



Biodiversity

Young Marine Champion Training Module



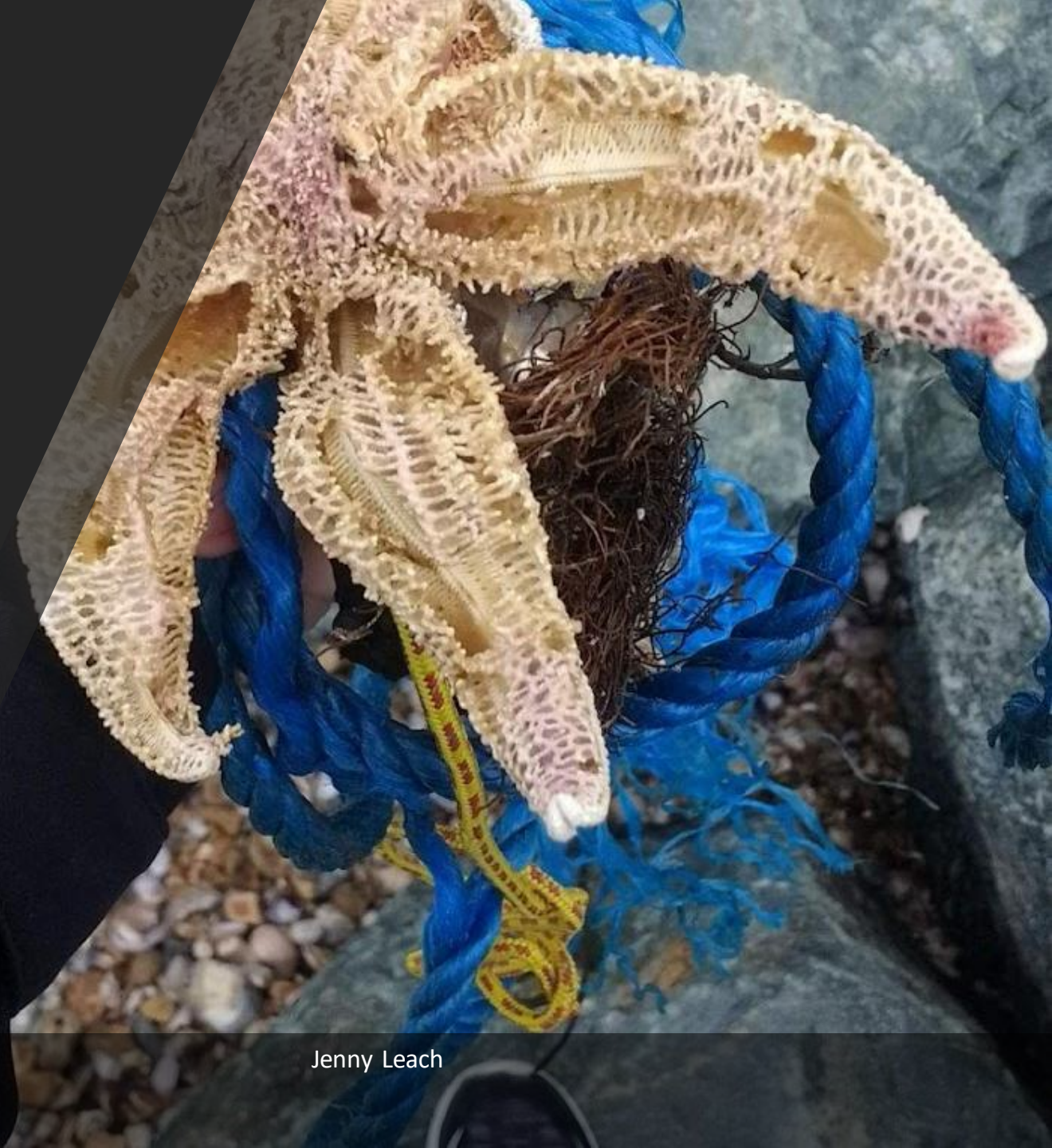
What is 'Biodiversity'?

- The word 'biodiversity' comes from two words - 'Biological' and 'diversity'. It means the variety of life at all levels and most of the time it's a case of 'the more the merrier'!
- We may use the word to talk about a particular habitat such as a beach or area of sea, or to talk about the biodiversity of the whole planet.
- Biodiversity is often categorized into 3 levels- genetic diversity, species diversity and ecosystem diversity. These three levels work together to create the complexity of life on Earth.



