Discovering the Swan River and the Swan Estuary Marine Park

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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DISCOVERING THE SWAN RIVER AND THE SWAN ESTUARY MARINE PARK

by Ann Storrie and Carolyn Thomson-Dans

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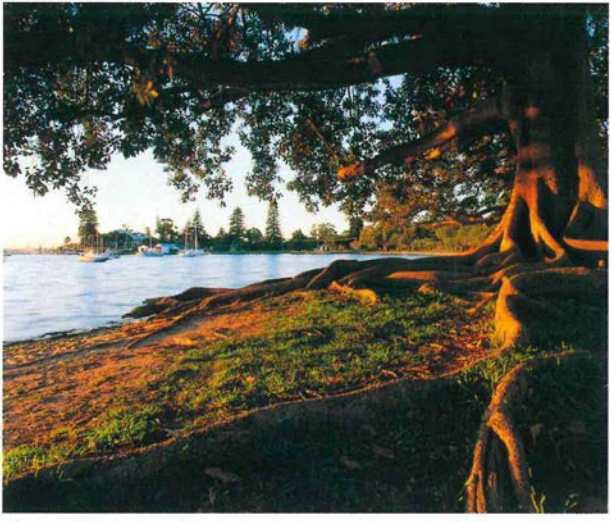
INTRODUCTION

The Swan River and its tributaries are among the most prominent features of the Perth metropolitan area. The river and its foreshores provide habitats for a large variety of terrestrial and aquatic plants and animals.

The Swan River was first explored by Europeans in January 1697 when a party of 40 men in three boats, led by Willem de Vlamingh, rowed and sailed up the river. They named the river but saw little to impress them. They found fires, reed huts with food remnants and pits along the foreshore, but no people. In June 1801 the French, led by Ensign Francois Heirrison, carried out a scientific and exploratory voyage of the Swan River in the French ship the *Naturaliste*.

Captain James Stirling spent nine days exploring the Swan River in March 1827, taking two boats from the *HMS Success*. The British party found astonishing numbers of swans, pelicans and ducks in the Pelican Point area. Stirling named many features of the river after relatives, naval colleagues and VIPs of the day. He found freshwater springs along the river and good agricultural land. Two years later he returned on the *Parmelia* with the colony's founding settlers, having been vested with the rank of Lieutenant Governor. The port of Fremantle on the river mouth, the colony's capital of Perth 18 kilometres up the river and the town of Guildford in the river's upper reaches were soon established, with the river forming the major transport artery between them.

Today the Swan River is a highly altered environment with relatively little of its original fringing vegetation left. However, three important reserves at Alfred Cove, Pelican Point and Milyu collectively form the Swan Estuary Marine Park. These areas remain a haven for wildlife. The entire river is a recreational playground, attracting walkers, picnickers, fishers and boaters. The book is your guide to some of its many attractions.



Above: *Claremont foreshore*

Below: *Matilda Bay Reserve*

Photos – Ann Storrie

ABORIGINAL HISTORY

Nyoongar Aboriginal people camped, fished and hunted along the Swan. The Mooro Tribe, led by Yellagonga, used the Pelican Point area where fish, shellfish, reptiles and birds were plentiful. The Alfred Cove area was used by the Beeliar tribe, who migrated through the area mainly in the summer months. People of the Ballaruk tribe hunted and fished in the Milyu area.

The following story is told about the creation of the Swan River. A long time ago in the Dreamtime, two rainbow dragons (Waugals) left Northam and followed the Avon River down to Walyunga National Park, where the river bends east. The female laid some eggs, which can still be seen as boulders, then they crossed over the hill and continued along the other side. This side of the hill is devoid of trees where they slithered. Further along, they joined the Swan River and travelled to where Ascot Raceway is today (Belmont). Here, the male shook himself and some of his scales fell off and can be seen embedded in the riverbank (shells).

They continued to Melville waters and swam around creating the huge bay. She laid some eggs at Kennedy fountain at the foot of Kings Park. They had a fight so she went south, underground, coming up at Bibra Lake and created the lake. She also created Yangebup Lake (Jilbup), Thomsons Lake and White Lake.

He, in the meantime, went north underneath Kings Park, coming up and creating Lake Monger, Karrinyup Lake, Joondalup Lake and Yanchep Lake. Later they got lonely and went back underground to Melville waters. The two rainbow dragons were glad to see each other, swimming around together creating Crawley Bay. They then followed the river down to Fremantle and sunbaked there, creating a sand bar. At one time Nyoongars used it to cross the river. The two dragons followed the river out from Fremantle north and beyond Rottnest Island back to the Dreaming.

Photo – Ann Storrie

An ancient Dreaming Trail (used by men only) along the northern bank of the Swan River passed around Rocky Bay.

THE SWAN ESTUARY MARINE PARK

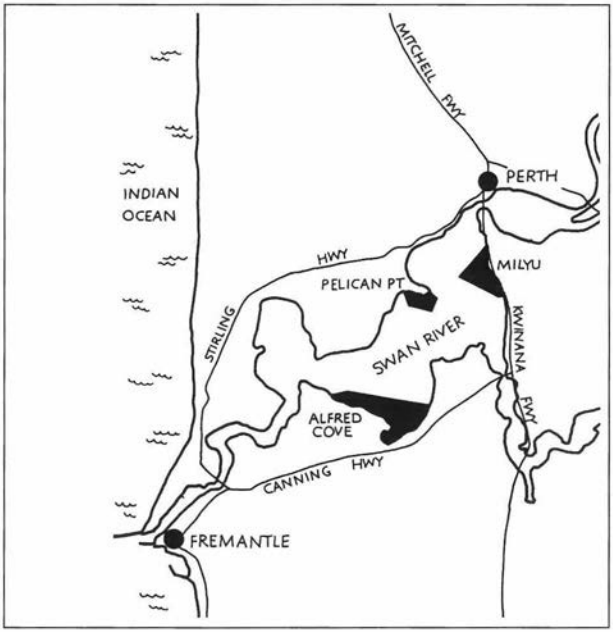
The Swan Estuary Marine Park protects three biologically important areas of Perth's beautiful Swan River. Swan Estuary Marine Park encompasses Alfred Cove, 190 hectares adjacent to the suburbs of Attadale and Applecross; Pelican Point, a 40 hectare area in Crawley; and Milyu, 95 hectares adjacent to the Como foreshore and Kwinana Freeway.

All three localities lie within 20 minutes drive from the centre of Perth. Depending on which area you are visiting, you can drive to the nearest car park and walk to the foreshore. The most popular activities are walking and cycling along the scenic riverside and birdwatching. There are dual use paths (for the shared use of pedestrians and cyclists) along the river foreshore. There are also information panels on the Milyu foreshore.

These areas encompass mudflats, seagrass beds and intertidal vegetation such as sedges and saltmarsh, which provide many different habitats for a host of animals. The most important of these, due to their international significance, are the migratory wading birds (see pages 38-39).

Up to 10 000 waders visit these three areas every summer, coming from as far afield as Asia, Mongolia and Siberia. The birds move between the intertidal flats of the three areas of the marine park according to where feeding and roosting sites are available. Most birds are seen from August to the following March. Pelicans, ibis, egrets and other birds also reside in the estuary.

ALFRED COVE: At Alfred Cove there are a number of vantage points for viewing more than 140 species of flying visitors and residents. The semi-enclosed waters hide mussels dating back 6 000 years, as well as considerably younger, more juicy examples sought after by the 33 species of wading birds. The seagrass beds adjacent to the mudflats are a primary link in the food chain for



the animals on which waders depend for food, as well as an important nursery area for fish and prawns.

PELICAN POINT: At Pelican Point, there is an observation platform that is reached from Australia II Drive.

MILYU: Milyu is the Aboriginal name for samphire, and the main physical feature of the reserve is a small peninsula vegetated with sedges and samphire. Despite its proximity to the freeway, this area provides equally good feeding and resting areas for both the waders and other waterbirds. They can be seen from the beach or from the foreshore path. You can almost always see Australian pelicans here.

SEAGRASSES

Seagrass meadows provide an important habitat for hundreds of animals. They provide food and shelter for many juvenile species of fish and invertebrates, and they also help to stabilise the sand and mudflats of the sea or estuary. In the Swan River, seagrass beds support the tiny shrimps, prawns, worms and molluscs that are essential food for the migratory wading birds (see pages 38-39).

DESCRIPTION: Seagrasses are often confused with algae, or seaweed. Seaweeds are simple plants with no root systems or flowers. They require a solid object, such as a rock, upon which to grow. Seagrasses, however, have roots that can grow in, and stabilise, sand. They have flowers and reproduce just like flowering plants on land. Two common seagrasses in the Swan River are ribbon weed (*Posidonia* spp.) and eel grass (*Zostera* spp). Their long, ribbon-like leaves provide a handy attachment point for many other plants and animals such as algae, ascidians, molluscs and bryozoans. Up to 90 per cent of these plants grow below the sand in an extensive rhizome root system.

LIFE HISTORY: Ribbon weed produces flowers with both male and female parts. These flowers are arranged in spike-like clusters, and produce floating fleshy fruits from December to January. When ribbon weed dies and decays, large quantities of tough fibre remain. In the ocean, these are often washed around by wave action and form little football-shaped 'fibre balls', which are frequently washed up on beaches. Eel grasses have small flowers that grow on modified leaves which curl over at the edges to protect the flowers. Other seagrasses, such as wireweed (*Amphibolis* spp.), have separate male and female parts. The male flower releases pollen into the water. The pollen drifts until it reaches a female flower and fertilises it. The seedlings grow on the parent plant for several months until they break away to form a separate plant.

Photo – Sue Morrison

ANEMONES

Anemones are related to corals. They have a rim of tentacles around a central opening that serves as both a mouth and anus for the body. They have stinging cells with tiny, harpoon-like structures that lie coiled up like a spring. These fly out when discharged and inject venom into the prey. Most anemones are harmless to people. However, one species known as the armed anemone (*Dofleina armata*) should never be handled. It can inflict very painful stings. The armed anemone can be seen at the Harvey Beach and The Coombe dive sites (see pages 50-53).

DESCRIPTION: One of the most attractive and common anemones in the Swan River is the tube anemone. It has its own subclass, Ceriantharia. It forms a very large, solitary polyp with two beautiful whorls of slender tentacles. It builds a tube of sand and mucous around its long, muscular body, and the delicate tentacles extend from the top of the tube. The tentacles are often mauve, or white with purple tips, and can rapidly retract into the tube if disturbed. A small, flat anemone with short, purple-tipped tentacles (*Oulactis* sp.) is also common at Harvey Beach. This animal is usually buried in the sand, with only the tentacles showing. Unlike the cerianthid tube anemone, which filter feeds, this anemone often catches large prey and spends hours consuming it.

LIFE HISTORY: Although anemones reproduce asexually by budding small animals from their body wall, they can also reproduce sexually by liberating sperm and eggs into the water. These form larvae that disperse some distance from the parents. Some species, however, can retain the larvae within their body cavity until they develop into tiny, fully formed anemones. These are then released through the mouth.

