

# Coorong



Photo by Paul Wainwright



The Coorong bioregion extends from Port Elliot in Encounter Bay to Cape Jaffa. It is in this bioregion that the Murray river empties into the sea via a narrow but shifting mouth between the high dunes of Sir Richard and Younghusband Peninsulas.

It has a temperate climate with cool, wet winters and warm, dry summers.

## Biodiversity and habitat

In this bioregion you will find sandy beaches, sand dunes, coastal lagoons, seagrass meadows and reefs.

There are a series of parallel rocky reefs, which stretch offshore. These parallel reefs are dominated by red algae and bryozoans. Communities of giant kelp also live on the reefs.

Extensive seagrass meadows which occur in the region are important nursery and feeding areas particularly for species of fish and crustaceans.

The coastal waters in the region are among some of the most productive waters along the southern Australian coastline. This is primarily a result of the presence of nutrient-rich upwellings. As such, this region is significant for a number of commercially important species, including the Southern Rock Lobster, abalone, Goolwa Cockle, mullet, shark and Coorong Mullet.







Photo Coast Protection Board

Coorong

The Coorong Lagoon waters are an important feeding, breeding, spawning and nursery area for key commercial fish species as well as supporting one of the largest concentrations of waterbirds and migratory waders in Australia.

The ocean beach adjacent to the Coorong National Park is an important nesting area for threatened species, including the Hooded Plover. Other threatened birds in the bioregion include the Little Tern, White-bellied Sea-Eagle and Little Egret.

### Threats

Threats to the Coorong bioregion and its dependent species include:

- diversion of water from the River Murray impacts on the health of the Coorong lagoons
- pollution
- overfishing of some species
- climate change.

### Conservation

Most of the wetlands of the Coorong bioregion are of international importance and are protected by international conservation agreements. Two rock lobster sanctuaries are protected in the bioregion – Margaret Brock Reef and Cape Jaffa.

You can help conserve the Coorong bioregion and its dependent species by:

- Finding out more about marine conservation issues and educate others
- Researching the Murray system and the biodiversity that it and the Coorong supports.

The region is visited by the Southern Right Whale during May and June and many people travel to the area to view them!

## For further information

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**Lobethal:** (08) 8389 5900

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# Australian Sea-lion

*Neophoca cinerea*



The Australian Sea-lion belongs to the Eared Seal family, Otariidae (they have external ears). They propel themselves through the water using their front flippers and are capable of walking on land on all four flippers.

Sea-lions are sociable animals and gather in groups, called colonies, of 10-15, to rest and sunbathe on rocks and beaches. Males (called bulls) are darker and larger than females (cows) and can weigh up to 300 kg. Pups are born with a dark brown coat and moult to look like an adult at three to four months old.

## Diet

Unlike New Zealand Fur Seals that feed in the water column, Australian Sea-lions find most of their food on the sea floor. An adult female with an unweaned pup (baby sea-lion) will eat about eight to ten kg of food per day at sea.

Their carnivorous diet is opportunistic, eating squid, octopus, scale fish, penguins, rays, small sharks and some crustaceans.

## Breeding

Their long life span (up to 25 years) means it takes a while for them to reach maturity (an age where they can reproduce). When they finally have pups they only have one every 17.6 months, and only about 30 per cent of pups from each breeding season survive to maturity.

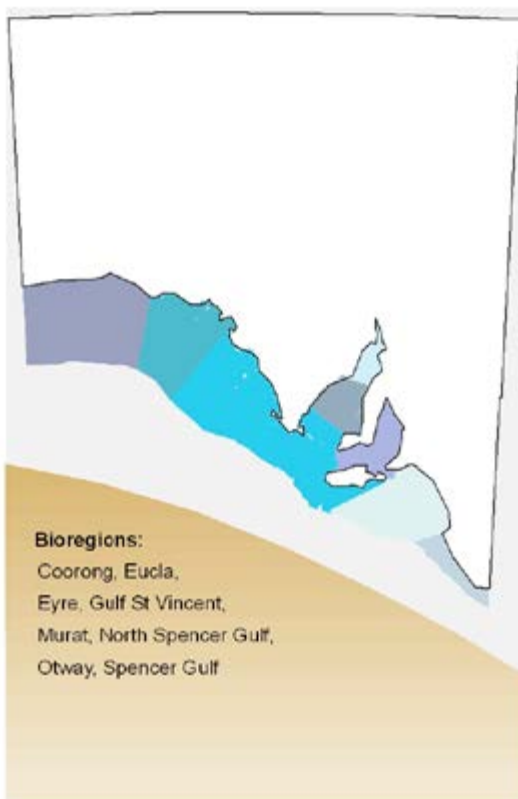
## Habitat

About 80 per cent of the world's Australian Sea-lion population occurs in SA. These animals travel large distances to find food but return to the same places to rest on land.

## Threats

The Australian Sea-lion is one of the rarest seal species in the world. Only 10,000 to 12,000 remain in the world. Hunting decimated their population in the 18th and 19th centuries and they have been slow to recover.

Sea-lions are now protected in Australian waters, but there are still many threats to their survival in SA. Australian Sea-lions are killed illegally and accidentally. This is often a result of entanglement in nets (especially those used for gillnet fishing) and marine debris. Australian Sea-lions die from diseases related to parasites, are eaten by sharks, suffer from habitat destruction and clearance on coasts and are sometimes harmed by boat strikes.



Map courtesy of Mapping Unit, Customer and Commercial Services.

Map is not intended to indicate spatial distribution of the species, only the bioregions in which the species is found.



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In a 3 day foraging trip an individual makes 900-1200 dives!

### Conservation

You can help the Australian Sea-lion by:

- putting rubbish in a bin, as litter makes its way to the ocean from everywhere and Sea-lions can die from eating it or becoming entangled in it
- taking any rubbish home with you after going fishing, including fishing line, hooks and nets as these can harm marine animals
- keeping your distance if you see Sea-lions in the wild, in the ocean, or on the beach and don't disturb them.

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Photo by Robyn Morcom

Australian Sea-lion



Photo by Simon Bryars

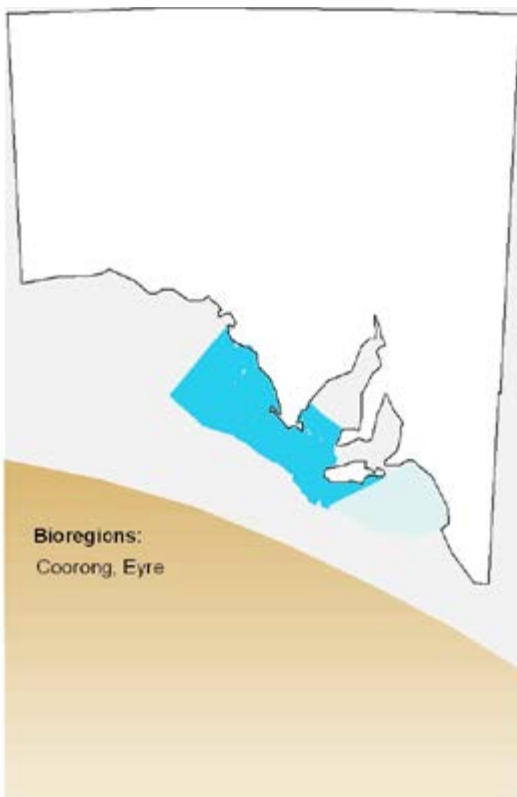
Australian Sea-lion





# Goolwa Cockle

*Donax deltoides*



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Goolwa cockles, commonly known as Pipis, are bivalve (bi meaning two, valve meaning shell) molluscs. Usually white to light pink on the outside, the insides of their shells are dark purple. They can grow to 80mm but usually don't grow to more than 60mm in 3.5 years.

