

Ocean Exploration and Human Impact



By: Carly Coupal, Logan Hoepfner, and Sydney McMichael

Scuba Divers

Scuba divers are people that wear underwater suits and have air tanks called an breathing apparatus on their back so they can explore the ocean. Scuba divers can travel down to depths of 130 feet. Scuba Divers explore coral reefs and other shallow parts of the ocean.



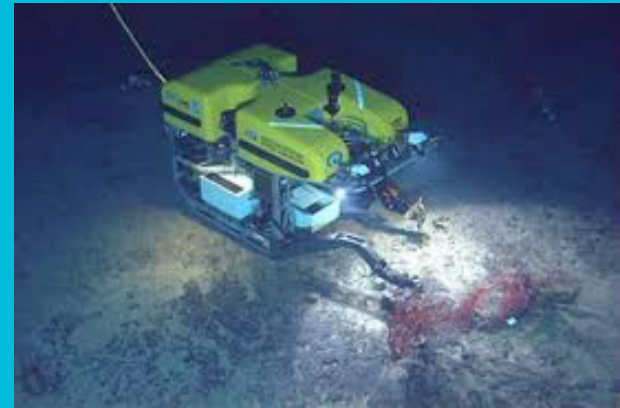
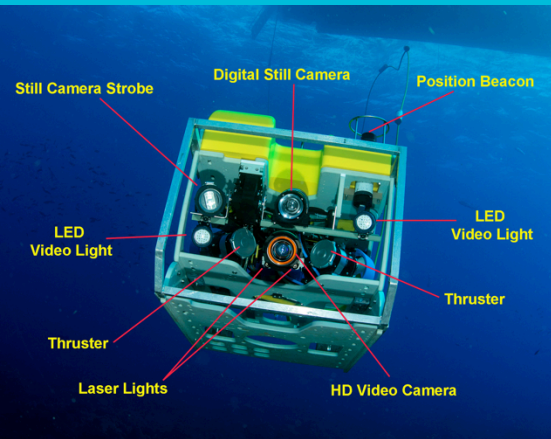
Submarines

Submarines are used to explore deep depths of the oceans. Submarines can travel as far down as 21,300 feet below sea level. These manned machines can discover new animal species.



Remotely Operated Vehicle (ROV)

An ROV (remotely operated vehicle) is an underwater vehicle that allows humans to explore the ocean floor without being in the ocean. ROVs can travel down to depths of 35,000 feet, almost 6.6 miles down. Humans aren't able to travel to the depths that ROVs can because of the extreme pressure of the ocean. The ROVs take pictures and videos, then record the data to send back to people above shore.



All the different parts of ROVs

An ROV in action

Overfishing

What is overfishing?

Overfishing is when too many fish are caught and the fish can't reproduce quick enough to restore their population.

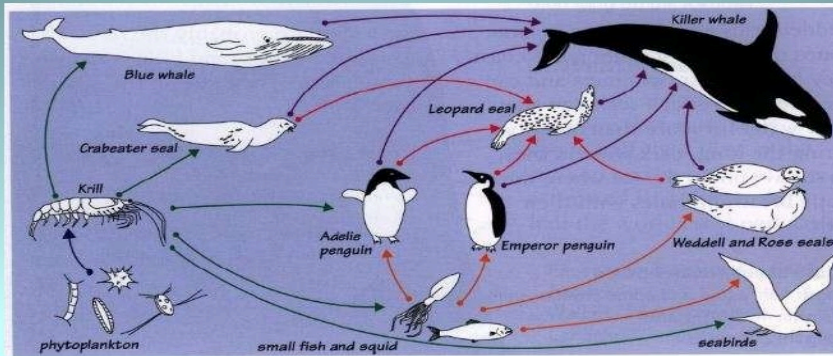
Why is this a problem?

Overfishing is a problem because it can affect the food chain and predators that eat the fish won't have anything to eat. As a result of that, the fish population will decrease fairly quickly.



Types of Overfishing:

Overfishing and the food web



<http://amurdoch.tripod.com/yr4/AntFoodWeb.JPG>

Ecosystem Overfishing- When a fish population decreases, causing smaller fish population to skyrocket.

Recruitment Overfishing- When fish are caught before they can reproduce.

Growth Overfishing- When fish are caught before they are full sized.

By-catching

What is by-catching?

By-catching is when people unintentionally catch other marine species by getting trapped or tangled in nets. Every year about 7.3 million tons of marine animals are caught by accident.

