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## MAKING BIRD FEEDERS

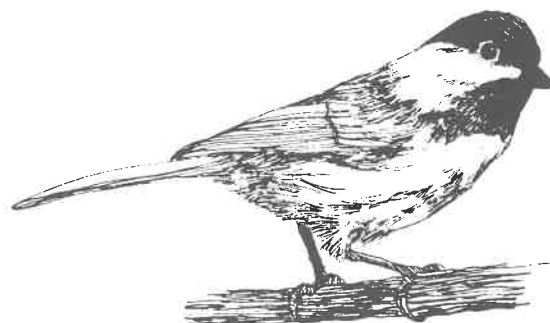
### Objectives

This fact sheet will provide numerous ideas for making bird feeders that will attract a variety of species for students to observe. The feeders are inexpensive to make and can be used by students at home or school for bird observation or experimentation. By participating in this activity, students will learn that different species of birds prefer different foods and feed in different locations. They will become familiar with several types of bird foods and bird feeders. Through observations and experimentation students can learn about bird feeding behavior, dominance at a bird feeder, identification of common bird species, and food preferences of those species.

### Materials

The following materials are sufficient for making one of each type of bird feeder described in this fact sheet. The letters in parenthesis refer to the feeder type.

- 1 roll of nylon string or twine (A,B,C)
- 1 cardboard toilet paper roll (A)
- plastic net bag like those used for produce (onions or oranges) (E)
- dull kitchen knife (A,B)
- hole punch (A)
- drill with 1" drill bit (C,F)
- nails and hammer (G)
- 1 eye bolt (F)
- screen cloth (G)
- 3 pieces of 1"x2" wood 12" long (G)



- 2 pieces of 1"x2" wood 10.5" long (G)
- 2 pieces of 1"x2" wood 24" long (G)
- 4 small right angle metal braces, screws and nails (G)
- 4 small wooden blocks (G)
- wire hanger (D)
- 6" sturdy, but flexible wire (C)
- two 9" wooden dowel 5/16" diameter (C)
- clean 2-liter plastic soda bottle (C)
- softwood log 12" long; 4-6" diameter (F)
- smooth peanut butter (A,B,F)
- mature pine cone (B)
- sunflower head (D)
- seeds (A-G)
  - millet
  - corn
  - black-oil sunflower seed
  - niger thistle seed
- suet (B,E,F)

## What Types Of Feeders Can Be Made?

### A. Peanut Butter/Millet Roll

Take a cardboard toilet paper roll with a small hole punched 1/2" from the top on each side of one end. Attach a string loop through these holes. This string should be long to hang the feeder from a branch. Using a dull knife, spread smooth peanut butter all over the outside of the cardboard roll. Roll the peanut butter-covered cardboard in millet seed until it is well covered. Hang the feeder from a tree branch. This type of feeder will attract several species of finches and chickadees and possibly nuthatches.

