



Sea Turtle Food Web

Created by the NC Aquarium at Fort Fisher Education Section

Essential Question:

How do sea turtles fit into the food web of the ocean?

Lesson Overview:

Students will learn about sea turtle food chains by building a sea turtle and then placing it in a food chain with phytoplankton, zooplankton, small fish, and jellyfish.

Learning Objectives:

Students understand the concept of a “food web” and learn which animals play a role in the sea turtle food web.

- Ocean food webs often begin with tiny photosynthetic organisms called phytoplankton.
- Animals can be an important part of the food web as both predators and prey.
- Turtles rely on all levels of the food chain, not just what they eat.

North Carolina Standards:

First Grade:

Art:

- **1.V.2** Apply creative and critical thinking skills to artistic expression.
 - **1.V.2.1** Recognize that artistic problems have multiple solutions.
 - **1.V.2.3** Create art from imaginary sources of inspiration.
- **1.CX.2** Understand the interdisciplinary connections and life applications of the visual arts.
 - **1.CX.2.2** Identify connections between art and concepts from other disciplines, such as math, science, language arts, social studies, and other arts.
 - **1.CX.2.3** Differentiate between sharing ideas and copying.

Science:

- **1.L.1** Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive
 - **1.L.1.1** Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment
 - **1.L.1.2** Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world

Second Grade:

Art:

- **2.V.2** Apply creative and critical thinking skills to artistic expression.
 - **2.V.2.1** Understand that artistic problems have multiple solutions.



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- 2.V.2.3 Create art from real and imaginary sources of inspiration.
- 2.CX.2 Understand the interdisciplinary connections and life applications of the visual arts.
 - 2.CX.2.2 Understand relationships between art and concepts from other disciplines, such as math, science, language arts, social studies, and other arts.

Third Grade:

Art:

- 3.V.2 Apply creative and critical thinking skills to artistic expression.
 - 3.V.2.3 Create art from realistic sources of inspiration.
- 3.CX.2 Understand the interdisciplinary connections and life applications of the visual arts.
 - 3.CX.2.2 Understand how to use information learned in other disciplines, such as math, science, language arts, social studies, and other arts in visual arts.

Fourth Grade:

Art:

- 4.V.2 Apply creative and critical thinking skills to artistic expression.
 - 4.V.2.1 Identify different successful solutions to artistic problems.
 - 4.V.2.2 Use ideas and imagery from North Carolina as sources for creating art.
- 4.CX.2 Understand the interdisciplinary connections and life applications of the visual arts.
 - 4.CX.2.2 Apply skills and concepts learned in other disciplines, such as math, science, language arts, social studies, and other arts, in the visual arts.

Science:

- 4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats
 - 4.L.1.1 Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.
 - 4.L.1.2 Explain how animals meet their needs by using behaviors in response to information received from the environment

Fifth Grade:

Art:

- 5.V.2 Apply creative and critical thinking skills to artistic expression.
 - 5.V.2.2 Use ideas and imagery from the global environment as sources for creating art.
 - 5.V.2.3 Create realistic, imaginative, abstract, and non-objective art.

Science:

- 5.L.2 Understand the interdependence of plants and animals with their ecosystem.
 - 5.L.2.2 Classify the organisms within an ecosystem according to the function they serve: producers, consumers, or decomposers (biotic factors)

Time Frame:

Preparation: 10 minutes

Activity: 30 minutes



Materials:

- Turtle body outline (One per student- printed on green paper)
- Turtle limbs outline (One per student- printed on green paper)
- Food web organism sheet (One sheet per three students- printed on white paper)
- Crayons
- Scissors
- Glue
- Card stock (optional)
- Green or brown construction paper (optional)

Supplemental Background Information for Teachers:

Food webs are used to demonstrate the relationship between a living organism and its predators and prey. In the ocean, the base of the food web is made up of sea grasses, algae, and tiny plants called phytoplankton. Plankton is anything in the ocean that cannot swim against a current. Phytoplankton is plant plankton and zooplankton is animal plankton. The next level in the food web is made up of herbivores and omnivores. This can include zooplankton (although some of these are carnivorous, eating other zooplankton), some fish, and many other creatures. The next levels of the food web are made up of animals that eat other animals such as larger fish, dolphins, and some sea turtles.

Sea turtles are marine reptiles that eat a variety of items. They do not have teeth, but rather have a beak similar to a bird. Each species of sea turtle has a slightly different diet.