Goolwa Cockles can tolerate salinities of 20–45 parts per thousand. Well adapted to living in the intertidal surf zone of sandy shores, they bury themselves a few centimetres below the sand in the surf area of the beach. These cockles are able to move with a strong muscle called a 'foot' that they can stick out of their shell. They are also known to actively migrate further up or down the shore by surfacing and being washed by the tide. They can rebury themselves quickly if disturbed because they orient themselves vertically in the sand. They are an important food source for many animals including fish and seabirds. Historically they were an important part of the diet of local Ngarrindjeri people in the Coorong region. They are now harvested (in limited numbers) for use in restaurants and sold as recreational fishing bait.

## Diet

Goolwa Cockles feed by extending a tube called a 'siphon' to the surface and filtering out minute floating plants called phytoplankton.

## Breeding

Goolwa Cockles have separate sexes and fertilisation happens outside their shells. They mature and are able to reproduce at 13 months of age.

## Habitat

They can be found in large numbers in sandy shore environments from southern Queensland to the Eyre Peninsula in SA.

## Threats

Harvesting (professional and recreational) for human consumption and bait are a potential threat to Goolwa Cockle populations. Bycatch of juveniles leads to fewer adults in the next generation which lowers the reproduction rate. Pollution of beaches and the ocean are another problem. Long spells of hot, calm weather or large freshwater outflows from the Murray can also lead to their decline.





Cockle shells can be found in Aboriginal middens in the Coorong area dating back 2000 years!

### Conservation

The cockle industry is being managed to try and keep harvesting at sustainable levels.

You can help the Goolwa Cockle by:

- putting rubbish in its place as litter makes its way to the ocean from everywhere
- not digging up Goolwa Cockles unless you are sure you are going to use them – the birds and fish that eat them will thank you
- observing recreational size and bag limits and never taking juveniles (you can recognise them because they will look smaller than average).



Goolwa Cockle

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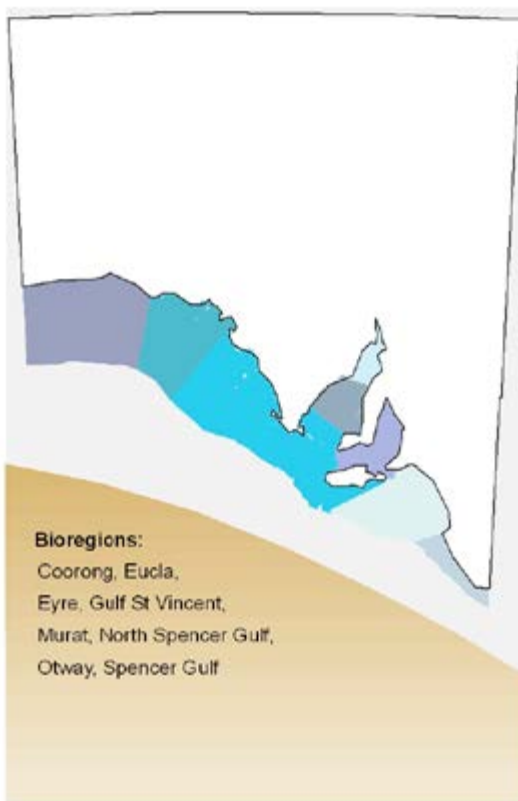
Goolwa Cockle





# Greater Crested Tern

*Thalasseus bergii*



Map courtesy of Mapping Unit, Customer and Commercial Services.

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Greater Crested Terns are medium sized, slender terns that are widely distributed. They are commonly found in near-coastal environments and estuaries, but also inhabit lakes and rivers inland.

Also commonly known are the Swift Tern or Crested Tern they can be seen singly, in small groups or large flocks and sometimes form large flocks with other bird species.

Purposeful in flight, Greater Crested Terns are sometimes referred to as the 'swallows of the sea'. They are coloured grey on their wings and back, with white necks and underparts and black legs and feet. They have a forked tail and narrow, strongly angled wings. Their black shaggy crest and long yellow bill allow them to be easily distinguished from other terns.

Greater Crested Terns are 40-50cm in length with a 90-115cm wingspan. Although similar in shape and proportion to their relative, the Lesser Crested Tern, they are bigger and bulkier with a different profile in flight.

## Diet

These birds dive from heights of five to eight metres when foraging but only penetrate a few centimetres below the surface of the water.

Their diet includes small fish such as Sardines, Australian Anchovies and Leatherjackets.

## Breeding

Greater Crested Terns are residential rather than migratory. When the time comes to breed, Greater Crested Terns form large noisy colonies on small offshore islands. Nesting on islands makes it easier to protect their eggs because there are fewer predators like foxes and feral cats. Terns are ground nesting birds that lay their eggs in shallow scrapes (depressions in the ground). The eggs are then incubated by both parents.

## Habitat

Greater Crested Terns are widespread around the coasts of the Indian Ocean, Southern Ocean and west-central Pacific Ocean. They may rest on the surface of the sea in calm weather but during storms they shelter behind dunes, rocks and vegetation.





### Threats

Threats include predation by feral animals (foxes, cats, dogs, and rats) and Silver Gulls. Commercial fisheries have also created some concerns for Greater Crested Terns as they attract large numbers of gulls that compete for food and habitat. Pollution of the marine environment is another threat, along with the disturbance of nests that can be caused unintentionally by inquisitive tourists and fishermen, or intentionally during acts of vandalism.

Greater Crested Terns hunt small fish by sighting them from the air and then diving into the water and grabbing them by the head.

### Conservation

You can help protect the Greater Crested Tern by:

- organising a day to pick-up litter on your local beach
- not getting too close to tern nests as disturbance can distract them from caring for their young
- being careful what you wash down the drain – stormwater ends up in the ocean.



Photo by Peter Canty

Greater Crested Tern



Photo © SATC, Craig Ingram

Greater Crested Tern

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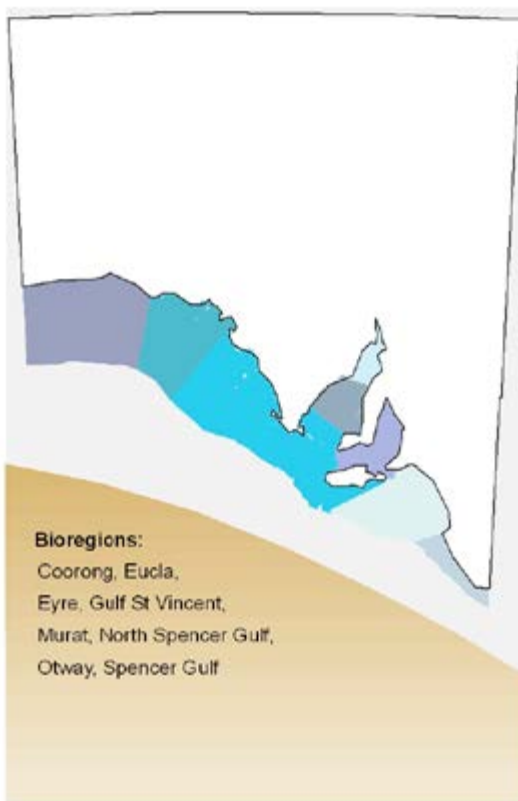
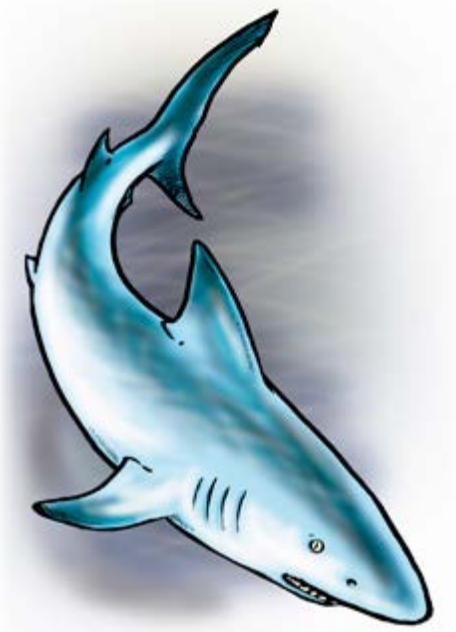


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# Great White Shark

*Carcharodon carcharias*



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Great White Sharks (Great Whites) are large predators at the top of the marine food chain. They are in the same class as all sharks and rays (Chondrichthyes) – this group is different from other fish as their skeleton is made from cartilage instead of bone. They have an average length of four to five metres, but can grow up to seven metres.

