

Dining Out With Fishes of the Hudson

Many different kinds of fish live in the Hudson. They come in all shapes and sizes, and have a variety of **adaptations** for survival. A fish's mouth, for example, tells us a lot about its lifestyle. Some fish have **specialized** mouths and are picky eaters. Others eat almost any **prey** that fits in their mouths.

Look at each picture the next page. How big is the fish's mouth? Does it point straight ahead or down towards the bottom? How big is each fish? (The numbers give average lengths of adults), Then from the selection below, choose the preferred food(s) of each fish and write its letter(s) next to each fish.



lined seahorse - 5"

Examples: The lined seahorse's snout is a tube that ends in a tiny mouth. Using it like a medicine dropper, this small fish sucks in tiny **invertebrates** that drift or swim nearby—food items listed in Group **D**.

The pumpkinseed sunfish has a small, rather ordinary (for a fish) mouth. Not having a specialized mouth, it eats a variety of animals in Groups **B** and **C**.



pumpkinseed - 6"

A. Frogs, fish, big crustaceans



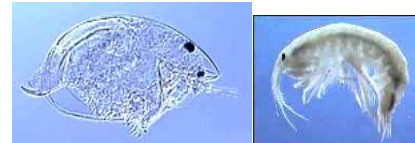
B. Small creatures on river bottom: insect larvae, crustaceans, worms



C. Tiny fish, crustaceans, insects



D. Tiny invertebrates, zooplankton



Write the letter of each fish's preferred food group (or groups) on the line



1. *walleye* - 20"
Sharp teeth hold slippery prey in this big mouth.



2. *shortnose sturgeon* - 36"
Its mouth points down. **Barbels** (whiskers) allow it to find food by feel and taste where there is little or no light.



3. *Atlantic needlefish* - 18" These sharp teeth can hold slippery prey. _____



4. *northern pipefish* - 10"
It has a tiny mouth at the tip of a tube-like snout.

5. *white sucker* - 14"
Its mouth points down.



6. *largemouth bass* - 15" Its name says it all! _____



7. *white perch* - 9"
Its mouth is small and not specialized.

Dining Out With Birds of the Hudson

Hundreds of different birds can be seen along the Hudson River. There are big ones, like eagles and swans, and tiny ones, like hummingbirds. All have special **adaptations** for the lifestyle that they lead and the **habitat** where they live. Beaks, for example, give clues to what birds eat and how they catch their food.



The great blue heron stands still, waiting for fish to swim by. When one comes close, the heron stabs it with a beak that is shaped like a spear point.

Tiny warblers search for insects in trees and shrubs. Their small beaks are thin and pointed like tweezers —perfect for picking up tiny bugs.



Look at the birds pictured on the next page. Choose which bird best fits each description below, and write its name in the space provided.

1. Swimming underwater, this bird grabs fish with a long hooked beak.
2. This bird has a long thin beak. It picks tiny creatures out of water and mud.
3. The beak of this bird looks like a spoon. Slots along the sides of the beak let water drain out of a mouthful of plants, crustaceans, worms, and insects.
4. This bird's short, thin, pointed beak is adapted for picking up insects.
5. This swift predator catches other birds that it eats with its hooked beak.
6. This small bird has a stout bill for cracking open seeds.
7. This bird spears fish with its strong, sharply pointed beak.

Decide which bird best fits each description on the last page.
Write its name in the space below that description.

