

## OVERVIEW

After making models of homes that might protect small animals from the elements, the youngsters search living plants for real homes constructed by small animals.



## BACKGROUND



When the wind howls and the rain pours, we pull our foul-weather clothing tight around us and head for shelter. Rain slickers, umbrellas, and warm snug rooms protect us from the elements and allow us to live in relative comfort and safety in spite of adverse weather.

But what happens to the multitude of other animals when environmental conditions threaten? Small animals may seem defenseless in the face of bad weather, but a close look reveals a variety of unique structures and behaviors that allow these animals to survive.

# SNUG AS A BUG

**BIO  
KEY**

Bio-Craft  
Animal Behavior  
Survival Strategies



In *Snug as a Bug*, your youngsters explore the leafy environment of growing plants to discover how insects and other tiny animals protect themselves from adverse conditions. The youngsters may find that some animals deposit their eggs in cracks in the bark of trees. Others may locate tiny, flat webs on the undersides of leaves and twigs. The youngsters may also discover more elaborate cocoon-like shelters constructed from two or more leaves wrapped tightly together with silk, snug and secure. And there is always the chance that the youngsters will find.... But this is what the activity is all about: discovering survival strategies used by small animals.

All of the unique structures and strategies that you find are examples of **adaptive behaviors** used by different animals. Such behaviors help the organisms survive. One effective way to get the youngsters to think about ways tiny animals might protect themselves from the elements is to challenge them to craft some structures of their own. They will then appreciate the skill shown by the other animals living in the area.

**CHALLENGE: FIND SHELTERS THAT ANIMALS HAVE CONSTRUCTED ON AND AMONG LEAVES AND TWIGS.**

## MATERIALS



### For each team of two:

- 1 hand lens\*
- 1 plastic bag\*
- 1 small paper plate\*

### For the group:

- several large brown shopping bags
- 1 pair of scissors\*
- 1 pencil
- 1 small handful of rice or birdseed\*

- white glue\*
- tape\*
- thread\*
- cotton\*
- colored flagging\*

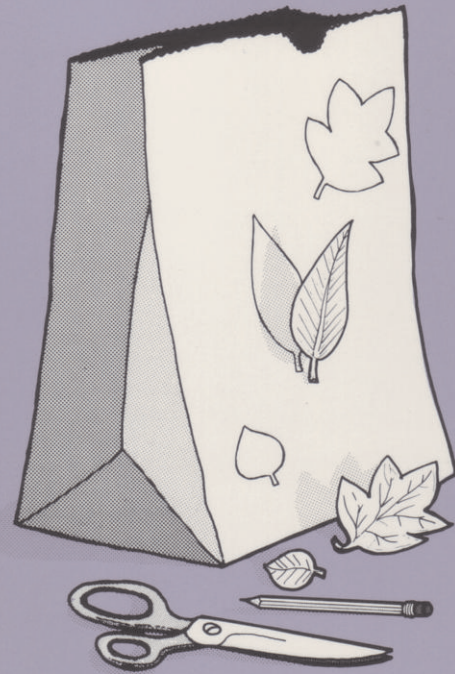
\* Available from Delta Education.

## PREPARATION



**Group Size.** This activity is easier to conduct with groups of up to sixteen youngsters, but can be used with larger groups.

**Time.** Plan on forty to sixty minutes for this activity. Small webs, cocoons, and other structures will be most plentiful from late spring to late summer. A calm day is desirable, because Part One of the activity is a craft activity. It's no fun when craft materials keep blowing away.





**Site.** Select a site with a variety of small structures constructed by tiny animals. Generally, dense brush and woods are best, but fence rows, fields, and vacant lots often provide good activity sites. Look on the undersides of leaves, at buds, in bark, and on stems. Make note of two or three kinds of trees or bushes that have structures for use in the activities. Collect a leaf sample from each of these trees or bushes.



TENT CATERpillARS ON BRANCH

**Materials.** Take the leaf from each of the study trees or bushes and trace it on a large brown shopping bag. With scissors, cut out about two dozen “make-be-leaves” in each of the shapes. (Make stacks of paper and cut several shapes at one time.)

**Safety.** Caution the youngsters about rushing heedlessly into dense vegetation. Chance encounters with sticky brambles, hornets, poison oak or ivy, snakes, or bees can be avoided when the youngsters are observant and forewarned.