Right: *Tube anemone*

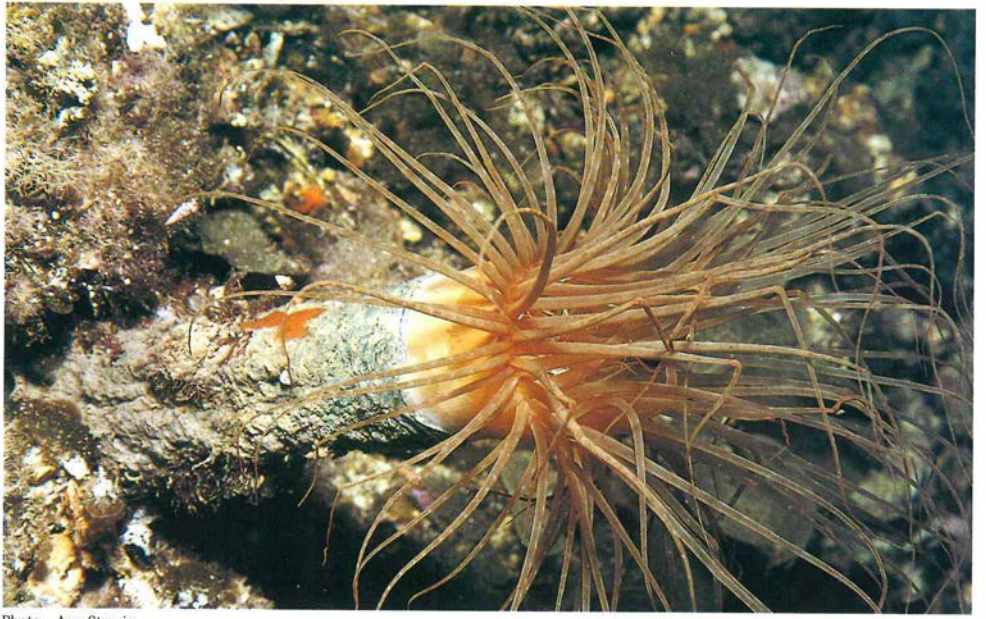


Photo – Ann Storrie

JELLYFISH

There is far greater variation between jellyfish than most people believe, and those seen in the Swan River include spotted jellyfish, mosaic jellyfish, sea nettles, moon jellyfish and hairy stingers. In the water, they can be quite beautiful to watch. Many species, such as the hairy stinger and sea nettle, can deliver severe stings, so it is best to treat all jellyfish with caution and avoid touching them.

DESCRIPTION: Jellyfish are characterised by a bell, that is usually saucer-shaped and either transparent or opaque. The mouth is under the bell and surrounded by long stinging tentacles. These animals have a stomach cavity and reproductive organs inside the thick jelly of the bell.

DISTRIBUTION: They are found in temperate and tropical seas and estuaries, always living near the surface of the ocean or river, where they capture their food of plankton and small fish. They can make pulsing movements but are largely at the mercy of currents when in the open ocean.

LIFE HISTORY: Two juvenile fish species that associate with jellyfish are the mosaic leatherjacket and trevally. The jellyfish provide shelter, transportation and food, in the form of plankton killed and trapped by their stinging tissue. The young fish are immune to the stinging tentacles and can even eat them, despite the stings being toxic to other animals. The association does not appear to benefit the jellyfish, nor does it seem to do them any great harm. The fish leave their hosts when they are a few centimetres long to settle around jetty piles and other structures, moving into deeper waters as they mature.

Right: *A spotted jellyfish*

Photo – Ann Storrie

TUBEWORMS

The beautifully coloured, feathery tentacles of a tubeworm are usually the only parts of the animal that divers see. The animal is actually a polychaete worm, which has a segmented body and paddle-like projections, called parapodia, along its sides. The parapodia usually have bundles of spines, known as chaetae, or setae. The body is concealed in a tube that the worms make by binding sand and mud, or by secreting calcium carbonate. The tube is usually attached to a rock, or another firm surface, although some worms, such as the tiny tubeworm (*Polydorella prolifera*) build them on the surface of sponges.

DESCRIPTION: Most tubeworms are filter feeders and catch particles of food with their tentacles. Some species have one large, extendible fan of tentacles (tentacular crown), others have two fans extending from their tube, while the tiny tubeworm has one pair of long tentacles. Some, such as the rugose tubeworm (*Protula* sp.), even have a little cup-shaped cap, or operculum, on a stalk that sticks out with the tentacles. This is used to seal the tube when the tentacles are withdrawn. Their ability to withdraw their tentacles in a split second is frustrating for photographers, who depress the shutter button a fraction too late, and end up with a photograph of the empty end of a tube. It is, however, interesting to watch the instant colour change of the tangled tubeworms (*Filograna implexa*). They change from a bright red, or orange, mass of tentacles, to a white skeleton of tubes when the tentacles retract.

FEEDING: Tubeworm tentacles have cilia, or tiny hairs, along their length. These capture food particles and transport them, embedded in mucous, along grooves in the lower edge of the tentacles to the mouth. If the particles are large, they may be used to build up the animal's tube. In most species, the tentacles also serve as respiratory organs, or gills.

Photo – Ann Storrie

LIFE HISTORY: The sexes of polychaete worms are nearly always separate. In some species, the eggs and sperm are liberated into the water and form distinctive planktonic larvae. Other species brood their young, while some bud off juveniles from body segments. Unfortunately, the European fan worm (*Sabella spallanzani*), is a prolific breeder. It was recently introduced into Australian waters, where it now occurs in large numbers around Fremantle, Cockburn Sound and in the Swan River. Although it is attractive, its large size and huge particle-filtering capacity allow it to out-compete many native filter feeders.

NUDIBRANCHS

Nudibranchs (pronounced noo-dee-branks) are sea slugs related to land snails and other molluscs, but they have no trace of a shell. They are often brightly coloured and many divers take photos of them as avidly as others collect sea shells.

DESCRIPTION: Nudibranchs are found in a vast variety of body shapes and sizes, ranging from a few millimetres to 30 centimetres long. The word nudibranch is Latin for 'naked gills' and most species have exposed gills in a circle on their back. Others have gills along the sides of their bodies. They also have sensory organs called rhinophores on their head, and a tongue-like apparatus known as a radula to scrape up sponges and other invertebrates for food.

DISTRIBUTION: Nudibranchs live in all of the world's oceans. Several species are found in the Swan River. One particularly beautiful specimen is an iridescent, blue-spotted animal (*Dendrodoris denisoni*). It has white-rimmed pustules over its body, and can grow to about six centimetres long. It usually feeds on sponges.

REPRODUCTION: Nudibranchs are hermaphrodites, having both male and female sex organs. However, they do not usually self-fertilise, but exchange sperm sacs during copulation. Copulating nudibranchs line up side by side, usually with their heads in opposite directions. The genital organs are often seen joined at the side. Eggs are laid in a colourful mass, like a ribbon that has been arranged in a spiral. Some nudibranchs can lay up to a million eggs in the mass. The young of some species hatch as replicas of their parents, while others hatch as larvae with a shell that is later cast off.

Above: *Chromodoris* species. Below: *Dendrodoris denisoni*

Photos – Ann Storrie

OCTOPUSES

Along with their relatives the squids and cuttlefish, octopuses are the most highly developed invertebrates. They have a well-developed brain and eye structure, and are sometimes very inquisitive towards divers and camera lenses. For protection, they often rely on camouflage and ingenuity. They can quickly change the colour and texture of their skin to suit their surroundings, and some species have even been known to mimic other animals by altering the shape of their body and the position of their arms. If cornered, they can emit a cloud of black ink from a funnel at the side of their body. This acts as a screen while the octopus shoots away using jet propulsion by forcing water out of the funnel.

DESCRIPTION: An octopus's head (which is actually part of the octopus' bag-like body) is completely fused with its foot, which bears eight long arms covered with suction discs. The gloomy octopus (*Octopus tetricus*) is often found in the Swan River. This large octopus grows up to 80 centimetres long and is often mottled black, brown and white. Its long arms are unequal in length, slender at the tips and have two rows of suckers.

HABITAT: These bottom-dwelling creatures love to hide in cracks, crevices, empty containers and old timbers. If these are not available, they will build a house out of rubble, rocks and sand. The entrance to a gloomy octopus's home is often littered with shells from prey that the animal has eaten. Divers can often find an octopus lair by looking for the clump of discarded shells. If you are game enough, wiggle your fingers at the entrance to the lair and the octopus may put out an arm and touch your hand, but don't let it pull you into its house! Another octopus sometimes found in the Swan River is the blue-ringed octopus (*Hapalochlaena maculosa*). This small octopus (up to 12 centimetres long) lives in bottles, empty shells and under rocks. Take care if turning over rocks or collecting bottles and shells, and never put them inside

Photo - Ann Storrie

your wetsuit. If a blue-ring crawls out, it is likely to bite, and its venom quickly causes respiratory failure and paralysis.

FEEDING: Octopuses are carnivorous and will usually eat whatever they can catch. They have strong jaws shaped like a parrot's beak. These can be used for breaking into mollusc shells, chomping crustaceans or biting predators. Octopuses usually feed at night and hide in their lair during the day.

LIFE HISTORY: Octopuses have an interesting method of copulation. Sexes are separate, and one of the male's eight arms is modified to carry and place a packet of sperm into the female's body. He has sex at arm's length, so to speak! Females usually lay thousands of small eggs that they attach in strings or clusters to hard underwater surfaces. Many species will remain to care for their eggs until they hatch. The larvae are thought to go through a planktonic stage before settling. The adults usually die after a single reproductive season.

BLUE MANNA CRAB

(Portunus pelagicus)

Despite the name of this crab, the blue colouring is found only in the male. The female is sandy brown, but both females and males have extensive white markings. This bottom-dwelling carnivore will scavenge dead drifting food. However, most of its diet consists of bivalve molluscs, crustaceans, polychaete worms and brittle stars. Feeding activity is highest at sunset.

DESCRIPTION: The claws are long and slender, and the fifth pair of legs has been modified to form a set of paddles used in swimming. Adult crabs usually weigh about 500 grams, with a maximum weight of up to one kilogram.

DISTRIBUTION: This is the only ten-legged crustacean found around the entire Australian continent. It particularly likes muddy estuaries. Several crabs will usually be seen on any dive in the Swan River, whether it is night or day. They are often partially buried in the mud, and the sudden billowing of silt, next to a diver, as the crab scurries away, can be quite startling.

LIFE HISTORY: While the female blue manna mates only once a year, she has an extraordinarily high reproductive output. At a given time she may lay up to two million eggs. In WA, the peak spawning period is in January and February. At this time, the female will leave the estuaries and rivers to release the eggs in the open ocean, a strategy that may help to broaden the distribution of the species. Mortality of these eggs is extremely high and less than one per cent will survive to make their way back to shallow coastal waters and rivers. Blue manna crabs appear to live for up to three years. There are daily bag limits and minimum legal sizes and all females carrying eggs must be thrown back into the water while they are still alive. Contact the Fisheries Department for the latest rules and regulations. Follow a few common sense rules and blue manna crabs will be here to stay.

Photo – Babs & Bert Wells/CALM

Photo – Ann Storrie

DECORATOR CRABS

Naxia species

Decorator crabs are actually spider crabs that have a rough surface on their carapace, or exoskeleton. They attach all sorts of marine plants and animals, such as algae, sponges and hydroids, to their carapace. They are usually so well camouflaged that divers only see them if they move.

