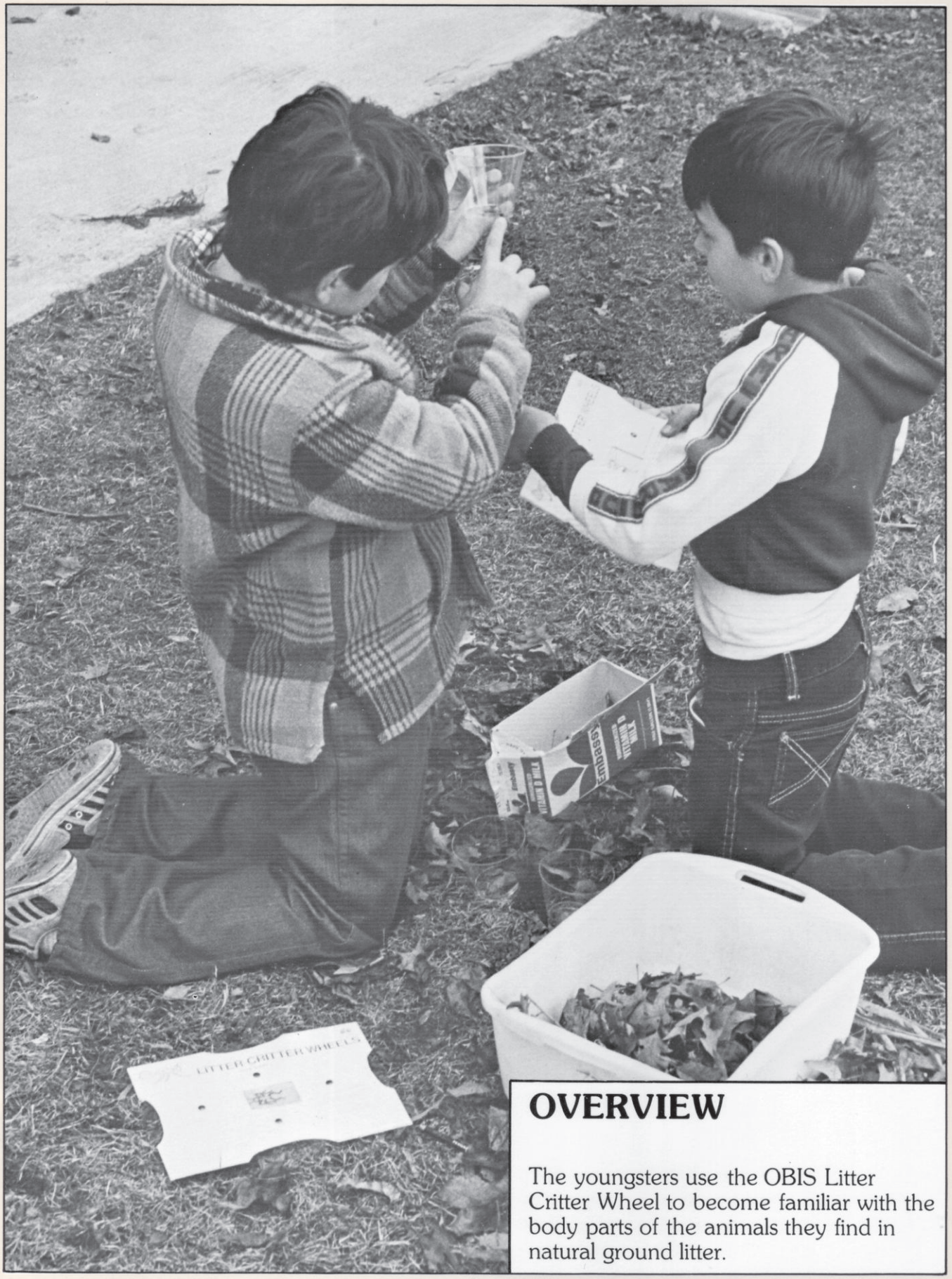
LITTER CRITTERS

BIO KEY

Animal Investigation
Craft Activity
Decomposition

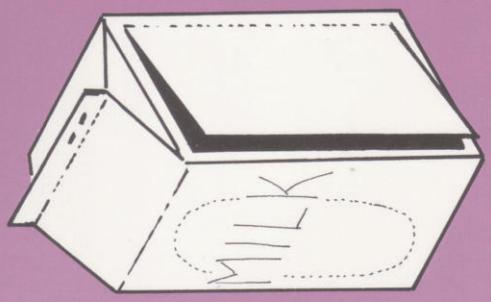


OVERVIEW

The youngsters use the OBIS Litter Critter Wheel to become familiar with the body parts of the animals they find in natural ground litter.

