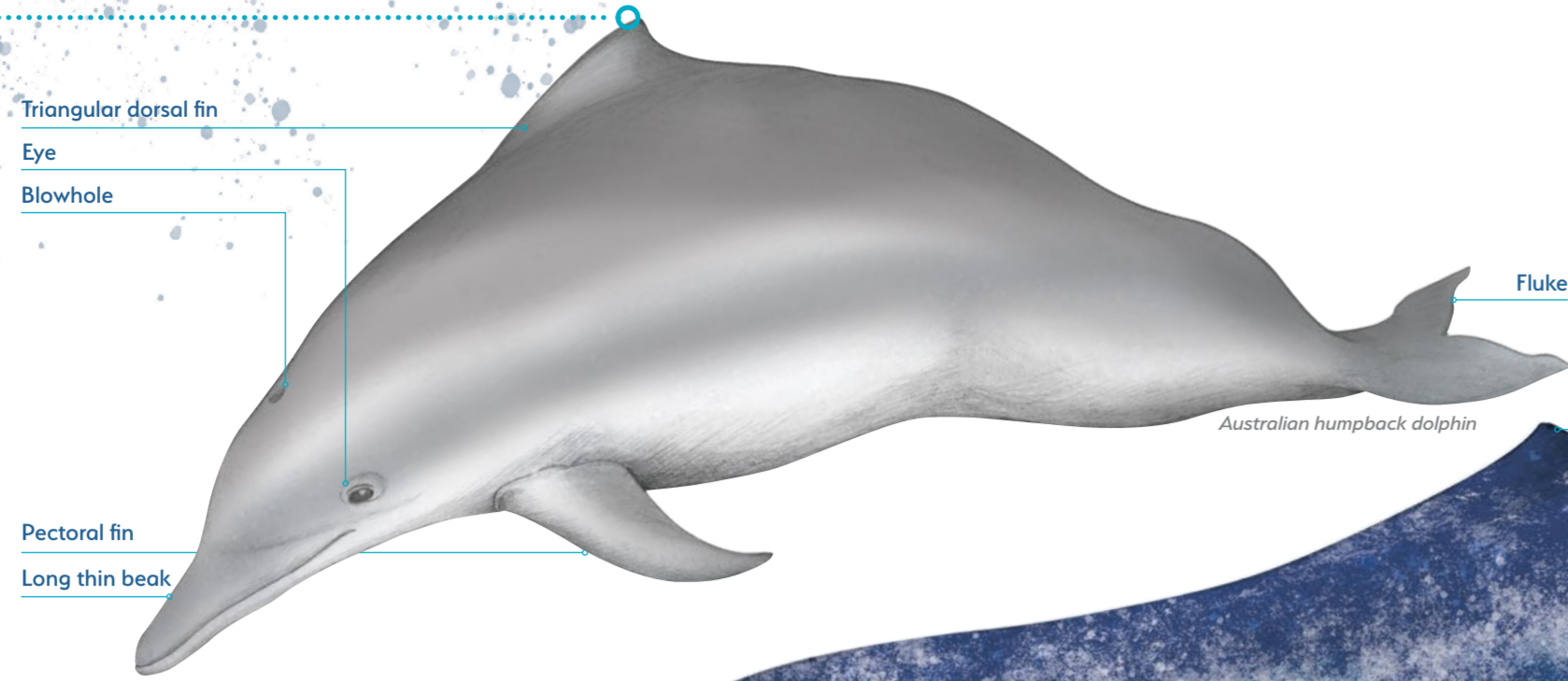
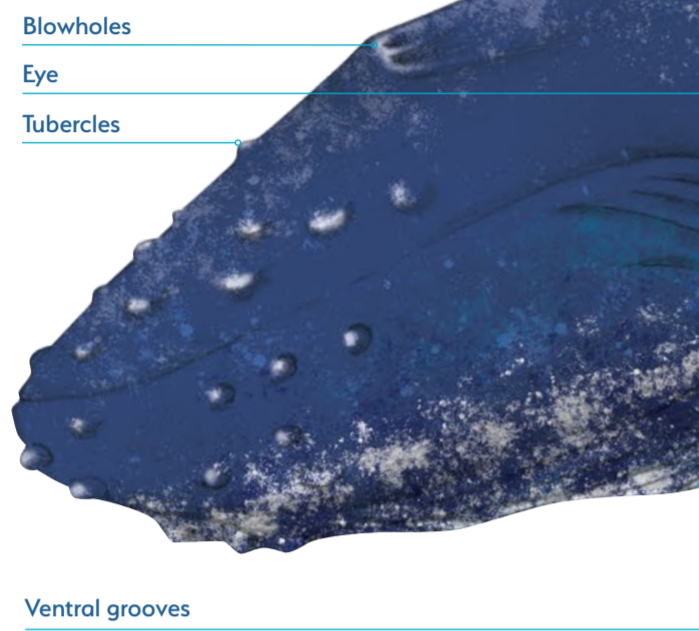


Marine mammals of Western Australia

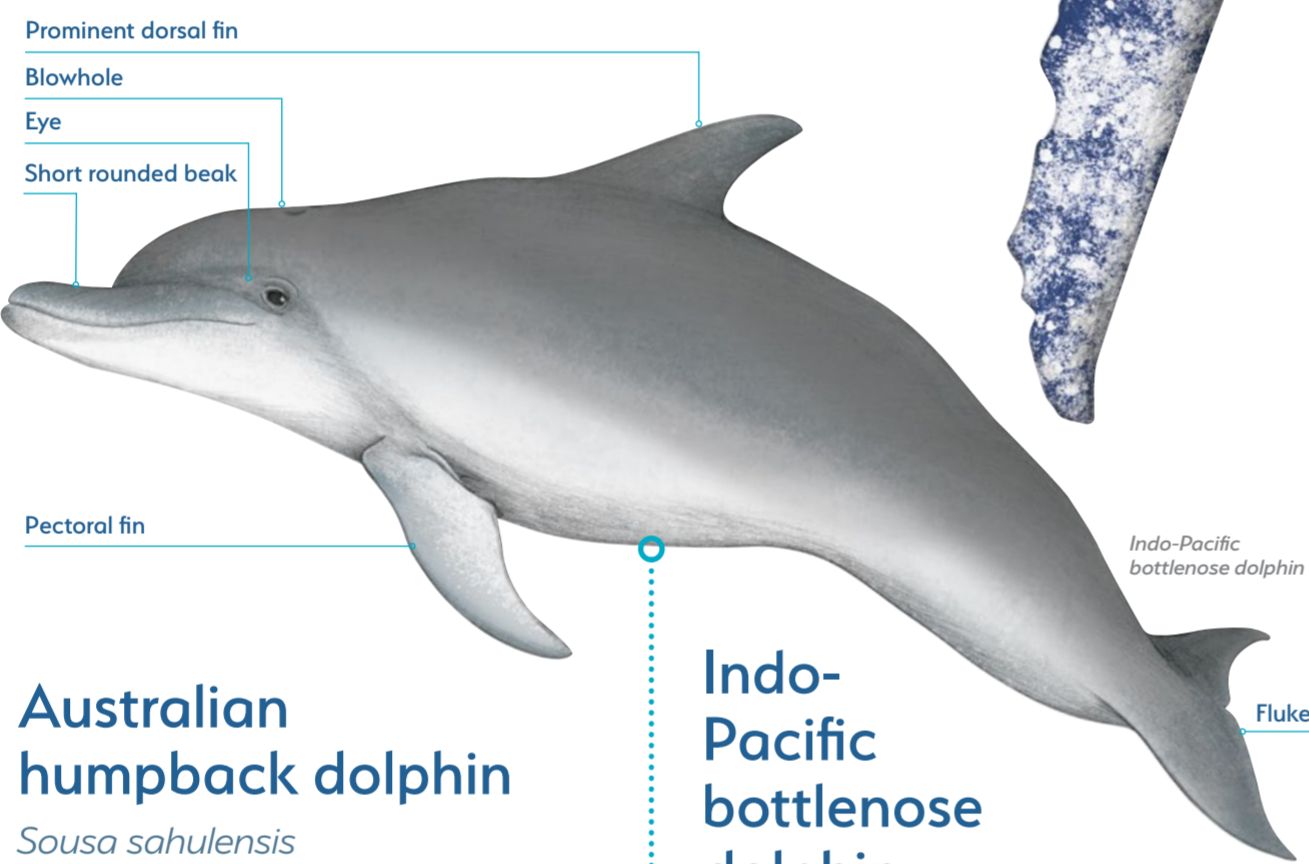


Pectoral fin
Long thin beak



Blowholes
Eye
Tubercles

Ventral grooves



Prominent dorsal fin
Blowhole
Eye
Short rounded beak

Pectoral fin

Indo-Pacific bottlenose dolphin
Fluke

Australian humpback dolphin

Sousa sahulensis

- Adults grow to maximum of 3m long.
- Colouration varies by age, juveniles tend to be darker than adults. Dorsal surface (back) brown-grey with a lighter underbelly. Dorsal fin may be white in older animals and males.
- Belong to the suborder Odontoceti (toothed whales). Toothed whales only have one blowhole.