DESCRIPTION: Decorator crabs usually have a triangular shape, tapering towards the head. They have long legs with which to forage for food and transplant marine life onto their skeleton. Sometimes, the attached plant or animal grows so prolifically on the crab's back and legs, that it completely covers the animal. Decorator crabs found in the Swan River usually only grow to about four centimetres in width.

HABITAT: Decorator crabs live in sheltered seagrass beds or on shallow rocky shores of the south-west and southern coasts. They are found to depths of about 15 metres. If you look carefully, you will probably find a few in the rocks at the Harvey Beach dive site, or on the wrecks at The Coombe. Night dives are the best time to see them, as they are out feeding. Watch for little pieces of moving sponge or algae.

LIFE HISTORY: These crabs are carnivorous and consume a variety of live or dead animals. Like most other crustaceans, crabs have to moult, or discard their exoskeleton, in order to grow. The animal withdraws blood from its limbs into the rest of the body so that it can shrink slightly and slide out of its exoskeleton. Once out, the animal pumps itself up with water before the next exoskeleton hardens, thus giving it room to expand. The decorator crab must then collect another group of plants or animals to stick onto its new carapace.

Photos – Ann Storrie

WESTERN KING PRAWN

(Penaeus latisulcatus)

Western king prawns are commercial species found in both tropical and temperate Australian waters. They are especially common in the Swan River. Meadows of seagrass are important nursery areas for juveniles.

DESCRIPTION: This is a large species of prawn, hence the name. They are light yellow to brown, and females are larger than males. The third and longest leg of western king prawns is clawed, and the first segment of the abdomen always overlaps the second segment. King prawns have a serrated rostrum, or beak, that projects from their carapace (hardened outer skeleton). They have around 10 upper teeth and one lower tooth on the surface of the rostrum.

OTHER NAMES: Shrimp.

DISTRIBUTION: Western king prawns occur around most of the Australian coast, apart from Victoria and Tasmania, but northern waters are far more productive than southern waters.

PREFERRED HABITAT: Western king prawns range from the shallows through to depths of 200 metres. Most of those caught are trawled from depths of between 10 and 20 metres.

LIFE HISTORY: Western king prawns feed on decaying organic matter, usually at night. Juveniles like to inhabit shallow seagrass beds in estuaries. After several months, they migrate offshore to spawn. Females release hundreds of thousands of eggs directly into the water as plankton, where they provide an important food source for other animals. Those that survive quickly migrate back to the estuary to mature.

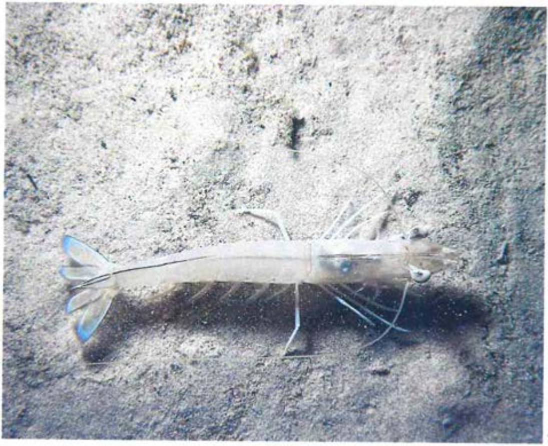


Photo – Ann Storrie

ESTUARY CATFISH

(Cnidoglanis macrocephalus)

Estuary catfish are also known as cobblers. In Western Australia they are highly regarded for their taste, and are one of the most expensive fish species. Strangely, the same species is rarely eaten in the eastern States.

DESCRIPTION: The estuary catfish is a large species with pale mottled markings on its dark blackish-grey body. It has six barbels, which look like whiskers, around its mouth, and a small tentacle at the rear of the upper lip. It has venomous spines at the front of the dorsal and pectoral fins that can cause painful injuries if handled. The species grows to 91 centimetres long.

HABITAT: Catfish like to live in muddy or sandy seagrass beds, where they remain hidden during the day. With their mottled body, they are usually very well camouflaged. It is wise to shuffle your feet if wading in the river to avoid stepping on a catfish. The estuary catfish can be found in sheltered bays and estuaries, from the Houtman Abrolhos Islands in WA around the southern coast to South Australia, and from northern Tasmania to southern Queensland.

FEEDING: The barbels around the catfish's mouth have a sensory function for detecting food. The estuary catfish usually feeds at night, probing the sand and weed for small crustaceans, molluscs and worms.

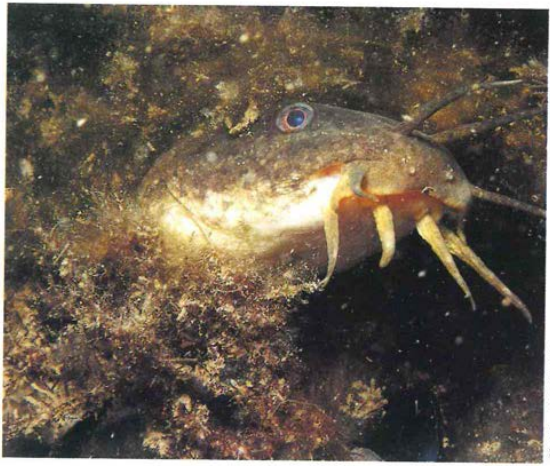


Photo – Ann Storrie

WEST AUSTRALIAN SEAHORSE

(Hippocampus angustus)

The West Australian seahorse is a diver's delight and is common in many areas of the Swan River. This is one of more than a dozen species of seahorses in Australian waters. All seahorses belong to the Family Syngnathidae, which also includes pipefish and seadragons. They are among the most appealing marine creatures, and have been part of sea mythology since Aristotle first described them 2 300 years ago. Looking like little chess knights, seahorses sway in the current while their tails grasp onto holdfasts such as seagrasses. Although they move slowly and are weak swimmers, their fins can oscillate up to 70 times per second and they can swim forwards, backwards, upwards, downwards and pivot on the spot.

DESCRIPTION: The West Australian seahorse is distinguished from other seahorses by a number of brown lines around its snout. Its colour varies from white to bright orange, yellow or pink. It can even slowly change its skin pigmentation to match the colours of the reef. It relies on this camouflage and on its ability to open its mouth very quickly to catch tiny crustaceans that drift past. It also relies on camouflage to avoid predators, including divers. When you see a seahorse, marvel at its unique structure and beauty, watch its tiny fins beating quickly, perhaps take a quick photograph, and then leave it to enjoy its next meal in underwater tranquillity.

STATUS AND DISTRIBUTION: Although one or two specimens have been found in South Australian waters, the species is generally found only from the Ningaloo Marine Park to Augusta.

PREFERRED HABITAT: This bizarre-looking fish is relatively common in sheltered bays along our west coast, and lives in sponge gardens and on algal reefs, as well as in seagrass beds. One or two are usually seen on the wrecks at The Coombe dive site.

Photo – Ann Storrie

LIFE HISTORY: The female seahorse lays her eggs in a pouch on the male's belly. The male secretes sperm into this pouch and then incubates the eggs until they hatch as miniature seahorses. The male even undergoes a series of strong contractions of his pouch as the young are born.

BLACK BREAM

(Acanthopagrus butcheri)

Black bream are delicious eating fish and also have a reputation for being wily and challenging to catch. Well before European settlement, they were caught by Aboriginal people in the rivers and estuaries of the south-west, using fish traps constructed from branches and stones. Large groups of Aboriginal people would gather to feast on the catch, enabling them to hold ceremonies that lasted for days. Unfortunately, this brought them into conflict with European settlers, who also felt they had a right to the fish and banned the use of fish traps in areas such as the Murray River. The remains of some fish traps can still be seen in certain areas today.

DESCRIPTION: In the Swan River, black bream are generally a dark bronze colour, with green and silver highlights in their colouring. Their chin and belly are white and their fins are dusky to greenish-black. In profile, they have a lens-shaped body. Black bream can attain weights of more than two kilograms and can reputedly grow to 60 centimetres long. Females grow larger than males and some large specimens have been aged at 17 years.

STATUS AND DISTRIBUTION: In WA, black bream extend from the Murchison River to just east of Esperance. They are absent from the Great Australian Bight because of the lack of estuaries but are also found from South Australia to central New South Wales. As they are highly sought after and heavily fished, size and bag limits apply for this species. Please check with the WA Fisheries Department for the latest rules and regulations. This species is being bred in captivity and released into the Swan River in an effort to boost stocks following mass deaths in 1998, when pesticides were illegally released into the river.

PREFERRED HABITAT: Black bream live almost exclusively in estuaries. However, in summer, when estuaries are saltier because

Photo – Ann Storrie

of lack of winter run-off, they will move into the upper reaches of rivers. They prefer to live around rocks, snags or structures such as jetties, which provide suitable cover.

LIFE HISTORY: These fish take about three years to attain breeding size. In WA, they spawn from mid-July through to November, with females releasing between 300 000 and three million eggs during the season. The small eggs hatch about two days after being fertilised and the larvae and small juveniles inhabit seagrass beds in shallow estuaries. Black bream eat plant material and also predate on a wide variety of shellfish, prawns and crabs, various worms and small fish.

AUSTRALIAN PELICAN

(Pelecanus conspicillatus)

Pelicans can often be seen on a hot day hitching a ride on spiralling thermal updrafts. The birds spread out with slow and heavy wing beats, searching out suitable updrafts. When one is found, the lead birds begin to circle, flapping their wings intermittently, rising steadily through the sky. Within minutes a 'staircase' is formed, with the pelicans spiralling steadily upwards. When they reach a suitable height, perhaps thousands of feet, they peel off and glide towards their destination. On short journeys one updraft may be enough; over longer distances several are needed. In this way the birds avoid expending the considerable energy needed to propel their bulk through the air by flapping.

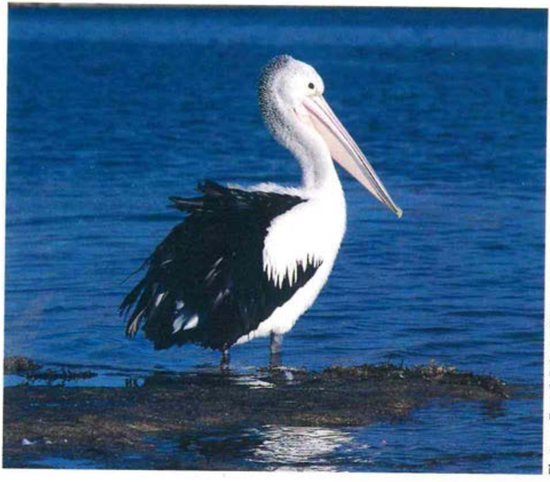
DESCRIPTION: Pelicans are easily recognised by their bold, black and white markings, blue legs, enormous bill with pink pouch and yellow eye-rings. During courtship the pouch becomes bright red, blue and orange.

STATUS AND DISTRIBUTION: They are common throughout most of Australia and small numbers occur in Indonesia, New Guinea and the western Pacific islands.

PREFERRED HABITAT: These birds inhabit fresh and salt water lakes and estuaries, rivers, swamps and seashores.

LIFE HISTORY: The bird's pouch is used mainly as a 'scoop net' for catching small fish and shrimps, rarely for carrying them. The pouch is also used for catching rain. The total pouch capacity is seven litres! Pelicans nest in colonies, almost invariably on islands. Colony sizes in WA's nine regular breeding sites vary from a dozen pairs to more than 1 000. Nests are little more than shallow scrapes on the ground, often lined with pieces of seaweed and discarded feathers. Two eggs are laid. Within a couple of weeks of hatching, the chicks gather in small mobs or 'creches'.

