14.6 metres and females 15.2 metres long. The maximum length is 18 metres and a mature adult may weigh up to 45 tonnes.

STATUS AND DISTRIBUTION: Humpbacks are widely distributed in all the world's oceans. They were heavily exploited by whalers and their numbers were severely depleted by 1962. In WA, their numbers are now recovering at a remarkable 10 per cent each year since they became protected in 1963. Nevertheless, it is estimated that there are only a few thousand humpback whales in southern oceans and in WA they are considered endangered.

MIGRATION: Each autumn, in late April to early May, the Australian humpbacks leave Antarctica to migrate northwards to their tropical calving grounds along the western and eastern coasts of Australia. About July, they begin travelling south to their feeding grounds in the Antarctic. Whales can be seen passing through the waters of Shark Bay from July to October. The first groups to be seen heading south are usually the newly pregnant females, followed by the immature whales of both sexes, then the mature males and females. Mothers with newborn calves stay longest, and travel more slowly, enabling the calves to grow rapidly and develop a layer of blubber for protection in the cold feeding waters they will soon be visiting.

Above: *Head and flipper*

Below: *A humpback tail*

Photos - Doug Coughran

FEEDING: Australia's humpback whales spend the summer in the waters of Antarctica feeding mainly on protein-rich krill. They are filter feeders, straining their food from the water by means of hundreds of horny baleen plates hanging from their upper jaws. These have bristly edges which mesh to form a filter. A humpback can consume nearly one tonne of food each day. They feed where large concentrations of prey are available and are not thought to feed while in WA waters.

BREEDING: When born, after about a 12 month gestation period, calves are about four and a half metres long and weigh about one and a half tonnes. The mother's milk has a 35 per cent fat content and milk production can be as high as 600 litres per day. The sucking calf can gain more than 45 kilograms a day during the first few weeks of life. Nursing ends at about 11 months, when the calf can be up to nine metres long.

STRANDING HISTORY: They rarely strand. However, a humpback yearling stranded at Bunbury in October 1990 and had to be euthanased. There is little that rescuers can do to help humpbacks, as such a huge animal is impossible to move.

WHERE TO SEE THEM: Following their recovery from the brink of extinction, pods of humpbacks are once again becoming a spectacle as they pass close to the coast on their journey south. They pass near to Shark Bay and sometimes enter the Bay.

Above: *Tail*

Below: *A humpback's underside*

Photos - Doug Coughran

DUGONG

(Dugong dugon)

One of the largest and most secure populations of dugong in the world grazes on the extensive beds of seagrass in the shallow marine environment of Shark Bay. It is estimated that around 10 000 dugongs, representing 10 per cent of the world's population, live in the bay. These big brown mammals are alert, shy and curious, and will readily come to investigate people or boats, disappearing as quickly as they materialise. They are more closely related to elephants than they are to whales and dolphins.

DESCRIPTION: Dugongs are quite streamlined, with a whale-like tail and flippers. The snout is downturned with the nostrils on top, and a greatly expanded upper lip is equipped with complex muscles and bristles of varying size and stiffness. This is used to root into the sea bottom and extract seagrass rhizomes. Their portly appearance is due to the exceptionally long, large intestine needed to break down their seagrass diet. Dugongs also have very dense, heavy bone that helps them control their buoyancy.

STATUS AND DISTRIBUTION: These "sea cows" are found in tropical and subtropical waters throughout coastal parts of the Indian and western Pacific oceans. However, they have been hunted to near extinction over much of their former range.

PREFERRED HABITAT: Subtropical Shark Bay is at the southern limit of the dugong range. Shifts in dugong distribution within the bay correlate to seasonal shifts in relative water temperatures: dugongs take refuge in the warmer waters of the bay in winter. In summer dugongs feed mainly on a few small beds of rhizome-rich tropical seagrasses in the eastern bay and the lower part of the Freycinet Estuary.

LIFE HISTORY: Dugongs have a very low reproductive rate. Females may live up to 70 years of age, but don't produce their first calves until between 12 and 17 years of age. The interval

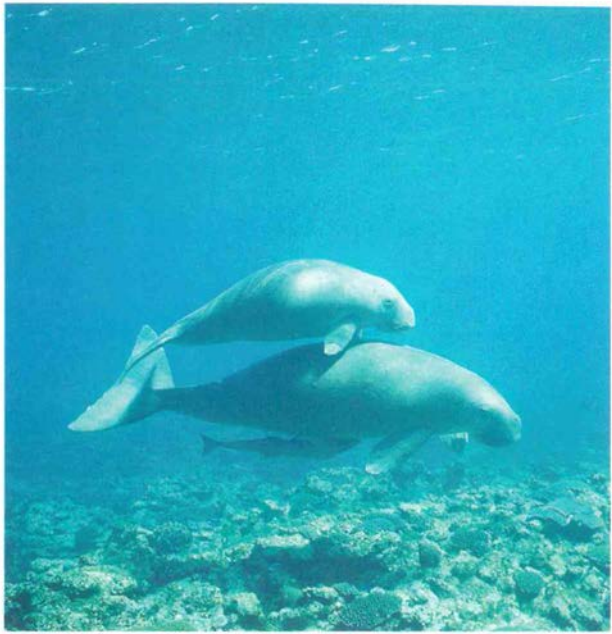


Photo - Geoff Taylor/Lochman Transparencies

between births may vary between three and seven years, and they reportedly give birth in very shallow water. The single calf stays close to its mother for 18 months or more. Although dugongs begin to eat seagrass within two weeks of birth, females continue to suckle their young. Young dugongs hide above the mother's back when danger threatens. In Shark Bay people have sometimes seen dugongs being attacked by groups of killer whales.

WHERE TO SEE THEM: When boating over the shallow seagrass beds in Shark Bay, travel slowly (about 10 knots) to avoid hitting or harming dugongs. If you come across a herd, cut the boat's engines and drift and let them swim around the boat.

GREEN TURTLE

(Chelonia mydas)

Most of the turtles seen in Shark Bay are green turtles. The World Heritage Area is the southern limit of green turtle nesting in WA. In the past, the animal was boiled up into soup, and its common name came about because its fat was green. Australia, along with 115 other countries, has now banned the import or export of products from sea turtles.

DESCRIPTION: The heart-shaped shell of the green turtle is greyish-brown to black. Adults reach about a metre long and weigh from 100 to 125 kilograms.

STATUS AND DISTRIBUTION: Green turtles are found throughout the world's tropical and subtropical areas. Small numbers are also occasionally seen in temperate waters, such as those offshore from Perth.

PREFERRED HABITAT: For most of their lives, these animals do not leave the sea. However, during the summer months, the females come ashore to nest on some mainland beaches and many offshore islands of northern Australia.

LIFE HISTORY: Unlike other marine turtles, which are carnivores, adult green turtles are vegetarian, grazing on seagrass beds or algae. Congregations of turtles may be seen in Shark Bay from the end of July, although the start of the breeding season is usually later. At mating time, males cluster around and compete for individual females, which inevitably breed with more than one male. Within a short time, the female lays her first parchment-shelled eggs on the beach, repeating this on a fortnightly basis up to six or even eight times. The hatchlings emerge from their nests and journey to the sea between January and April. They have an extremely high mortality rate, falling victim to foxes, silver gulls and birds of prey.

Photo - Doug Coughran

Photo - Tony Start

LOGGERHEAD TURTLES

(Caretta caretta)

The loggerhead, considered to be the most endangered turtle that nests in the Australian region, inhabits the waters of Shark Bay. Human activities are the main cause of its decline. Loggerheads may be drowned in fishing nets, strangled by rubbish or hit by boats. In other parts of the world they are killed for meat and leather, and their eggs are taken for food and aphrodisiacs.

DESCRIPTION: Most loggerhead turtles are less than a metre long and rarely weigh more than 150 kilograms. Older adults can develop very large heads. The shell is more or less heart-shaped, and quite elongated. It is usually dark brown above and much lighter below.

STATUS AND DISTRIBUTION: It is estimated that 1500 to 2000 females nest in WA each year, predominantly in the Shark Bay and North-West Cape region.

PREFERRED HABITAT: Loggerhead turtles reside largely in warm shallow seas and estuaries. They mate and nest in tropical and subtropical areas such as Dirk Hartog Island.

LIFE HISTORY: Feeding in estuaries and along the continental shelf, loggerheads use the strong jaw muscles in their large heads to crush shellfish and crustaceans. They begin to breed in about October. Each clutch contains 100 to 150 parchment-shelled eggs. Individual females do not nest every year. They commonly skip several years, with some not returning for seven years or more. In the winter months, baby loggerhead turtles are often carried south from northern breeding areas by means of the Leeuwin Current.

