

RESOURCE LIBRARY  
ACTIVITY : 50 MINS

## Marine Ecology Video Scavenger Hunt

Students geolocate marine ecosystems. They watch videos, make observations about species, populations, and communities of organisms, and discuss how they interact with and depend upon one another for survival.

### GRADES

9 - 12+

### SUBJECTS

*Biology, Ecology, Earth Science, Oceanography, Geography, Physical Geography*

### CONTENTS

2 PDFs, 5 Videos, 1 Link

## OVERVIEW

Students geolocate marine ecosystems. They watch videos, make observations about species, populations, and communities of organisms, and discuss how they interact with and depend upon one another for survival.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/marine-ecology-video-savenger-hunt/>

## DIRECTIONS

### 1. Introduce the activity using a KWL chart.

Provide each student with a copy of the Marine Ecology Video Scavenger Hunt worksheet and divide them into groups of four. Give each group a large sheet of paper to create a KWL chart based on the key terms listed at the top of the worksheet. Ask groups to draw the “K” column of their chart and then discuss and write down what they Know about the key terms. Observe and facilitate student groups and then have them draw the “W” column on their

chart. Ask them to write down what they Want to know about the key terms. Instruct them to list terms they are unfamiliar with or questions they might have. In small groups or as a whole class, address student questions.

## **2. Show students the four videos and have them complete the Video Scavenger Hunt worksheet.**

Read aloud the directions for the worksheet. Instruct students to pay close attention to the ways in which species, populations, and communities of organisms are interdependent and interact with one another and with their environment. Then, for each video segment complete the following steps:

- As a class, have students use the Water Planet Mega Map, included in the World Physical MapMaker Kit, to geolocate the ecosystem in the video (Antarctic Ocean, Indian Ocean, Monterey Bay, California, United States, Everglades, Florida, United States).
- Introduce the video and focus student attention on the five key terms they will need to use in their description of the ecological concepts addressed in the video.
- Ask students to complete their worksheets individually as they watch the video and afterward review their responses as a group.
- Ask groups to draw the “L” column of their chart and then discuss and write what they Learned from watching the video.

## **3. Have a whole-class discussion about students’ observations and KWL charts.**

After all the videos have been viewed, student worksheets are completed, and group discussions have concluded, follow up with a class discussion. Ask each group to report what they learned using what they have written in the “L” column of their charts. Ask if there are still things they want to know. Clarify any questions or misconceptions and address important ecological principles that students may have overlooked.

## **4. Conclude the activity and discuss how humans impact marine ecosystems.**

Explain to students that, although the videos represent very different marine ecosystems, the ecological themes—especially interdependence and interactions—are similar and are an essential part of characterizing and supporting these diverse ecosystems. Ask students to discuss the ways humans interact with and impact marine ecosystems in the videos. Ask: *Can you think of ways humans impact other marine ecosystems? Explain.*

# Informal Assessment

Evaluate student comprehension:

- based on students' written responses in the KWL charts
- by using the provided answer key to check students' completed worksheets

## Extending the Learning

Choose another National Geographic video about ecosystems and see if students can use all of the key terms to describe the ecological principles presented in the video.

## OBJECTIVES

## Subjects & Disciplines

### **Biology**

- Ecology

### **Earth Science**

- Oceanography

### **Geography**

- Physical Geography

## Learning Objectives

Students will:

- use scientific terminology to describe the ecological principles occurring in a variety of marine ecosystems
- infer that different marine ecosystems are characterized by the same ecological processes, including interdependence, niche selection, and adaptation
- describe specific ways in which species, populations, and communities of organisms are interdependent and interact with one another and with their environment
- discuss ways in which humans interact with and impact marine ecosystems

## Teaching Approach

- Learning-for-use

# Teaching Methods

- Cooperative learning
- Discussions
- Information organization
- Visual instruction

## Skills Summary

This activity targets the following skills:

- Critical Thinking Skills
  - Analyzing
  - Applying
  - Understanding
- Geographic Skills
  - Acquiring Geographic Information
  - Analyzing Geographic Information
  - Organizing Geographic Information

## National Standards, Principles, and Practices

### NATIONAL GEOGRAPHY STANDARDS

- **Standard 1:**

How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

- **Standard 14:**

How human actions modify the physical environment

- **Standard 8:**

The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

### NATIONAL SCIENCE EDUCATION STANDARDS

- **(9-12) Standard C-4:**

Interdependence of organisms

- **(9-12) Standard D-1:**

Energy in the earth system

- **(9-12) Standard F-4:**

Environmental quality

## OCEAN LITERACY ESSENTIAL PRINCIPLES AND FUNDAMENTAL CONCEPTS

- **Principle 5d:**

Ocean biology provides many unique examples of life cycles, adaptations and important relationships among organisms (such as symbiosis, predator-prey dynamics and energy transfer) that do not occur on land.