CALL: Normally silent.



Photos – Bert & Babs Wells/CALM

BLACK SWAN

(Cygnus atratus)

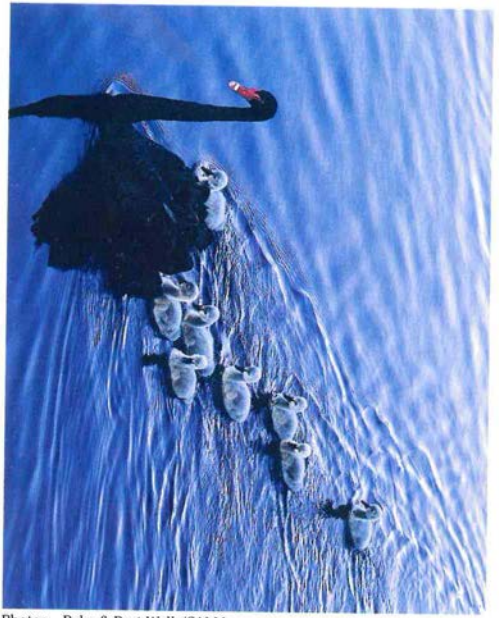
In January 1697 a party led by Dutch navigator Willem de Vlamingh became the first Europeans to see black swans, when they sailed up and named the Swan River. They took three swans to Batavia (Indonesia) with them, but the birds died. An exploratory party led by Captain James Stirling marvelled at the spectacle of hundreds of black swans rising from the water as their boats navigated the Swan River in March 1827. Each evening they enjoyed roast swan for dinner. Today, sadly, black swans are now uncommon on the river after which they were named.

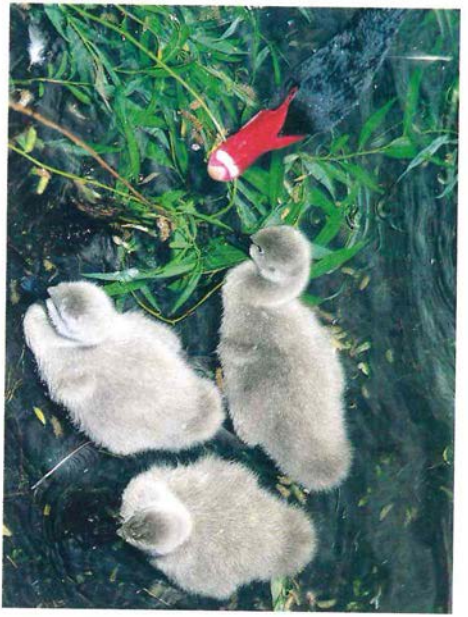
DESCRIPTION: The birds are entirely black, except for the white outer flight feathers of the wings, with an orange to dark red beak. The white eye becomes red during the breeding season. Males average about 1.3 metres long, whereas females are slightly shorter at 1.2 metres. Females also have slightly shorter necks than those of males. The cygnets are covered with light grey down.

STATUS AND DISTRIBUTION: Black swans live throughout southern Australia, extending north to Townsville in Queensland.

PREFERRED HABITAT: Rivers, estuaries, lakes and briny swamps.

LIFE HISTORY: Black swans moult every year between September and February. Unable to fly during this period, they gather on open lakes in large numbers. They graze on aquatic plants at the surface as well as growth from the bottom, which they obtain by making use of their long necks. Breeding is mostly between May and September, but can occur in any month. They construct a mounded nest of vegetation on reeds, islands or in tall bushes near water. While older birds generally bond permanently with one partner, younger birds may pair up for only a short time, breed then desert the nest, leaving the other partner of either sex to care for the young. After leaving, the deserter will often mate again and females may produce up to four broods in the one year.





Photos – Babs & Bert Wells/CALM

LITTLE BLACK CORMORANT

(Phalacrocorax sulcirostris)

Little black cormorants can often be seen on the Swan River in large rafts of hundreds of birds, congregating around schooling fish. Like all cormorants, after fishing they spread their wings wide to dry off in the sun, remaining in their flocks to do so. The other cormorants seen in the Swan River and estuary include little pied cormorants, great cormorants and darters, and the little black cormorant associates with all of these species.

DESCRIPTION: Little black cormorants have entirely black plumage, but during the breeding season they may have small areas of white on the sides of their head. They are about the same length as little pied cormorants, at about 61 centimetres. Like other cormorants and darters they have a relatively large elongated body and long neck. Their feet are black and webbed to help with underwater propulsion, and the bill is longer and thinner than that of the little pied cormorant.

DISTRIBUTION: Little black cormorants are very widespread. They are found through most of Australia in areas with large water bodies, although they are absent from a large part of the interior. They also extend to Indonesia, Borneo, New Guinea and New Zealand.

PREFERRED HABITAT: These communal birds live in deep, large water bodies such as rivers, lakes, estuaries and inlets.

LIFE HISTORY: Little black cormorants consume a variety of crustaceans and fish. They breed in colonies in spring through to autumn, building platform nests in flooded timber and trees along rivers and lakes. Both parents take turns to incubate up to six eggs.

CALL: Ticking and creaking sounds are made when nesting.

Photos – Babs & Bert Wells/CALM

MIGRATORY WADERS

Up to 10 000 waders visit the Swan River every summer, and congregate in the three areas protected in the Swan Estuary Marine Park (see pages 6-7). They come from as far afield as Asia, Mongolia and Siberia. About 33 of these species are protected under the Japan-Australia and China-Australia Migratory Bird Agreements. Most notable is the tiny red-necked stint (*Calidris ruficollis*). Although they weigh only 30 to 40 grams, these birds regularly fly thousands of kilometres from their breeding areas in Arctic Siberia to the warm mudflats of the Swan Estuary.

The ability of these waders to fly great distances and to navigate with such pinpoint accuracy has been the subject of much study and research, particularly in the northern hemisphere. It seems that the urge to migrate is triggered by changes in the length of daylight, and it is further suggested that birds use the sun, stars and perhaps even the Earth's magnetic fields for navigation. However, the actual mechanisms remain unknown.

The estuarine mudflats in the Swan River contain high concentrations of food which replenish the energy of the exhausted birds after their long flight south. The birds move between the intertidal flats of the three areas of the marine park according to where feeding and roosting sites are available.

The transitory waders are fascinating birds. Different species arrive at varying times between August and November. Because other wetlands are too full of water at this time of year, the Swan Estuary (and the coast) are used as the first resting and feeding spots. Some of the birds will be sporting their breeding plumage when they arrive. Others will moult to their breeding glory in February. Most waders will have left the Perth region by late March.

Above: *Red-necked stint*

Below: *Sharp-tailed sandpiper*

Photos – Babs & Bert Wells/CALM

BOTTLENOSE DOLPHIN

(Tursiops truncatus)

Bottlenose dolphins are intelligent, air-breathing mammals that often interact with people and ride on the bow waves of boats. They are perfectly adapted to life in the water, and have a streamlined body which merges with the tail, and a layer of blubber, or fat, for insulation and food storage.

DESCRIPTION: Bottlenose dolphins have prominent dorsal fins, which are seen slicing through the water. The fin is slightly hooked and set midway along the body. This frequently photographed mammal is also easily recognised by its well-formed melon forehead and short, wide and rounded beak. The species has a medium grey back above a pale or light grey flank or belly. The flippers are broad at the base and taper to a point. Bottlenose dolphins are very variable in size, ranging from around two to four metres as adults, depending on where they are found. Average length is three metres and calves are about a metre at birth.

STATUS AND DISTRIBUTION: This species is common in cold, temperate and tropical seas and estuaries all over the world. It is often seen close inshore near the Swan River estuary. During summer, when the lower estuary is more saline, bottlenose dolphins will sometimes swim upriver as far as the Perth central business district. Watch out for them on the Point Walter to Blackwall Reach Walk (see pages 62-65).

LIFE HISTORY: Bottlenose dolphins have a fascinating social structure. Within a population, they form small subgroups which inhabit a defined home range. Members of a group, however, 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 then 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

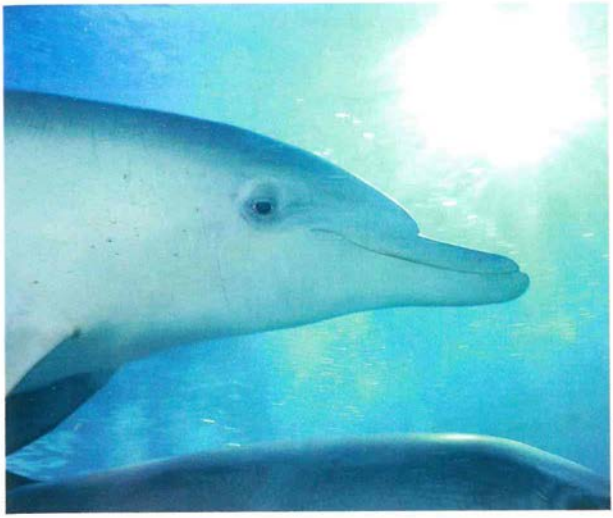


Photo – Ann Storrie

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.

FISHING

The marine and freshwater environs of the Swan River lend themselves to many fishing experiences. In the freshwater upper reaches you can test your skills at catching the wily black bream (see pages 30-31) or simply collect mussels from jetties or submerged logs. From the shores opposite the wide expanses between Perth and Melville waters, you may be lucky enough to hook a 20 kilogram mulloway or a tasty plate-sized flounder. Flathead and cobbler may be caught from jetties.

On balmy summer nights, prawners, trawling the waters by hand, are nearly always rewarded with a mouth-watering banquet. Others prefer to dive for larger prawns or crabs. During daylight, crabbers and fishers catch blue mannas and chopper tailor, if they're persistent.

To ensure the Swan River remains a fishing paradise for years to come, always abide by the rules, such as minimum legal sizes and licenses where required. Only take what you can eat. To give released fish the greatest chance of survival, avoid handling them as much as possible, so that their protective mucous coating remains intact. If the fish are legal size and edible, dispatch them as quickly as possible and keep them on ice, to ensure a tasty meal. Before embarking on your fishing trip, contact the Fisheries Department for the latest rules and regulations.

Opposite: *Fishing at Fremantle traffic bridge*

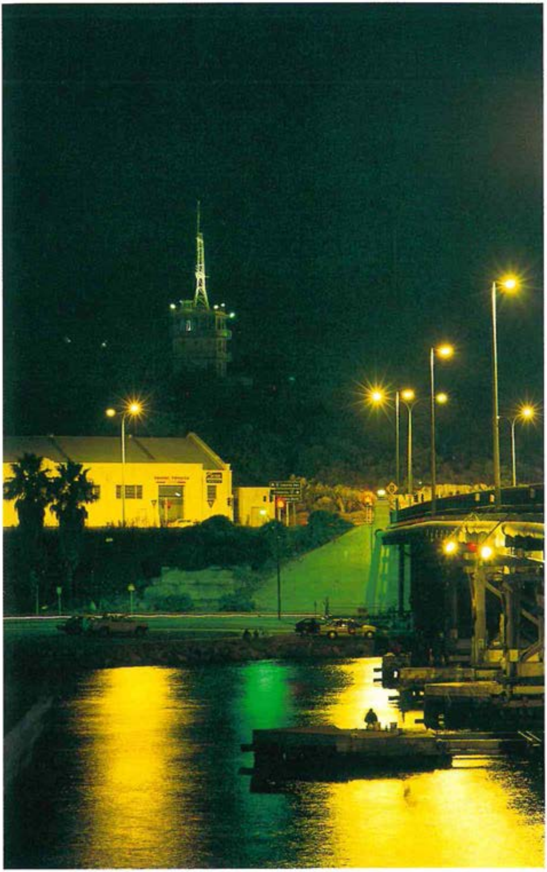


Photo – Ann Storrie

WINDSURFING

The Swan River provides a wide range of opportunities for boardsailors with varying styles and skill levels. The whole river (limited only by water depth, boating traffic and clear wind) is available to boardsailors, however, you cannot launch directly into some areas and must sail your board to the particular location to experience the conditions that it offers.