- Loggerhead turtles eat a lot of hard-shelled animals such as conchs, lobsters, and crabs. They have large jaw muscles to help them crush these items.
- As adults, green sea turtles eat a lot of sea grass. This diet led to their name because it turns their fat greenish. A green turtle's beak is serrated to help them cut the sea grass.
- Leatherbacks mainly eat jellyfish. Because of this, they have a thick leathery shell that allows them to dive deeper in search of jellies.
- Hawksbill turtles eat tough coral, anemones and sea sponges. To help them, they have a hawk-like beak.
- Kemp's Ridley turtles also eat many of the same items such as crabs, fish, jellyfish, and mollusks.

Although the diet of each species varies, most of them do eat jellyfish. To protect themselves from being stung by the jellies, sea turtles have [papillae](#) covering their esophagus. These ridges of toughened skin help protect the turtle but also prevent the jellies from washing out if the turtle expels the excess water swallowed with the jelly.

At the top of the marine food web are animals such as large sharks, orcas, whales, and people. The ocean food web is very complex and many top predators can be prey for something else. As on land, there are even detritivores such as crabs, giant isopods, bacteria, and other scavengers.



Included in this food web are the following organisms:

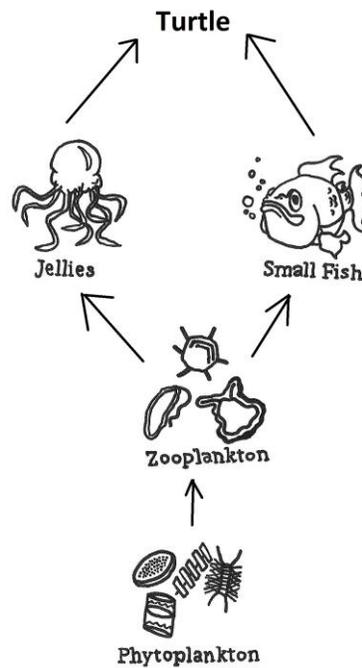
- Phytoplankton: plant plankton eaten by many organisms including zooplankton. This is the base of the marine food web in many parts of the ocean.
- Zooplankton: animal plankton eaten by many organisms including jellyfish and small fish.
- Jellyfish: also considered zooplankton and can be eaten by sea turtles and some fish such as the mola mola or man-of-war fish.
- Small fish: eaten by jellyfish and sea turtles.
- Sea turtle: eaten as young by many organisms such as crabs, birds, and fish. As an adult, sea turtles can be eaten by sharks and people in some parts of the world.

Preparation:

Print out one turtle body outline, turtle limbs, and food web organisms for each student. Cut the food web organisms sheet into three strips so each strip has all four organisms. Gather coloring utensils, scissors, glue, construction paper. Create an example if needed. You can also print the outlines on card stock and cut them out. Then you can have the students trace them onto green or brown construction paper.

Activity:

1. Review food chains and food webs with your students
2. Give each student a set of turtle body parts, scissors, crayons, and glue.
3. Explain to the students that they will be creating a sea turtle food web but first they must assemble their turtle.
4. Have the students cut out the turtle body, both flippers, the head and the tail.
5. Have the students glue the head to the indented (heart-shaped) end of the body.
6. Have the students glue the flippers on either side of the body near the head end.
7. Have the students glue the tail between the two back flippers.
8. Next hand out the food web organism strip.
9. Have the students cut out each organism.
10. Ask the students to arrange the organisms in the order of a food web. As a class, discuss what they think would be the correct order. Remember to have them include their sea turtles.
11. Once you have determined the correct order for the food web, have the students glue them onto the turtle shell in the correct order (phytoplankton near the tail, then zooplankton towards the center, then the jellyfish and small fish near the head of the turtle next to each other).
12. Have the students draw arrows from each organism to the organism that eats it.



13. Give the students crayons to decorate their sea turtles and color the organisms on its shell.

Extensions:

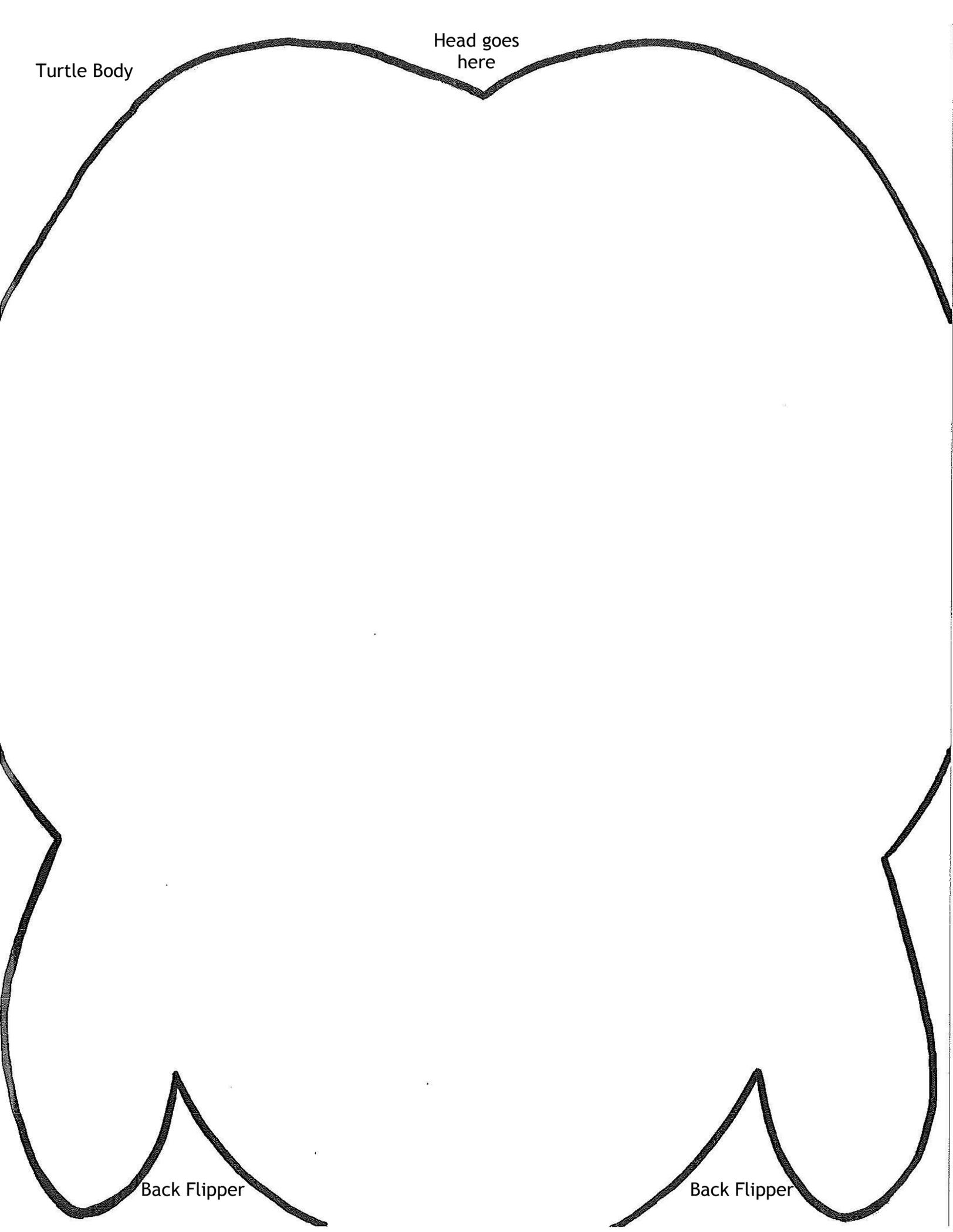
1. If your students have access to computers, have them review marine food webs with this challenging interactive activity:
http://coolclassroom.org/cool_windows/home.html
2. Have the students research the issues sea turtles are facing in relation to their food webs. Marine debris is a major problem for sea turtles. What can be done about marine debris?
3. Follow this lesson with the “Sea Turtle Stomach Dissection” activity.