Using their powerful tails to propel them, these sharks can move through the water at up to 24 km per hour. Their mouths are lined with up to 300 serrated triangular teeth arranged in several rows.

## Diet

Great Whites are able to use electroreception (the ability to detect weak electrical currents) to find and attack prey without seeing it. This can be useful in murky water or when their prey is hidden under sediment. This gives them the ability to navigate by sensing the Earth's magnetic field. They have a strong sense of smell which is also useful in detecting prey. Contrary to some people's beliefs, they often only attack humans to 'sample bite' and do not usually choose to eat human flesh, preferring marine mammals such as seals and sea lions. They are also known to feed on dolphins, octopus, squid, other sharks, rays and lobster, fish, crabs and seabirds.

## Breeding

Great Whites have a low reproduction rate that makes it difficult for species numbers to recover. Males mature at eight to ten years and females mature at 12-18 years. Females give birth to two to ten pups once every two to three years.

## Habitat

Found in temperate and sub tropical areas around the world, Great Whites can migrate across oceans. In Australia, they are found from southern Queensland, around the southern coast to the north-western cape of Western Australia.

## Threats

Great Whites are caught as bycatch in fishing nets by commercial and recreational fishers. They are also illegally hunted for their fins, and killed by 'trophy hunters' for their jaws and teeth. Habitat deterioration and the loss of food sources are continuing threats. Entanglement in marine debris and eating plastic and other litter can also harm or kill these animals.

There is increasing interest in first-hand experiences with this animal underwater. This industry is being tightly managed to minimise its impact on the sharks' natural behaviour.





Great White Sharks can detect 1 drop of blood in 100 litres of water! This means they can detect small quantities of blood up to 5 km away.

### Conservation

The Great White Shark is a protected species in Australian waters.

You can help the Great White Shark by:

- keeping our oceans clean – don't leave your litter behind
- signing a petition to stop shark finning
- spreading the word – educate others about Great White Sharks and why they are so special and misunderstood.



Photo by Mark Conlin

Great White Shark

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# Hooded Plover

*Thinornis rubricollis*



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Hooded Plovers are small-to-medium sized coastal shorebirds. They can be active during the day and night time, and are non-migratory. Also known as the Hooded Dotterels, these plovers bob their heads continually when alert and standing still. A distinctive black hood and throat give them their name; they also have a red ring around their eyes, a black-tipped orange bill and orange legs.

Pairs of Hooded Plovers establish territories to live and breed in, that they defend from other plovers. When approached by humans they run or fly away and are quite vocal as they do so! They will only leave these areas if they are persistently disturbed.

## Diet

They forage on the beach and can usually be seen in pairs or small groups finding food at the waters edge as the waves recede. Some Hooded Plovers also forage around salt water lagoons, salt pans and coastal lakes. They feed on insects, small bivalves, crustaceans, marine worms, water plants and seeds.

## Breeding

Hooded Plovers breed from August to March in eastern Australia on wide, sandy, seaweed strewn beaches. They make their nests in small scrapes on the beach between the high tide line and the sand dunes during spring and summer. They line these nests with pebbles, seaweed or other materials they find on the beach. An average clutch size is one to three eggs, and these are incubated by both parents for around 28 days. There is a very low success rate for chicks hatching and making it to maturity.

## Habitat

These birds are found along the southern sandy coasts of Australia.

## Threats

Coastal development and increased human activity on the coasts is a major threat to the Hooded Plovers, especially as they nest in summer when people like to visit the beach. Vehicles on the beach destroy nests, eggs and chicks. Dogs kill chicks and destroy nests as well as chasing adults away from their nests. This often leads to the death of the chicks. Disturbance and trampling by humans and stock, and predation by foxes are other threats these birds face. Unfortunately, only 700–800 of these birds remain in SA. Nationally, it has been estimated that a population of around 7,000 Hooded Plovers are alive today.





Although they move around during the non-breeding season and sometimes flock with other birds, Hooded Plovers usually return to the same breeding area with the same partner to lay their eggs each year.

### Conservation

You can help the Hooded Plover by:

- preferably keeping your dog on a leash (at least) when at the beach - especially during spring and summer
- only walking within the intertidal zone during the nesting season
- refraining from driving on the beach or dune areas
- moving away quietly when you see Hooded Plovers – parents will abandon their nests if they feel threatened.



Photo by Paul Wainwright

Hooded Plover

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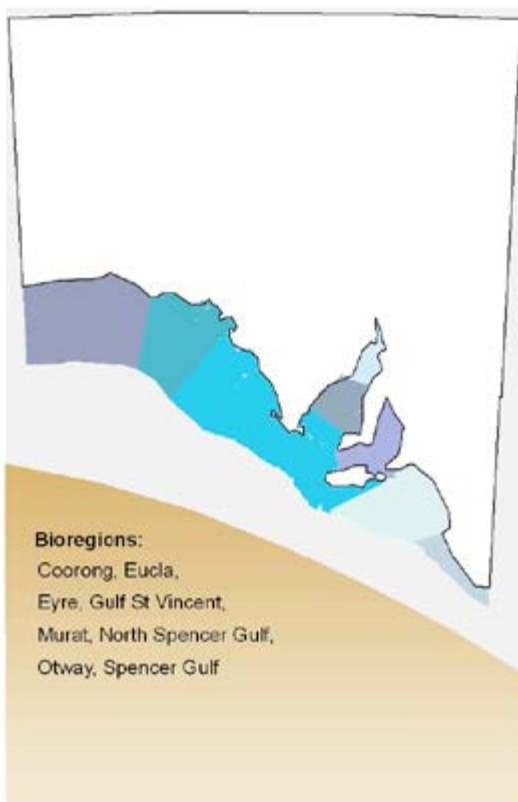
Hooded Plover





# King George Whiting

*Sillaginodes punctata*



Map courtesy of Mapping Unit, Customer and Commercial Services.

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King George Whiting was named as a South Australian icon species in 2004 and the species has been a popular target for both recreational and commercial fishers. There are greater numbers in South Australian waters than the other states and they are one of the most popular fish to eat for South Australians.

The largest of the whiting species, King George can live for up to 15 years and can grow up to 70cm long but have an average length of 35cm. Their bodies are silver but appear pale yellow from above with a pattern of brown spots. Long and slim in shape, they commonly weigh 300g– 1.4kg. Their natural predators include larger fish, dolphins, sharks, rays and birds.

## Diet

They eat mostly benthic species (species that live on the sea floor) such as bristle worms, bivalve molluscs (e.g. cockles) and small crustaceans. Their small mouths are adapted to sucking up food from the ocean floor.

## Breeding

King George Whiting spawn from April to June usually in deep, offshore waters. Fertilised eggs and larvae are then carried by ocean currents to sheltered bays and estuaries with warmer water. Juveniles remain in shallow waters of mangrove creeks and estuaries for the first two to three years of their lives and quickly grow to around 28 cm long. At three to four years of age they reach maturity and move to gulf and offshore waters up to 100 metres deep.