Published by
Delta Education
Nashua, NH

BACKGROUND



In the leaves under our feet is a world teeming with animals. As plants die and drop to the ground, they form a layer of decaying leaves, sticks, and bark called *litter*. This natural litter layer forms a constantly changing habitat in which many organisms live. Large animals dig through litter in search of food.

Rain washes litter away, wind blows it around, and sun dries it out. Where the litter is thick, however, only the upper layers dry out; the layers next to the soil provide a continuously moist environment. In this moist area, tiny organisms such as fungi and bacteria feed on bark, leaves, and twigs, and break them down (decompose) into smaller and smaller pieces. Decomposers also release minerals back into the soil. At the same time that the lower layers are being broken down, new plant material is being deposited on top of the existing layer, insuring a continuous litter habitat.

Animals that live in litter (for example, insects, slugs, spiders, and salamanders) are generally small. Their small size allows these animals to crawl into tiny crevices between pieces of decomposing plant and animal matter. Their size also makes these animals easy to overlook.

CHALLENGE: DISCOVER THE DIFFERENT KINDS OF ORGANISMS THAT LIVE IN A NATURAL LITTER HABITAT.

MATERIALS

For each team of two:

1 observation tray (See the "Preparation" section.)
1 plastic cup*
1 ziplock bag* (sandwich size)
1 bug box* or magnifying lens*
1 index card* (to scoop up animals)
1 Litter-Critter Wheel (See the "Litter-Critter Wheel" Equipment Card.)
1 sack* or bike bag* (to contain the above materials)
1 pencil
crayons*
2 Record Cards
1 copy of the "Litter-Critters Body-Parts Sheet"
scissors*, single-edge razor blade, or mat knife
rubber cement or glue*
transparent tape*

For the group:

several "Litter Shakers" (See the "Litter Shaker" Equipment Card.)
1 "Litter-Critter Wheel" Equipment Card*
1 Litter-Critter Wheel Title Sheet*
1 master of Card 1: Head and Thorax Wheels*
1 master of Card 2: Abdomen and Wing Wheels*
1 sheet of Record Cards*
1 "Litter-Critters Body-Parts Sheet"*
1 "Litter Shaker" Equipment Card*
extra Record Cards and Body-Parts Sheets

Optional:

1 data board or large drawing pad*
1 marking pen*

* Available from Delta Education.

Developed by
Outdoor Biology Instructional Strategies
Lawrence Hall of Science
University of California
Berkeley, California 94720

LITTER CRITTERS

BIO KEY

Animal Investigation
Craft Activity
Decomposition

PREPARATION 

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

Time. Plan on forty-five minutes for this activity. If you want the youngsters to make their own Litter-Critter Wheels, plan on thirty to forty-five minutes for construction prior to conducting the activity.

Site. Select a site with a thick layer of natural ground litter. Make sure it is moist and harbors a diversity of animals.

Safety. Stinging or biting insects such as centipedes, large ants, and spiders should not be handled with bare hands. The youngsters should scoop them up with an index card or cup and observe the critters in a tray or plastic cup. (See the *Leader's Survival Kit* folio for safety and conservation suggestions.)

Materials

1. Observation Trays. Cut a half-gallon milk carton open along one long seam and two adjoining short seams to create a flap. Staple the spout shut. Prepare one of these observation trays for each team of two.

2. Litter Shakers. Prepare several shakers for the youngsters to use for revealing tiny animals. The shakers are also good for kids who are reluctant to search through the litter with their hands.

3. Record Cards and Body-Parts Sheets. There are two methods the youngsters can use to keep a record of the animals they find. (See the "Action" section.) If you choose the tracing method, duplicate the Record Cards on onionskin paper. If you choose the cut-and-tape method, duplicate the Record Cards and the "Litter-Critters Body-Parts Sheet" on regular paper.

4. Place all of the materials for each team of two into a sack or bike bag. This will keep everything organized.

5. Litter-Critter Wheels. Once assembled, the wheels can be used repeatedly. It takes about thirty minutes to assemble one wheel after all the materials are duplicated and gathered. You may construct the wheels, or have the youngsters make their own. (See the "Litter-Critter Wheel" Equipment Card.)

ACTION 

1. At the activity site, pick up a handful of litter and tell the kids it is called "litter." Describe the natural ground litter habitat and show it to the group.

