

dancing shrimp -
Indo-Pacific



red hairy hermit crab -
Caribbean



spiny lobster - Caribbean



sea urchin - worldwide distribution

sea urchin - worldwide distribution

The sea urchin is a relative of the sea star. The spines are coated with a toxic mucus that can be deadly to fish. The spines can move in any direction. Sea urchins can be red, green, purple, orange, and yellow.

red hairy hermit crab - Caribbean

A hermit crab does not have a protective outer skeleton on its abdomen so it finds shells of other animals in which to live. The crab's abdomen is curved so it fits well inside the spiraled shells of many kinds of mollusks. When the hermit crab outgrows its borrowed shell it looks for a new and bigger shell. Hermit crabs eat plants and animals, living or dead.

dancing shrimp - Indo-pacific

The dancing shrimp is red with white markings. Shrimp are found everywhere on the reef scavenging for food. They will eat plants or animals, living or dead. Shrimp are eaten by many reef dwellers and man.

spiny lobster - Caribbean

The spiny lobster has a mottled red, blue, and brown shell. The shell is actually its skeleton and it provides protection for the lobster's soft body. As the lobster grows, it forms a new shell underneath the old one. The lobster discards the old shell and the new, bigger shell hardens. A lobster will eat almost anything that crosses its path and is considered the housekeeper of the reef. Lobsters are also eaten by many reef dwellers. A female lobster can produce up to 30,000 eggs which she holds under her abdomen with special paddle-like arms. When the eggs hatch they are scattered with the currents, becoming part of the zooplankton until they are big enough to settle on the reef.



spiral shark egg case

epaulette shark - Australia

shark egg case

baby sharks

shark egg case
The egg case of the dogfish family of sharks is dark brown and leathery with tendrils on the ends to catch onto sea plants or coral. It is sometimes called a mermaid's purse.

baby sharks
Many sharks give live birth around reefs. There is a greater variety and abundance of food in a reef area.

spiral shark egg case

Spiral-shaped egg cases are laid by the bullhead shark family. The egg cases are often wedged into coral crevices and rock hollows by the female to protect them from scavenging fish. The cases are brown and leathery.

epaulette shark - Australia

The epaulette shark is about three feet long. It is grayish brown with scattered black or dark brown spots. This shark has a relatively small mouth and eats small fish and crustaceans. It lays leathery eggs that intertwine with sea plants and corals until they hatch.

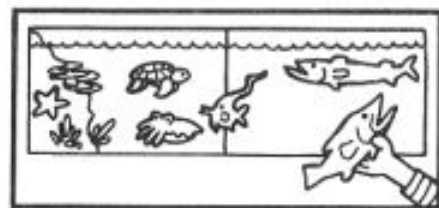
A Note to the Teacher or Parent

This book contains patterns and activities for exploring the important ecosystems of the tropical coral reefs around the world. The study of these ecosystems can be approached by learning about each reef system around the world, by comparing the animals that live on each reef and how they differ or how they are similar, and by looking at the environmental view of how pollution affects the delicate reef ecosystem and animal species that live on the reefs.

General Instructions

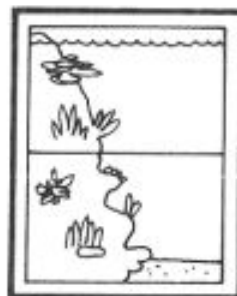
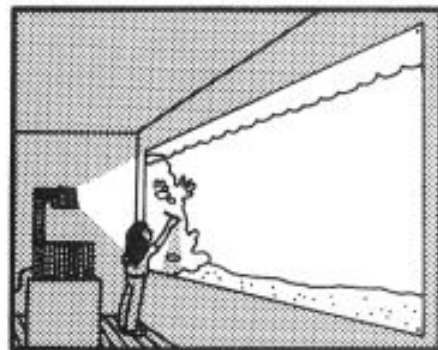
Using the patterns in the size provided:

- 1A. Reproduce one mural (page 75) for each child and let him color the page.
- 1B. Reproduce two, three, or four mural pages (pages 75 through 79) for each child. Glue the three pages together vertically, as shown, and color or paint the entire poster.
2. Let each child choose one or more animals to color and cut out.
3. Glue the animals to the mural or coral reef poster. Using watercolor paints will add a "watery" feel to the murals.

