

Chapter 7.

Bird Studies Overview

Steigerwald Lake National Wildlife Refuge provides a variety of habitats for many species of birds. Thousands of breeding birds rely on the resources of the refuge to rest, eat, and raise their young. In addition, the refuge supports wetlands that are vital to the survival of migratory birds. The activities that follow offer an excellent opportunity for students to learn about and to observe the different species of birds — their behaviors and adaptations to the habitats on the refuge.

Background

The actively managed refuge wetlands and grasslands, when combined with the natural floodplain vegetative communities, provide habitat that supports over 200 species of birds. Hundreds of thousands of birds migrate along the lower Columbia River every year. The refuge hosts thousands of migratory birds that fly thousands of miles from their breeding grounds in Arctic Canada and Alaska to their wintering grounds in Baja California or South America, a route known as the Pacific Flyway. The few remaining areas of wetland habitat along the lower Columbia River are vital to the flyway. Some birds spend their winter on refuge wetlands, returning north to nest; some nest here but migrate to milder climates in the south for the winter; and some do not migrate at all but remain in the area as permanent residents. Several of the songbirds found in the summer spend our winters in Central and South America, migrating thousands of miles annually between their summer and winter habitats.

Birds using the refuge are specifically adapted to the type of food they eat and the type of habitat they occupy (open water, freshwater wetland, field, riparian woodland, or upland woodland). Many of these adaptations take the form of beak and feet modifications. The beak and feet pictures will give you an idea of the variety of these adaptations.

Different species of birds usually do not compete for the same food. Birds in wetland habitats, though often feeding together, are not looking for the same food. One species may have a long bill that probes deep into the mud, while another species may have long legs that allow it to feed in deeper water. Wetland birds can be loosely divided into four groups based on their food preferences:

Fish eaters — great blue heron, pied-billed grebe, belted kingfisher, great egret

Invertebrate eaters — long-billed dowitcher, spotted sandpiper

Filter feeders — Northern shoveler, mallard, cinnamon teal

Seed eaters — marsh wren, red-winged blackbird

As lakes and ponds dry out in late summer, longer-legged birds such as great blue herons and great egrets are seen in groups feeding on fish, frogs, snails, and invertebrates that are concentrated in the shrinking bodies of water. At the same time, long-billed dowitchers and yellowlegs make use of the shallower water along the shoreline. Their long legs keep them above the water, while their long beaks probe for food in the mud.

On higher land among grassy vegetation, nests of mallards and cinnamon teal are found. Great blue herons make their nests in trees on Bachelor Island, and wood ducks and hooded mergansers nest in tree cavities along the sloughs. The refuge supports a wide variety of birds, all of which need the precious habitats the refuge manages and protects.

Bird Beaks



Slender beaks for probing mud (long-billed curlew and other shore-birds)



Long, broad beak for spearing prey (egrets, herons)



Sharp, hooked beak for tearing meat (northern harrier)

Board beak for scooping plants and straining water (ducks)



Long, hooked beak for catching fish (cormorant, pelican)



Slim, sharp beak for catching insects (flycatcher, swallow)

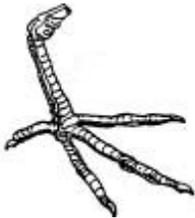
Bird Feet



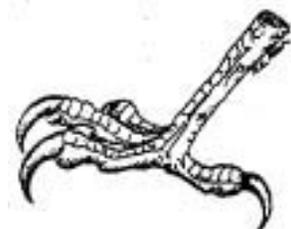
Three toes in front and one for perching (sparrows, wrens, black-birds)



Webbed feet for swimming (ducks, geese)



Long-toed feet for wading (egrets, herons)



Sharp-clawed feet for grasping (owl, hawk)

Calling All Birds

Classroom Grades: K-7

Objective

Students will understand how birds call to sound alarms, establish territory, and attract mates. Students challenge their hearing by listening for their partner's matching call.

Materials

Pairs of opaque film containers with different contents (one pair each with the same object.) Possible contents: paper clips, stones, rice, pasta, sand.

EALRs

Communication: 1.1, 1.2 Science: PC 03 1.1.5, 2.1

Background

How do birds find a mate of the same species? Birds identify each other through their songs. A keen sense of hearing is critical for the survival of their species. If birds cannot find a mate, no young birds are produced to replace the old birds that die or are eaten by predators.

