

DISCOVER THE *REAL*
OCEAN GROVE

WOODLANDS · WETLANDS · COAST · ESTUARY

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This publication is an initiative of the Bellarine Catchment Network (BCN), working in collaboration with local residents and community groups.

environmentbellarine.org.au

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DISCOVER THE *REAL* OCEAN GROVE

There are obvious attractions to living in or visiting Ocean Grove. We all enjoy the fresh air, the lifestyle and the vibrant community set amid a landscape rich in natural beauty.

But many of the incredible ecosystems that are fundamental to the area's character are now disguised by development.

What's underneath the disguise?

Ocean Grove actually has four distinct natural environments: woodlands, wetlands, coast and estuary. Each plays a crucial role in nurturing specific flora and fauna so it's important that they all survive.

Unlike a city where natural surroundings all but disappear, Ocean Grove still has the opportunity to preserve, even restore, each of these unique environments so that the native flora and fauna that depend on them can continue to flourish.

This booklet will guide you to the natural wonders within and beyond our backyards.

Enjoy discovering the real Ocean Grove.

Sundew *Drosera*

A carnivorous plant. Tentacled leaves with sticky 'dew' at the tips trap insect prey. The tentacles fold over the insect and ooze plant enzymes to help digest their meal.

OCEAN GROVE HABITATS



A LOOK BACK

Have you ever wondered what Ocean Grove may have looked like hundreds of years ago? Imagine a landscape of old-growth woodland, with carpets of wildflowers and native grasses along with abundant populations of native animals, birds and marine life. This is the Ocean Grove of the past, but look closer and you'll see that many plants and animals can still be found here today.



Ocean Grove main beach

The image above is one of the earliest known photos of Ocean Grove (circa 1890s) and shows large bare sand dunes with sparse vegetation. Small areas of South African Marram Grass plantings are evident.

In contrast, the photo at right was taken around 10 years later (circa 1900s) and shows the dunes vegetated in Marram Grass while Coastal Tea-tree colonises in the foreground.



OCEAN GROVE OF THE PAST

Before European colonisation, the Ocean Grove landscape was characterised by sand dunes and low scrub vegetation on the coast. Further inland, grassy woodlands dominated with trees such as sheoaks, eucalypts and banksias, and native grasses such as Spear Grass and Kangaroo Grass. The wetlands of the past were more extensive than present, providing a ready source of fresh water, and linking Ocean Grove to Swan Bay by a series of seasonal wetlands.

Sustainable living

The Wadawurrung people lived and moved around the Ocean Grove district, with the local area providing an abundant and varied food source including fish, native animals, birds and insects. Plants were sustainably harvested for food, medicine, tools and utensils. More than 90 shell middens have been recorded nearby, indicating a long aboriginal occupation of the Ocean Grove area.

Changing landscape

European colonisation began in the early 1830s, changing the landscape in ways that continue today. Foreign flora and fauna were introduced, and land clearing for farming and development destroyed many staples of the aboriginal diet.

Non-indigenous grasses were planted on the foreshore and the dunes were re-shaped with roads, paths and housing development. Industries such as tanbarking, fishing and farming harnessed the natural resources of the district and tourism opened the way for further expansion.


OCEAN GROVE TODAY

The Ocean Grove that we see today is very different to that of the past. Despite all these changes to the landscape, you can still find great examples of natural environments that provide valuable food, shelter and biodiversity for the area's flora and fauna.

They are an integral part of the Ocean Grove landscape and an important and valuable natural asset that needs our care and protection.




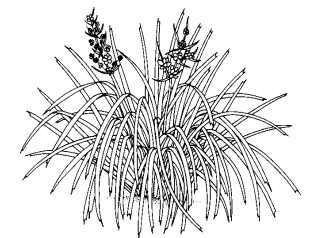
Kangaroo Grass
Themeda triandra

 Seeds were ground into flour, mixed with water and cooked into damper.




Bulbine Lily
Bulbine bulbosa

 Bulb-like edible tuber, cooked by steaming. Once common in Ocean Grove.



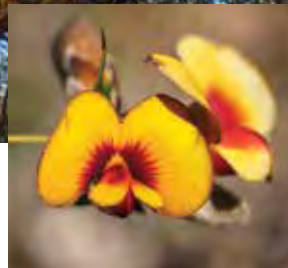
Spiny-headed Mat-rush
Lomandra longifolia subsp. *longifolia*

 Leaves were split and softened in water, then fibres were woven into baskets and fish traps. Flowers provided nectar.

WOODLANDS



Above: Manna Gum – Yellow Gums Estate
Right: Common Flat-pea – Ocean Grove Nature Reserve



Black Wallaby

A small wallaby with black/grey back and yellow/orange chest. Common in the Ocean Grove Nature Reserve where they blend expertly with the woodlands flora.

The streets of old Ocean Grove traverse a modified grassy woodland. As you walk around them you'll see remnant old-growth trees and native grasses and you may discover other plants, birds, mammals, reptiles and insects that are unique to this part of Ocean Grove.

HOW, WHY AND WHERE

How do you define a 'woodland'?

In Australia, the term 'woodland' generally refers to ecosystems that feature scattered shrubs and grassland between widely spaced trees. The woodlands of Ocean Grove are classified as 'grassy woodlands'. They have a dominant understory of native grasses between trees that include eucalypts, banksias, sheoaks and wattles.

Why are woodlands valuable?

The diverse flora of a woodland provides habitat for many birds and animals. Any depletion of the plant diversity within them has a negative flow-on effect for species relying on woodlands for food, shelter or breeding.

Where are the woodlands in Ocean Grove and what can you find there?

The Ocean Grove woodlands were once widespread across the area's moderately fertile, gentle slopes, but now only about 2% remain. They can be explored at Ocean Grove Nature Reserve, Kingston Park, Yellow Gums Estate and around our local streets.

Among the trees and grasses you'll find wildflowers, birds, frogs, bats, and a world of insects. The list is vast! The following pages show a snapshot of what's out there. The rest is waiting for you to discover!



WHERE'S MY NEST?

Many native birds and mammals need tree hollows to nest in. That's a great reason to protect old trees as it can take **100 years** for hollows to develop.


Hybrid Rainbow/Scaly-breasted Musk Lorikeet at nesting hollow in Thacker Street garden.

WOODLANDS FLORA AND FAUNA

The native flora and fauna of the Ocean Grove woodlands ranges from delicate fungi and wildflowers to wattles, sheoaks and large old-growth trees such as yellow gums and manna gums. And of course there's a whole mix of grasses and shrubs growing in-between that provide food and shelter for an array of birds, reptiles, insects and mammals.



Silver Banksia
Banksia marginata
Common tree to 6m high. Source of nectar for birds.


 Nectar used as food.



Kidney-weed
Dichondra repens
Native ground cover, not an actual 'weed'. Grows in shady conditions.



Chocolate Lily
Arthropodium strictum
Tuber. Flowers in spring and really *does* smell like chocolate.

 Edible tubers, rich in carbohydrates.



Fibrous Spear-grass
Austrostipa semibarbata
Feathery tussock. Seeds have long awns that twist and bend, helping to bury the seed into the ground.



Ghost Fungi
Omphalotus nidiformis
Glowes a soft green in the dark. Colonises decaying timber and living trees. Seen in autumn and winter.




Salmon Sun-orchid
Thelymitra rubra
Grows to 50cm tall. Seen on sunny days from Oct onwards. Flower stays closed on dull days.



Small-leaved Clematis
Clematis microphylla
Vigorous climber. Flowers in spring. Feathery fruit.



Lightwood
Acacia implexa
Quick growing, long-lived wattle.

 Bark used to treat skin diseases.



Flame Robin
Male has red breast and grey back. Female has brown and buff markings. Arrives locally in March and departs in August. Breeds in woodlands.



Brown Falcon
Powerful flyer with strong bill. Can kill prey in one bite. Feeds on birds, small mammals and reptiles.



Tawny Frogmouth
A master of camouflage, blending easily with the bark of the trees that it roosts in. Nocturnal. Mates for life. Feeds mainly on insects and reptiles.




Spotted Pardalote
Small, colourful bird with white spot markings. Nests in the ground in clay or soil burrows. Feeds on insects, particularly sugary lerp.