## Habitat

King George Whiting are endemic to the waters of southern Australia. Generally they prefer channels, broken reefs and seagrass meadows as their habitats.

## Threats

Recreational fishing was at one point the greatest threat to King George Whiting. However, in 2012, recreational fishing catch limits came into effect to help ensure stock sustainability. Habitat loss due to the destruction of seagrass meadows from pollution is another major threat to the survival of this species.





## King George Whiting sometimes migrate up to 200 km!

### Conservation

You can help the King George Whiting by:

- always observing bag limits and size restrictions when fishing; if it's too small put it straight back!
- not polluting – anything washed down the storm-water drain goes straight out to sea.



Photo © MLSSA

King George Whiting

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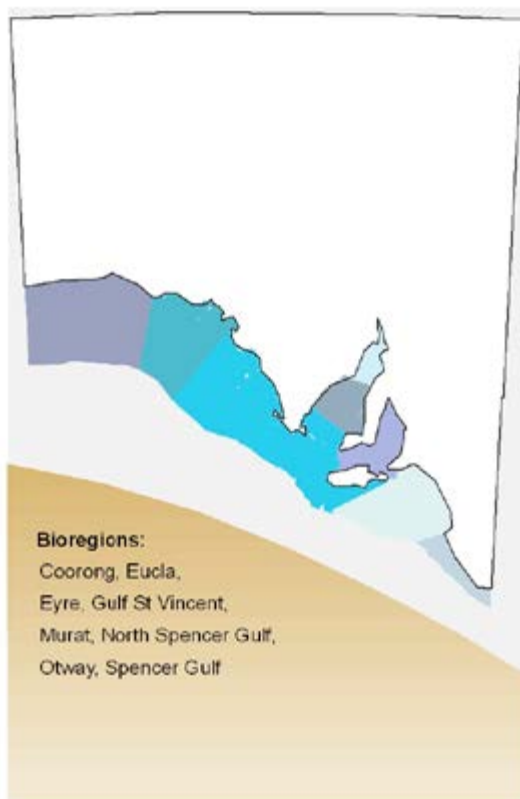
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# Lacy Bryozoan

*Phidoloporidae*



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Lacy Bryozoans are lace-like structures made of colonies of small marine animals fused together. These animals are called zooids; they are each about one mm long and box-shaped. Millions of zooids can form a single colony, and colonies have a lifespan of 1-12 years.

The zooids have special purposes: to form joints, to be brood chambers for the young, and to clean or defend the colony with bristles or pincers. Zooids have U-shaped guts, simple nervous systems and skeletons but no respiratory or circulatory systems due to their small size. They secrete limestone (calcium carbonate) that forms an outer skeleton in which they live. Their skeletons are then cemented together to form colonies connected by gaps or pores in the body walls. When cemented together they look like lacy works of art. They can grow to more than a metre in height and width.

Also known as 'lace corals', Lacy Bryozoans can often be mistaken for corals but are actually more complex. Lacy Bryozoans come in pink, orange and other colours and a variety of shapes from flat sheets to coral-like forms. South Australia has over 500 recorded species of Bryozoans.

## Diet

Most zooids have feeding tentacles to collect minute food particles from the water. Their diet consists of microscopic organisms including diatoms and other unicellular algae.

## Breeding

They are hermaphrodites (have both male and female reproductive parts) and can reproduce sexually and asexually.

## Habitat

Lacy Bryozoans are usually found in coastal waters but can grow at depths of 8,200m. They settle on hard surfaces such as rocky reefs, shipwrecks or jetty pilings and sometimes sand.

## Threats

The zooids that make up Lacy Bryozoans are preyed upon by grazing marine animals such as fish and sea urchins. Pollution and other forms of habitat degradation are a threat to this species, as well as warming as a result of climate change.





Fossilised remains of Lacy Bryozoans dating back millions of years can be commonly found in South Australia! This is because of the strong outer skeleton that the zooids create.

### Conservation

You can help Lacy Bryozoans by:

- not polluting. Anything washed down a stormwater drain goes straight out to sea
- looking, but not touching – marine life is often fragile and can be easily damaged
- picking up litter – plastic and other litter can hurt marine life and destroy habitats.

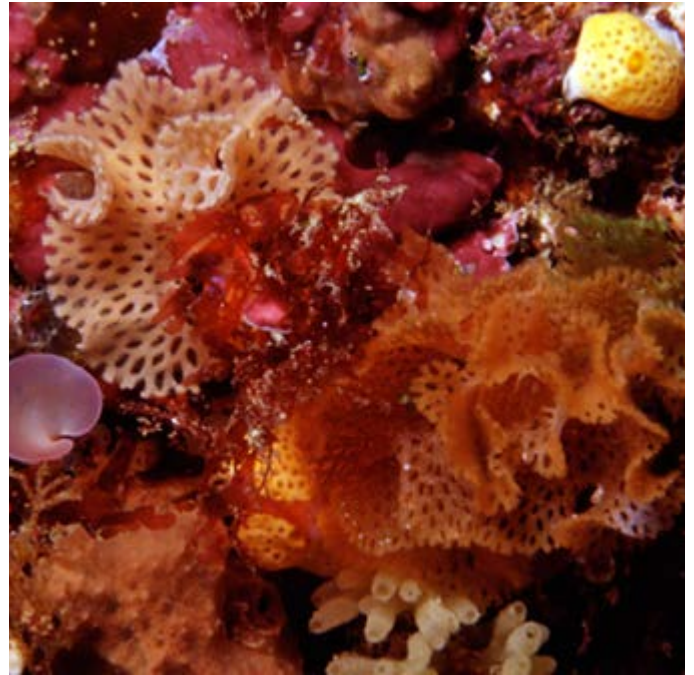


Photo by David Muirhead

Lacy Bryozoan

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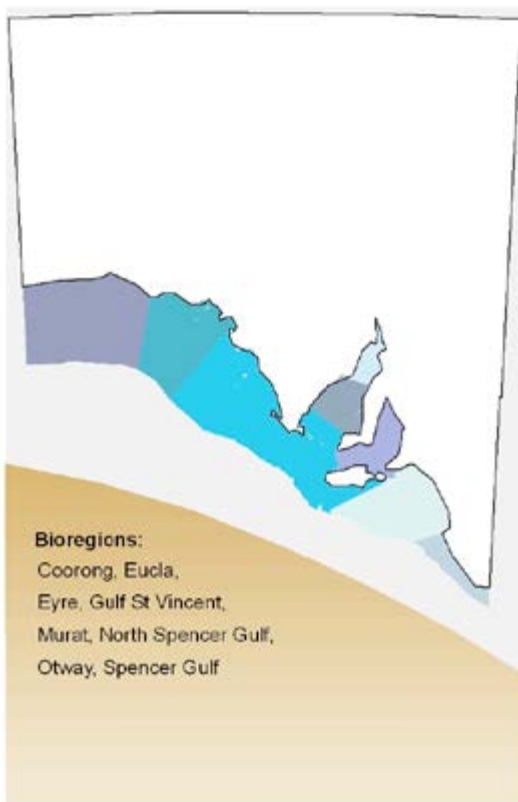
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# Leafy Seadragon

*Phycodurus eques*



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Leafy Seadragons are a unique species of marine fish known for their ability to camouflage themselves in weedy habitats. They are South Australia's state marine emblem and their name comes from the distinctive leafy appendages that are attached to their bodies. Closely related to seahorses and pipefish, Leafy Seadragons are in the family of animals called Syngnathidae and are a protected species under the *Fisheries Management Act 2007* (SA).