WHERE TO SEE THEM: The sandy beaches of Turtle Bay, at the northern end of Dirk Hartog Island, are among the few key nesting sites for loggerhead turtles in WA. More than 100 females nest there on some nights at the peak of the summer season.

Photo - Babs & Bert Wells/CALM

Photo - Eva Boogaard/Lochman Transparencies

SEA SNAKES

For air-breathing animals, sea snakes are remarkable divers. Some species can dive to 100 metres or more, and remain submerged for up to two hours. This may be partly due to the ability of some species to absorb part of the oxygen they need through their skins. Sea snakes feed, breed and grow in the sea.

DESCRIPTION: The 22 species of sea snake found in WA vary greatly in colour and markings. They all, however, have nostrils on the top of the snout, a boat-shaped abdomen and a flat tail which acts as a paddle to help them swim more effectively.

DISTRIBUTION: Most sea snakes live in the warm, shallow seas of the tropics and sub-tropics. Some inhabit muddy estuaries, while others prefer clear waters near reefs. Individuals are occasionally swept south by warm currents, but eventually perish in the cooler southerly waters. The Shark Bay sea snake (*Aipysurus pooleorum*) is largely confined to Shark Bay but occasional vagrants are found further south.

LIFE HISTORY: Sea snakes give birth to live young at sea. The venom is used to subdue and kill prey, which is then grabbed in the jaws and swallowed whole. The skull bones of snakes are loosely attached and they can dislocate their lower jaws and slide them sideways to swallow very large prey. They tend to be fussy eaters. Some eat only catfish, another the eggs of only two families of fish. Others dine on eels, fish, prawns, crabs and worms.

PRECAUTIONS: Although sea snakes are highly venomous, they are placid and rarely attack people unless provoked and, even when they do, they do not always release venom. They are quite curious and may approach, but if you don't touch them they should leave you alone. Sea snakes have been known to curl around divers' regulator hoses and limbs, especially during the breeding season. If this occurs, don't become alarmed, but wait patiently until they

Photo - Babs & Bert Wells/CALM

move off. Never touch sea snakes washed onto beaches, even if they seem dead.

TREATMENT: If you are bitten, keep the injured limb still and seek immediate medical attention.

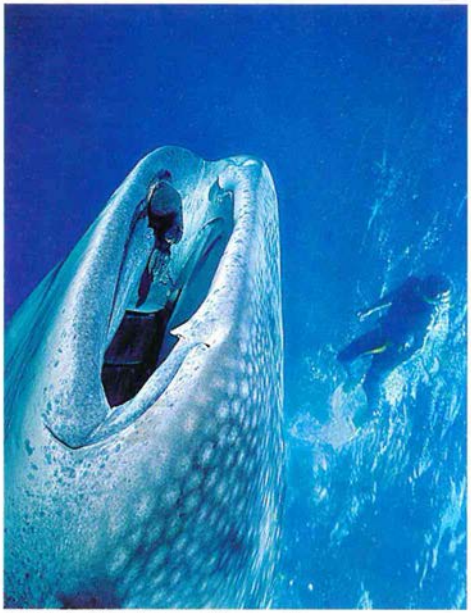
WHALE SHARK

(Rhincodon typus)

Whale sharks are the world's biggest species of fish. These magnificent animals are generally between four and 12 metres long, but they are harmless to people. Faced with an animal this size looming out of the ocean, it is impossible not to marvel at their sheer power and beauty, and their huge bodies patterned with rows of white spots. The whale shark is the only member of the family Rhincodontidae. Its closest relatives include nurse sharks, leopard sharks and wobbegongs.

DESCRIPTION: Whale sharks have a broad, flattened head; a very large mouth, very large gill slits, three prominent longitudinal ridges on its upper flanks, a large first dorsal fin, an enormous upper tail fin that is partially crescent-shaped and a unique "checkerboard" pattern of light spots and stripes on a dark background. The function of these distinctive body markings is not known. Many bottom-dwelling sharks (close relatives of the whale shark) have bold body markings for camouflage. Sharks have a high degree of visual development so such distinctive markings, in a species that spends a great deal of time near the surface, could be related to social activities, such as postural displays and recognition. Another possibility is that these pigment patterns could shield the fish from ultra-violet radiation. Males have sexual organs known as claspers, which are used in copulation. Females lack these organs.

STATUS AND DISTRIBUTION: The whale shark is a semi-oceanic species found in a band extending about 30° on either side of the Equator. The animals are fished in certain parts of the world, such as India, Pakistan and the Philippines, but are not particularly sought after, as the flesh is reported to be very soft and bland.



Photos - Geoff Taylor/Lochman Transparencies

MIGRATION: Whale sharks are thought to be highly migratory animals. Their movements are undoubtedly linked to changes in water temperature, currents, winds and other environmental factors. It has also been suggested that these "suction" filter-feeders, are probably quite dependent on localised productivity events, such as plankton blooms and invertebrate spawning events, with associated increases in zooplankton and shoals of bait fish. Different locations appear to be preferred at various times of the year. It is not known whether whale sharks undertake fairly localised migrations or engage in large-scale trans-oceanic movements.

LIFE HISTORY: Nobody knows where whale sharks mate. Whale sharks that visit Ningaloo seem to be mostly adolescent fish, with few very large sexually mature individuals. A recent discovery revealed that the egg case is retained in the mother's uterus before she gives birth to live embryos. Most shark species live for between 20 and 30 years, but a few live to about 100 years of age. Whale sharks could be very old, but scientists have so far found no way of aging them.

FEEDING: The whale shark feeds by filtering a wide variety of prey from the water. Its prey includes small, planktonic crustaceans such as krill, crab larvae and copepods, small schooling fish such as sardines, anchovies and mackerel, and occasionally larger prey such as small tuna, albacore and squid. Microscopic marine plants (phytoplankton) and seaweeds may also form a component of the diet.

WHERE TO SEE THEM: The best place to see whale sharks is at Ningaloo Marine Park. Significant numbers of whale sharks have been seen along the WA coastline in December and January, between Kalbarri and Shark Bay. They have also been recorded in South Passage in April. The Department of Conservation and Land Management would like to be informed about any sightings. If you see or photograph a whale shark in or near Shark Bay phone (089) 432 5100.

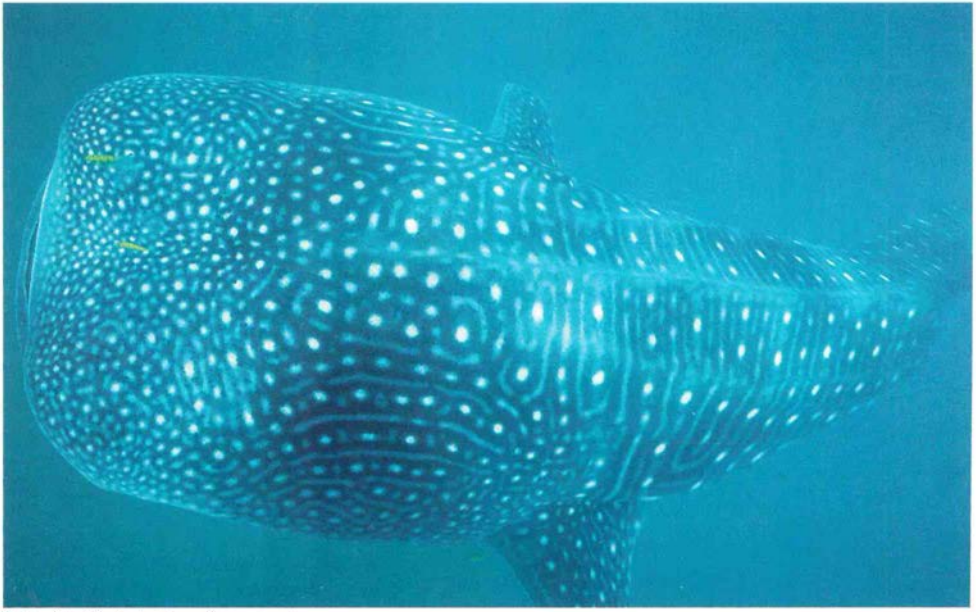


Photo - Geoff Taylor/Lochman Transparencies

STINGRAYS AND MANTA RAYS

Rays are among the most graceful animals that inhabit our underwater world. Like sharks, to which they are closely related, rays do not have true bones but cartilage and have an ancient lineage that can be traced back 350 million years. Most have venomous spines attached to the tail. Manta rays (*Manta birostris*) are frequently seen in Shark Bay, especially around the southern and northern ends of Dirk Hartog Island. These magnificent fish can weigh more than two tonnes and are able to leap from the water.