There are no notable boardsailing locations between the mouth of the Swan and Point Walter, however, Blackwall Reach presents steady side shore breezes on summer afternoons. The low sandy spit of Point Walter has very flat water on its northern side, and sailors with high performance equipment will enjoy the flat water speed sailing sensation that it provides.

The Applecross foreshore is perhaps the best year round boardsailing location on the river. Grassy rigging areas extend along almost the entire length of Melville Beach Road and provide easy launching into nearshore waters. These shallow waters are ideal for learning manoeuvres such as water starts and high speed gybes, as sailors can stand and re-orientate themselves with their feet on the bottom in most situations. Melville Beach Road is suitable for high performance sailing in any winds between the north (through the west) to the south. Beginners will find the location ideal in any wind direction as long as the strength is less than ten knots.

The grassy area adjacent to the Applecross jetty is an ideal launching spot for high performance sailing during strong easterly winds that sometimes occur in summer. The site is also a reasonable summer launching spot but is a little sheltered close to shore.

The northern shore of the river does not have as many launching sites as the south. However, one of the river's most popular summer spots for both advanced and beginner sailors is Pelican Point. The shallow nearshore waters of Pelican Point offer

Photo – Ann Storrie

similar benefits to Melville Beach Road with the addition of onshore showers, toilets and a mobile snack facility. Pelican Point, however, can become very congested under favourable summer conditions.

The final launch area worth mentioning is for advanced sailors only. The grassy area just downstream from the Narrows Bridge, adjacent to the Kwinana Freeway, provides a good rigging area and clear steady winds. Sailors do, however, need to tack upwind to clear the shore.

The Canning River and the waters of the Swan upstream of the Narrows Bridge are not ideal for advanced sailors, given the narrowness and meandering nature of the river channel and the resultant patchy winds. However, they may provide good conditions for beginners at certain locations under certain conditions.

CYCLING

Perth is a cyclist's paradise. Its relatively even climate makes cycling an ideal recreational activity for experiencing the outdoors. A dual use path (for the shared use of pedestrians and cyclists) can take you around the river. The Around the Rivers Ride consists of 12 rides of varying lengths around the Swan and Canning Rivers between Redcliffe, Fremantle and Riverton. The nine Swan River rides are outlined here. More detailed maps and further information are available from Bikewest, cycling clubs or cycling shops.

The wearing of helmets is compulsory while riding bicycles in Western Australia. Cycle hire operators also hire helmets. Always show courtesy to other users of dual use paths and ring your bell to warn pedestrians of your approach.

Ride 1 - **Causeway (Perth side) to the Narrows Bridge.** A three kilometre flat path along the edge of Perth water.

Ride 2 - **Narrows Bridge (Perth side) to Nedlands.** A four kilometre flat path along the Swan River foreshore and through Matilda Bay Reserve.

Ride 3 - **Nedlands to Mosman.** A total of eight kilometres of riverside and suburban area featuring high points around Freshwater Bay.

Ride 4 - **Mosman to Fremantle.** Seven kilometres of suburban heights overlooking the Swan River foreshore via Rocky Bay and through North Fremantle.

Ride 5 - **Fremantle to Point Walter.** Five kilometres of low and high foreshore areas from East Fremantle to Point Walter Reserve.

Ride 6 - **Point Walter to Applecross.** Seven kilometres of foreshore flats through Attadale, past the Alfred Cove section of the Swan Estuary Marine Park, to Applecross. The last small section scales the heights of Point Dundas.

Photo – Ann Storrie

Ride 7 - **Applecross to the Narrows Bridge.** Seven kilometres from Waylen Bay in Applecross, over the Canning Bridge, along the Como shoreline and past the Milyu section of the Swan Estuary Marine Park, and on to Mill Point Reserve and its historic buildings and artefacts.

Ride 8 - **Narrows Bridge (South Perth side) to the Causeway.** Five kilometres of parkland along the shoreline of Perth Water from Mill Point to Victoria Park and then over the Causeway across Heirisson Island.

Ride 12 - **Causeway (Perth side) to Garvey Park.** Thirteen kilometres of varying suburban and Swan River environs, taking in parklands, woodlands, river flatlands, steep hills and shorelines of thickets and rushes between East Perth and Redcliffe.

SCUBA DIVING

To be able to scuba dive in a river that runs through a capital city is a rare occurrence in the world today. Many rivers and estuaries are so polluted and overcrowded with boat traffic that scuba diving, snorkelling and swimming would not be considered. Divers in Western Australia, however, are very lucky. The Swan River is still relatively clean, and the estuarine marine life is exceptional.

Prawn diving at night is, for many people, a regular activity, even in winter. Water temperatures may drop to 12 or 13 degrees, but are usually between 18 and 20 degrees in summer. Blue manna crabs are also caught by night divers. In fact, there is little better than emerging from your dive to throw fresh prawns or crabs on the barbecue at a reserve close to your entry-exit dive point.

The river also offers subjects for macro underwater photography. Pop the close-up lens on and try the Harvey Beach or The Coombe dive sites (see pages 50-53) to experience very easy access to the myriad of small invertebrates and fish life. You will find that the visibility is not always terrific, and can be down to a metre or so, especially at the end of winter and spring with run-off from the winter rains. This should not, however, worry you much during night dives or with the close-up equipment on the camera.

Many dive schools also use dive sites in the river for teaching, not just beginners, but students doing commercial dive courses. No matter what the weather conditions, there will be no swell or severe chop on the river foreshore. Sometimes if the tide is flowing, you may have to be careful of a current out from the bank. Check at the river's edge before swimming out too far.

Always remember to take your dive flag, a torch to peer at the little crabs and seahorses in the wrecks at The Coombe, and, if night diving, attach a light to your flag and dive tank.

Photos – Ann Storrie

THE COOMBE DIVE SITE

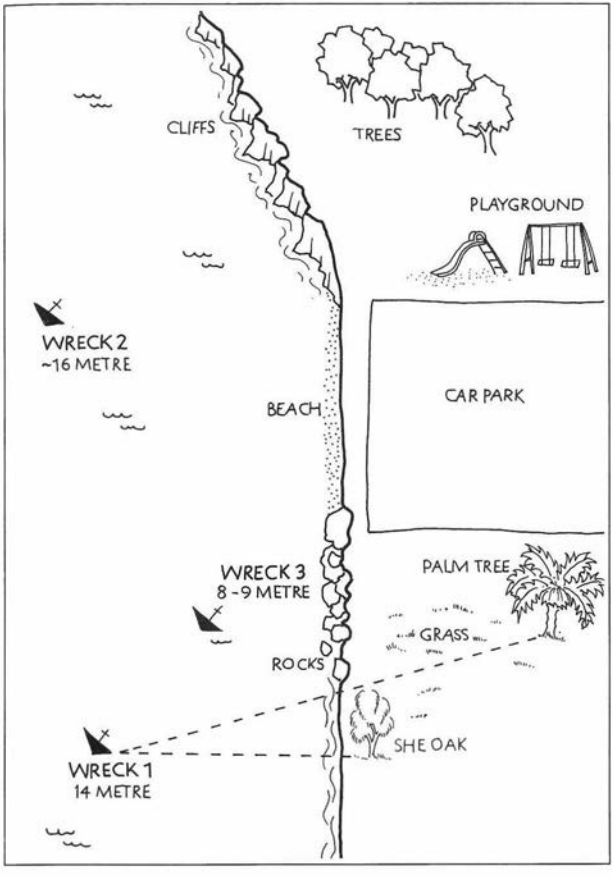
HOW TO GET THERE: Turn off Bayview Terrace into Saunders Street. Descend to a small car park and grassed reserve on the foreshore.

DEPTH: 8 to 16 metres.

The Coombe in Mosman Park is an easy shore dive, and is particularly good for night dives. There are at least three small wrecks in the area, two of which are relatively easy to find. Invertebrates such as sponges, hydroids, bryozoans and tubeworms can be found growing on the wrecks and among nearby rubble, while beautiful tube anemones live on the sloping bank and river bed. Octopuses can often be found in old bottles and under the timbers around the wrecks. Hermit crabs are fun to find, as they poke out of their mollusc shells, and decorator crabs are often hidden among the invertebrates on the wrecks. If you are after a meal, blue manna crabs and king prawns are plentiful, especially at night when they are out feeding.

The main wreck is in 14 metres of water, directly out from the grassed area on the northern side of the car park. The wreck is about 12.5 metres long and 2.5 metres wide. Whether you dive during the day or night, you should find at least one seahorse on the wrecks. They grip the timber or algae with their tails, as they gently sway in the current. Always be careful when you swim away from the wreck in case you accidentally kick one with a fin.

The second wreck is in slightly deeper water (16 to 17 metres) about 40 metres south-east of the first wreck. It isn't easy to find. The third wreck is a little smaller but has as much, if not more, marine life. It is in about eight metres of water, just north of the car park. Gobies, blennies and wavy grubfish often sit on the sand close to a burrow, and schools of gobbleguts and cardinalfish live among the wrecks. Flatheads, flounders and catfish are also found on the silty bottom.



CAUTION AREAS: Always tow a dive flag, and watch out for boats passing overhead. Be careful of rocks as you enter and exit. There can sometimes be a slight current with the tides.

HARVEY BEACH DIVE SITE

HOW TO GET THERE: Take Harvest Road down to the river. A path to the left of the Water Police building takes you to the beach.

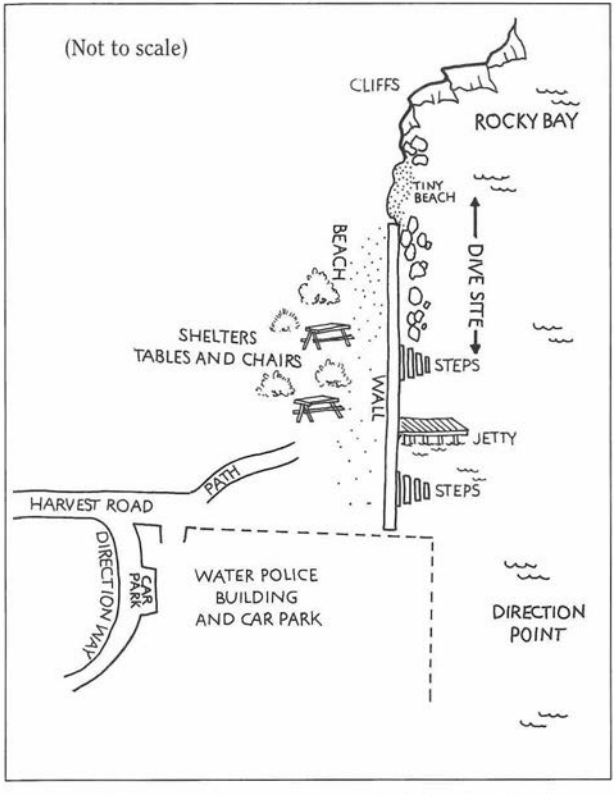
DEPTH: 5 metres.