Instead of scales, their bodies are protected by bony plates. They are smaller than the Weedy Seadragon, which is the only other seadragon species and is also found in the waters of SA.

Leafy Seadragons are slow moving, and rely on their excellent camouflage to protect them from predators (they are well disguised as floating seaweed). They can also change colour depending on their age, diet, location, or stress level. Several long, sharp spines along the sides of their bodies can also help protect them from fish. They can grow to a length of 45cm but on average they are 30cm.

## Diet

Leafy Seadragons have long, tubular snouts with small toothless mouths that suck up food. They feed on plankton, mysids and other small crustaceans and fish.

## Breeding

They belong to one of the few groups of animals where males rear the young. Female seadragons deposit their eggs on a brood patch near the end of the males' tail where they are fertilised on contact. Males then carry them while they develop and release tiny seadragons after four to six weeks. Mature after two years, they have a lifespan of 5–10 years. Leafy Seadragons are completely independent when born, but they are vulnerable to predation as they are only 20mm long.

## Habitat

They are only found in temperate waters of southern Australia and live in seagrass meadows, seaweed beds, rocky reefs and structures colonised by seaweed.

## Threats

Illegal capture for display and as pets is a threat to the Leafy Seadragon. They are very sensitive to disturbance of any kind and will often struggle to survive sudden changes in water depth and pressure. Marine pollution, habitat loss and degradation are other threats that Leafy Seadragons face.





Homing beacons.....Leafy Seadragons are able to travel hundreds of metres from home and return to exactly the same place!

### Conservation

Leafy Seadragons are protected in SA waters.

You can help the Leafy Seadragon by:

- not polluting. Anything washed down a stormwater drain goes straight out to sea
- picking up any litter you see, especially at the beach – fishing line and other litter can hurt LeafySeadragons
- keeping your distance and not disturbing Leafy Seadragons if you see them.

## For further information

### Public enquiries

For more local information on any of the species in this resource please contact your nearest Natural Resource Centre office on:

**Eastwood:** (08) 8273 9100

**Gawler:** (08) 8523 7700

**Lobethal:** (08) 8389 5900

**Willunga:** (08) 8550 3400

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**Southern Fleurieu:** (08) 8551 0524



Photo © Paul Macdonald

Leafy Seadragon



Photo © Paul Macdonald

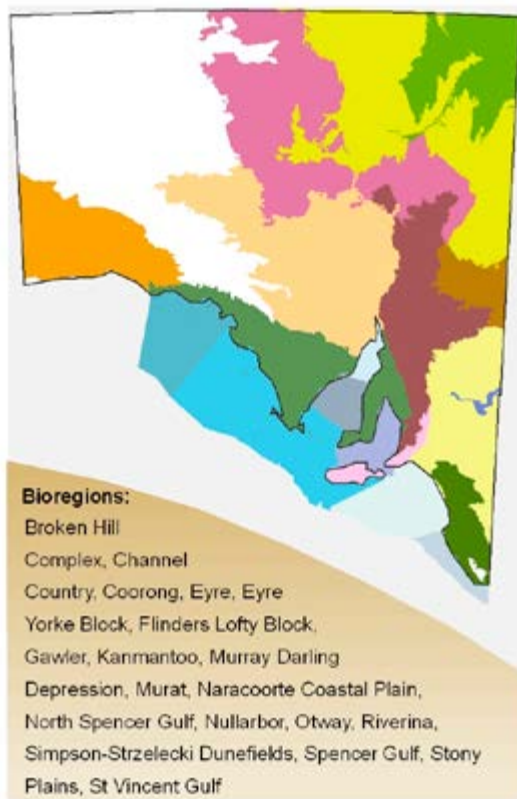
Leafy Seadragon





# Red-necked Stint

*Calidris ruficollis*



Map courtesy of Mapping Unit, Customer and Commercial Services.

Map is not intended to indicate spatial distribution of the species, only the bioregions in which the species is found.

Red-necked Stints are migratory wading birds. When migrating, they travel by the East Asian-Australasian flyway and flocks of thousands of these birds travel together. Their breeding plumage gives the Red-necked Stints their name. After breeding they moult, and throughout the rest of the year their plumage provides good camouflage for their habitat in Australia, with a grey back and white underneath.

The smallest of Australia's migratory birds, the Red-necked Stint weighs just 30 grams and is small enough to fit inside a wine glass. Red-necked Stints are sandpipers; they have short straight bills, short legs and are quite plump in shape. Because of their short legs they can only walk in shallow water, and prefer to forage without getting their legs wet.

## Diet

These birds are omnivorous – they eat seeds, worms, insects, small vertebrates, plants in salt marshes, molluscs, and crustaceans. Once they arrive in South Australia these birds start fattening themselves up for the long journey north, and a healthy bird can increase its weight by 50 per cent in the months it spends here. Unlike humans they can instantly convert this fat to energy. Their favourite food at the Coorong is midge (chironomid) larvae, and they find these on the surface of saturated mudflats.

## Breeding

Despite their small size they still manage to make the annual journey north to breed, which is a distance of approximately 15,000 km one way. They breed in eastern Siberia and western Alaska and visit Australia only in summer.

## Habitat

When in South Australia they choose mudflats within estuarine wetlands, sand flats and inland salt lakes as their habitats.

## Threats

The destruction and degradation of their wetland habitats is the greatest threat to Red-necked Stints. This can be caused by coastal development, changed water regimes, drought and pollution. Flocks of migrating birds rely on a series of three to four stopovers so they can rest and find food on the journey from their breeding sites to their 'wintering' sites. If any one of these places becomes unsafe or degraded, it can be disastrous for them. These birds are also sometimes the victims of hunting.





In its lifetime (approximately 20 years) the Red-necked Stint flies further than the distance between the Earth and the Moon!

### Conservation

Australia has signed the migratory bird agreements with China and Japan to protect birds crossing international boundaries, and more international agreements are being developed.

you can help the Red-necked Stint by:

- being waterwise at home and helping save our Coorong
- Not polluting – anything washed down a stormwater drain goes straight out to sea
- checking out the book (and link) *Rusty Loses His Loop* and understanding the Murray Darling System and how vital it is for creatures like the Red-necked Stint.



Photo © SATC, Craig Ingramz

Red-necked Stint

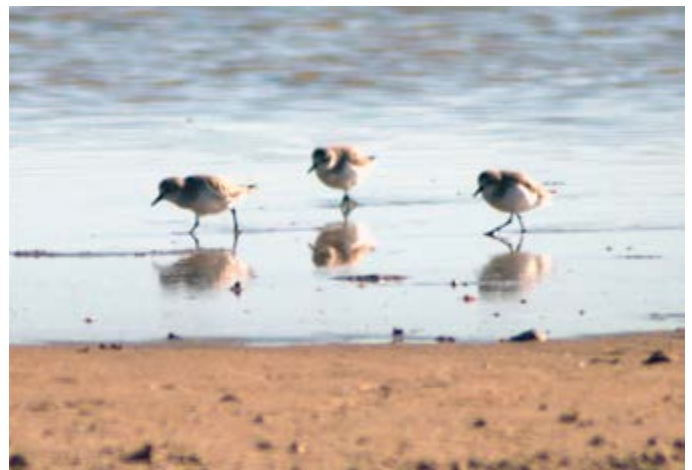


Photo by Daniel Rogerts

Red-necked Stint

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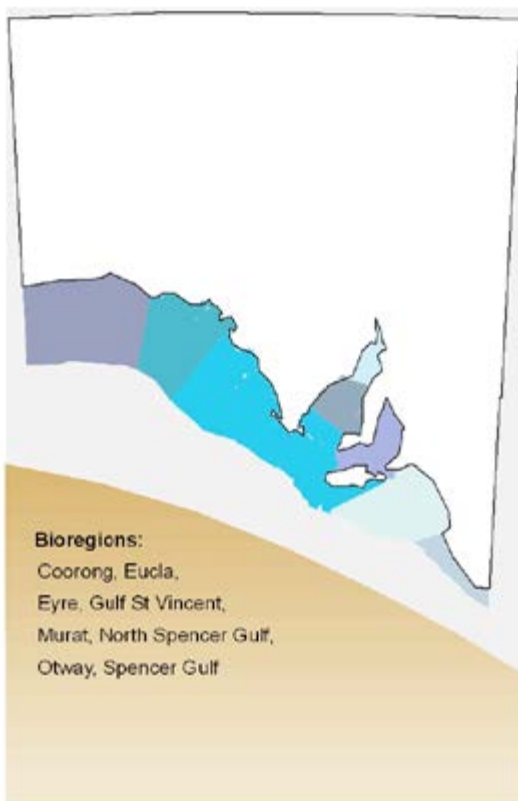