Diet

- Fish, cephalopods and crustaceans.

Breeding

- There is limited research on the life history of the Australian humpback dolphin as it was only recognised as a separate species in 2015. Based on detailed research of its close relative, the Indo-Pacific humpback dolphin, females reach sexual maturity at 9-10 years and males at 12-14 years. Gestation is 10-12 months and calves can suckle for more than two years.

Habitat

- Found in tropical waters along the coast and around islands.
- Have been sighted as far as 60km from the mainland at the Montebello Islands where water depth is less than 20m.
- Also live in mangrove channels, bays and estuaries.
- Frequently seen in the Ningaloo Marine Park off the North West Cape and in Dampier Archipelago.

Distribution

- Largely tropical, the Australian humpback dolphin is also found in some subtropical areas in association with warm currents, for example Shark Bay.

Indo-Pacific bottlenose dolphin

Tursiops aduncus

- Dark grey dorsal surface and a light grey belly.
- Adults grow to 2.7m long and weigh 230kg.
- Belong to the suborder Odontoceti, have only one blowhole.

Diet

- Fish and cephalopods such as squid, octopus and cuttlefish.

Breeding

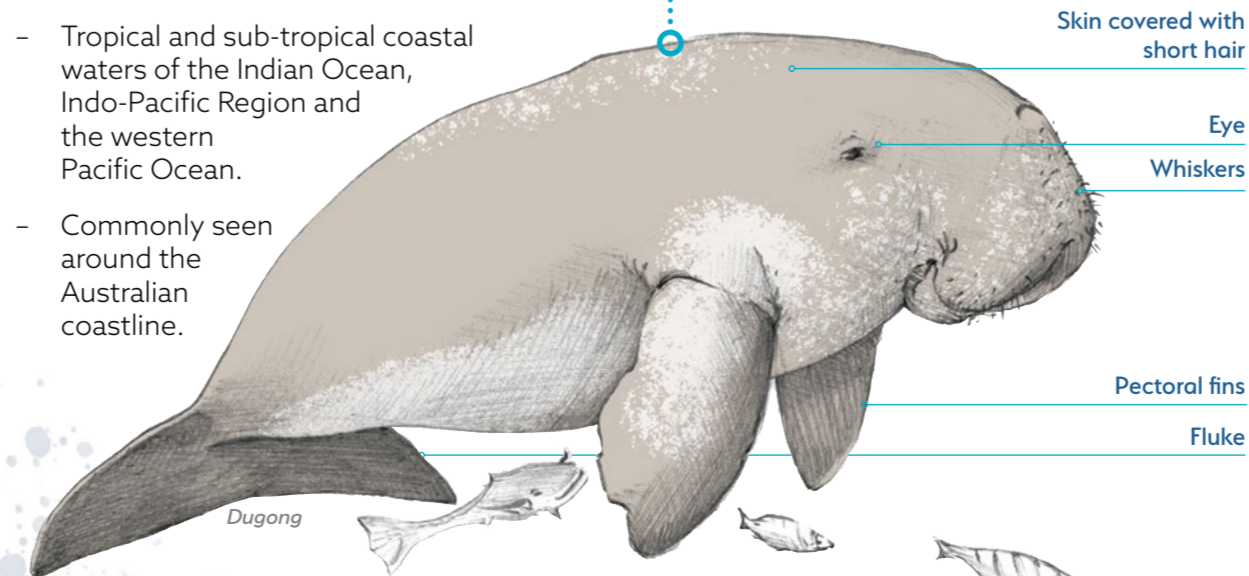
- Low reproductive rate with three to six-years between offspring.
- Females start breeding at 9-11 years.
- Males start breeding at 11-15 years.

Habitat

- Restricted to coastal waters including bays, estuaries, lagoons and nearshore waters along the coast.
- Also known to be found in shallow offshore waters and waters around offshore islands.

Distribution

- Tropical and sub-tropical coastal waters of the Indian Ocean, Indo-Pacific Region and the western Pacific Ocean.
- Commonly seen around the Australian coastline.



Skin covered with short hair
Eye
Whiskers

Pectoral fins
Fluke

Dugong

Dugong

Dugong dugon

- Adults range from 2.2-3.1m in length and weigh 200-400kg. Calves are 1-1.2m long and weigh 20-35kg at birth.
- Tiny ears with excellent hearing.
- Can hold their breath underwater for 8-11 minutes.
- Have a dense heavy skeleton that keeps them on the bottom while feeding and may help protect vital organs during attacks by predators.

Diet

- Herbivorous, diet of seagrass.
- Can consume 25-40kg of seagrass per day.

Breeding

- Long lived and have a slow breeding rate.
- Can live for 70 years.
- Start breeding at about 6-10 years.
- Gestation is about 13-14 months and one calf is born. Calves suckle at least 14-18 months, possibly up to two years.
- Mothers produce a calf every 3-7 years.

Habitat

- Sheltered waters such as inshore coastal and island waters and bays that are shallow and nutrient-rich with plenty of seagrass. Also known to frequent deeper areas offshore where the continental shelf is wide and protected.
- Shark Bay, Ningaloo Coast, Exmouth Gulf and the Pilbara coast provide important habitat for dugong populations in Western Australia.

Distribution

- Indo-Pacific region in shallow, warm tropical and subtropical coastal waters (18°C or warmer).
- Australia from Shark Bay to Moreton Bay in Queensland.
- The north-west of Western Australia has the largest dugong populations in the world and Shark Bay has one of the biggest.

Humpback whale

Megaptera novaeangliae

Conservation status – Vulnerable

- Adults grow to 12-16m long and weigh up to 45 tonnes.
- Calves are 4-6m long and weigh 1.5 tonne at birth.
- Belong to the suborder Mysticeti (baleen whales). All baleen whale have two blowholes.

Diet

- Krill and small fish.
- Filter feeders, force water across the baleen plates, which act like a huge sieve trapping the krill.

Breeding

- Start breeding between 4 and 8 years.
- Breeding occurs during the winter months, gestation is 11 to 12 months.
- Calves suckle for about 11 months and drink about 240l of milk a day.
- Can live for more than 50 years.

Migration and distribution

- Humpback whales have a near global distribution and are seen in the both the southern and northern hemispheres. Two populations of humpback whales are found in Australian waters, the east coast and west coast populations.

Map of west coast migration and distribution



1. Summer months – feed in Antarctic waters.
2. May to August – migrate north along west coast of to Ningaloo Coast and Kimberley calving grounds.
3. September to November – migrate south to feeding grounds. On the return they stay much closer to the coast as they usually have calves with them.
4. Important resting areas during southern migration include Lacepede Islands, Pender Bay, Eighty Mile Beach, Nickol Bay, Exmouth Gulf, Shark Bay and Geographe Bay.

Sharks and rays under threat

Green sawfish

Pristis zijsron

Conservation status – Vulnerable

- Cartilaginous fish belonging to the order Chondrichthyes (sharks and rays), members of Pristidae family.
- Unusual-looking ray species, with a shark-like body and a flattened head.
- Long and narrow saw-like rostrum gives them their name. Rostrum is about 20 per cent of entire body length and has 24-28 pairs of unevenly spaced teeth.
- Green sawfish exhibit countershading, dorsal surface is greenish brown or olive and underside is pale or white. This adaptation helps them camouflage and blend into their environment.
- Green sawfish has a maximum length of 730cm making it one of the largest Chondrichthyes after the whale shark and basking shark.

Diet

- Fish, molluscs and crustaceans including prawns.
- Saw-like rostrum is important for detecting and capturing prey. Along the rostrum are sensory organs that detect electrical signals from fish, these signals help locate prey in murky waters. Once the prey is detected the long rostrum is used to 'club' fish to stun them before eating.

