

Lesson 3 Birds of a Feather

An Introduction to the Bird Feathers and Their Uses

Overview: Students will be introduced to the feathers of a bird and to their uses and to man-made objects performing some of the same tasks.

Objectives (1-3): Students will be able to list various uses of feathers, recognize various feathers on the body of birds, and be able to list specific uses that humans have found for feathers.

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| Key Concepts: Biodiversity, bird feathers, coloration, evolution, insulation, ecology |
| Subjects: Biology, Ecology |
| Duration: 1 class period |
| Setting: In the classroom, then eventually in the field, |
| Season: mid to late fall or early spring |
| Interdisciplinary Connections |
| Frameworks: |

Environmental Education @ the Cove River Site, and other coastal Connecticut settings.



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Introduction (background): Feathers are perhaps one of the most prominent features of a bird's anatomy as well as being unique to birds. Every bird has feathers and everything that has feathers is a bird.

Feathers perform a number of functions for a bird. Firstly, they provide insulation, this is very important in a warm blooded animal. It is believed by most scientists that this insulating effect was the primary force driving the evolution of feathers as well as protecting birds from UV light.

Secondly, feathers allow for flight. Scientists believe that flight evolved in birds as a result of their possessing basic feathers and that this added selective pressure to the evolution of feathers making them larger, stronger and refining their structure.

Thirdly, feathers control what a bird looks like. A plucked chicken or pigeon looks very different to a fully feathered one. Feathers supply the bird with colors allowing for camouflage and secondary sexual characteristics and sexual display (an example being the peacock).

Materials: A list of necessary materials

- Flight feathers (can be bought at an arts and crafts store)
- Downy feathers (can be bought at an arts and crafts store)
- A large diagram of a birds wing that labels the various feathers
- Magnifying glass (one per student)
- Pictures of various birds in their natural habitat (including penguins and ostriches)
- Pictures of people in winter gear
- Insulation from a sleeping bag or coat

Preparation / Set Up (if necessary): None

Engagement (Opening or Essential

Question: Why do birds have feathers, what are their uses? Can they be used for multiple things?

- In a class ask your students what they know about bird feathers
- What are they made of?
- Have them list the various uses of feathers

- Show them the diagram of a birds wing and walk them through what each type of feather is for.

Exploration:

1. Use the magnifying glass to compare both the flight feather and the downy feather
2. Compare the various parts (filaments and shafts) of the feathers including coloration. What are the similarities? The differences?
3. Due to their warm-blooded nature both birds and humans use coverings to help maintain their body temperature against their environment.
4. Have your students compare the pictures of humans in winter clothing and the penguins, ask them to note the similarities (ex. The air pockets that become trapped close to the body). Remind them that penguins are the only animals that can survive in Antarctica and despite the fact that they cannot fly, their feathers serve other purposes.

Explain:

Walk through the answers with your students and ask them to locate an area of the world without birds (exception being ocean floor). This will let them know just how adaptable the uses of feathers is.

Elaborate:

Introduce or bring students to the Cove River site, have them observe the local bird populations and compare the plumage of the various birds as well as potential uses for these animals.

Evaluate:

Ask your students to pick ten different birds from all over the world and to extrapolate the uses that each bird makes of its feathers

Supplementary Materials:

<http://www.birds.cornell.edu/AllAboutBirds/studying/feathers/>

http://askabiologist.asu.edu/research/bird_feathers/