Food Chains, Webs, and Pyramids

LT: I can describe ecosystems by creating food chains, food webs and food pyramids. 4.6.3; 4.1.1

Enduring Understandings

- Ecosystems are made up of living and nonliving things that interact in complex ways.
- A single change to an ecosystem can affect all different parts of that ecosystem. Eventually, the ecosystem will get to a new equilibrium.

Task:

1. Explore the video segments and text passages that explain components of the Hudson River ecosystem:
https://hudsonriverpark.org/education-and-environment/hudson-river-ecosystem/habitat-water/fish
https://www.amnh.org/learn-teach/curriculum-collections/river-ecology/curricular-materials

2. Using the "Hudson River Ecosystem Cards" (page 3-6) complete the following:

a. In a T-Chart, list biotic and abiotic factors of the aquatic ecosystem.

b. Complete the "Food Web Graphic Organizer" (page 2).

c. Create a food chain for the Hudson River ecosystem.
    1. What do the arrows represent?
    2. Do organisms always stay at the same 'level' in the food chain? Why or why not?
    3. Why are some organisms difficult to place in a food chain?

d. Create a food web for the Hudson River ecosystem. Label your food web using the following terms:
    1. producer/consumer
    2. predator/prey
    3. abiotic factor, biotic factor

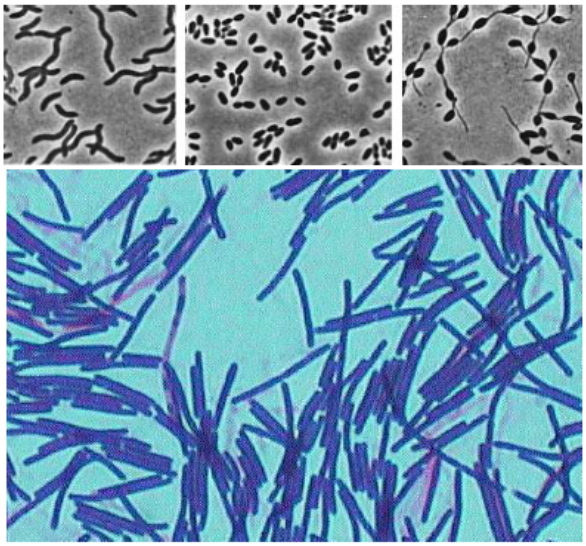
e. Create an energy pyramid for the Hudson River ecosystem.

f. Explain the difference between how energy and how matter move through an ecosystem.

3. Textbook page 88. Complete "Math Skills" Activity

Food Web Graphic Organizer

Tertiary Consumers Consumes secondary consumers, some may be considered carnivores	**Decomposers**
Secondary Consumers Consumes primary consumers, some may be considered carnivores	
Primary Consumers Consumes producers, may be considered herbivores	
Producers Capture energy from none biological sources and use this energy to make organic molecules like sugars.	



Name: Bacteria

Notes: Bacteria are decomposers. They help break down the remains of dead animals and plants, making the nutrients available for other organisms.

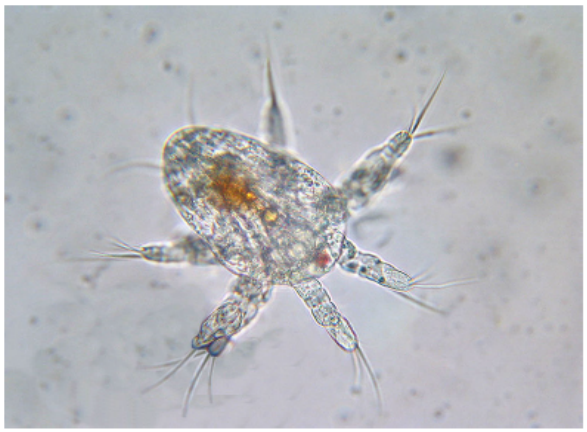
PHYTOPLANKTON

Name: Phytoplankton
(measured by looking at the amount of chlorophyll in the water)

Notes: Phytoplankton are producers. They use chlorophyll to capture light energy in chemical bonds of carbon molecules.

Name: Rotifers

Notes: Rotifers are small multi-cellular animals that eat bacteria, phytoplankton and sometimes zooplankton like small copepods.



