Coral Conservation: Find my Fishes Lesson Plan

Age Group: All
Time Frame: 30 Minutes

Overview:

Why are coral reefs important? What are some of the threats that they are facing? Students will explore the importance of coral reefs and the many benefits they provide to other marine life by participating in a hands on activity. Students will build their own coral reefs as well as share their coral reefs with others!

Objectives:

- Learn the importance of coral reefs
- Learn the threats that coral reefs are facing

Set Up:

Material:

- 5-6 coral pieces (toys, paper or foam cut outs)
- Modeling clay (optional)
- Lego plate
- Assorted legos
- 1 predator (toy, paper or foam cut outs)
- 5 Small fish (toys, paper or foam cut outs)
- Worksheet

Lesson:

1.Presentation Talking Point

What is Coral?

- Corals are “invertebrates” (NOAA, 2018)
  - This means they do not have a backbone
- They breathe in oxygen through their tissues and breathe out carbon dioxide
  - Cellular Respiration
- They need food to make energy
  - Heterotrophs, not autotrophs
- An individual animal is called a polyp
- Corals have skeletons
  - Extract carbon from the sea water
  - Use it to build “Calcium Carbonate” skeleton
    - What seashells are made of
  - Coral cells or “tissues” grow on top of the calcium carbonate skeletons

What is Zooxanthellae (zoh-an-thuh-lay)?

- Microscopic algae that live inside the tissue of a coral polyp (NOAA, 2018)
- Photosynthesize which, gives energy to the coral
- Can only live at certain temperatures:
  - Too cold or too hot results in death
- No zooxanthellae means dead corals
- Corals and algae living together is a type of symbiotic relationship called “mutualism” (NOAA, 2018)

Why are corals important?

- Corals are keystone species of their environment, corals give us an estimation of the overall health of their ecosystem.
- Provides shelter for thousands of marine animals
- Provides food for thousands of marine animals
- Coral reefs cover less than 1% of the ocean floor, however they support about 25% of all ocean life. (NOAA, 2018)

What are the threats to coral reefs? (Source: https://oceanservice.noaa.gov/facts/coral.html)

- Pollution
    - Runoff
    - Oil and chemical spills
- Fishing
    - Some fishing practices can destroy whole reef systems
- Tourism and recreation
    - Swimmers, divers, and boats can damage coral reefs
    - Collection of coral for jewelry and home aquarium systems
- Coral Bleaching
    - Corals are very sensitive
    - Reef building coral that are stressed from factors such as light, temperature, turbidity, and nutrient concentration can cause coral to expel their zooxanthellae (NOAA, 2018)
    - Without zooxanthellae coral will not be provided with nutrient rich sugars
    - Coral can bounce back from short term stressors, but long term stressors can result in massive mortality
- Ocean Acidification
    - Oceans absorb carbon dioxide (CO_2) from the atmosphere.
    - Carbon dioxide reacts with seawater to form carbonic acid.
    - Due to increases in carbon emissions, more CO_2 is entering the world's oceans, which creates additional carbonic acid in the water.
    - The more acidic seawater becomes, the less calcium carbonate it can hold.
    - Many marine species, including coral, need calcium carbonate to build their protective shells and exoskeletons.
    - Without it, shells grow slowly and become weak. Coral reefs with breakable, slow-growing corals erode more quickly than they accrete. Reefs can disappear, and the extinction of entire species is possible.

2.Activity

1. Using the materials, build your own coral reef
2. Build a "coral reef" that can adequately "hide" your fish
3. After 10 minutes of building and hiding your fish, you will swap reefs with or show your reef to another person
4. Try to find the fish hidden in the reef and answer the questions on the worksheet provided along with a group discussion

"Find my Fishes!" Questionnaire

After building your own coral reef, you will analyze a different group/student's coral reef. There should be 5 different colored "fish" hiding in this group/student's coral reef. As you find them (without taking apart their coral reef) answer the following questions:

1. Which fish was the least difficult to find?

    a. Why do you think this is so?

2. Which fish was the most difficult to find?

    a. Why do you think this is so?

3. What does this coral reef have that yours does not?

4. What is an improvement you would make to this coral reef?

5. Why are coral reefs so important?