DESCRIPTION: All rays have very flat bodies. The tail varies from quite thick to thin and rodent-like. Some such as eagle rays have pointed wings, whereas others appear rounded from above. Rays are usually coloured to blend in with their surroundings.

DISTRIBUTION: Rays are distributed throughout the world in a variety of habitats but they are usually bottom-dwellers.

LIFE HISTORY: As with many shark species, almost all types of rays hatch their eggs within the uterus and then give birth to live young. They emerge tail-first and their venom spines are rubbery at birth, presumably to prevent the mother being impaled. Manta rays are large and powerful and also have a reputation for being dangerous, but they are harmless plankton feeders. They use a pair of slender feeding flaps on each side of the head to direct food towards their mouths as they cruise through swarms of plankton.

WHERE TO SEE THEM: Rays can generally be seen cruising along on sandy or weedy bottoms, especially around jetties or boats. They sometimes hide in caves or under ledges.

PRECAUTIONS: Rays are usually not aggressive, but it is preferable to admire them from a distance. Wear exposure suits, gloves and suitable footwear when snorkelling and diving and shuffle, rather than stride, when in shallows.

Photo - Babs & Bert Wells/CALM

Photo - Ann Storrie

BUTTERFLYFISH

Many spectacular species of butterflyfish are found on Australia's tropical and subtropical coral reefs. Their delightful appearance is no accident, but designed to increase their chances of mating and defining their territory.

DESCRIPTION: There are at least 116 species of butterflyfish, which can be distinguished by the variations in their markings. However, they all have flattened bodies which enable them to squeeze into crevices and between branches of coral. Many also have false eyes on their rear and a dark band over their real eyes. This subterfuge is designed to confuse predators, such as eels, scorpionfish and sea snakes, and prevent them from attacking the vulnerable eye area.

DISTRIBUTION: Most species of butterflyfish inhabit coral reefs in tropical and subtropical areas, usually in waters less than 20 metres deep. Relatively few species live in colder southern waters.

PREFERRED HABITAT: Butterflyfish rely on coral reefs for shelter and protection and coral polyps are a major source of food.

LIFE HISTORY: They often hover upside down, and use their fine, bristle-like teeth to nip off tasty morsels of coral. Their snouts are usually pointed, making them useful for consuming coral polyps, sponges, marine worms and perhaps small shellfish. Butterflyfish often hide at night to avoid their enemies. Some species may even change colour at night to help avoid detection.

WHERE TO SEE THEM: Butterflyfish tend to be active during the day, so they can be easily seen by snorkellers around most patches of reef in Shark Bay, such as the Broadhurst corals, Sandy Point and Surf Point (see pages 56-61).

Right: *Raccoon butterflyfish*

Photo - Peter & Margy Nicholas/Lochman Transparencies

QUEENSLAND GROPER

(Epinephelus lanceolatus)

One of the biggest thrills of exploring the underwater environment is to come face to face with large, rare or unusual sea creatures. One animal that can reach a tremendous size is the Queensland groper, which can weigh in excess of 300 kilograms and reach more than two and a half metres long. These fish are often curious and may even approach you for a closer look.

DESCRIPTION: Its massive size distinguishes the Queensland groper from most other fish. It is dark olive-grey, with lighter grey mottling. Younger fish are attractively marked with black bands spotted white and yellow fins and tail spotted with black. The pectoral and anal fins are quite rounded but the front of the dorsal fin consists of 11 pointed spines. Large lips surround the downward-sloping mouth, which has many rows of small, sharp teeth.

OTHER NAMES: Giant groper.

DISTRIBUTION: The Queensland groper is found over a wide area of the Indo-Pacific region, ranging from eastern Africa to the central Pacific islands. In WA it can be seen from Rottnest Island and northwards, but one individual took up residence under the Busselton Jetty during much of 1995, an anomaly that could have been related to the presence of a southward-flowing band of warm water known as the Leeuwin Current.

PREFERRED HABITAT: This fish usually inhabits coral reefs and rocky areas, showing a particular preference for caves.

LIFE HISTORY: This large predator lurks in caves and other good hiding spots, ready to ambush tasty animals, such as fish and crustaceans, that venture too near. It will readily change colour to camouflage itself. It does most of its feeding at dusk. Like other species of groper, all Queensland gropers begin their lives as females and change their sex when quite old.

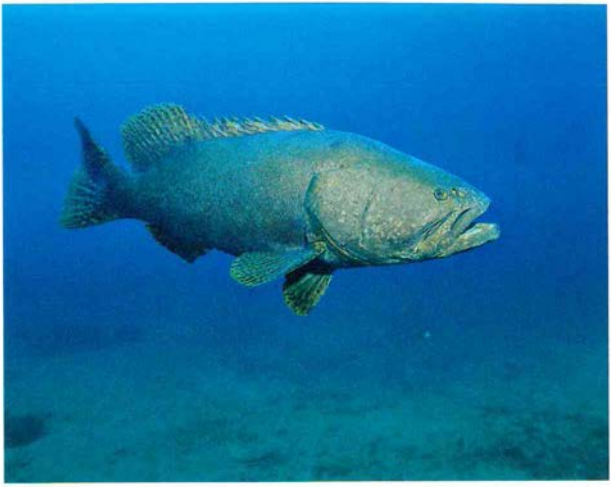


Photo - Peter & Margy Nicholas/Lochman Transparencies

CONSERVATION: These fish are one of our marine wonders and conservation-minded divers will leave them unmolested for others to enjoy. They may live up to 50 years of age and there are few in any location, so large animals would take many years to be replaced.

CLARK'S ANEMONEFISH

(Amphiprion clarkii)

Anemonefish, together with other members of the damselfish family, make a rather drastic transformation when a member of their social group dies. They don't just mourn - one of them actually has a sex change. Anemonefish live in groups of one large dominant female and one or more smaller males. Only the largest male fertilises the female's eggs, as the others are sterile. Size and the aggressive behaviour of each fish towards those below it (with the female at the top of the pecking order) maintain the hierarchy. However, the males' testes contain rudimentary ovaries. If the female dies, the largest male begins to act like a female and develops fully functioning ovaries. At the same time, the second-largest male becomes sexually mature and takes over as the dominant male. The remaining male anemonefish stay sterile. The most common species in Shark Bay is Clark's anemonefish.

DESCRIPTION: Clark's anemonefish is predominantly dark grey, with two white bars outlined in black along each side of its body. A bright orange patch on its lower body and a pale yellow tail contributes to its striking appearance. It grows up to 13 centimetres.

STATUS AND DISTRIBUTION: The species is found from the Houtman Abrolhos Islands, offshore from Geraldton, to Indonesia and the Western Pacific.

PREFERRED HABITAT: Clark's anemonefish associate with large sea anemones, usually near coral reefs.

LIFE HISTORY: Anemonefish have developed a mucus that prevents the anemone's stinging tentacles from triggering. These small fish then gain protection from predatory fish by retreating into the tentacles.

WHERE TO SEE THEM: They inhabit large anemones in South Passage and on the eastern sides of Dirk Hartog, Bernier and Dorre islands.

Photo - Ann Storrie

COWRIES

Cowries are known for their highly polished shells, which come in a delightful array of colours and patterns. However, these otherwise alluring shellfish are generally encased in a fleshy camouflaging mantle, which covers most of the shell when the animal is active. Egg and tiger cowries are just two of the species that can be seen at Shark Bay.

DESCRIPTION: Their distinctive shape disguises the fact that cowry shells are spirally coiled, like those of other gastropods. Youngsters hardly resemble their parents and are seldom recognised as cowries, since their shells are long and thin, with a pointed spire. However, the last body whorl produced before the onset of maturity is swollen and covers the spire. The outer lip turns inwards, narrowing the opening to just a slit that extends for the length of the shell.

STATUS AND DISTRIBUTION: There are more than 70 species of cowry in WA waters, and most of these inhabit the tropics.

PREFERRED HABITAT: Most cowries inhabit areas of reef less than 20 metres deep.

LIFE HISTORY: These animals do most of their feeding at night, browsing on small animals and plants that attach themselves to rock or coral. Females lay large egg masses of several hundred capsules, each capsule with 100 to 300 eggs. After hatching, the young usually go through a larval stage, and will drift for a few days as plankton before settling on the bottom.

