

4-H Cloverbud

Marine Ecology

Project



Name _____

Club _____

Date _____

4-H Cloverbud Marine Ecology Project

Marine ecology is the study of how different plants and animals interact with their salty living area. Marine organisms may live at the beach, in the ocean, in a tidal marsh, or in an estuary where fresh water and salt water meet. Some animals live part of their life in fresh water and then move to salty water.

Enjoy some of these fun activities to learn about oceans and sea creatures. You should do 4 activities from the list each year you are in the project. You can take a field trip to the beach or to a nature center or water park as an activity. Work with an adult to select the activities you want to do. Let them help you gather the materials and help you do the activities. Ask them to take pictures of you doing your activities for your 4-H project report.

Be sure to ask your 4-H club leader if you have questions about the project or 4-H.

Have fun learning!

Compiled by:
Eleanor Foerste
Faculty/ Natural Resources
UF/IFAS Osceola County Extension
1921 Kissimmee Valley Lane
Kissimmee, FL 34744
321-697-3000
efoe@osceola.org
<http://osceola.ifas.ufl.edu>

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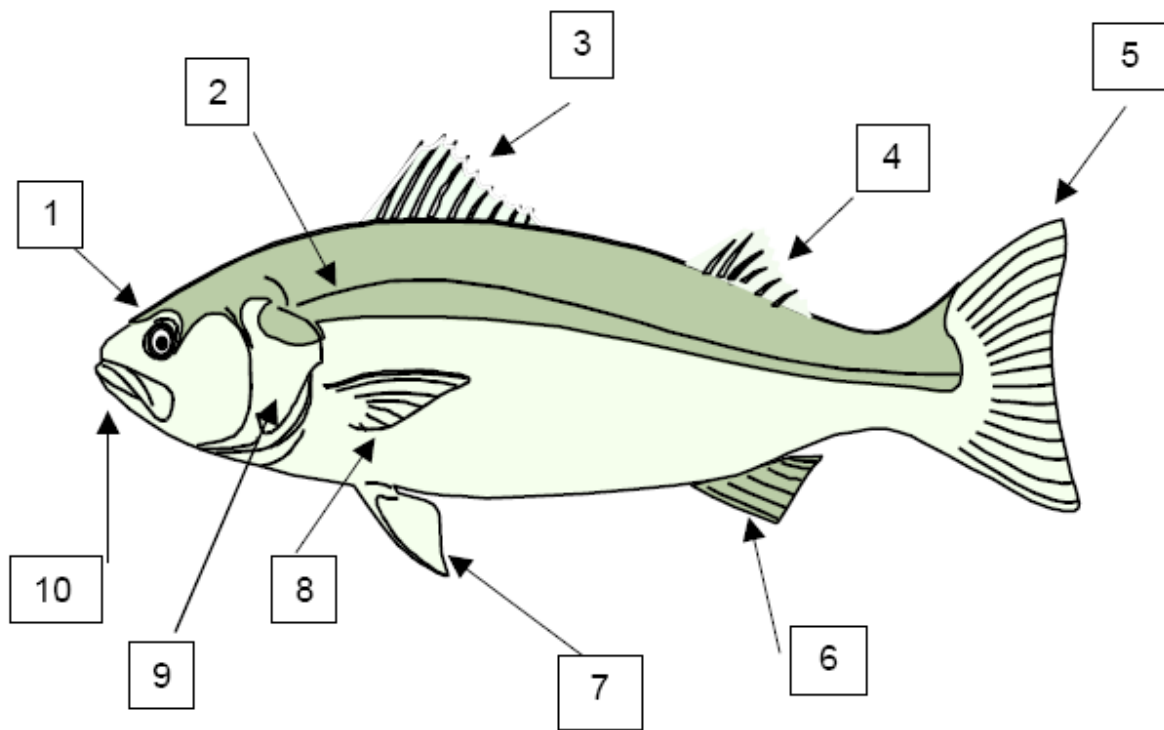
Fancy Fish - Name that Fin

Fish come in many shapes and sizes. Fins help fish move through water. Gills help the fish breathe underwater. Eyes help them see where they are going.

Fill in the word for the correct name of the parts of a fish.

Anal fin
Caudal fin
Eye
First Dorsal Fin
Gill Plate

Lateral Line
Mouth
Pectoral Fin
Pelvic Fin
Second Dorsal Fin



1. _____
3. _____
5. _____
7. _____
9. _____

2. _____
4. _____
6. _____
8. _____
10. _____

<http://www.marine.usf.edu/pjocean/packets/f99/f99u21e2.pdf>

FAST FACTS ABOUT FISH

from <http://www.first-school.ws/activities/alpha/f/fisfish.htm>

- Fish are backboned animals
- Fish breathe through gills and are cold blooded so they adjust their body temperature to their surroundings. Humans are warm blooded.
- Fish come in a big variety of shapes, sizes and colors.
- Many fish are edible, meaning we can eat them. Some fish are kept as pets in a fish tank or fish bowl.
- Fish live in salt or fresh water environments: oceans, rivers, streams, lakes, et

Fish come in many different shapes, each adapted to a particular lifestyle. The shape, size, and placement of fins differ with each kind of fish. If you look at a fish's fins carefully, you can tell something about how it lives. Pectoral fins that are set low on the body and at an angle are the sign of a bottom-dweller, like a sculpin. A narrow, forked tail and slender, sharply pointed pectoral fins indicate fast swimmers, like tuna. Body shape also tells something about where and how a fish lives. Flat fish like halibut spend much of their time buried in the sandy bottom, while the compressed shape of some reef fishes and the elongated bodies of eels make it easy for them to dart into the safety of a coral reef crevice.

Design a Fish

Create refrigerator magnets in a variety of fish shapes.

Adapted from <http://www.seaworld.org/just-for-teachers/classroom-activities/k-3/pdf/Design%20a%20Fish.pdf>

Materials

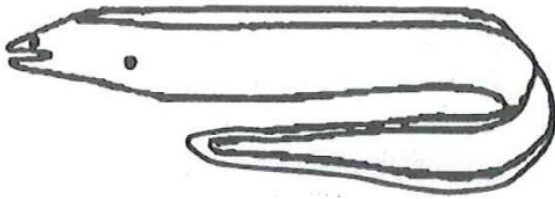
- Modeling compound
- $\frac{1}{2}$ inch pieces of magnetic strips
- Glue

- Wax paper
- Colored markers or watercolor paints

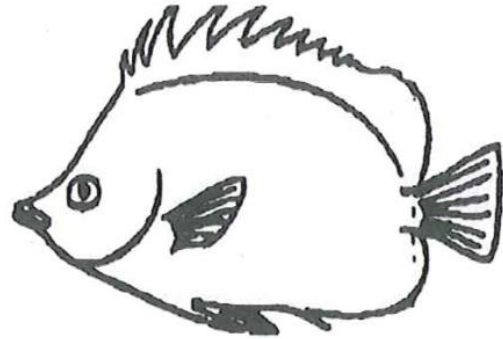
1. Think about how fish shapes are related to the way they move and where they live.
2. Place a small amount of modeling compound on a piece of wax paper.
3. Form the compound into a fish shape and form fins that fit your own imagination. Consider the placement of the fins and shape of the body.
4. Let the compound dry completely.
5. Color it with markers or paint.
6. When the color is dry, glue a magnet strip on the back so you can use it as a refrigerator magnet.

Write a story about where your fish lives.

