



# OCEAN CREATURES FACT SHEET

Dive in to an environment like no other — a hydrothermal vent. Meet a trio of sea creatures and their small but mighty microscopic sidekicks.



## SEA ANEMONE

*Ostiactis pearseae* in the East Pacific Rise.

Sea anemones are like sneaky flowers. They take in food through an opening at the center of their wiggly appendages and release waste from the same spot. Their sidekicks, or symbionts, are microbes that live within their tissues and provide important nutrients. In turn, the microbes have a place to live.



## YETI CRAB

*Kiwa hirsuta* in the Pacific Antarctic Ridge.

Yeti crabs are the dancing farmers of the deep sea. However, instead of growing crops (or leaving behind mythical footprints), they appear to do a claw-waving dance to nourish specialized bacteria that cling to the “hairs” on their claws. Then, they scrape the bacteria into their mouths for vital nutrition.



## TUBE WORM

*Riftia pachyptila* in the Galápagos Rift.

Tube worms may be the heaviest (and most similar looking to lipstick) worms on the planet. They host microbes inside their bodies that provide them with all the food they need. Tube worms protect themselves and their microbes by quickly retracting their red, feathery gill-like filaments whenever a potential predator sneaks by.



### The phylum, or way to group organisms with similar structures and evolutionary history

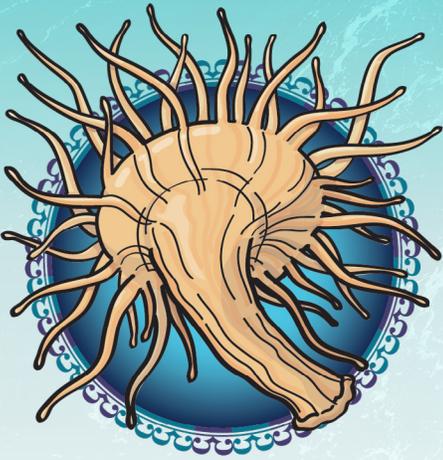
- ▶ Sea anemones belong to the phylum Cnidaria, along with jellies and corals.
- ▶ Yeti crabs belong to the phylum Arthropoda, along with spiders and other crustaceans.
- ▶ Tube worms belong to the phylum Annelida, along with other segmented worms like earthworms.



### How do we study these creatures?

- ▶ Scientists rely on human-occupied submersibles, like *Alvin*, and remotely operated vehicles, like *Jason*, to get video footage and photos of these incredible creatures.

LEARN MORE: <https://www.nsf.gov/impacts/oceans>



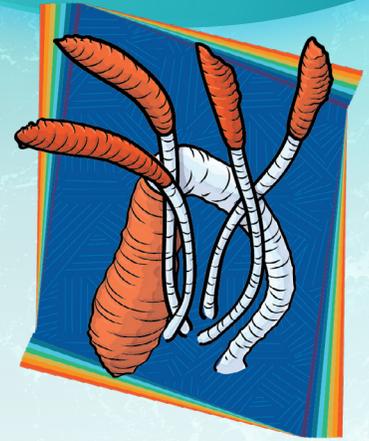
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*Hydrothermal vents provide a habitat for animals that live nowhere else on our planet.*

These hot springs can form near underwater volcanoes. Cold seawater seeps down into seafloor sediments, touches hot magma and then bursts back up into the ocean. The water that comes out of hydrothermal vents can be as hot as 700°F (370°C), which is unlike anything we can experience on Earth's surface and live to tell the tale.

How does the water get so hot and not boil? It's under too much pressure from thousands of meters of water pressing down. When there's that much pressure, water cannot turn from a liquid to a gas.

In case this super-hot, extremely pressurized environment isn't extreme enough, it's also always dark. To survive, animals living near hydrothermal vents have evolved over thousands of years to develop unique ways of finding food and making a living.

For example, the terrific trio (the **sea anemone**, **yeti crab** and **tube worm**) relies on their symbionts, or sidekicks, which are microscopic organisms that help them obtain the nutrients they need to survive. In turn, they provide these microbes a place to live. The relationship between microbes and their larger animal hosts is called a symbiotic relationship because both organisms benefit from the relationship. Even though it's a bit of a less-than-ideal case for microbes that live on yeti crabs.



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<https://www.nsf.gov/focus-areas/earth-environment/educational-resources>