Spiny-cheeked Honeyeater
Black-tipped pink bill with a brush-tipped tongue to soak up nectar. Can empty a flower of nectar by licking 10 times in one second.



Jacky Lizard
Well camouflaged tree dragon. Grows up to 30cm. An ambush predator that lies still then pounces on its prey.

 Meat used as food.



Plume Moth
Named for its unusual modified feathery wings that resemble plumes. Legs are stick-like with barbs.



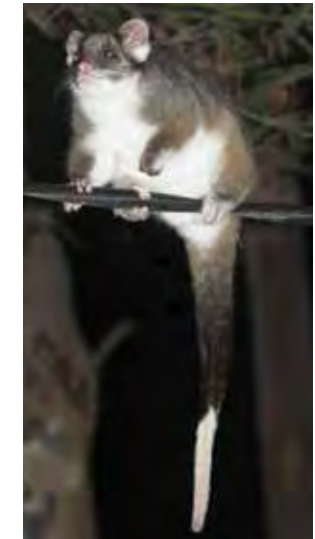
Lesser Long-eared Bat
Mouse-sized 'micro' bat. Shelters in bark on trees. Feeds on mosquitoes and other insects. Nocturnal.




Golden Stag Beetle
Powerful digger and flyer. Larve feed on plant roots, rotting wood and decaying animal matter. Colour can be gold, green, red or blue.



Echidna
Females lay a single soft shelled egg in their pouch. When hatched she leaves the young in a burrow and returns to feed it. Feeds on ants and termites.



Ringtail Possum
Excellent climber. A bare skinned patch underneath the tail enables tight gripping for climbing. Nocturnal.

 Skins used for clothing.

IN OUR BACKYARD

PRECIOUS REMNANTS

'Old-growth' trees have been undisturbed by fire or land clearing. They're highly valued for genetic diversity and nesting hollows, attributes not found in younger trees.

Grass trees – Ocean Grove Nature Reserve

LOCAL WOODLANDS

Ocean Grove Nature Reserve

Ocean Grove Nature Reserve is the largest remnant native woodland on the Bellarine Peninsula and hosts more than 200 plant species. Walk the Discovery Trail to discover the complex world of ants, curious brush-tongued birds, meat-eating plants, the endangered Bellarine Yellow Gum and more.

Kingston Park

A native bushland oasis with stunning wildflowers in spring. Visit year-round for a rewarding spot of nature watching.

Yellow Gums Estate

A residential estate with a proposed 8ha grassy woodland reserve that includes old-growth Bellarine yellow gums, some more than 200 years old.

ANCIENT SENTINELS

Grass Tree *Xanthorea australis*

Unique to Australia and once common throughout Ocean Grove, grass trees are now mainly restricted to the Ocean Grove Nature Reserve. They're incredibly slow growing, managing a rate of 1–2cm per year. Fire is their friend, promoting flowering, with one flower spike able to produce up to 10,000 seeds after fire.

This plant is threatened by *Phytophthora cinnamomi*, a water-borne fungus that attacks the roots, slowly cutting off nutrients and water. Grass trees killed by *Phytophthora* may appear to have been incinerated by a 'ray gun'. Staying on walking tracks helps to avoid spreading this deadly disease.



Grass tree resin was used in tool making. Nectar was collected from flowers. Old flower stalks were used to start fires.

PRIME BUTTERFLY REAL ESTATE

In summer the woodlands are alive with the beautiful (and unfairly named!) Common Brown butterfly. After the first autumn rains they lay eggs on the Thatch Saw-sedge and Spiny-headed Mat-rush. In winter when the larvae emerge they're able to enjoy a ready supply of food by feeding on the host plant. It's a clever adaptation, eliminating the need to leave home in search of a meal.

Left: Thatch Saw-sedge seed head
Right: Common Brown (female)



SWIFT BY NAME, SWIFT BY NATURE

Swift Parrot in peril

A seasonal visitor to Ocean Grove, the Swift Parrot breeds in Tasmania in the summer then migrates to the Australian mainland in autumn and winter. The winter-flowering Bellarine Yellow Gum is a reliable food source, providing nectar, seeds and insects. A chatty, gregarious bird, they're also fast flyers and thoroughly deserving of the 'Swift' Parrot name.

Due to habitat threats, only 2000 birds are estimated to exist in the wild, earning it the sorry status of 'critically endangered'.



Swift Parrot—Ocean Grove

Going going... A plant or animal listed as 'critically endangered' is just one step from extinction.

DANGEROUS LIAISONS

Mini-beast survival tactics

Survival tactics and adaptations such as camouflage, stealth, weaponry and mimicry abound in the insect world.

The Praying Mantis wears a cunning disguise and routinely decapitates its partners. Freaky? Bizarre? Think again...it's just doing what comes naturally to survive in the insect world by laying low and blending in, then skillfully killing prey to ensure it has enough nourishment for producing the next generation.

The Hover Fly can expertly imitate the yellow and black warning colouration of a native wasp, a clear way of saying 'back off buddy!'. They'll even mimic the wasp's stinging action as a way of scaring a predator. They are in fact a completely harmless insect and are an important pollinator of plants.

It seems that it's not just a case of 'survival of the fittest' but also a case of 'survival of the cleverest' in the insect world!



Hover Fly – trick of the eye

- Member of a fly family that has evolved as wasp and bee mimics.
- Can be seen hovering in one spot, then suddenly moving forward or sideways, then hovering again.

Praying Mantis – the gory details

- Strictly carnivorous insect that lies in wait for victims to pass by before pouncing.
- Camouflages with the colour and shape of the plants that it lives in.
- Has spikey forelegs that snap shut like a pocket knife, piercing and killing their victims.
- While mating, females may eat the head off the male, giving her protein for rearing healthy eggs.
- The headless male can still continue mating due to a chain of nerve responses.

Praying Mantis – Ocean Grove garden

SPECIAL TO OCEAN GROVE

Bellarine Yellow Gum

Eucalyptus leucoxylon subsp. *bellarinensis*
The Bellarine Yellow Gum is an endangered subspecies, important to the Ocean Grove district because it is the only local (endemic) eucalypt to flower in winter, making it a vital food source for nectar-feeding birds and insects. First described in 1998, this particular subspecies of *Eucalyptus leucoxylon* is only found on the Bellarine Peninsula and in some parts of Torquay. The grassy woodlands in which this tree occurs have been extensively cleared and only cover about 2% of their former range.

Where can you see a specimen?

The Bellarine Yellow Gum is best represented in the Ocean Grove Nature Reserve and Kingston Park, as well as the residential areas of Yellow Gums Estate, Woodlands Estate and many local streets such as Presidents Avenue.

Hard to spot?

Details of their bark, leaves, buds and fruit distinguish Bellarine yellow gums from other eucalypt species. The features listed below will help you recognise these majestic trees.



Bellarine Yellow Gum – street tree in Currango Way

How to identify a Bellarine Yellow Gum

Size: Small to medium-sized trees to 15m, commonly multitrunked, whitish gum-type bark on most of trunk.

Bark: Dark, rough and scaly at base; smooth above, whitish or grey, mottled.

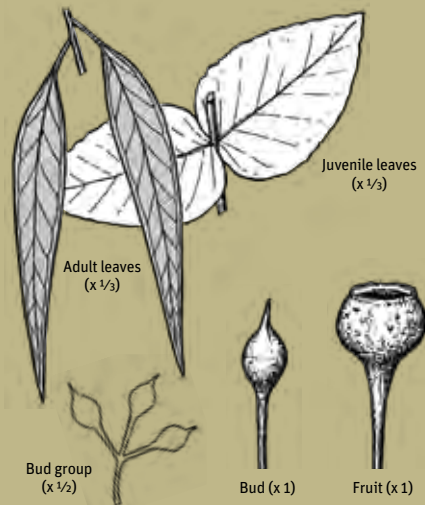
Leaves: *Adult*—Lance-shaped, 10–16cm × 15–30mm, bluish-green, veins distinct.

Juvenile—Persisting opposite; waxy grey-green; broad ovate to heart-shaped, pairs commonly joined at base.

Buds: In 3s, ovoid or globular on distinct slender stalks; particularly long-stalked and long-beaked. Flowers white (April–May).