Different Fish Shapes



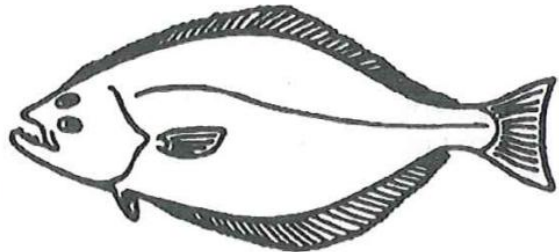
eel—elongated body
habitat—coral reef



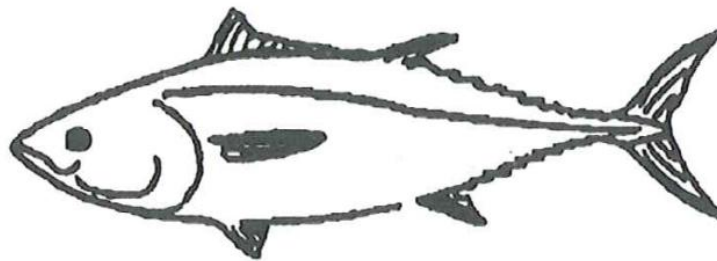
butterfly—compressed body
habitat—coral reef



sculpin—depressed body
habitat—sandy and rocky bottoms

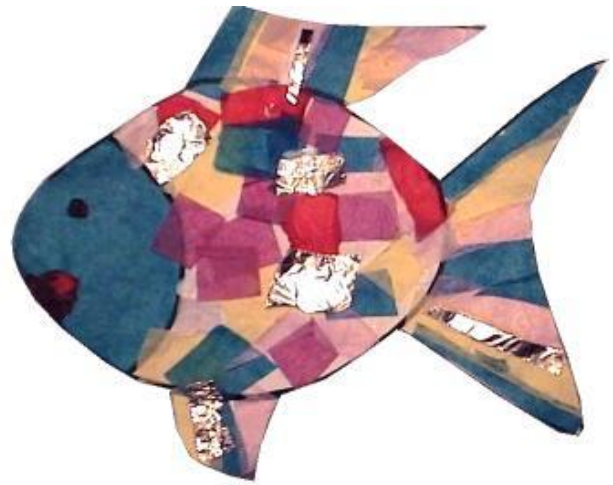


halibut—flat body
habitat—sandy bottoms and mud



tuna—fusiform body
habitat—open ocean

Rainbow Fish Craft



MATERIALS:

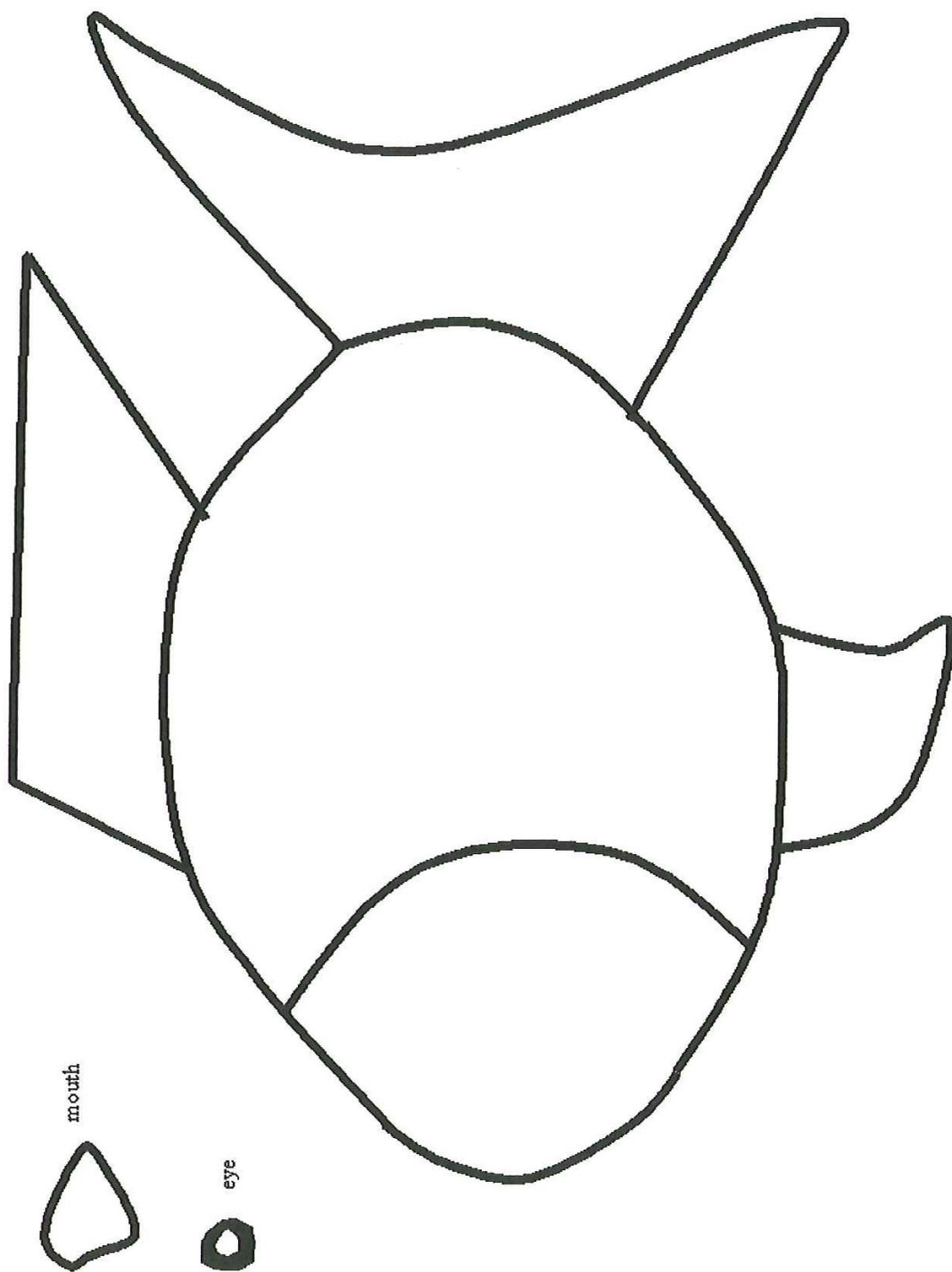
- template of the fish (or you can draw your own)
- 1/2 inch or so bits of various colored tissue paper or construction paper (we used tissue paper in the photo above)
- 1/2 inch strips of various colored tissue paper or construction paper
- small amount of tinfoil
- one big blue piece of tissue or construction paper OR a blue marker or crayon
- glue
- scissors

INSTRUCTIONS

1. print rainbow fish template (or draw the outline of a fish on a piece of paper)
2. Color the head in blue, or glue on a piece of tissue or construction paper. It doesn't have to be perfect since you will cut out the fish at the end.
3. Glue strips of various colored tissue or construction paper on the fins and tail
4. glue 1/2 inch (ish) squares of tissue paper or construction paper onto the body.
5. glue a few strips and 1/2 inch squares of tinfoil over the fish (or just glue on one square scale to show Rainbow Fish after he shared).
6. Cut out along the lines (if you used tissue paper you'll be able to see the lines through it... if you used construction paper, just estimate where the lines are). This step will require adult assistance for younger children.
7. Cut out the mouth and eye and glue them onto the head. (you can color them in with markers if you wish.)
8. To make your look underwater, stick it to a blue sheet of blue construction paper and place a sheet of slightly crumpled plastic wrap over the top. Tape the plastic wrap to the back of the paper.

From: http://www.dltk-teach.com/books/rainbowfish/rainbow_fish_craft.htm

You may want to read the book "The Rainbow Fish" written by Marcus Pfister and J. Alison James.

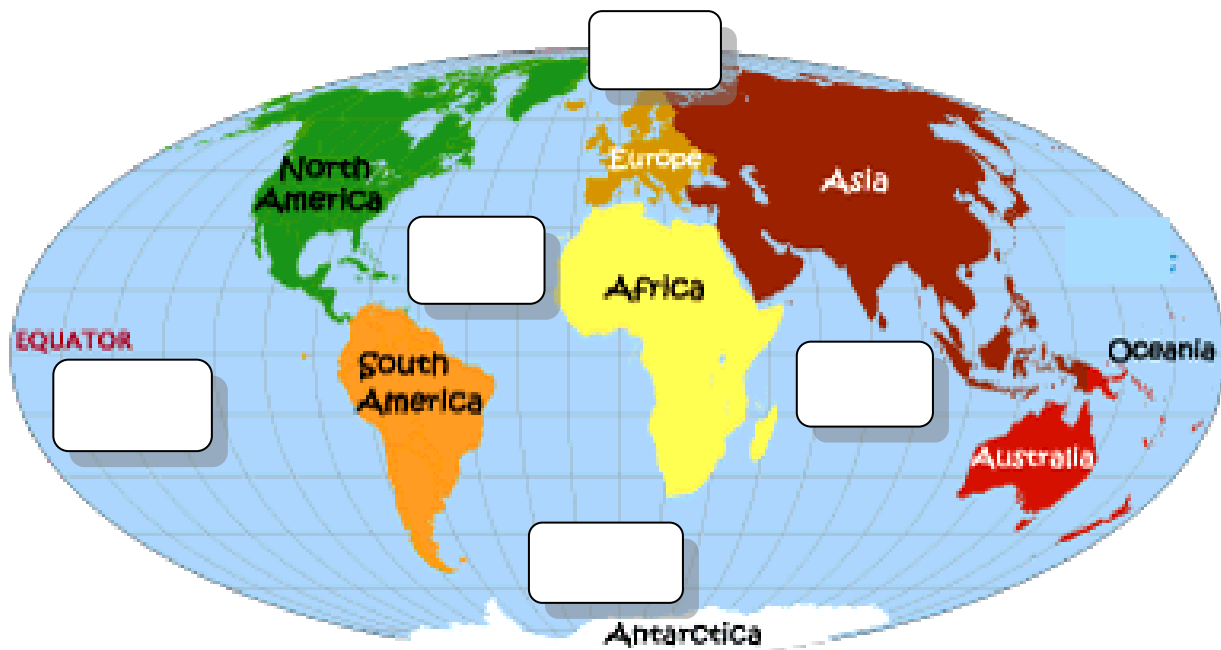


What is the ocean?