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# Short-tailed Shearwater

*Puffinus tenuirostris*



Map courtesy of Mapping Unit, Customer and Commercial Services.

Map is not intended to indicate spatial distribution of the species, only the bioregions in which the species is found.

Short-tailed Shearwater are migratory ocean birds. They usually have a lifespan of 15–19 years, but can live up to 38 years. Each year they travel around 15,000 kilometres to the Arctic and then return to South Australia during summer. Large colonies of these birds rest on the sea in the late afternoon, and this is referred to as 'rafting'.

## Diet

These birds feed on krill, small fish and other marine creatures. Food is usually caught on the surface of the water but Short-tailed Shearwaters sometimes dive down up to 12 metres to feed among the weed on the sea-bottom.

## Breeding

Short-tailed Shearwaters mate and lay their eggs in burrows which are usually around one metre long. When they return to their breeding grounds in late September they usually reunite with the same partner of previous years and occupy their previous burrow or one nearby. The burrow is prepared during nightly visits and the couple is very noisy, possibly to announce that the burrow is occupied. Short-tailed Shearwaters rarely breed until they are five years old and it may take them longer than this to find a mate. They lay one egg from late November each year. All females in all the different colonies lay their eggs within the same 12 day period. The male and female take turns incubating the egg for around 53 days until it hatches. To feed their chicks they have been known to fly to Antarctica and back to collect good food. This means flying 1000km a day for four days at a time.

## Habitat

Short-tailed Shearwaters migrate north in April each year to the Arctic region, where they spend the northern hemisphere summer. They travel in flocks, and return to southern Australia to breed on islands and promontories off the Australian coast.

## Threats

Past hunting and egg collection has lessened the numbers of this species. Grazing stock have destroyed whole colonies in some places by trampling chicks and destroying burrows. Soil erosion after fire can make sites unsuitable for burrowing. Gillnet fisheries accidentally drown large numbers every year as they become entangled in the nests. Natural mortality of juveniles during migration due to exhaustion and starvation, and predation by feral cats, are other threats to this bird.





When sheep fly? Short-tailed Shearwaters are commonly referred to as mutton birds. They were once a common food source for early settlers. When a Naval officer referred to them as “flying sheep” the name stuck.

### Conservation

You can help the Short-tailed Shearwater by:

- finding out more about the areas where these and other migratory birds breed and how important their conservation is. Then give a presentation to your class about it
- not disturbing nesting birds if you see them
- checking out a map to see how far these birds migrate each year. It's pretty amazing!

## For further information

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Photo by Paul Wainwright

Short-tailed Shearwater



Photo by David Paul Wainwright

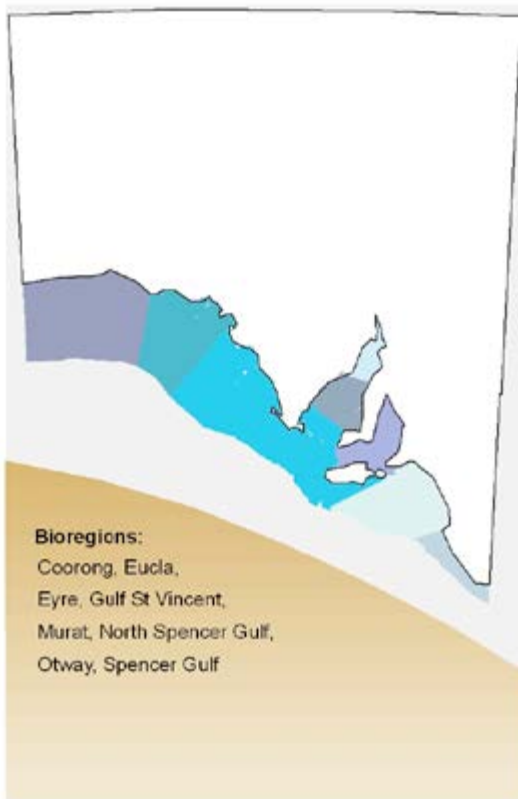
Short-tailed Shearwater





# Southern Bluefin Tuna

*Thunnus maccoyii*



Map courtesy of Mapping Unit, Customer and Commercial Services.

Map is not intended to indicate spatial distribution of the species, only the bioregions in which the species is found.

Southern Bluefin Tuna are large, fast swimming fish that are dark blue above and silvery white below. Up to 2.25 metres long, they can weigh up to 200 kg. Their shape is very dynamic (like a torpedo) which makes it easier for them to move fast. These fish have swim bladders which stop them sinking to the sea floor. However, they can still dive to at least 500 metres.

Just like mammals, Southern Bluefin Tuna have the ability to keep the temperature of their bodies warmer than the outside water. This is an ability that not many other fish have and is possible because they have an advanced circulatory system. They have a lifespan of 20–40 years and do not reach reproductive maturity until they are 8–12 years old.

The farming of Southern Bluefin Tuna is currently the most economically important aquaculture venture in SA. They are caught in nets in the Great Australian Bight and slowly towed back to shore. They are then fattened up in captivity and sold frozen or fresh, mostly to Japan.

## Diet

They eat fish, squid and marine invertebrates.

## Breeding

Southern Bluefin Tuna spawn in the northern, tropical waters between Indonesia and Australia.

## Habitat

Southern Bluefin Tuna live in the open ocean. Juvenile fish travel from tropical waters down the Western Australian coastline, in the Leeuwin Current. As they grow into adults these tuna ride the current south-eastward along South Australia's coast.

## Threats

Careful management of catch quotas is essential to the survival of Southern Bluefin Tuna populations. The fact that they reach sexual maturity at a late age and have a slow growth rate makes it harder for them to renew their numbers fast enough. Marine pollution is also a threat to their health.





The Porsche of the Sea! Southern Bluefin Tuna have earned this nickname as they can travel at up to 70 km/h over long distances. They can even form a film over their eyes and hold their fins against their bodies to make themselves more hydro-dynamic!

### Conservation

The Australian Commission for the Conservation of Southern Bluefin Tuna is trying to manage the catches of this species and rebuild its stocks, but catches outside their control continue and the total population of this fish is decreasing.

You can help the Southern Bluefin Tuna by:

- finding out more about marine conservation issues and educating others
- not polluting – anything washed down a stormwater drain goes straight out to sea
- never wasting tuna, they are not as abundant as you think.