WHERE TO SEE THEM: The keen-eyed can spot cowries in most marine areas, but conservation-minded divers will leave them unmolested, for others to enjoy. Cowries are highly prized by collectors, but those living within marine parks are protected and may not be removed.

Photo - Ann Storrie

SHARK BAY PEARL OYSTER

(Pinctada albina)

The town of Denham owes its existence to the Shark Bay pearl oyster. It was originally a pearling camp known as Freshwater Camp. Old shells can still be found scattered at other old pearling camps around the Bay, such as Herald Bight. In those days, large pots ("pogey" pots) were used to boil down the oysters. The women and children had the job of keeping the fires alight. Once a week, the pots would be emptied to obtain the pearls and shells, which had sunk to the bottom. The streets of Freshwater Camp were constructed from the discarded shells, and the old pearlshell thoroughfare is still there today beneath the bitumen.

DESCRIPTION: Pearl oysters have two flattened shells, with a straight edge where they are hinged. The outer sides are quite rough, but the inside is coated with a lustrous form of calcium carbonate called nacre. A number of species of pearl oyster live in WA waters, but the one at Shark Bay is smaller, and produces a smaller pearl, than the world's most commonly exploited species - the silver-lip pearl oyster (*Pinctada maxima*).

STATUS AND DISTRIBUTION: The species is abundant at Shark Bay, despite being heavily exploited in the late nineteenth century for use in making buttons and inlay work. After plastic buttons were introduced the industry crashed in the 1920s and 1930s, allowing pearl oyster stocks to recover.

PREFERRED HABITAT: These animals are filter feeders and prefer areas with fast-flowing currents. They attach themselves to any hard substrate on intertidal and sub-tidal reefs and flats.

LIFE HISTORY: The larvae of pearl oysters settle as thin-shelled "spats" after a few days of life, attaching themselves to the bottom by threads that emerge from a notch in the shell. They may live for many years. Pearl farmers capture wild oysters which are about three years old and insert beads into the mantle, which irritate the

Photo - Eva Boogaard/Lochman Transparencies

Photo - Jeremy Colman

animals and trigger production of pearls. This takes about two years. The best oysters can be seeded several times during the course of their lives, producing larger pearls as they age.

HAMELIN COCKLE

(Fragum erugatum)

A humble shellfish with an ordinary appearance has had a major effect on the geography of Shark Bay. Countless tiny white shells of this burrowing bivalve have formed the amazing Shell Beach, which stretches for 60 kilometres. Some deposits are as much as ten metres deep. Further inland, the shells have become compacted and were used as a unique building material in the Shark Bay area. Buildings made from local shell blocks include St Andrew's Church and the Old Pearler Restaurant.

DESCRIPTION: The shellfish is enclosed in tiny bivalve shells a few millimetres long (less than 14 millimetres long in Shark Bay, though specimens from the Dampier Archipelago may reach almost two centimetres). The flesh of living animals is brown and can be seen through the translucent, largely unpigmented valves.

STATUS AND DISTRIBUTION: It ranges from the Dampier Archipelago in the Pilbara to the Houtman Abrolhos Islands.

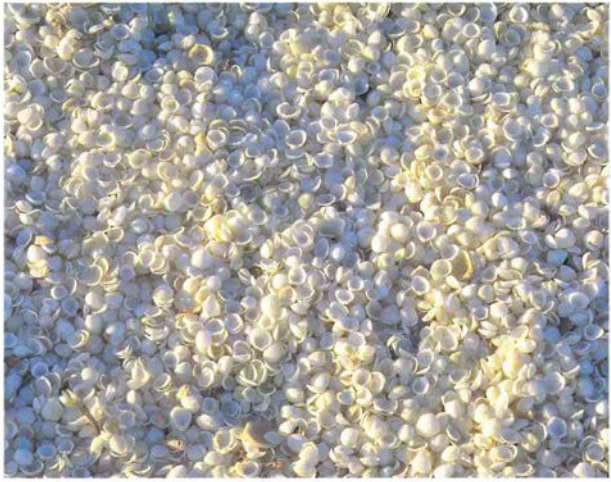
PREFERRED HABITAT: The shellfish burrows into the sea floor in areas between 1.2 to 6.5 metres deep.

LIFE HISTORY: The Hamelin cockle is a hermaphrodite which is believed to spawn once a year between winter and spring. The bivalves that live in the hypersaline Hamelin Pool and Lharidon Bight contain zooxanthellae (green algae) living within their mantle and gills. Like other plants, they photosynthesise energy from the sun, producing sugars and oils used by their host. This is probably the secret that allows the bivalves to thrive in these nutrient-deficient and relatively closed ecosystems. Although some shells are washed ashore continuously, large scale deposition of the shells probably only occurs during major storms.

WHERE TO SEE THEM: Shell Beach Conservation Park is easily accessible from the Denham Hamelin Road. You can also visit the shell block quarry near the Hamelin Pool Telegraph Station.

Above: *Shell Beach*

Below: *Close-up of the shells*



Photos - Jiri Lochman

PRAWNS

(Penaeus species*)*

Banana prawns (*Penaeus merguiensis*), western king prawns (*P. latisculcatus*) and brown tiger prawns (*P. esculentus*) are all commercial species found at Shark Bay, which supports one of Australia's major prawn fisheries. The vast meadows of seagrass in the shallow embayments are important nursery areas for juveniles.

DESCRIPTION: These species are large compared with other prawns. Brown tiger prawns are usually pale brown or yellow with darker bands, and have two long feelers. Banana prawns are white or pale yellow, with a smattering of small reddish-brown dots. Western king prawns are light yellow to brown. Females of all species are typically larger than males. The third and longest leg of prawns in this family is invariably clawed, and the first segment of the abdomen always overlaps the second segment.

OTHER NAMES: Shrimp.

DISTRIBUTION: Shark Bay is the southernmost limit for banana prawns and brown tiger prawns on the western coast of Australia. Western king prawns occur around most of the Australian coast, apart from Victoria and Tasmania, but are far more abundant in northern waters than southern waters.

PREFERRED HABITAT: These species range from the shallows through to depths up to 200 metres. Most of those caught are trawled from depths of between 10 and 20 metres.

LIFE HISTORY: Brown tiger prawns and banana prawns emerge from the bottom to feed at night on molluscs, crustaceans and marine worms, while western king prawns feed on decaying organic matter. Depending on the species, spawning may occur several times each year. The females release hundreds of thousands of eggs directly into the water as plankton, where they provide an important food source for other animals. When

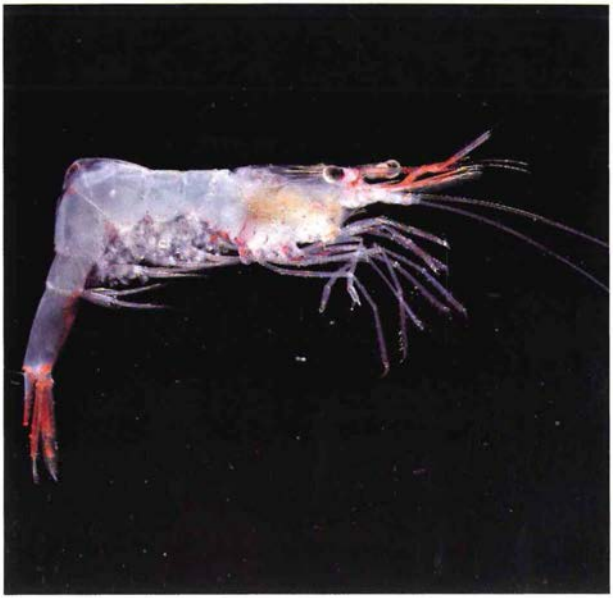


Photo - Clay Bryce/Lochman Transparencies

A species of small carid shrimp found in seagrass beds.

they are a few months old the juveniles leave nursery areas and migrate offshore. The timing of these movements may be related to the amount of rainfall.

SEA SLUGS

Sea slugs or nudibranchs (pronounced "noo-dee-branks") are renowned for their boundless variety and beauty. They are only distantly related to land slugs. Unlike other molluscs, they don't need to generate the huge amount of energy required to build and continually enlarge a shell.

DESCRIPTION: Sea slugs are found in a vast variety of body shapes and sizes, ranging from a few millimetres to 30 centimetres. The word nudibranch is Latin and literally means "naked gills", as they have exposed gills in a circle on their back or along the sides of their body.