Fruit: Fairly large, cup- or barrel-shaped on slender stalks longer than capsule; disc depressed, 4–6 enclosed valves.

Wood: Pale, hard, strong, durable.



Identification description courtesy Leon Costermans 2017.

POSITIVE STEPS

PRESERVING THE *REAL* OCEAN GROVE

There are many steps we can take to encourage preservation of our woodlands. Small actions can collectively make a big difference, not just locally but globally. The more you learn about the Ocean Grove woodlands, the more you'll appreciate the great natural asset that we have at our doorstep.

Join a community group

Friends of Ocean Grove Nature Reserve and Friends of Yellow Gums are local groups involved in nature activities connected with woodlands. Specialist talks, tree planting, bird watching and nature observation are some of the activities they run.



Build a nest box

Many native birds and mammals need tree hollows for nesting and shelter, but availability is scarce due to the removal of old trees. Contact the Ocean Grove Men's Shed for ready-made nest boxes. For more info go to birdsinbackyards.net/Nest-Box-Plans



Green corridors

Linear habitats on roadsides, creeks and parks are 'green corridors' that help to maintain diversity by allowing native fauna to travel and linking plant communities. Assist in their preservation by joining groups with active conservation interests.



Pets and wildlife

Millions of native animals are killed daily by dogs and cats whose instincts are to hunt or chase. Prevent your pets from roaming and adhere to cat curfews. Report roaming animals to the local council at geelongaustralia.com.au/pets



Gardening for wildlife

Provide habitats in your garden by replacing exotic ornamental plants with native grasses, shrubs and trees that provide food sources and shelter. A water body will attract native birds and frogs, while rocks and tree branches provide great refuge.



KEEP DISCOVERING

For more woodlands resources go to page 38.

WETLANDS



Ewing's Tree Frog
Also known as a Southern Brown Tree Frog. An agile climber with specially adapted suction cups on its toes.



Right: (from L to R) Twig-sedge; Begola Wetlands; Pacific Black Duck ducklings

Visit a wetland in Ocean Grove and you'll encounter birds that are specially adapted to aquatic life with long legs for wading or webbed feet for swimming. Hear the sounds of croaking frogs calling for a mate. Look closer and you'll find lively insects and hidden aquatic life. Diverse flora and fauna make wetlands truly special places.

FOOD FOR THOUGHT

In the past 200 years more than **50%** of Australia's wetlands have disappeared due to land clearing and draining for housing, farming and industrial development.

HOW, WHY AND WHERE

How do you define a 'wetland'?

Wetlands are aquatic ecosystems inhabited by plants and animals adapted to permanent or periodic inundation. Water in wetlands can be still or flowing, fresh, salty or brackish, and it doesn't have to be continuously wet. In fact, many wetlands in Australia remain dry for years at a time.

Why are wetlands valuable?

Wetlands have an important role in maintaining healthy waterways and providing sanctuary for plant and animal life. They enhance water quality by filtering pollutants and trapping sediments, protect against natural hazards by slowing flood waters, and provide wildlife refuges in dry seasons.

The natural beauty of a wetland cannot be overlooked, providing opportunities for nature appreciation, recreation, and open space.

Where are the wetlands in Ocean Grove and what can be found there?

There are several wetlands in Ocean Grove and it's worth visiting each of them as they are all unique in their own way. The map on pages 2-3 shows the locations of wetlands that can be explored.

Once there you're likely to find birds, frogs, aquatic plants, eels and freshwater turtles. You could even spot a rare migratory bird. The following pages show a snapshot of what's out there. The rest is waiting for you to discover!

WETLANDS FLORA AND FAUNA


Wetland plants, birds, fish, reptiles, insects and mammals are adapted to survive in challenging habitats that can change intermittently from wet to dry. Birds may have long legs and pointy beaks to forage in the mud; plants may float on the water or anchor in boggy soil; and dragonflies, the ultimate wetland predators, helicopter above the water, hunting a smorgasbord of hapless prey.



Black Bristle-rush
Chorizandra enodis
Rush-like plant. Grows to 1m high. Thrives in boggy soil but can tolerate short dry periods.



Pale Rush
Juncus pallidus
Vigorous, tufted rhizomous rush. Needs periodic inundation for growth.

 Leaves used for basket making.




Ferny Azolla
Azolla pinnata
Small free-floating fern. Forms carpets over still fresh water. Dies back in cold weather. Good cover for fish.



Common Duckweed
Lemna disperma
Rapid growing floating plant, 1–4mm long. Forms mats of individual plants. Good cover for aquatic animals.



Common Nardoo
Marsilea drummondii
Aquatic fern with floating fronds. Grows widely throughout Australia.

 Leaf spores ground into flour.



Water Ribbons
Cyanogeton procerum
Robust plant with thick woody rhizome. Grows to 50cm high. Requires regular inundation.




Broadleaf Cumbungi
Typha orientalis
Large clumping plant. Grows to 3m high. Remains green in winter.

 Fibres used for nets and baskets.



Common Reed
Phragmites australis
Semi aquatic. Grows to 3m high. Food and nesting plant for waterbirds.

 Edible rhizomes. Stems used for spears.



Royal Spoonbill
Large white bird. Grows to 81cm. Spoon shaped bill. Feeds by feel, sweeping its bill through shallow water for prey.



Little Bittern
Extremely shy bird that hides in reeds and dense vegetation. Australia's smallest heron. Grows to 30cm. Rare in Ocean Grove.



Australian Spotted Crake
Inhabits the margins of wetlands, preferring dense vegetation. Observed to flick their tail when walking and crouching when running.



Australasian Swamphen
Common. Grows to 48cm (rooster size). Lives in small groups where all family members share in care of the young. Eats frogs, snails, eggs and ducklings.



Freckled Duck
One of the world's rarest ducks. Only found in Australia. Represents an early stage of waterfowl evolution with swan and duck characteristics.



Eastern Snake-necked Turtle
When disturbed can eject a pungent liquid, earning it the common name of 'Stinker'. Can travel 2km overland to reach food, water or shelter.



Rakali
Characterised by a white tipped tail and orange belly. Also known as a Native Water Rat. Territorial. Partly webbed back feet aid in swimming.



Pobblebonk Frog
Common name is 'Banjo' frog. Their call is a musical repetitive 'bonk', like a banjo string being plucked. Lays up to 4000 eggs in water bodies.



Eastern three-lined Skink
Characteristic lengthways stripes. Lays eggs. Grows from 22–80mm long. Feeds on insects and small invertebrates.



Copperhead Snake
Mostly timid but can become aggressive if threatened or disturbed. Venomous. May be seen near water.



Dragonfly
Eyes are made up of thousands of tiny lenses. Catches prey with precision accuracy while in flight. Can travel at speeds of 50km per hour.



St Andrews Cross Spider
Makes a large web with four spokes of zigzagged silk at the centre, forming a cross. They vibrate the web to become invisible to predators.

IN OUR BACKYARD

LOCAL WETLANDS

Begola Wetlands

Traditionally known as 'place of many frogs', these wetlands live up to their name with six species of frog being recorded there. But it's not just about the frogs; 102 species of birds have also been documented here.

Although small in size, Begola Wetlands is one of the most important places in Australia for the migratory Latham's Snipe.

Replenished by storm and surface water from around Ocean Grove, this wetland dries out on average every 5 years, a natural and important part of the wetland cycle.

Bonnyvale Wetlands

Intermittent wetlands that flow into Lake Victoria and Swan Bay.

Blue Waters Lake

A permanent, constructed lake, replenished by storm water. Dusky moorehens, Australasian grebes, egrets, ducks and herons can be seen year round while many migrating birds spend the summer here.

Nature Reserve Lake

A constructed wetland that fills intermittently.

Kingston Estate Wetlands

A constructed wetland, replenished by storm water.

Parks Estate Wetlands

A group of small water bodies linked by a linear park along a natural watercourse. Flows to Bonnyvale Wetlands. A haven for birds and many frog species.



Australasian Grebe and young
- Blue Waters Lake



Great Egret - Blue Waters Lake

Main image: Blue Waters Lake

BIGGEST FROG IN THE POND

Growling Grass Frog

One of the largest frogs in Australia, the male grows to 65mm while the female of this species grows to a whopping 104mm! Their colour is variable, usually olive to bright green with bronze, gold/brown or black spotting. Growling grass frogs like to live among plants growing in streams, wetlands and dams. True to their name, their call is several short grunts followed by a long deep growl that lasts about one second.