Breeding

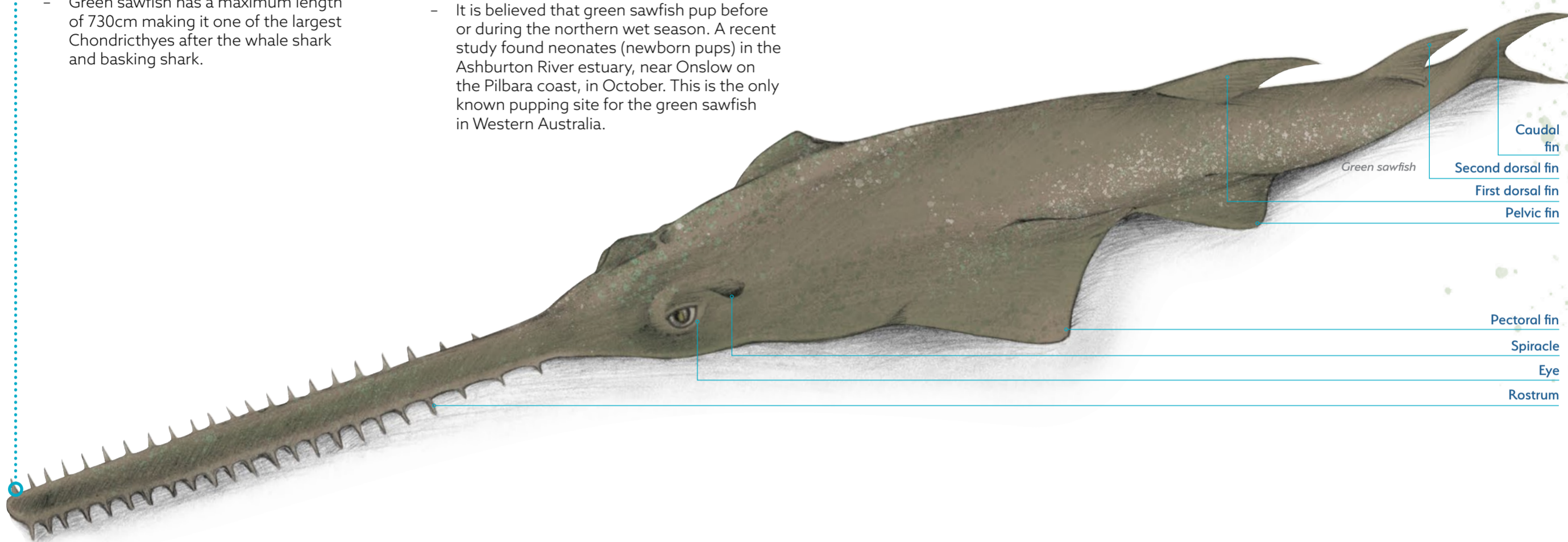
- Viviparous (give birth to live young) and have about 12 pups each litter.
- Average length at birth is 76cm.
- Born with a well-developed rostrum.
- Green sawfish may live for more than 50 years.
- It is believed that green sawfish pup before or during the northern wet season. A recent study found neonates (newborn pups) in the Ashburton River estuary, near Onslow on the Pilbara coast, in October. This is the only known pupping site for the green sawfish in Western Australia.

Habitat

- Often found in very shallow waters of inshore coastal environments including estuaries, river mouths, embayments and along sandy and muddy beaches, usually associated with mangroves.
- Seen in coastal waters in depths of less than 1m to waters well offshore in depths of more than 70m.
- Mangrove creeks and estuaries along the Pilbara and Kimberley coast provide important habitat for green sawfish.

Distribution

- The green sawfish once had a wide distribution across the Indo-West Pacific from South Africa, up the east coast of Africa to the Red Sea, Persian Gulf and India, China and Taiwan to Australia. The species has declined significantly across most of its range and is thought to be extinct in south-east Asia and has disappeared from New South Wales and southern Queensland.
- Current distribution of green sawfish in Australia is from Shark Bay in Western Australia to the Whitsundays in Queensland.
- Sawfish are thought to be the most threatened marine fish. Their active behaviour, prey preference and rostrum make them susceptible to capture in gillnets and by trawl fisheries.



Whale shark

Rhincodon typus

Conservation status – Vulnerable

- Largest fish in the world, up to 15-20m long.
- Dark blueish-grey with a pattern of white spots and stripes that is unique to each individual and does not change over time.
- Thickest skin of all species in the world, up to 14cm thick.

Diet

- Whale sharks are filter-feeders.
- Consume a variety of plankton and nekton, including small crustaceans such as krill, crab larvae and copepods, small schooling fish such as sardines, anchovies, mackerel, and occasionally larger prey such as small tuna, albacore and squid.

Breeding

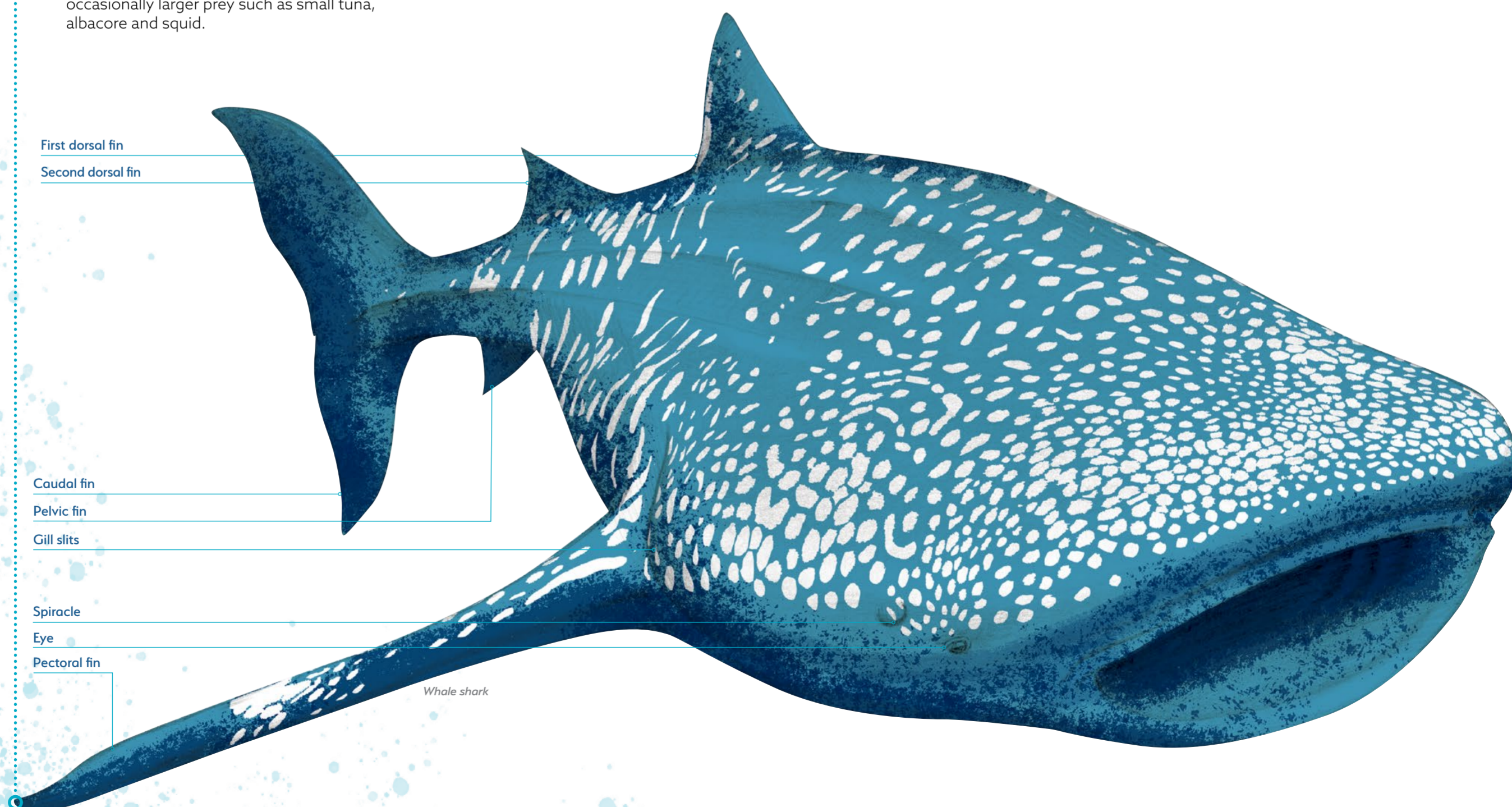
- Although seen in large aggregations around the world, there are big information gaps and breeding and early life stages are still a mystery.
- Where whale sharks mate and give birth is unknown.
- Thought to be ovoviviparous (the eggs hatch and develop in the uterus and the females give birth to live young).
- Very small whale sharks, measuring just 50-60cm, have been seen off India and Pakistan.