Oceans are large areas of water that cover the earth.

There are five oceans. Write the correct name in the space on the map.

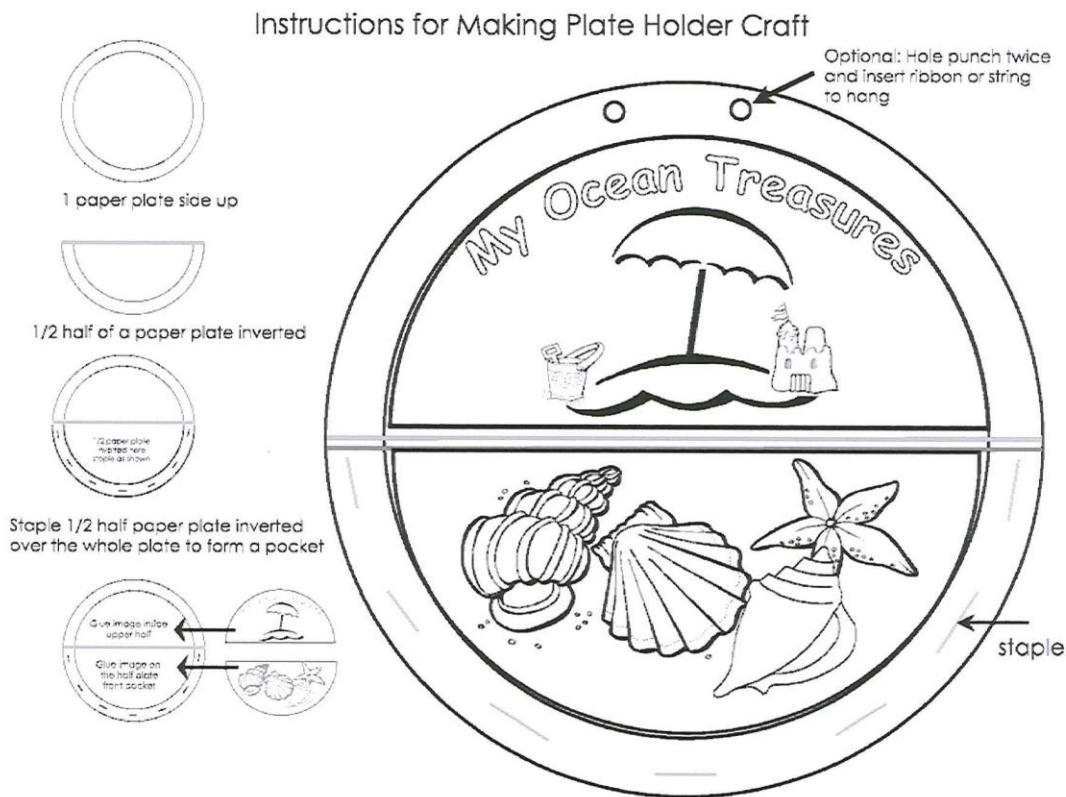
The Atlantic, Pacific, Indian, Arctic and Southern



My Ocean Treasures Paper Plate Holder Craft

Use this holder to keep shells and other treasures you find at the beach or that you get from friends or your family.

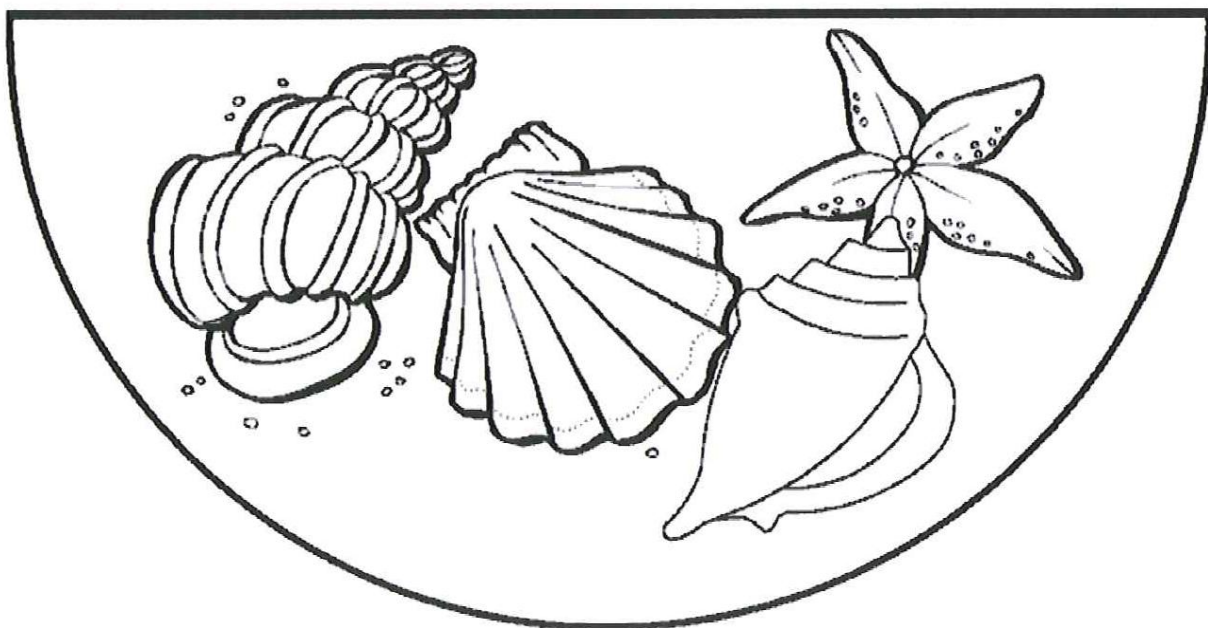
- *1 1/2 paper plates for each holder
- *something to color or paint with
- *paper or construction paper
- *optional: string, yarn or ribbon to hand the holder
- *scissor
- *glue or glue stick



10/9/2010

http://www.first-school.ws/craft/plateholder_assembly.html

1. Use the following page or have an adult copy the page onto a light/pastel colored craft or construction paper (yellow, orange, pink) to be decorated and colored.
2. Name some of the items in the artwork.
3. Color and/or paint the half circle images then cut them out. You may need an adult to help you use scissors
4. Cut one paper plate in half. Glue or staple half of a plate to the bottom of the whole paper plate so that it forms a pocket. Cover the staples with tape or sticky mailing labels for precaution.
5. Glue the picture of the seashells to the bottom half (the front of the pocket, and the picture with the words "My Ocean Treasures" to the top half. You can decorate the border of the plate if you wish.



Quick Crab Facts



* Crabs are arthropods with jointed legs.

Crabs live along coastlines in cracks and under plants in tide pools, or in burrows in sand.

* Like a suit of armor, a crab's shell protects it from attackers. A crab has two claws for holding and tearing food and for fighting. If a crab's claw breaks off, a new one grows back!

* When a crab grows too big for its shell, the shell splits and the crab climbs out of it. The crab then grows a new shell.

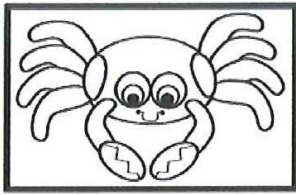
* A crab's shell matches the color of the rocks, plants or sand where it lives.

* A crab moves quickly, moving sideways on its eight back legs.

