



# FEATHER FEATURES

Ages 6+

## Learning Objectives

- Students will be able to:
  - describe two types of feathers
  - describe parts of feathers and how birds keep them clean

**Summary:** Students will learn how birds' feathers enable them to fly and keep warm.

**Subject Area:** Science

**Time:** 45 minutes

**Background:** What makes birds different from all other animals is that they have feathers. Other animals— bats, flying squirrels, and many kinds of insects—can fly; reptiles, fish, insects, and some mammals (duck-billed platypus) lay eggs; but only birds have feathers.

Feathers have many functions: they enable a bird to fly, keep warm and dry, hide from predators, and communicate with other birds.

There are two main types of feathers: contour feathers and down feathers. Contour feathers are the most common feathers. They cover the body, wings, and tail. They are smooth and firm, give a bird its smooth, sleek shape, and protect the bird from heat and cold. They are waterproof, serving as a bird's raincoat. Flight feathers are special contour feathers on the wings that are shaped to help in flight. Down feathers are fluffy and soft. They lie under the contour feathers, close to the bird's skin, and help to keep the bird warm by trapping a layer of air next to its body. They act like a bird's down jacket. The softest, fluffiest feathers, the ones used by humans to stuff warm jackets and quilts, grow most thickly on birds that live in cold climates, especially waterbirds such as ducks, geese, and penguins.



Birds spend a lot of time every day preening—cleaning, arranging, and oiling their feathers with their bill. Preening is essential for birds. If feathers are not kept in shape, they lose their ability to keep the bird warm and dry. Most birds have a “preen gland” on the rump at the base of the upper tail feathers. Using its bill, the bird squeezes oil from this gland and then works it into the feathers, drawing one feather after another through the clamped bill. The oil cleans and conditions the feathers and makes them waterproof. It is also thought to inhibit the growth of fungi and bacteria.

### **Before the Lesson**

- Ensure all necessary resources (or alternatives) are available.
- Familiarize yourself and your students with local bird species.

### **Materials**

- Collected contour and down feathers (artificial feathers can also be used)
- Paper and pencils
- Small amount of vegetable oil
- An overhead projector (if available)
- Handout: copy of page 3 illustrating feathers

### **References**

- Mangrove Action Project, Marvellous Mangroves - A Wetlands Education Resource Book for the West Indies

### **Acknowledgements**

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# Activity - Feather Features

## Procedure

1. Several days before the class, have students collect and bring in feathers. It doesn't matter if these come from wild birds or from chickens—feathers are feathers! **DO NOT** pluck feathers from a living bird. Only use feathers found on the ground that have been shed by birds.
2. Let students explore how they can “zip” the feathers together by running their fingers along them. Compare flight/contour feathers with down feathers.
3. Sketch the features of the feathers and label the shaft (the hard center tube that is hollow at the base) and the vane. (If the feather has one vane wider than the other, it is a flight feather from the bird's wing or tail. The vanes of regular contour feathers, which cover the body, are the same width on each side of the shaft).
4. Observe a feather projected to illustrate the fine structuring and barbs. Have the students draw a picture of each projected feather.
5. Flap the down and contour feathers up and down. Describe how each feels.
6. Dip the contour feathers into the vegetable oil. Run water over them. What do you observe?

## Discussion/Reflection

- How do the barbs help a ruffled feather?
- What is the difference between the flight/contour and down feathers?
- Which feather holds up better in the wind ?
- Which feather makes a better pillow?
- How do the feathers protect against water (rain, snow, etc.)?



# Feather Features