Habitat

- Pelagic species found in tropical and warm temperate waters with temperatures from 25-35°C.
- Whale sharks are not social animals but tend to aggregate in large numbers at locations around the world.
- In Western Australia, big numbers of whale sharks gather off Ningaloo between March and July every year. Some years they stay longer, past August.
- Whale sharks aggregating here has been linked to things associated with mass coral spawning and the unique current system along the north-west coastline where the Leeuwin and Ningaloo currents interact.

Distribution

- Usually found in tropical and sub-tropical waters in a band around the equator between latitudes 30°N and 35°S.
- In Australia whale sharks occur mainly off northern Western Australia, the Northern Territory and Queensland. They have also been reported in New South Wales and Victoria.



Migratory shorebirds

Shorebirds, also known as waders, are a diverse group of birds that are mostly associated with wetland and coastal habitats where they wade in shallow water and feed along the shore.

Shorebirds vary in size, from the red-necked stint (weight 30g, length 13-16cm) to the eastern curlew (weight 900g, length 60cm).

Diet

- Depending on the species, the diet will consist of one or more of the following: molluscs, crustaceans, polychaete worms, small fish and insects.
- The different bill shapes of the various species of shorebirds allows for a wide range of species to share the same shore with minimal competition. Long-billed species, such as bar-tailed godwits and eastern curlews can probe deep into the sand while short-billed species such as ruddy turnstones and lesser sand plovers feed by pecking and probing at the surface in search of food.
- The Pilbara coast and islands provide excellent feeding grounds for shorebirds where they need to consume enough food to fuel to migrate and breed. They need to increase their body weight by up to 70 per cent.

Habitat

- Islands, sandy spits, sandbars, rocky shores, sandy beaches, salt marsh, intertidal flats and mangroves are important feeding and resting habitat used during spring and summer when the birds are escaping the harsh winters of their northern hemisphere breeding grounds.
- The Pilbara coast and islands, including the Exmouth Gulf, provide important refuge for shorebird species.

Migration

- Migratory shorebirds make some of the most impressive migrations of all animals.
- For some, the annual migration is close to a 30,000km journey from their breeding grounds in the northern hemisphere to their feeding grounds in the southern hemisphere and back again.
- The migratory shorebirds of Australia migrate along a route known as the East Asian-Australasian Flyway (EAAF).
- A 'flyway' is like a circuit of highways in the sky flown by migratory shorebirds that connects them to their feeding grounds in the southern hemisphere and their breeding grounds in the northern hemisphere. As the journey is long, many need to stop along the way to refuel.
- There are 23 countries throughout the EAAF and many of these provide important areas called staging sites, where migrating birds can rest and refuel.
- Important staging areas include the Yellow Sea, bordered by the coasts of China and the Korean Peninsula, Japan's southern Honshu region, Manila Bay in the Philippines and northern Australia.

Types of shorebirds

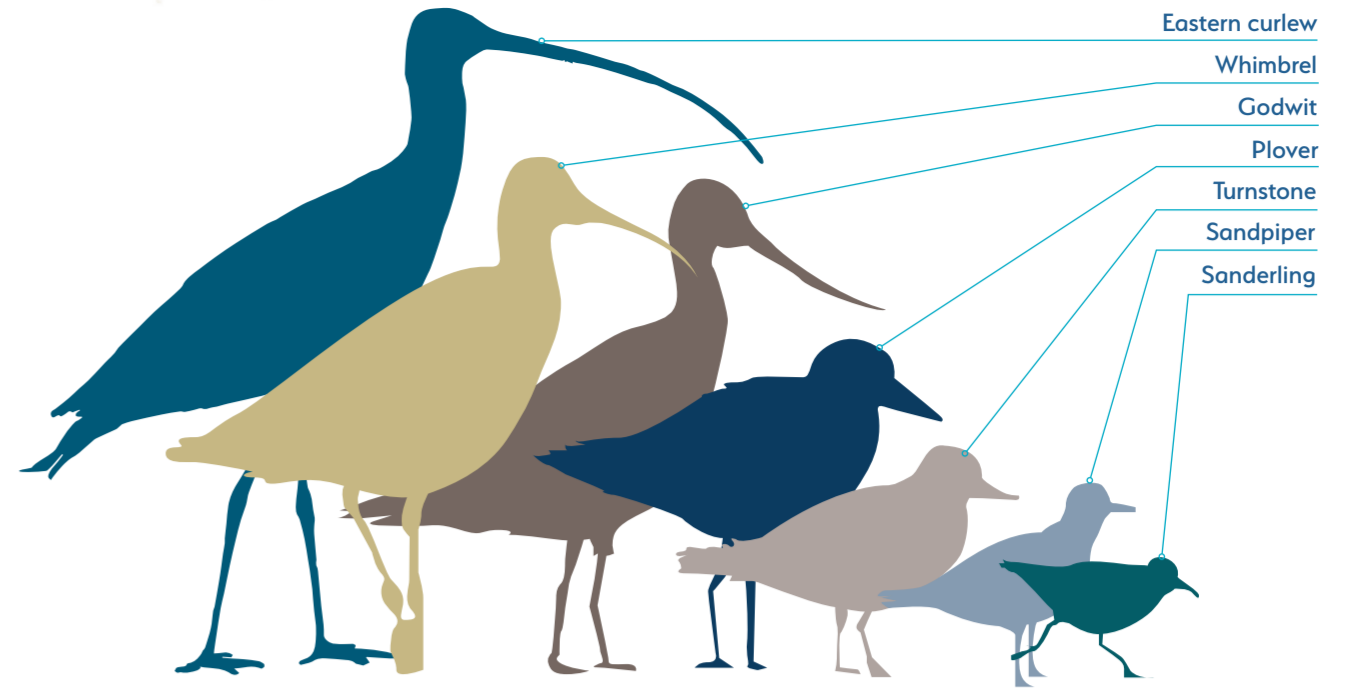


Diagram - adapted with permission from Ted A Morris Jr.

Bill shapes of migratory shorebirds.

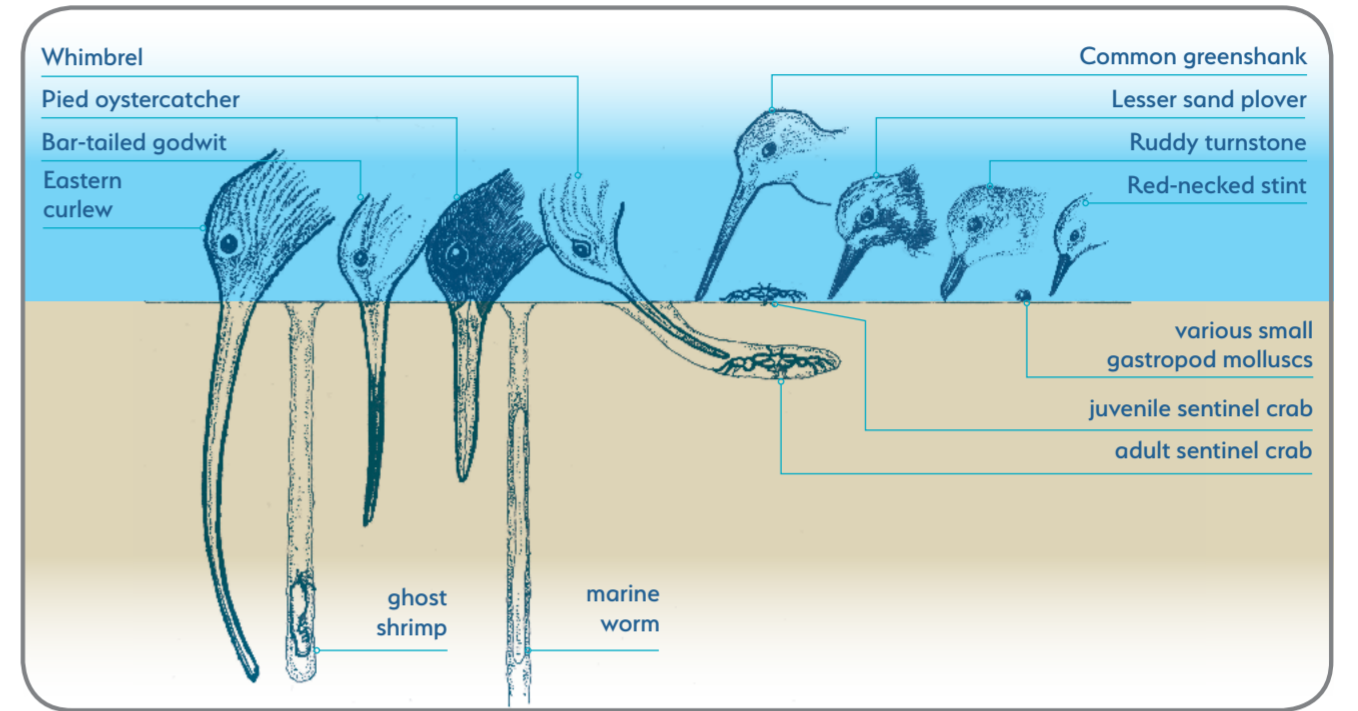


Illustration source material - Jeff Davies. Adapted by Gooitzen van der Meer/DBCA.