Why is this a problem?

By-catching is a problem because when animals are unintentionally caught, they get severely injured or killed by the net and they are thrown back into the ocean.



Upwelling

What is upwelling?

Upwelling is the process in which cold, deep water ascends toward the surface of the water due to wind.

Who It Benefits

Fisherman-Upwelling benefits fishermen because the colder water that rises to the surface are rich in nutrients. This means that some marine life will travel to this certain area, making fishing easier.

Marine Life- When the water rises to the surface, it brings its rich nutrients with it and those nutrients help with the growth of seaweed and plankton, which helps animals higher up on the food chain live.

The process of upwelling

surface winds
push surface water away from an area.

A cross-sectional diagram of the ocean showing the process of upwelling. At the top, three grey arrows pointing right represent surface winds pushing water away from the shore. An orange arrow below the surface points right, indicating warmer surface water moving offshore. On the left, a brown landmass slopes down into the water. Black arrows show a clockwise circulation: one arrow points down along the coast, another points left along the bottom, and a third points up towards the surface. A circular inset shows a magnified view of phytoplankton and zooplankton. The word 'UPWELLING' is written in large blue letters on the right side of the water column.

warmer surface water
moves offshore.

UPWELLING



phytoplankton
zooplankton

deeper, colder, nutrient rich water
rises up from beneath the surface to replace the water that was pushed away.



Ocean Pollution

The majority of ocean pollution comes from activities people do on land. One type of ocean pollution is nonpoint source pollution. This is pollution in the form of runoff. This could be from cars or trucks. Point source pollution is pollution that enters water from a known source.

Why is it a problem?

- 1.) Ocean pollution is a problem because it can affect the food we eat. Metals and other harmful things can get into the seafood, therefore, making the seafood harmful to eat.
- 2.) Ocean pollution is a problem because when plastic garbage gets thrown into the ocean, animals often mistake it for food and could possibly choke on the garbage.

What is the EPA?

The United States Environmental Protection Agency (EPA) helps protect our environment. The EPA helps protect human and environmental health by making sure Americans have clean air, land, and water. The EPA cleans up polluted land and water. The EPA establishes laws to protect environmental health. An example is the Clean Water Act (CWA), where the EPA regulates the discharges of pollutants that go into the waters of the United States.



VIDEO:

[Ocean Pollution](#)

In the video it talks a little bit about hypoxia and dead zones. Hypoxia is an area in the ocean where the oxygen is very little so the marine life in that place suffocates and dies, so sometimes they are called “dead zones”.

What can we do to prevent ocean pollution?

- Pick up litter
- Use reusable items
- Use less energy

Why is it important to prevent ocean pollution?

If we didn't have oceans, we wouldn't have good air to breathe because the oceans make up half of the oxygen we breathe. One-sixth of the food we eat comes from oceans so when we pollute the oceans, we are also polluting the food we eat.



3 Interesting facts!!!

1. We have explored less than 5 percent of our ocean.
2. An Egyptian scuba diver named Walaa Hafez set a Guinness World record in 2015 for the longest saltwater scuba dive. He stayed underwater for 51 hours and 20 minutes.
3. Children can learn to scuba dive as young as eight years old.

Review Questions

What does the EPA stand for and what do they do for our country?

It stands for Environmental Protection Agency and they help protect our environment.

What are the three ways we can prevent ocean pollution?

Pick up litter, use reusable items and use less energy

What are the three types of overfishing?

Ecosystem overfishing, recruitment overfishing and growth overfishing

Review Questions Continued

What is a non-point source?

- A.) Pollution that enters water from a known source.
 - B.) Pollution in the form of runoff.
 - C.) Pollution that comes from nether land or water.
 - D.) Pollution that comes from multiple sources.
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- B.) Pollution in the form of runoff

WE ARE THE

EXPLORATION NATION!



Citations

Types of overfishing-

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By-catching

<https://www.worldwildlife.org/threats/bycatch>

Upwelling

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<https://oceanexplorer.noaa.gov/facts/upwelling.html>

Ocean Pollution

<https://www.noaa.gov/resource-collections/ocean-pollution>

http://wwf.panda.org/our_work/oceans/problems/pollution/

Citations Continued

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<https://www.epa.gov/laws-regulations/summary-clean-water-act>

ROV's

<https://oceanexplorer.noaa.gov/facts/rov.html>

Submarines and Scuba Divers:

Eighth Grade Textbook