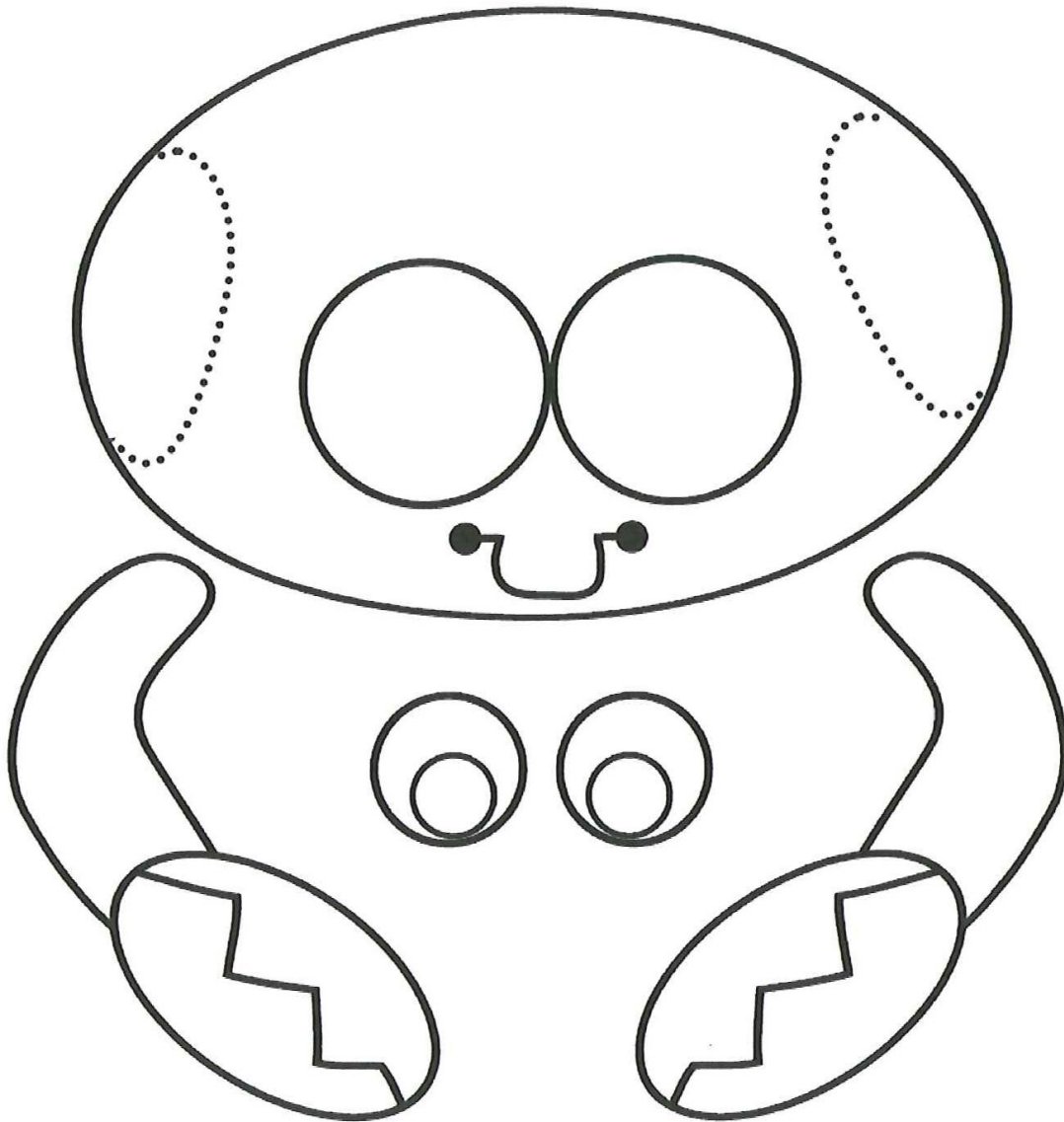
* Crabs vary in size from the pea crab, a few millimeters wide, to the Japanese spider crab, with a leg span of up to 4 meters (13 ft).

Make Your Own Crab

Count the legs. Crabs come in many colors and shapes. Use this internet link to see other pictures of many types of crabs and to read more information: <http://en.wikipedia.org/wiki/Crab> at Wikipedia.org. Click on images to see a larger version. Color the crab parts with designs and colors you like. Cut out the parts and assemble them together using a glue stick to attach smaller parts to the large body part.