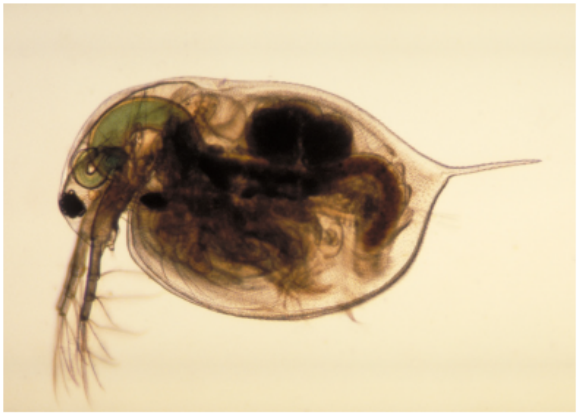
ZOOPLANKTON

Name: Copepod nauplii

Notes: Copepod nauplii are young copepods, they are small zooplankton that eat phytoplankton and bacteria.

Name: Copepod (adults)

Notes: Copepods are planktonic crustaceans that eat phytoplankton, bacteria, and small zooplankton.



CRUSTACEANS

Name: Cladocera

Notes: Cladocera are planktonic crustaceans that eat phytoplankton, bacteria, dead organisms and small zooplankton.

Name: Unionidae

Notes: Unionidae are native mussels in the Hudson River. They live in the soft sediment on the bottom of the river. They are filter feeders, feeding on plankton.

CLAMS

Name: Sphaeriidae

Notes: Sphaeriidae are native clams in the Hudson River. They live in the soft sediment on the bottom of the river. They are filter feeders, feeding on zooplankton.

Name: Alosa (herring)

Notes: Alosa live in open water they feed on plankton that the filter from the water with tiny “combs” in their throat (called gill rakes).

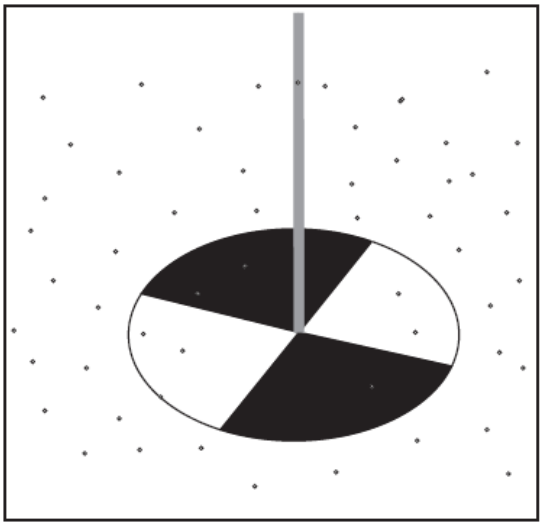
SUNFISH

Name: Centrarchidae (sunfish)

Notes: Centrarchidae live near the shore in shallow “weed beds” where they feed on insect larvae, crustaceans, small fish and small clams.

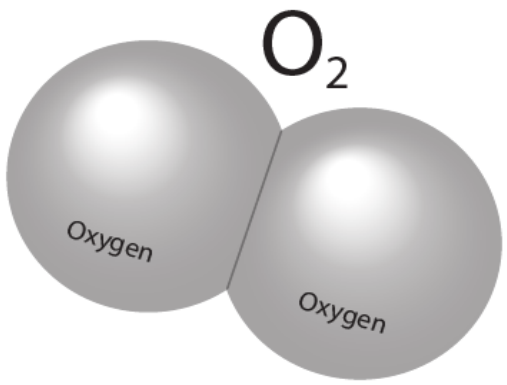
Name: Zebra Mussel

Notes: These small clams are filter feeders, eating small plankton and plant and animal fragments.



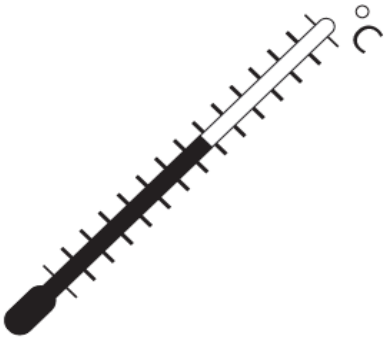
Name: Secchi Depth

Notes: Sechi Depth a way of measuring the depth which light penetrates the water. This is important for plants which need light. Filter feeders can increase water clarity.



Name: Dissolved Oxygen

Notes: Oxygen molecules (O_2) dissolve in water. They are introduced through contact with the atmosphere and when oxygen is produced by photosynthetic organisms in the water. It is consumed by respiring organisms.



Name: Temperature

Notes:

Name:

Notes:

Name:

Notes: