

Start Up: Mounts of various types of birds, feathers to touch, bird posters, field guides
Ask families to make nametags as they arrive.

Welcome/ Introduction: Staff/Volunteer Names
5 min. **Today's Topic-Birds we see in Iowa in the winter**
Question: How do birds survive the winter?

Opener: Ask everyone to take turns saying his/her name and favorite bird.
10 min. Encourage the making of descriptive birdcall or behavior.

Feather Poem with actions (*Ranger Rick*)-especially for younger students.

Background/ Exploration: Birds are vertebrates. They have a backbone like mammals, reptiles, and amphibians.

60 min. **What makes a bird a bird?** Ask the students what birds have that people don't. (feathers, wings, flight, beaks, scaly feet, eggs, crop or gizzard, hollow bones...) Point out basic bird features using mounts and posters or diagrams.

Pass around examples or show pictures of the three kinds of feathers.

Feathers

- down (warm, fluffy)
- contour (gives shape, smooth)
- flight (long, strong)

- Allow families to look at and feel some feathers.
- Show them how they zip back up after they get ruffled.
- Look at the feathers with magnifying glasses to see the hooks.
- Try to find the three kinds of feathers on a couple bird mounts.

Flight-For birds to fly well, their set of feathers must be streamlined, not too fluffy or puffy.

Preening-Feathers protect birds' skin and keep them warm. Birds clean their feathers by preening. They run each feather through their beak and coat it with a light layer of oil from their oil gland (at base of rump above tail). This is especially helpful for water birds. The oil keeps the feathers dry and light. Sometimes you can see birds preening, similar to a cat or dog lick their fur.

Activity: **Fluffy Feathers** (*Ranger Rick*)-Ask students coat a couple strips of cloth in petroleum jelly.
5 min. Dip the strips into water with some uncoated cloth strips.
Which strips come out heavier?
Dip a real feather in water to compare (or spray water onto it). See the drops bead up.
Why is it helpful for feathers to repel water?

Sight-Birds move their head to look around because they can't move their eyes.
Explain the difference between eye placement on prey birds (sides of head) and predators (front).

Beaks-Ask families what birds use their beaks for.

Look at some different kinds of beaks on bird mounts or pictures (Sisson).

Feet- Look at some different kinds of bird feet on mounts or pictures.

How do these feet help the bird live?

Do the **Feet are Neat** sheet (*Ranger Rick*).

Kinds of Birds-Ask students to name different bird groups.

(ducks/geese, perching/song, wading, raptors/birds of prey)

Help the students look at several mounts or posters illustrating types of birds to discover how each bird's adaptations help it in its life and habitat. For example:

Duck/Wood Duck-	bill, webbed feet, body shape for floating
Bluebird/Robin-	pointed sharp beak, perching feet, body shape for flying
Heron-	long sharp beak, long legs, long neck for snatching up prey
Owl/Hawk-	talons, hooked beak, eye size and placement on front of head

Migration (see background)-Ask families what they know about birds flying south.

Why do birds do this? Are there any other animals that migrate?

- Some of our birds stay here all winter.
- Others migrate farther South to stay warmer and find more food in the winter.
- Some kinds of birds fly very far, even to South America!
- Most migrate with a group of others of their kind.

Winter bird adaptations-

The birds that stay in Iowa can find food in the winter and have good insulating feathers to keep them warm, and tough, temperature resistant feet with little circulation and few nerves. They have a high metabolism which keeps them warm, but they need to eat often, almost constantly for some smaller birds.

Foods include uneaten fall seeds, dormant insects, and smaller birds and mammals.

Who goes South? (IAN booklets)

Ask the students which Iowa birds fly south for the winter? Which stay here?

Mention some neotropical migrants, then discuss resident winter birds.

Robin	Southern U.S.
Redwing Blackbirds	Southern U.S.
Hummingbird	Mexico, CA
Oriole	Mexico, CA

Bats, turkey vultures, and broad wing hawks also migrate for the winter.

Some species migrate south TO Iowa, like the Junco and Bald Eagle.

Birds that stay in Iowa in winter include house sparrows, woodpeckers, goldfinches, cardinals, chickadees, blue jays, crows, starlings, owls, & some hawks.

Show pictures of winter birds.