Why is Biodiversity important?

- **Life Support**— biodiversity provides functioning ecosystems that supply oxygen, clean water, pollination of plants, pest control, wastewater treatment and many ecosystem services that we need to survive



Jenny Leach

Why is Biodiversity important?

- **Biodiversity is an essential part of the solution to climate change** – by protecting biodiversity and creating resilient ecosystems, nature can help us reduce our emissions by 30% by 2030.
- Some Ecosystems like mangroves, seagrass beds and saltmarsh are incredibly efficient at storing Carbon – meaning that any stored carbon is no longer contributing to climate change by being in our atmosphere!



Why is biodiversity important to the Solent?

- The Solent has many different types of habitats, with many different species of plant and animal. Its rich in Biodiversity!
- We need to keep this biodiversity strong because it's flora and fauna work together keeping the ecosystem balanced and resilient, particularly to climate change challenges.
- If just one species was suddenly removed, replaced or declined it can have huge implications on the local environment- It can change the relationships between the species and habitats, throwing things out of balance and causing further harm in the forms of species loss, habitat loss, disease, lack of predator/prey interactions. Etc.





What are the different types of Marine Species?

- Marine Mammals and Sea Turtles
- Anemones and Corals
- Jellyfish
- Worms
- Sea Snails and Sea Slugs
- Bivalves
- Squids, Octopuses and Cuttlefish
- Crustaceans
- Starfish and Sea Urchins
- Fish, Sharks, Skates and Rays
- Seaweeds and Seagrass
- Sponges and Sea Squirts



Marine mammals

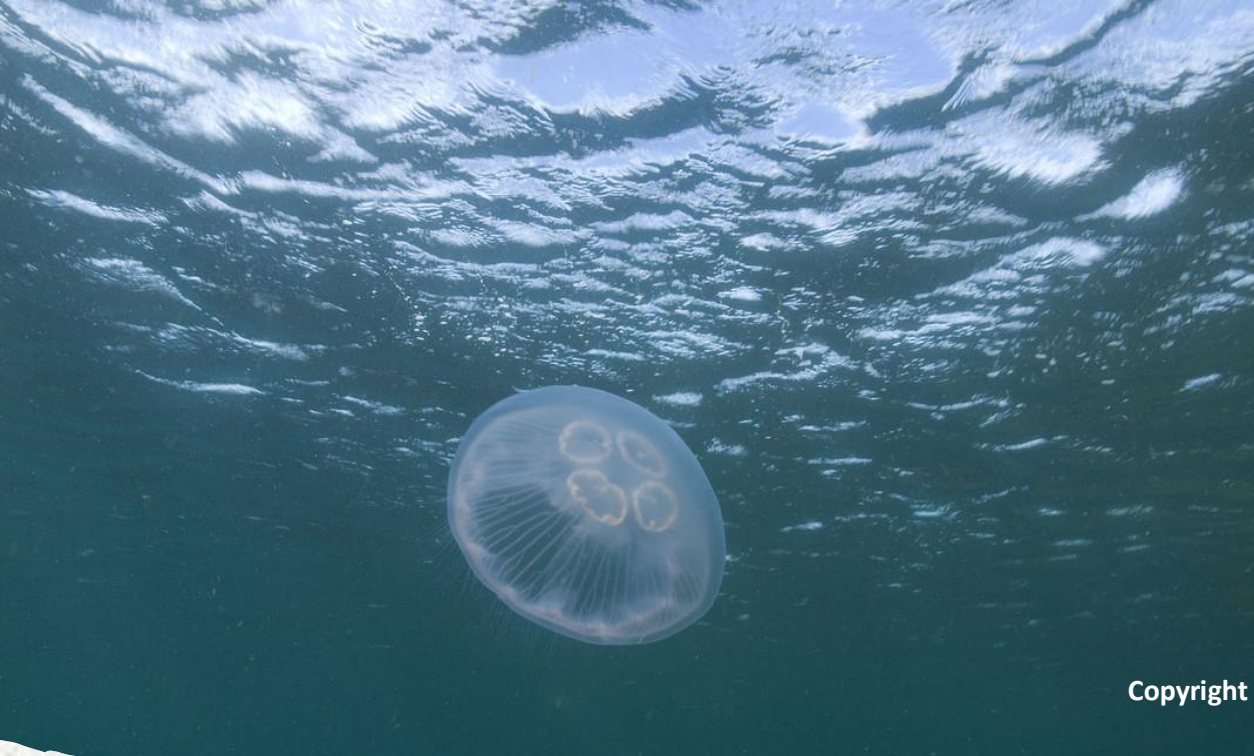
In the Solent we get [cetaceans](#) (whales, dolphins, and porpoises), [pinnipeds](#) (seals) visiting or living here. You are most likely to see a [common seal](#) or [Harbour porpoise](#) in these waters. Click on the links to learn more.



