

Gulf of California Food Web



ACTIVITY: Identify some animals in the Gulf of California food web.



GRADE LEVEL(S): 3rd to 6th

OVERVIEW: In the ocean, many food chains start with phytoplankton.
Food chains connect to create food webs.



20 minutes

DISCIPLINES: Life science, Visual Arts

OBJECTIVES: Students will be able to:

- identify three animals in the Gulf of California's food web
- define a food chain
- define food web
- discuss the importance of understanding a food web
- create a flow chart or describe how energy (matter) works its way up and through the food web
- recognize how energy works its way through the Gulf of California's food web
- predict possible outcomes of removing an plankton, an animal, or animals from an ocean food web

MATERIALS:

- Photocopies of the "Gulf of California Food Web" (one per student)
- Pencils, colored pencils or crayons

WHAT TO DO:

Step 1: Introduce the food web after students have learned a little about vaquita and totoaba.

Step 2: Give each student a photocopy of the "Gulf of California Food Web" sheet.

Have students:

- Point to the two vaquita?
 - Point to the four totoaba. Hint: they're about the same size as the vaquita.
 - Either tell have them find specific animals or have students share what other kinds of animals they can find on the page. (SEE EXAMPLE #1.)
 - Tell the students, the animals on this page represent types of animals found in the Gulf of California where the vaquita and totoaba live. Older students can label the animals
 - Next, for younger students or students new to food chains, help students follow/find a simple food chain from a predator to its prey. For example, they can find the vaquita and then find the squid. Have them if anything eats vaquita. (Yes, sometimes large sharks.)
- Have them find the food chain from the shark, to the vaquita to the squid.

- Ask students to point to other food chains they see on this page. (SEE EXAMPLE #2.)
- As a group or individually, Have students draw lines from the animal to what it eats. Have them use different color crayons/pencils for each food chain. Tell them it's okay if the lines cross or go over an animal. (SEE EXAMPLE #3.)
- After students have finished, ask *What do you notice about the lines?*
- Tell the students, the animals on this page represent the food web Gulf of California.

- Ask, *Is this food web complete? Or What is missing?* (Answers include: Specific animals such as sea urchins, seastars, crabs, lobsters, eels, sea turtles, sperm whales, killer whales, humpback whales, seaweed/algae, plankton, and more.)
- What is at the bottom of the food web? Seaweed (other kinds of algae). In shallow water, some seagrasses or plants. For older kids phytoplankton.
- Ask, *What is missing to create a complete food web?*
 - 1) *Plankton: tiny plants and animals that many fish, crabs, shrimp, jellyfish, and other animals eat.
 - 2) The sun. The source of **energy in shallow water and on land.

Have students draw in the sun, plankton, seaweed, and a couple animals that should be in the food web. Examples could include: sea turtles, seals, crabs, lobsters, sea urchins, seastars, sea anemones, sperm whales, jellyfish, octopus...etc. (SEE EXAMPLE #4.)

Conclude activities by asking questions such as:

What do you think would happen to the food web if an entire animal population is removed, say all the shrimp disappeared?

What might happen to the (animal) if all the (animal) are removed?

What might happen to the seaweed if all the animals that eat it were removed?

Would more a different kind of animal population increase?

Do you think another kind of animal might expand its habitat into the Gulf?

Could the entire food web fall apart?

What might happen if we drastically alter a food web. Scientists cannot predict the answers to these questions. It is important that we protect the ocean. Healthy populations are important for every food web. Have students share what they can do to help the ocean.

Teacher's notes:

*For older students:

Phytoplankton: Those are tiny, often microscopic microbes, algae, and plants that get their energy from the sun. Phytoplankton is the basis of ocean food webs.

Zooplankton: (Often) tiny animals that live part (larval forms) or all of their lives floating through the ocean. Phytoplankton are an important part of the ocean food web.

**For this activity, we are only talking about solar energy. If your students are in an advanced science class, you can add a discussion about both photosynthesis and chemosynthesis.

Background information: All life on Earth is fueled by energy from two sources. Most living things (plants and algae) on Earth get their energy from the sun in a process called **photosynthesis**. In the deep ocean, where solar energy cannot travel, another form of energy transfer occurs. It is called **chemosynthesis**. It is the use of chemical energy.

Learn more:

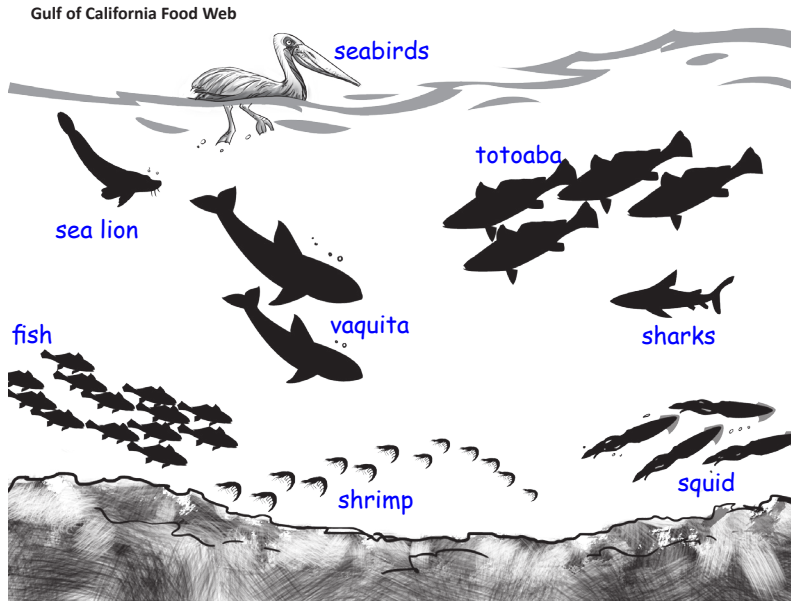
Aquatic Food Webs: <http://www.noaa.gov/resource-collections/aquatic-food-webs>

Phytoplankton: <http://oceanservice.noaa.gov/facts/phyto.html>

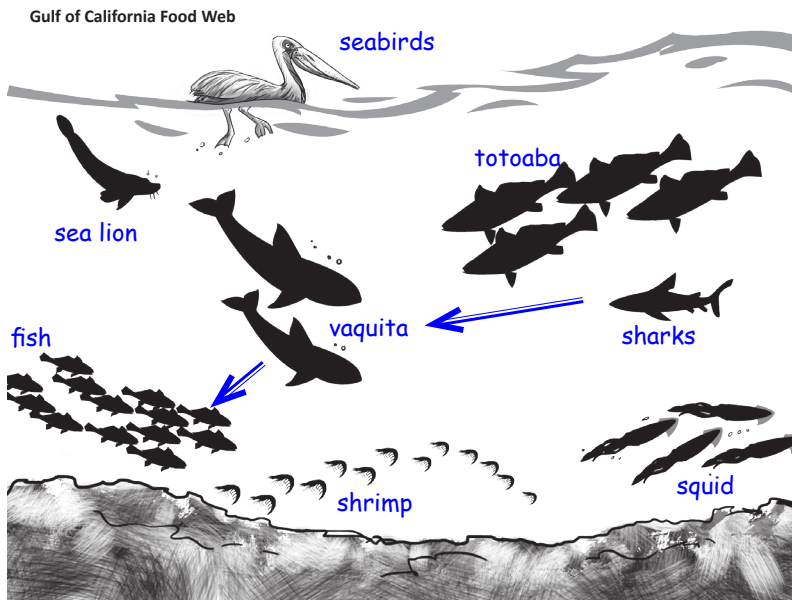
Zooplankton: <https://www.nwfsc.noaa.gov/sem/zooplankton.cfm>