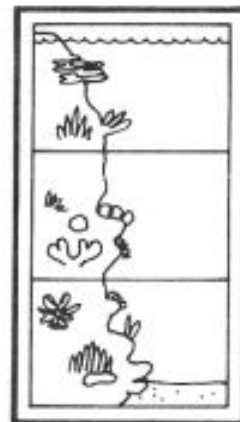


Mural (page 75) extended to the right with plain paper

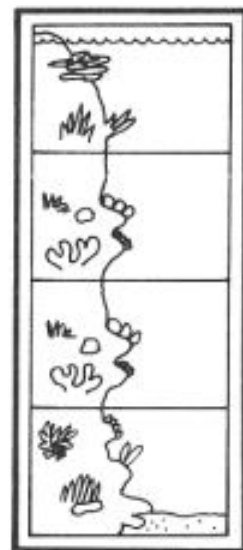
***All the murals can be extended to the right with plain paper.**



Mural using page 75 on top and page 79 for the bottom



Mural using pages 75, 77 and 79



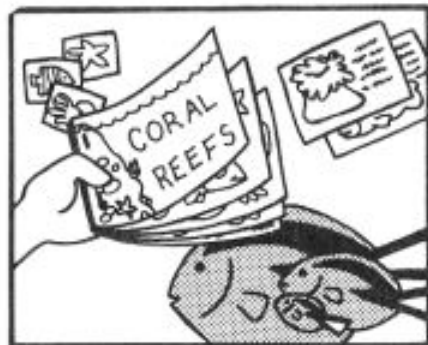
Mural using two copies of page 77 in the middle

Enlarging the Patterns

1. Cover the desired area with butcher paper.
2. Use an opaque projector to enlarge the reef mural pages (75 through 79), the map (page 90 & 91), or any of the animal patterns to the desired size.
3. Trace the projected pattern on the butcher paper.
4. Use poster paint, watercolor paint, chalk or tissue paper collage to decorate.

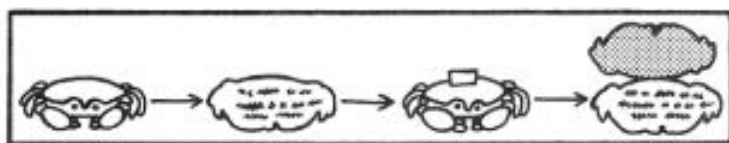
Reducing the patterns:

Many copiers now have a "reduce" function. The patterns can be reduced for minibooks, game cards, flannel boards, and more.

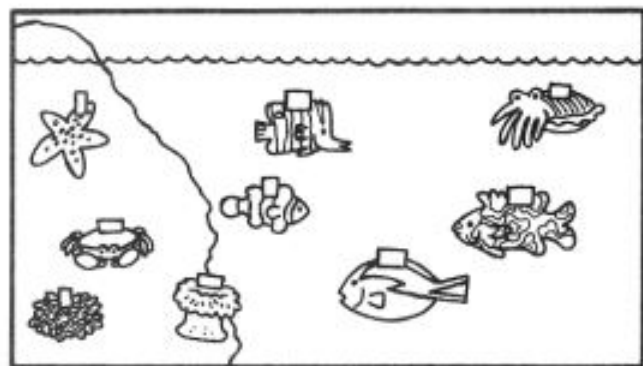


Bulletin Boards

1. **Bulletin Board of Facts:** Enlarge the mural pages (75 through 79) to fit a bulletin board. Let the children color, print and decorate the background. Let each child choose an animal. He will color and cut out his animal then trace and cut out the animal pattern on plain paper and write several facts about that animal on the plain paper pattern. Tape together the colored animal and the fact pattern at the top so the tape acts like a hinge, as shown. Place all the hinged animals on the bulletin board with more tape, as shown.



