

Activity 4.2

WHY ARE FEATHERS SPECIAL?



Take home and do with family and friends.

Materials Needed

- Bird flight feathers (one per student)
- Hand lens (one per student if possible)

Procedure

1. Use the hand lens to examine your feather. Notice that it is made up of a strong shaft or spine, with many small threadlike pieces or *filaments* attached on either side of the spine.
2. Examine the shaft. Hold it by the thicker end and carefully bend the opposite end a little bit. What happens when you release the bent end?
3. Carefully separate the threadlike filaments near the middle of your feather. Notice they seem to stick together. Although you probably will not be able to see them with a small hand lens, each filament has hundreds of tiny hooks, called *barbules*, that hold the filaments together to make a long, flat surface called a *vane*.
4. Beginning at the shaft, use your fingers to gently stroke the area where you separated the filaments. Can you describe what happens and why? Can you think of man-made devices similar to this?

Teacher Information

Before you use feathers, certain precautions should be taken. Be certain they are clean and free of dust and tiny insects such as fleas and lice. Most feathers can be rinsed in warm water (no soap), and when dry, placed in a microwave oven for one to two minutes.

Feathers are remarkable examples of animal adaptation. Man has not been able to produce any material or system to match them, weight-for-weight, for strength, insulation, or air-foil qualities.

The substance of which feathers are made is called keratin, similar to the material in human fingernails. The tiny barbs on the filaments allow them to be separated and rejoined, much as we use zippers or Velcro fasteners.

The filaments of flight feathers lock together in an overlapping pattern, providing extra strength. If you have a large feather and a strong magnifier you may be able to see the overlapping by looking along the shaft from a nearly horizontal angle. Many of the following activities use birds as examples of adaptation.

SKILLS: Observing, inferring, classifying, communicating