Do the **Migration Maze** (*Ranger Rick*)-A fun sheet, especially for younger students.

Older siblings can help the younger ones find their way through the maze.

Activity: **Bird Guessing Game** (see *HS-1: K-2 Wings & Things*)-
5 min. Using what mounts you have (or pictures), ask older students to read clue cards for specific birds. Let the other family members guess which bird fits each set of clues.

Prepare to go Outside: Restroom break.
10 min. Bring: Water bottles, bird behavior sheets, field guides, binoculars
Apply: Sunscreen, Bug Repellant (if necessary)
Trail Rules (see The First Program).
What we will do/What to look for-Iowa species seen this time of year
Predictions-Which birds will we see?

OUTDOOR EXPLORATION: Explore different nearby habitats, looking for birds and signs of birds.
60 min. (tree cavities, nests, woodpecker holes, tracks, soaring raptors, etc.)
Look for signs of songbirds, birds of prey, & game birds.
Observe the behavior of the birds you see.
Listen for bird calls.
Visit a nearby Bald Eagle watching spot. Observe eagle behavior.

More winter adaptations-Note some birds that are a different color in winter, like goldfinches. Discuss molting and camouflage.

Activity: **Bird Talk** (*Ranger Rick*)-Help younger students learn some bird calls by singing a song to the tune of "Old MacDonald".
You may also want to use a tape/CD or *Birdsong Identifier*TM.

Game: **Migration Headache** (*Project Wild Aquatic*)-Play outside if weather allows, or play later
10-15 min. back inside. Players pretend to be migrating waterfowl, meeting hazards as they travel from winter to summer habitats. Discuss how problems during migration affect bird populations.

Back Inside: Introduce families to *Project FeederWatch*.
Discuss how their observations can help winter bird populations.

We can help birds survive the winter by feeding them.
Discuss different feeder types and foods (thistle, peanut, platform, suet, water).

Give some ideas for landscaping for winter shelter
(larger trees, shrubs, evergreens, fruiting shrubs).
Mention non-native birds to be discouraged: house sparrows, starlings.

Activity: Build a simple bird feeder to take home (1/family, see plans below).
20 min.

Closing: Briefly discuss opportunities for continued learning and bird conservation
(Audubon, Iowa Ornithologists' Union).

Send Off: Goodbye!
Next Time-Iowa Nesting Birds

Take Home: Bird feeder
Winter food sheet
Migration problems & help sheets (below)

Vocabulary

Crop, gizzard, down, contour, migration, conservation, raptor, adaptation, vertebrate, preen, neotropical

Background and Activity References for Naturalists and Parents

www.birds.cornell.edu Cornell University Lab of Ornithology-website

www.birds.cornell.edu/pfw Cornell University Lab of Ornithology, *Project FeederWatch* website

<http://www.nwf.backyardwildlifehabitat/> How to create a backyard habitat for wildlife

A Teacher's Activity Book About Iowa Birds. 1997. Zaletel ed. Iowa Ornithologists' Union and Iowa Conservation Education Council. Pp. 21-22 Where Would A Bird Be Without Its Bill?

P. 1 Goldfinch Information; pp. 12-13 Birds in Iowa History; pp. 23, 35 Beak and Nest worksheets;

Pp. 8-10 Iowa Bird Checklist-send home; pp. 57-66 Owl Pellet dissection

Arnosky, J. 1992. *Crinkleroot's Guide to Knowing the Birds*. Bradbury Press, New York.

Audubon Adventures (Bird Migration). National Audubon Society, Greenwich, CT..

*Birdsong Identifier*TM. For the Birds, LLC. www.identifyer.com

Caduto, M. J., and J. Bruchac. 1988. *Keepers of the Earth: Native American Stories and Environmental Activities for Children*. Fulcrum, Inc. Golden, CO. P. 157 How Turtle Flew South for the Winter

Cole, Joanne. 1982. *A Bird's Body*. William Morrow, New York.

Esbensen, B.J. 1991. *Tiger with Wings-the Great Horned Owl*. Orchard Books, New York, NY.

Gans, Roma. 1980. *When Birds Change Their Feathers*. Crowell Jr. Books, New York.