This dive site is in North Fremantle next to the Water Police building. A small wall runs along the foreshore and a jetty juts a little way into the water. A fresh water tap is available, and two sets of wide steps provide easy access to the water.

This dive site follows the limestone cliffs from Point Direction towards Rocky Bay. If you stay at the edge of the cliffs where most of the action is, it is only about five metres. Even further out along the sea bed, the river does not get much deeper until you are in the boat channel. Keep clear of the channel, as boats present a hazard and the current may be running swiftly.

The limestone rubble at the base of the cliffs is a great place to find decorator crabs, tubeworms, anemones and molluscs. A large, colourful nudibranch (*Dendrodoris denisoni*) is often seen (see pages 16-17). In summer, sea hares mate and lay their long strands of eggs in the estuary. You will occasionally find a seahorse among the rocks, and octopuses make their lairs among the rubble at the base of the cliffs. Be careful when handling old bottles or empty mollusc shells in case a blue-ringed octopus pops out.

Armed anemones (see page 10) are often found just out from the edge of the cliff. The tentacles can be brown with light vertical lines, or pale and mauve tipped. They protrude from the silt, with a spread of 15 centimetres or more, and wave about in search of prey. Their sting is very painful and can cause fever, nausea, vomiting and, in serious cases, shock. Cerianthid tube anemones (see pages 10-11) are beautiful and relatively harmless. Their thin, delicate mauve to white tentacles protrude from a tube that is embedded in the sand.



Tiny blennies, gobies and wavy grubfish make their homes in the limestone rubble. You might even see a fingered dragonette 'walking' along the river bed on its fins. It has two large dorsal fins, and blue to purple markings on its back.

CAUTION AREAS: Always tow a dive flag, and watch out for boats and a current with the tides.

FRESHWATER BAY WALKTRAIL

This 3 km return walk begins at Keanes Point, Mosman Park, and has excellent views of Freshwater Bay across to the Claremont foreshore and Point Resolution. It takes about 50 minutes.

1. Begin at the Lilla Street car park opposite the Royal Freshwater Bay Yacht Club. Go left, joining the foreshore 100 metres away.

2. Walk past the moored yachts, with views across the bay. For the first several hundred metres, the walk offers a choice of beach, narrow limestone sea wall, or grass. Moreton Bay figs and peppermint trees are plentiful. Near the bottom of Irvine Street, a huge Moreton Bay fig crouches across the foreshore reserve, showing off its enormous roots above the surface.

3. Picnic spots are plentiful until the flat grassy foreshore meets the bottom of the hill along the Esplanade. If you take the path through peppermint trees along the foreshore, you can take the hillside walk for the return.

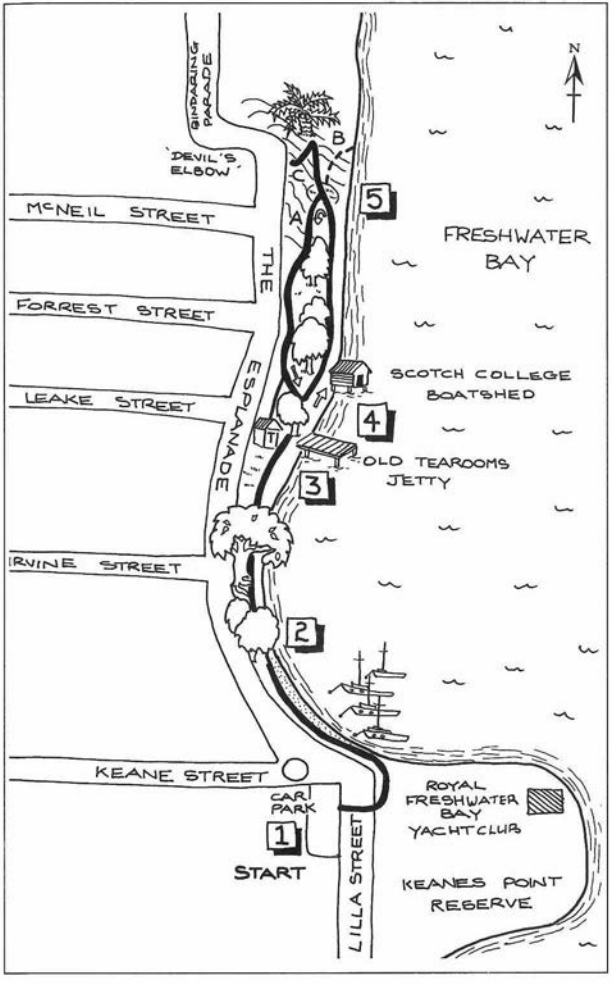
4. The jetty here is the site of the old tearooms. A path rises from here to join the hillside walk.

5. The walk rises to a picnic clearing at the face of the cliff. Three paths meet here. The right (B) peters out into a rough track down to the shore. The brick path further up and to the right (C) winds steeply to The Esplanade, with views of the river.

6. The left path (A) is the return walk. This curving brick path rises to street level and falls again. It is only 30 to 40 metres above the river, but the views seem quite different. Stay near the road and follow the grass down to the grassed picnic areas and back to Lilla Street.

WHERE IS IT? 11 km (20 minutes drive) south-west of Perth via Stirling Highway.

FACILITIES: Picnic area, barbecues, tables, kiosk, playground, toilets.


GINDARING PARADE
DEVIL'S ELBOW
McNEIL STREET
FORREST STREET
LEAKE STREET
IRVINE STREET
KEANE STREET
THE ESPLANADE
LILLA STREET
CAR PARK
START
A
B
1
2
3
4
5
FRESHWATER BAY
SCOTCH COLLEGE BOATSHED
OLD TEAROOMS JETTY
ROYAL FRESHWATER BAY YACHT CLUB
KEANES POINT RESERVE
N

PELICAN POINT WALK

This pleasant 3 km loop walk begins at the car park on the corner of Mounts Bay Road and Hackett Drive. It passes through the tree-lined Matilda Bay Reserve to J H Abrahams Reserve, before visiting the Pelican Point Bird Observation Tower and skirting along the foreshore on its return leg. You can picnic along the route. The varied vistas of the Swan River make this a delightful riverside stroll, taking about one and a half hours to complete.

1. From the car park, walk towards the UWA Guild Boat Shed (one of three boat sheds on this stretch of the foreshore). This old wooden building is undergoing long-term renovation. Walk up the gentle grassy slope to the dual use path (for the shared use of walkers and cyclists) that runs through the reserve.

2. Follow the dual use path along Hackett Drive, past a variety of planted and native trees. Most trees in the reserve are labelled.

3. You will pass a splendid Moreton Bay fig.

4. The path continues besides lawn and shady trees. Sit for awhile and enjoy magnificent views of Mount Eliza and the city skyline.

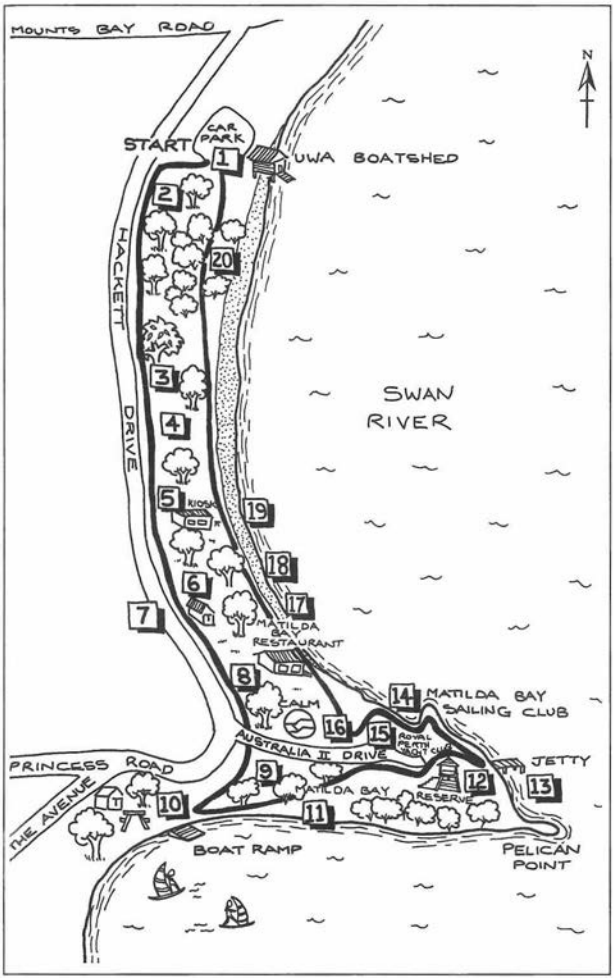
5. Continue close to Hackett Drive and pass behind the kiosk and tearooms.

6. To the left of the track is an information board about the reserve.

7. Walk back to the roadside and pass behind the toilet and shower block.

8. There is another shady lawned area ideal for picnics, with gas barbecues provided. Continue behind the gazebo, the Matilda Bay Restaurant and cross Australia II Drive.

9. There is an open grassy area with planted trees and the first views of the south side of the river. Proceed to the boat ramp at J H Abrahams Reserve.


MOUNTS BAY ROAD
N
START
CAR PARK
1
UWA BOATSHED
2
20
HACKETT DRIVE
3
4
SWAN RIVER
5
KIOSK
19
18
6
17
7
MATILDA BAY RESTAURANT
8
14
MATILDA BAY SAILING CLUB
ALM
16
15
ROYAL PERTH YACHT CLUB
AUSTRALIA II DRIVE
JETTY
PRINCESS ROAD
9
12
13
MATILDA BAY RESERVE
THE AVENUE
10
11
BOAT RAMP
PELICAN POINT

10. The section of river adjoining the J H Abrahams Reserve is popular with windsurfers (see pages 44-45) and has shady picnic areas, barbecues, toilets and a playground.

11. Head back through the grassy area (there is no path) and on to the end of Australia II Drive. The fenced area to your right is the Pelican Point Reserve - a sanctuary that adjoins part of the Swan Estuary Marine Park.

12. Climb the bird observation tower adjacent to the river, reserve and marine park. Bird identification boards help you spot the wide variety of waterbirds found in this area.

13. Walk back down the steps and turn right towards a jetty, then walk north-west along the foreshore.

14. Pass the Matilda Bay Sailing and Royal Perth Yacht Clubs.

15. Follow the fenceline past yachts and the dry dock to Australia II Drive, then cut back across the car park on the other side of the fence.

16. In front of the Department of Conservation's Corporate Headquarters is a shady lawn with seating. Stop and enjoy the views.

17. A sandy beach is backed by open lawns and a picnic shelter.

18. A plaque commemorates the re-enactment of the voyage of exploration on the Swan River by Captain James Stirling RN, in March 1827.