East Asian-Australasian Flyway (EAAF)



Ruddy turnstone



Bar-tailed godwit

Eastern curlew



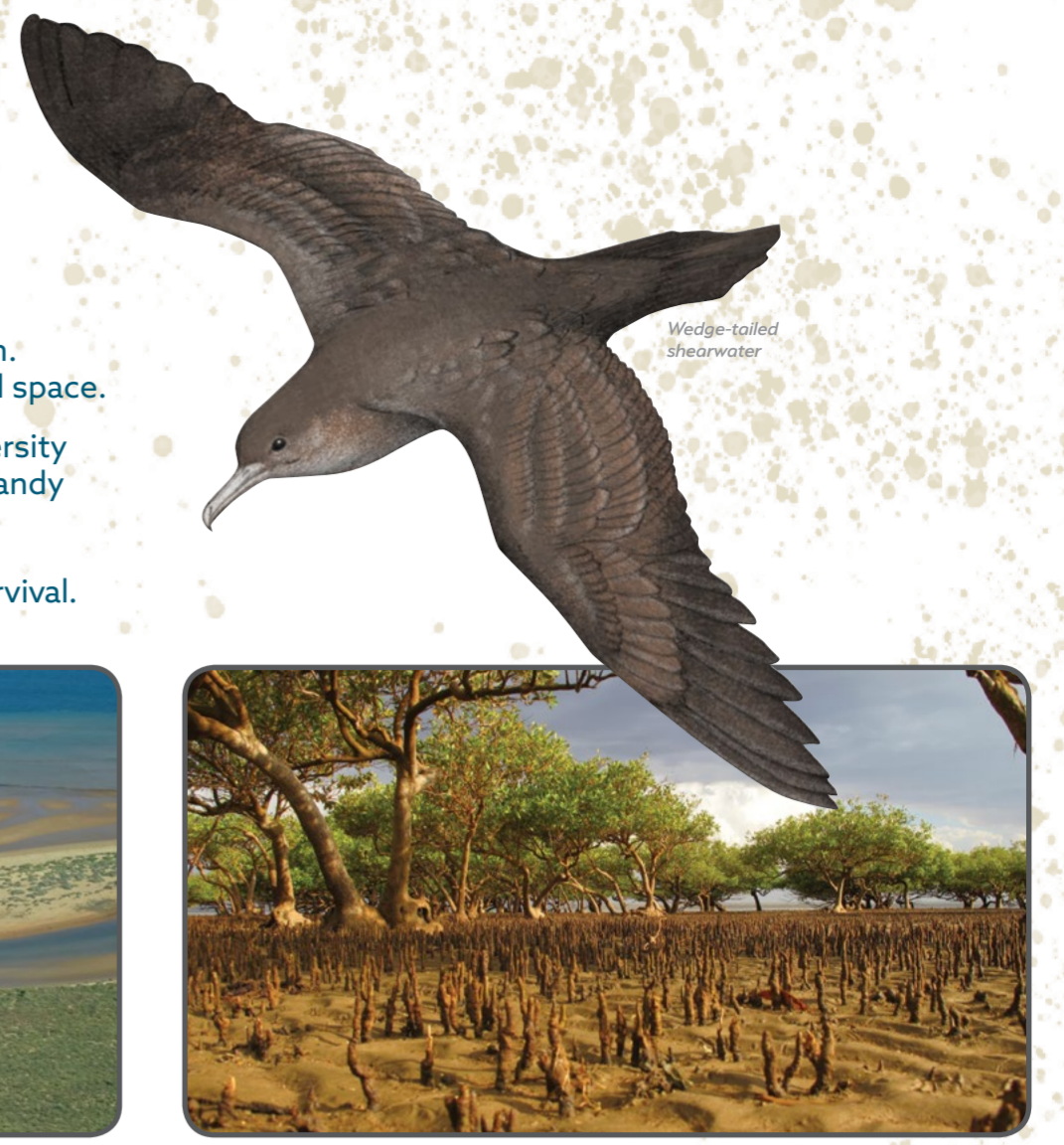
Red-necked stint

Importance of habitat

Healthy habitats are fundamental to the survival of species, particularly those that are under threat of extinction. A habitat provides a species with the basic resources it needs to survive and reproduce: food, water, shelter and space.

Western Australia's coastline spans more than 13,500km providing an array of habitats that support a great diversity of life, including many threatened and migratory species. Islands, coral reefs, mangroves, seagrass meadows, sandy beaches, rocky shores, bays and estuaries are among the essential habitats.

Marine turtles, shorebirds, seabirds, whales, dolphins, dugongs and sawfish depend on these habitats for their survival.



Islands

Western Australia's islands provide refuge for many threatened and migratory species. Many of which provide habitat free from pressures (such as introduced predators, bushfires and four-wheel driving on beaches) and types of disturbance (people walking pets on beaches, light pollution) found on the mainland.

Islands are significant breeding and nesting areas for marine turtles, shorebirds and seabirds. Many islands in Western Australia are nature reserves and are protected under the *Conservation and Land Management Act 1984*.



Estuaries

Estuaries are found where rivers meet the sea, they have a mix of salt and fresh water. Estuaries in the Pilbara tend to be shallow and, as freshwater rarely reaches the coast, the incoming tide refreshes them.

They are important habitats for molluscs, crustaceans, and worms, which mostly live on the estuary floor. These in turn are an important food source for a range of larger marine life, including the green sawfish that may spend all or part of their life cycle in estuaries.

Recent research discovered that the green sawfish pup in the Ashburton River delta. This was the first known pupping site for green sawfish in Western Australia and it highlights the importance of estuaries as valuable habitat in the Pilbara and Kimberley.

Migratory shorebirds such as curlew, sandpipers and grey-tailed tattlers will also rest and feed in estuarine habitats.



Mangroves

Western Australia has a diverse range of mangrove habitats, ranging from temperate to tropical with one of the largest intact arid mangrove habitats in the world. Mangroves help protect the shoreline from erosion and wave action and help reduce turbidity in coastal waters.

Mangroves play an important role in the early life stages of fish and sharks providing shallow, sheltered waters suitable for a nursery habitat. As mangrove habitats are highly productive and support a diverse range of organisms, they provide feeding grounds for many species of migratory shorebirds. Green turtles are also known to forage in the mangroves, feeding on mangrove fruit.



Seagrass meadows

As their name suggests these plants often look like grasses, they have flowers that are pollinated underwater to produce seeds. They grow in intertidal zones, sheltered bays, estuaries and in the lee of islands.

Seagrass is a food source for species such as dugongs and green turtles. It provides a habitat for many, smaller marine species, such as prawns and fish. For this reason, seagrass meadows are also important feeding grounds for species such as green sawfish and coastal dolphins.



Coral reefs

Coral reefs are typically found in tropical to subtropical warm, clear waters. Western Australia offers some unique coral reef habitats as corals can be found in cooler temperate waters as far south as the Abrolhos Islands and Rottnest Island.

Coral reefs are built from living animals called coral polyps that produce hard skeletons made of calcium carbonate. The polyp lives symbiotically with a microscopic algae known as zooxanthellae. These plants give the corals their colours and capture energy from the sun by photosynthesis, for this reason coral reefs are typically found in shallow waters but can be found as deep as 60m where the water is clear most of the time.

Coral reefs support an abundance of fish, sea stars, crabs, marine worms, molluscs, shellfish, sharks and turtles. They provide protection and feeding habitat for marine turtles.



Sandy beaches

Sandy beaches are the most common intertidal habitat in Australia. They are constantly changing as the action of waves, tides and wind move the sand particles about, eroding some areas and depositing in others.

