

OVERVIEW

The youngsters use sweepnets and pitfall traps to collect grassland animals for investigation.



BACKGROUND



An amazing variety of small flying, hopping, and crawling animals live in lawns and other grasslands. In spite of their abundance, grassland animals are often overlooked by people because the

animals are usually small and well camouflaged among grasses and weeds.

A sweepnet is a good tool for collecting hopping and flying lawn animals for observation. Flies, moths, leaf hoppers, wasps, ladybugs, gnats, and springtails are some of the animals that can be

ANIMALS IN A GRASSLAND

BIO Animal Investigation
KEY Sampling Techniques
Species

easily collected with a sweepnet from a lawn or field. Animals such as ants, beetles, isopods, spiders, and millipedes are not as effectively sampled with a sweepnet because they walk along the ground. However, they can be captured in small pitfall traps. Pill vials buried with their tops flush to the ground surface make fine traps for these animals.

CHALLENGE: FIND AS MANY DIFFERENT KINDS OF ANIMALS AS POSSIBLE ON A LAWN.

MATERIALS



For each team of two:

- 1 sweepnet (See the "Sweepnet" Equipment Card.)
- 2 plastic bags (25 cm × 35 cm—the size that is commonly found in the produce section of grocery stores)
- 1 hand lens or bug box
- 1 copy of the *OBIS Lawn Guide*

For the group:

- 1 data board
- 1 "Sweepnet" Equipment Card
- 1 marking pen

For "Branching Out":

For each team of two:

- 2 10-cm × 10-cm pieces of aluminum foil (pill vials or tin cans with drain holes may be substituted)
- 1 fine-pointed trowel or dinner knife small pieces of bait such as peanut butter, meat, or drops of sugar water (Peanut butter is the best bait to use.)

PREPARATION



Group Size. This activity is suitable for any size group.

Time. Plan on forty to fifty minutes on a warm sunny day for this activity. If you plan to have your youngsters make their own sweepnets, allow a separate session for construction.

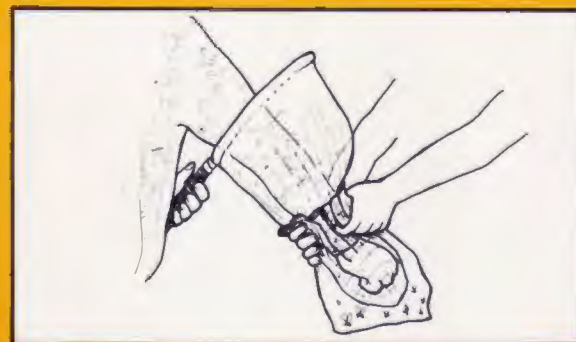
Sweepnet and Insect-Transferring Technique. Refer to the "Sweepnet" Equipment Card for directions on using a sweepnet and transferring insects to a bag for observation. Be prepared to demonstrate these techniques for the group.

Branching Out. If you intend to do the "Branching Out" activity, plan on having the kids set out the pitfall traps near the end of the session and returning to check the traps the next day.

ACTION



1. Read the challenge to the participants: "Find as many different kinds of animals as possible on the lawn."
2. Give the youngsters plastic bags and encourage them to search on "all fours." They probably will not have much success finding animals, so interrupt them after five minutes and demonstrate how effectively you can collect animals with your sweepnet. With the aid of one of



the youngsters, demonstrate how to transfer insects from a sweepnet into a plastic bag. Show the kids how to twist and secure the bag in a belt loop or under a belt while collecting more animals.

3. Divide the group into teams of two and give each team a sweepnet. Challenge the teams to collect as many insects as possible. Let the youngsters continue to sweep and add samples to their observation bags for about fifteen minutes. Team members should take turns using the nets. Encourage the youngsters to share discoveries while sweeping.

4. Call the teams together and give them a hand lens or bug box and a copy of the *OBIS Lawn Guide*. Ask the teams to identify the animals that they caught. As identifications are made, ask the teams to list the animals on the data board. Encourage the youngsters to make up names for animals they cannot identify. The names should describe how the animals look or how they behave, for example, fuzzy blue fly or green hopper.

5. While the youngsters examine their critters, mention that they should be looking for interactions between two or more animals in their bags. Are there any animals eating other animals? Is there water vapor in the bag? Is a spider spinning a web? Ask the youngsters to report any interactions that they observe. Remind the kids to keep their bags of critters out of direct sunlight.

SWEEPING THOUGHTS



- 1.** How many different animals did you find? Check the data-board list.
- 2.** What kind of animal was caught most frequently? Least frequently?

3. What was the biggest animal found? The smallest?

4. Which animal was the most brightly colored? List all of the different animal colors on the data board.

5. Are there animals living in the lawn that were not caught with sweepnets? If so, how could they be captured? (Mention pitfall traps for capturing animals that walk or crawl on the ground.)