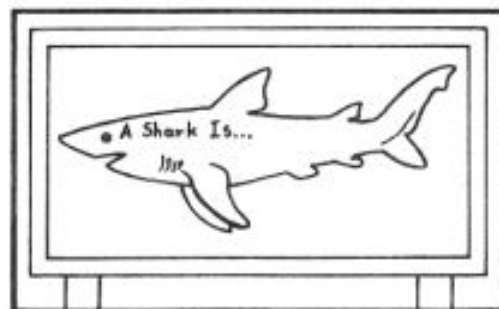
Assembling Each Animal



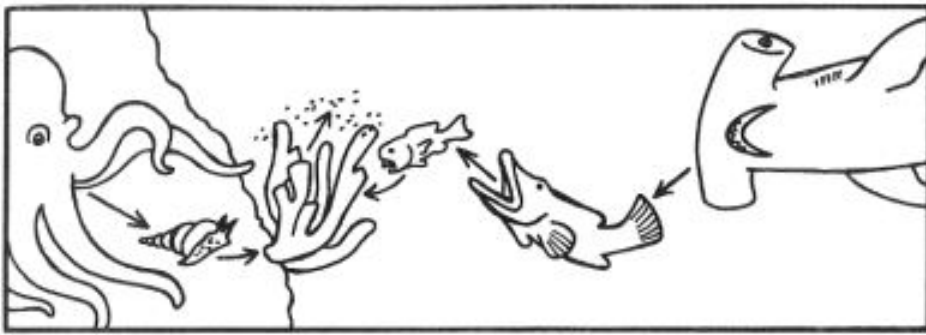
Bulletin Board of Facts

Extension: Use the same procedure and let several classes create a bulletin board in the school hallway between two classes.

2. **Giant Animal Bulletin Board:** Choose one or more animals and enlarge them to fill an entire bulletin board. Print "A (name of animal) is..." on the animal and let the children fill in with appropriate words, phrases, or sentences.
3. **Food Web Bulletin Board:** Use one of the mural pages (pages 75 through 79) or place the zooplankton pattern and a coral pattern in the middle of a bulletin board. Let the children determine which animals feed on zooplankton and place them around the board, connecting them to the zooplankton with yarn. Place more animals on the board and connect each one to what it eats with yarn. One predator may be connected to several food sources.



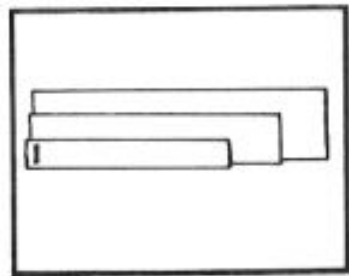
Giant Animal Bulletin Board



Food webs are important because they help us understand how parts of an environment are interrelated. For classroom discussion, ask a child to remove one of the animals from the bulletin board. What effect does that have on the other animals? Keep in mind that even removing a top predator can cause over population and reduction of food supply to its prey. Balance is the key.

Making a Diorama

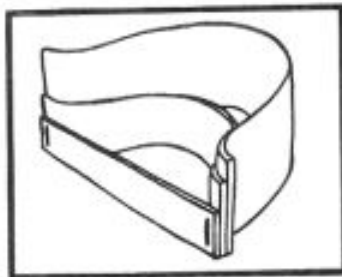
1. Cut three strips of construction paper or tag board for each diorama. The first strip should be three inches wide and eighteen inches long. The second strip should be two inches wide and fifteen inches long. The third strip should be one inch wide and twelve inches long.
*Larger dioramas can be made by lengthening each strip in proportion.



Diorama Step 2

2. Match the left and bottom edges of the three strips and staple them together as shown in diorama step 2.
3. Bring the right edges to meet and staple them together. This will cause the middle and back strips to bow as shown in diorama step 3.
4. Cut out and color various animals. Arrange and glue them to the three strips as desired. One arrangement is shown in diorama step 4.

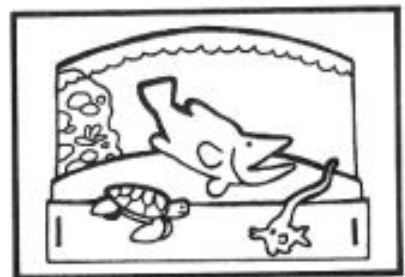
Option: Use a mural (like page 75) in place of the largest strip. Lengthen the other strips in proportion. See diorama step 5.