Henderson, C. 1984. *Woodworking for Wildlife*. Minnesota Department of Natural Resources, St. Paul, MN.
Bird house plans for many species

Home School EE Program Series: Year 1. 2005. Indian Creek Nature Center, Cedar Rapids, IA.

Pp. 45-45 Bird Guessing Game cards

Hunken, J. 1992. *Birdwatching for All Ages: Activities for Children and Adults*. Globe Pequot Press. CT.

Iowa Wildlife. 1998. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA.

Iowa Winter Birds, Iowa Nesting Birds (IAN-602, 603)

<http://www.extension.iastate.edu/pubs/wi.htm>

Koch, M. 1992. *Bird Egg Feather Nest*. Stewart, Tabori & Chang, New York, NY.

Lingelbach, Jenepher. 1986. *Hands-On Nature: Information and Activities for Exploring the Environment with Children*. Vermont Institute of Natural Science, Woodstock, VT.

P. 51 Good drawings of feather types; p. 50 Beaks, Feet, and Feathers-parent background

MacPherson, M. 1988. *Bird Watch-A Young Person's Introduction to Birding*. Summerhill Press, Toronto, Canada.

McGowen, Tom. 1982. *Album of Birds*. Rand McNally. Chicago, IL.

Project Wild Aquatic: Education Activity Guide. 1992. Council for Environmental Education, Gaithersburg, MD. P. 94 Migration Headache

Ranger Rick's Naturescope: Birds, Birds, Birds! 1992. National Wildlife Federation, Washington, D.C.

P. 43 Feather Poem w/actions; p. 50-51 People and Birds, conservation problems-send home info.;

Take a Bird to Lunch-feeding and feeder poster (center); pp. 17, 38, 39 Facts, Feet, maze

P. 13 Feather anatomy; p. 20 Bird Talk; p. 52 Home-made "binoculars"

Red-tailed Hawk Glider. April 1992. Field Museum of Natural History, Chicago, IL. Pattern & directions

Sisson, Edith A. 1987. *Nature with Children of All Ages*. The Massachusetts Audubon Society-Prentice Hall Press, New York. P. 79 Beak/Feet Illustration-Good for program use and take home;

P. 81 Simple Feeders You Can Make

The Migratory Bird Handbook: Activities and Lessons for International Migratory Bird Day and Every Day!

Jamie K. Doyle, ed. 1992. Partners in Flight, Washington, D.C.

Yolen, J. 1987. *Owl Moon*. Philomel Books, New York, NY. A great story for kids of all ages.

Extensions/Alternate Activities/Rainy Day

Take data for *Project FeederWatch*. Enter it into the computer if weather is nasty.

More birds may be seen if time is spent observing feeders from inside a building. This is a good way to study bird behavior with children.

Where Would a Bird Be...? (Zaletel) Bird beak adaptation stations. Explain to the students how to go through stations where beak forms and functions are illustrated with household and kitchen tools. (see also *HS Year 1: K-2 Wings & Things*)

Discuss the features of raptors. Look at or dissect owl pellets.

Make model binoculars for younger students (*Ranger Rick*).

Tell a Native American story about migration (Caduto).

Use a mortar & pestle to grind dried corn to simulate a bird's gizzard.

Supplies:	Bird mounts	Bird books	Binoculars (older students)
	Feathers	Bird posters	Field Guides
	Nametags & markers	Bird puppets	Bird Feeder Kits
	Bird Guessing Game Cards	Pictures of winter birds	wood slats
	Feather poem	Magnifying glasses	screen
	Cotton cloth strips	Migration Headache plates	nails
	Petroleum jelly	Feat are Neat sheets	staples
	Clear cups filled with water	Migration Maze	Staple gun
			Hammers

Advance Copy and cut guessing game cards.

Preparation:

Cut an even number of cotton cloth strips about 1" wide and 5" long for the feather demo.

Copy *Project FeederWatch* record sheets if you will use them.

Cut wood slats, pre-drill holes, and cut screen rectangles for bird feeder kits (plans below).

Migration (from *Migratory Bird Handbook*, IAN)

Migration helps some bird species survive the winter.

Insect eaters and those that need open water are likely migrators.

Birds **hormones change** before migration, and they spend time in the fall eating more, which helps them increase their fat layer for insulation and energy.