Methods

Before passing out the canisters, discuss the following question: Why do birds sing or call? (to attract mates, to alarm others about danger, and to establish territory)

After the question has been thoroughly discussed, give each student a canister. Explain that this is their song, and they are to find another bird with the same song by shaking their canister. For a group of 10 to 20 students, allow 5 minutes to find each other. For a larger group, allow 7 to 8 minutes.

When students think they found their partner, have them stand together. When time is called have them open their canisters to see if they found their partner.

Count the number of correct pairs. Collect the canisters and pass them out again; decrease the amount of time they have to find a partner.

You can play several rounds making each one shorter as the students improve at differentiating the sounds.

At the end of the activity, collect the canisters and discuss the questions below. Stop and listen for birds whenever you are outside!

Discussion

Conclude the activity with a discussion about the following questions:

Q: What problems did they experience while trying to find their partners?

A: *Too much noise or not enough time.*

Q: Do wild birds have the same problems?

A: *If there is noise that sounds similar to their call, the birds may have trouble finding a mate.*

Q: How do unnatural sounds affect bird calls?

A: *They have to adapt to the interfering sounds or move to a different area.*

Q: What unnatural sounds do you hear?

A: *Planes, cars, trains, horns, etc.*

Q: Why are birds so good at singing and calling?

A: *They start at birth and have to rely upon oral communication for much of their survival.*

Extension

Have students choose a partner. As in the first part, have a discussion on bird calls.

Why do birds sing?

- To identify the species.
- To proclaim their territory.
- To attract a mate.
- To distinguish between strangers and neighbors.
- To sound an alarm of danger.

Birds need a keen sense of hearing. This is a sense we do not use as much as other senses. We are going to practice listening for bird calls by learning a call and using it to find another bird with the same call. Have each pair practice their call together. Mix everyone up; put a paper bag over their heads, and start calling. End the exercise when all pairs have found each other.

Sample calls

Chickadee — *chick a dee dee dee*

Bob white — *bob white, bob white*

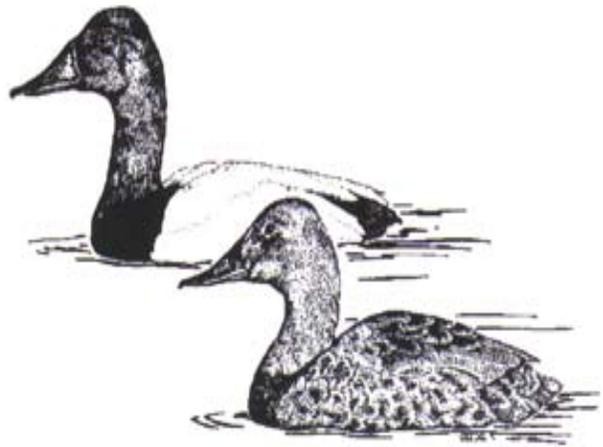
Towhee — *towee towee*

Barn owl — *hoo hoo hoo, hoo hoo hoo*

Flicker — *wick, wick, wick, wick*

Stellar's jay — *squawk squawk*

Killdeer — *killdeer, killdeer*



Discussion

- Q: Did you experience problems?
- Q: Do wild birds have similar problems?

Adapted from "Sound Off" Outdoor Biological Instructional Series, University of California, Berkeley Hall of Science

Calling All Birds

Outdoor grades: 3-8

Try to answer the questions for bingo. If you do not know a bird's name, give it a new one.

Find and draw a bird soaring high in the sky	Name a bird grazing in a field.	Find and draw a bird that is feeding.	Find a bird feeding in the woods. What is it doing?
Name a bird walking or standing in the marsh.	Name an animal that birds would catch in the marsh.	Find a bird with a long skinny beak. Draw the beak.	Find bird tracks and draw them.
Find and name a bird with a long neck.	Draw a bird that is flying low to the ground.	Find and draw a bird that is diving underwater or swimming above water.	Listen for a bird that is singing. What does it sound like? Write it out.
Find a bird in a tree. What is it doing?	Find a bird with long legs. Draw the legs.	Find a bird hiding in the shrubs. What color is it?	Find evidence of a bird's visit. What is the evidence?