Once so abundant they were collected for scientific dissections in universities, now they are listed as threatened due to disease and loss of habitat. They are now uncommon in Ocean Grove but occasionally one is seen, giving hope that there may be others. Preservation of our wetlands is crucial to their survival.

FROGGY FACTS

- Growling grass frogs eat other frogs and small snakes!
- All frogs absorb water through their skin instead of drinking.



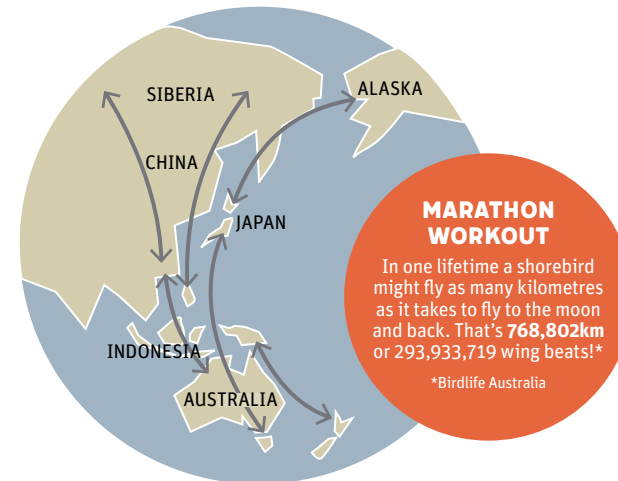
Growling Grass Frog

OVERSEAS TRAVELLERS

Globetrotting journeys of migratory shorebirds

Migratory shorebirds are remarkable travellers. Every year they fly to Australia and New Zealand from far-flung outposts such as Alaska, Siberia, Japan and the Arctic circle. In the Northern Hemisphere summer they busily raise their chicks then leave on their migration journey before winter sets in. The Ocean Grove wetlands host many species that stop here for food and shelter in our warmer months.

On their annual 20,000km return journeys along the 'East Asian-Australasian Flyway', the birds may visit resting and feeding sites along the coasts of China, Japan or South-east Asia. Unfortunately these important places are among the most threatened ecosystems in the world and influence the survival of many birds.



Flight paths of migratory birds

MARATHON WORKOUT

In one lifetime a shorebird might fly as many kilometres as it takes to fly to the moon and back. That's **768,802km** or 293,933,719 wing beats!*

*Birdlife Australia



Latham's Snipe

Migrates to and from Japan. Arrives in Ocean Grove each year on the first full moon in August and leaves in late February.



Red-necked Stint

Migrates to and from Siberia and Alaska. A small bird to 15cm height. Usually seen in large flocks. Australia's most common small migratory wader.



Bar-tailed Godwit

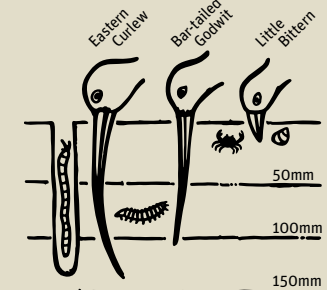
Migrates to and from Siberia. Grows to 37-39cm. Their bills curve slightly upwards to enable digging for deep-burrowing creatures.

BILLS AND FEET

Wetland adaptations

Wader birds have long legs and toes for wading on sand and mudflats. Swimming birds have webbed feet for swimming. Long beaks can delve deep into sand or mud, short beaks are useful for surface foraging, and bills are used to sieve food.

With adaptations suited to feeding in different niches, many bird species can co-exist in a wetland, finding different varieties of food without direct competition.



DOWN THE DRAIN

Living with wetlands

Have you ever thought about where storm water from Ocean Grove ends up? You may be surprised to know that much of it feeds into our wetlands. In fact, the Begola Wetlands is replenished solely by storm water runoff.

Anything that ends up in storm water eventually feeds into the wetlands. 'Escapees' such as garden plants and weeds, street rubbish, oils and chemicals from roads and dog poo commonly end up in our wetlands, with negative impacts on the water quality.

Weeds can outcompete native plants, reducing the natural habitat available to wetland animals. Pollutants are bad for any living creature, and frogs are particularly vulnerable.

Our local wetlands are surrounded by urban development so a little bit of caring can go a long way to ensuring they stay clean and healthy.



Begola Wetlands

A DRY WETLAND?

Wetlands aren't always wet. Drying out can be beneficial to wetland health, allowing silt to disperse and new plants to flourish.

Urban wetland pressures:

- Loss of natural habitat
- Pollution from household rubbish, street littering, waste dumping, sewage and chemicals
- Exotic plants and garden nutrients escaping into waterways
- Dogs, cats and foxes preying on native wildlife

IN THE BIGGER PICTURE

Wetland links to the world

Ocean Grove is a close neighbour to a network of wetlands that are listed under the Convention on Wetlands, an international treaty signed in Ramsar, Iran, in 1971. Commonly known as the Ramsar Convention, the treaty aims to halt the worldwide loss of wetlands and to conserve those that remain. The Australian Government has signed the treaty, thereby agreeing to protect and conserve our Ramsar wetlands forever!

The nearby wetlands of Swan Bay and Lake Connewarre (which includes the Barwon Estuary) form part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site; selected for their high biological diversity values and the urgent need to preserve them.

Ocean Grove's wetlands and storm water systems feed into these wetlands, forming a critical link to this internationally important local Ramsar site.



Black Swans on Lake Connewarre

POSITIVE STEPS

PRESERVING THE REAL OCEAN GROVE

There are many ways to help preserve our local wetlands. Visiting them to see and learn about what makes a wetland function is a great step. The more we can learn, the better we can appreciate and preserve these great local assets.

Join a local group

Friends of Begola Wetlands are a local friends group with a common interest in the Begola Wetlands and the flora and fauna that the wetlands support. Join in activities such as bird counts and specialist talks with a group of like-minded people.



No pollution – the best solution

Water run-off from our streets carries pollutants that end up in waterways. These include litter, weeds, chemicals, dog poo and nutrients. Garden without chemicals. Pick up after your dog. Join a clean-up activity. Your choices can make a real difference.



World Wetlands Day

Celebrate all things wetlands on February 2 each year and learn about the values of wetlands, both local and global. Contact the local council to see what's happening in your area or check environment.gov.au/water/wetlands/world-wetlands-day



Create a froggy garden habitat

Frogs need a shallow pond surrounded with lots of vegetation around the water's edge. This provides hiding places for them and attracts insects which they eat. Avoid using pesticides in your garden: they're toxic to frogs and other aquatic life.



Let wildlife be wild

Wildlife may seem willing to eat our food, but it slowly makes them sick, leading to diet imbalances and bone deformities. Aggression and dependence on humans can be a by-product. Allow wildlife to feed naturally and they'll stay healthy and wild.



KEEP DISCOVERING

For more wetlands resources go to page 38.

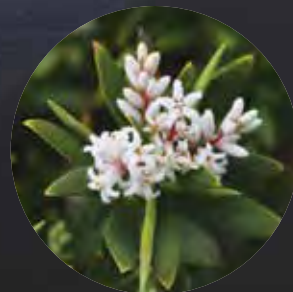
COAST

Next time you're swimming at the beach, or surfing a wave, look about and chances are you'll see a gannet diving for a fishy meal, or a pod of bottlenose dolphins playing in the surf. Explore the sands of the intertidal zone and you may spot a shark egg disguised as seaweed. A stroll on a coastal pathway could reveal a sleepy possum or a shy lizard scurrying into the scrub. An amazing world of flora and fauna guarantees there's always something interesting to discover on the Ocean Grove coast.

Main image: Ocean Grove beach
Right: Surfers waiting



Australian Fur Seal
Males average 279kg and females just 77kg. Can dive to 200 metres.



Coast Beard-heath
Leucopogon parviflorus
'Front-line' coastal shrub that tolerates salt and wind. Important dune stabiliser.



Sea Nymph Seagrass
Amphibolus antarctica
An underwater plant that produces flowers and pollen. Filters pollutants.

HOW, WHY AND WHERE

How do you define the 'coast'?