## ACTION

### PART ONE: MAKE-BE-LEAVES

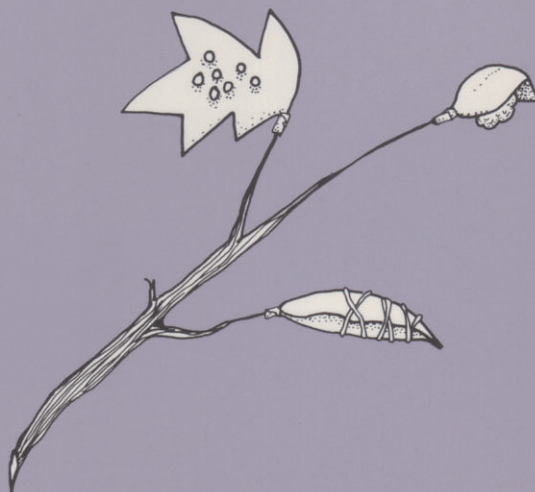
**1.** Take your group to the area you have selected, and establish site limits. Pick out one grain of rice or small seed and tell the kids to pretend that it is a “bug”

that needs protection from wind, rain, and other animals.

**2.** Hold up one of the paper “make-be-leaves” and tell the kids that they are going to build a protective structure in which a “seed-bug” can live, using the make-be-leaf surface.

**3.** Divide the group into teams of two. Show the youngsters the craft materials, and give each team four make-be-leaves. Challenge each youngster to make a safe, snug home for one or more seed-bugs using one or more of the make-be-leaves. Make sure the kids put the seed-bugs inside their homes. Give each team a small puddle of glue on a small paper plate, and let them start constructing.

**4.** Circulate among the teams while they work. As the teams complete their make-be-leaf seed-bug homes, ask the youngsters to find dead twigs about one-half meter long, and to tape their creations to these twigs.



**5.** After all the teams have created at least two make-be-leaf homes and have attached the leaves to a twig, call the teams together. Let the teams swap twigs. Challenge the teams to find the seed-bugs without tearing the home-structures apart. Distribute hand lenses, and ask the kids to first look closely for the seed-bugs without prying into the structures. Then tell the youngsters to open the structures carefully and look for the seeds.



6. Give the youngsters a chance to describe the seed-bugs they have opened. Let them explain how a seed-bug might have built the structure. Encourage the kids to speculate on the structure's effectiveness as a shelter from weather and predators.

7. Tell the youngsters that shelter building is an example of **animal behavior** that helps animals survive in parts of their environment where they might ordinarily be threatened by exposure to weather or other animals.

### PART TWO: REAL LEAVES

1. Tell the kids that the activity area might contain small animals that use real leaves as a surface for building protective structures. Give each team a plastic bag, and make sure the youngsters have their hand lenses. Assign each team to one kind of tree or bush that harbors animal constructions. (You may assign several or even all of the teams to one kind of plant.) Ask the kids to look very closely and to use their lenses. Ask them to collect one sample of each *different kind* of structure they find. Tell the youngsters to flag any structures that cannot be collected, such as spider webs and hornet's nests.

2. Call the youngsters together at a picnic table, bench, or on a flat piece of ground. Tell the youngsters to spread out their finds. Give the teams a chance to show and describe their structures to the group. Let the kids open the structures and find out what kinds of animals made them. Visit the flagged structures and ask the youngsters who placed the flags to describe what they found.

3. All the animals should be released on their "home" plants at the end of the activity.

## CONSTRUCTIVE CONVERSATION



1. How do you think structure building helps the survival of the animals you found?
2. What kinds of animals were most commonly found in the structures? Were these animals larvae (young) or adults? Were they found alone or in groups?
3. What kinds of materials did the animals produce themselves? (Cotton? Silk threads?) Was the material hard? Sticky? Do you suppose the animals built the homes themselves, or did parent animals build them?
4. Which structures do you think would be most effective at warding off the cold? The wind? Wetness? Predators?
5. Did any of the protective structures appear to be damaging the plants in any way?
6. If you were only as big as a grain of rice, what kind of leafy structure would you build to protect yourself?

## BRANCHING OUT



Find other foundations on which animals build their shelters. Look at boards, rocks, dead branches, and old cloth. Turn these objects over carefully and look for small animal structures. Look for the different materials used in the construction. How are foundations that are built on ground materials different from leafy foundations?

**Note:** Make sure you return the rocks and boards to their exact positions when your investigation is complete.