2. Tell the kids that they will locate and record the kinds of animals that live in the litter. Explain that they should not dig into the soil, but should just search the litter layer. Demonstrate the use of the Litter Shakers. (See the Equipment Card.) Caution the youngsters not to injure the animals while capturing them. Encourage the kids to scoop up the animals with cups or index cards. Warn them about centipedes and other biting animals.

3. Divide the group into teams of two, and give each team a bag of materials. Challenge the youngsters to find several litter critters.

4. Allow ten to fifteen minutes for the litter search. Circulate among the teams and offer assistance. Ask the kids to return any logs, rocks, or layers of litter to their original spots after the search is completed.

5. Gather the group with their litter critters. Demonstrate the use of the Litter-Critter Wheel:

- Choose an animal, and look at it closely.

Published by
Delta Education
Nashua, NH

Developed by
Outdoor Biology Instructional Strategies
Lawrence Hall of Science
University of California
Berkeley, California 94720

- Try to match the animal by turning each wheel until the closest matching body part appears in the window.
- Record your animal by either tracing it on a Record Card, or by cutting out appropriate body parts from the "Litter-Critter Body-Parts Sheet" and taping them to a Record Card. Modify the generalized body parts with pencil and crayons to more accurately represent your animal.
- A third method uses the data board. After a youngster dials up an animal, have him or her draw it on the data board. This can be done in addition to or instead of the Record Cards.

Note: If you consistently find animals in your area whose body parts are not on the Litter Critter Wheels, draw in additional body parts on the open spaces on each wheel. The best method for permanently including your own drawings is to draw them on the master wheel or on a copy of the wheel with pencil or black ink. Then make a new transparent wheel to put inside the folder.

6. Distribute the Litter-Critter Wheels and recording materials.

7. After all the kids have recorded their animals, have them compare the animals (both actual and recorded).

A LITTER DISCUSSION

1. How many kinds of animals did the group find?

2. Which animals had wings?

3. Which areas of the litter contained the most animals? How are the animals found in the moist litter different from those in drier litter?

4. What were some difficulties you had in recording some organisms?

5. What generalizations could you make about the color, size, and movements of litter critters?

RELEASING THE ANIMALS

Have the youngsters release all the animals in the locations they were taken from and observe what the animals do after they are released.

BRANCHING OUT

1. Investigate organisms associated with man-made litter. Compare animals found around cans, bottles, paper, etc., to the animals you found in natural litter. (See the OBIS activity *Junk-in-the-Box*.)

2. Conduct the activity in different litter habitats. How do the number of different kinds of animals (diversity) and the population size of individual kinds of animals (abundance) compare at the different sites?

3. Conduct the activity at the same site during different climatic conditions: under snow, after rain, during rain. If animals are not present, where do you think they go? If animals are present, how do they compare with those originally found?

Litter Critters

LITTER CRITTER WHEEL

Equipment Card

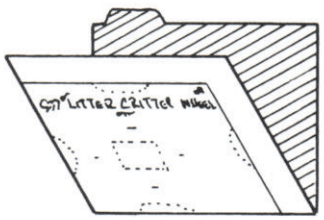
MATERIALS FOR ONE WHEEL:

1 8.5″ × 11″ manila file folder or card stock*
1 copy of the "Litter-Critter Wheel Title Sheet"
1 set of body-part-wheel transparencies (head, thorax, abdomen, wings)
4 round-head paper fasteners*

* Available from Delta Education.

MAKING THE WHEEL:

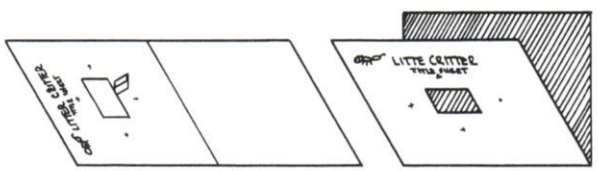
1. Glue the Title Sheet to the file folder, lining up the bottom of the sheet with the folder, as shown.



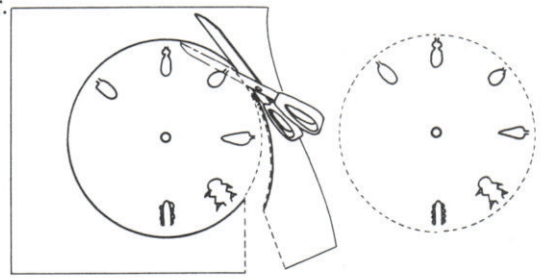
Cut the folder to the size of the Title Sheet.