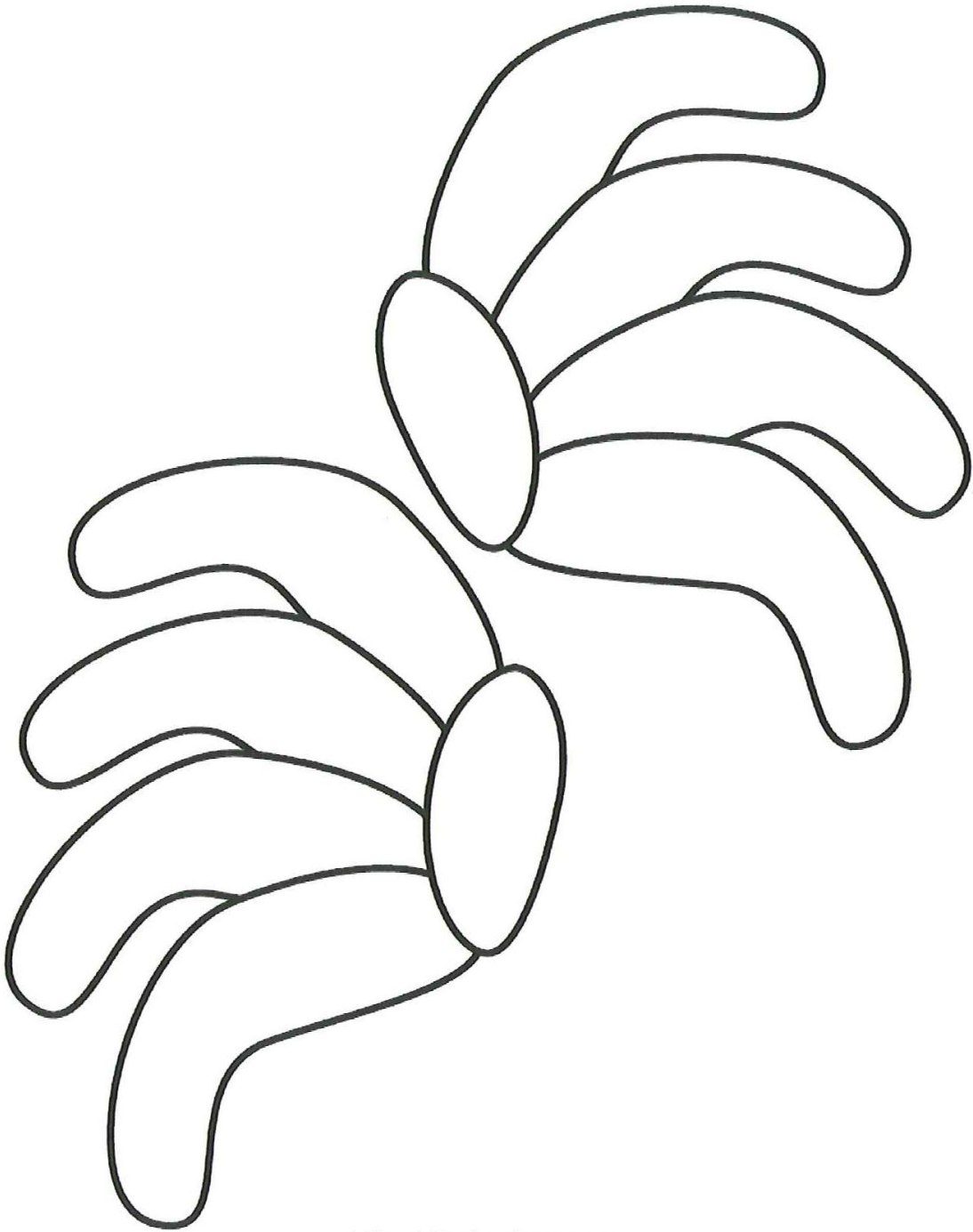


Little Crab Craft - Page 1 of 2

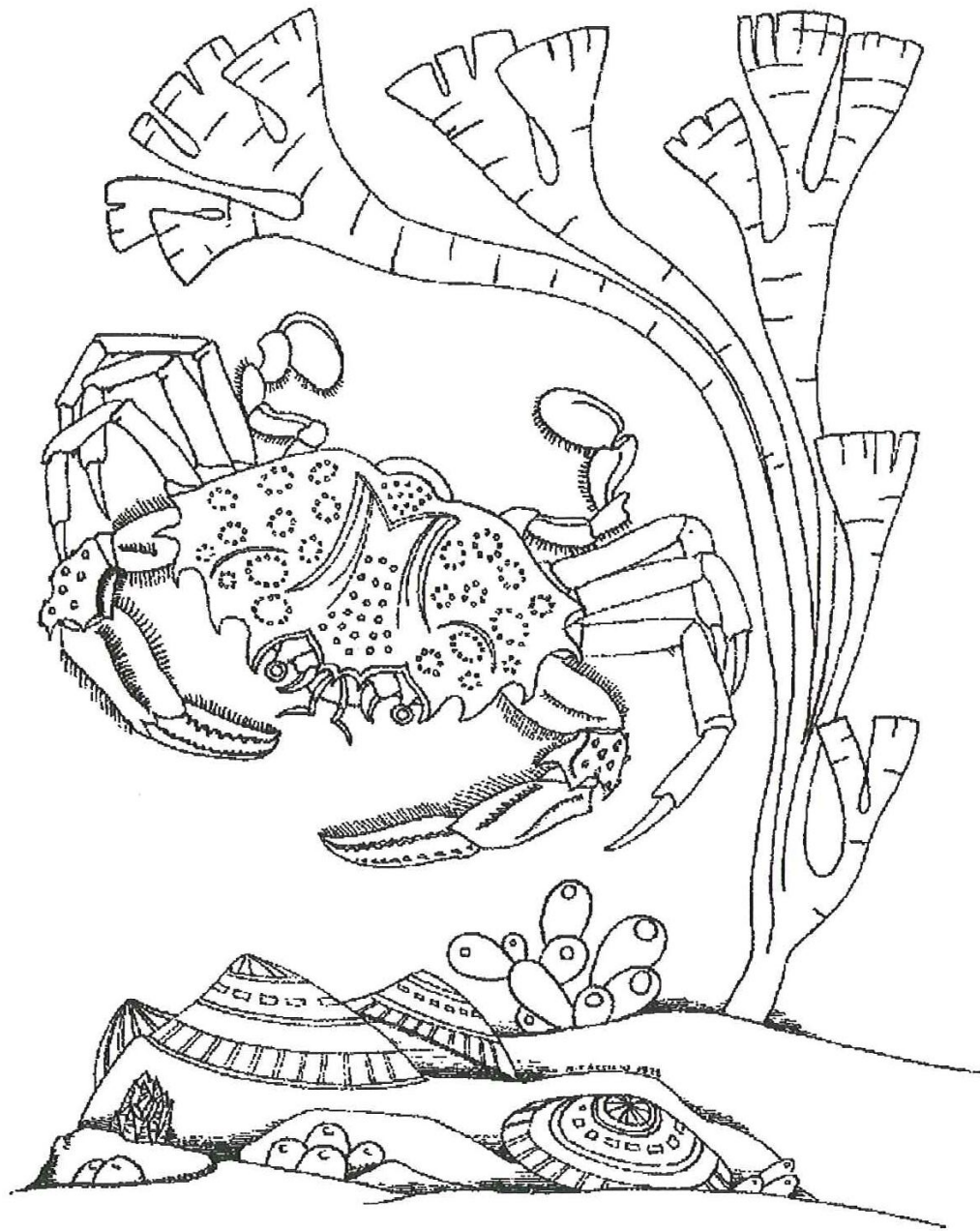


<http://first-school.ws>

Little Crab Craft - Page 2 of 2



<http://first-school.ws>





STARFISH

From <http://www.first-school.ws/activities/animals/ocean/starfish.htm>

The [starfish](#) is a sea animal with a flat body and five or more arms. Starfish live in shallow parts of the ocean. They are carnivores that eat clams, sea urchins, snails, abalone, sea cucumbers and other mollusks. They are also called sea stars. The sunflower starfish usually has 16-24 limbs called rays. It is the largest starfish in the world. Sunflower starfish can grow to have an arm span of 1 meter (3 ft 3 in) in diameter. The color of the sunflower starfish ranges from bright orange, yellow and red to brown and sometimes to purple. When stressed by fish, crabs and other animals that might eat them, they can shed arms to escape, which will grow back within a few weeks. Sunflower starfish are quick hunters, moving at a speed of one meter per minute using 15,000 tube feet which lie on the undersides of the body. They eat clams, and other sea stars. Link for images and information:

<http://en.wikipedia.org/wiki/Starfish>,

http://en.wikipedia.org/wiki/Pycnopodia_helianthoides Click on images to see a larger version.

Make a Paper Starfish

Materials: [Starfish picture template](#), 1 tablespoon birdseed or oatmeal, glue and brush

Optional: scissors to cut out star to make a decoration.

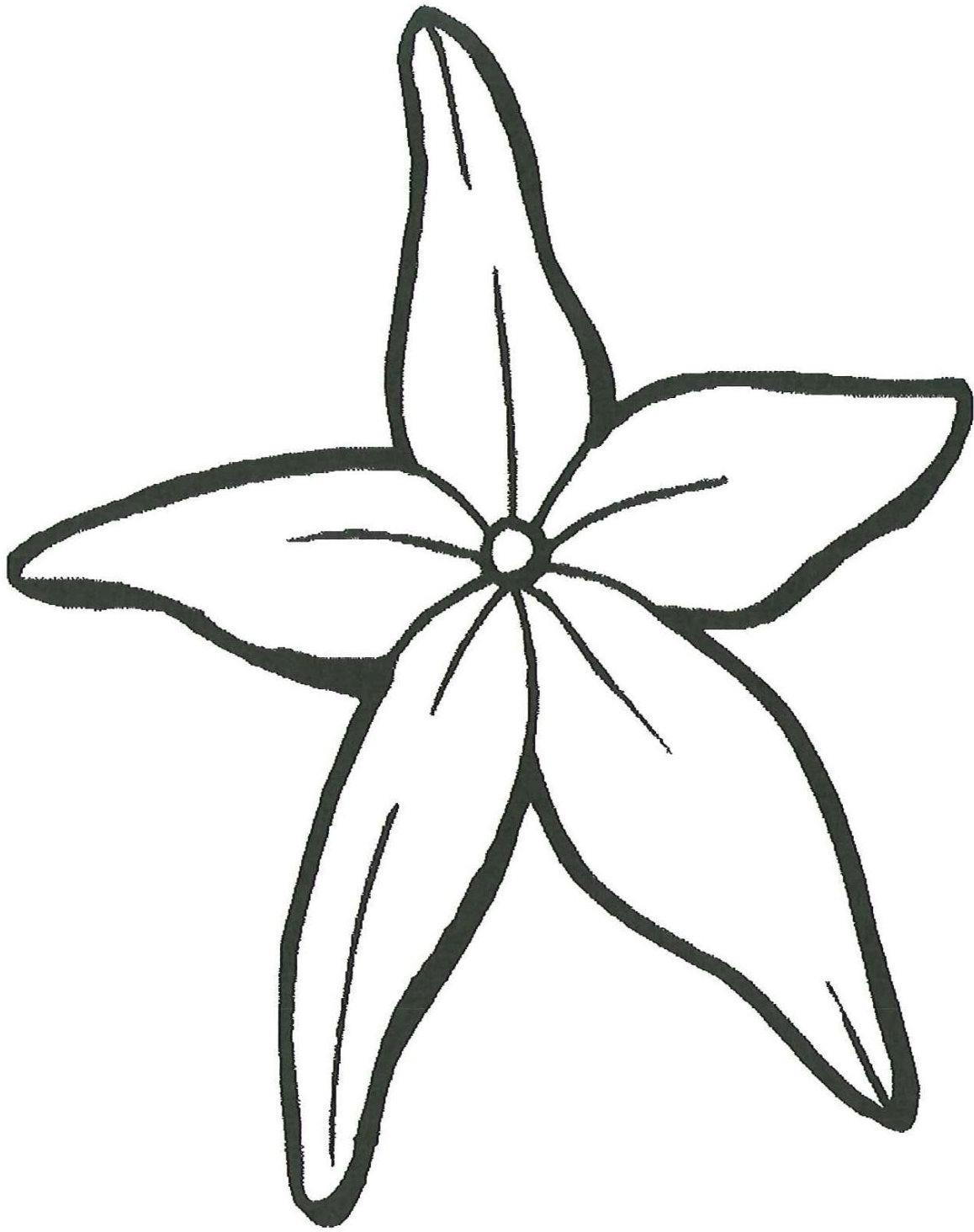
1. Count the number of arms on the starfish. Starfish may have 5 or more arms. How many does your starfish have? _____

Why is it called a starfish? Because it is shaped like a _____.