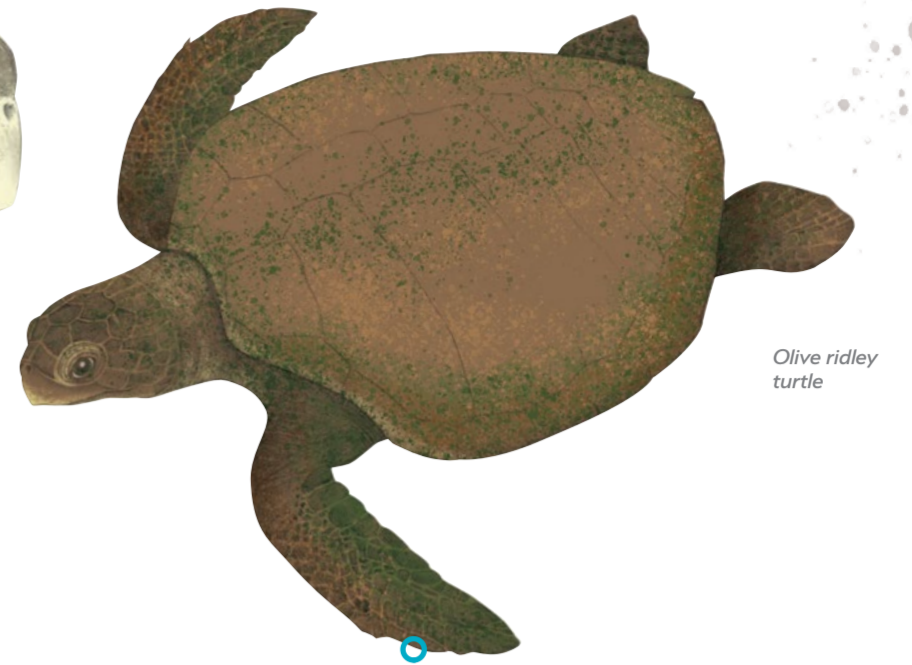
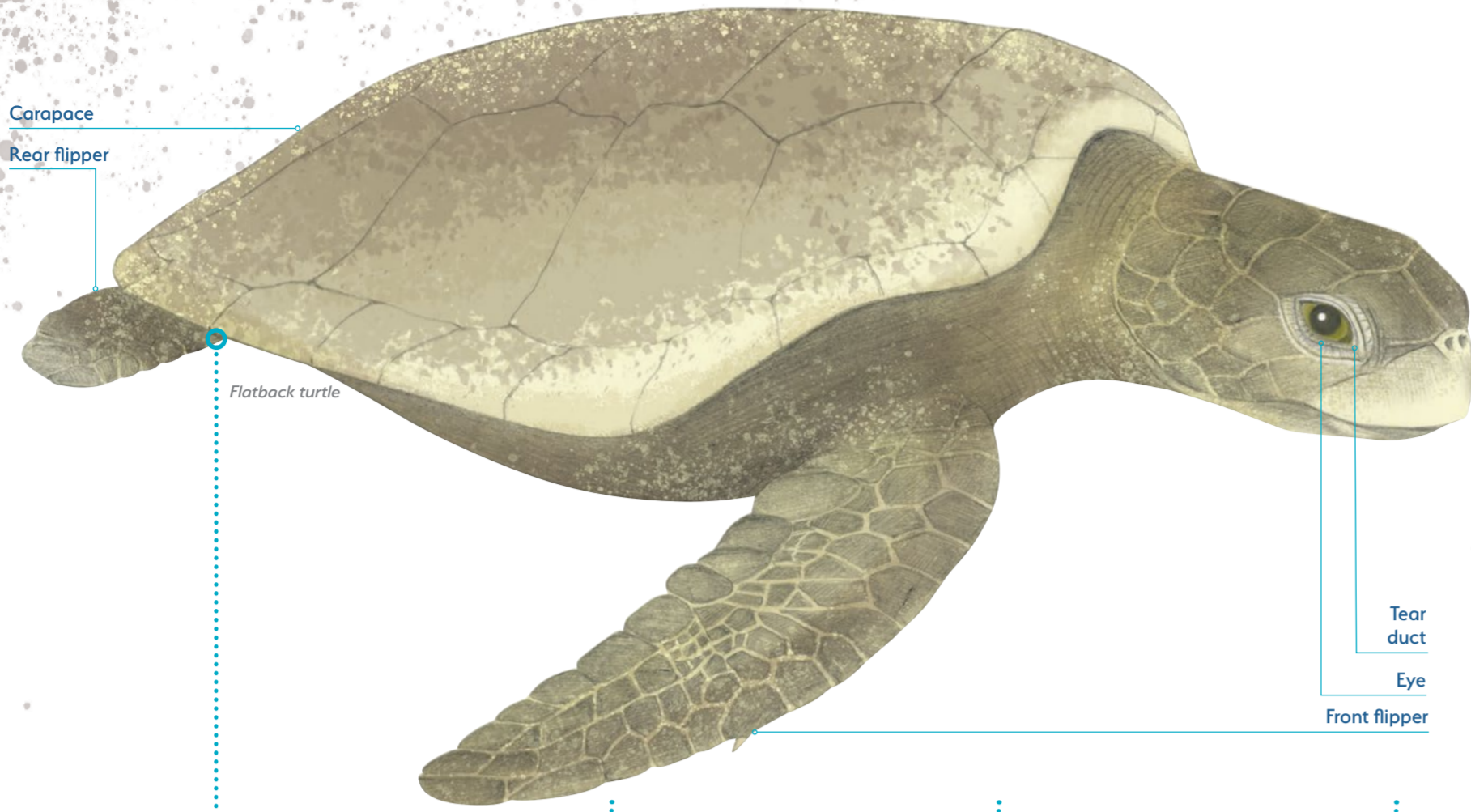
Microscopic algae, diatoms and bacteria that are important as primary producers and for nutrient cycling live between the sand grains.

Crabs, bivalves and worms that burrow into the sand are an important food source for resident and migratory shorebirds. The sandy beaches of many of the Pilbara and Kimberley islands are perfect undisturbed habitats where seabirds nest and roost in colonies sometimes in the thousands.

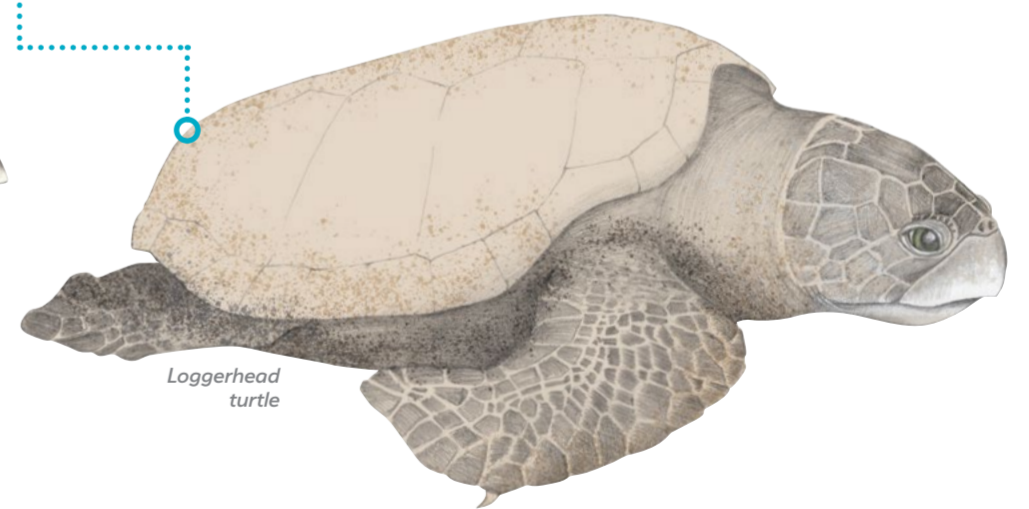
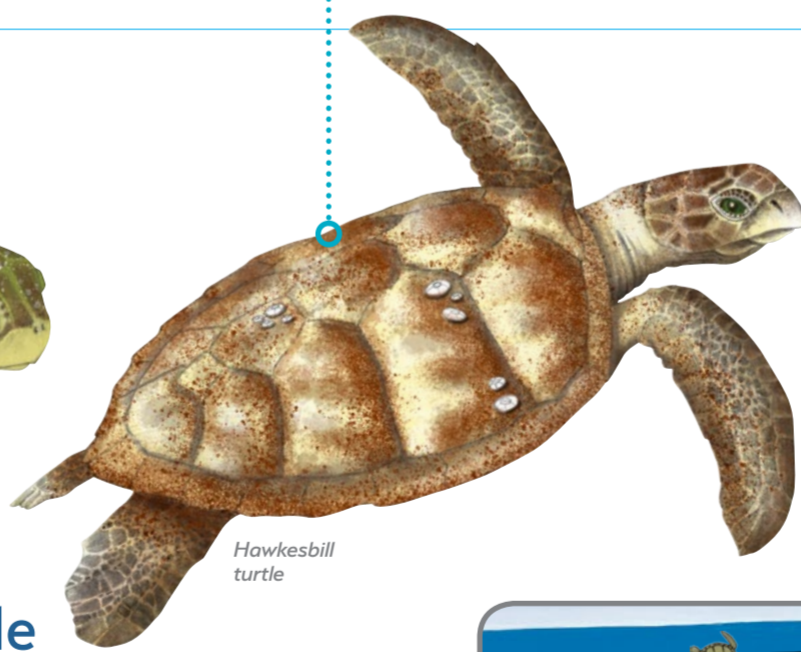
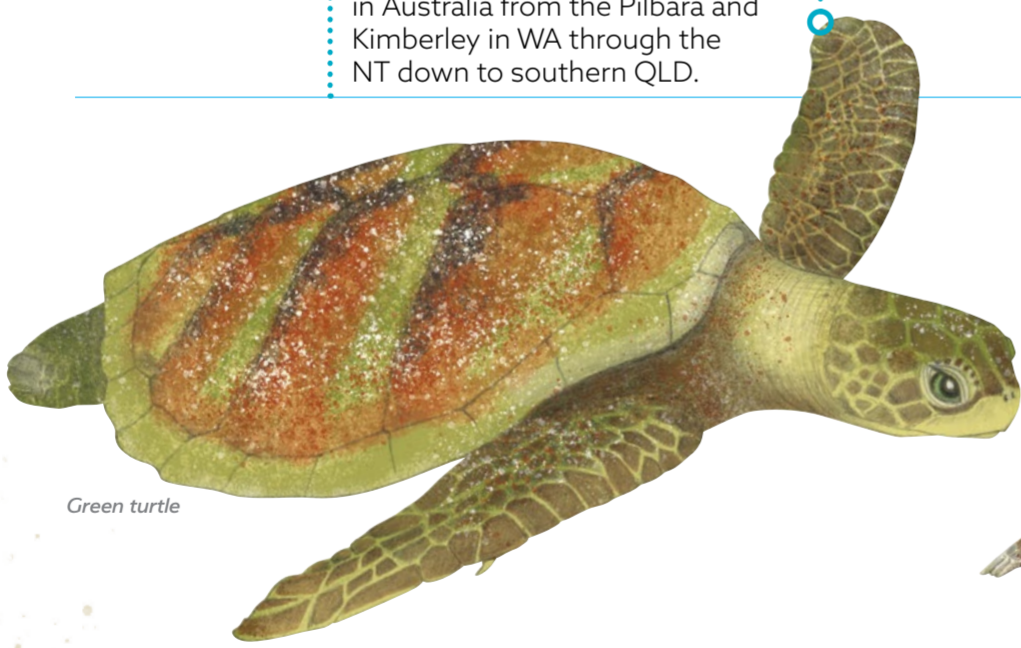
The five species of marine turtle that occur here (flatback, green, hawksbill, loggerhead and olive ridley) rely on the sandy beaches of the mainland and islands from Shark Bay north to the Kimberley to lay their eggs that are then incubated in the sand.