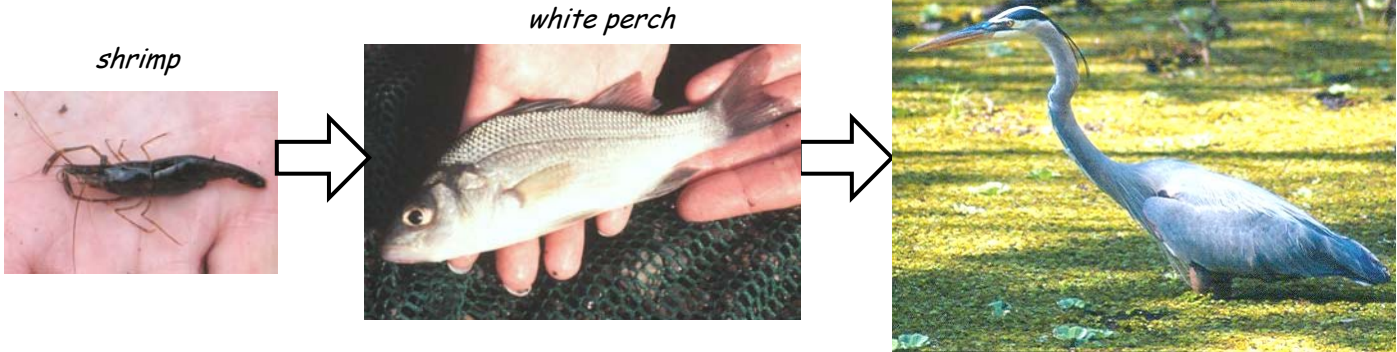


Bird photos on these pages courtesy of Michael Pogue.

Weaving Food Chains Into Food Webs

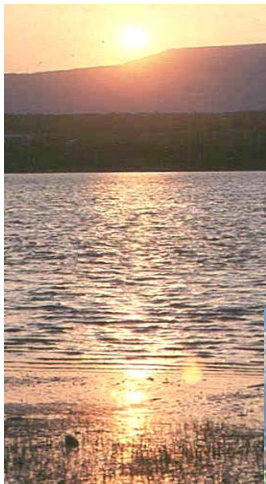
Each fish and bird is **adapted** for a certain diet. Great blue herons eat fish such as white perch. White perch eat, among other things, **crustaceans** like shrimp. The heron, perch, and shrimp are links in a **food chain**. In food chains, energy in food moves from one **organism** to another.

great blue heron (photo by Brian Houser)



People are part of food chains. The tuna in the sandwich you might eat for lunch comes from a fish. Tuna eat smaller fish that might eat crustaceans. But what do crustaceans eat? What is the first step in the chain?

The **energy** that people and other animals need comes from the sun. This **solar energy** is changed into food energy by green plants visible all around us and by tiny **algae** visible through microscopes. This food energy also enters the food chain after plants die. Crustaceans feed on algae, plants, and **decaying** plant matter like dead leaves. Worms also eat decaying plant matter.



green algae cells

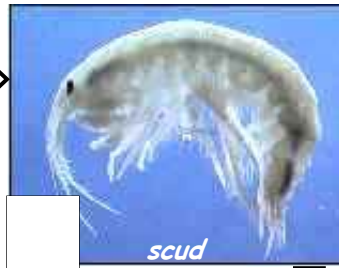
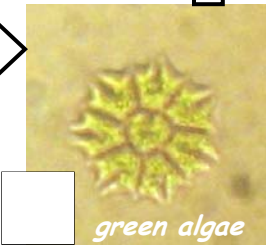
water celery - a green plant

dead leaves

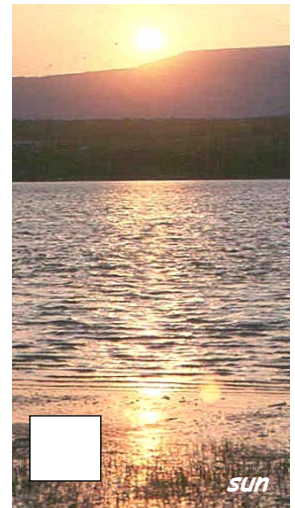
Scud (a type of crustacean) feeding on dead leaves (photo by Eric Lind)



To make a complete Hudson River food chain, let's put the sun and plant steps together with diet information from the Dining Out With Fishes and Birds worksheets. Our example starts with the sun and ends with a **predator** not usually eaten by any other animal.