STATUS AND DISTRIBUTION: Sea slugs live throughout the world's tropical, subtropical and temperate waters, with different species occupying different home ranges and niches.

PREFERRED HABITAT: The hundreds of species of sea slug so far recorded in WA waters live in a diverse range of habitats. Many crawl around on reefs and other marine habitats, while others swim around in the ocean belly-up, feeding on plankton.

LIFE HISTORY: Different species of sea slugs have evolved diverse adaptations that enable them to survive in the marine environment. Many brightly-coloured species store distasteful and noxious chemicals in glands in their skin. One species eats a poisonous sponge and uses the toxins from its food as a defence against enemies. The bright colours probably serve as a warning to predators that they are poisonous. Other species mimic the colour patterns of those that are poisonous. All sea slugs are carnivores. A group of sea slugs known as aeolids feed mainly on sea anemones, hydroids, soft corals and hard reef corals, which have special stinging structures called nematocysts. As they feed, aeolid nudibranchs are able to remove undamaged nematocysts

Photo - Clay Bryce/Lochman Transparencies

and store them in their bodies for future use. When attacked, they can discharge the stinging cells to deter their predators.

WHERE TO SEE THEM: Close inspection of most marine habitats will usually turn up at least one species of sea slug nestled amongst the animals on which it feeds, or sheltering in vegetation.

SPONGES

Aristotle was the first to recognise, some 2000 years ago, that sponges were animals. In the sixteenth century, they were thought to be solidified sea foam, and in the seventeenth century it was suggested that they were the homes of marine worms. Otherwise the general impression was that sponges belonged to the plant kingdom.

DESCRIPTION: Living sponges look nothing like the bathroom sponge, which is only the skeleton of one particular group of sponges. The colours range from pink, light blue, yellow, white, orange, purple and so on. The smallest sponges are only a millimetre high when fully grown and the largest sponge known is about as big as a medium-sized barrel. Near the shore, sponges tend to encrust rocks and other structures. In shallow and deep seas, the forms vary from spherical, finger-shaped, bushy or tree-like, tubular, cup-shaped or funnel-shaped. Their texture varies from soft and readily compressible to as hard as stone. The characteristic feature of a sponge is that it bears one or more conspicuous rounded openings. These are best described as vents. The rest of the surface under a microscope is seen to be punctured by minute pores.

DISTRIBUTION: Sponges grow virtually anywhere in the ocean where they can gain a firm hold.

PREFERRED HABITAT: Sponges are found in large numbers, from mid-tide level near the shore down to the greatest depths of the ocean, but prefer low energy environments.

LIFE HISTORY: These remarkable animals have no mouths or blood systems. These sedentary creatures feed by filtering particles of food, such as minute plant fragments, from the water. Sponges are important components of the marine ecosystem, providing shelter and food for a variety of animals such as fish,

Photo - Eva Boogaard/Lochman Transparencies

Sponges near Dirk Hartog Island

crabs, prawns, brittle stars, marine worms and molluscs. They often produce large quantities of mucus, which forms the main diet of many micro-organisms.

WHERE TO SEE THEM: The best places to see sponges in Shark Bay are probably in the patches of shallow reef. In the Broadhurst coral patch a bright purple sponge is notable and easily viewed by snorkellers.

REEF-BUILDING CORALS

There are three major coral groups: hard corals, soft corals and gorgonians, which are distinguished by the way in which they lay down their skeletons. Only hard corals can build reefs. Corals have formed patches of reef in a number of areas in Shark Bay, such as the Broadhurst corals and Surf Point.

DESCRIPTION: The basic component of a coral reef is the coral polyp. These animals take the form of a cylinder of tissue. Each is closed at the base and has a mouth at the other end that is surrounded by tentacles. Some species of coral may exist as single individual polyps, but most form colonies which live together as a single entity. Most corals feed at night and the polyps remain contracted during the day, but some species are occasionally seen with polyps extended and feeding during the day - a beautiful sight.

DISTRIBUTION: Corals with zooanthellae (see below) only flourish in warm, clear, low-nutrient water, so coral reefs are restricted to the tropics and sub-tropics.

PREFERRED HABITAT: Different forms and species of coral inhabit different parts of the reef. Staghorn corals favour sheltered lagoons that protect the delicate structures they have created. On deeper parts of the reef, sprawling plate-like forms maximise capture of the limited available light.

LIFE HISTORY: The tentacles have stinging cells that are used to capture food such as plankton and also serve as a defence mechanism. Hard corals produce a limestone skeleton by associating with tiny cells of algae known as zooanthellae. The microscopic zooanthellae find a safe haven in the living tissue of reef-building corals. Like other plants, they capture energy from the sun by photosynthesis, producing sugars and oils used by the coral host. They also help corals to extract calcium carbonate from the surrounding water, and this is used in reef-building.

Photo - Jeremy Colman

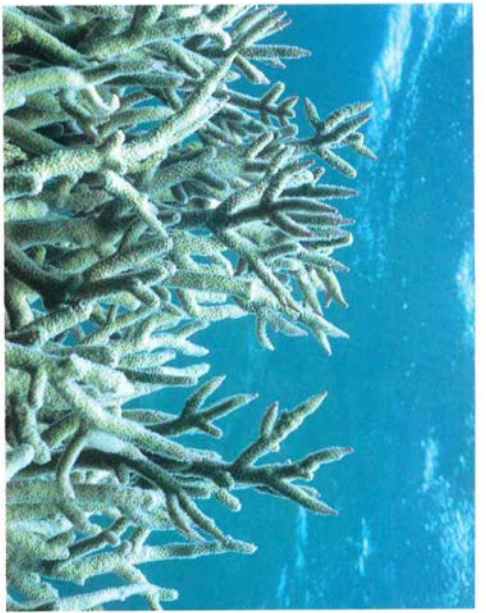


Photo - Jiri Lochman

SEAGRASSES

All animal life in the ocean is in some way linked to marine plants. Seagrasses, in particular, provide an important food source and shelter for marine organisms.

DISTRIBUTION: About 60 species of seagrass grow in sheltered and shallow waters throughout the world, except of course for Antarctica. Australia has 31 species, more than any other continent, and 12 of these grow in the Shark Bay World Heritage Area.

DESCRIPTION: Although often confused, seagrasses differ from seaweeds. Seaweeds are simple plants, without flowers or root systems, and require a firm surface, such as a rock, to grow on. Seagrasses, in contrast, are true flowering plants that have a root system which grows on and stabilises sandy or silty bottoms. Unlike other tropical and subtropical areas of the world, which have small seagrasses, Shark Bay has lush, long seagrasses that cover nearly a third of the shallow bay. The most abundant is wireweed (*Amphibolis antarctica*), covering nearly 3700 square kilometres of the bay's sandy bottom. It has branched woody upright stems, up to two metres long, with clusters of leaves on the end of each branch. Ribbon weed (*Posidonia australis*) is the other large seagrass growing in meadows, which cover about 200 square kilometres of Shark Bay. It has ribbon-like leaves.

LIFE HISTORY: Ribbon weed has flowers with both male and female parts. It produces floating fleshy fruits which are washed up on beaches from December to January. Wireweed, in contrast, has separate male and female flowers. The male flower releases pollen into the water, which drifts until it reaches a female flower. The seedling then continues to grow on the parent plant for several months until it breaks away to form a separate plant.

ECOLOGICAL ROLE: Seagrass meadows provide an important food source and habitat for hundreds of animals and help stabilise

Photo - Jiri Lochman

Above: *Aerial view of seagrass*

Below: *Ribbon weed*

Photo - Jeremy Colman

the sea floor. Such beds attract a wide range of animals, such as tiny worms, molluscs, echinoderms and crustaceans. These in turn attract larger animals and so begins a complex food web. Seagrass beds provide nursery areas for many commercially important species, including the western rock lobster, tiger prawn and herring.

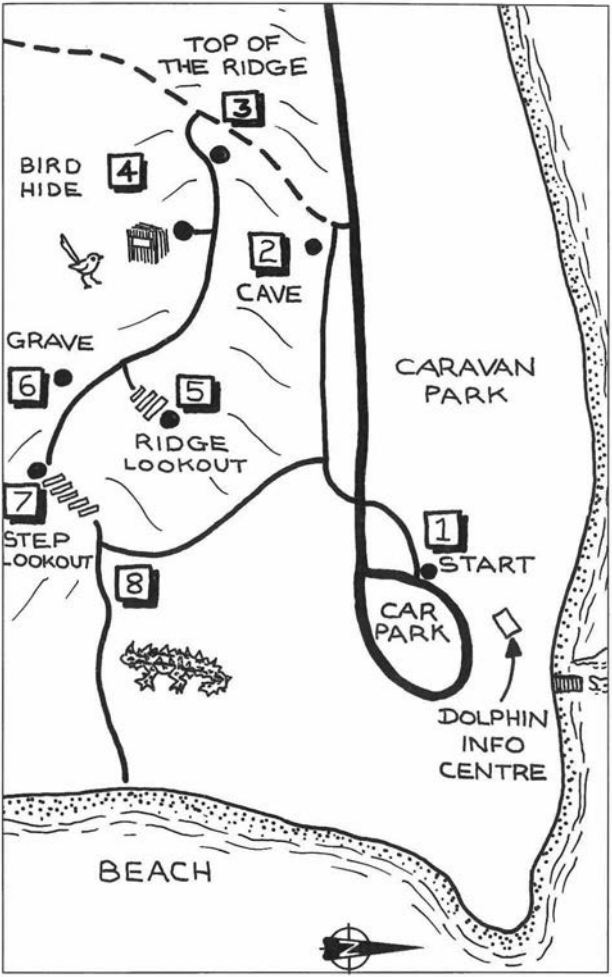
THE MONKEY MIA WALKTRAIL

The Monkey Mia walktrail is an easy walk of about one and a half kilometres that takes about an hour to complete. The best time to take the walk is just after sunrise or just before sunset, when the land birds are feeding. Please stay on the walktrail. This is a fragile ecosystem as the coastal sandplain, dunes and red sandplain are easily damaged and quickly erode.

1. At the start of the walk it is interesting to note the contrast between the white coastal sandplain and dunes and the red sand ridge further back. The two different soil types support quite different types of vegetation. The white coastal sandplain is dominated by limestone wattle (*Acacia sclerosperma*), green saltbush (*Rhagodia preissii*) and coastal myrtle (*Scholtzia leptantha*). The red sandplain is dominated by wattles, especially bowgada (*Acacia ramulosa*), a spreading shrub that grows up to three metres high. Larger plants include dead finish (*Acacia tetragonophylla*), broom bush (*Exocarpos sparteus*) and bullock bush (*Heterodendrum oleifolium*). The iron-rich red sand ridge evolved as the Australian land mass eroded. At one time the ocean lapped at the foot of the red dune. The white sands originated from the sea floor. They were blown onto the shore as the sea level fell to its current level over the past 4000 years.

2. In the 1980s, archaeologists excavated the small cave on this walktrail. They uncovered charcoal and the remains of shellfish which showed that Aboriginal people used this cave more than 1000 years ago. Please do not disturb this site.

3. The top of the ridge provides some stunning views to the north-west across Red Cliff Bay. The first land mass is Cape Rose, in the Francois Peron National Park, while the distinctive cliff in the distance in the north is Guichenault Point. The floating structure in Red Cliff Bay is the work platform for a pearl farm (see pages 34-35).


TOP OF THE RIDGE
3
BIRD HIDE
4
2
CAVE
GRAVE
6
5
RIDGE LOOKOUT
CARAVAN PARK
7
STEP LOOKOUT
1
START
8
CAR PARK
DOLPHIN INFO CENTRE
BEACH
N

4. The next feature, the bird hide, is a good place to see the thick-billed grasswren. Though endangered, it can be seen quite easily in bushland near Monkey Mia. This bird is about 15 to 20 centimetres long, with an erect tail and light brown streaky plumage. It has a high squeaking call and can be seen running along the ground near the start of the walktrail and on the white sandplain. Try to spot the Australian pipit, the little crow (the smallest of Australia's four species of raven), white-browed babbler, crested pigeon and zebra finch. The chiming wedgebill is more often heard than seen. Its distinctive voice seems to be asking "Why did you get drunk?", repeated monotonously and in a descending tone.

5. The ridge lookout provides views of the sand dunes and coastal sandplain, and across the waters of Hopeless Reach. The dark shadows stretching out in front of Monkey Mia indicate the extent of the seagrass meadows that grow in Shark Bay (see page 46).

6. The walktrail takes you past the lonely grave of three-year-old Hilda Johnstone, daughter of HF Johnstone (later WA's Surveyor General) who became ill and died, whilst travelling between Fremantle and Carnarvon.

7. The step lookout, adjacent to the gravesite, provides views of the tidal flats behind the sand dunes where migratory wading birds from as far away as Siberia feed in the shallows, along with local seabirds such as pelicans, cormorants and terns. In the distance is Faure Island.

8. After the step lookout you can either turn right to return to the Monkey Mia car park or continue onwards to walk back along the beach. Reptiles are numerous at Monkey Mia. Thorny devils (*Moloch horridus*) can often be seen sitting motionless. They have a bizarre appearance. Their long, curved spines are attractively dappled with yellow, orange, brown and white. The scientific name was derived from a poem by Milton which described the Caanite god Moloch, a "horrid king besmeared with blood of human sacrifice". However, the ferocious appearance of this thorny devil belies its nature - the lizard feeds solely on ants.

Above: *Thick-billed grasswren*

Right: *Richard's pipit*

Below: *Crested bellbird*

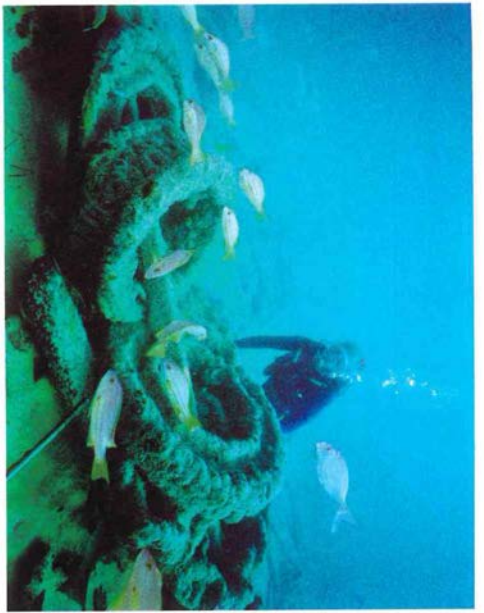
Photos - Babs & Bert Wells/CALM

THE WRECK OF THE *GUDRUN*

The *Gudrun*, the biggest wooden shipwreck found off WA, sank in 1901, carrying a load of jarrah from Bunbury to England. The ship was deliberately scuttled with more than a metre of water in its hold, after it had been sabotaged by the ship's carpenter. He admitted drilling a four centimetre hole though its bottom. The wreck was rediscovered by Canadian researcher Paul Anderson in 1989, on the sand flats north of Cape Peron in the Francois Peron National Park. The wreck lies in about six metres of water, 5.3 nautical miles north of Cape Peron. It is within the Shark Bay Marine Park, and a special sanctuary zone extends 500 metres around the wreck to protect the site. Artefacts can't be removed and line fishing and spearfishing are not permitted. However, the currents can be very dangerous. Novice divers should only dive this site with a charter operator.

The *Gudrun* is one of WA's largest untouched wrecks in shallow waters. Though heavily salvaged in the months following its loss it remained intact (the figurehead, for example, was removed and eventually came into the hands of the WA Maritime Museum in Fremantle), and the remains, which were flattened by the constant flow of the current and by the occasional cyclone, are substantial and visually very attractive. The hull is buried largely intact up to a metre in the soft sands, but anchors, fastenings, deck knees and so on are all visible. The remains, however, do not project much more than a metre above the sea bed.

The wreck is 65 by 20 metres, with another 20 by eight metre section nearby. Because of its relatively untouched wreckage, stunning marine life, remote and romantic location and history, WA Maritime Museum archaeologists rate it as one of the State's best wreck dives. It has become home to a rich variety of fish and marine life, including marine turtles, giant groper, stingrays, spotted cod, many species of trevally and sweetlips.



Photos - Patrick Baker/WA Maritime Museum

DIVING AND SNORKELLING

Most of the animals shown in this book are easily observed by divers or snorkellers in Shark Bay Marine Park. The best time to dive is between June and October, when winds are generally lightest and the temperature is in the mid-20s (°C). The town of Denham is fully serviced. While no hire equipment or compressed air is available at present, this is likely to change, so check before you visit. Otherwise, if you wish to dive in the marine park you have to bring filled SCUBA tanks and other dive gear with you. Fortunately, the lack of compressed air does not present a major problem for people who wish to explore the marine environment, as many sites are shallow and easy to snorkel.