Marine turtles of Western Australia



	Flatback	Green	Hawkesbill	Loggerhead	Olive ridley
	<i>Natator depressus</i>	<i>Chelonia mydas</i>	<i>Eretmochelys imbricata</i>	<i>Caretta caretta</i>	<i>Lepidochelys olivacea</i>
Conservation status	Vulnerable	Vulnerable	Vulnerable	Endangered	Endangered
Weight	About 90kg	About 130 kg	About 60kg	About 100kg	About 40kg
Carapace length	88-98cm	>100cm	>80cm	80->100cm	70cm
Diet	Hatchlings: macro zooplankton Adults: sponges, soft corals, feather stars and sea pens	Hatchlings: crustaceans and seagrass Adults: seagrass, algae and mangroves	Hatchlings: plankton Adults: sponges, sea cucumbers, soft coral algae and seagrass	Hatchlings: algae, pelagic crustaceans and molluscs Adults: hard-shelled prey including crabs, shellfish and molluscs, occasionally jellyfish, fish and sea urchins	Gastropod molluscs and small crabs
Breeding – Reach sexual maturity	20-30 years	25-50 years	After 31 years	20-30 years	10 – 18 years
Clutch size	50 eggs	75-150 eggs	100-200 eggs	95-150 eggs	50-150 eggs
Incubation	50 days	48-70 days	52-74 days	56-80 days	50-80 days
Nesting season in WA	October-March	October-April	Nesting can occur all year round with peaks in October-January.	October-April	Nesting may occur all year.
Nesting habitat in WA	Mainland coast from Onslow north to the Kimberley, Pilbara islands, Dampier Archipelago and islands in the Kimberley.	Ningaloo coast, Pilbara islands, Dampier Archipelago and islands in the Kimberley.	Ningaloo coast, Pilbara islands and Dampier Archipelago.	Between Shark Bay and Ningaloo Coast and the Muiron Islands.	The Kimberley.
Habitat	Unlike other turtles there is no evidence that flatback turtle hatchlings have an oceanic dispersal phase (when they move into deeper water and spread out). They are thought to stay relatively close to the coast in surface waters of the continental shelf.	For the first 5-10 years green turtles are known to inhabit pelagic waters (open ocean) drifting along with rafts of Sargassum mats. As they mature they move from pelagic waters to benthic foraging habitats including tidal and subtidal reefs, seagrass beds and algal mats.	Juvenile hawksbills inhabit pelagic waters in their early life stages. Sub-adult and adult hawksbills can be found in tidal and sub-tidal reefs where they can be seen foraging for invertebrates and on seagrass.	Loggerheads can spend up to the first 15 years in pelagic waters, feeding mainly in the top 5m of water. Sub-adult and adult loggerheads move closer to the coast where they can be found foraging in coral reefs, seagrass beds, muddy bays and sand flats.	There is little information on olive ridley turtles' habitat preference. Research suggests that sub-adult and adults forage at depths ranging from a couple of meters to more than 100m.
Distribution	Flatbacks are Australia's only endemic marine turtle and have a restricted distribution compared to other species. They nest only in Australia from the Pilbara and Kimberley in WA through the NT down to southern QLD.	Greens occur in tropical and sub-tropical waters world-wide. WA is known to support one of the largest remaining populations.	Hawksbills occur in tropical, sub-tropical and temperate waters world-wide. WA's Dampier Archipelago has one of the largest populations of hawksbills in the Indo-Pacific region and possibly the world.	Loggerheads occur in tropical, sub-tropical and temperate waters world-wide.	Olive ridleys occur in tropical waters world-wide and are known to nest in more than 60 countries.