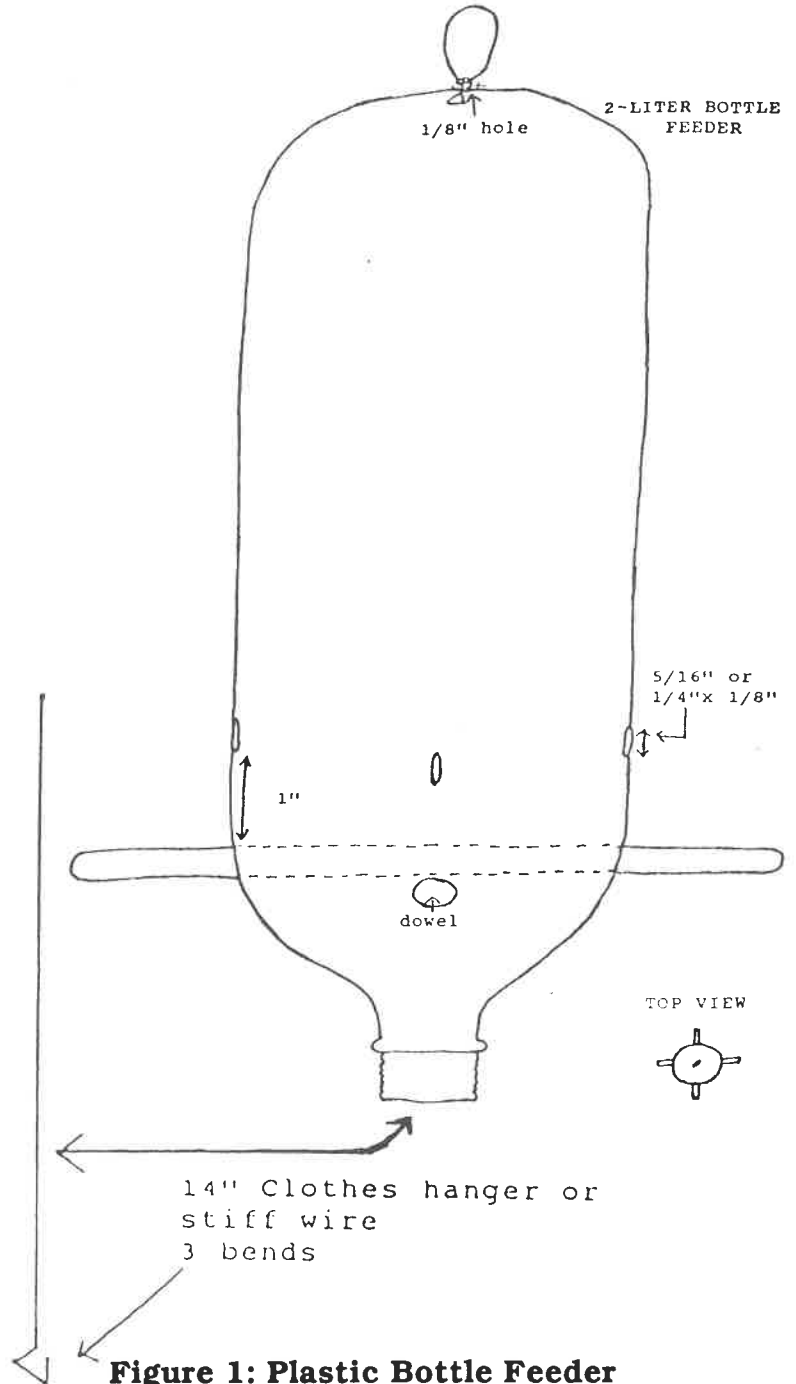
### B. Pine Cone Treat

Tie a string to a pine cone in such a way that the pointed end will remain upright when hung from a tree by the string. Make a mixture of peanut butter and millet seed. Using a knife or finger, apply the peanut butter/seed mixture to each pine cone scale. A variation of this feeder using a combination of suet, peanut butter and seeds is described in the *Sharing Your Space* book. Pine cone feeders will attract several species of finches and chickadees.

### C. Hanging Plastic Bottle Feeder

Remove the heavy plastic bottom and label from a 2-liter plastic soda pop bottle. Several holes must be made in the bottle either with a drill or a hot wire (see Figure 1). For young children, these holes should be made by the teacher before class. Make holes in the bottle as follows: a 1/8" hole in the bottom of the bottle; 4 holes 5/16" in diameter near the shoulder of the bottle so that dowels can be inserted for perches; and 4 feeding holes about 1" above the perch holes. The feeding holes should be 5/16" round if you intend to fill the feeder with black sunflower seeds and 1/4" x 1/8" if you will be using niger thistle seed. Take a 14" clothes hanger or other stiff wire and make 3 bends at one end as shown. Insert the wire, straight end first, though the mouth of the bottle and into an 1/8"

hole in the bottle's bottom. Pull the wire through the hole and fashion a loop that from which to hang the feeder. Cut off any extra wire. Insert two dowels to serve as perches. Fill the feeder with the desired seed and suspend from a branch. This type of feeder will attract several species of finches and chickadees.



**Figure 1: Plastic Bottle Feeder**

#### **D. Hanging Sunflower Head**

Sunflower heads can be purchased from seed stores or collected, with permission, from farmers' fields after harvest. Combines, when turning around at the end of fields, often knock down some sunflower stalks. Some farmers will allow people to collect these knocked down heads. The heads are spiny and are attached to tough stalks so be sure to wear gloves and bring clippers. To hang the sunflower head, impale it on the hook of a hanger and bend the hanger so you can suspend it from a branch. Chickadees, siskins, redpolls, nuthatches and goldfinches will feed from this simple feeder.