CARING FOR THE MARINE ENVIRONMENT: A number of sites within the Shark Bay Marine Park have been proposed as sanctuary zones. No fishing of any kind is permitted in these areas and all marine plants and animals are completely protected. They serve as benchmark areas to monitor changes in adjacent areas in which fishing is allowed, and as replenishment zones, which allow fish to repopulate nearby depleted reef communities in the event of excessive use. They also enable visitors to experience pristine marine communities. Wrecks are protected under an Act which prohibits the removal of artefacts, or wilful damage of any sort. Please help preserve our maritime heritage by leaving wrecks undisturbed.

DIVING SAFELY: Because local tides and conditions can be tricky, people without local knowledge should only dive many sites in the Shark Bay Marine Park, including Monkey Rock and the wreck of the *Gudrun*, with an experienced charter operator. Dive all sites only on a slack tide, because when the tide kicks in it can do so with surprising ferocity. Ensure you are using the correct equipment for the conditions. Always check the weather forecast on the morning of your dive, and assess the site thoroughly

Photo - Eva Boogaard/Lochman Transparencies

before entering the water. Be flexible and alter your plans if necessary. Whether snorkelling or SCUBA diving, always display a dive flag and dive with a buddy.

Always use an approved dive table and stay within its limits. Never SCUBA dive if you have not completed an accredited course. It is also recommended that you complete an accredited snorkelling training program before venturing into the marine environment. Before diving, you and your buddy should:

- inform a friend of your dive site and estimated return time;
- establish entry and exit points and techniques;
- choose a course to follow, taking currents and other factors into consideration;
- consult dive tables and agree on a maximum time and depth;
- establish and review communication procedures and revise hand signals;
- agree on an air pressure for returning to the surface, usually 50 bar;
- decide what to do if separated;
- discuss what to do should an emergency arise.

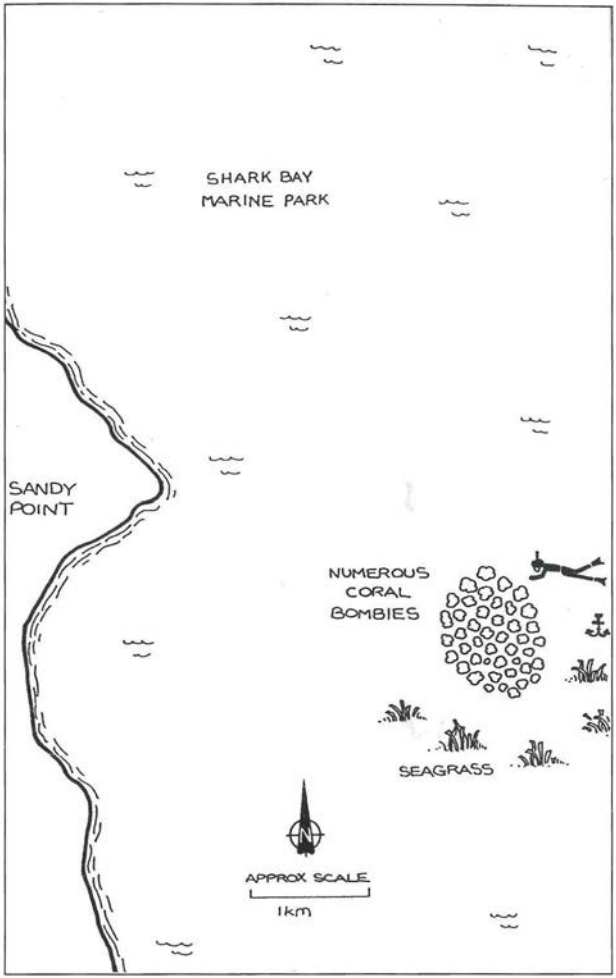
SANDY POINT

The coral and fish communities of Sandy Point are in a proposed sanctuary zone, which means you can look at but not touch marine life. This excellent snorkelling area is very sheltered. It lies on the eastern side of Dirk Hartog Island at 25°43.40' S and 113°04.6' E in only 3-4 metres of water. There are numerous species of blue, purple, green and brown staghorn corals growing in a great diversity of forms. In one area there is a virtual garden of beautiful blue staghorn coral. Brain corals and plate corals can also be seen. You may even be lucky enough to see brain corals with polyps extended and feeding during the day. There is such a large diversity of corals, in a kaleidoscope of colours and forms, that this is a good place to see how many different varieties and growth forms you can distinguish. Only dive this site on a slack tide, as the currents can be dangerous.

Fish species in the area include estuary cod, many species of brightly-coloured wrasse such as cleaner fish and green moon wrasse, scissortail sergeant, lined butterflyfish, varieties of surgeonfish and brightly-coloured angelfish.

Dugongs and green turtles also inhabit the area. In Australian waters, herbivorous green turtles are more numerous than other marine turtles, which are carnivores. Traditionally, turtles and dugongs formed an important part of the diet of Aboriginal people, but in Shark Bay these animals are not subject to as much hunting pressure as in other parts of the world.

On the way to the dive site, you may see humpback whales from July to October. Humpback whales are recovering from whaling, and sightings are bound to become more frequent as they increase in abundance. If you cut the engines of your boat and they are in a playful mood, they may be encouraged to approach of their own accord.


SHARK BAY
MARINE PARK
SANDY
POINT
NUMEROUS
CORAL
BOMBIES
SEAGRASS
N
APPROX SCALE
1km

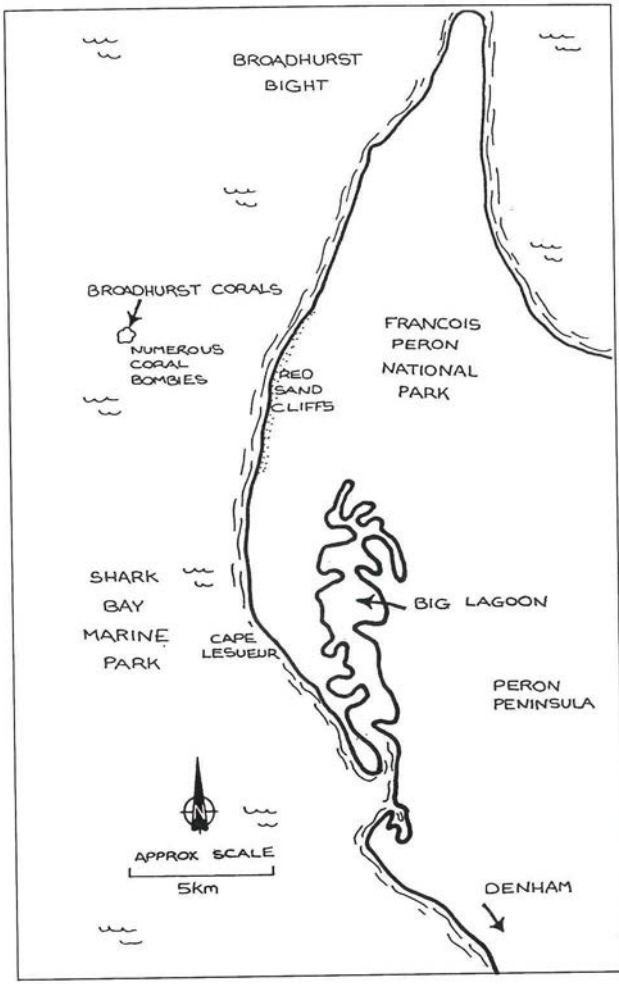
BROADHURST CORALS

The Broadhurst corals, in the Shark Bay Marine Park, can be likened to a sandy football oval covered with growths of corals. Each of these communities contains numerous individuals, which are all genetically identical. They were formed by asexual reproduction from a single ancestor. The Broadhurst patch is around 500 metres in diameter, and swarms with colourful sea life. Many species of staghorn, brain and plate coral vie for attention. There are also numerous soft corals. A bright purple sponge growing throughout the area is notable. With a depth of only three to four metres there is no need to dive on SCUBA. The site can be located using GPS co-ordinates 25°38.22' S and 113°22.24' E as an approximate guide. Only dive this site on a slack tide.

Rather than anchoring on the patch, which would risk damaging the reef, a drift over the patch with a shallow draught boat (with a driver on board) is recommended.

Fish species in the area include many species of brightly-coloured wrasse such as cleaner fish and green moon wrasse, scissortail sergeant, lined butterflyfish and varieties of surgeonfish. Surgeonfish are named because of the scalpel-like spine on each side of their tail base, which can be used in defence. There are also many brightly-coloured angelfish sheltering within the numerous coral communities. Some species of angelfish can make a loud drumming sound that can be heard by divers. These tropical fish are usually territorial and live in and around coral reefs.