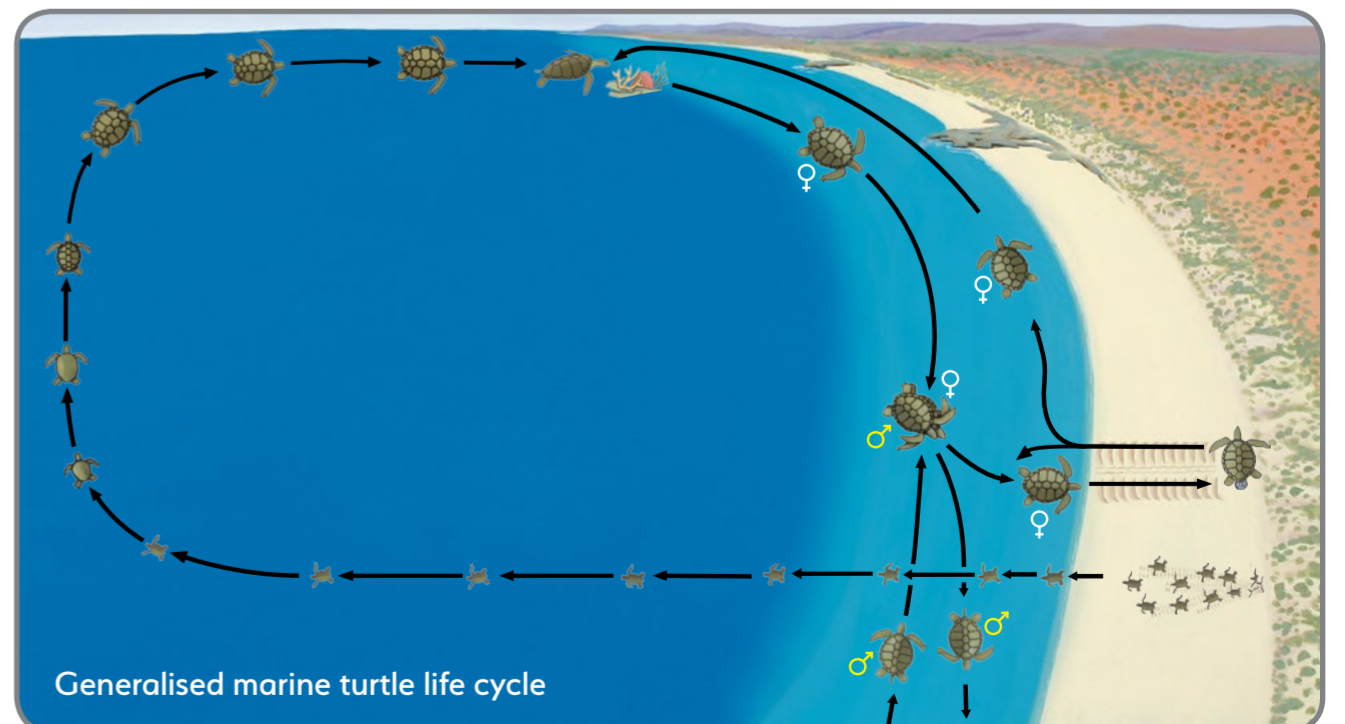


Turtle adaptations

- Front flippers: used for swimming and females use them to haul themselves up the beach and dig body pits when preparing to lay eggs.
- Back flippers: help steer through the water. During nesting females use them to carefully excavate sand to make the egg chamber and then to cover it after laying eggs.
- Hard shell is called a carapace. All marine turtles have a smooth rounded shape (hydrodynamic) allowing them to move easily through the water.
- To keep hydrated they drink seawater they have an enlarged tear duct that helps remove excess salt from their bodies.
- Marine turtles do not have teeth, the mouth and jaw are adapted according to their diet.
- Turtles are reptiles and are ectothermic (cold blooded) their body temperature changes depending on the temperature of their environment.

Life cycle

- Marine turtles are migratory and move between different habitats at different life stages. There is no known migration path between feeding, breeding and nesting grounds for the different species or management units (genetic stock). Individuals nesting in the same management unit may have migrated from different breeding and feeding grounds.
- Marine turtles need terrestrial and marine habitats to fulfil all life cycle stages. Females of all species show high fidelity to their natal beach (where they hatched) and return to the same area of beach once they reach sexual maturity, beginning the first of many mating migrations, often laying multiple clutches in a season.



Pressures facing threatened species

Disturbance

Disturbance to threatened species is one pressure we can all work towards minimising. Disturbance is any human action that interrupts an animal from breeding, feeding, or resting.

Human disturbance to any species can have serious impacts with severe consequences, such as failed breeding attempts, insufficient feeding, site abandonment, separation of adult and young, and stress impacting the survival of individual animals or populations.

Recreational activities that can lead to disturbance of species such as turtles and birds include: four-wheel driving on beaches, walking with dogs off leads, using lights and lighting campfires on or near nesting beaches at night.



Seabirds taking off after being disturbed. Photo - Tony Howard

Loss of habitat

Loss of habitat is occurring throughout the world due to the increase in industrial, residential and tourism developments.

In Australia many of these developments are in coastal areas where they encroach on critical habitats for many species, including shorebirds and seabirds, marine turtles, marine mammals and many other marine species. This often reduces suitable breeding, nesting and foraging habitats and forces animals to move to less favourable habitats.

In Australia habitat loss can be a result of urban and industrial coastal development which can restrict access to beaches for nesting turtles, shorebirds and seabirds.

Camping and vehicle traffic on beaches can increase disturbance and compact sand making the beaches unsuitable for nesting, roosting and feeding shorebirds, seabirds and marine turtles.

Increased vessel traffic in important habitats where humpback whales rest with calves can cause stress and lead to cows and calves being separated. Increased noise and risk of boat strike make the habitat unsuitable for whales to rest.



Coastal development. Photo - DBCA.

Marine debris

Marine debris poses a significant threat to all marine and coastal species around the world.

Discarded plastic, including bags, bottles and containers are often mistaken for food leading directly to choking, injury and starvation. Plastic doesn't digest and can block up the stomach and intestines making the animal feel full or unable to eat enough nutritious food to survive. Plastic items break down into tiny particles that can be ingested by small animals and the effects of the plastic are then amplified up the food chain.

Abandoned fishing gear including lines, nets and ropes can entangle animals, potentially leading to serious injury, starvation, choking and drowning.

Marine debris is everyone's responsibility, we can all work towards preventing harmful plastic items reaching our oceans.



Dolphin entangled in fishing line. Photo - Phil Coultard.

Invasive plant species

Invasive species (non-indigenous species) are plant species that have been introduced to an ecosystem outside of their natural range, their establishment can have serious consequences for the native species.

Invasive plant species also known as weeds are plant species not native to the area and they compete with native species for space, nutrients and sunlight. Weeds alter the natural environment, making habitats unsuitable for native species.

Weeds are excellent at surviving and reproducing in disturbed environments. They are easily spread via wind, waterways, birds, animals vehicles and people.



Kapok bush is an invasive plant species. Photo - DBCA

Introduced animal species

Introduced animal species are a serious threat to natural habitats including islands. Introduced predatory species such as fox, cats, black rats and house mice have been known to eradicate native mammals, birds and reptiles.

Species such as rabbits, sheep, goat, and donkeys degrade natural habitat through intense grazing and compete with native animals for resources including food and shelter.



Introduced predatory species like the fox put native wildlife at risk. Photo - DBCA

Fishing

Fishing can have social, cultural and economic benefits. However, if done unsustainably, it can be an additional pressure for many threatened species.

Some of the issues associated with different fishing methods include: overfishing (can deplete fish stocks reducing food supply for other species such as dolphins); catching non-target species (known as bycatch); illegal fishing; and damage to habitat.

Commercial fishing methods have improved over time to reduce bycatch and prawn trawl-nets are now fitted with Turtle Excluder Devices (TED) to reduce turtle bycatch.

Recreational fishers can play their part in sustainable fishing by obtaining appropriate licences and adhering to bag limits and size limits for certain species.



Sustainable fishing methods help minimise impacts on fish stocks. Photo - Tony Howard

Boat strikes

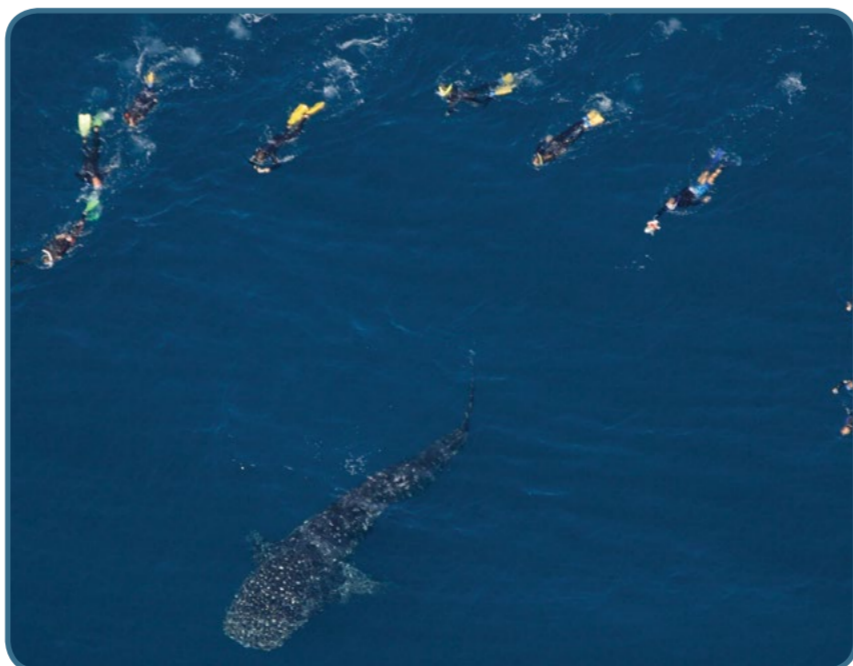
The collision with a hull or a vessel's propeller can be responsible for causing serious injury or death to dugongs, dolphins, whales and turtles, which are often found at the surface when coming up to breathe.



Humpback whale with a boat strike injury. Photo - John Totterdell/MIRG Australia.

Tourism

Wildlife viewing can be an educational and amazing experience for us but if done irresponsibly it can have negative effects on individual animals, including: displacement from habitat; stress; separation of adult and young; and interrupted feeding, breeding and resting attempts.



Swimmers following Whale shark interaction protocol minimises impact on the whale shark. Photo - Cameron Skirling

Recreation

Disturbance from recreational activities is increasingly putting migratory and resident shorebirds and seabirds at risk. Activities carried out in feeding, roosting and nesting areas, such as four-wheel driving, boating too close to shore, jetskiing, windsurfing, kitesurfing and camping can have significant impacts on shorebirds and seabirds.



Four-wheel driving along the beach close to a red-capped plover nest puts the success of the eggs hatching at risk. Photo - Felicity Kelly/DBCA