Anemones

- [Anemones](#) are related to corals and jellyfish. They use stinging cells along their tentacles to paralyze their plankton prey.
- It is common to see [Snake-locks anemone](#), [Strawberry anemones](#) and [Beadlet anemones](#) while rock pooling. Click on the links to learn more.





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Jellyfish

[Jellyfish](#) are invertebrates and travel on ocean currents. They feed by trailing their tentacles in the water waiting to entangle prey animals. These tentacles have specialized stinging cells along them to paralyze the prey for digestion. Therefore we recommend not to touch these animals. We see many species of jellyfish on our coast i.e. [Compass jellies](#) and [Moon Jellies](#). Click on the link to learn more.



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Worms

Evidence of marine [worms](#) living on our muddy shores can be found on muddy and sandy intertidal areas. They provide valuable food for migrating birds and other animals. Their burrowing and tunnelling help oxygenate our sediments contributing in a big way to maintaining a healthy ecosystem. Some marine worms are incredibly eye catching like the group of peacock worms (middle photo). The [sand mason](#) worm is easy to find on the beaches. Click on the links to know more.



Sea Snails and Sea Slugs

Sea Snails and Sea Slugs - also known as [Nudibranchs](#), are both Molluscs and are related to the garden snail. Sea snails can be vegetarian, feeding on algae and seaweed like [Purple Topshells](#), [Painted Topshell](#), [Limpets](#) and [Edible Periwinkle](#). Some are carnivorous like the [Netted Dogwhelk](#), [Common Whelk](#) and [Dog Whelk](#) as they possess a modified tooth similar to a drill. They use this tooth to create holes in their prey's shells and then consume them. Nudibranchs are like slugs you find in your garden, but they have an incredible defense mechanism against predation – stinging cells on their back! Some are very beautiful colors and shapes. [Sea hares](#) are common in our Solent. Click on the links to learn more.



Credit Jon Oakley 2009 /HIWWT

Bivalves

[Bivalves](#) are once again related to your garden snail as they are a mollusc. They have an external shell covering that has two parts joined together by a hinge. Bivalves provide many important ecosystem services like filtering water and food source for other animals, including ourselves. Here in the Solent we get many different bivalves such as the now rare [Native oyster](#), [Common Cockle](#) and [Piddocks](#).

Squids, Octopuses and Cuttlefish

Surprising this [group of animals](#) are also molluscs! They are highly intelligent and have amazing camouflage abilities. They are masters at camouflage thanks to their exceptional control over muscles that surround skin sacs containing colour pigments. Depending on how the muscle is relaxed or constricted depends how much pigment is showing on the surface. [Cuttlefish](#) bones are a common sight washing up our shores here. Cuttlefish like to lay their eggs in our Solent's seagrass beds. Click the links to learn more.

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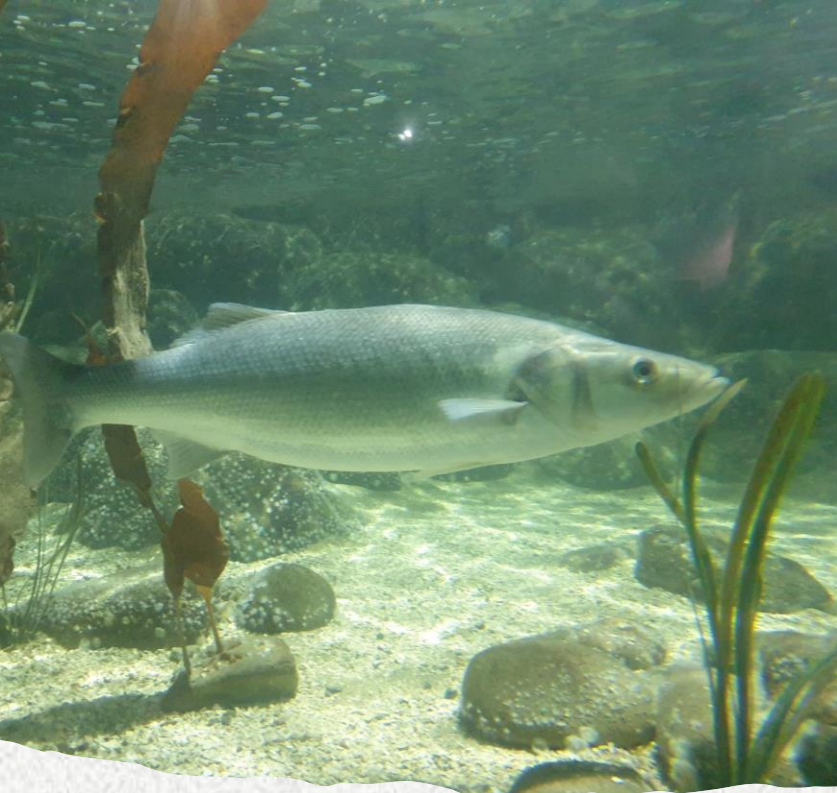
Crustaceans