2. Open the folder, and lay it flat with the Title Sheet facing up. Cut out the window in the Title Sheet.

Fold the folder in half, and make a tiny slit at each end of the four paper-fastener locations through all the layers of paper. The slit allows you to push the paper fastener through the sheet more easily.

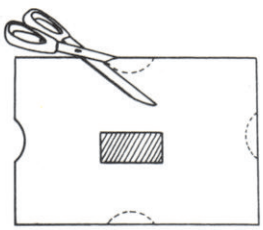


3. Cut out the transparent body wheels *inside* the black outline so that the edge of the wheel is clear.

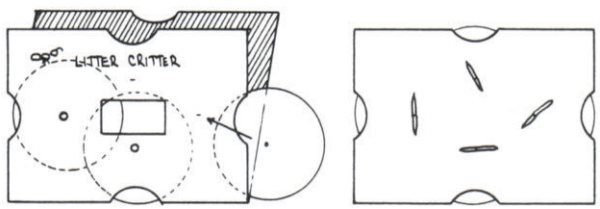


In the center of each wheel, cut a hole the width of the paper fastener (not too big!) so that the wheel will turn freely on the fastener.

4. Cut out the crescent-shaped pieces at the top, bottom, and two sides of the Title Sheet and file folder. These cuts should be made through *both* sides of the folder.



5. Use the Title Sheet to guide you in positioning each wheel; put the thorax wheel in first and the wing wheel in last. Place each wheel in the folder, and lock it in place with a paper fastener through the center. The paper fasteners should go through both sides of the folder.



6. Your Litter-Critter Wheel is now complete. Each body-part wheel should turn freely on its fastener, and the body part should line up in the window so you can recreate animals of different shapes.

Published by
DELTA EDUCATION

Litter Critters

LITTER SHAKER

Equipment Card

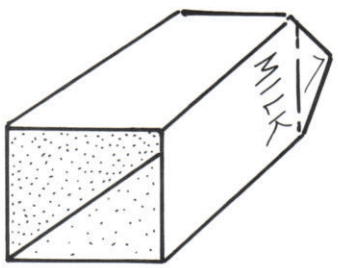
MATERIALS FOR ONE SHAKER:

1 half-gallon milk carton
1 9 cm × 9.5 cm piece of hardware cloth screening* (0.5 inch mesh)
1 single-edged razor blade or knife
1 roll of reinforced filament tape or duct tape*

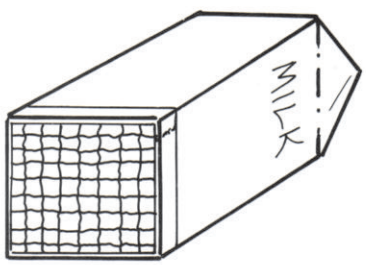
* Available from Delta Education.

TO MAKE YOUR SHAKER:

1. Cut out the bottom of a half-gallon milk carton.



2. Tape the square of hardware cloth to the carton bottom.



3. Open the top end of the carton. Your shaker is now ready to use.

TO USE YOUR SHAKER:

1. Place litter by handfuls into the carton until it is about half full. Hold the top edges of the carton closed.

2. Shake the carton up and down three or four times over a white-bottomed container. Because they are agitated, the animals usually scurry about in the pan and are easy to see. Most of the animals will come out in the first or second shake. Check around the screen on the bottom to be sure no animal is stuck to the tape or too big to come through the screen.