Turtle Body

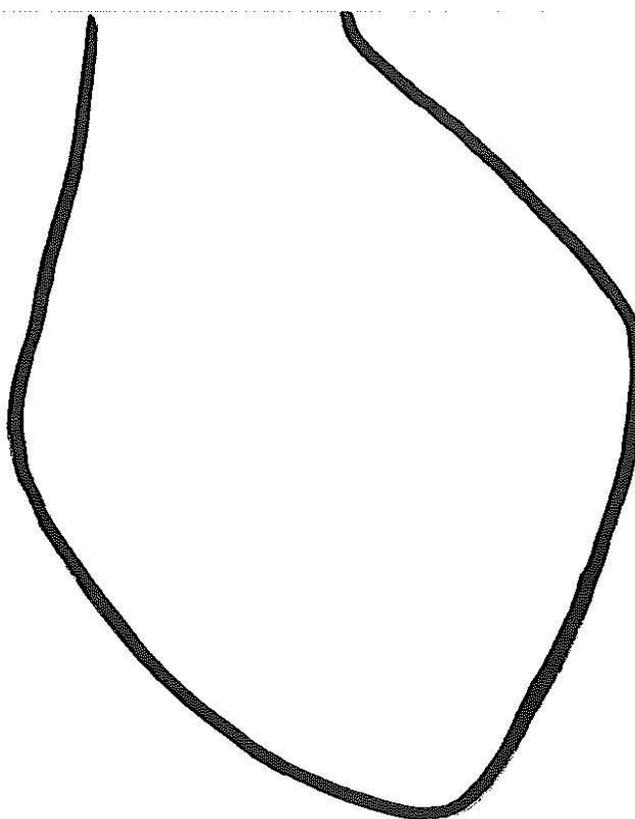
Head goes
here

Back Flipper

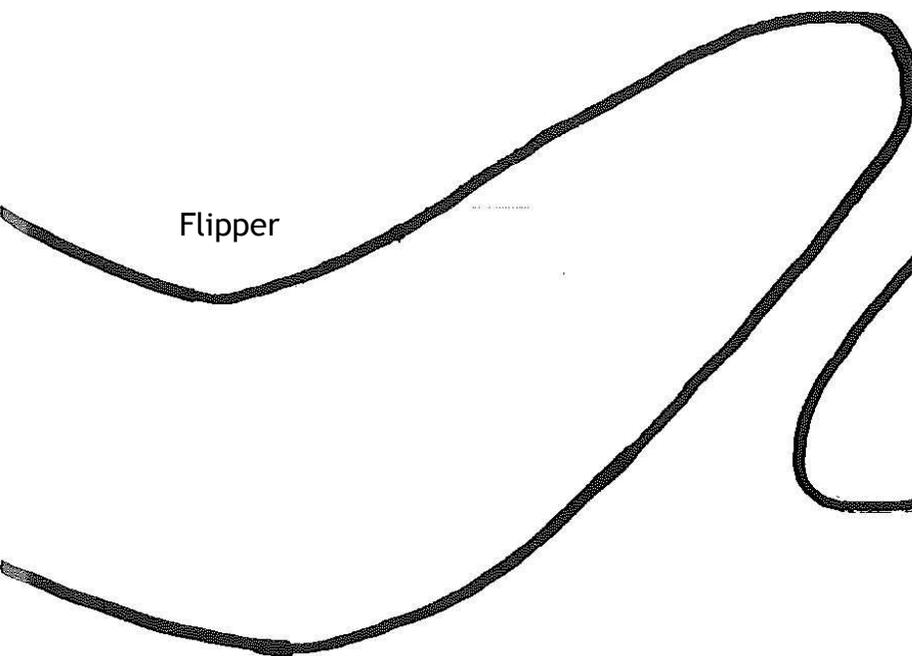
Back Flipper



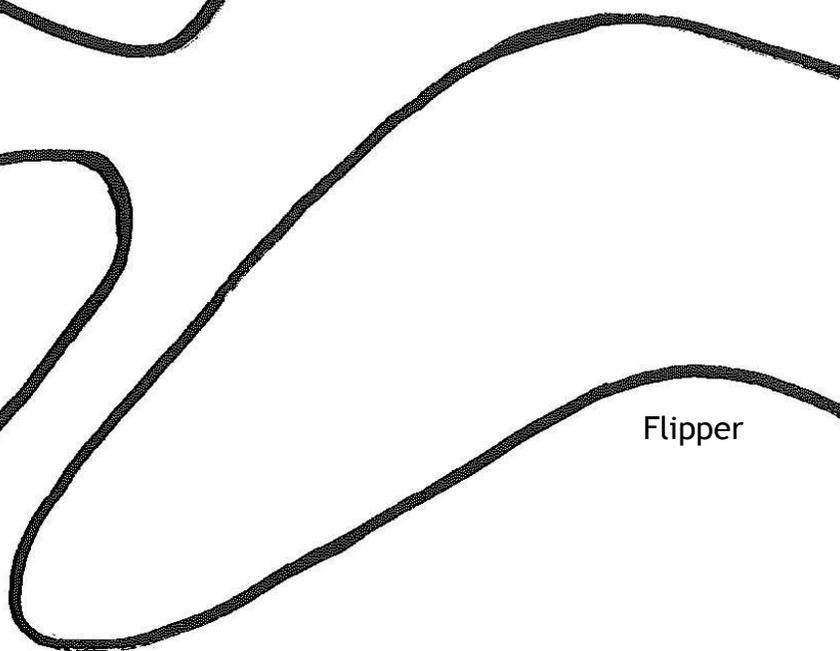
Turtle Head



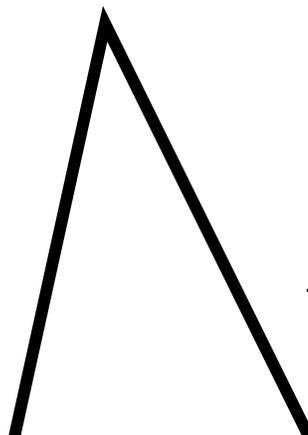
Flipper

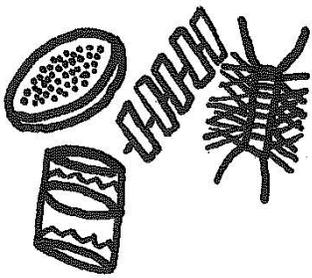


Flipper

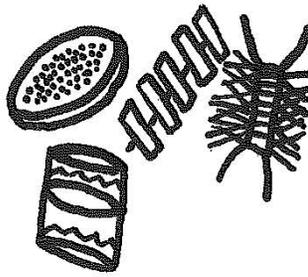


Tail

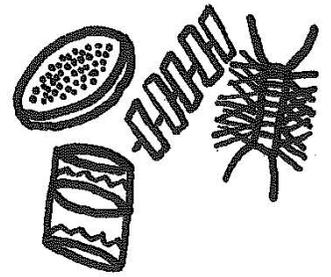




