

Explore the Museum Like a Scientist!

Fantastic Flying Machines

For Families and Groups with Young Visitors

These activities are designed to spark your curiosity and encourage you to think like a scientist. When scientists are curious they: **look closely, ask questions, compare, collect information** and **test ideas**.

Birds are remarkable creatures with specially designed beaks, feet, legs, eyes, and wings. Use this guide to discover birds. There are birds all over the Museum, but you'll find lots of them in the natural science exhibits *Back to Nature* (3rd floor) and *Cabinet of Curiosities - the Museum, Science Collections and YOU* (1st floor).



Bird Search

Throughout the Museum look for birds that:

- are perched on a branch
- have brightly colored feathers
- are well camouflaged
- swim
- have long beaks
- have short beaks
- have flat beaks

Find a favorite bird. To find out more about your favorite bird, look it up in a field guide. Look in the bookcases found in the *Cabinet of Curiosities* exhibit to find a selection of field guides.



Beaks

Bird beaks come in different shapes to help birds eat different types of food.



Wide scoop-like bills are good for shoveling in underwater plants and animals.



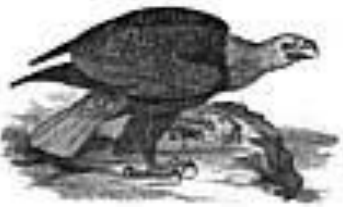
Long bills are useful for digging and exploring sand and mud for small creatures.



Slender bills are good for reaching insects in tree bark.



Stout bills are designed for picking up and eating seeds.



Sharp curved bills are for tearing the flesh of prey.

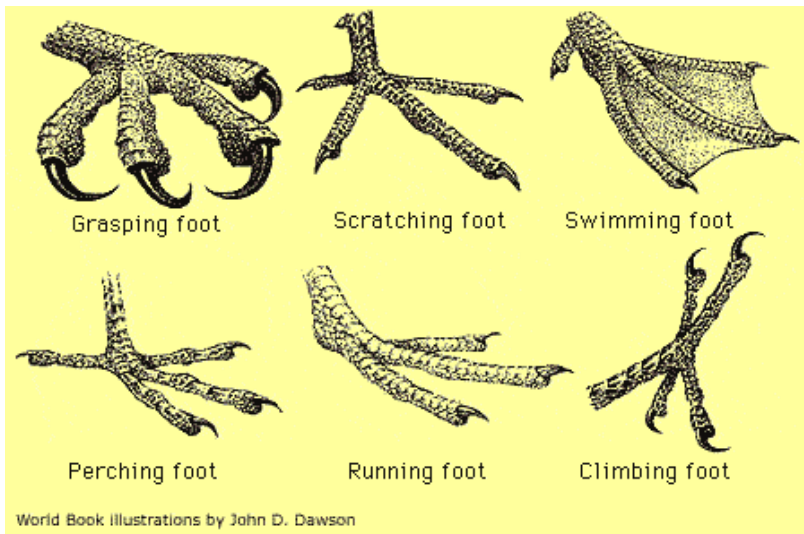
Match the bird with the food it likes to eat.



Feet

Birds use their feet in lots of ways: to walk, hop, run, perch, swim, and to catch or grip their food. *What do you do with your feet?*

Try matching the following birds to the correct foot.



Woodpecker

Eagle

Prairie Chicken

Robin

Roadrunner

Mallard Duck

*Hint: if you need some help look in the field guides found on the bookcases in the **Cabinets of Curiosity** exhibit.*

Eyes

Most birds have eyes on the sides of their heads, allowing broad peripheral vision - they can see what is happening in the corner of their eyes much clearer than people.



Birds of prey have forward facing eyes that give them binocular-like vision. They can rapidly focus on their prey from great distances.

Where are your eyes located?

Wings

Wings come in many shapes and sizes. Birds, like sparrows, that nest and feed in grass or brush covered areas can rise almost straight up in the air on their short, broad wings.

Birds that chase their prey have long, narrow, angled wings that allows for speed.

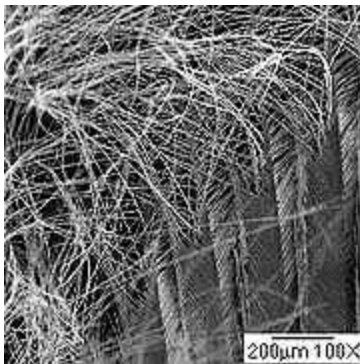
Birds of prey like hawks and eagles have a long broad wing that lets them soar on the air currents. *If you could fly like a bird what kind of wing would you have?*

Feathers

Feathers not only keep birds warm, they help birds fly. There are three types of feathers:

- **Down feathers** are short and fuzzy and they help keep the bird warm.
- **Contour feathers** are smooth and give the bird its streamline form.
- **Flight feathers** have a central hollow shaft with webs on each side making it a lightweight but solid surface for flight.

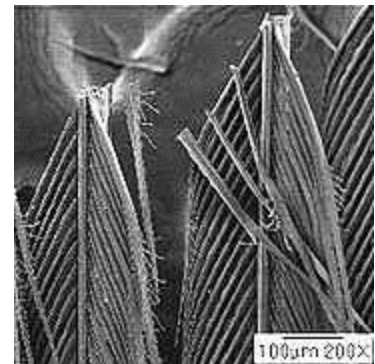
This is what feathers look like under a microscope. *What do you see?*



Down Feathers



Contour Feathers



Flight Feathers

Photos courtesy of Minnesota Microscopy Society

The interlocking structure of each feather gives it strength. When a bird is flying, these hundreds of contour and flight feathers enable it to push against the wind and propel itself forward. *Do you think that birds can fly without feathers?*