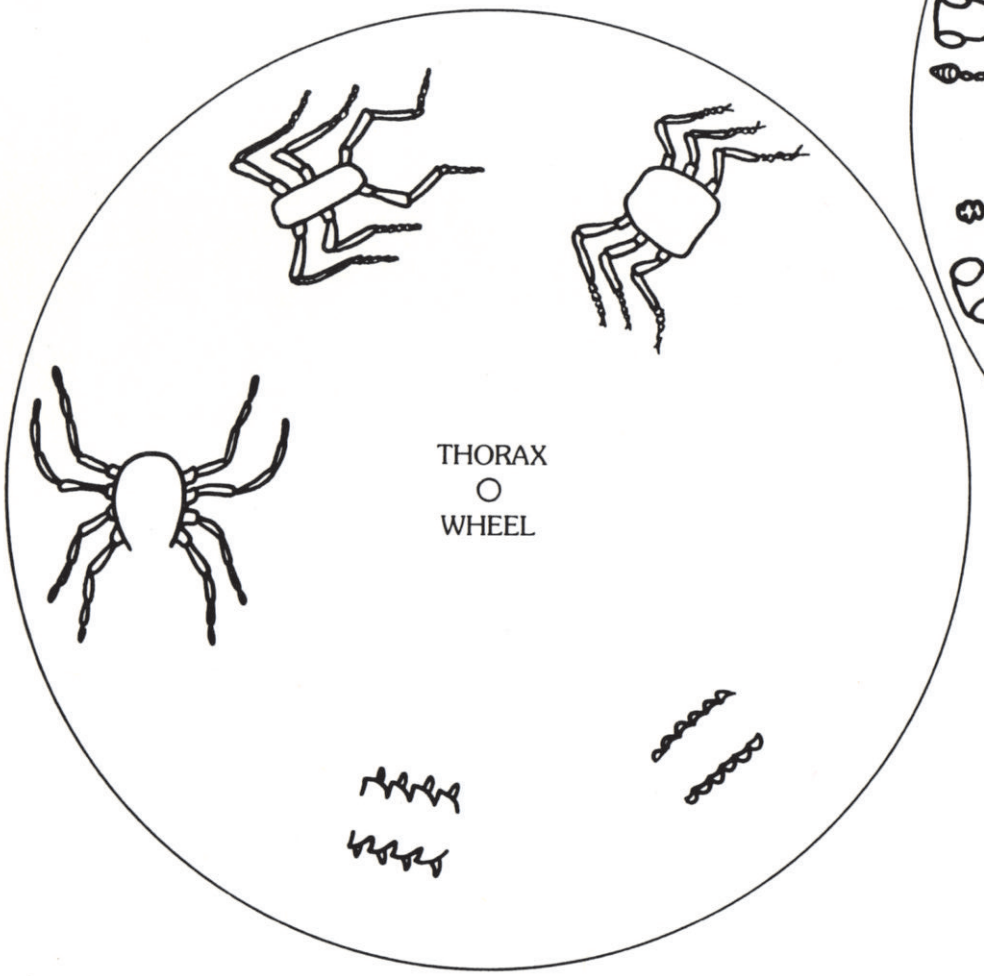
3. When you think all the animals are out of the litter in the shaker, dump the litter, put in some new litter, and shake away.

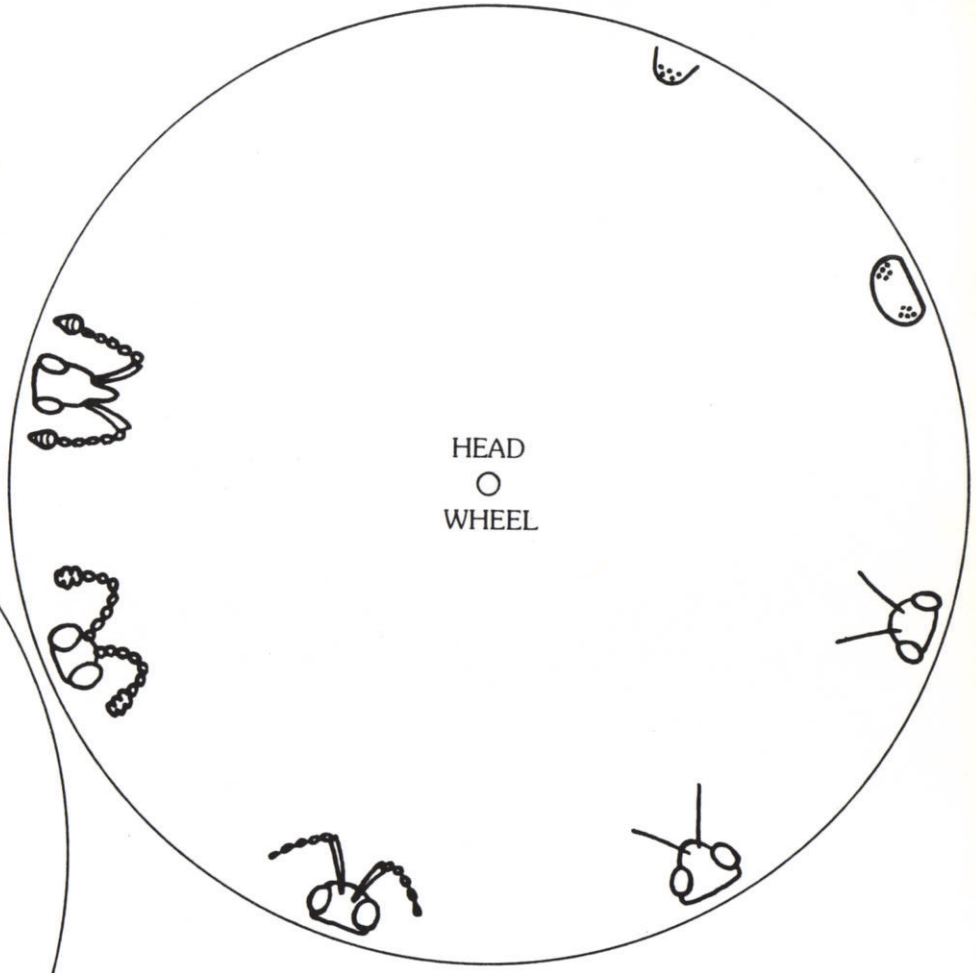
Note: It is important to work fast when scooping up litter to put in the shaker, because litter critters often move fast.