Changing day length, colder weather, and other factors may trigger migration.

Birds which migrate great distances, even to Mexico or South America, can be considered “birds of two worlds”. They are called **neotropical migrants**.

About 110 of our Midwestern songbird species are neotropical migrants.

Some of “our” songbirds spend six to nine months a year in Latin America.

Fifty to seventy percent of our breeding birds are long migrants (3-5,000 km).

Many migrators **fly at night**, some navigate with the stars.

Problems include surviving the **cold** and crashing into **skyscraper windows** that reflect the night sky.

For a lifestyle including migration from North America to South America, resources are needed in both locations (food, shelter, water, habitat, freedom from disturbance).

Habitat loss is a serious problem at both ends of the route. In North America it is mostly due to forest fragmentation, as more native lands are used for human developments.

This fragmentation allows an increase in the population of “**edge**” species like cowbirds (deer, raccoons).

We have already seen large population declines in many waterfowl species (geese, ducks, swans) resulting from **wetland drainage** during our settlement of this country.

The **loss** of large tracts of **forest** has also resulted in population decline among songbirds.

In South America, the problem is forest loss, **burning for agriculture** and clear-cutting for resource harvesting. This **rainforest destruction** has a great effect on many bird and other species.

Loss of this tropical habitat is especially bad because *each acre of habitat in the tropics holds 6 or 7 times the number of birds as nesting habitat in Iowa.*

Bird populations can only be as strong as their weakest link.

Bird Problems (*Ranger Rick*)

Habitat destruction-Natural areas used for buildings, parking lots, roads, & fields.

Sale of birds & body parts & over-hunting has decreased populations, even to extinction.

Some places bird products are still sold illegally

Capture for pets-Thousands of birds are taken out of their homes each year, some do not survive the trip to market due to smuggling in poor conditions.

Lead Poisoning-Lead gun shot makes waterfowl sick when they eat it off the bottom of ponds.

Non-native species-Rats, cats, pigs, etc. upset natural balance in an area by eating birds & eggs.

Pesticides-Population decline in raptor species occurred due to DDT in the environment; species are making a comeback, but poisons are still used in other countries.

Pollution-Oil spills and other chemical dumping kill thousands of birds eat year, especially water birds.

How to help our native birds (*Ranger Rick, Migratory Bird Handbook*):

Learn more about birds to better help them

Read about problems and solutions

Join a local bird club or conservation group

Increase awareness of problems.

International Migratory Bird Day-second Saturday in May

Other birding events?

Write letters to legislators and other officials to educate and persuade them to protect birds and habitat

Gather information on species occurrence and abundance.

Audubon Society Christmas Bird Count

Audubon Society county counts

Breeding Bird Survey

Cornell Lab of Ornithology Project FeederWatch-watch your own or another feeder regularly

Restore/recreate native habitat.

National Wildlife Foundation Backyard Wildlife Habitat Program

Restoration work at local conservation areas and nature centers

Build and install nest boxes in natural areas

Donate money for the cause.

Conservation (non-game species) check-off on State tax returns

Local, national, and international conservation organizations

Join a group and help them raise funds for solutions

For Further Study

www.birds.cornell.edu Cornell University Lab of Ornithology-website

www.birds.cornell.edu/pfw Cornell University Lab of Ornithology, *Project FeederWatch* website

<http://www.nwf.backyardwildlifehabitat/> How to create a backyard habitat for wildlife

Arnosky, J. 1992. *Crinkleroot's Guide to Knowing the Birds*. Bradbury Press, New York.

Birdsong Identiflyer™. For the Birds, LLC. www.identiflyer.com

Cole, Joanne. 1982. *A Bird's Body*. William Morrow, New York.

Durrell, Gerald. 1986. *The Amateur Naturalist*. Alfred A. Knopf, New York. P. 271 Bird Pellet i.d. chart

Esbensen, B.J. 1991. *Tiger with Wings-the Great Horned Owl*. Orchard Books, New York, NY.

Gans, Roma. 1980. *When Birds Change Their Feathers*. Crowell Jr. Books, New York.

Henderson, C. 1984. *Woodworking for Wildlife*. Minnesota Department of Natural Resources,
St. Paul, MN. Bird house plans for many species

Hunken, J. 1992. *Birdwatching for All Ages: Activities for Children and Adults*. Globe Pequot Press. CT.