Chemosynthesis: at: <http://oceanexplorer.noaa.gov/facts/photochemo.html>

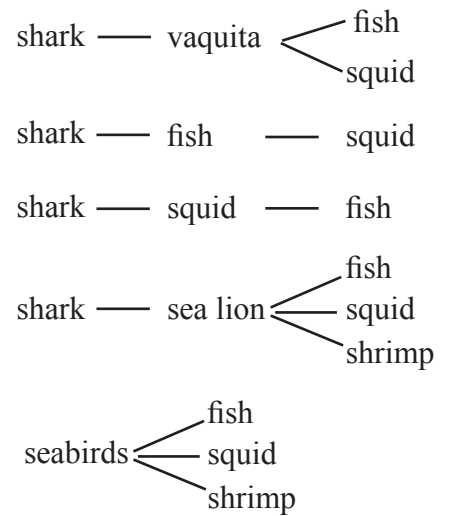
EXAMPLE #1: ANIMAL LABELS



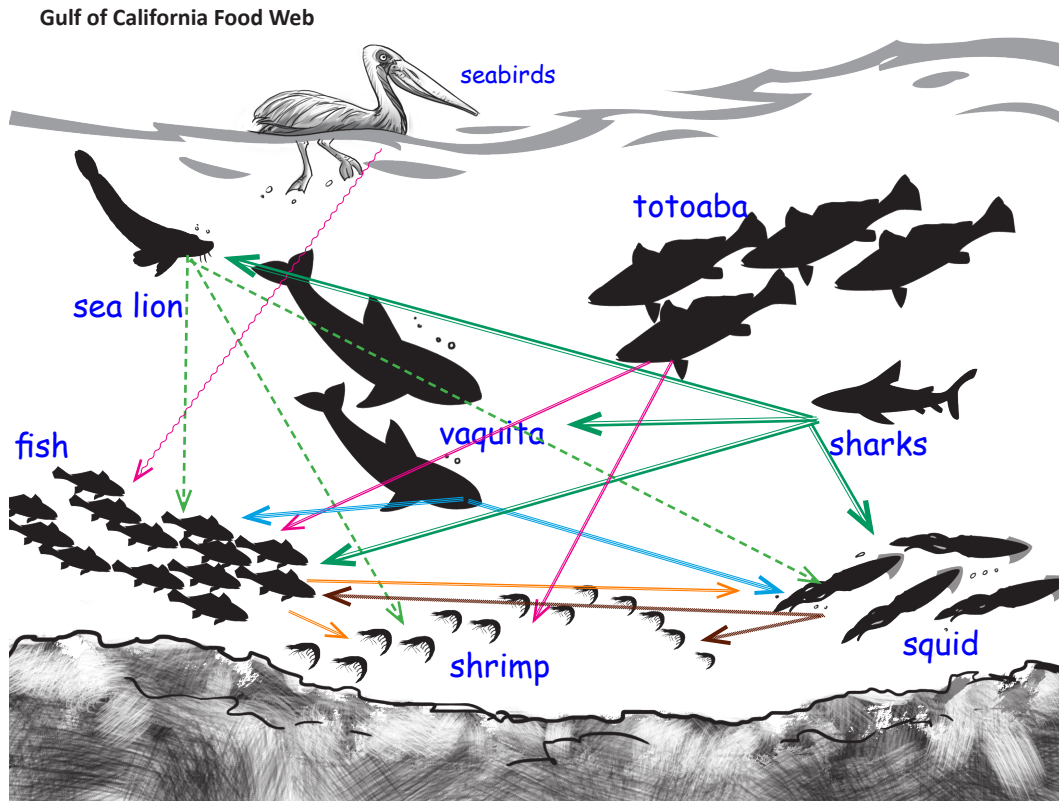
EXAMPLE #2: FOOD CHAIN



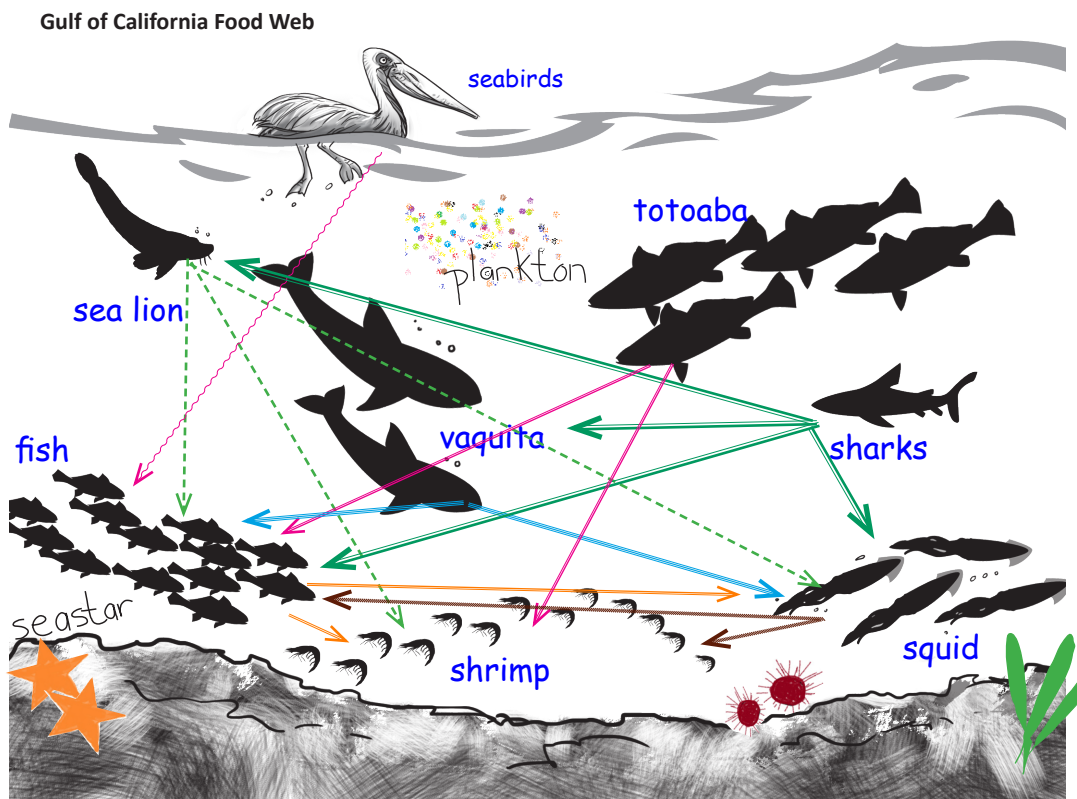
EXAMPLE FOOD CHAINS



EXAMPLE #3: FOOD WEB



EXAMPLE #4: FOOD WEB WITH MORE ANIMALS ADDED



NGSS: 5. Matter and Energy in Organisms and Ecosystems

5-PS3-1 Energy: Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

5-LS2-1 Ecosystems: Interactions, Energy, and Dynamics Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. Energy can be transferred in various ways and between objects. (5-PS3-1)

LS2.A Interdependent Relationships in Ecosystems: The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants.

www.nextgenscience.org/topic-arrangement/5matter-and-energy-organisms-and-ecosystems

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WhaleTimes Virtual Team Member Activity