19. The Matilda Bay kiosk has outdoor seating on the river's edge, sheltered by flame trees.

20. There is an avenue of tea trees along this part of the reserve. Return along the shoreline to the start point.

WHERE IS IT? 5 km south-west of Perth (5 minutes drive) on Hackett Drive, adjacent to the University of Western Australia.

FACILITIES: Picnic areas, parking, tearooms, toilets and showers, bird observation platform, barbecues, playground at J H Abrahams Reserve.

Above: *Red wattlebird*

Below: *Darter*

Photos – Babs & Bert Wells/CALM

ROCKY BAY WALK

This 6 km, two hour return walk has views across the Swan River. It follows a concrete path for most of the way, then becomes a rough cliff top walk from Rocky Bay to Cypress Hill.

1. Begin at Minim Cove Park in Fairbairn Street, Mosman Park. Minim Park was an Aboriginal tool-making site about 10 000 years ago. Where the path forks, turn left towards the power lines.

2. There is a lookout just before the power lines.

3. Just after the power lines steps take you down to a tiny cove.

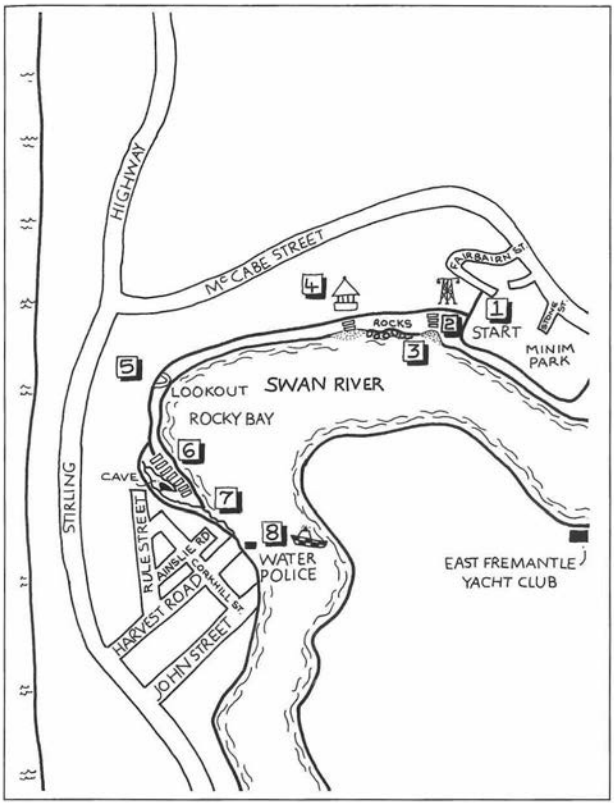
4. The trail continues with the river on one side and the Minim Cove residential development area on the other, reaching a lookout and gazebo with steps leading down to a tiny beach.

5. Pass a residential area and small playground to reach Lookout Point, which has views over the river and sea. It is hard to imagine that prior to the 1890s you would have looked back down the river at several 50 metre high limestone hills known as the Seven Sisters. They were extensively quarried for limestone in the 1890s and used to build Fremantle Harbour and buildings such as the University of Western Australia. The path ends just after the lookout.

6. Opposite the old soap factory, which operated until 1959 but has now been converted into units, a sign marks the cliff top path down stone steps to Rocky Bay (Garungup) Beach and an old tunnel which once discharged effluent from the soap factory. About halfway down the path there is an Aboriginal cave, from which the Waugal emerged during the Dreamtime.

7. The narrow cliff path to Cypress Hill is not clearly visible from the signs at Rocky Bay Beach; it is often single file only, and can be slippery when wet. Take care if you have small children.

8. The Water Police headquarters is below Cypress Hill, beside a foreshore area with shelters and drinking water. The simplest way



down to the foreshore is through the car park and down Ainslie, Corkhill and Harvest Streets. Alternatively, there is a rough path that descends around the hill to Harvest Street.

WHERE IS IT? 12 km south-west of Perth (20 minutes drive).

FACILITIES: Wood barbecues, benches, playground.

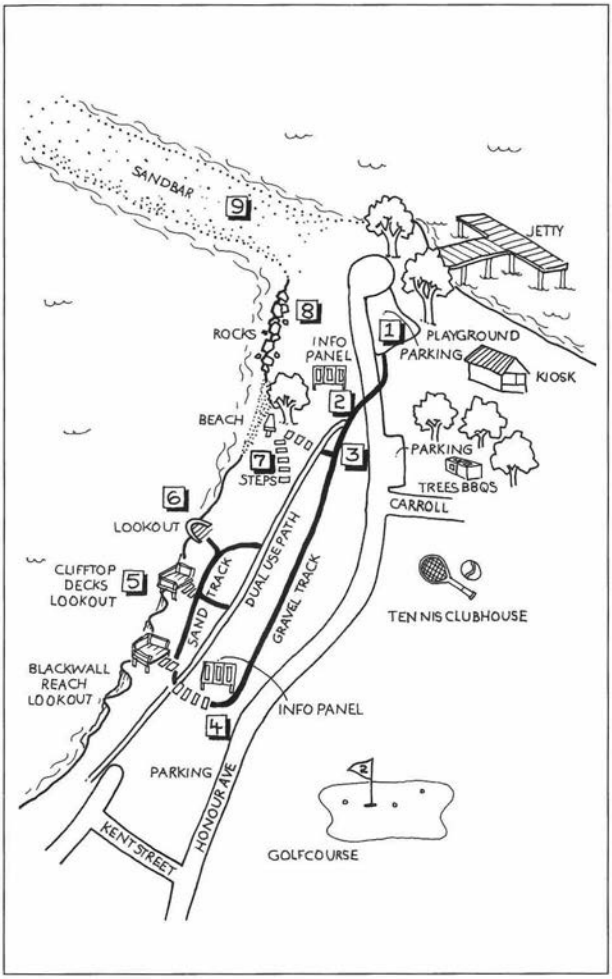
POINT WALTER TO BLACKWALL REACH LOOP

This 2 km loop (plus a kilometre walk along the sand bar) is close to excellent family facilities at Point Walter. It provides scenic vistas over the Swan River, a glimpse into the original riverside vegetation and prolific bird life. It takes about one and a half hours and most of it is suitable for prams and strollers.

1. Park in the upper section of the car park near the kiosk, and walk a short distance uphill along Honour Avenue. Take great care to avoid traffic, as there is no path until you reach the start of a dual use cycle/walk trail on your right.

2. Take some time to peruse the information shelter provided by the City of Melville, as this area has some fascinating history. Take the gravel track above and roughly parallel to the concrete dual use path. The first section of the walk is through bushland of peppermint (*Agonis flexuosa*), tuart (*Eucalyptus gomphocephala*), jarrah (*E. marginata*), parrotbush (*Dryandra sessilis*), hakea (*Hakea prostrata*), zamia (*Macrozamia reidlei*), wattles and banksias (*B. attenuata, B.menziesii* and *B. grandis*). Wildflowers include native wisteria (*Hardenbergia comptoniana*), one-sided bottlebrush (*Calothamnus rupestris*) and the yellowish-orange pea-flowers of green stinkwood (*Jacksonia sternbergiana*). The Department of Conservation's Bush Books, *Common Trees of the South-West Forests, Common Wildflowers of the South-West Forests* and *Bush Tucker Plants of the South-West* will help you to identify some of the flora species. Unfortunately, many weeds have also invaded this area and compete vigorously with the natural vegetation. Keep your eyes open for birds such as magpies, wattlebirds and other honeyeaters, kookaburras and Port Lincoln parrots.

3. At a five-way intersection of tracks there is a sign about the trams that once serviced Point Walter. Continue along the old tramway path that still runs parallel, and above the dual use path.


SANDBAR
9
JETTY
8
ROCKS
INFO PANEL
1
PLAYGROUND
PARKING
KIOSK
2
BEACH
PARKING
7
STEPS
3
TREES BBQS
6
CARROLL
LOOKOUT
CLIFFTOP DECKS LOOKOUT
5
SAND TRACK
DUAL USE PATH
GRAVEL TRACK
TENNIS CLUBHOUSE
BLACKWALL REACH LOOKOUT
INFO PANEL
4
PARKING
HONOUR AVE
KENT STREET
2
GOLFCOURSE

3. A little way along, you will reach a five-way intersection of tracks and a sign about the trams that once serviced Point Walter. Continue along the old tramway path that still runs parallel, and above the dual use path.

4. When you reach the car park and another information sign at the end of this track, turn right, towards the river, and continue down the steps to the Blackwall Reach lookout over the Swan River and the scenic limestone cliffs along its edge (if you have a stroller or pram there is an alternative but less direct track without steps). You can see across to Chidley Point, Mosman Bay and Freshwater Bay. You may also see the striking red flowers of cockie's tongues (*Templetonia retusa*). The limestone pinnacle in front of the platform is known as the 'White Lady'. Information panels explain that the locality was used to load blue metal onto ferries during World War II.

5. Start back along the dual-use path, then take a sandy track that forks to the left. This takes you to the Cliff Top Decks lookout, overlooking caves along the water's edge. If you are lucky you may also see bottlenose dolphins (see pages 40-41) frolicking in the river.

6. A third cliff top platform is also accessed by the sandy track. It incorporates a gate and a short ladder down to the rocky shoreline. If you opt to explore please take great care and supervise children closely. Do not enter the cave, which is a risk area.

7. Continue back along the dual use path. When you are directly below point 3 a set of steps takes you down to an attractive and secluded beach on the river's edge. A grassy area under the nearby trees and a bench seat makes this an ideal spot to linger.

8. Follow the path back to the information sign. Or you can opt to continue along the narrow rocky beach back to Point Walter.

9. This part of the walk is optional. It traverses the sandbar and gives views upstream and downstream. Migratory waders, such as sandpipers, stints, plovers and godwits, can often be seen.

Above: *Cockie's tongues*
Below: *Firewood banksia*

Below: *White-faced heron*

Photos – Babs & Bert Wells/CALM

WHERE IS IT? 9 km south of Perth (20 minutes drive) via Canning Highway and Point Walter Road.

FACILITIES: Lookouts, barbecues, kiosk, playground, toilets, bike racks, safe swimming beach.

BETWEEN THE BRIDGES WALK

This 10 kilometre return, three hour walk links the two major river crossings at each end of the city. It runs mostly along the water's edge. Except for Heirisson Island, the walk is along a dual use cycle/walk track and is suitable for wheelchairs, prams and strollers. It is best on Sundays when there is less traffic noise.

1. The walk begins at the small car park by the ornamental lake and Narrows interchange in Mounts Bay Road. One hundred years ago the area on which you are now walking was a stretch of water known as Mounts Bay, with long jetties snaking through its shallows. Warehouses and shipbuilding industries stretched along the foreshore, as the river was still an important means of transport at that time.

2.Walk south and pass under the Narrows Bridge, taking in views to the Old Swan Brewery and across to the South Perth foreshore.

