



**Aquarium Webcam Resource Kit**  
***Kelp Forest Conservation***  
**6th-8th Grade**

**Next Generation Science Standards:**

- **MS-LS2-1** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- **MS-LS2-2** Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- **MS-LS2-3** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- **MS-LS2-4** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- **MS-LS1-5** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
- **MS-LS1-6** Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
- **MS-ESS3-3** Apply scientific principles to design a method for monitoring and minimizing a human impact of the environment.

**Key Words:**

- **Conservation:** prevention of wasteful use of a resource
- **Fertilizer:** a chemical or natural substance added to soil or land to increase its fertility.
- **Food Web:** a system of interlocking and interdependent food chains
- **Organism:** an individual animal, plant, or single-celled life form.
- **Pesticides:** a substance used for destroying insects or other organisms harmful to cultivated plants or to animals.
- **Pollution:** the presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects
- **Predator:** the preying of one animal on others.

**Supplies:**

- Kelp Forest Conservation Video
- Food Web Cards, print, cut & tape (downloadable from website kit)
- Computer & projector to show Blue Cavern Webcam:

**explore.org**

Webcams provided by explore.org

<http://www.aquariumofpacific.org/exhibits/webcams>

- Ocean Ranger Worksheet: Kelp Forest Conservation

## **Lesson Activities:**

### **Step 1: Food Web Activity**

#### Directions

- Have students form small groups.
- Pass out one food web card to each group.
- Using a blank white board, start the game by placing the sun card at the top.
- Have students discuss where their card would fit in the food web. Each card will have a picture of a kelp forest organism and name.
- Groups will place their cards on the board and draw lines to indicate prey or predator.
- When all of the groups have gone up, ask the whole group if they would like to make any changes or additions.
- Go over some fun facts or pass them out to student groups to read to the class.

### **Step 2: Watch the *Kelp Forest Conservation* Video**

#### Pre-video Prompts

- Are we part of the kelp forest food web, if so how?
- Do people use kelp?

#### Post-video Prompts

- How do animals use the kelp forest?
  - Nursery
  - Hunting grounds
  - Shelter
- What types of organisms live in the kelp forest?
  - *From plankton to sea lions, there are hundreds of different types of organisms that call the kelp forest home.*
- After watching the video, are we part of the food web?
  - *People are consumers, eating both the kelp and animals from the kelp forest.*
  - *The canopy layer of kelp can be harvested sustainably because of its fast growth rate. Kelp helps bind ingredients together in products such ice cream, toothpaste, cosmetics, and medicines.*

### **Step 3: Ocean Ranger Worksheet: Kelp Forest Conservation**

- Discuss as a class:
  - How do you think kelp forests are affected by people?  
*Kelp forests are impacted by many human activities on land. For example, storm drains are used to prevent flooding in our neighborhoods, but sometimes trash and chemicals from fertilizers, pesticides, and motor oil also travel down storm drains and into the ocean.*

- What are some ways to protect kelp forests?  
*Trash and chemicals can affect the health of a kelp forest. Making sure you recycle, don't have a leaky car, and reduce chemicals on your lawn to help local ocean ecosystems.*
- Complete the *Kelp Forest Conservation* worksheet.
  - Page 1: fill out the worksheet using what you have learned from the video, class discussion, and observations of the kelp forest webcam
  - Page 2:
    - Choose one of the listed polluters
    - Design a way to monitor your ocean pollutant
    - Share ideas to minimize the impact of that pollutant
    - This can be completed in pairs, groups, or individually.

### **Extended: Sea Otter Research**

- Sea otters are indicators of a healthy ecosystem. Research on sea otter health and overall population information is conducted using different methods, including yearly surveys. US Geological Survey conducts these surveys with teams of scientists from the Western Ecological Research Center.
- Review the USGS Western Ecological Research Center webpage for opportunities to dive deeper.  
<https://www.usgs.gov/centers/werc/science/california-sea-otter-surveys-and-research>
  - Sea Otter Spotting Game
  - Review sea otter survey data
  - Podcast Interview with researcher Tim Tinker  
[https://www.usgs.gov/search?keywords=tim%20tinker&f%5B0%5D=usgs\\_facet%3Amultimedia\\_audio](https://www.usgs.gov/search?keywords=tim%20tinker&f%5B0%5D=usgs_facet%3Amultimedia_audio)

### **Additional Resources:**

- USGS Western Ecological Research Center: Sea Otter Ecology and Population Trends. Includes background information on current research in a downloadable PDF. <http://www.werc.usgs.gov/ProductDetails.aspx?ID=4328>