- **Principle 5f:**

Ocean habitats are defined by environmental factors. Due to interactions of abiotic factors such as salinity, temperature, oxygen, pH, light, nutrients, pressure, substrate and circulation, ocean life is not evenly distributed temporally or spatially, i.e., it is “patchy”. Some regions of the ocean support more diverse and abundant life than anywhere on Earth, while much of the ocean is considered a desert.

- **Principle 5i:**

Estuaries provide important and productive nursery areas for many marine and aquatic species.

- **Principle 6e:**

Humans affect the ocean in a variety of ways. Laws, regulations and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollution (such as point source, non-point source, and noise pollution) and physical modifications (such as changes to beaches, shores and rivers). In addition, humans have removed most of the large vertebrates from the ocean.

### Preparation

### What You'll Need

### MATERIALS YOU PROVIDE

- Butcher paper
- Markers

- Pencils

## REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, Projector, Speakers
- Plug-Ins: Flash

## PHYSICAL SPACE

- Classroom

## GROUPING

- Large-group instruction

## OTHER NOTES

Using the MapMaker Kit Assembly video as a guide, print, laminate, and assemble the Water Planet Mega Map before starting this activity.

## BACKGROUND & VOCABULARY

### Background Information

Marine ecosystems and the organisms, habitats, and relationships that comprise them are highly diverse, but the ecological principles that characterize them are similar. Several interacting biotic and abiotic components determine the trophic characteristics, symbiotic relationships, adaptive strategies, niche selection, and interdependent relationships among marine communities. Humans can impact these ecosystems in positive and negative ways, and the importance of anthropogenic interactions is a growing aspect of marine research.

### Prior Knowledge

["ecological principles related to food webs, adaptations, niche selection, and symbioses", "the interactions between biotic and abiotic ecosystem components"]

### Recommended Prior Activities

- [Marine Food Chains and Biodiversity](#)
- [Marine Food Webs](#)

# Vocabulary

Term	Part of Speech	Definition
adaptation	<i>noun</i>	a modification of an organism or its parts that makes it more fit for existence. An adaptation is passed from generation to generation.
apex predator	<i>noun</i>	species at the top of the food chain, with no predators of its own. Also called an alpha predator or top predator.
aphotic zone	<i>noun</i>	the deepest ocean zone, below 914 meters (3,000 feet). Also known as the midnight or bathypelagic zone.
autotroph	<i>noun</i>	organism that can produce its own food and nutrients from chemicals in the atmosphere, usually through photosynthesis or chemosynthesis.
biodiversity	<i>noun</i>	all the different kinds of living organisms within a given area.
commensalism	<i>noun</i>	relationship between organisms where one organism benefits from the association while not harming the other.
decomposer	<i>noun</i>	organism that breaks down dead organic material; also sometimes referred to as detritivores
ecosystem	<i>noun</i>	community and interactions of living and nonliving things in an area.
food chain	<i>noun</i>	group of organisms linked in order of the food they eat, from producers to consumers, and from prey, predators, scavengers, and decomposers.
food web	<i>noun</i>	all related food chains in an ecosystem. Also called a food cycle.
habitat	<i>noun</i>	environment where an organism lives throughout the year or for shorter periods of time.
marine ecosystem	<i>noun</i>	community of living and nonliving things in the ocean.
mutualism	<i>noun</i>	relationship between organisms of different species, in which both organisms benefit from the association.
niche	<i>noun</i>	role and space of a species within an ecosystem.
parasitism	<i>noun</i>	relationship between organisms where one organism (a parasite) lives or feeds on the other, usually causing harm.
trophic level	<i>noun</i>	one of three positions on the food chain: autotrophs (first), herbivores (second), and carnivores and omnivores (third).

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## For Further Exploration

### Websites

- [U.S. Environmental Protection Agency: Oceans, Coasts, Estuaries, and Beaches](#)
- [National Geographic Education: National Teacher Leadership Academy \(NTLA\)](#)

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