[Crustaceans](#) are a diverse group of invertebrates with exoskeletons. They include crabs, lobster, barnacles, prawns and many more. Here in the Solent you are likely to see [Acorn barnacles](#), [Common Green Shore Crab](#) and the [Velvet Swimming Crab](#). Click the links to discover more.



Starfish and Urchins

- [Starfish and Urchins](#) are known as echinoderms – which means spiny skin! They have star like appearance and are invertebrates with a calcium carbonate skin / skeleton. At very low spring tides and after storms you are likely to see [Common Starfish](#) washed up on the beach. When rock pooling you can sometimes find [Green Sea Urchins](#) hiding beneath large boulders. Click the links to discover more.



Fish, Sharks, Skates and Rays

[Fish, sharks, Skates and Rays](#) are incredibly diverse group of animals that come in a variety of forms. They are a food source for other animals, as well as ourselves. A variety of them act as Top predators keeping our ecosystems in balance. Here in the Solent, we have [Seabass](#), [Short snouted seahorses](#), visiting [Thresher Sharks](#), [Small spotted catsharks](#), [Cuckoo wrasse](#) and many more species! Click the links to find out more.



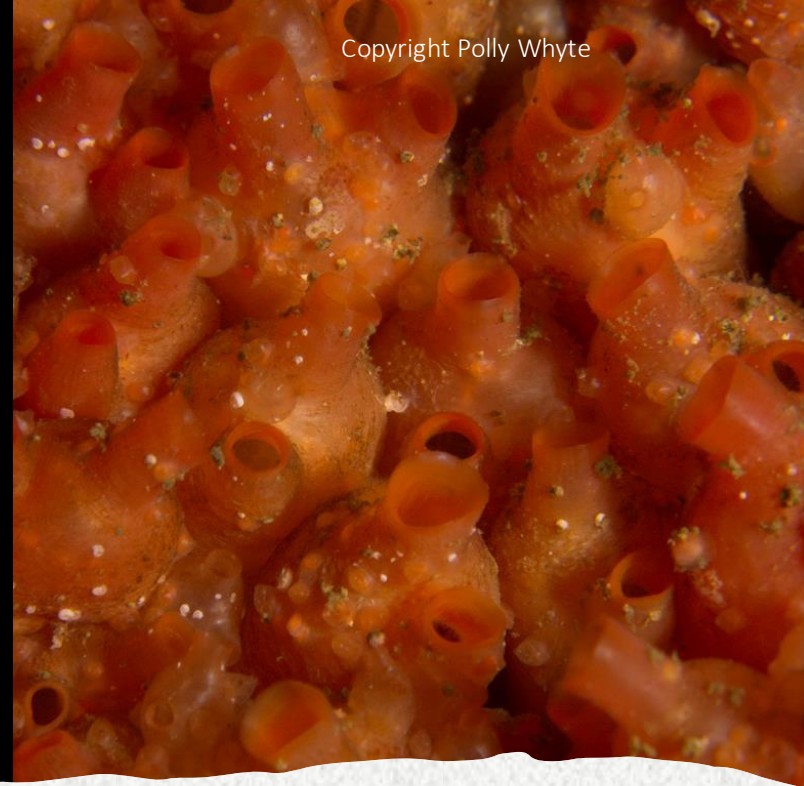
Seaweeds and Seagrass

[Seaweeds and Seagrass](#) provide crucial habitats for a wide range of species in our Solent. [Seagrass](#) produce oxygen and are excellent at storing carbon in the seabed as well as ideal nurseries for species like Seahorses, Seabass and Cuttlefish. We even get rare algae species like [Peacock's tail algae](#).