#### **E. Bag of Suet**

Take a plastic net produce bag, such as those used for onions or oranges. Fill the bag with suet. Suet is animal fat that can be obtained free of charge from the grocer. If you'd like, the fat can be mixed with seeds. Knot the bag closed and hang it in a tree high enough so that dogs will not be able to jump up and get it. This type of feeder is excellent for attracting woodpeckers, nuthatches, and chickadees.

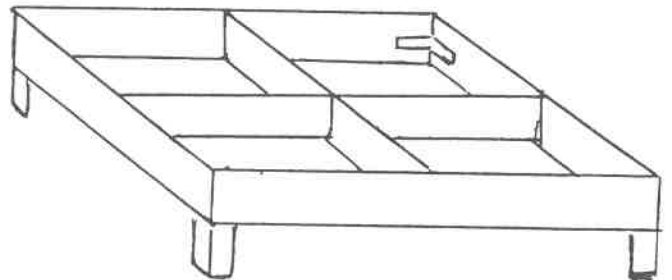
#### **F. Suet Log**

This idea comes from *Sharing Your Space*. Take a softwood log (pine or aspen would be good) 12 inches long and 4 to 6 inches in diameter. Prepare the log by drilling numerous 1 inch holes 1 to 1.5 inches deep in various places along the log. Have students fill these holes with suet or a mixture of suet and seeds. Attach an eye bolt to the top, from which the log can be suspended in a tree or from a pole. This suet log should attract the same species as the suet bag. It might be fun to try filling the holes with a peanut butter/seed mixture to see what species it may attract.

#### **G. Platform Feeder**

For birds that feed on the ground you can make a simple, rectangular platform feeder. Build a shallow rectangle from 4

pieces of inexpensive wood that are reinforced at the corners with small metal braces. Tack screen cloth tightly across the bottom. Attach a short leg at each corner. If you want to use this feeder for feeding preference experiments, divide the feeder into fourths by inserting dividers in the tray at right angles so there are 4 equal quadrants. Nail the screen bottom to these dividers. Filled with cracked corn this feeder will attract pheasants, blackbirds, doves, and blue jays. Use millet or black-oil sunflower seeds to attract finches and redpolls.



**Figure 2: Platform Feeder**

### **What Birds Come To A Winter Feeder in South Dakota?**

About 27 species commonly visit South Dakota feeders. These species, along with their food preferences, are listed in Table 1.

**Table 1. Food Preferences Of Birds That Come To South Dakota Bird Feeders** ( birds arranged taxonomically). + = preferred food; o = food eaten but not preferred. Blank boxes = species will not normally eat that type of food. \* = mainly in SE; \*\* = more common in Black Hills; \*\*\* not found in the Black Hills.

Species	Black oil Sun-flower	White Proso Millet	Red Proso Millet	Niger Thistle	Crack Corn	Whole Corn	Milo Sorghum	Suet	Pea-nuts	Saf-flower
Mourning Dove	+	+		+	+		o			o
Downy Woodpecker	o							+		
Hairy Woodpecker	o							+		
Blue Jay	o				o	o			+	
Black-capped Chickadee	+							+	o	
White-breasted Nuthatch	+							+		
Red-breasted Nuthatch	+							+		
*** N. Cardinal	+	o								o
*Tree Sparrow	o	+	+		o					
White-throated Sparrow	+	+	+		o		o		o	
White-crowned Sparrow	+	+	+		o		o			
Harris Sparrow	+	+	+							
Song Sparrow	+	+	+		o					
Dark-eyed Junco	o	+	o		+					
Pine Siskin	+			+						
Am. Goldfinch	+			+						
Common Redpoll	o			+						
Purple Finch	+									
House Finch	+			o						
**Red Crossbill	+									
**White-winged Crossbill	+									
Evening Grosbeak	+									
Ring-necked Pheasant					+	+				
Common Grackle	+				+	o				
Red-winged Blackbird	+				o	o				
***Yellow-head. Blackbird	+	+								
House Sparrow	o	+	o							

## What Foods Do Wild Birds Prefer?

Table 1 shows the food preference of the common bird species that will come to South Dakota feeders. Species starred with an asterisk will be more common in the southeast and ones with a double asterisk are more common in the Black Hills. Three asterisks indicate the species is not seen in the Black Hills. The northern cardinal, marked on the chart as unknown in the Hills, is most common in the southeastern part of the state.