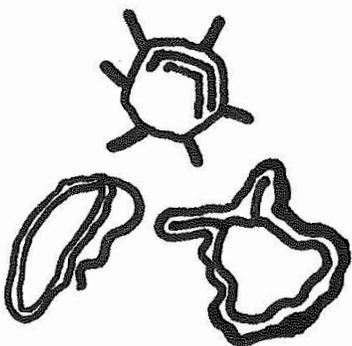
Phytoplankton



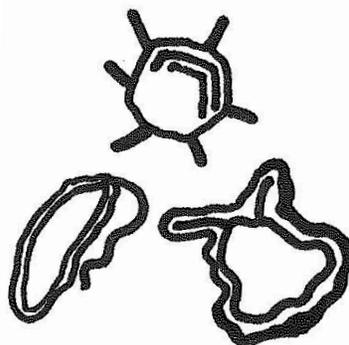
Phytoplankton



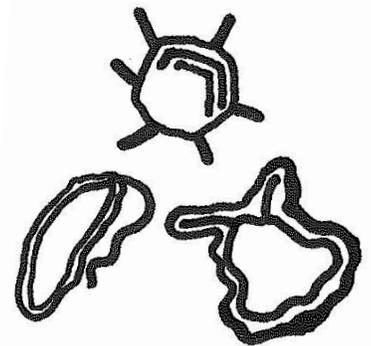
Phytoplankton



Zooplankton



Zooplankton



Zooplankton



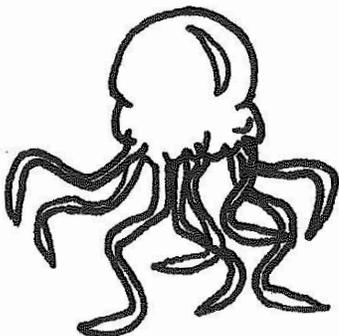
Small Fish



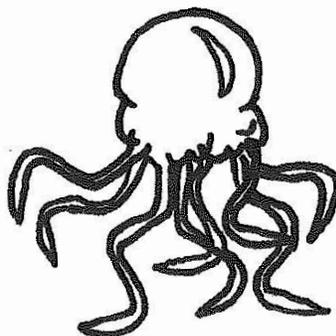
Small Fish



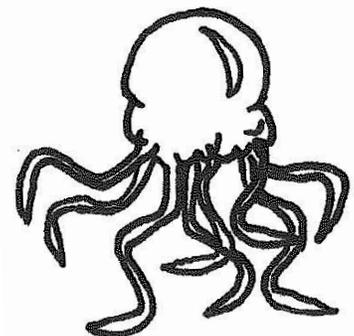
Small Fish



Jellies



Jellies



Jellies