Green turtles and dugongs also inhabit the area and you may be rewarded with an encounter. Shark Bay's famous dolphins often frolic here. These mammals are highly social and live in small groups. Members of a group change from time to time and they assist each other in activities such as fish herding and calf rearing.

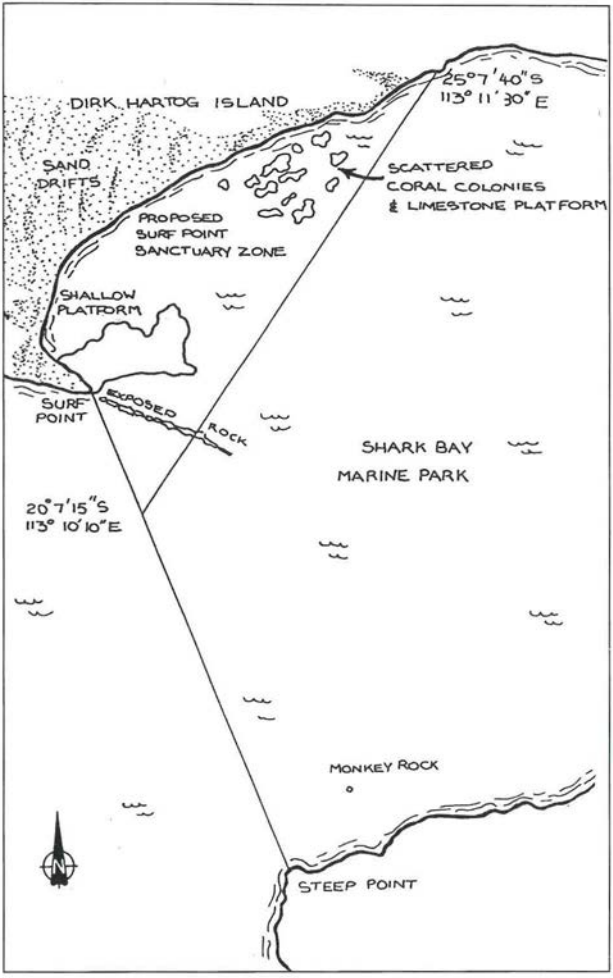

BROADHURST
BIGHT
BROADHURST CORALS
NUMEROUS
CORAL
BOMBIES
RED
SAND
CLIFFS
FRANCOIS
PERON
NATIONAL
PARK
SHARK
BAY
MARINE
PARK
CAPE
LESUEUR
BIG LAGOON
PERON
PENINSULA
N
APPROX SCALE
5km
DENHAM

SURF POINT

Coral patches at Surf Point, south of Dirk Hartog Island, are likely to be set aside as a sanctuary area within the Shark Bay Marine Park, so please look at but do not touch marine life. The area, in just 3-4 metres of water, will be used as a benchmark for scientists to monitor any changes to other areas in the bay. It is therefore a good place to see an undisturbed community of marine plants and animals. As well as being a dugong refuge area, it is known particularly for its beautiful egg and tiger cowries, but snorkellers should remember to admire them and leave them there for others to enjoy. Dive only on a slack tide and take care not to anchor on the fragile corals.

It is suggested that snorkellers concentrate on exploring the coral communities in the eastern part of the sanctuary zone. The area is in relatively shallow water which is protected from oceanic swells by a rocky platform reef. A good assemblage of hard and soft corals can be found. There are communities of vase corals, plate corals and a great variety of staghorn species. This site has the most diverse coral communities in the marine park, probably due to more favourable conditions for coral growth.

A wide range of tropical fish species can be seen at Surf Point, including a variety of parrotfish, butterflyfish, wrasse, angelfish and snapper. Baldchin groper are fairly common. As the name suggests, baldchin groper can be distinguished by their very pale chins. These large fish reach 90 centimetres long and can weigh up to seven kilograms. Blennies and gobies can also be seen. Gobies are common in sandy areas along the fringes of the reef, where they may inhabit burrows. At least 323 species of fish inhabit South Passage, which is particularly diverse when compared to other major coral reef communities such as the Houtman Abrolhos Islands. There are also high densities of invertebrates, including sea cucumbers.


DIRK HARTOG ISLAND
25°7'40"S
113° 11'30" E
SAND DRIFTS
SCATTERED CORAL COLONIES & LIMESTONE PLATFORM
PROPOSED SURF POINT SANCTUARY ZONE
SHALLOW PLATFORM
SURF POINT
EXPOSED ROCK
SHARK BAY MARINE PARK
20°7'15"S
113° 10'10"E
MONKEY ROCK
STEEP POINT
N

SIGHTING RECORD			
	DATE	TIME	LOCALITY
bottlenose dolphin			
humpback whale			
dugong			
green turtle			
loggerhead turtle			
sea snakes			
whale shark			
stingrays			
butterflyfish			
Queensland groper			
Clark's anemonefish			
cowries			
Hamelin cockle			
prawns			
sea slugs			
sponges			
corals			
seagrasses			

Photo - Jeremy Colman

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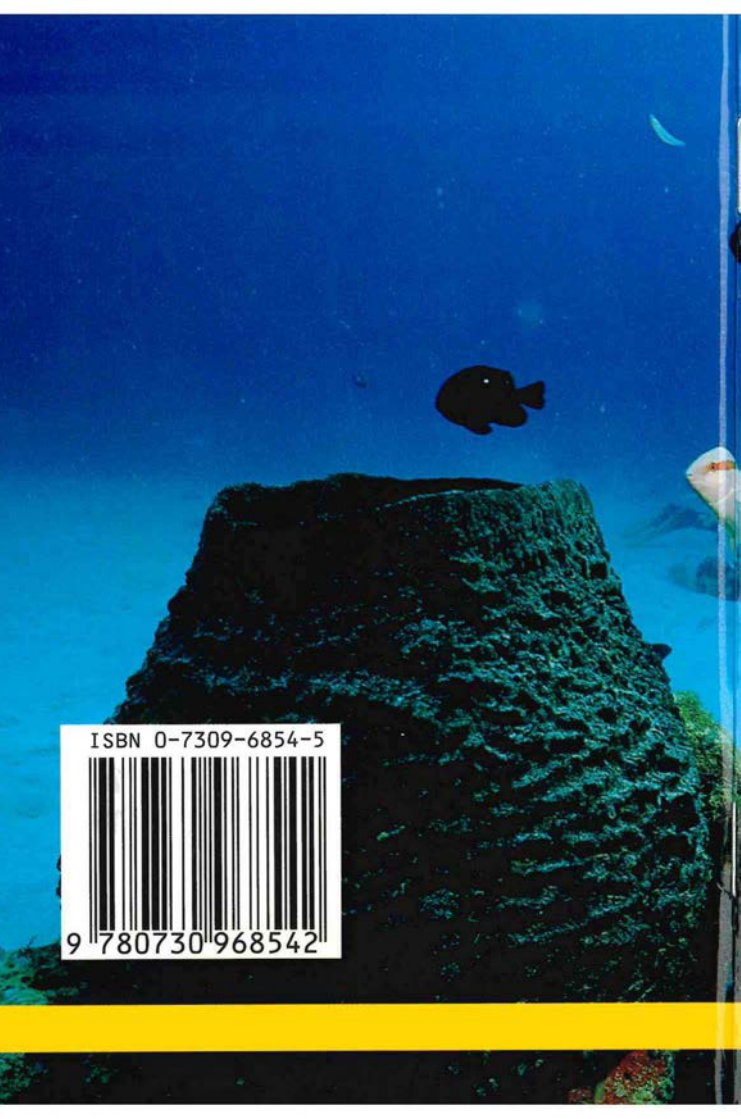
Photo - Jeremy Coleman

Dugong

ABOUT THE AUTHOR

Carolyn Thomson is a special projects officer for CALM. She has written and edited numerous publications about WA's natural environment and wildlife, including *LANDSCOPE* magazine, *Leaf and Branch*, *North-West Bound*, *Mountains of Mystery* and *Dive and Snorkel Sites in Western Australia*. She has also co-ordinated CALM's successful Bush Book range, a series of practical field guides to help you learn about and discover WA's unique plants, animals and special features, region by region.

Other books in this series:
Discovering Penguin Island and the Shoalwater Islands Marine Park, Discovering Yanchep National Park.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