## What Investigations Can Students Undertake?

There are many questions students can explore with their bird feeders. Some of the simpler ones do not even require the students to be able to identify the species. In these cases the data collected can be numbers of birds visiting the feeder (regardless of species), amount of seed eaten, or the time it takes for all of the seed to be used up.

If the objective is to help students learn bird identification, several strategies will work. A color poster with pictures of common species will make identification a simple matter of matching the birds with the pictures. Either purchase a poster from the Cornell Lab of Ornithology (see resource section) or make your own based on Table 1 by cutting pictures from an inexpensive field guide.

**Which feeder attracts the most birds? Which feeder attracts the most different kinds of birds?** Students can answer these questions by tallying the number of birds that come to each feeder. You would want to have the feeders differ in only one way and to be located in comparable areas to have a more controlled experiment. For example, you could make the peanut butter/millet roll and then make a second one using black-oil sunflower seeds. Or, students could

make two hanging soda pop bottle feeders, one filled with niger thistle and the other filled with black-oil sunflowers. Students could take turns monitoring the feeders and counting the numbers of visitors. If you just want to know which feeder is most effective, you could weigh or count the seeds before and after the experiment, or keep track of which feeder's seed was used up first.

**Which species of birds will feed at the different feeders? Which species are ground feeders? Which species feed from hanging feeders? Are there species that will eat a certain seed regardless of the type of feeder is used? Which species eat suet? Which species like millet?** For these types of questions students will have to learn how to identify the common birds. Again you would want to be comparing feeders that differ in only one way and have students monitor bird visits to each feeder.

**What type of seed is most preferred by ground feeding birds? What type of seed works best in the soda pop bottle feeder?** These questions can be answered without having to identify the feeding birds. Students should carefully measure equal volumes of 4 types of seeds and place them in different sections of the platform feeder or in different bottle feeders. After a pre-determined period of time, collect the seed from the feeder to see which type was most eaten. Alternatively, students could see which seed is used up first.

**What time of day do birds most often eat at feeders? Does the type of weather make a difference in bird feeding?** These questions are long term investigations that will require collection of a great deal of data. Therefore they are most appropriate for students doing science fair projects at home and who are interested enough in birds to want to watch feeders for a long time. Perhaps more advanced students or those with

parents' help can set up video recorders to monitor the station.

**Which species are dominant at a bird feeder?** Not all species or individuals are equally aggressive at a feeder. Some species, such as blue jays, will be quite aggressive and will chase other species away. Also, sometimes, individual birds will consider the feeder in their territory and defend the feeder against other birds. To answer this question students will have to monitor bird visits as well as bird interactions and keep track of which species "won" each encounter.

**Does the color of the seed (or feeder) affect the birds' feeding?** To answer this question students should make

identical feeders that differ only in their color or the color of the seed. The feeders should be placed in comparable locations. The hanging sunflower head would work quite well for this question. The students could divide the head into 4 equal quadrants, leaving one quadrant natural and each of the others painted a different color. Be sure to use non-toxic paints.

## Evaluation

As with any project, students' work can be evaluated in a variety of ways. The quality of the feeders, the data charts, graphs based on the charts, reports and presentations of the findings are all examples of student work that can be evaluated.

### References and Selected Resources For Teachers

- A Field Guide to the Birds*, 1980 by R. T. Peterson. Peterson Field Guide Series. Houghton Mifflin Co., Boston, MA.
- Birds of North America*, 1983 by C.S. Robbins, B. Bruun and H.S. Zim. Golden Field Guide Series. Golden Press, New York, NY.
- Common Feeder Birds of North America*, 1993 by Cornell Laboratory of Ornithology, 159 Sapsucker Woods Rd., Ithaca, NY 14850. This is a set of 2 color posters, one for eastern states and one for western states that illustrates common birds that come to feeders. They are available for less than \$2 each if you call 607-254-2411.
- North American Birds, Peterson Multimedia Guides*, 1995. Houghton Mifflin Co. Boston. Interactive CD ROM program for bird identification with motion pictures, photographs, drawings, bird calls, and bird watching tips by Roger Tory Peterson.
- Sharing Your Space: A Homemaker's Guide to Attracting Backyard Wildlife* by Eileen Dowd Stukel, Douglas Backlund, Maggie Hachmeister, and Terry Wright, 1995. S.D. Department of Game, Fish and Parks, Pierre, SD.

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