A coastal environment is where the land meets the sea. In technical terms it's defined as the strip of land that lies between the high tide mark and the inland extent of coastal vegetation. However when we think of the Ocean Grove coast we also think of the intertidal zone between the high and low tide mark, as well as the marine environment.

Why is the coast environment valuable?

The Ocean Grove coastal dunes are part of the largest area of continual and intact remnant vegetation on the Bellarine Peninsula. They support diverse and fragile ecosystems, and much of the flora and fauna that have adapted to this dynamic environment live only along the coast.

Specialised plants stabilise and protect the dunes, providing habitat for native fauna including threatened species such as the Hooded Plover. Beyond the sands, the marine environment supports a network of creatures, from the tiniest plankton to large mammals such as seals and whales.

Where is the Ocean Grove coast and what can be found there?

The Ocean Grove coast extends a distance of 4.4km from the Barwon Heads bridge in the west to Buckley Park Foreshore Reserve in the east.

On the coast you'll discover a fascinating and diverse world of marine plants, fish and sea jellies, worms, snails, sponges, dunes and grasses, trees and birds and much more.

The following pages show a snapshot of what's out there.

The rest is waiting for you to discover!

COASTAL CARERS

Barwon Coast Committee of Management Inc. manages the crown land coastal reserves from Ocean Grove through to 13th Beach between access points 7W and 42W.


COASTAL FLORA AND FAUNA

The flora and fauna of the Ocean Grove coast has evolved to adapt to the harsh, salty and windy conditions. In this environment you will find a mix of plants that stabilize the dunes, such as Hairy Spinifex, Karkalla and Sea Celery. Behind the dunes are hardy trees such as moonahs, banksias and sheoaks growing among an understorey of shrubs and grasses. Coastal fauna have many adaptations for survival, such as the ability for sea birds to drink salt water. For marine flora and fauna the ability to survive in the sea is an adaptation dating back a massive 3.5 billion years.



Coast Fan-flower
Scaevola albida
Sprawling mat-forming plant. Fan shaped flowers with 5 petals. Flowers Nov–Feb.



Karkalla
Carpobrotus rossii
Ground cover with fleshy leaves. Often mistaken for pigface.
 Leaves and berries eaten.




Hairy Spinifex
Spinifex sericeus
Long runners colonise and bind shifting sands dunes. Seed pods blow like tumbleweeds to spread seed.




Coastal Tea-tree
Leptospermum laevigatum
Nectar plant for butterflies. Can spread easily beyond the dunes.



Coast Wirilda
Acacia uncifolia
Of state and regional conservation significance. Grows to 6m high.
 Used to poison fish.



Sea Celery
Apium prostratum
Grows on dunes to the high tide mark. Tolerates salt spray and harsh winds.
 Peppery leaves eaten.




Leathery Kelp
Ecklonia radiata
Large brown algae. Grows up to 2m long. Strong holdfast anchors to reefs. Grows in deep water.



Neptune's Necklace
Hormosira banksii
An algae with small bead-like segments containing water to prevent drying out.



Bower Spinach
Tetragonia implexicoma
Succulent, scrambling or climbing plant. Stabilises sand dunes.
 Raw leaves and ripe berries eaten.



Pacific Gull
Australia's largest gull. Big yellow bill, with red tip. Breeds on islands from eastern Bass Strait to north Western Australia. Seldom seen on east coast.



Crested Tern
One of 22 species of terns and Australia's most common. Black cap with shaggy crest, yellow to orange beak. Grows to 49cm.



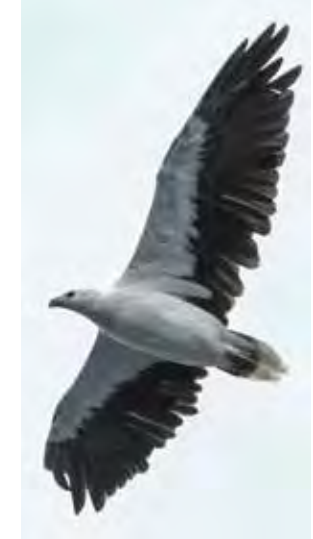
Australian Pied Oystercatcher
Shy bird. Inhabits beaches and mudflats. Probes in sand and mud for food. Often seen prying shells off rocks.



Little Pied Cormorant
Catches fish by diving from the surface, propelled by webbed feet. After fishing they stand with outstretched wings, drying their feathers.



Curlew Sandpiper
Migrating bird that travels in large flocks. Arrives here in August and leaves in March–April to breed in the Arctic tundra.



White-bellied Sea-Eagle
Second largest raptor (bird of prey) in Australia. Wingspan of 1.8–2m. Females are larger than males. Eats fish, reptiles, birds and mammals.



Biscuit Star
Grows to 20–30mm in a variety of patterns and colours. Rows of tubed feet on the underside aid in gripping rocks and opening shells to feed on.



Smooth Toadfish
An 'ocean cleaner' that scavenges on organic ocean debris. Unfairly maligned because it's inedible to humans.



By-the-wind-sailor
A thin transparent 'sail' catches wind and propels it across the water. Often seen in large numbers.

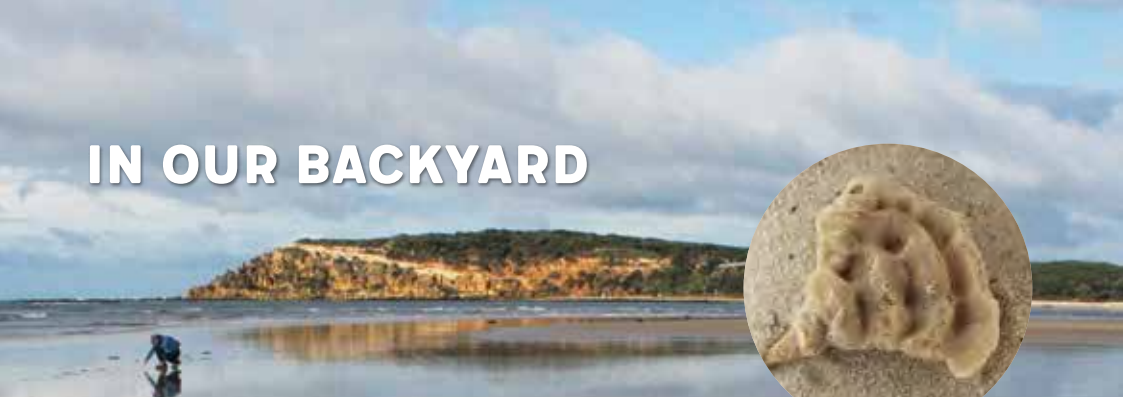


Cuttlebone
A hard, brittle, lightweight internal shell belonging to a Cuttle (or Cuttlefish). Acts like a backbone, supporting the cuttle's body.



Goose Barnacle
A soft body is enclosed in a flat shell plate attached to the end of a flexible stalk. Grows in clusters on floating debris. Often washed ashore.

IN OUR BACKYARD



TIDAL TREASURES

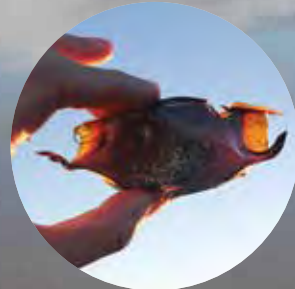
Exploring the beach at low tide can reveal a mosaic of sea life and marine plants that wash up on the shore as 'flotsam and jetsam'. With tidal changes approximately every six hours it's an environment constantly in flux with each tidal movement sculpting the coastline and depositing a bounty of marine treasures.

Plant or animal?

Sponges may look a lot like a plant but they're actually a member of the animal kingdom. A simple animal, they consist of cells with tiny pores that take in water containing food and oxygen. In 24 hours a 10cm sponge can filter up to 20 litres of water. While often brightly coloured in the water, they mostly appear as sandy brown 'skeletons' once washed up on the shore.



Sponge skeleton



Shark egg case – 'mermaid's purse'

Sharks and mermaids

Looking like a seaweed, a 'mermaid's purse' is actually a shark egg case. The case contains a yolky egg which develops into an embryo fish, consuming the yolk as it develops. The adult shark attaches the case to seaweed where it stays until the young shark emerges and swims away. Empty mermaid's purses often wash up on the beach with seaweed.



Globe Fish swimming bladder – 'windbag'

It's a gas!