2. With the help of a grownup, smear glue all over the starfish and then sprinkle birdseed or oatmeal on top of the glue.

3. When you are finished applying the birdseed or oatmeal, pick up each starfish and pour off the excess back into a container.

4. When the starfish is dry, it will feel **bumpy** just like a real starfish.

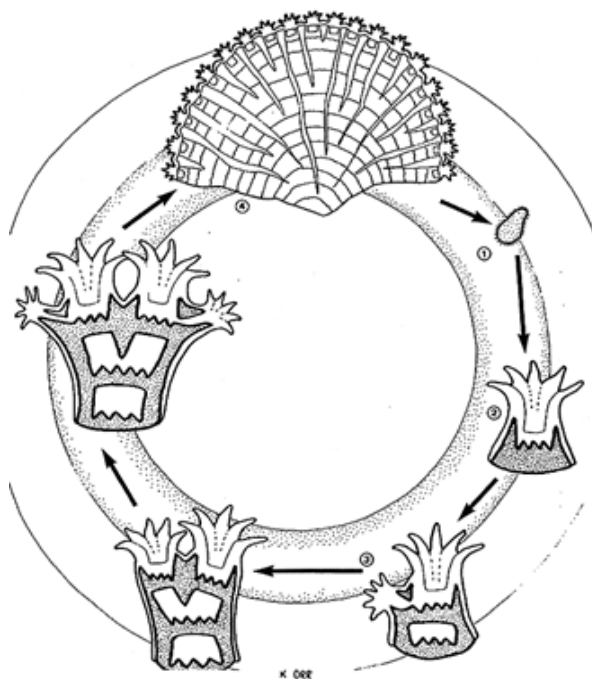


Coral Reefs

Reefs are created by tiny animals called coral polyps that live in large groups. The animal is like a watery sack with tentacles. They wave in the current and move floating food toward the mouth located at the bottom of the tentacles.

As the animals grow, they produce a rocky skeleton made of calcium carbonate, the same material that makes up our teeth, bones, shells and chalk. Many reef building corals have tiny green algae inside, living plant cells called zooxanthellae (pronounced zo-zan-thel'-ee).

Corals also eat tiny animals that float in the water called zooplankton. The Florida Keys are islands that were once underwater coral reefs.



Corals need:

- * year round water temperatures above 64 (F.) degrees
- * clear and clean water
- * sunlight

Learn more about corals that live in the National Marine Sanctuary at the southern end of our state. Go to the website <http://www8.nos.noaa.gov/onms/park/Parks/?pID=8> and learn more about organisms that live in the Florida Keys Marine Sanctuary. Look at invertebrates, [Cnidarians](#) for pictures of corals in the Florida Keys.

Learn more about coral reefs and read about how corals grow. Print out a coral reef coloring book.

http://hawaiihumpbackwhale.noaa.gov/documents/pdfs_activity_books/reef_book.pdf

Lesson plan included for grade 3-6

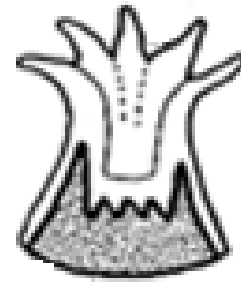
<http://sanctuaries.noaa.gov/missions/2010aquarius/welcome.html>

Coral Craft

Create your own coral colony from modeling dough.

Materials:

- Modeling dough, various colors
- 3-4 oz cups



Coral colonies grow in many colors and shapes. Make a coral polyp by rolling dough into a small ball the size of a golf ball. Drop the ball of dough into one of the small cups, which represents the calcium carbonate coral rock. Add small pieces of dough rolled out like spaghetti to the top of the dough ball. These are the tentacles of the coral polyp animal. Corals live in colonies with many, many polyps side by side. Make at least 8 coral polyps and arrange the cups close together.

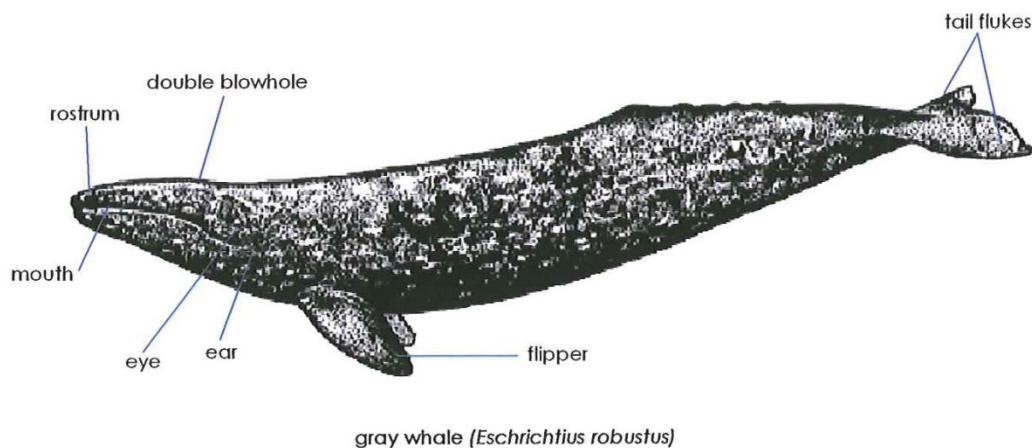
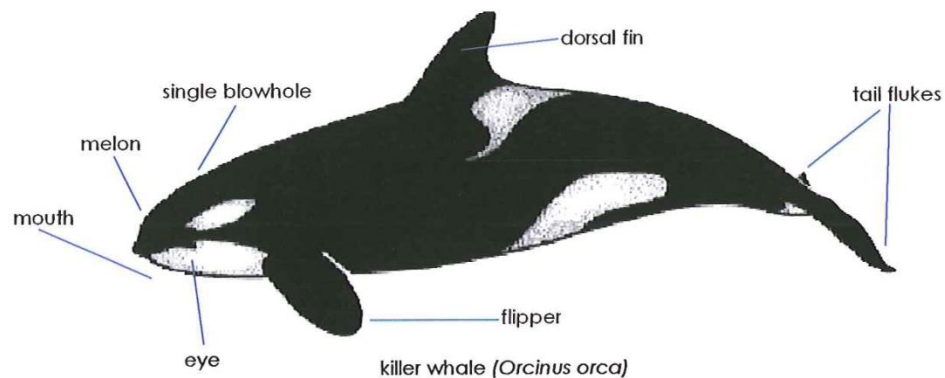
Edible Alternate- Line cups in a cupcake pan with paper or foil liners. Make polyps of sugar cookie dough for an edible treat. Bake according to cookie dough instructions. Experiment with cooking time as it will depend on the diameter of the tentacles. If they are too small, they will burn before the dough ball is thoroughly cooked.

Whales

<http://en.wikipedia.org/wiki/Whale>

Whales facts

- Whales are mammals that live in the ocean.
- Whales have backbones, fine hair on their bodies, produce milk to feed their babies and breathe air like land mammals.
- Some whales eat large animals like fish and seals, while others eat small creatures like shrimp and krill.



Adapted from <http://www.seaworld.org/just-for-teachers/classroom-activities/k-3/pdf/How%20Big%20is%20a%20Blue.pdf>

How Big is a Blue?

1. Copy the whale picture pages and cut apart the pictures of the different whales.
2. Sort them and arrange them from smallest to largest.
3. Write the names and lengths, in order from smallest to largest, on the chart below.

	Type of Whale	Length in feet	Length in meters
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Make a Whale of a Rope

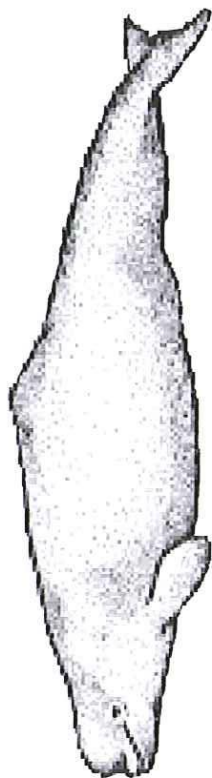
Use a rope to show how long different whales really are.