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Sponges and Sea Squirts

Sponges and Sea Squirts are curious organisms and can be similar in appearance. They are in the group called Chordata and usually found growing on rocks. They filter feed particles out of the water column by intaking water through tiny pores and expelling them through larger central openings, filtering the water as they do so.



What are the main habitats in the Solent?

- click on the links to explore further!

- **MARINE:**

- [Subtidal reefs](#)
- [Muddy Gravel beds](#)
- [Kelp Beds and Forests](#)
- [Seagrass meadows](#)

- **COASTAL:**

- [Sublittoral sands](#)
- [Saltmarsh](#)
- [Mudflats](#)
- [Maritime Cliffs](#)
- [Intertidal reefs](#)
- [Coastal Grazing marsh](#)
- [Vegetated shingle](#)
- [Saline lagoons](#)
- [Sand dunes](#)

'Chichester Harbour is the seventh largest expanse of saltmarsh in Great Britain, but like many natural environments, faces both manmade and natural threats.'

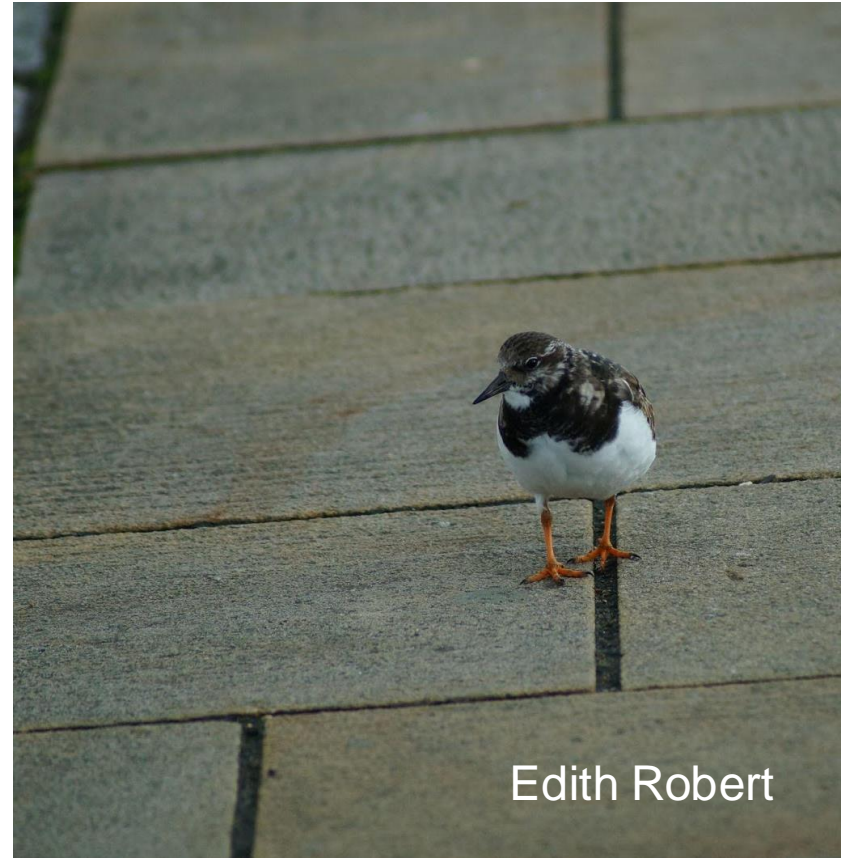
- *"Mudflats might not sound exciting but are actually a biological powerhouse, a key habitat providing essential services for countless species, supporting biodiversity and supporting us. As mudflats build up, they capture all manner of organic material from the water column which feeds bacteria, fungi and microscopic algae that teem within the mud. Millions of small invertebrates burrow into the mud or forage on its surface, some of these animals, for example sea bass, clams and oysters, can even feed us!"*
- *The food produced by mudflats goes directly to feeding the many wading and other bird species which rely on them such as Brent Geese, Godwit and Plover species. Mudflats also have a vital role in storing carbon and processing excessive organic material, sewage and nitrate fertilisers in agricultural runoff, helping to improve the water quality in our stressed estuaries and the wider Solent."*
- Marine Specialist Tim Ferrero, Hants & Wight Wildlife Trust

What can you do to help our biodiversity?