Note: Have the teams release all of their animals back into the lawn.

BRANCHING OUT



1. Pitfall Traps

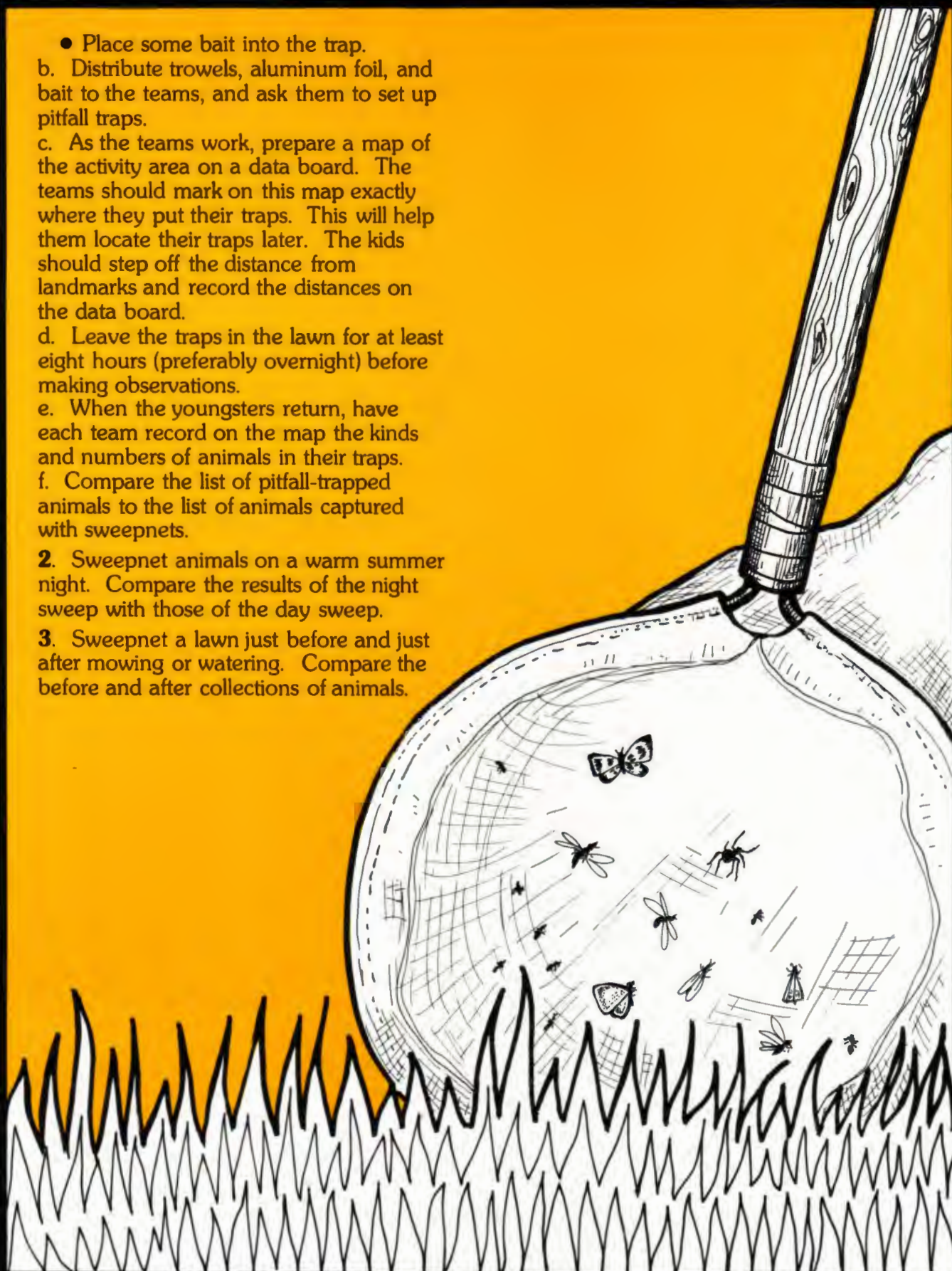
a. Tell the youngsters that they will set up pitfall traps to capture animals that are not usually captured in sweepnets. Show the group how to make and place the pitfall traps.

- Place your thumb in the center of a square of aluminum foil and wrap the foil around your thumb to make an extra-long thimble. Punch a small hole in the bottom of the foil thimble to allow water to drain. (Pill vials or small cans with drain holes may be substituted for the foil traps.)



- Dig a hole in the lawn the same size as the trap, and press the trap into the hole. Flare or flatten the foil sticking out of the hole so little animals can easily walk into the traps from the surrounding grassland.