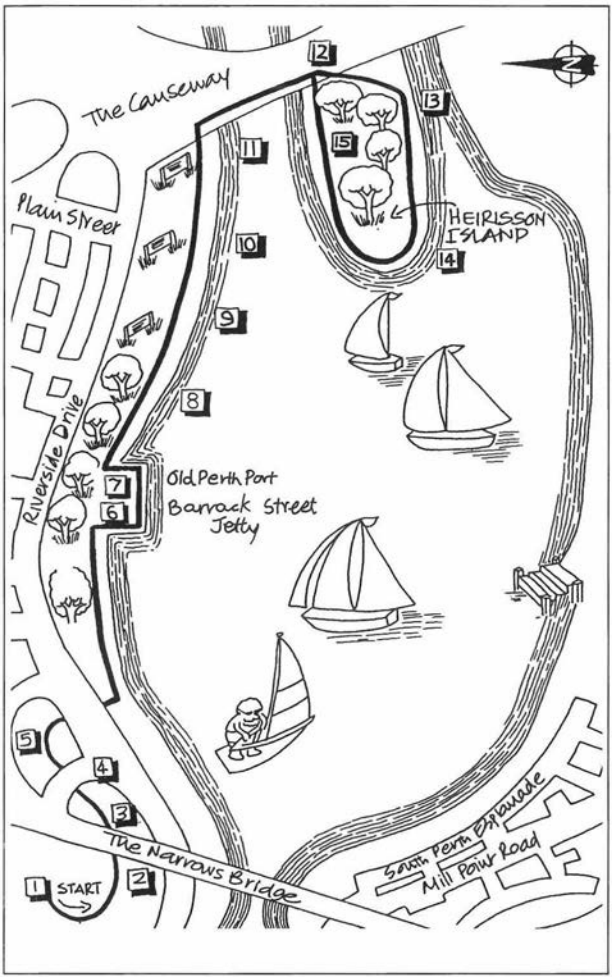
3. A small wetland within the Narrows interchange has the city skyline as a backdrop and teems with bird life.

4. The first of three underpasses. Facilities here include a toilet block, drinking fountain and bench seating.

5. There is a small open space between three underpasses: one leading to the city, the second to the foreshore and the third back towards the brewery. A large obelisk gives details about the construction of the freeway interchange and the river's geomorphology. Take the underpass to the river and follow the path along the river's edge.

6. Barrack Square serves as a departure point for river cruises, and ferries to South Perth and Rottnest Island.

7. Have a short break and perhaps a snack at the Old Perth Port with its shops, restaurants and toilets.


The Causeway
Plain Street
Riverside Drive
Old Perth Port
Barrack Street Jetty
HEIRISSON ISLAND
The Narrows Bridge
South Perth Esplanade
Mill Point Road
START
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14
15

8. The WA Rowing Club, classified by the National Trust, is an interesting old wooden building built around 1905. Between it and Victoria Avenue there is a beautifully landscaped area featuring date palms and sculptured seating.

9. Langley Park was Perth's first aerodrome. From time to time the park is used to commemorate historic aviation events, which see dozens of vintage aircraft on display or flying. Other exhibitions and sporting events are also held here. Riverside Drive is prone to flooding as the land on which it lies was reclaimed from the river.

10. As you come to the junction of Plain Street and Riverside Drive, Heirisson Island can be seen across the river. Heirisson Island was named by Commander Freycinet of the French ship the *Naturaliste* in honour of the sub lieutenant who led the expedition to explore the Swan River in June 1801. The 'islands' were little more than mud banks that blocked the river at this time, and it took the French party 13 hours to drag their long boat over them. In later years the river was dredged and a single landscaped island was formed, retaining the original name.

11. The trail diverges from Riverside Drive and passes through a grassed public open space beside the river with cycle hire facilities, a children's playground and a drinking fountain. Walk onto the Causeway Bridge and head south.

12. Access to Heirisson Island is on the right. The compacted limestone pathways are unsuitable for wheelchairs.

13. Walk to the south bank of the island, and enter the fence through a gate. The fence was erected to keep in the kangaroos which were introduced to the island. However, the best time to see kangaroos is in the evening or early morning, when these largely nocturnal animals emerge to graze. This part of the island is a grassed open space with several internal wetlands and extensive clumps of trees. Waterbirds such as ducks, egrets and cormorants are highly visible. Head around the island in a clockwise direction.

Photo – Ann Storrie

Kangaroo on Heirisson Island

14. The western end of the island gives superb views of Perth water, with the city and Kings Park providing a picturesque backdrop. On a broad grassy knoll is a large bronze statue of the Aboriginal warrior Yagan, whose people once camped in areas by the Swan and Canning Rivers.

15. The northern bank of the island is more open and exposed to the wind. Leave the enclosure and continue to the Causeway Bridge, retracing your steps to the car park on Mounts Bay Road along the river foreshore. Walking in a westerly direction gives a different perspective, with Kings Park becoming a more dominant feature.

WHERE IS IT? The starting point is 1 km (5minutes) from Perth city centre, just off Mounts Bay Road on the north of the Narrows.

FACILITIES: Seating, water and childrens' play areas at various points along the walk.

CLAREMONT FORESHORE TRAIL

This 5 km loop walk offers a riverside experience with views across to Alfred Cove, Lucky Bay, Point Walter, Mosman Bay and Freshwater Bay. It takes about an hour and a half to complete.

1. From the small car park adjacent to Point Resolution Reserve there are panoramic views of the river. A metal plaque indicates that the point was named after the ship *Resolution* and was also the location of a convict depot. A limestone and concrete pathway runs down from the car park to the river foreshore.

2. Downstream, the beach is mainly sandy, sometimes rocky and rarely wider than three or four metres. There are several other paths leading up to the reserve.

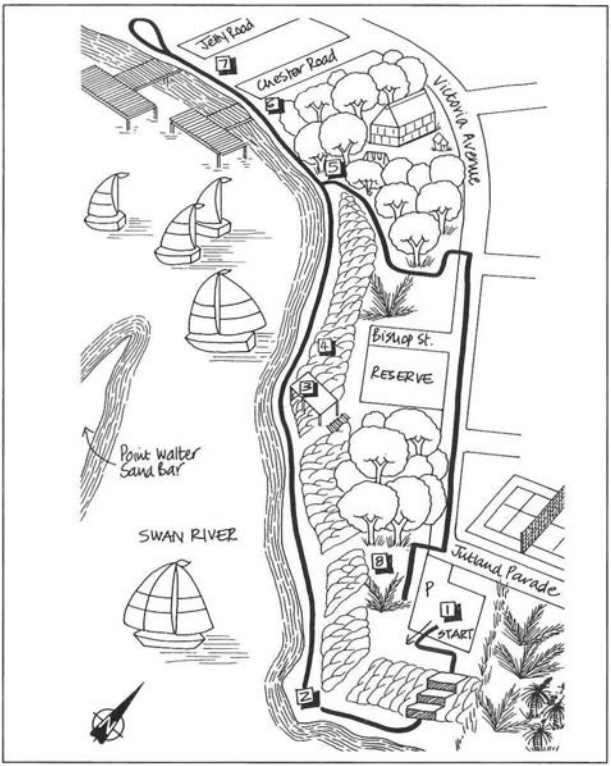
3. Walk about one kilometre along the beach to a low lookout (brick pillars supporting a concrete roof) which marks Bishop Road Reserve. A bitumen path leads up to the reserve.

4. About 100 metres further along the foreshore, the beach narrows to about one metre, past tall limestone pinnacles. Check the tide before continuing. The beach here is narrow, often rocky, and frequently covered with reeds and grass. River views are excellent, but you need to stand still to enjoy them in case you stumble.

5. The foreshore widens to a grass reserve (Mrs Herbert's Park) with a playground, trees and toilets halfway up the hill. Claremont Museum is at the top of the hill.

6. A foreshore reserve leads to a small car park at the bottom of Chester Road. A plaque marks the site of the old Claremont Baths.

7. Claremont Jetty is on Jetty Road adjacent to the Claremont Yacht Club. There are views to Keanes Point and the Royal Freshwater Bay Yacht Club and downstream to Blackwall Reach. From here, retrace your steps to Mrs Herbert's Park and visit the Museum before continuing south along Victoria Road.



8. Point Resolution Reserve contains a mix of native and eastern States trees and shrubs. At the northern end of the reserve is a clump of trees shading a brick paved circle with a picnic table.

WHERE IS IT? 9 km south-west of Perth (20 minutes drive) on the north bank of the Swan River.

FACILITIES: Picnic area, tables, water.

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ABOUT THE AUTHORS

Ann Storrie has been diving and taking underwater photographs for some time. She has co-authored and photographed two stunning full-colour CALM books, *The Marine Life of Ningaloo Marine Park and Coral Bay* and *Wonders of Western Waters: The Marine life of South-Western Australia.*

Carolyn Thomson-Dans, a Special Project Officer with CALM, has written and edited numerous books, Bush Books and books in the *Discovering* series.

OTHER BOOKS IN THIS SERIES:

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Discovering Monkey Mia and Shark Bay Marine Park

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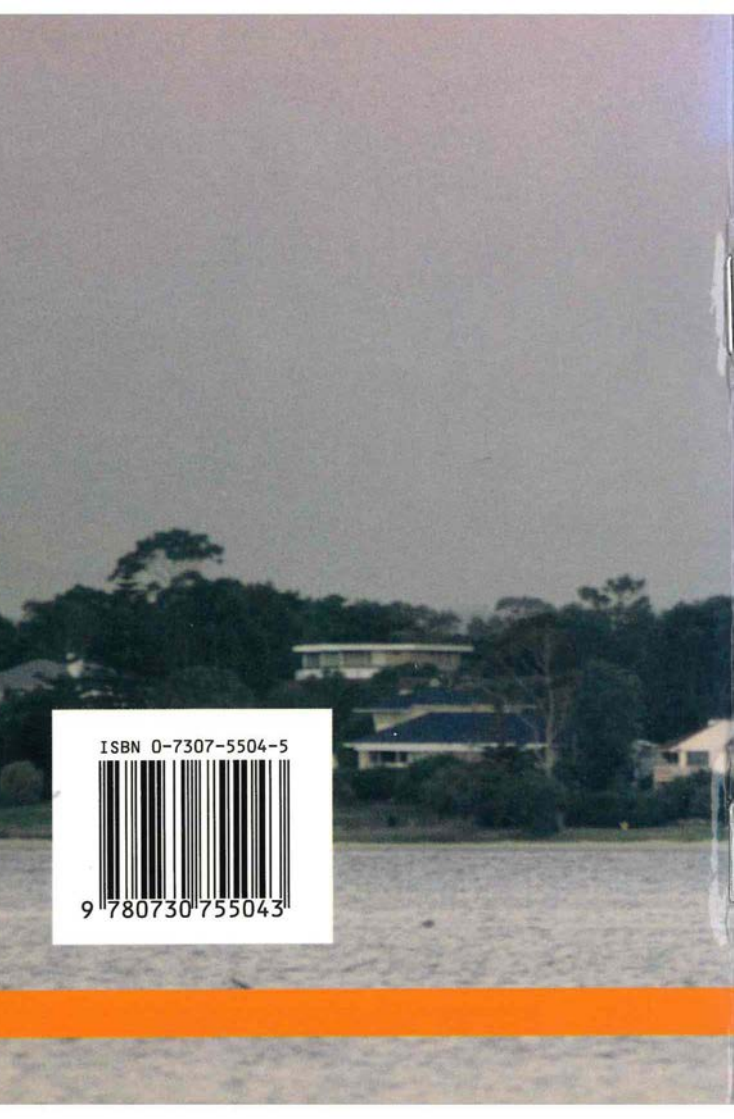
Discovering Nambung National Park

Discovering Valley of the Giants and Walpole-Nornalup National Park



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