Adapted from *Salt Marsh Manual*, U.S. Fish and Wildlife Service

Bird Word Search

archaeopteryx
bill
birds
bluebird
canary
cassowary
chicks
cockatoo
crane
crow
dodo
dove

duck
emu
falcon
goldfinch
flamingo
goose
gull
hawk
hen
hummingbird
ibis
kakapo

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Bird Word Find

kiwi
kookaburra
jay
junco
macaw
meadowlark
moa
mockingbird
mynah
nandu

nene
nest
oriole
ostrich
owl
parakeet
parrot
pigeon
plover
puffin
quail
quetzal

rhea
roadrunner
robin
sparrow
swan
tern
toucan
turkey
vulture
xenops
wings
woodpecker

R E N A R C D R I B G N I M M U H
O Q U E T Z A L P U F F I N E O H
A U C A N A R Y R A W O S S A C A
D A X B I R D S P A R R O W D D G
R I B L U E B I R D K H F G O F G
U L C O C K A T O O C H E V W J O
N C M N O C L A F I U H E A L D L
N G O O S E T E R N D Z I H A G D
E V C S Z P I T O R R A P C R F F
R B K K R D S K W A H T H X K F I
A P I G E O N K U A S V A E D S N
S W N C R O W A O E C C N E N E C
O I G L I W I K N O D A Y R K Y H
G N B B D L J A Y D K E M U T U V
N G I W S T C P Y O U A S T E L B
I S R S P U F O G D G N B L L I B
M W D U O R I O L E L Q J U N C O
A A I T N K P L O V E R G V R B B
L N H T E E K A R A P N I B O R R
F X F K X Y R E T P O E A H C R A

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archaeopteryx
 bill
 birds
 bluebird
 canary
 cassowary
 chicks
 cockatoo
 crane
 crow
 dodo
 dove

duck
 emu
 falcon
 goldfinch
 flamingo
 goose
 gull
 hawk
 hen
 hummingbird
 ibis
 kakapo

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Bird Word Find

kiwi
 kookaburra
 jay
 junco
 macaw
 meadowlark
 moa
 mockingbird
 mynah
 nandu

nene
 nest
 oriole
 ostrich
 owl
 parakeet
 parrot
 pigeon
 plover
 puffin
 quail
 quetzal

rhea
 roadrunner
 robin
 sparrow
 swan
 tern
 toucan
 turkey
 vulture
 xenops
 wings
 woodpecker

R	E	N	A	R	C	D	R	I	B	G	N	I	M	M	U	H
O	U	E	T	Z	A	L	P	U	F	F	I	N	E	O	.	.
A	C	A	N	A	R	Y	R	A	W	O	S	S	A	C	A	.
D	.	B	I	R	D	S	P	A	R	R	O	W	D	D	.	.
R	B	L	U	E	B	I	R	D	K	H	.	.	O	.	.	G
U	C	O	C	K	A	T	O	O	C	.	E	V	W	.	.	L
N	M	N	O	C	L	A	F	I	U	H	E	A	L	.	.	D
N	G	O	O	S	E	T	E	R	N	D	.	I	.	A	.	F
E	C	.	.	P	.	T	O	R	R	A	P	C	R	.	.	I
R	.	K	.	.	D	S	K	W	A	H	T	H	.	K	.	N
.	P	I	G	E	O	N	K	.	A	S	.	A	E	.	S	C
.	W	N	C	R	O	W	A	O	E	C	.	N	E	N	E	H
O	W	I	G	.	I	W	I	K	N	O	.	A	Y	R	.	.
G	N	B	.	L	J	A	Y	D	K	E	M	U
N	G	I	.	S	T	C	P	.	O	U	A	.	T	.	L	.
I	S	R	.	P	U	.	O	.	D	.	.	B	L	L	I	B
M	W	D	.	O	R	I	O	L	E	.	.	J	U	N	C	O
A	.	T	N	K	P	L	O	V	E	R	G	V	R	.	.	.
L	.	T	E	E	K	A	R	A	P	N	I	B	O	R	.	.
F	.	.	X	Y	R	E	T	P	O	E	A	H	C	R	A	.

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What Can I Eat With this Beak?

Classroom Grades: K-8

Objective

Students will learn how different adaptations and feeding habits allow several types of birds to live in the same habitat at the same time.