Photo by Adam Watkins

Southern Bluefin Tuna



Photo by AFMA/ASBTIA

Southern Bluefin Tuna

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# Southern Eagle Ray

*Myliobatis australis*



Southern Eagle Rays belong to the same class as sharks and other rays (Chondrichthyes) which all have skeletons made of cartilage instead of bone. A distinctive feature of the Southern Eagle Ray is their blunt snout. Their bodies are wider than they are long with pointed tips and eyes on the side of their heads. Nostrils and an internasal flap (this is a fleshy flap of skin between the nostrils that partly covers the mouth) are on their underside. They have three types of fins, and the small dorsal fin at the beginning of the tail is followed by a venomous stinging spine.

They are large animals, which can measure a total length of up to three metres and can weigh more than 50 kilograms. They have smooth skin without the thorns on their bodies that some other ray species possess.

## Diet

They eat small fish and crustaceans such as crabs and molluscs as well as annelid worms. To make feeding easier their mouths are located on the underside of their bodies, with small plate-like teeth for grinding food.

## Breeding

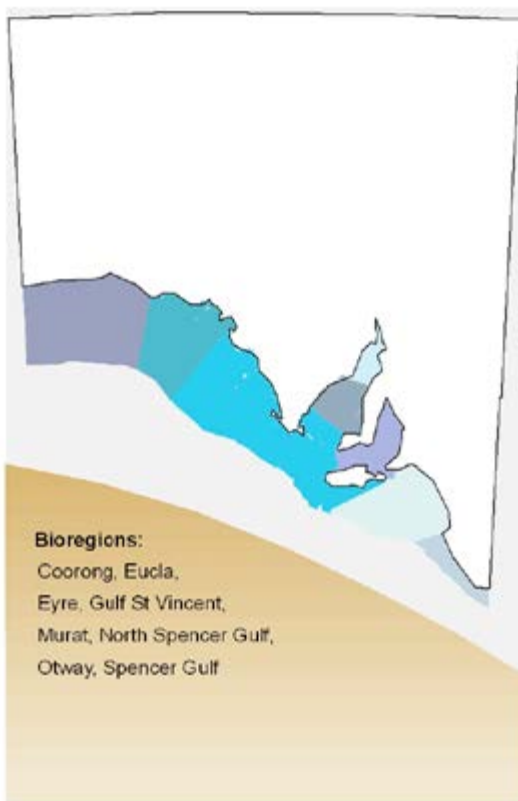
Southern Eagle Rays are viviparous (they give birth to live young). They have an average litter size of six but can have 2–15 babies at a time. Young are born in summer.

## Habitat

These animals are found only in Southern Australia from Jurien Bay in Western Australia to Moreton Bay in Southern Queensland. The adults migrate south in the warmest months of the year. They are bottom-dwellers and are so flat they can cover themselves with sand at the bottom of the ocean for camouflage. It is partly for this reason that they prefer the shallow water near beaches and shoals and over sand-flats as habitat.

## Threats

The Southern Eagle Ray is a common bycatch of commercial and recreational fishers. Unfortunately Southern Eagle Rays are increasingly kept and marketed for their flesh rather than being returned to the ocean. Marine pollution is another threat to this species, possibly leaving it with less food to eat. Currently they are classified as Near Threatened on the IUCN redlist.



Map courtesy of Mapping Unit, Customer and Commercial Services.

Map is not intended to indicate spatial distribution of the species, only the bioregions in which the species is found.



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Southern Eagle Rays have a pair of openings just behind the eyes called 'spiracles' that allow them to draw in oxygenated water from above. This helps them to breathe even when they are lying flat on the ocean floor!

### Conservation

You can help the Southern Eagle Ray by:

- putting rubbish in its place as litter makes its way to the ocean from everywhere
- bringing a bag along for collecting rubbish when you go for a walk along the beach
- not polluting – anything washed down a storm-water drain goes straight out to sea.
- letting it go if you catch one.



Photo© MLSSA

Southern Eagle Ray

## For further information

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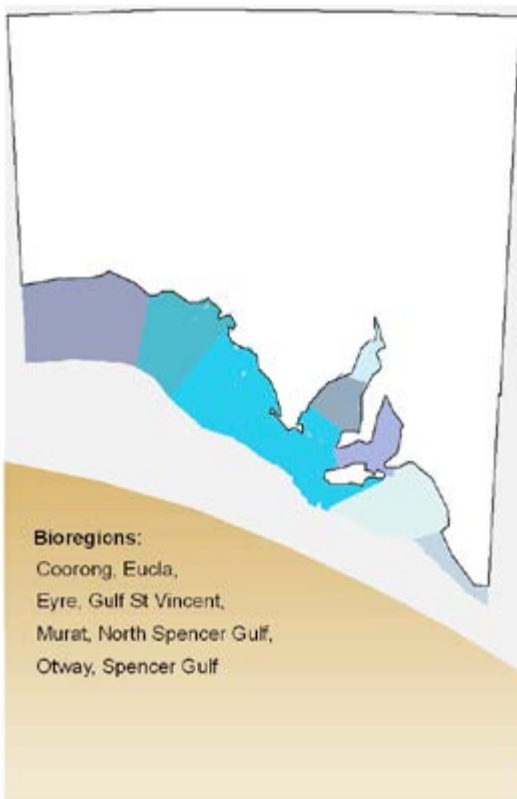
**Southern Fleurieu:** (08) 8551 0524





# Southern Right Whale

*Eubalaena australis*



Map courtesy of Mapping Unit, Customer and Commercial Services.

Map is not intended to indicate spatial distribution of the species, only the bioregions in which the species is found.

Southern Right Whales are mammals, not fish. They breathe air just like humans do through nostrils called 'blowholes' located on top of their heads. All whales are cetaceans – a group of marine mammals which also includes dolphins and porpoises.

The raised whitish patches of thickened skin on Southern Right Whales are called callosities and are encrusted with marine lice and barnacles. They are present on calves from birth and can be used to individually identify whales throughout their lifetime (like unique birthmarks). A Southern Right Whale calf weighs about one tonne at birth, while adults can weigh up to 80 tonnes.

The story of Kondole, the whale, is one dreamtime story from Encounter Bay.

## Diet

These giant mammals eat some of the smallest foods in the ocean in large quantities. Small crustaceans, like krill and copepods, make up most of their diet. A Southern Right Whale eats up to a tonne of tiny crustaceans per day in subantarctic waters. They strain their food from the ocean, catching it in their comb-like 'teeth' called baleen.

## Breeding

Between 25 and 55 calves are born in Southern Australia each year in June and nursing continues in November. When a calf is born it has only a little blubber to keep it warm. To quickly build up some blubber it suckles up to 150 litres of rich, fatty milk from its mother every day. When doing this it can gain up to 90kg in weight each day.

## Habitat

Every year, Southern Right Whales migrate from cold Antarctic waters to the warmer sheltered waters of southern Australia to breed and have their young (calves). The Head of the Great Australian Bight is an important calving ground for the Southern Right Whale, with more than 900 individual whales recorded in this area over the past 18 years.

## Threats

Whaling (hunting) in the past drastically reduced their numbers from around 60,000 to around 7,000 globally. Pollution, habitat degradation, and predation by sharks are other potential threats to Southern Right Whales. Coastal development, human harassment and entanglement in fishing gear and ship strikes are other problems.



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Adult Southern Right Whales grow up to 18 metres long – that's as long as a bus!

### Conservation

Numbers of Southern Right Whale are thought to be increasing since they were internationally protected

You can help the Southern Right Whale by:

- going whale watching and seeing Southern Right Whales for yourself
- not polluting – anything washed down a stormwater drain goes straight out to sea
- following the whale watching code if you are lucky enough to see a whale at sea: keep your distance and keep quiet.