Diorama Step 3



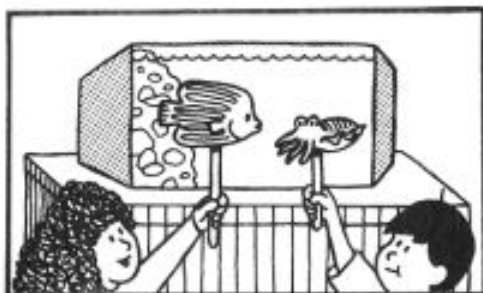
Diorama Step 4



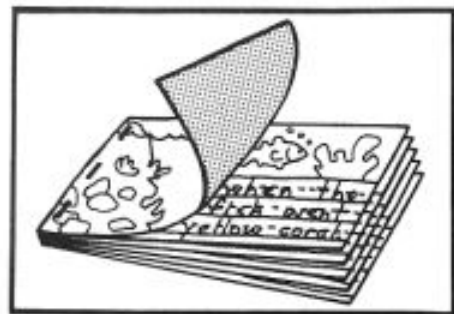
Diorama Step 5

Making Stick Puppets and a Mini-Theater

1. Reproduce, color, and cut out the animal patterns.
2. Attach each animal to a tongue depressor.
3. Reproduce, color, and cut out a mural (page 75, 77, or 79).
4. Glue the mural page to a piece of poster board. Attach a piece of plain poster board to each side of the mural at a right angle with masking tape. This should allow the mural to stand upright.



Animal Puppets



Fact or Fiction Book

Making a Large Fact or Fiction Book

1. Reproduce the mural on page 75 for each child, to be used as the cover of the book. Let the children color and decorate their covers.
2. Distribute three or four pieces of story book-style lined paper to each child.
3. The children can use patterns from this book or draw their own illustrations and create factual reports or fictional stories.
4. Let each child gather the pages for his story or report in order and place his cover on top. Assist each child in stapling the pages and cover together along the left side.

Making a Pop-Up Book

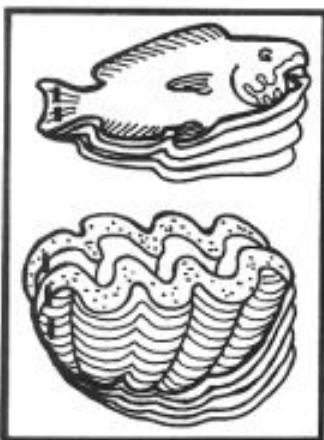
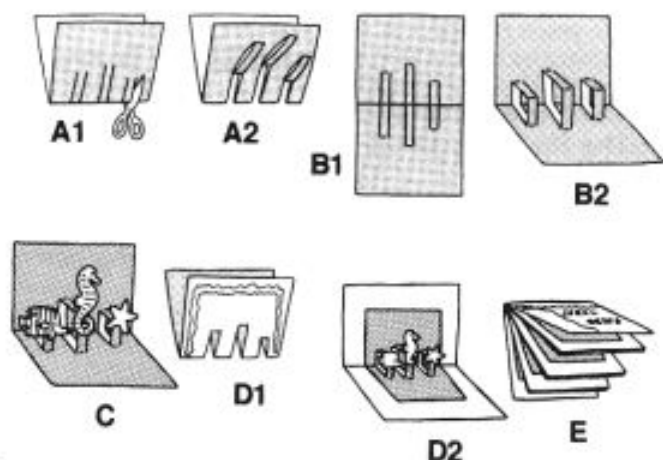
A. Give each child a 9"x12" piece of construction paper. Instruct the children to fold it in half and cut two parallel lines about 1/2" apart into the fold, as shown in A1. Make a set of two parallel cuts for each item that will pop up. The sample shown is for three pop-up items as shown in A2.

B. Unfold the paper to a flat position (B1). From the back, push the strip forward to the position shown in B2.

C. Choose the items that will pop up and glue one item to each strip as shown in C. Let the glue dry before closing the paper.

D. Fold a 12"x18" piece of construction paper in half length-wise to 12"x9". Apply glue around the edge of the pop-up piece (D1) and glue it to the inside of the larger piece so that align (D2).

E. Glue the larger pieces together, back to back, and attach a cover with tape to the top page (E). Extend wide tape across the folds at the top for a more finished look.



Large Shape Book

Making a Large Shape Book

1. Reproduce a large animal pattern (like the shark) or enlarge any of the smaller animal patterns to 11"x17" size and reproduce one pattern for each child. Let the children color and decorate their animals. These will be the covers of the books.
2. Let the children use their covers to trace and cut out several pages of lined storybook paper.
3. Let the children write their stories or reports on the lined paper shapes.
4. Gather the pages, position the cover on top, and staple together on the left side.