The Globe Fish swim bladder is an internal organ; a flexible-walled, gas-filled sac that affects the fish's buoyancy. The sac is controlled by inflation or deflation, which allows the fish to swim up and down and balance in the water. The Globe Fish also uses the sac as a means of defence by puffing itself up to look larger and scaring off predators. Commonly referred to as a 'windbag'.



Dead Man's Fingers

Dead Man's Fingers – friend or foe?

Dead Man's Fingers (*Codium fragile*) is a dark green velvet-like native marine plant that is hard to distinguish from a similar looking introduced species. The difference is evident in the tips of the plant but this can only be seen under a microscope.

Main image: Ocean Grove beach

IT'S A TOUGH LIFE

The Hooded Plover

The Hooded Plover nests on the sandy beaches of Ocean Grove between August and April. They lay camouflaged eggs in a simple 'scrape' on the sand...hard to see and easy to step on!

Dogs, foxes and humans are a great threat. If disturbed, adults will leave their nest to keep its location hidden until the threat passes. Unattended eggs can bake in the sun or be eaten by predators.

Once hatched, the chicks fend for themselves, feeding on insects in seaweed and in the sand. They can't fly until five weeks old so they're vulnerable until able to flee to safety.

True little battlers, 'hoodies' have been known to lay up to nine batches of eggs in a season, often without a single chick surviving.



Hooded Plover adult (left) and chick (right)

FOOD FOR THOUGHT

- Listed as **vulnerable**, there are only 550 Hooded Plovers on the Victorian coast.
- They are one of the **most threatened** beach-nesting birds in Australia.



Same name, different bird

Not all 'plovers' are the same. The common plover or Masked Lapwing (pictured above) looks quite different to a 'hoodie' and will only nest on open grassy areas, not beaches.

ALMOST LOVED TO BITS

Preserving the Ocean Grove Spit

The Ocean Grove Spit is a narrow sandbank that provides access to both the estuary and the open coastline. At around 6,000 years old it has been formed by sand deposits and wave action that continue to build or erode through natural processes. The vegetated tip can vary in length by up to 120 metres! The spit works in partnership with the protective headland of Barwon Heads Bluff by reducing the impact of wave energy on the estuary.

Once a much-loved holiday camping destination, the fragile spit was in danger of serious erosion due to damaging human impact. Today the ocean side of the spit is no longer a camping ground while ongoing works including fencing, planting and weeding programs (many involving local volunteers) are helping to stabilise and protect the area.

This valuable work helps to ensure that the spit remains stable and continues to protect the estuary environment.



Ocean Grove Spit looking towards Barwon Heads bridge (circa 1945), showing sandy tracks and dune erosion.

BIRDS OF THE SEA

Australasian Gannet – with built in air bags

Groups of Australasian gannets can often be seen off the Ocean Grove shoreline, diving into the ocean at great speed to catch a fishy meal.

Their special hunting skills are aided by some unique adaptations:

- The skull of the bird has air bags to cushion the impact of hitting the water at 100km/hr. No human could do that!
- Their wings act as fins in the water to chase the fish.
- They can swallow a fish during a 10-second dive into the water.
- Their beak has serrated edges that help to grip slippery fish.



I'LL TAKE SALT WITH THAT

Did you know that seabirds can drink salty sea water? A pair of salt glands above their eyes extracts salt from their body and excretes it through the nostrils.



Short-tailed Shearwater stats

- Can live up to 38 years old.
- To get to Australia they travel 30,000km, averaging 750 to 1800km per day.
- They are Australia's most numerous sea bird.

Short-tailed Shearwater – with built in compass

Commonly known as a muttonbird, the Short-tailed Shearwater spends Northern Hemisphere summers in the sea off Alaska, Siberia and Japan, migrating to Australia to breed in our summer months. They breed off the southern and south-eastern coast of Australia in colonies of up to 16 million adults.

In an amazing feat of endurance and using sophisticated navigational skills, they arrive on our shores each year on about 24 September. They breed with the same partner, in the same burrow, which incredibly they're able to find year after year.

Short-tailed Shearwaters are sometimes seen off the Ocean Grove coast in great numbers, 'rafting' together or feeding. Many wash up on the shore, exhausted or dead after their long journey.

Left: Short-tailed Shearwater. Above: Australasian Gannet

A HAREY TALE

Sea Hare – Mr or Ms?

The Sea Hare is a slug (or nudibranch) with large protruding tentacles that are thought to resemble the ears of a hare or rabbit. Their bodies are soft with internal shells and they have large wings for swimming, which they do very gracefully.

This interesting creature is a hermaphrodite, both female and male. During the summer breeding season they migrate from the coast to the Barwon Estuary where they attach to each other, forming a long 'conga line' while mating. They release long spaghetti-like yellow egg masses that look a lot like seaweed, a well adapted disguise.

Similar to squid, the Sea Hare ejects a purple ink as a defence mechanism. The ink blocks the predator's ability to smell, preventing the Sea Hare from being eaten.



Sea Hare

POSITIVE STEPS

PRESERVING THE REAL OCEAN GROVE

There are many steps we can take to encourage preservation of the coastal environment. Little things such as collecting litter, picking up after your dog or joining a local Coastcare group can make a big difference, not just locally but globally. We can all play a part in caring for our coast.

Join a like-minded group

Get involved in the coastal and marine environment by joining one of the many groups such as Ocean Grove Coastcare, Friends of the Bluff or Friends of Buckley Park Foreshore Reserve just to name a few. This will be rewarding for you and the community.



'I need my space!'

Seals on our shores have travelled from near and far, and need to re-energise by resting. We can allow them to rest by giving them space...at least 50 metres of it. This helps to stop them taking fright and entering the water in a weak and vulnerable state.



Dogs and leashes

Dog on beaches can disturb and frighten wildlife or damage fragile dunes. Know where to take your dog, clean up after them, and keep them controlled and under supervision so that wildlife can safely shelter and forage for food.



Trashing the coast

'Let our sea be plastic bag free', 'Bin it don't swim in it'. There are many ways to minimise waste. Any litter can harm coastal and marine life so take your rubbish home and make informed decisions about how you generate and dispose of rubbish.



Dune protection

Sand dunes are fragile and easily eroded in severe weather conditions. Humans and dogs also degrade dunes by creating paths and flattening plants that hold the sand structure together. Help to prevent dune erosion by staying to defined tracks.



KEEP DISCOVERING

For more coastal resources go to page 38.

ESTUARY

Visit the estuary at low tide and you'll see rippled sandbanks, seagrass meadows and mudflats teeming with marching soldier crabs, and wading birds mining the sand for a meal. High tide is a different picture, with inflowing sea water distributing micro organisms and other marine creatures. An environment in constant flux, the estuary is a haven for flora and fauna that are uniquely adapted to a world of salty and fresh water.



Main image: White-faced Heron with crab – Barwon Estuary
Above left: Mangrove lichen – Barwon Estuary
Above right: Sand crab – Barwon Estuary
Right: Sand patterns made by moon snails – Barwon Estuary

HOW, WHY AND WHERE

How do you define an 'estuary'?

An estuary is the place where fresh water from a river mixes with salt water from the sea. Estuaries come in many shapes and sizes, and the Barwon Estuary is unique in south-western Victoria because it is permanently open to the sea.

Why is the Barwon Estuary valuable?

Habitat types found in the Barwon Estuary and its coastal margins include saltmarsh, mangroves, sandbanks and mudflats, seagrasses and open water. Each habitat, like pieces of a puzzle, fits together to maintain a balance in the health of the estuary.

Estuaries provide vital habitat for a variety of flora and fauna, both above and below the water. At least two-thirds of all fish consumed worldwide depend on coastal wetlands at some stage in their life cycle. Estuarine plants help to prevent erosion and filter pollutants and sediments. Threatened species including fish such as the Australian Grayling and birds such as the Eastern Curlew rely on the Barwon Estuary for habitat.

Importantly, the Barwon Estuary is a wetland of international significance and is part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site.

Where is the estuary in Ocean Grove and what can you find there?

The Barwon Estuary meets the ocean between the towns of Ocean Grove and Barwon Heads. A great walking track extends along the estuary on the Ocean Grove side from Barwon Heads Bridge to the boat ramp near Ocean Grove Golf Club. An excellent boardwalk among the mangroves can be accessed from the north end of Sheepwash Road in Barwon Heads.