Materials

1 small paper cup per student (bird stomach)

Chalk board or easel paper for data chart

Food: provide an adequate food supply for all students, i.e., marbles (snails), cut up pipe cleaners (worms), 3/16 metal washers (beetles)

Beak types: spoons, scissors, tweezers, and clothespins (one beak per student)



Flycatcher

EALRs

Communication: 1.1, 3.2 Math: C1.1.1, S1.4.1,

4.3.2 Science: PC03 1.1.5, SI03 1.2.8, CH03 1.3.7, IQ01 2.1.2

Background

Steigerwald Lake National Wildlife Refuge provides many birds with homes (habitats). They are all able to live here because their beaks are adapted for different feeding techniques. Hundreds of organisms (worms, clams, snails, crustaceans) that birds eat live in the habitats on the refuge.

Methods

Ask the students to sit in a circle or two lines facing each other. Begin the activity with a general discussion about bird beak types. What kind of beaks have they seen? (long, pointy, short, wide, etc.) Explain that bird beaks are adapted to match the type of food they eat. For example, many birds have tweezer-like beaks. A bird with a short “tweezer” beak eats animals near the surface of the ground, whereas a bird with a long “tweezer” beak can reach animals that burrow deeper. Some birds have scissor-like beaks that rip their food apart into bite-sized pieces while other birds have clothespin-shape beaks that are excellent for crushing the hard covering of seeds. Lastly, birds may have spoon-like beaks that can scoop up large numbers of small fish or strain plant material from mud. The different diets of birds allow them to live in the same area at the same time (coexist). This is why you may see many types of birds feeding together in one area.

Hold up the beak utensils one at a time and ask the students for examples of birds with a beak similar to the utensil. Some potential answers are in the chart located in this activity. After your bird beak discussion, introduce the students to the activity by having them imagine that they are a flock of birds (think about your wings, feet, beak, etc.). Explain that the area between them represents their habitat. Ask them to choose what type of habitat they will feed in (marsh, slough, or lake).

Hand a stomach (cup) and one bird beak to each bird (student). Explain the following rules:

- 1) Birds must pick up their food, using only their beaks, and put it into their stomachs
- 2) Food may not be scooped or thrown into the stomach — the stomach must be held upright
- 3) Birds can only feed when given permission to do so.

Distribute one type of food evenly within the habitat. Give the birds permission to leave their nests and feed. Allow the birds to feed for 1 to 2 minutes and then tell them to stop feeding and return to their nests. Have similar type beaks get together to count the total amount of food they collected; record their results on the data sheet.

Repeat the feeding steps for each food item. For a more natural situation, mix all three food items; an area seldom has only one type of food. Before feeding ask the birds what they will be eating. You may facilitate this discussion by sharing the following idea: birds should first eat the food they can gather the easiest (as they found out in the earlier rounds) and then switch to a secondary food item as it gets harder to find their first choice. Record the data. Try to correlate the simulation with real world examples.

The teacher is a hawk that eats birds. Unusual behavior of a bird draws attention so a predator will notice the bird and eat it. Unruly behavior or violations of the rules result in the hawk capturing the conspicuous bird and making it sit out for one round.

Discussion

Q: Are some beaks better at eating a particular food item than other beaks?

A: *Yes, look at the data chart and compare the numbers of each food eaten to determine what each beak type eats the best.*

Q: What other parts of a bird are important to its feeding success?

A: *A bird's legs and feet are adapted for living and feeding in a specific habitat. Some birds have long legs and wide feet for wading and searching for fish while others have webbed feet for swimming and diving or sharp clawed feet for catching prey.*

Q: In which habitat does each beak type forage for its food?

A: *Tweezers — mud (shorebirds) or field (hummingbirds); scissors — field (raptors); spoon — slough or pond (ducks, pelican); and clothespin — upland or marsh (wren).*

Q: What differences did you notice in feeding behavior when all food items were passed out?

A: *More relaxed, less fighting for food because there was enough for all birds.*

Examples of birds to match beak types

Spoon beak	Scissor beak	Clothespin beak*	Tweezer beak
Blue-winged teal	Perching birds	American goldfinch	Great egret
Northern shoveler	Northern harrier	Marsh wren	Kingfisher
Mallard	Caspian tern	House finch	Great blue heron
White pelican	Kestrel	Scrub jay	Hummingbird
Roseate spoonbill	Owl	Chickadee	Dowitcher

* Note: The old all wood clothespins (below) work well at only catching a few food types. The newer clothes pins with the metal spring often capture many food types and are not as effective in this model.