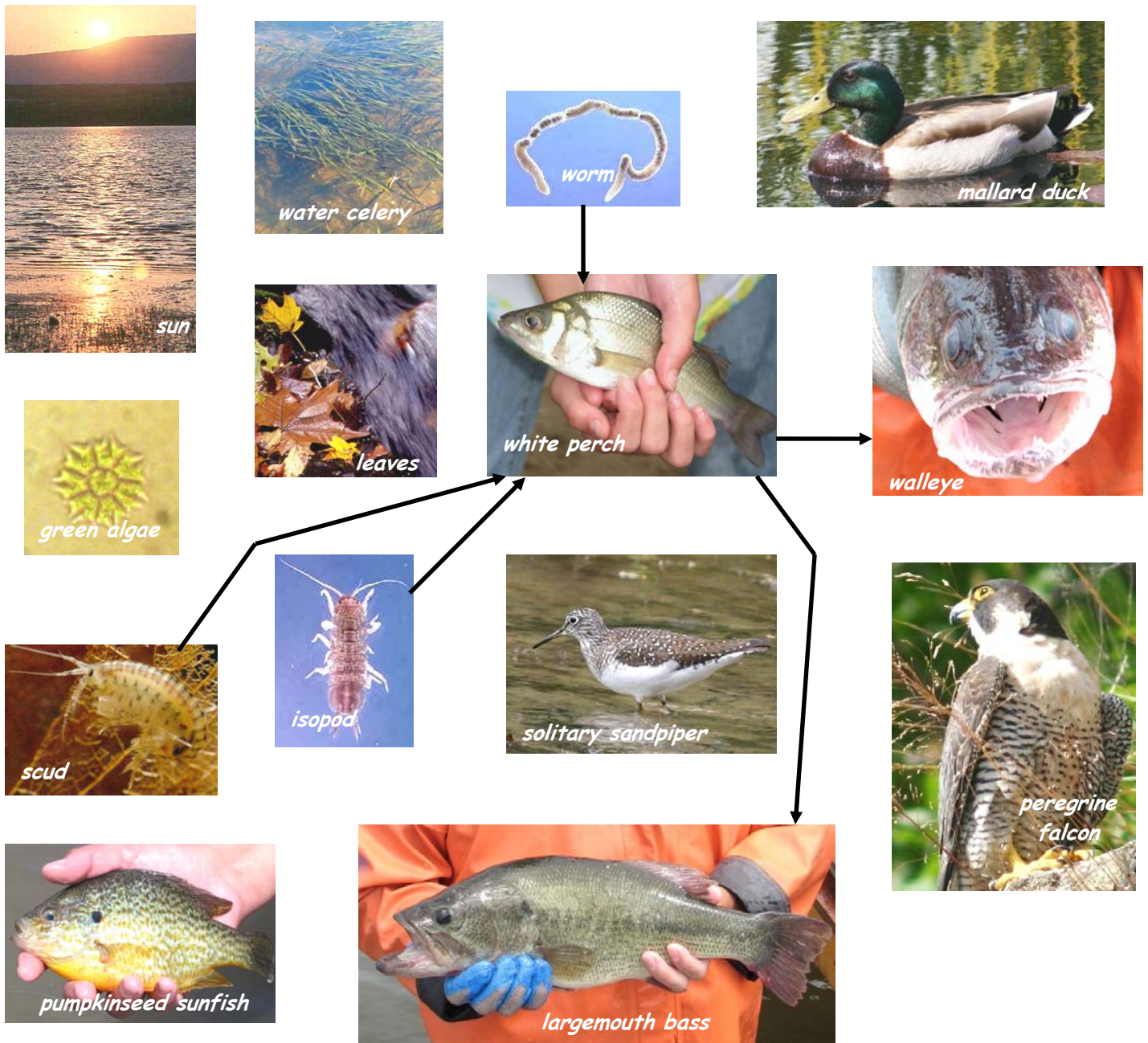
The five photographs below show steps in another food chain. Put them in order from 1 to 5, writing the numbers in the boxes provided. Then draw arrows showing how food energy travels from one piece of the food chain to the next. Your food chain should begin with the source of the energy and end with a predator not usually eaten by any other animal.



Most animals eat a variety of foods: different kinds of fish, for example, or a diet combining small crustaceans, insects, and worms. Think how bored—and unhealthy—you would be if all you ever ate were peanut butter sandwiches.

When each animal eats many different things, food chains become **food webs**. Look at all the arrows going to and from the white perch below. It eats worms, scuds, and isopods, and is in turn eaten by walleye and largemouth bass.

Following the example of the white perch, draw arrows linking the solitary sandpiper to the foods it eats and to any predator that might eat it.



Use the pictures below and information from all the worksheets to create a Hudson River food chain. Cut out the pictures below. Arrange them in a food web on a blank sheet of paper. Paste them down. Then draw arrows linking each member of the food web below to all the other animals or plants that it eats, or that eat it. Link the plants to their source of energy too.

Except as noted, bird photos on these pages courtesy of Michael Poaue.

