



What do Birds Have for Breakfast?

Grade: 2

Subject Areas:
Physical science, Life
Science

Skills: predicting,
observing, comparing,
modeling tools, identifying
relationships

Duration: 1 hour

Connections:
adaptations, physical
characteristics, forces, oral
instructions

Vocabulary

adaptation

carnivore

diverse

herbivore

invertebrate

omnivore

prey

probe

species

Objective:

Students will observe that bird beaks have different shapes and that these differences are based on habitat, diet and behavior.

Materials

- Assorted bird beak materials (see attached list)

Standards

Strands: Excellence in Environmental Education Guidelines

Strand 1 —Questioning and Analysis: F) Learners understand that relationships, patterns, and processes can be represented by models.

Strand 2.2—Environmental Processes and Systems A) Organisms, populations, and communities: Learners understand basic similarities and differences among a wide variety of living organisms. They understand the concept of habitat. **B) Heredity and Evolution:** Learners understand that plants and animals have different characteristics and that many of the characteristics are inherited. **C) Systems and connections:** Learners understand basic ways in which organisms are related to their environments and to other organisms.

California State Educational Standards:

Physical Sciences 1d: Students know tools and machines are used to apply pushes and pulls (forces) to make things move.

Life Sciences 1c: Students know many characteristics of an organism are inherited from the parents. Some characteristics are caused or influenced by the environment.

Life Sciences 1d: Students know there is variation among individuals of one kinds within a population.

Investigation and Experimentation (I and E) 4a: Make predictions based on observed patterns and not random guessing.

1 and E 4c: Compare and sort common objects according to two or more physical attributes (e.g. color, shape, texture, size, weight)

Background

Unique Beaks

A great way to introduce the idea of animal **adaptations** to young children is to show them the differences in bird beaks. An adaptation is something like a structure or a behavior that is changed or changes to a new application or situation. Minute changes over time give rise to new characteristics. Studies have been done on the Galapagos Islands showing that just a slight change in the length of a bird's beak may mean life or death during hard times like a severe drought.

There are over 10,000 species of birds worldwide representing an incredible diversity in form. In the King Range National Conservation Area (NCA) there are over 300 species that frequent the area. This is due to a large degree to the **diverse** habitats found there. The different forms birds come in is closely related to their diet. However, birds don't just use their beaks for eating. Beaks are used for a host of other things such as nest building, preening, and attacking those that are viewed as a threat.

Many birds are **carnivores** and eat meat exclusively. Shorebirds such as sandpipers, yellow legs, avocets and plovers have long pointed beaks to probe into sand and mud plucking small **invertebrates** from below the surface or skimming them off of the surface. Kingfishers fly over water and "stab" fish with long sharp beaks using their keen eyesight to assist them. Pelicans scoop up both water and fish like a scoop net. Their bills are used as **strainers**. Loons, cormorants, grebes and some ducks dive for fish from atop water. Their beaks are long

and flattened and sometimes have fringed edges. They are propelled by their strong webbed feet. Herons and egrets have very long legs and very long bills so that they can get a good view of critters living in marshes and wet fields and ditches. Their beaks are used like spears. Flycatchers, swallows, and swifts are primarily insect eaters that catch the insects on the wing while woodpeckers, and nuthatches look for insects and their larva in trees. Birds that catch insects while flying have wide gaping mouths like a fish net. The beaks of woodpeckers are strong and pointed which allows them to **probe** for food in the crevices of trees and stumps. They have very strong necks and a padded brain so they can use their

heads like a hammer. Large birds of prey like eagles, hawks and falcons hunt for small animals and catch their meal with sharp talons. Their beaks are hooked and strong in order to tear meat from bone before eating it. Their nighttime counterpart are the owls. The wings of owls are specially designed to be silent so they can sneak up on their prey.

Some birds are strict vegetarians or herbivores. Finches, sparrows and grosbeaks eat seeds so their beaks are wide and strong for cracking seeds open like a nutcracker. Other birds are opportunistic. Like humans, they will eat just about anything and would be considered **omnivores**. One group in particular, the corvids, fit into this

King Range NCA Common Birds

Killdeer	Pelagic Cormorant
Mourning Dove	Western Gull
California Quail	Band-tailed Pigeon
Anna's Hummingbird	Acorn Woodpecker
Allen's Hummingbird	Northern Flicker
Red-tailed Hawk	Western Meadowlark
Osprey	Western Bluebird
Turkey Vulture	Raven
Black Phoebe	Wrentit
Western Wood-Pewee	Brewer's Blackbird
Ash-throated Flycatcher	Hermit Thrush
Violet-green Swallow	American Robin
Chestnut-backed Chickadee	Yellow-rumped Warbler
Barn Swallow	Song Sparrow
Scrub-Jay	Black-headed Grosbeak
Steller's Jay	Lazuli Bunting
Spotted Towhee	American Goldfinch

category. Corvids include ravens, crows and jays. They hunt, steal and scavenge for their meals. Their beaks are used for a very diverse list of tasks including getting into your garbage can or lunch bag when you aren't looking.

Contrary to being generalists, there are the specialists. Crossbills are highly specialized to extract the seeds from conifers (cone-bearing trees). Their beaks have a twist in them so when they open their bills the seeds come right out of the cone. Hummingbirds are highly adapted for eating nectar. They use their long tongues almost like a straw and sip nectar from flowers. As they fly from flower to flower sipping nectar they are inadvertently pollinating them.

Birds are endotherms or "warm blooded" which allows them to generate their own heat. In order to keep warm they have to have a high metabolism. Because of this they need to stay warm so they need to eat a lot. Their wide range of highly successful beak shapes allows them to perform many different tasks especially eating. (see list of local birds pg. 5)

Local Connection

Birding at the Community Park

The best time to introduce someone to the ever growing and popular leisure activity of bird watching is in the late Spring. During this time, birds are engaged in breeding activity such as singing, displaying, and nest building. The male birds especially are bold and colorful. In Southern Humboldt a great place to bird watch is the Community Park just outside of Garberville on Sprowl Creek Road.

The Community Park has several different habitats. It has beach access to the south fork of the eel river, open grassy fields, and acres of woodlands. Along the Meadow Loop, one should look for Grasshopper Sparrows and Meadowlarks. These are seed eaters. In the woodland areas, one is likely to see a Scrub Jay, a American Robin, and many different types of woodpeckers, including the entertaining Acorn Woodpecker. Along the river bank, several wading birds can be seen including the Great Egret and the Great Blue Heron. Flying over head Northern Harrier Hawks, Redtail hawks and American Kestrels, a small type of falcon, may be hunting for rabbits, small rodents or snakes.

When it comes to bird watching, the most important things to keep in mind are to walk slowly, watch for activity, and listen for the sounds birds make like calls and scratching. To truly appreciate the amazing life of birds, it is best to watch them with a pair of binoculars.

Activity: Identifying Different Beak Types

Preparation

1. Collect an assortment of different tools that can represent different beak types. Here is a list of possibilities:

Materials 1

- **Tweezers** (*thrushes, chickadees, woodpeckers*)
- **Pliers** (*crows, ravens, sparrows*)
- **Small fishnets** (*pelicans, swallows, swifts, flycatchers*)
- **Straws** (*hummingbirds*)
- **Chopsticks** (*sandpipers, yellow legs*)
- **Slotted spoons or strainers** (*ducks, geese, loons*)
- **Letter opener** (*herons and egrets*)
- **Plastic knives and forks** (*hawks, owls*)
- **Nutcrackers** (*finches, grosbeaks,*)
- **A whistle for signaling when it is time to move on**

3. Set up 5-8 different stations depending on your group size. Lay out 3-4 different tools at each station making sure that the appropriate one is there as well. (one tool per student) Have a sign at each station to remind you of what each set of tools represents (see above italics).

2. Collect different foods that will require certain tools or “beaks” to eat. To make it more realistic situate these “meals” into a habitat. Here is a list of foods and their representative habitat:

Materials 2

- **Cluster of grapes hanging from a string** (fruit hanging from a tree for robins and pigeons)
- **Bed of oatmeal with gummy worms at the bottom** (worms in a lawn or mud flat for sandpipers, etc.)
- **Tiny marshmallows in a pan of water** (aquatic plants and animals for ducks and geese)
- **Rice scattered on a log with holes in it** (insects in a hollow tree for a chisel beak of a woodpecker or nuthatch)
- **Rubber erasers in a shallow pan of water** (fish in a shallow pan for kingfisher or osprey)
- **Whole sunflower seeds or walnuts** (seeds on the ground for grosbeaks and sparrows)
- **Bread** (small rodent mouse or shrew in a field for hawks and owls)
- **Glass of juice** (nectar from a flower for hummingbirds)
- **Popcorn**—to be thrown in the air and caught flying insects for flycatchers, swallows, etc.

Procedure

1. Have the students sit as a group and show them the poster of different birds and their different beaks.

2. Introduce the set of local birds that will be modeled in this exercise. (See picture cards/photos) Show each card and ask the students questions about diet, behavior and habitat. Bring their attention to the different beaks each species has.

- *How does a bird get its food?*
- *What features do birds have that other animals don't have?*
- *Why do you think different birds have different shapes and sizes to their beaks?*
- *What do birds eat for breakfast?*
- *What are some different habitats in which birds live?*

3. Have 3-4 students at each station. An easy way to group students is to have them count off (1, 2, 3, 4,5 for 5 groups, etc.) Blow a whistle or have some other method denoting when they should change stations. At the stations the students will use trial and error to use the tools to get the food. Ideally there is one adult for every two stations.

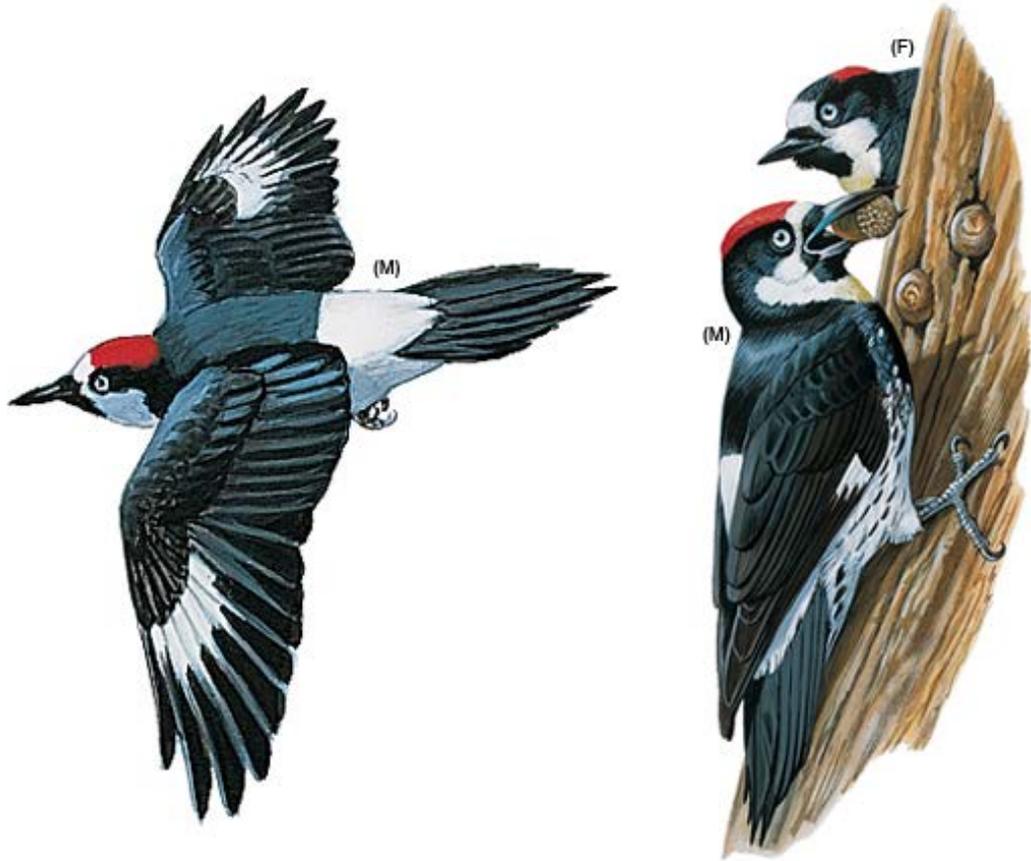
4. After this activity have the students come back to the group area and discuss their results.

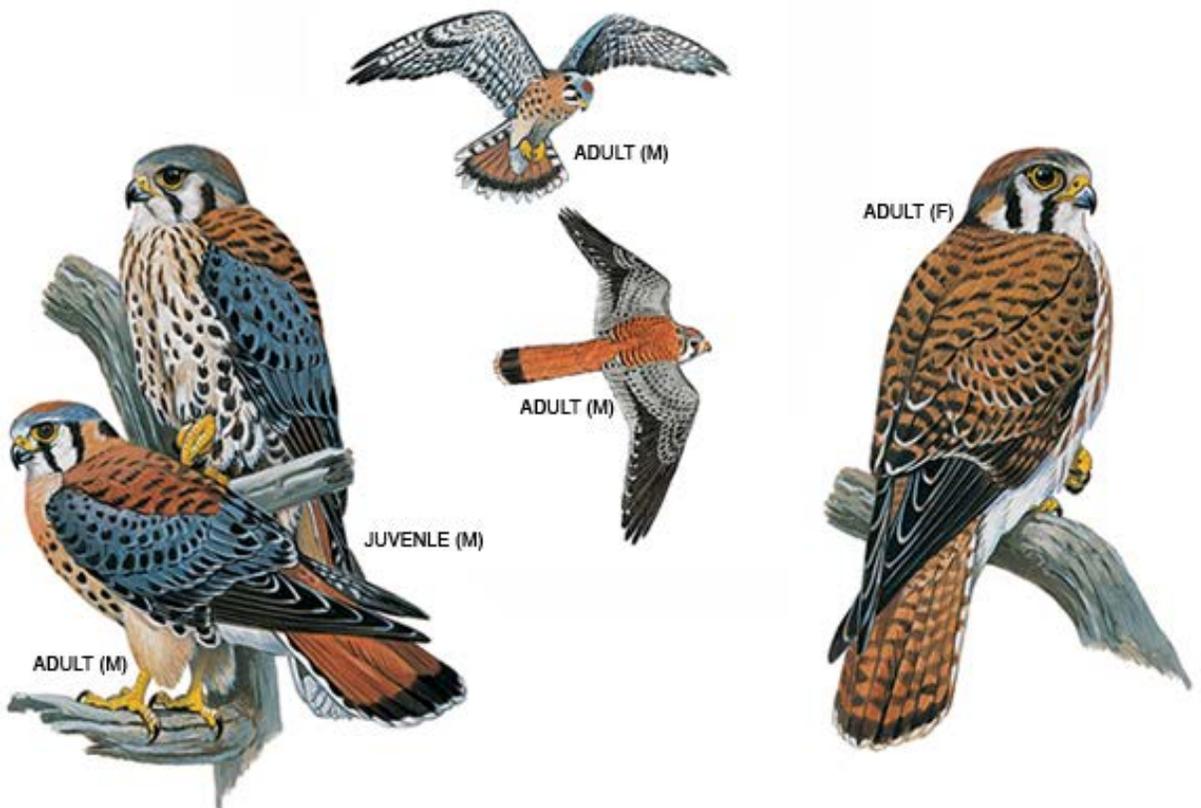
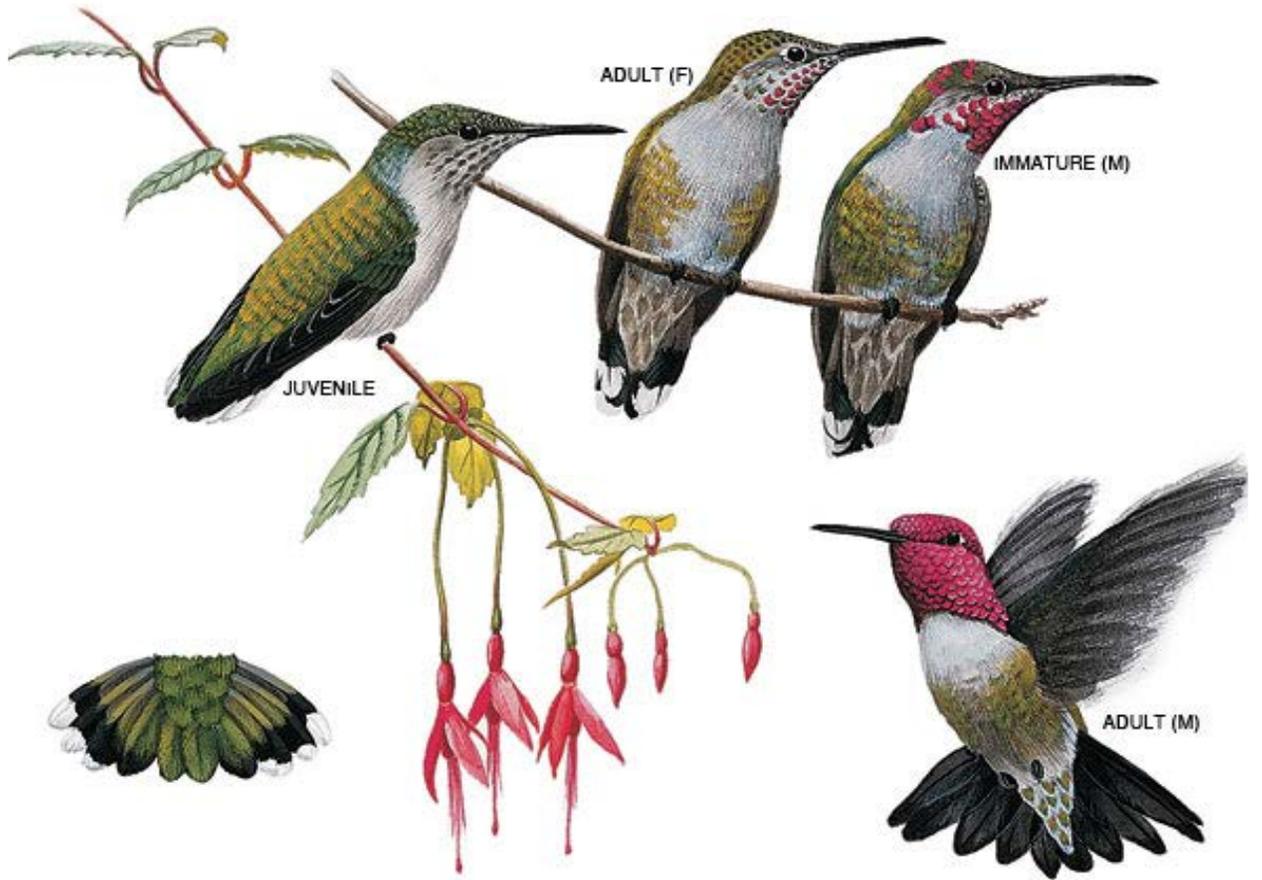
Extensions

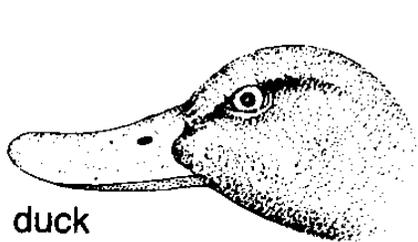
- Go bird watching using a nearby natural area.
- Encourage birds to visit your campus by making bird feeders. See: <http://www.learnnc.org/lp/pages/646>
- Observe the development of a chicken embryo using prepared microscope slides. Incorporate activities from All About Birds. See: <http://www.enchantedlearning>.
- Hook up with your local Redwood Audubon group for current activities available.
- Introduce pollination of flowers and fruit.

References

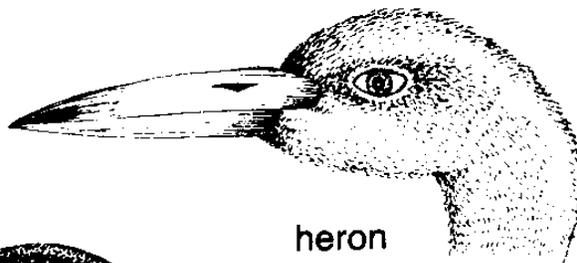
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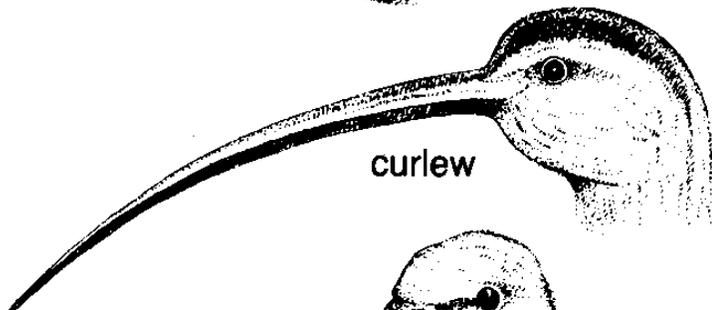




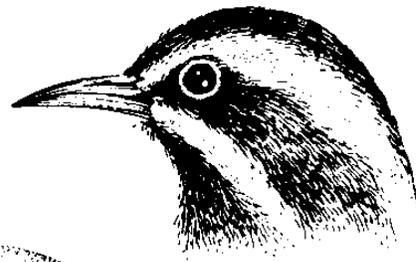
duck



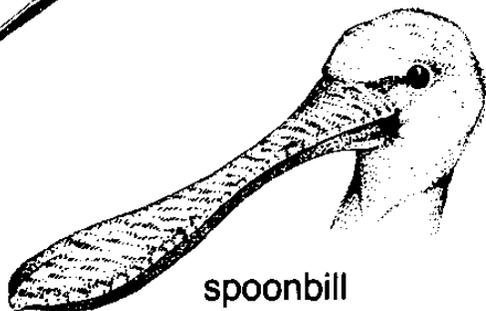
heron



curlew



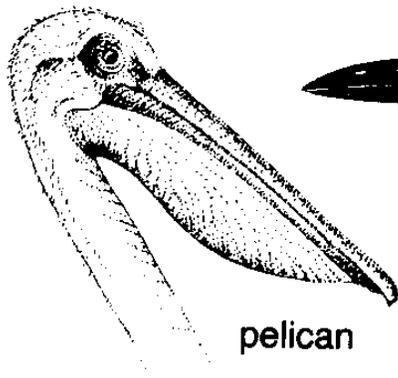
warbler



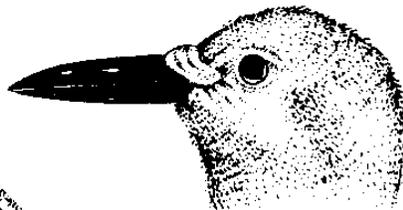
spoonbill



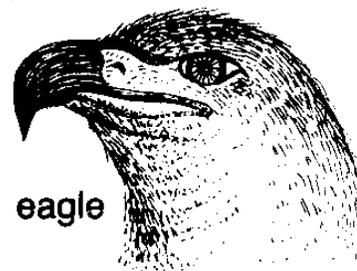
parrot



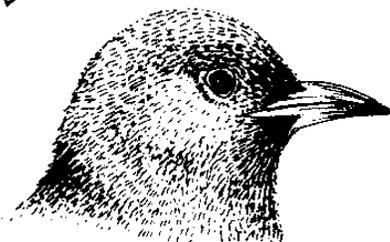
pelican



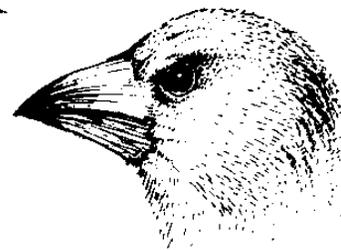
woodpecker



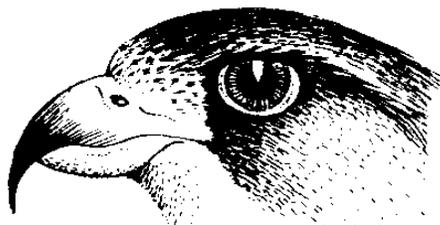
eagle



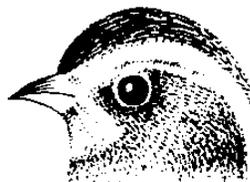
blackbird



finch



falcon



sparrow