

Deep Sea Resources



Overview

The ocean covers 71% of the planet's surface – but humans have visited and explored less than 20% of it. There are endless mysteries to be uncovered, and it is incredibly important we explore this ecosystem. The better we can understand the ocean the better humans will be able to understand how it works and protect its future. Ocean exploration is an interdisciplinary effort – it takes scientists, engineers, communication experts, photographers, designers, politicians, and citizens just like you to make it happen. But anyone can make a difference for the ocean through simple actions such as choosing sustainable seafood.

Key Concepts

- The ocean is largely unexplored.
- Living things are diverse, have internal systems to help them survive and interact with their environment.
- Create a creature adapted to surviving challenges in the deep ocean.
- Human impacts directly affect life in the deep ocean.

Key Words

Abiotic = Non-living chemical or physical component of an ecosystem which affect living organisms and the function of an ecosystem (e.g. salt, water, sand)

Adaptation = A change or the process of change by which an organisms or species becomes better suited to its environment.

Bioluminescence = The production and emission of light by a living organism.

Biotic = A living component of an ecosystem that affects other organisms or the ecosystem around it (e.g. animals, plants, algae, fungi etc.)

Sunlight (Euphotic) Zone = The top 200m (650 ft) of the ocean. Temperature in this zone varies with season and latitude.

Twilight (Dysphotic) Zone, = 200m – 1000m (650-3,300 ft) of the ocean with minimal light travelling this deep.

Midnight (Aphotic) Zone = 1,000 – 4,000m (3,300-13,100 ft) of the ocean with no sunlight travelling this deep.

Abyss (Abyssopelagic Zone) = 4,000 – 6000m (13,100-19,700 ft) of the ocean which is in perpetual darkness.

Trenches (Hadal Zone) = narrow, deep spaces lying below the ocean basin. They are the deepest parts of the ocean.

Videos

Deep sea exploration videos | NOAA – Oceanexploregov: <https://www.youtube.com/user/oceanexplorergov>

The Light Aquatic: How do animals glow? | Vancouver Aquarium:
<https://www.youtube.com/watch?v=FQIhIcfzodY>

A deep sea dive into Bermuda's hidden depths | The Guardian:

<https://www.youtube.com/watch?v=mjzVct3Om-M>

The Life Hydrologic: Crash Course Kids #30.2: <https://www.youtube.com/watch?v=gReciwVEAxI&t=90s>

Deep Sea Creatures - Nature's Microworlds - Episode 11 Preview - BBC Four:

https://www.youtube.com/watch?v=BtmXN_tH2iM

The otherworldly creatures in the ocean's deepest depths - Lidia Lins | Ted-Ed:

<https://www.youtube.com/watch?v=U69LIr0OrNc>

Octonauts - The Midnight Zone | Octo-Glow! | Deep Sea Adventures:

<https://www.youtube.com/watch?v=JOYAonzbRuY>

Discussion Questions

- Why haven't we explored more of the ocean? Why do you think humans prioritized space travel over ocean travel?
- You have been tasked to investigate and collect data on a remote part of the ocean. Who do you bring on your team?
- How are humans connected to the ocean?
- How are we finding plastic in the deepest parts of the ocean?
- Will deep sea animals be affected by climate change?

Activities

Deep Sea Creature Design Challenge: use probing questions to have the students (individually or as a group) create their own unique creature that lives in the deep sea. Students should consider and be able to provide explanations for how their animal finds oxygen, finds food, protects itself, handles the pressure and low light conditions of the deep sea, and moves around its environment. Give the students a challenge by introducing an environmental threat and have them discuss how this threat would impact their creature.

Deep sea zones and animals matching: <https://coast.noaa.gov/psc/sea/content/open-ocean-habitats.html>

Classroom Activities: <https://education.ocean.org/oceanlitlib/resources/>

Extra Links

Ocean Literacy Course – Ocean Unexplored: <https://education.ocean.org/oceanlitelem/assignments/folder/533>

Ocean Wise Education: <https://education.ocean.org/>

Seafood Education Kit: <https://seafoodedkit.ocean.org/>

Shoreline Cleanup: <http://shorelinecleanup.ca/>

Community/citizen science identifying types of creatures in deep sea exploration videos:

<http://www.oceanvideolab.org/>