Many interesting things await you on the estuary! There are plants adapted to thrive in the salty environment, and even some that can flower underwater; sand-dwellers such as crabs and moon snails; and majestic pelicans and sea eagles. The following pages show a snapshot of what's out there. The rest is waiting for you to discover!

VITAL STATISTICS

- The Barwon Estuary is **19km** in length from Geelong causeway to Barwon Heads Bluff.
- The **largest area** of coastal saltmarsh vegetation on the Bellarine is found here.

Ocean Grove boat ramp – Barwon Estuary

ESTUARY FLORA AND FAUNA

Variations in the flow of tides from the sea, and fresh water from the land, create specific conditions for estuarine plants and animals, and only those that have adapted to these conditions can survive. For plants, salt tolerance is an important survival adaptation. Many of the birds that thrive in an estuary have specially adapted beaks and long-slender legs that allow them to wade and forage in mud and sand.




Rounded Noon-flower
Disphyma crassifolium subsp. *clavellatum*
Spreading herb to 2m wide. Flowers Oct–Feb. Good soil binding qualities.

 Raw succulent leaves were eaten.



Seaberry Saltbush
Rhagodia candolleana subsp. *candolleana*
Dense scrambling shrub. Red berries.

 Leaves and fruit were eaten.



Australian Salt-grass
Distichlis distichophylla
Coarse prickly grass. Grows in salty areas. Good lawn alternative for coastal gardens.



Knobby Club-rush
Ficinia nodosa
Hardy plant with creeping rhizomes. Good sand and soil binding qualities. Common across the Bellarine.



Moonah
Melaleuca lanceolata
Tree to 10m high. Flower nectar attracts birds and insects.

 Sweet drink made from nectar.




Shrubby Glasswort
Tecticornia arbuscula
Low shrub. Grows to 2m high. Succulent stem segments. Food source for Orange-bellied Parrot.



Eelgrass Seagrass
Zostera capricorni
Flowers underwater. Filters pollutants. Stabilises the estuary floor and provides habitat for estuarine animals.



Coast Saltbush
Atriplex cinerea
Densely spreading shrub. Fleshy fruit.

 Seeds and leaves were eaten.



Red-capped Plover
Feigns injury to lure intruders away from nesting sites. Orange bands indicate banding in the Port Phillip area.



Black Swan
Feeds on seagrass, crushing the roots with grinding plates in its bill. Worms and sandhoppers eat their poo.



Common Greenshank
Large wader bird. Prominent white triangle on its back. Forages in shallows for insects, worms, fish, crustaceans and molluscs.



Eastern Curlew
Largest migratory shorebird to visit Australia. Long bill to 185mm in length, used to probe for crabs and molluscs. Often active at night.




Sharp-tailed Sandpiper
Breeds in Siberia. If floods occur inland and food is plentiful, fewer birds travel to Victoria's shores, saving many kilometres of flying.



White-headed Stilt
Wades and forages in shallow water. Long slender bill acts like tweezers when foraging for food. Both sexes incubate eggs and rear their young.



Australian Grayling
Migrates from fresh to estuarine water. Listed as a threatened species.

 Source of food.



Nankeen Night-Heron
Mostly nocturnal. Roosts by day in trees close to water. Forages in shallow water at night for aquatic animals and insects. Breeds in large inland colonies.



Bass Yabby
Prawn-like animal. Grows to 65mm. Burrowing scavenger. Forms complex burrows in mudflats. Preyed on by wader birds with long beaks.



Bivalve
Two-part shell, joined by a hinge. Contains a soft bodied animal. Preyed on by birds and moon snails.



Warrene
Gastropod (snail), commonly known as turban shell. Active grazer. Found on the coast, estuary and in middens.

 Source of food.

IN OUR BACKYARD



Mangroves and pneumatophores – Barwon Estuary

CARBON MODERATORS

Mangroves and saltmarsh capture large amounts of carbon and store it in the sediment below.

MANGROVES AND PNEUMATOPHORES

The Barwon Estuary is home to Victoria's westernmost occurrence of the White Mangrove, *Avicennia marina*. This small tree occurs here in large numbers and forms a protective fringe along the estuary. Its roots form important habitat for marine species, creating a nursery ground for fish and crustaceans. They stabilise the mud flats by trapping silt and filter pollutants in the water.

Mangrove trunks and branches are covered in lichens, the start of a complex food chain beginning with tiny microbes which feed infant fish, invertebrates and crustaceans. This chain sustains the larger fish and bird life along the estuary.

The humble pneumatophore – snorkel of the mangroves

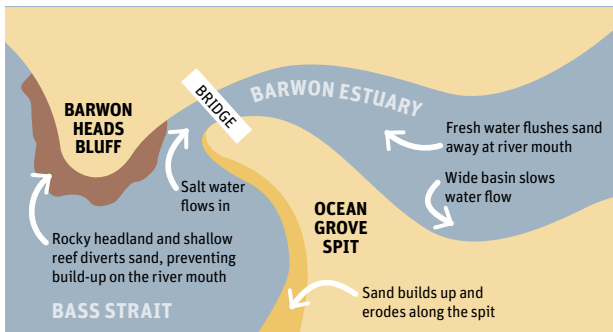
Pneumatophores are specialised roots, commonly called 'breathing tubes' that allow mangroves to survive in oxygen-depleted and saltwater inundated mudflats. They grow upwards through the dense airless mudflats, acting like a snorkel by taking air into the plant. If these tubes are damaged the tree will die, which is why boardwalks and paths have been built to protect them.



Pneumatophores – Barwon Estuary

DYNAMIC ESTUARY

Geography and weather have a strong influence on water and sand movements in the estuary. Always open to the sea, the river mouth is protected from the prevailing weather and ocean currents by the Barwon Heads Bluff which diverts sand around the reef and on to the Ocean Grove ocean beach.



A BIRDS EYE ESTUARY VIEW

The majestic Australian Pelican

Pelicans are skilled fishers and rely on the estuary for their varied food source. They glide above the estuary, flying in a line or a 'V' formation. When breeding, they favour the safety of small islands in the estuary where they form large colonies.

Did you know?

- Pelicans have a bill pouch which can expand and hold up to 13 litres, making it useful as a net and food storage.
- They live from 10 to 25 years.
- They can weigh up to 5kg yet their light skeleton weighs less than 10% of their total body weight.
- Despite being one of the world's heaviest flying birds, pelicans can soar effortlessly on thermal currents, remain airborne for up to 24 hours, and reach altitudes of 3000 metres.
- Both males and females incubate the eggs using their feet.
- After the eggs are hatched, the chicks leave the nest to form crèches of up to 100 birds.



Australian Pelican – Barwon Estuary

THE BIG BILL

- At over 40cm, the Pelican has the **largest bill** of any known bird in the world.
- In courtship, both sexes clap their bills shut several times a second and the bill pouch ripples like a flag in a breeze.

SNAILS AND SOLDIERS

Moon snails – drilling for food

Named for their full moon shell, these snails are predators that eat bivalves and other sea snails. The Moon Snail grips its prey with a large muscular foot, drills a hole into the shell with a rough, scraping tongue, and eats the soft body inside.

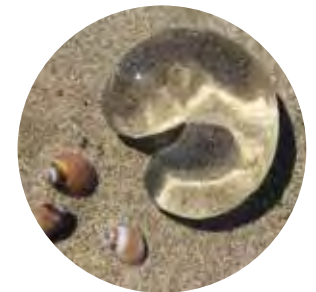
Females lay egg masses in a stiff jelly that looks like a horse-shoe shaped 'jellyfish'. These are often referred to as 'jelly sausages'.

Moon snails create worm-like patterns in the surface of the sand as they move about hunting for prey.

Solider crabs – marching forward

These small crabs (up to 15mm) form large armies and can often be seen sifting for food on the sandflats as the tide recedes. If approached, they quickly scatter and hide in the sand in a very un-soldier-like way. They're known for being the only crab to walk forward instead of sideways!

A valuable addition to the estuarine food chain, they provide a ready food source for long-billed birds, fish and sand-dredging predators such as moon snails.



