

OVERVIEW

At night, the youngsters gather around a brightly lit white surface and conduct a series of investigations to study the behavior of the animals attracted to the light.



BACKGROUND



Animals that you never see during the day come out and move around after dark. Some creep, some crawl, and some hop. Most of the animals that this activity deals with are night fliers. Of the thousands of insects that enjoy active night lives, many are attracted to light. You can take advantage of this behavior by creating a brightly lit white surface and observing the insects that come to it.

Flying insects are abundant during the summer due to the warm temperatures and greater availability of food. A warm, humid, calm, and moonless summer night is just right for *The Old White Sheet Trick*. The brighter the lighted target you provide, the more light seekers you can lure. Once a selection of night fliers have landed, you and your youngsters can perform a number of simple and fascinating experiments to discover more about the night life at your site.

CHALLENGE: USE A LIGHT SOURCE TO ATTRACT AS MANY DIFFERENT NIGHT ANIMALS AS YOU CAN.

MATERIALS



For the group:

- 1 old white sheet, large sheet of white paper*, or similar material materials for hanging the sheet (string, tape*, tacks*, rope, and so forth)
- light sources (electric lamps, gas lanterns, car lights, flashlights)
- 1 *The-Old-White-Sheet-Trick* junk box, containing:
 - colored cloth and paper, tape, felt pens, smelly substances (onions, paint, vinegar, garlic, ammonia, liquid flavoring extracts), and colored gel or cellophane

- 2 sheets of Action Cards*
- 1 copy of an Action Card for each pair of youngsters

* Available from Delta Education.

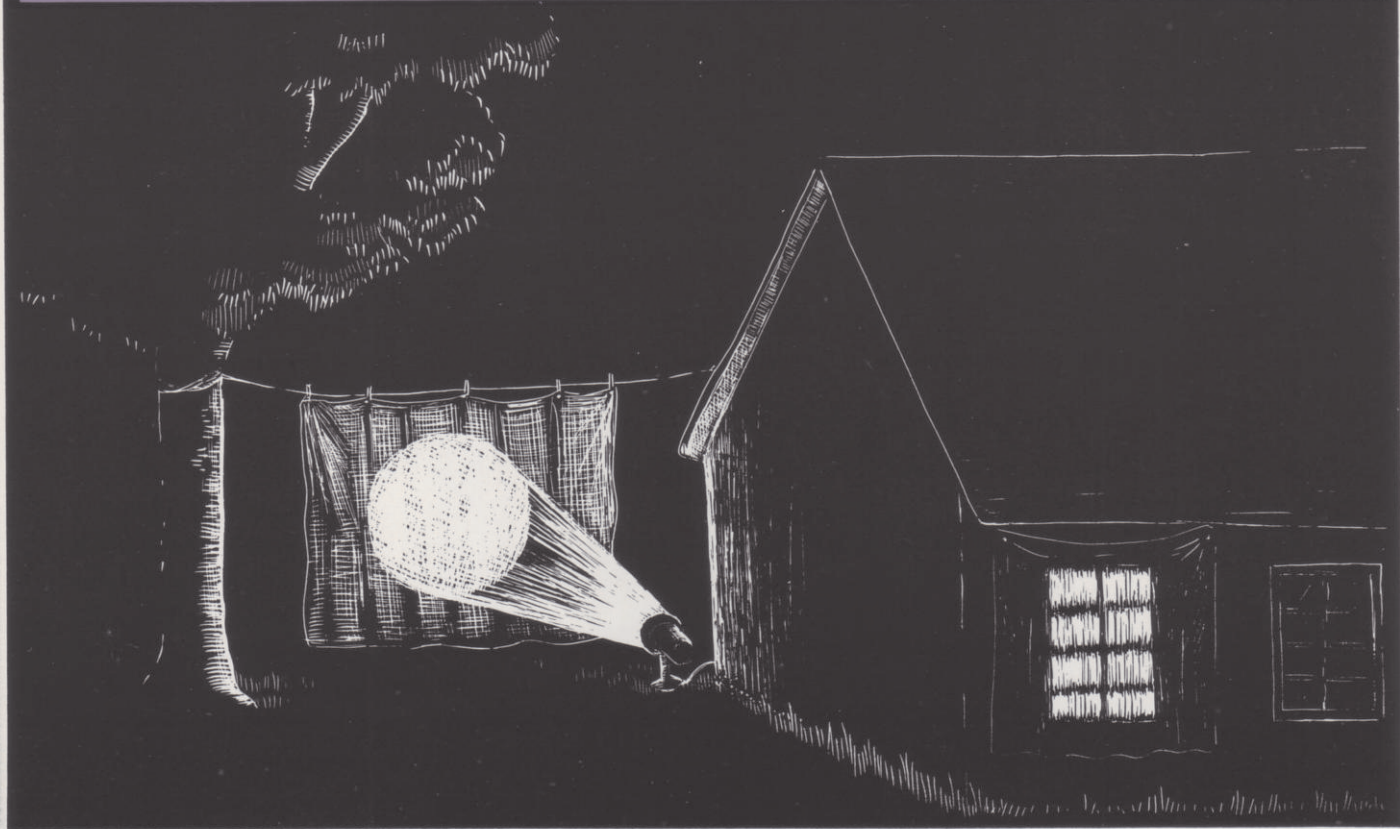
PREPARATION



Group Size. This activity works best with eight to twelve youngsters. For larger groups, set up two sheets.