Published by
DELTA EDUCATION

Litter Critters
Card 1 Master
HEAD AND THORAX WHEELS

Directions: Duplicate these wheels onto an overhead transparency using a thermofax machine or any similar transparency maker. A set of four transparency wheels is available from Delta Education.



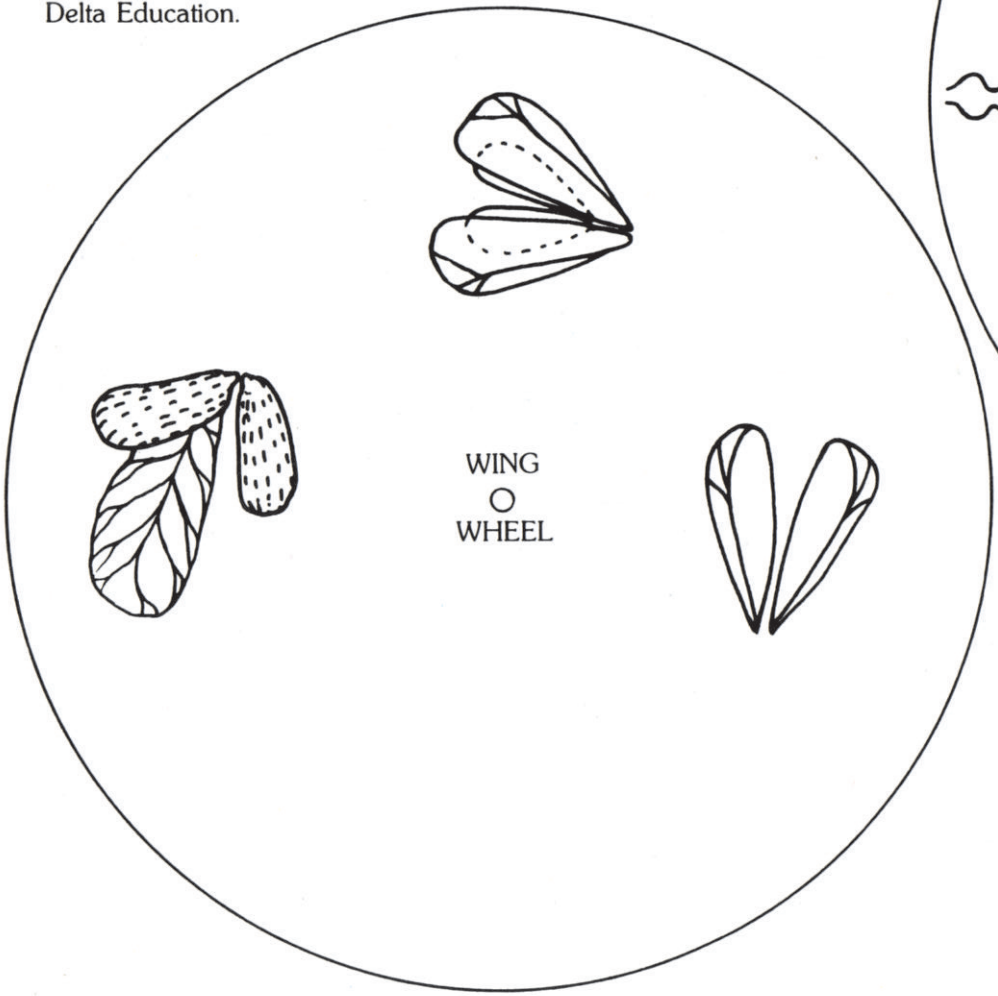


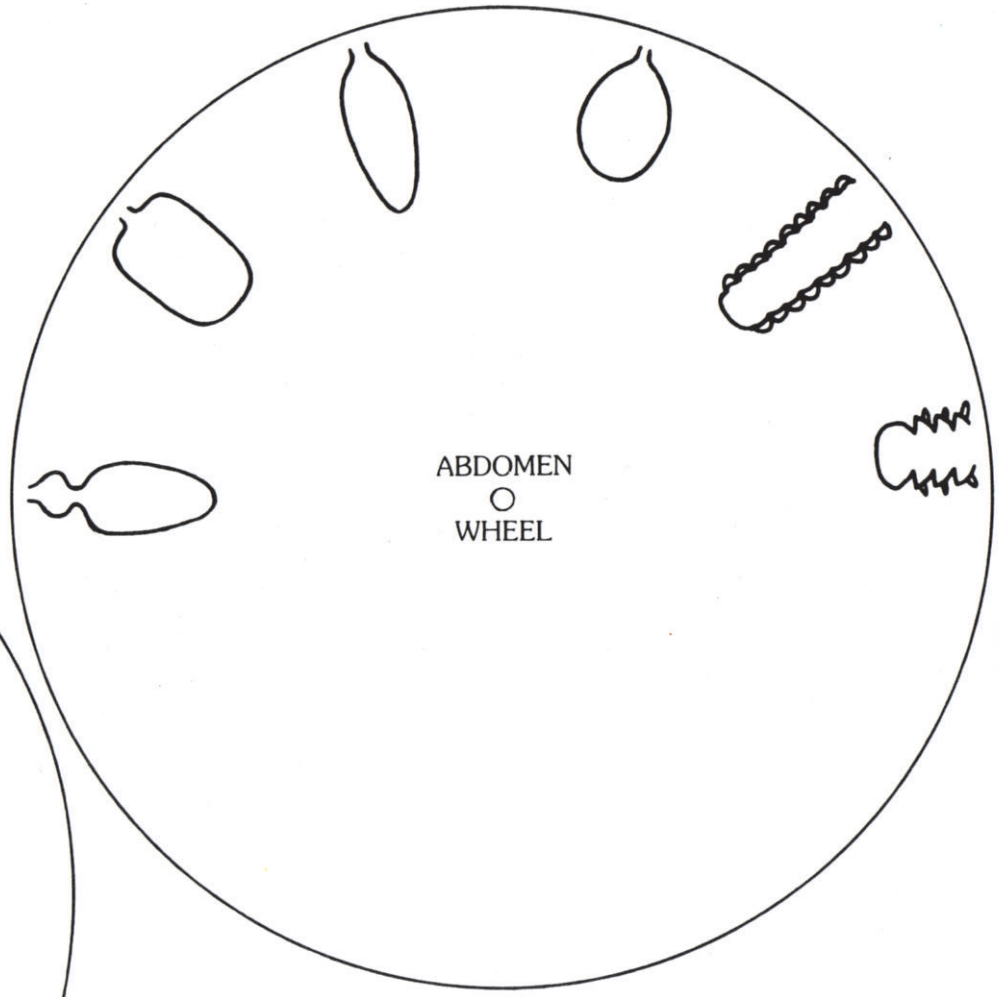
Litter Critters

Card 2 Master

ABDOMEN AND WING WHEELS

Directions: Duplicate these wheels onto an overhead transparency using a thermofax machine or any similar transparency maker. A set of four transparency wheels is availabe from Delta Education.

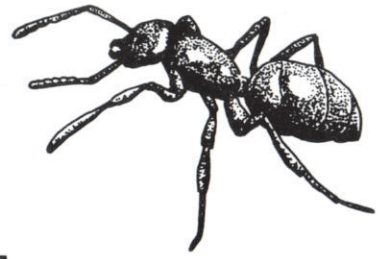




WINGS

LITTER CRITTER WHEEL

TITLE SHEET



HEAD

ABDOMEN

How to use the wheel:

1. Turn all four wheels so the window shows no body parts.

2. Locate an animal from the litter.

3. Look at it closely.

4. On your wheel, dial the head that most closely resembles the head of your critter.

5. Next select a thorax, the middle part of the animal. How many legs does the animal have?

6. Then choose an abdomen, the last part.

7. Finally, does your animal have wings?

How to make a record of your critter:

1. Cut out the appropriate body parts from the "Body-Parts Sheet" and tape them to a Record Card.
Or...trace your critter on a Record Card.