Adapted from an activity funded by the Environmental License Plate Fund,
California Department of Education.

Data Sheet

Food Beak Type	Worms	Snails	Beetles	All food types
Scissors				
Tweezers				
Spoons				
Clothespins				

Sharp Eyes

Classroom Grades: K-8

Objective

Students will prepare for watching wildlife by improving their observation skills.

EALRs

Communication: 1.1, 1.2

*Math: 1.1 Science: PC03
1.1.5*

Methods

This is a preparatory observation skills exercise.

Divide the group into two lines facing each other; make sure each person has a partner. Ask each person

to look very carefully at the person facing him or her (i.e., buttons, shoe laces, zipper, etc.).



When the leader gives a signal, the lines turn their backs to each other (no peeking!) and each person changes one thing about the way he or she looks. He or she might turn up their collar, unbutton a button, make cuffs on their pants, roll up a sleeve, take off glasses, etc. When the leader gives a second signal, both lines turn around and each person tries to figure out the changes the other person made. Have each pair share the changes they observed about each other. Repeat this activity until everyone has gained their “sharp eyes.”

Now that students are warmed-up, have them count how many different items they can observe in the classroom during a given period of time; compare their numbers. Did they see differences where everything looked the same before? Now go outdoors and discover how different an area really is by using your “sharp eyes!”

Adaptation Artistry

Classroom Grades: 4-9

Objective

Students will be able to:

- 1) Identify and describe the advantages of bird adaptations.
- 2) Evaluate the importance of adaptations to birds.

Materials

*Drawing, painting, clay sculpture, or paper mache' materials
construction paper and glue*

recycled and household materials such as pipe cleaners, buttons, toothpicks, yarn, straws.

Pencil and paper

EALRs

Writing: 1.1, 1.3, 2.3 Science: PC03 1.1.5, Ch 03 1.3.9 Art: 2.1, 3.1, 3.2, 4.2 Geography: 2.1, 2.3

Background

Birds have a variety of adaptations, including characteristics of beaks, feet, legs, wings, and color. These adaptations have evolved so that the bird is better suited to its environment and lifestyle. The purpose of this activity is for students to realize there are advantages for birds in looking how they do and recognizing some of the ways in which birds are physically adapted to their environments.

Methods

- 1) Discuss with the students the various adaptations given in the background section of this activity. Or, brainstorm a list of bird characteristics, then describe the advantage of the adaptation represented by the characteristic.
- 2) Tell the students they will each have a chance to design their own original bird — one well adapted to its habitat. Each student should decide:
 - Where the bird will live?
 - What it will eat?
 - Its type of mobility?
 - Its sex?
- 3) Based on these choices, the students will decide what adaptations are necessary for their bird and write them down before proceeding further.
- 4) Using their list of adaptations, each student will create his or her own original bird; for example, by drawing or sculpting it.
- 5) In conjunction with each drawing or sculpture, each student should write a short report which includes the name of the bird and its food sources, habitat, and lifestyle. Students should also include their lists of adaptations, the reasons for the adaptations, and the advantages provided by the adaptations.

6) Completed projects may be submitted to the teacher, presented to the class, or displayed in the classroom. Optional: Go outside and identify adaptations on real birds!

Extensions

Make mobiles of the completed birds.

Prepare a slide presentation on an overhead projector showing different types of bird adaptations.

The teacher could give the students examples of bird adaptations on the overhead projector or a ditto sheet and the student could explain the reasons for these adaptations.

Collect pictures of birds to develop a bulletin board showing some of the adaptations discussed. Look for pictures showing bird parts compatible with the “invented” birds. Display the invented birds. Use the bulletin board during parent conferences.

Evaluation

Name two bird adaptations for each of the following body parts, listing their advantages: beaks, feet, legs, wings, color.

