

# Poster: Seacrets to sex and survival

## WA Curriculum

K-10 Science

## Region

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

## Summary

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# Secrets to Sex and Survival

For a species to survive, it must reproduce successfully and in the ocean, as on land, this is not always easy. Individual animals show an enormous variety of strategies to ensure their offspring survive to adulthood to reproduce themselves. The urge to reproduce is so strong that in some species, such as squid, the parents will die after they have spawned. Mating can be beautiful – seahorses court with each other for days on end in an elaborate 'dance'. For some species, such as the yellow-striped leatherjacket, the hard work is worth it as they pair up for life.



## Safeguarding offspring

Marine creatures demonstrate an immense range of reproductive behaviour to maximise the chances of their offspring surviving. This can range from travelling many thousands of kilometres to reach waters suitable for swimming to sophisticated nest building followed by parental care. In most fish species, the female lays thousands or even millions of small eggs into the water, quickly followed by the males who release their 'milt' or sperm. This is called 'external fertilisation' as fertilisation of the eggs occurs outside of the body. In this case, energy is not expended in direct parental care but in producing an immense number of eggs to guarantee that at least some survive.



## Sex change

Fish display great variety in their reproduction. Some are 'hermaphroditic' with separate male and female partners; others are 'hermaphrodites' – having both male and female sexual organs and producing both eggs and sperm (either at the same time or at different times) and mating with other hermaphroditic fish. Changing sex is quite usual for many species, particularly those that inhabit reefs. Species of wrasse, parrotfish and some cods (such as western blue groper and halibut) are protogynous hermaphrodites – they start life as a female and some change into a male. Serranids do this in reverse – starting life as males then turning into females. These types of fish are called 'protandrous hermaphrodites'. Some fish (such as the broad-barred goby) just can't decide whether they want to be male or female, and can change sex from female to male and vice versa, depending upon the sex of their prospective partner! These fish are called 'simultaneous hermaphrodites'.



## Looking after the kids

In the aquatic realm, mum or dad are more likely to eat you than look after you, though there are some exceptions:

**MIL MUM**  
Seahorse males are stay at home dads. After courtship, the female will deposit her eggs in his pouch. He will then fertilise the eggs and look after them until they are ready to hatch. He might be lucky to receive a short visit from his female mate to see how things are going.

**SAFE AND SECURE**  
Female Port Jackson sharks lay about 15 cone-shaped eggs, which are initially very hard. The mother picks up each egg in her mouth then wedges it into a rock crevice

to keep it safe, as the eggs can take up to 12 months to hatch.

**GUARD DAD**  
Male gobies and catfish will guard their nest of eggs and continuously fan the eggs to keep them well oxygenated.

**LIVE PARENTS**  
Female crustaceans (such as lobsters, crayfish, crabs and prawns) often carry their fertilised eggs underneath their tails. The eggs develop and 'hatch' until they are ready to hatch and release. With mackerel, the hatched larvae actually hang under the mother's tail, clinging to the hairs.



## Timing is everything

Most marine organisms have a distinct breeding period of weeks or months. Species have cues such as temperature, salinity, moon phases, tides and currents that let them know when the time is right to spawn.

In the case of coral at Ningaloo Reef, their spawning is exceptionally coordinated. The phenomenon occurs at night, about seven to nine days after the full moon in March and April. Other species may follow the coral's lead and spawn at the same time, giving the eggs and larvae a greater chance to slip through the hungry predators (for example, the whale shark) attracted to the event.

If abalone spawn when the ocean is calm, the larvae are poorly distributed. The drifting will end up 'settling' on the same reef platform and crowding the amount of available space, resulting in smaller abalone and perhaps too much algae being consumed.

## Finding the opposite sex

Organisms that do not 'aggregate' (gather in one area) to spawn must use every trick in the book to impress the opposite sex. Males need to pull out all stops to impress the female, otherwise they miss out.

**BIGGER IS BETTER**  
Male Western Australian duffish have an elongated filament on their dorsal fin. The longer the filament, the greater success in finding females and keeping other males at bay. Male crustaceans have larger claws than females, which they use to pick up and turn over the female to complete their mating.

**PUSHY MALES**  
Older pink-wapper males grow fleshy bumps on the snout and it is thought that the males use these bumps to nudge females at breeding time, possibly to stimulate the release of eggs.

**SHOWING OFF**  
Male seahorses will pump water into their egg pouch, causing it to expand, to show the female how big and empty the pouch is.

**PRETTY BOYS**  
Males use colouring and markings to impress females, who are usually quite dull in colour.

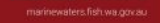
**ARMOUR**  
Leatherjackets use a set of spines in a side-sweeping maneuver to fight other leatherjackets.

**HOME SWEET HOME**  
Male damselfish will establish a territory over a reef by trimming algae and coral to enclose a female to his area.

**SMALL AND SNEAKY**  
Small, agile male damselfish can also dash in and deposit sperm while a larger, more dominant male is trying to court a female.



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