Iowa Wildlife. 1998. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA.

Iowa Winter Birds, Iowa Nesting Birds (IAN-602, 603)

<http://www.extension.iastate.edu/pubs/wi.htm>

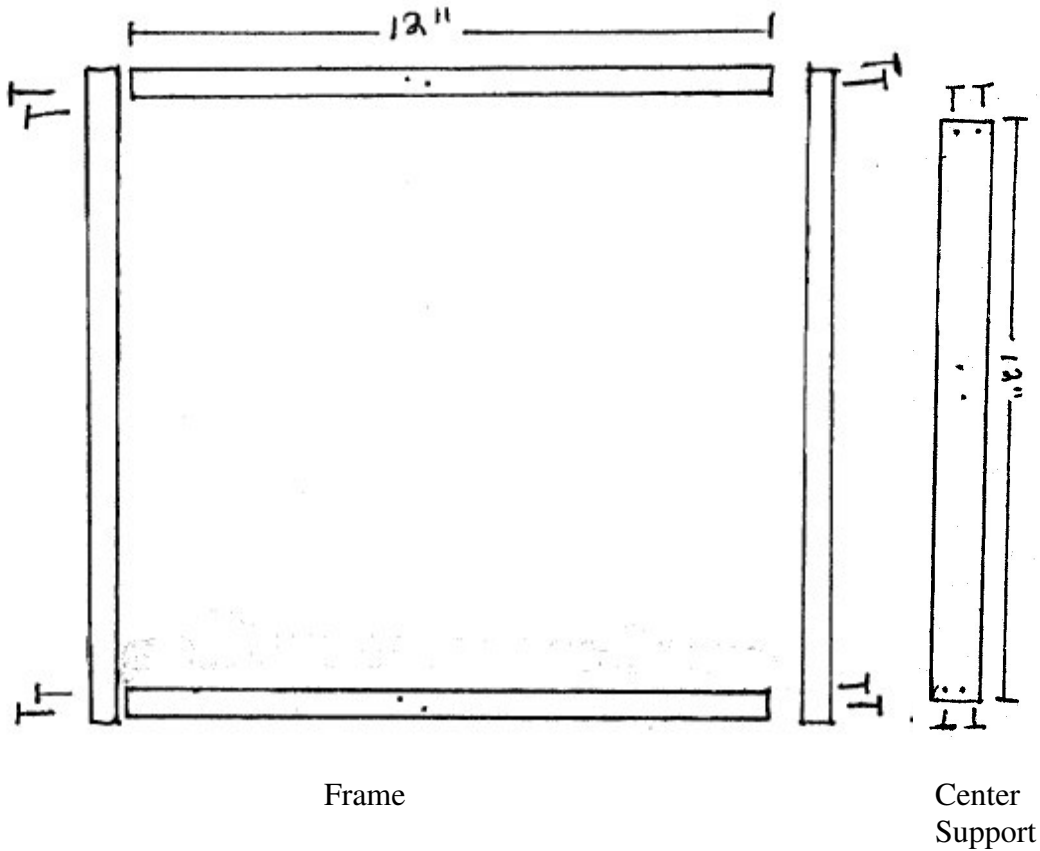
Koch, M. 1992. *Bird Egg Feather Nest*. Stewart, Tabori & Chang, New York, NY.

MacPherson, M. 1988. *Bird Watch-A Young Person's Introduction to Birding*. Summerhill Press,
Toronto, Canada.

McGowen, Tom. 1982. *Album of Birds*. Rand McNally. Chicago, IL.

Yolen, J. 1987. *Owl Moon*. Philomel Books, New York, NY. A great story for kids of all ages.

Platform Feeder Plans (screen bottom)-



- Each feeder: 4' screen pine ($\frac{1}{2} \times \frac{3}{4}$ ") cut into 1' lengths
- 1' lattice pine ($\frac{1}{4} \times 1$ ")
- 12 x 13" window screen
- 12 wire nails (1.75 oz should do 8 feeders)

Pre-drill holes for nails

Families can staple screen onto inside of frame w/a staple gun.

Feeder can be nailed to a post through the center support, or could be hung.