Bird adaptations for different body parts

	Adaptation	Bird	Advantage
Beaks	Pouch-like	Pelican	Can hold fish
	Long, thin	Avocet	Can probe swallow water for insects
	Pointed	Woodpecker	Can break barks of trees for insects
	Curved	Hawk	Can tear solid tissue, like meat
	Short, stout	Finches	Can crack seeds and nuts
	Slender, long	Hummingbird	Can probe flowers for nectar
Feet	Webbed	Duck	Aids in walking on mud
	Long toes	Crane, heron	Aids in walking on mud
	Clawed	Hawk, eagle	Can grasp food when hunting prey
	Grasping	Chicken	Aids in sitting on branches, roosting
Legs	Flexor tendons	Chicken	Aids in perching, grasping
	Long, powerful	Ostrich	Aids in running
	Long, slender	Crane, heron	Aids wading
	Muscular	Eagle, hawk	Aids lifting, carrying prey
Wings	Large	Eagle	Aids flying with prey, soaring
	Paddle-like	Penguin	Aids in swimming underwater
Coloration	Bright plumage	Male birds	Attraction in courtship, mating rituals
	Dark, molted	Female birds	Aids in camouflage while nesting

plumage
Change of
plumage

Owl, ptarmigan

Protection in shelter
Camouflage protection (brown in
brown in summer, white in winter)
Protection in shelter

Adapted from the Western Regional Environmental Education Council. 1983, 1985.

Fledging Young Birders

Classroom and Outdoors Grades: 4-9

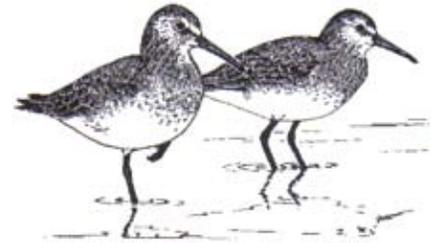
Objective

Through a series of simple, foolproof steps, students are taught the field marks and characteristic behaviors of common local birds.

Materials

Slide projector for set of 35 mm bird slides, or VCR for VHS tape version

One of the various field guides to birds of the area



EALRs

Communication: 1.2 Science: CH03 1.3.9, PC03 1.1.5

Geography: 2.3 Art 2.1, 3.1

Background

Bird watching is a very popular activity. Birders spend many enjoyable hours in the wild and in their backyards looking for, identifying, and observing the behavior of birds. This activity will teach students some of the key identification skills needed to learn to identify birds common to the Steigerwald Lake Wildlife Refuge.

In addition to learning to identify birds through the use of field marks (such as body shapes and feather colors), students will learn that different species live in different habitats. For instance, birding in wetland areas will locate species adapted to feeding on aquatic plants or seeds (e.g., mallards, American coots, or northern shovelers) or species adapted to feeding on fish (e.g., belted kingfisher, great blue heron, or pied-billed grebe). Birding in woodlands, however, will result in observing birds adapted to feeding on seeds of terrestrial trees or shrubs (dark-eyed junco, spotted towhee, song sparrow), insects (American robin, downy woodpecker, white-breasted nuthatch), or on other birds or mammals (great horned owl).

Another important factor when looking for birds is the time of the year. Many birds migrate between their summer breeding grounds and wintering grounds, and therefore are present only during certain times of the year. For instance, most Canada geese nest in Canada and Alaska, but spend their winters here along the Lower Columbia River. Purple martins, on the other hand, nest in this area during the summer but migrate to Mexico to spend their winters. Some species, such as black-capped chickadees and Stellar's jays, are here throughout the entire year.

When you discuss the identifying characteristics of the birds, introduce the importance of the habitat and season of year when trying to locate different species of birds.

Methods

Order Materials

Decide how many birds you would like your class to learn about. Learning fifty birds is not a difficult task for third or fourth graders, but you can certainly begin with fewer if you would like. Acquire slides or VHS tape of the birds you'd like to teach (see To Acquire slides for acquiring slides). Next, borrow a bird field guide from a friend, check one out from the library, or purchase one of your own at a bookstore. Once you begin learning the birds, it is very handy to have a bird field guide in the room. Your students will always be looking through it. The book will come in handy for helping students identify birds they haven't learned yet. A Field Guide to Western Birds, by Roger Tory Peterson, and Birds of North America, by Robbins, Bruun, and Zim are two classics — but there are several other excellent new guides. The best way to discover one you like is to look over the selections in the bookstore.

Plan your lesson

Once your slides or VHS tape have arrived, organize them into habitat (see the list at the end of this activity description). You will find that the habitats are represented by different numbers of species. Separate them into small groups of slides representing birds from the same habitat for each presentation of new slides.

For the first lesson, chose five to ten slides from one habitat type. We recommend starting with open water, then progressing to wetlands, fields, and woodlands. Have the list of names at your side while looking at the birds. You will probably discover that remembering the names of these birds is really quite easy. Then, look up each of the birds in your field guide. Read the text about the bird and look carefully at the drawing or photo of each. Note whether there are any differences in appearance between the males and females.