- This link goes to document from the European commission with 52 great tips on how to help your local biodiversity!
- https://ec.europa.eu/environment/nature/info/pubs/docs/brochures/biodiversity_tips/en.pdf

ACTIVITY: Poster!

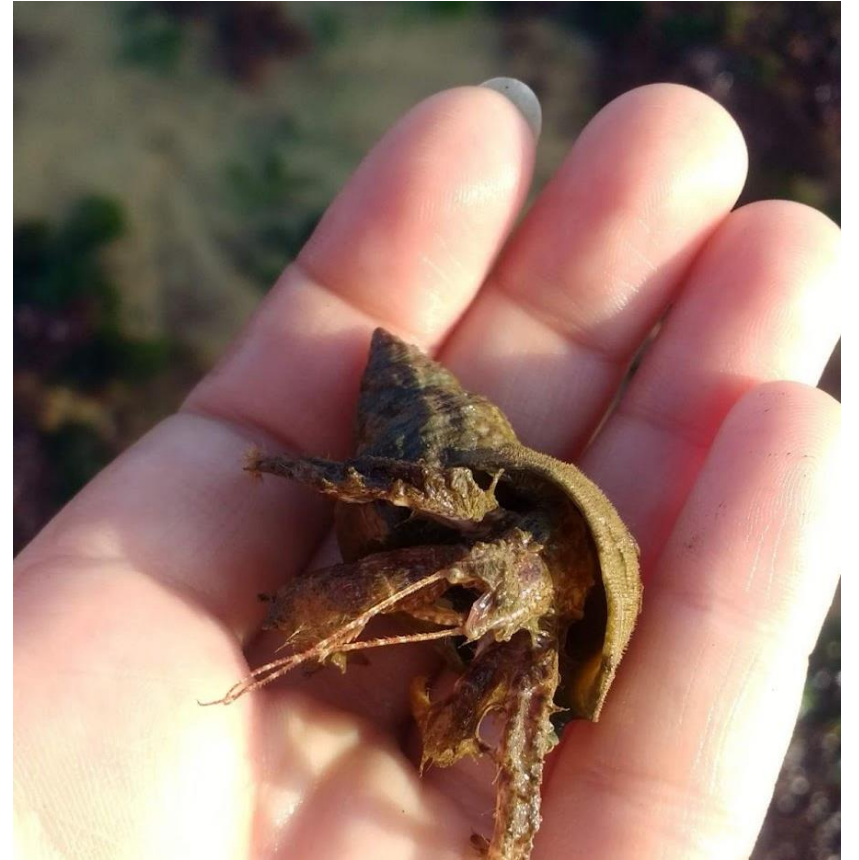
- What is your favorite marine species or habitat in the Solent?
- Include a drawing you have done or a photo you have taken and write 3 facts about it. If you want you can include the website link <https://www.hiwwt.org.uk/secrets-of-the-solent> and the hashtags #SecretsOfTheSolent and #NationalLotteryHeritageFund at the bottom so people can look it up online.
- Put the poster up in your own home to show your friends and family when they visit or you could ask your school or club to display it for you!
- Why not use it as a conversation starter to get people talking?!



Edith Robert

ACTIVITY: Crossword!

Why not download our crossword and give it a try by yourself, or with friends/family!



References and further reading:

- <https://www.hiwwt.org.uk/habitats>
- <https://www.hiwwt.org.uk/wildlife-explorer>
- <https://www.hiwwt.org.uk/secrets-of-the-solent>
- <https://www.nhm.ac.uk/discover/nudibranchs-psychedelic-thieves-of-the-sea.html>
- <https://www.wwf.org.uk/success-stories/seagrass-restoration-project>
- <https://www.nhm.ac.uk/discover/quick-questions/how-do-oysters-make-pearls.html>
- <https://www.mcsuk.org/goodfishguide/>
- <https://www.nationaltrust.org.uk/features/no-37-explore-the-wonders-of-a-rock-pool>
- https://www.wildlifetrusts.org/sites/default/files/2018-07/the_way_back_to_living_seas_the_wildlife_trusts.pdf
- <https://www.conservation.org/blog/why-is-biodiversity-important>
- http://www.solentforum.org/publications/key_publications/habitat_info_pack/