



The Sea Cucumber and the Pearl Fish

The Sea Cucumber lineage

Echinodermata

[Phylum of radially symmetrical hedgehog-skinned animals]

Echinozoa

[Subphylum of limbless echinoderms]

Holothuroidea

[Class of leathery-skinned, elongated marine animals]
There are more than 1700 species of Sea Cucumbers belonging to five orders with each order having different characters.

Cool Cucumbers of the Sea!

Sea Cucumbers are like the millipedes of the sea. They have a very important role in keeping the marine world alive! They live on the sandy or rocky bottom of the sea in the shallow seas and in deep oceans. They move slowly on the sand and feed on decaying organic matter. They constantly excrete pellets of nutritious waste keeping the marine waters healthy and providing fertilizers for better plant growth. Sea Cucumbers are the superheroes of the sea playing a vital role in recycling and keeping the sea bed clean.

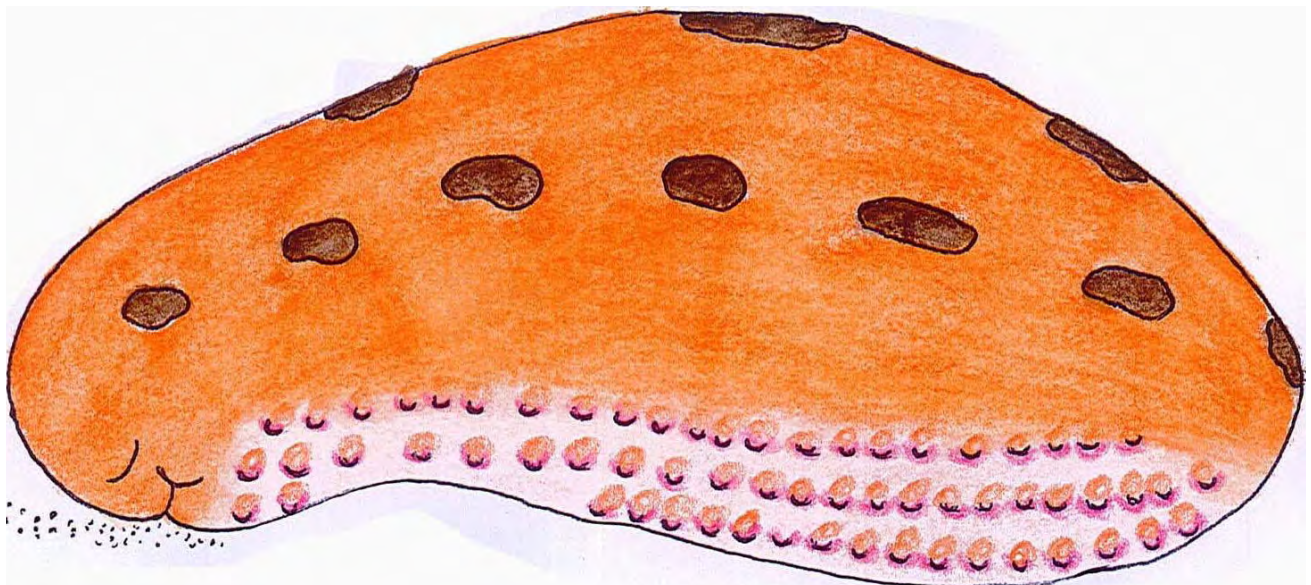


Sea Cucumbers are squishy fleshy recyclers of the sea. Some of them can grow up to 2 feet (24 inches) ... yes, twice the length of a foot scale! But don't be misled by their dull appearance or their slow movement, they have very strange and funky habits that few other animals match up to.

To start with Sea Cucumbers breathe from their bum (anus)!! Okay, yes ... that does sound very strange. So how do they do that funky thing? They have tree-like structures branching out inside them, which they use to extract oxygen from the sea water. Now, these trees are extremely important for the sea cucumber, so much so that when they are threatened they sometimes squirt out part of these structures called Cuvierian tubules to deter predators.

Holothuria atra or Lollyfish photographed by B. Ravichandran in Rameshwaram.

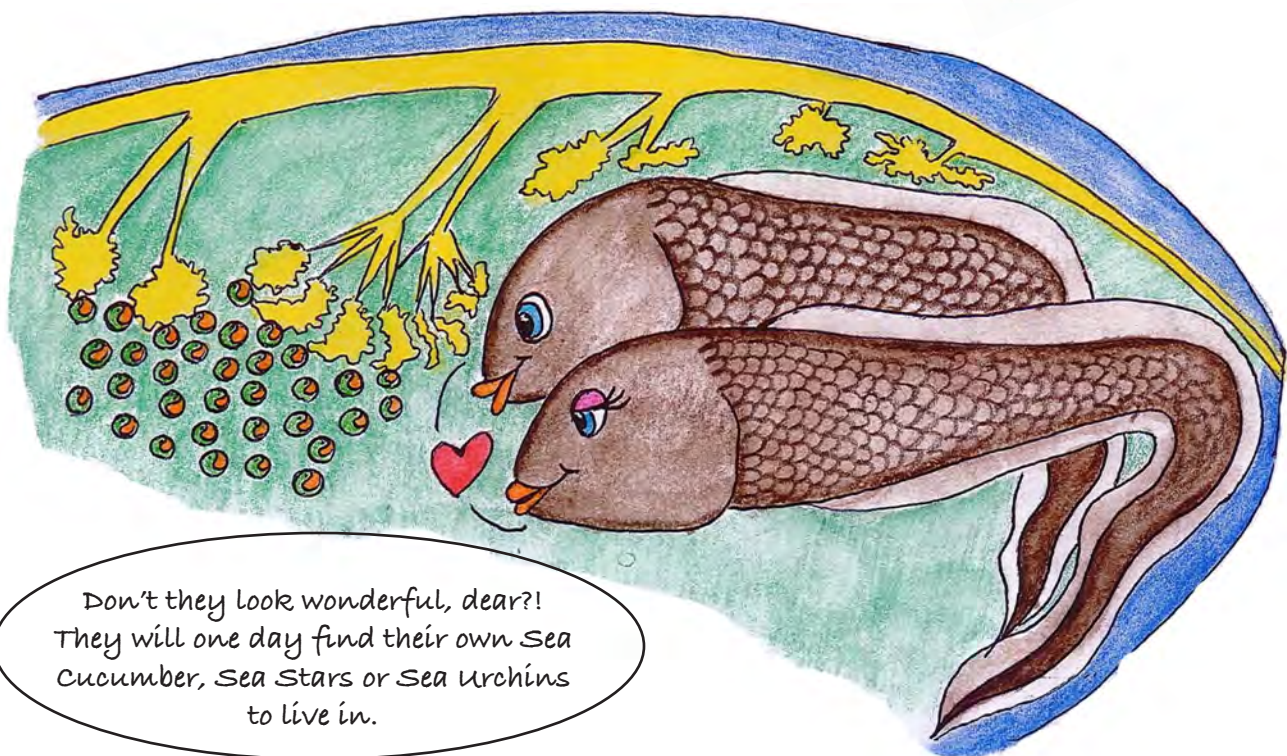
And now if you are wondering how does it survive if it cant breathe; it is not like you can throw up your lung and still breathe. This is where the next trick of the phylum Echinodermata (to which Sea Cucumbers, star fishes and sea urchins belong) comes in. These animals can regenerate certain parts of the body. So once the Sea Cucumber throws up the Cuvierian tubules it just simply regrows them ... how cool is that?! It is like Wolverine of the X-Men fame, but of the ocean, without the claws of course.



But just like Superman is weakened by kryptonite, Sea Cucumbers have an equally alien looking fish who can get it into sticky situations. This is where the Pearl Fish enters the story, but before that lets get a short introduction of this new character. The Pearl Fish inhabits various marine invertebrates (animals without a backbone) such as sea stars and sea urchins, and some of these fishes can grow up to 16cm long. And of all the host species, the Sea Cucumber is a favourite. In fact, the Pearl Fish lives in the bum of the Sea Cucumber! Yes, I know you are thinking that this is a whole new level of invasion of privacy, but apparently some Pearl Fish species have a give-and-take, or, commensal relationship with their host, the Sea Cucumber. That means, sure they live up their bum but they do not cause any inconvenience to the Sea Cucumber. How convenient! But not all Pearl Fish are such kind guests; some species are parasitic and eat the insides of the Sea Cucumber feeding on their tissues and organs. Now, talk about a difficult house guest!

So, why do these Pearl Fish pick such prime real estate? Well to start with, Pearl Fish choose this sticky spot for a primary reason — safety from predators. But it is not restricted only to safety, on occasion more than one Pearl Fish has been found living inside a Sea Cucumber. And there are records of Pearl Fishes using Sea Cucumbers for reproduction. These Pearl Fish eggs are then released through the water expelled out by the Sea Cucumbers during breathing. The current carries these eggs far and wide after which the little Pearl Fish hatch out and look for the next available hot property.

Here we have a Sea Cucumber munching on sand. Look what happens inside some of them. A pair of Pearl Fish admiring their eggs inside a Sea Cucumber.



So how do Sea Cucumbers tackle this fishy problem? To start with, some species have teeth in their anus to keep out the Pearl Fish mafia. Sea Cucumbers also shut their anus, but that is like you holding your nose closed while breathing. Eventually, when they resume breathing the Pearl Fish easily slips in tail first one breath at a time. In another last ditch attempt Sea Cucumbers also produce poisons called saponins that can destroy fish gills. But the Pearl Fish are a step ahead on that one — they produce a mucus that does not allow the saponin to impact their gills.

The Sea Cucumber and Pearl Fish have been going through this cycle of life for millions of years. But today Sea Cucumbers are harvested by humans as medicinal and food, and their numbers have reduced to very low numbers in the wild. Sea Cucumbers are the recyclers of the ocean and homes of Pearl Fish; without them the ocean would have lost one of its “ultra cool” nutrient recyclers causing an imbalance. So, the next time you think of eating an exotic seafood meal think about where it came from, who lived in it and where it is headed as a species.



Text and illustrations by Priyanka Iyer

priyanka@zooreach.org