

# Oceanographer: Saving the Ocean

**NGSS Standard: 5-LS2-1**



## Adventure Description:

In this adventure, students will think like oceanographers and design a robot to determine whether an ecosystem is damaged.



## Activity

### Step One: Background Information (10 minutes)

- Show [Video: Saving the Ocean](#).
- Discuss how oceanographers study ocean ecosystems. Explain that an ecosystem includes living and non-living things in an environment. Ask students to give some examples of living and non-living matter.
- Show [Handout: Movement of Matter in an Ecosystem](#). Discuss how organisms depend on the movement of non-living matter between plants, animals, and the environment.
- Next, explain that ecosystems can become damaged. Show [Handout: Damaged Ecosystem](#). Ask students what consequences are possible if an ecosystem becomes damaged. Explain that if ecosystems are damaged, plants and animals that live there can die because they don't have the nutrients or other non-living matter that they need to survive.
- Next, show [Handout: Technology and Equipment](#). Explain to students that oceanographers sometimes use technology and other equipment to learn about, monitor, and repair ecosystems.

### Step Two: Repairing Damaged Ecosystems (20-25 minutes)

- Explain to students that they will design a robot that can determine if an ecosystem is damaged.
- Provide students with [Handout: Creating a Robot](#). As a class, read through the steps.
- Divide students into small groups. Have groups choose a scenario from Step 1.
- Then, have groups complete Step 2. Give students time to brainstorm a solution to their problem. While students are working, discuss the following:

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- There is a cycle of non-living and living things in your ecosystem. Where could there be a blockage that could result in the ecosystem being damaged?
- How can you design a robot that can determine if there is damage in an ecosystem?
- Have groups complete Step 3, designing their robot. Provide groups with art supplies and building materials to build their robots.
- Extra Time? Have students complete [Handout: Creating a Diagram](#). Students will create a diagram that shows what a healthy ecosystem would look like if damage was repaired.

## Step Three: Discussion (5-10 minutes)

- Have students showcase their design to the class.
- Have a concluding discussion about how nonliving matter moves through an ecosystem. Explain that nutrients move through plants to animals, then into the soil when organisms die. Then, new plants use the nutrients, and are eaten by animals. The cycle repeats itself over and over.

## Materials List

### Provided online:

- Video: Saving the Ocean
- Handout: Movement of Matter in an Ecosystem
- Handout: Damaged Ecosystem
- Handout: Technology and Equipment
- Handout: Creating a Robot
- Handout: Creating a Diagram

### Not provided:

- Art Supplies
- Building Materials (cardboard, construction paper, string, etc.)

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