Choose two field marks (identifying visual characteristics) that you can talk about with students to help them remember the bird. Keep the field marks simple. For example, for a Stellar's jay you can use:

- 1 Dark blue-black color
- 2 Crest of feathers on head

See if you can find one piece of information in the text about each bird that you think might be interesting for students to remember. It might be a description of the way the bird flies or the kind of sound it makes. As you become an experienced birder yourself, you will acquire stories about places and times you have seen particular birds that will be fun to tell your class.

Teach the lesson

You can use whatever schedule you like for teaching these lessons. One plan that works well is to introduce the birds on Monday, do a quick review on Wednesday (and Thursday, if needed), and give a quiz on Friday. Students will need a notebook, folder, or some other permanent place to keep the information you present in class. Here's a sample of how a typical week might go: *Monday*: Show the first of five new slides. Ask whether anyone knows the name of the bird. Write the name of the bird on the board. Have students copy the name



of the bird into their notebooks. Ask students to help point out field marks that could be used to identify the bird. On the board, write the two field marks you have chosen to emphasize with the bird. Have students write these field marks in their notebooks.

Follow the same procedure with the remaining four birds. Show the slides of the five new birds three or four times in succession, having student volunteers identify them.

Wednesday: Go through the slides of the birds you learned Monday, as well as any others that you have already covered. Once you have learned at least 10 or 15, it is easy to just keep the projector clicking and go around the room, calling out the names of students so every child gets a chance to identify at least one bird. This activity doesn't need to take more than 5 minutes. *Thursday:* If necessary, the birds can be reviewed again. *Friday:* Give students a quiz on the birds they have learned that week plus all the other birds learned so far. Depending on the number of birds your class knows, this can take anywhere from 5 minutes to 25 minutes. Test students on the most recent birds plus only the last 20 of the birds they have learned. Otherwise, the tests of 30 or 40 birds can get rather long. However, a comprehensive bird test could be given once students have learned 50 birds. It's a good chance for them to show off how knowledgeable they have become!

Extensions

Once you begin learning the birds, your students will be telling you about birds they have seen. Part of the thrill for them is that most of them will know more about bird identification than their parents! Use some of the following activities to build on their enthusiasm.

Go on a field trip

Schedule a field trip to Steigerwald Lake National Wildlife Refuge. Ask students to bring binoculars from home. Sign up lots of parent volunteers, divide your class into groups of four or five, and remind them that quiet birders see the most wildlife. Giving kids checklists of the birds they are most likely to see helps make the day more enjoyable for students and keeps them on task.

Build a birdhouse

Books available from libraries, bookstores, U.S. Fish and Wildlife, and State Departments of Fish and Game have plans for a variety of bird houses.

Put up a bird feeder

If your classroom has a window with a spot where you can hang a bird feeder or set one on a post, you can watch birds from your own room. There are many kinds of math activities that could be developed from observations your students make and data they collect.

Learn to recognize birds by their songs

Many birders can identify dozens of birds simply by hearing their songs. The experts can recognize hundreds. Telling the difference between a red-breasted nuthatch song and that of a white crowned sparrow is even easier than telling them apart by sight! The key is having a chance to hear which song goes with which bird. Once you know what a red-breasted nuthatch sounds like, you will be able to make the sound for your class. (The best way to imitate it is to pinch your nose shut and say "Yaaaaank, Yaaaaaan, Yaaaaaannnnkkkk" in your most nasal sounding voice). And once the class tries it together, they will never forget

the sound of the red-breasted nuthatch!

There are several sources of bird songs which can be found at the Portland Audubon Society Bookstore in Portland, Oregon. A set of cassette tapes or compact discs goes along with Roger Tory Peterson's *Field Guide to Western Birds*. The Portland Audubon Society has also published a book entitled *Familiar Birds of the Pacific Northwest* and a complementary cassette tape of songs. The Connell Lab of Ornithology has a website with bird songs available at www.allaboutbirds.org.

Applications for Subject Areas

Math

Graphing results of simple bird censuses taken at school or at students home feeders.

Art

Making drawings, paintings, or sculpture of local species.

Language

Story- or poetry-writing activities involving birds, creation of pop-up books with bird themes, etc.