Moon snails and jelly egg mass



Soldier crab



COASTAL SALTMARSH

Coastal saltmarsh is a salt-tolerant coastal plant community that is subject to daily tidal influences. The plants here are typically low shrubs and herbs and on the Barwon Estuary you'll find 85% of Victoria's saltmarsh flora represented. A much depleted habitat elsewhere in Victoria, the Barwon Estuary coastal saltmarsh habitat is relatively healthy and intact.

This zone is one of the main feeding grounds for the critically endangered Orange-bellied Parrot and is an important habitat for other local and migratory birds. Historically held in low regard, saltmarsh is now recognised as highly valuable habitat.

Orange-bellied Parrot (OBP)

Not much bigger than a budgie, the OBP breeds only in south-western Tasmania. In winter it travels to the southern Australian mainland where it remains until returning to Tasmania to breed again. Listed as **critically endangered**, there are only a handful of individuals left in the wild.

Austral Sea-blite and Beaded Glasswort are favoured food plants for the OBP.



Austral Sea-blite

Suaeda australis
Sprawling herb with succulent leaves. Grows to 80cm high. Food source for the Orange-bellied Parrot which feeds on the seeds from autumn to winter.



Beaded Glasswort

Salicornia quinqueflora
Ground-cover plant. Succulent leaves store water. Lower leaves store salt, turning red in maturity and falling off to remove excess salt.

MARATHON MIGRATION

Short-finned Eel and its epic journey

The Barwon Estuary is an important stop-over for this amazing creature. Incredibly, these eels begin their lives 3,000 kilometres away in the Coral Sea, the sole spawning site for all Australian and New Zealand freshwater eels.

The eel spawn are carried southwards by ocean currents along the east coast of Australia. Along the way they feed on microscopic organisms and develop into transparent, leaf-shaped larvae that eventually metamorphose into tiny transparent 'glass eels'. At this stage, they move closer to land, migrating to estuaries and inland waters where they can take many years to fully develop into adults.

Once developed they return again to the Coral Sea where they spawn then die while their young begin the migration cycle again.

Short-finned Eel

Fresh and salty

The Barwon Estuary hosts many species of fish that migrate from freshwater to estuarine waters throughout their life cycle.

They include:

- Australian Grayling
- Australian Mudfish
- Australian Smelt
- Broad-finned Galaxias
- Common Galaxias
- Pouched Lamprey
- Short-finned Eel
- Short-headed Lamprey
- Spotted Galaxias
- Tupong

Local legend

Mulloway weighing up to 63kg were once fished in the estuary!

POSITIVE STEPS

PRESERVING THE *REAL* OCEAN GROVE

There are many steps we can take to encourage preservation of the beautiful Barwon Estuary. Visiting the estuary to observe and learn about how it functions is a great start. The more we can learn the better we can appreciate and preserve this valuable local asset.

Become a citizen scientist with EstuaryWatch

EstuaryWatch is a citizen science program where volunteers collect valuable data to monitor the health of the Barwon Estuary. New volunteers are welcomed. Contact EstuaryWatch to see how you can get involved. estuarywatch.org.au



Creative connections

The Barwon Estuary Project is a community group aiming to increase knowledge and appreciation of the Barwon Estuary through creative writing, photography, nature journalling, guided walks and workshops. barwonestuaryproject.wordpress.com



Tread lightly

Mangroves and pneumatophores are delicate and easily damaged so stay on the boardwalks and designated paths when walking in the area. Keep to the stairs when moving up and down the river bank and you'll prevent erosion in that area.



Slowly does it

Shore erosion is caused by the wave action of moving boats and powered water craft. By observing the 5-knot speed limit on the Barwon river, and enjoying a leisurely pace, you'll be helping to preserve the estuary habitat.



Water quality and rubbish

Pollution from further upstream, nutrient run-off, water flow alterations and littering all affect the health of an estuary. Start with responsible disposal of rubbish, bait bags and fishing line. Join a community 'clean up' activity and make a difference.



KEEP DISCOVERING

For more estuary resources go to page 38.

KEEP DISCOVERING

When it comes to learning more about the local environment, there's a great selection of resources out there to assist you on your discovery journey.

Milkmaids – Kingston Park

COMMUNITY GROUPS

Barwon Estuary Project

barwonestuaryproject.wordpress.com

Bellarine Catchment Network

environmentbellarine.org.au

Bellarine Landcare Group

bellarinelandcare.org.au

Coastcare Victoria

coastsandmarine.vic.gov.au/coastal-programs/coastcare

EstuaryWatch

estuarywatch.org.au

Friends of Begola Wetlands

geelongaustralia.com.au/directory/item/527.aspx

Friends of the Bluff

barwonbluff.com.au/friends-of-the-bluff/who-we-are/

Friends of Buckely Park

environmentbellarine.org.au

Friends of Ocean Grove Nature Reserve

fognr.wordpress.com

Friends of Yellow Gums

friends.yellowgums.oceangrove@gmail.com

Geelong Field Naturalists

gfnc.org.au

Ocean Grove Men's Shed

[facebook.com/Ocean Grove & District Men's Shed](https://facebook.com/OceanGroveDistrictMensShed)

PLANT NURSERIES

Bellarine Secondary College and

Bellarine Landcare Nursery Group

bellarinelandcare.org.au/index.php/blg-activities/bellarine-indigenous-nursery

Queenscliff Community Indigenous Nursery

queenscliff.vic.gov.au/community-directory-queenscliff/environment/item/queenscliff-indigenous-plant-nursery

West Coast Indigenous Nursery

50 Coppards Road, Newcomb VIC 3219. Phone: 5261 5773

LOCAL PUBLICATIONS

Coastal Plants of the Bellarine Peninsula

Bellarine Catchment Network 2010

Indigenous Wildlife of the Bellarine Peninsula

Bellarine Catchment Network

Inland Plants of the Bellarine Peninsula

Bellarine Catchment Network 2010

Life on the Edge

Friends of the Bluff

Plants that Clothe the Bluff

Friends of the Bluff

RESOURCES

Atlas of Living Australia

ala.org.au

Barwon Coast Committee of Management

barwoncoast.com.au

Nest box plans

birdsinboxyards.net/Nest-Box-Plans

birdlife.org.au/images/uploads/education_sheets/INFO-Nestbox-technical.pdf

Birdlife Australia

birdlife.org.au

Melbourne Museum

museums.victoria.com.au

Vic Flora online

vicflora.rbg.vic.gov.au/flora/search

ACKNOWLEDGEMENTS

Thank you all of the following organisations and individuals who contributed their time, energy and expertise on many levels.

Organisations

- Barwon Coast Committee of Management Inc.
- Bellarine Catchment Network
- City of Greater Geelong
- Coastcare–Ocean Grove
- Corangamite Catchment Management Authority
- Department of Environment, Land, Water and Planning
- Friends of Begola Wetlands
- Friends of the Bluff
- Friends of Ocean Grove Nature Reserve
- Friends of Yellow Gums
- Ocean Grove Camera & Photo
- Parks Victoria
- Rotary–Ocean Grove

Individuals

- Margaret Alcorn
- Rob Bone
- Margot Busch
- Jen Carr

- Jani Chalmers
- Matt Crawley
- Andrea Dennet
- Guy Dutton
- Noel Emselle
- Maddie Glynn
- Ken Gray
- Brendan Hellard
- Clare Laine
- Barry Lingham
- Bernie Lingham
- Di Luscombe
- Graeme McLean
- John O'Reilly
- Chris Pitfield
- Jaclyn Scally
- John Sharp
- LeI Shipley
- Donna Smithyman
- Pete Sullivan
- Chris Tsernjavski
- John Wynn

Project team

- Margot Busch
- Matt Crawley
- Jaclyn Scally
- Chris Tsernjavski

Graphic design

- Chris Tsernjavski

Thank you to the following sponsors whose generous financial and in-kind assistance enabled the development and distribution of this community publication.



Bellarine Catchment Network acknowledges the support of Coastcare Victoria and the Victorian Government.



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• Plume Moth: Chris Tsernjavski
• Lesser Long-eared Bat: Trevor Pescott
• Golden Stag Beetle: David Paul, Museums Victoria, collections.museumvictoria.com.au/species/8542
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Ringtail Possum in drey - Ocean Grove

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THE MORE YOU DISCOVER