- Place some bait into the trap.
 - b. Distribute trowels, aluminum foil, and bait to the teams, and ask them to set up pitfall traps.
 - c. As the teams work, prepare a map of the activity area on a data board. The teams should mark on this map exactly where they put their traps. This will help them locate their traps later. The kids should step off the distance from landmarks and record the distances on the data board.
 - d. Leave the traps in the lawn for at least eight hours (preferably overnight) before making observations.
 - e. When the youngsters return, have each team record on the map the kinds and numbers of animals in their traps.
 - f. Compare the list of pitfall-trapped animals to the list of animals captured with sweepnets.
- 2.** Sweepnet animals on a warm summer night. Compare the results of the night sweep with those of the day sweep.
- 3.** Sweepnet a lawn just before and just after mowing or watering. Compare the before and after collections of animals.



SWEEPNET

Equipment Card



Side 1



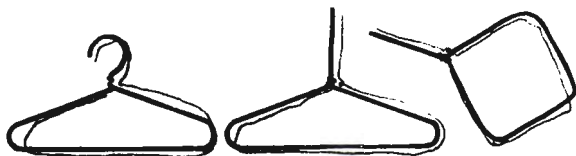
Note: Commercially available sweepnets are more durable and we suggest such an investment for schools, camps, or clubs.

MATERIALS FOR ONE SWEEPNET:

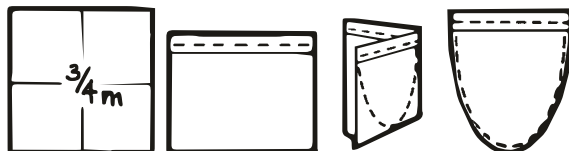
- 2 wire coat hangers or 1 piece of heavy-duty wire
- 1 dowel or broom handle about one meter long and 1.5 cm in diameter
- 1 piece of nylon netting (mosquito netting), .75 square meter
- 1 needle and thread for sewing (or a sewing machine)
- filament or duct tape
- 1 pair of pliers

MAKING A SWEEPNET:

1. Preparing the Hoop. Take the wire coat hangers, straighten the hooks and pull the hangers together into a square (one hanger on top of the other). The pliers make this job easier.



2. Preparing the Bag. Your net should be approximately .75 meter in circumference at the top, tapering down to a point. A sewing machine speeds up construction, but older kids can hand sew the nets if sufficient time is provided. Sew like this:

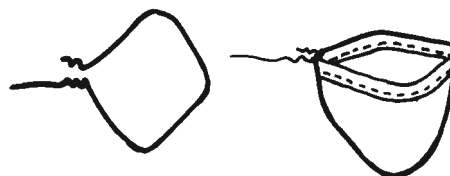


Fold one edge down and sew

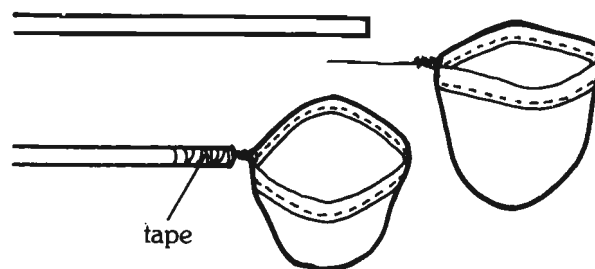
Fold square in half and sew

Cut off excess

3. Assembling the Net. Open the wire square (both squares, if you used two hangers) and thread the net on the wire (or wires).



Attach the wire hoop to the stick.



USING A SWEEPNET:

While a sweepnet can be used to pursue and capture an animal that has caught your eye, this is not the most efficient use of the net. A sweepnet is best used as a random sampling tool. You walk at moderate speed across a grassy area, sweeping the net back and forth in pendulum fashion, in front of you. The net should just brush across the top of the grass. The idea is to sweep any animals that are buzzing around in front of you into the nets, so you must turn the net in your hand to capture animals on both right and left swings of the net. After you have made fifteen to thirty swings of the net, make a quick swing around your head to concentrate the animals at the bottom of the net, and grab the top of the net in your hand to keep the catch from escaping.

SWEEPNET

Equipment Card



Side 2



TRANSFERRING ANIMALS FROM THE NET TO AN OBSERVATION BAG:

1. Concentrate the animals in the bottom of the net.



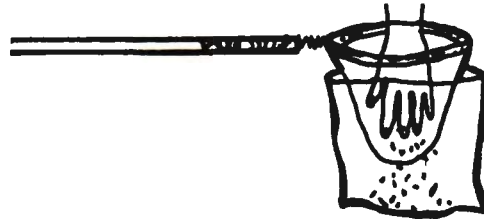
2. Pinch the net closed, keeping the animals in the bottom of the net.



3. Turn the net inside out while holding the animals.



4. Place the net in a plastic bag, then release and shake the animals into the bag.



5. Grab the top of the bag.



6. Twist the top of the bag a couple of times and tuck the top under your belt or into an open pocket while you continue to sweep.