

Poster: Molluscs

Region

North Coast, Gascoyne Coast, West Coast, South Coast, Indian Ocean Territories

Summary

Soft bodies, hard shells. Molluscs, one of the largest groups in the animal kingdom, have soft bodies and generally have a hard shell for protection - so they are often called 'shellfish'. Most molluscs are found in the ocean, but many can be found in freshwater and on land.

molluscs

SOFT BODIES, HARD SHELLS

SOFT-BODIED INVERTEBRATES

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Worldwide there are about 100,000 species of marine molluscs. Western Australian waters are home to over 2,000 species of mollusc – with nearly 10% of these found only along our coast.

Armour-plated

Meaning “house of plates”, the Polyplacophora (or chiton) are adapted for life on rocky surfaces in the intertidal zone. They are oval in shape and have eight rows of sclerotized plates (which look like armour) that overlap to form the shell. A tough, leathy tissue called the girdle surrounds the shell, clinging to rocks with a broad muscular foot. They rely on a foot to protect themselves if dislodged. With no eyes or tentacles, these nocturnal vegetarians use their radula to scrape algae off the rocks at night.

Like an elephant's trunk

These marine molluscs are known as limpets or lusk shells as the shell is lusk-shaped, but unlike most molluscs the shell is open at both ends. Scooped inwards, “tracheal feet” refer to the muscular foot of the animal which anchors the larger end of the shell into rock.

Snails and slugs

Gastropoda are the largest and most diverse class of molluscs, and include such animals as lark shells, cone shells, turban shells, cowrie shells, limpets, periwinkles and abalone – just to name a few. Meaning “stomach foot”, gastropods are sea snails – with a large muscular foot attached to a body that is coiled within a single spiralled shell. Most have gills and a well-developed head with eyes and tentacles. Vegetarian gastropods use their radula to scrape up algae, while the radula of carnivorous gastropods is adapted to bite or drill holes in the shells of prey.

Cross section of a basic mollusc

mantle
tentacle
mouth
foot
gill

Mollusc body plan

Although molluscs take many shapes and forms, they share the same basic body plan: a head, a single muscular “foot” on which they move about, and a mass of internal organs. Most have hard shells (although these may be reduced, incorporated into the body or in some species absent altogether) and a mantle – a fleshy membrane that covers the body and secretes the shell. Most molluscs also have a rasping ribbon-like tongue, called a “radula”, which is used to tear up food and draw it into the mouth.

There are seven different classes of molluscs: **Gastropoda** (snails and slugs); **Bivalvia** (clams, oysters, scallops and mussels); **Cephalopoda** (squid, cuttlefish and octopus); **Polyplocophora** (chitons); **Scaphopoda** (limp or lusk shells); **Amphiplocophora** (worm-like molluscs); and **Monoplacophora** (long water limpet-like species).

Beach detective

Molluscs are common in rock pools and a large variety of empty mollusc shells are found washed up on beaches. It's fun to try and identify what animals these shells came from, but always be careful – even empty shells can provide homes for other marine animals like hermit crabs, octopus and small fish.

A miniature ram?

Small spiral structures that look like a ram's horn are very common along Western Australian beaches. These are the internal shells of *Spirula* nautilus – a deep-sea relative of the cuttlefish.

Slippery little suckers

Look out for dark blobs of slime that wash up on the beach at certain times of the year. These are actually sea hares – which are gastropods, closely related to nudibranchs. When threatened, these slug-like animals can excrete toxic purple ink that can irritate the eyes and may even kill a dog if eaten.

Left high and dry

Intertidal gastropods are highly adapted for living in extreme conditions where they are exposed to the atmosphere or to strong waves and currents. They resist water loss at low tide by retreating into their shells and keeping them tightly sealed (such as whelks and turban shells) or by clamping their shells firmly to the rocks (like mussels and limpets). Gastropod shells range from being thick and ridged – which helps the animal survive the pounding waves, through to low and flat – a shape that offers less resistance to waves.

Smallest class of molluscs

Aplousobranchia are worm-like marine molluscs that mostly live in deep water. Meaning “house of the shells”, the mantle does not produce a shell but is embedded with hard calcareous spicules (skeletal like bones), possibly to deter predators. The foot is either reduced or completely absent.

Smart, swift and secretive

Squid, octopus, cuttlefish and nautilus belong to the class of molluscs known as **cephalopods**, meaning “head foot”, as the muscular foot common to molluscs has become suckered tentacles that appear to be joined to the head.

The brain, mollusc shell is internal and highly modified, or in the case of octopus, absent altogether. Cephalopods are the most intelligent of all invertebrates, with an advanced nervous system, a well-developed head and complex eyes.

Many cephalopods have mastered the art of camouflage, changing colour rapidly to blend in with their surroundings. With the exception of the nautilus, all cephalopods have a sac, called a siphon, that can discharge a cloud of ink to confuse and escape from predators.

They are fast moving active hunters with a hard beak (like a bird) used for biting, poisonous salivary glands that paralyse and kill their prey, and a radula that rasps their food to pieces.

Shaped like an ear

You may come across ear-shaped shells that are rough on the outside and smooth and shiny on the inside, with a row of small holes near the edge of the shell. These are from abalone, which are common to the rocky reefs around Perth. The hard, rough outer shell protects the animal from predators while the polished silvery-pearl inner shell protects their soft flesh from damage.

Guess the predator

You can often find crinkly cuttlebone washed up onto the beach – these are the internal shells of cuttlefish. Some cuttlebones have teeth marks on them that may indicate what killed and ate them – the peg-like teeth of a octopus, vicious and scurrying maw of a sea lion, sharp teeth of a shark or large fish, or even the peck marks of birds.

One shell or two?

The name bivalve literally means “two shells”. A shell with two halves, joined by a hinge, encloses the fattest body of these molluscs. Bivalves, the second largest class of molluscs, have no head and therefore no radula, so generally filter food particles from the water.

They tend to be sedentary, either attaching themselves to rocks or burrowing into sand. Some clams however can move about with their foot and siphons dug their shells together to produce a jet of water and draw it into the mouth.

Beware of pretty shells!

Cone shells are very attractive but may also be very dangerous. The cone shell uses hollow barbed shafts, like harpoons, to inject venom and paralyse its prey. This venom can also cause paralysis and breathing problems in humans, and even death.

Where are those blue rings?

Normally well camouflaged, this spiral but extremely venomous octopus develops bright blue rings on its skin when threatened or disturbed. It kills its prey – small crabs and shellfish – with a toxin injected with their bite, which can cause breathing problems and paralysis in humans. So be very careful when handling dead shells, empty cans and bottles, as these are great places for this little critter to hide!

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