Materials

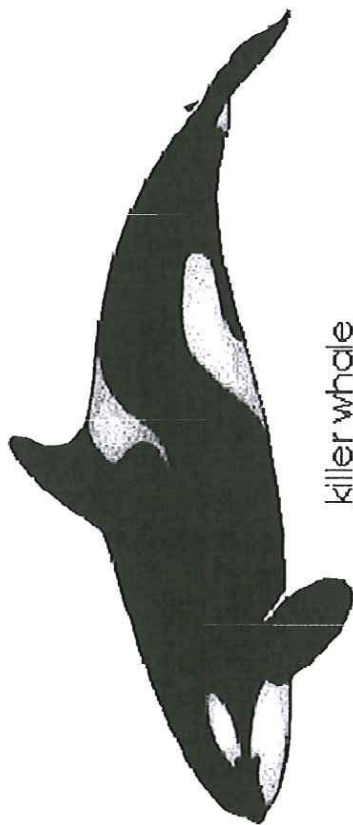
- 100 foot long rope
- Yarn
- Pictures of whales

1. Measure the length of each whale along the rope.
2. Tie a piece of yarn at the correct length and attach the picture of the whale to the rope.

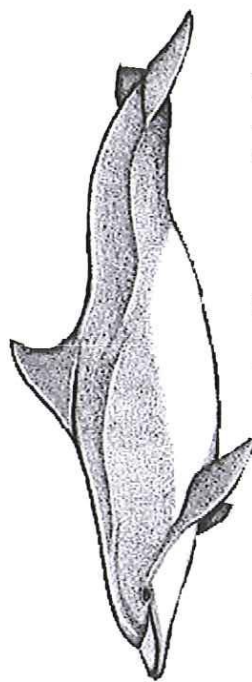
Whale Pictures



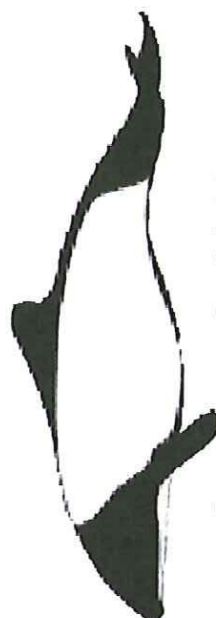
beluga whale
Delphinapterus leucas
15 ft. (4.5 m)



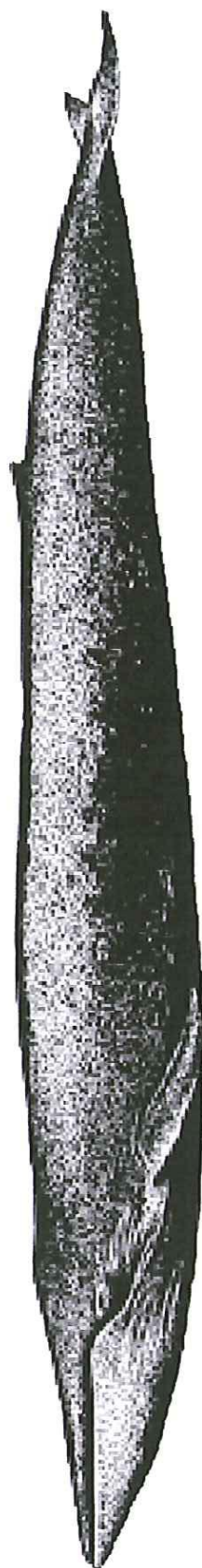
killer whale
Orcinus orca
19 ft. (5.8 m)



bottlenose dolphin
Tursiops truncatus
10 ft. (3 m)

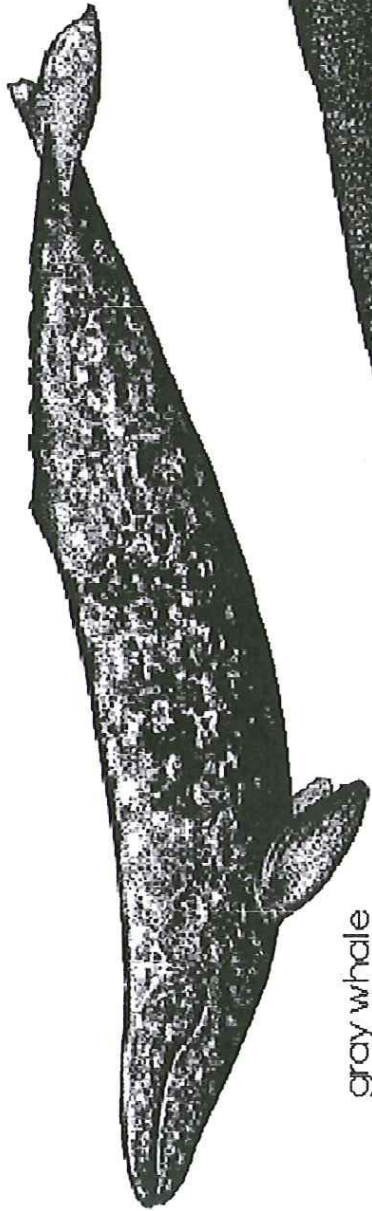


Commerson's dolphin
Cephalorhynchus commersonii
5 ft. (1.5 m)

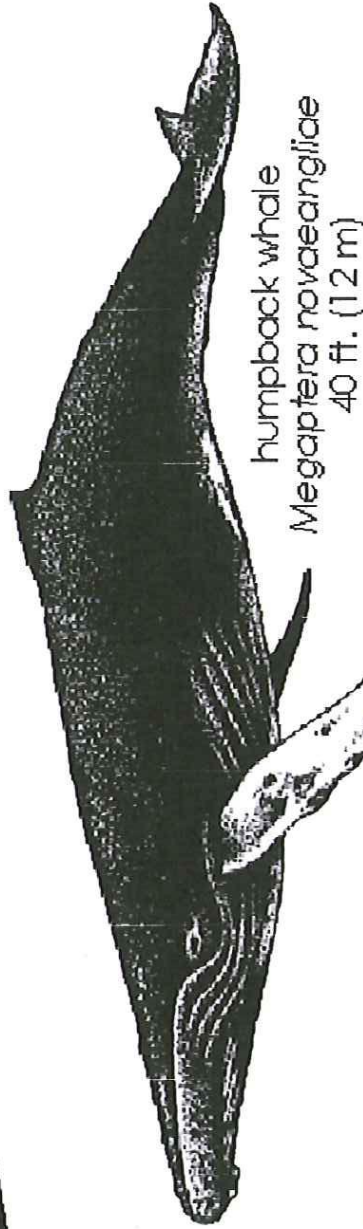


blue whale
Balaenoptera musculus
90 ft. (27.5 m)

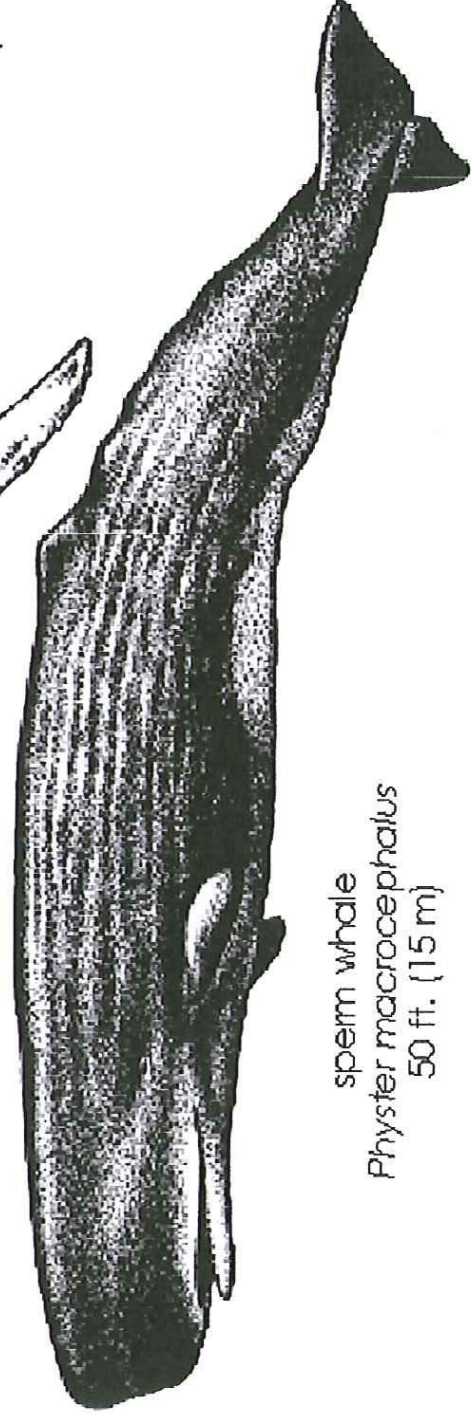
Whale Pictures



gray whale
Eschrichtius robustus
45 ft. (14 m)