Time. Plan to spend forty to sixty minutes (well after sunset) on this activity. A warm, windless night in mid-summer is best. If possible, set up your sheet and light a half hour or so before activity time.

Site. Just about any suburban, rural, or wilderness area is appropriate for this activity. Locate a site with a minimum of competing light sources (street lights, porch lights, and so forth). Make sure there are no hazards for the youngsters to fall into or over in the dark.



Hanging Your Sheet. Sides of buildings and clotheslines are the best places to set up your sheet. On buildings, suspend the sheet so it hangs in front of a window. Turn on the lights behind the sheet; turn off all others.

A line strung between two objects can support your sheet. Simply direct a strong lamp on one side of the sheet. Animals will come to both sides.

Caution: Be sure your clothesline is higher than your tallest participant.

ACTION

1. Take your group to the site. If the light has been on for a while, point to the insects, and ask the youngsters what they think makes this place so attractive to the insects.
2. If the light is off, announce that you have a set-up to attract animals that are out at night. Turn on the light, and ask the kids what animals they think will come to the light.
3. After the youngsters have had several minutes to observe the arrival and movements of the insects, ask a few questions to organize their observations:
 - What animal arrived first?
 - What kind is most numerous?
 - What is the largest? Smallest?
 - What is the most common color? Which are the prettiest?
 - Which insects are the most active? The slowest?
 - Are all of the animals fliers?
4. Tell the youngsters that coming to light is an example of a *behavior* that is shared by all of the animals that come to the sheet. The animals might also have individual behaviors that are not shared by the others. Show the youngsters the Action Cards. Introduce the cards as



investigations the kids can make with a friend to find out more about the night fliers. Ask the youngsters to pair up.

5. Give each pair of youngsters an Action Card. Point out the junk-box materials available for their use. Help the teams find the materials they need for their action-card challenges.
6. Encourage the youngsters to try new Action Cards when they have completed their first ones, or let them undertake an investigation of their own design. Continue the investigations as long as the youngsters remain interested.

BRINGING FACTS TO LIGHT

1. Ask each team to read one Action Card and show or explain what they discovered.
2. Ask these questions to stimulate thinking about the phenomena observed:
 - How do you think attraction to light is beneficial to these animals? Why?
 - What interactions between animals did you notice at the sheet?
 - Besides light, what may have attracted the insects? Why do you think so?



- What color clothes should you wear at night for keeping insects away from you? (Dark colors.) What colors should you wear for safety? (Light colors.) How can you resolve this dilemma? (Wear reflective tape or small safety lights.)
- Do you suppose people could control some pest insects with light? How?

BRANCHING OUT

1. With a sweepnet, collect some animals that are not attracted to the light from the grass, fields, and bushes. Then take the collected animals to the white sheet area and compare them to the animals attracted to the light. Are non-attracted animals bigger, longer, of a different color, or lacking wings or eyes? Do they have fewer legs?

2. Catch some spiders or other known insect predators. Try placing them on or below the sheet and see which animals they hunt, how they capture, and how many animals they eat. (Warn the children to be careful of any insects that might harm them, e.g. Black Widow spiders or scorpions.)

3. Get as many *different* kinds of insect repellents as you can. Set up an old white sheet, and treat different sections of the sheet with the various repellents. Which is the best? Ask the kids to make up a commercial for the best product, citing the results of their investigation.

The Old White Sheet Trick Action Card #1



Flashlight Stunts

- Put colored gel or cellophane over flashlights and find out how insects respond to colored light.
- Make super bright spots. Do insects seek these places or reject them?
- Will insects follow a moving spot of light?
- Does a flashlight shone on a *dark-colored* object attract insects?

The Old White Sheet Trick Action Card #2



Do smelly substances attract or repel animals that come to light? Try vinegar, onions, sweaty socks, assorted human food, perfume, and so forth.

Animal Investigated
(Make up a name.)

Smelly
Stuff

Animal Response

Attracted Repelled

The Old White Sheet Trick Action Card #3



Check the descriptions below that apply to animals that spend most of their time in one spot on your sheet.

- ___ Big
- ___ Small
- ___ Long
- ___ Short
- ___ Brightly colored
- ___ Plain
- ___ 6-legged
- ___ 4-legged
- ___ Big eyes
- ___ Small eyes
- ___ Big wings
- ___ Small wings

The Old White Sheet Trick Action Card #4



How do the animals act when they are:

- in the brightest spot?
- on the sheet, but away from the brightest spot?
- captured and released one, two, and three meters away from the lighted sheet?

The Old White Sheet Trick Action Card #5



Of all the animals on the sheet, can you find any that seem to be staying away from other kinds of animals?

Try getting the animals together to see if they separate again.



The Old White Sheet Trick Action Card #7



Use a colored marking pen to trace the path of a walking animal as it moves around the sheet. Have an animal art contest.



The Old White Sheet Trick Action Card #6



Catch several nighttime animals and keep them in a ventilated container until morning. How do they act when released in the light?



The Old White Sheet Trick Action Card #8



Turn the light off for the length of time it takes you to count to ten. Then turn it on. What do the animals do?

Try longer and shorter counts to see how long it takes for the animals to go away.