## For further information

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Photo by Aude Loisier

Southern Right Whale



Photo by Aude Loisier

Southern Right Whale



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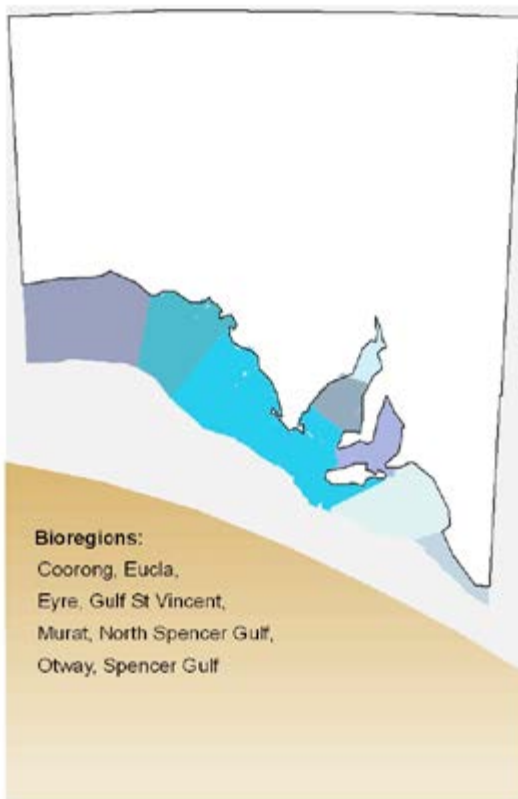


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# Western Blue Groper

*Achoerodus gouldii*



Map courtesy of Mapping Unit, Customer and Commercial Services.

Map is not intended to indicate spatial distribution of the species, only the bioregions in which the species is found.

Western Blue Gropers are large, long-lived slow-growing fish that are closely related to the Eastern Blue Groper (*Achoerodus viridis*). They are the largest bony fish species found on the rocky reefs of South Australia. Western Blue Gropers can live for up to 70 years, and females do not reach maturity until around 15 years of age, and for males it takes even longer. They grow up to 1.7 metres long and are fully grown at around 30 years old. When fully grown they have few natural predators.

They live in small groups with one male, one or two females and several juveniles. The male is always the biggest fish in these groups and is blue, while the females are a greener colour.

They are an important species for maintaining the balance in their ecosystem by controlling the numbers of other animals such as crabs and sea urchins. If Western Blue Gropers weren't there, these other animals might eat too much algae from the reefs, leaving them barren and unsuitable for other species.

## Diet

When feeding, Western Blue Gropers use their strong teeth to prise molluscs and crustaceans off the rocks. Adults are able to dislocate their jaw to bite off large pieces of reef algal mats and then suck off the tiny crustaceans that live in them.

## Breeding

Western Blue Gropers are sequential hermaphrodites, this means that they are all born female, and some females turn into males at around 35 years of age. They spawn between early winter and mid spring.

## Habitat

These fish can be found around the southern coast from Geraldton in Western Australia to west of Melbourne. Smaller fish are found in sheltered reef areas, but larger ones migrate to deeper exposed waters. Adults are territorial and have a home range.

## Threats

Overfishing is a major threat to the Western Blue Groper, especially as they are so slow-growing. This means it takes them a long time to replenish their numbers, and if young fish are caught they never get the chance to reproduce. Marine pollution is another problem as it limits the amount of food available to them.





Sex change! All Western Blue Gropers are born females, and some later change to be males! When they change sex they also change colour! If the male is removed from the small group the dominant female can change sex to take his place!

### Conservation

Western Blue Gropers are very inquisitive when they see divers. This makes them vulnerable to spearfishers. Many divers are now aware of their plight and choose to enjoy their company rather than killing them.

You can help the Western Blue Groper by:

- putting rubbish in its place as litter makes its way to the ocean from everywhere
- bringing a bag along for collecting rubbish when you go for a walk along the beach
- not polluting – anything washed down a storm-water drain goes straight out to sea.

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Photo by Simon Bryars

Western Blue Groper



Photo Female WBG, Simon Bryars

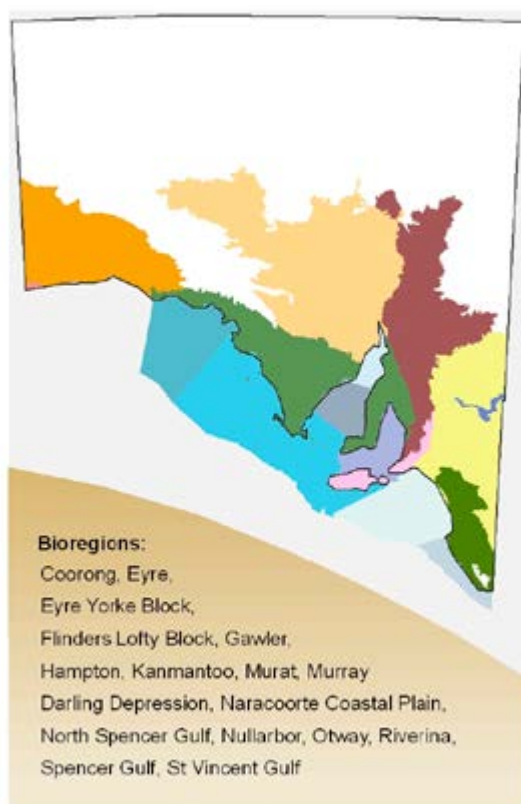
Western Blue Groper





# White-bellied Sea-Eagle

*Haliaeetus leucogaster*



Map courtesy of Mapping Unit, Customer and Commercial Services.

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White-bellied Sea-Eagles are large birds of prey. They are graceful in flight and spend their time soaring over the surface of the sea, or perching on rocks or branches beside the water. They live for up to 30 years in the wild.

## Diet

These birds hunt fish, tortoises, sea-snakes, waterfowl, reptiles, nestling birds, rabbits and also eat carrion. They are aggressive and skilled hunters both at sea and on the land. Their large talons and powerful curved beaks help them to grab and kill their prey. Thick scales on their legs protect them like armour. Excellent eyesight makes it easy for them to target their next meal. Occasionally, they harass other birds such as ospreys and terns until they drop their prey which the eagles then collect.

## Breeding

These eagles mate for life and share the same hunting range. In the morning and evening they roost and sometimes sing together. When breeding begins, sometime from May to October, White-bellied Sea-Eagles put on great aerial displays. They soar and call, loop-the-loop, drop fish from a height and then dive to catch it in midair. Nests are built on cliffs or in trees, and sometimes on the ground on treeless islands. Both sexes help with the construction and repair of a nest. Nests are made of sticks, and are huge structures up to four metres deep and 2.5m wide. Nests are lined with stems and green leaves and females lay a clutch of two eggs. Eggs are incubated for around six weeks, mostly by the female. One egg is laid several days before the other, and it is usually only the chick with the head start that survives because the parents feed the noisiest, most active chick first. If the first egg is infertile, or the chick is weak and dies, the second chick has a better chance of survival.

## Habitat

White-bellied Sea-Eagles are found throughout Australia along coasts and beside lowland rivers and lakes. They also occur in south-east Asia and India.

## Threats

The loss of nesting sites due to development is a major threat to the White-bellied Sea-Eagles. Disturbance of nesting pairs by human activity can cause them to abandon their nests. Deterioration of inland water sources and over-fishing in the ocean makes it harder for them to find food. Competition for food and nesting sites with Wedge-tailed Eagles (*Aquila audax*) is a potential problem.





Big birds! White-bellied Sea-Eagles have a wingspan of up to 2.2 metres. Their home ranges can be up to 100 square kilometres.

### Conservation

You can help the White-bellied Sea-Eagle by:

- always keeping your distance from eagles and their nests as they are easily disturbed by human activity
- protecting areas of native vegetation in your local area
- reporting anyone you see interfering with nests or disturbing sea eagles.

## For further information

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