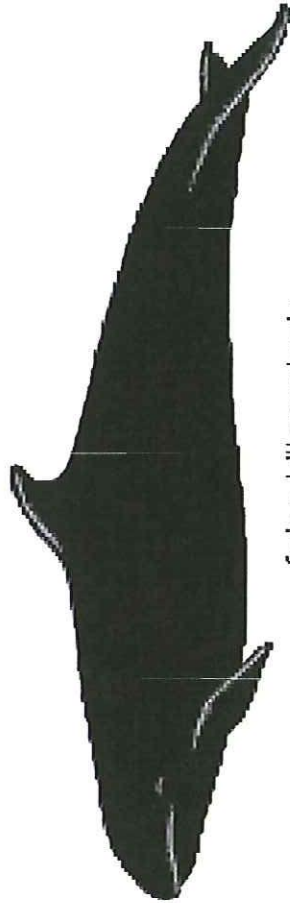


humpback whale
Megaptera novaeangliae
40 ft. (12 m)



sperm whale
Physeter macrocephalus
50 ft. (15 m)

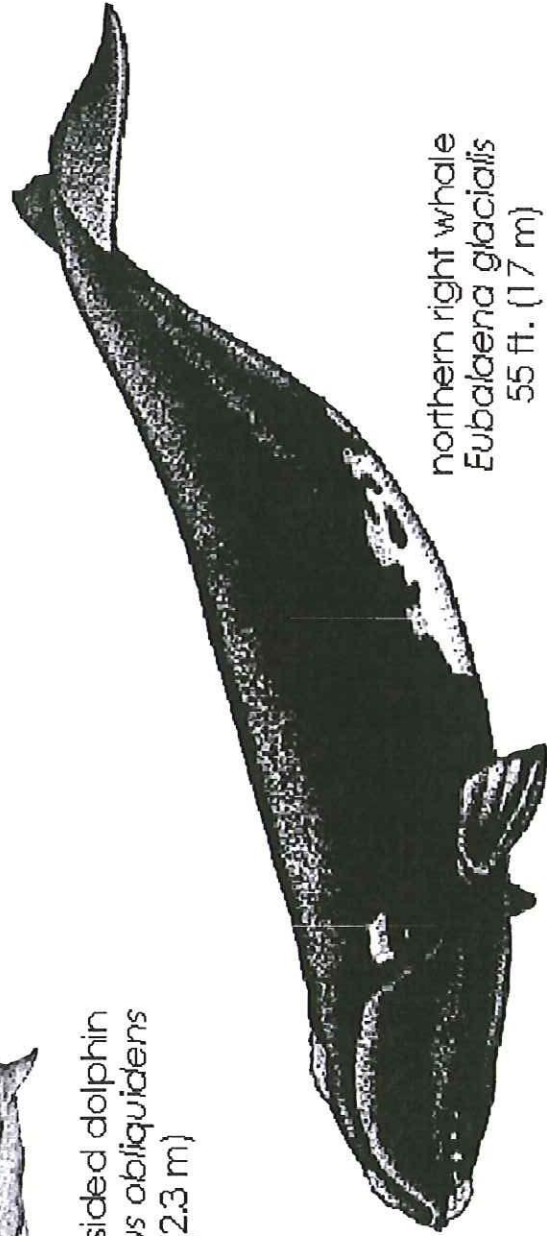
Whale Pictures



false killer whale
Pseudorca crassidens
16 ft. (5 m)



Pacific white-sided dolphin
Lagenorhynchus obliquidens
7.5 ft. (2.3 m)



northern right whale
Eubalaena glacialis
55 ft. (17 m)

Florida Birds at the Shore

<http://stock.tobinphoto.com/florida-birds-pictures.php>

Look up pictures of these "colorful" birds that live in and around our waterways.

<http://florida4h.org/projects/marine/files/09SenIntIDGuideCD.pdf>

<http://www.flmnh.ufl.edu/birds/sephotos/birdpint.htm>

Learn more about the birds in the Marine Ecology Species Identification Companion Guide.

<http://florida4h.org/projects/marine/files/2010SEN-INTcompanion%20guide.pdf>

Colorful Birds

Draw a line to the color that matches the bird's description.

- | | |
|---------------------------|----------------------------|
| 1. Great Blue Heron | a) Blue, green, purple |
| 2. Great Egret | b) Grey and yellow |
| 3. Osprey | c) Red and black |
| 4. Brown Pelican | d) Pink and White |
| 5. Roseate Spoonbill | e) Black, grey and white |
| 6. American Oystercatcher | f) Pink |
| 7. White Ibis | g) White, black and yellow |
| 8. Purple Gallinule | h) Black and white |
| 9. Bald Eagle | i) Red, black and white |
| 10. Red Winged Blackbird | j) Brown and white |

Home-made Modeling Dough

Things You'll Need:

- An adult to help you
 - Disposable gloves
 - All-purpose flour (not self-rising)
 - Salt
 - Water
 - Food coloring
 - Airtight containers or sealable plastic bags
1. Combine 2-1/2 cups of flour with 1 cup of salt, mixing well. Add 1 cup of water, and a few drops of food coloring. Blend thoroughly. Add more food coloring, a few drops at a time, until the shade deepens to your satisfaction.
 2. Put on disposable gloves to keep the food coloring in the dough from staining your skin.
 3. Knead the dough mixture for about 10 to 15 minutes, until it becomes firm and flexible and feels like modeling clay. When you can bend the dough without it breaking up into pieces, it's done.
 4. Place your colored modeling clays in separate airtight containers or sealable plastic bags and store them at room temperature. To keep the clay pliable, be sure to return it to its sealed container when you're not playing with it.

How to Make Homemade Modeling Clay | eHow.com

http://www.ehow.com/how_4762473_make-homemade-modeling-clay.html#ixzz11wRVzCCr

Other Marine Ecology Activity

Talk to your family or 4-H leader for some ideas. You could go to the beach or a nature park.

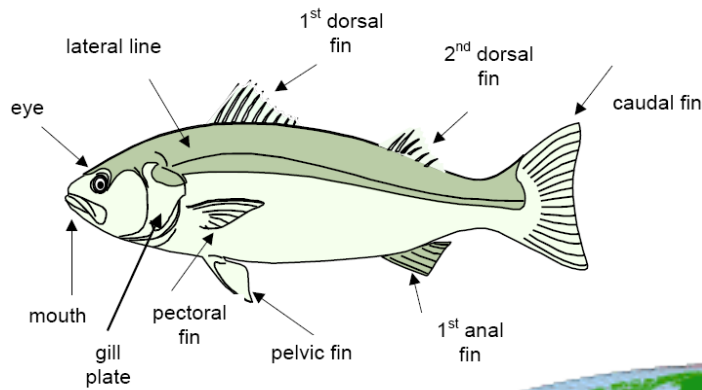


Where did you go?

What did you see?

What are some things you learned while on your visit?

Answers to parts of the fish



Answers to Ocean Names



Answers to Colorful Birds

- | | |
|---------------------------|----------------------------|
| 1. Great Blue Heron | a) Blue, green, purple |
| 2. Great Egret | b) Grey and yellow |
| 3. Osprey | c) Red and black |
| 4. Brown Pelican | d) Pink and White |
| 5. Roseate Spoonbill | e) Black, grey and white |
| 6. American Oystercatcher | f) Pink |
| 7. White Ibis | g) White, black and yellow |
| 8. Purple Gallinule | h) Black and white |
| 9. Bald Eagle | i) Red, black and white |
| 10. Red Winged Blackbird | j) Brown and white |