Science

Possibilities for a variety of discussions about ecology, based on the taught and observed behaviors and body types of birds.

To Acquire Slides

To teach the birds listed in this lesson, request slides or the VHS programs from the Ridgefield refuge office 360-887-4106. There are other places to acquire slides, however. You can write to the Buena Vista Audubon Nature Center and ask for the most current catalog of North American Slides. Their address is:

Buena Vista Audubon Nature Center
P.O. Box 480
Oceanside, California 92049.

Tips for Bird watching

□ Keep your eyes and ears open at all times. You will have the best chance of seeing a great blue heron or red-tailed hawk if you sometimes look far away as well as nearby.

□ Walk quietly and slowly. Remember that birds like boundary areas between trees and fields or the edges of ponds and lakes. When you are approaching water or any open area, move slowly and deliberately. Walking and talking quietly will allow you to see more and will disturb the wildlife less. Sometimes the best way to see birds is



to sit quietly in one spot for a few minutes.

□ Use hand signals and quiet voices to clearly tell others in your group when you have spotted an interesting bird. Don't just say "It's over there." Describe a specific

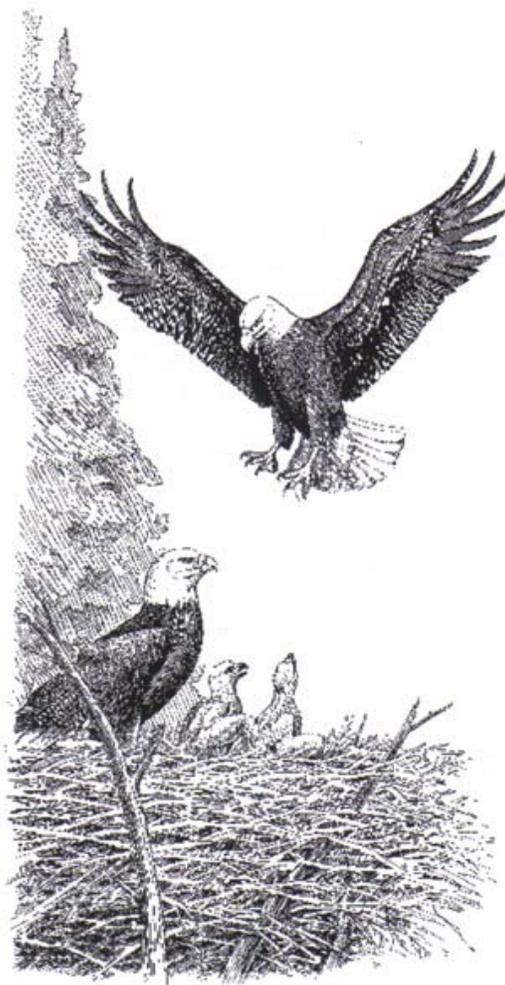
- Look for the dead tree straight across the pond. Just to the left of that dead tree is a small bush. There is a yellow bird singing from the top of the bush.

- Look at an unknown bird as long and carefully as you can before you try to look it up in your field guide and before it flies away.

Note to yourself the bird's body shape, size, coloration, and any markings on head, body, wings, or tail. These details will help you when you finally open your field guide.

- Use your ears as well as your eyes. Listen for bird songs to help you know where to look.

Adapted with permission from Spawning Junior Naturalists, Stephen Kramer, Hockinson Intermediate School



Bald Eagles nesting

The following local birds are listed as commonly seen in their feeding habitat.

Open-Water

Bald Eagle
Purple Martin
Red-Billed Gull
Tundra Swan
American Wigeon
Pintail

Freshwater Wetlands

American Coot
Belted Kingfisher
Cinnamon Teal
Common Snipe
Common Yellowthroat
Great Blue Heron
Great Egret
Sandhill Crane

Fields

American Crow
American Goldfinch
American Kestrel
Barn Swallow
Brewer's Blackbird
Canada Goose
Killdeer
Mourning Dove
Northern Harrier
Red-Tailed Hawk

Woodlands

American Robin
Bewick's Wren
Black-Capped Chickadee
Cedar Waxwing
Common Bushtit
White-Breasted Nuthatch
Dark-Eyed Junco
Downy Woodpecker
Great Horned Owl
Long-Billed Dowitcher
Mallard
Marsh Wren
Northern Shoveler
Pied-Billed Grebe
Wood Duck

Notes