2. Color your picture to make it more closely resemble the animal you caught.

THORAX

Published by
DELTA EDUCATION

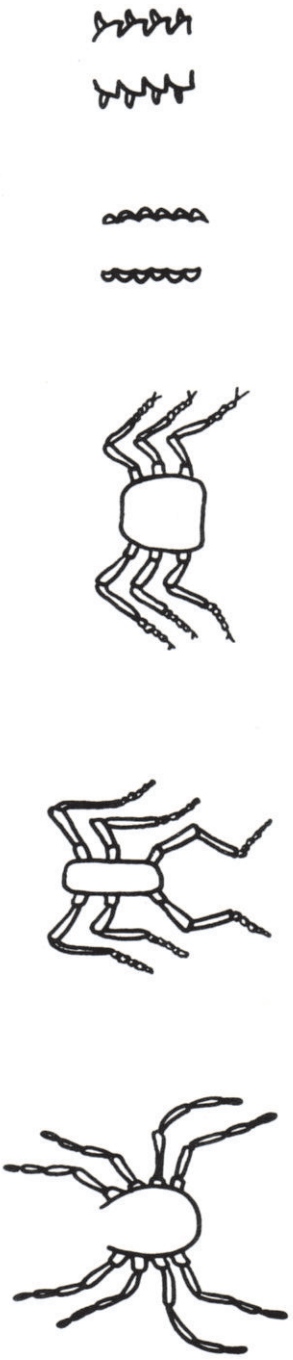
Litter Critters
BODY-PARTS SHEET

(Use with the cut-and-tape recording method.)

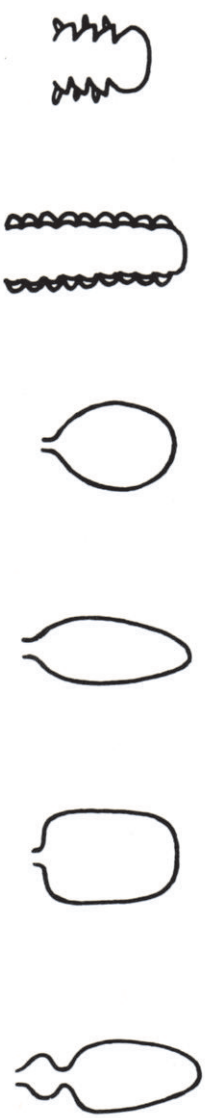
Make a record of each litter animal by cutting out the appropriate body part you used to describe the animal on the Litter-Critter Wheel. Tape the body parts to your Record Card.

HEAD

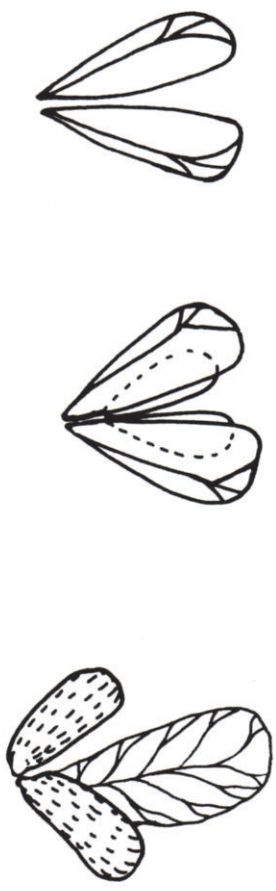
THORAX



ABDOMEN



WINGS



Published by
DELTA EDUCATION

Litter Critter Wheel RECORD CARD

Team _____

Activity Site _____

Date _____

Display your organism here:

HEAD THORAX ABDOMEN

Size: (Draw a line as long as the organism.)

- Are there any special color patterns on your organism?
- Draw on any special features you think are important.
- Color your picture to make it look more like the organism you found.

Litter Critter Wheel RECORD CARD

Team _____

Activity Site _____

Date _____

Display your organism here:

HEAD THORAX ABDOMEN

Size: (Draw a line as long as the organism.)

- Are there any special color patterns on your organism?
- Draw on any special features you think are important.
- Color your picture to make it look more like the organism you found.

Litter Critter Wheel RECORD CARD

Team _____

Activity Site _____

Date _____

Display your organism here:

HEAD THORAX ABDOMEN

Size: (Draw a line as long as the organism.)

- Are there any special color patterns on your organism?
- Draw on any special features you think are important.
- Color your picture to make it look more like the organism you found.

Litter Critter Wheel RECORD CARD

Team _____

Activity Site _____

Date _____

Display your organism here:

HEAD THORAX ABDOMEN

Size: (Draw a line as long as the organism.)

- Are there any special color patterns on your organism?
- Draw on any special features you think are important.
- Color your picture to make it look more like the organism you found.

OUTDOOR BIOLOGY INSTRUCTIONAL STRATEGIES

Published by
DELTA EDUCATION