

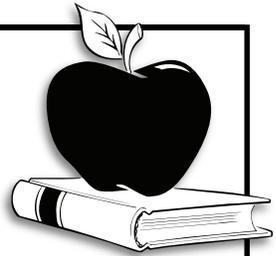
**SUGGESTED GRADE LEVEL:** 4

**NEXT GENERATION SCIENCE STANDARDS:**  
4-LS1-2

**SKILLS/PROCESSES:** observation, inference, prediction

**OBJECTIVE:** Students will recognize why some birds **migrate**, describing the complex processes, and identify the hazards encountered during **migration**.

# TEACHER'S GUIDE

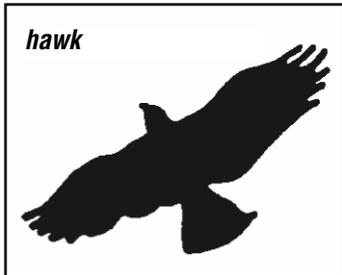


## UNIT 3 ■ LESSON 1

# Moving Day

## BACKGROUND

More than one-third of the world's birds migrate. Migration is a mechanism which allows birds to adapt to changes in the environment. Generally these changes are seasonal (weather, lack of food) and would make



continuing to live in that habitat difficult. From the small ruby-throated hummingbird to the large bald eagle, birds move from the area where they raise young to their winter home. Migration is instinctive. Most birds

migrate in flocks, even if they normally live alone. Migration in groups increases the chances for survival of individuals.

Migration moves birds from areas with dwindling food supplies to warmer winter feeding grounds with more abundant food. Only the fittest individuals will survive migration, insuring that the strongest birds are able to reproduce.

Some birds are **diurnal** migrators, others **nocturnal**. Daytime, or diurnal, migrators are generally larger (geese) and predatory species (hawks) that navigate by sight and have few, if any, predators. Many hawks begin their flight in mid-day taking advantage of rising warm air columns (**thermals**). Songbirds are nocturnal migrators, flying in darkness. Their daylight hours are spent searching for food and resting for the next leg of their trip.

The urge to migrate may be stimulated by a variety of factors. Changes in the angle and amount of light rays which occur seasonally may trigger migration. Low pressure areas in the fall trigger a southward migration, while high pressure areas in the spring encourage movement to the north. The lack of food sources in the fall and winter may also send birds toward areas where food supplies are more readily available.

The ability of birds to migrate great distances and return to the same general vicinity year after year is a subject which has fascinated people for centuries. Diurnal migrators fly along broad air routes established by physical features such as major rivers, coastlines, mountains and lakes. Many birds use the Mississippi River as a **flyway**. The position of the stars and moon and the earth's magnetic field are used by nocturnal migrators.

Birds encounter many hazards during their migration. Nocturnal and low-flying migrants risk flying into an assortment of humanmade objects such as tall buildings, power lines and towers, windows and aircraft. Hunting seasons are established for some species (ducks, geese, mourning doves) during the fall migration. Even though birds are harvested, hunting is within limits that a population can withstand. Predatory species, such as hawks, are often migrating at the same time that songbirds do. Habitat destruction and pollution are serious migrational hazards. Destruction and pollution of the northern breeding grounds affect spring migrations. Likewise, peoples' actions on southern feeding grounds, such as tropical deforestation, result in the death of untold numbers of birds. Late snow and ice storms and severe rain and lightning which occur on the spring breeding grounds also kill many migrants.

### *nocturnal migration*



## PROJECTS AND ACTIVITIES

1. Write a story or develop a journal entry with the author being a migrating bird. Include illustrations. Some suggested points to include are:
  - the urge to fly;
  - numbers of birds preparing for migration; mostly young, inexperienced flyers that may not complete the migration;
  - eating like crazy to increase fat reserves;
  - waiting for proper weather (low pressure--rain and cold) to head south;
  - losses of flock before heading south due to **predation**, starvation, poisons, etc.;
  - cruising at heights around 4,000 feet and appearing on airport radar screens;
  - flying at speeds up to 30 mph and distances of 270 miles per day;
  - reviewing a map and selecting resting locations that include food and cover;
  - hazards encountered during flight such as power lines and ice storms;
  - arrival on the winter grounds (where, when, losses occurring due to starvation, loss of habitat, predation and hunting).

## EVALUATION

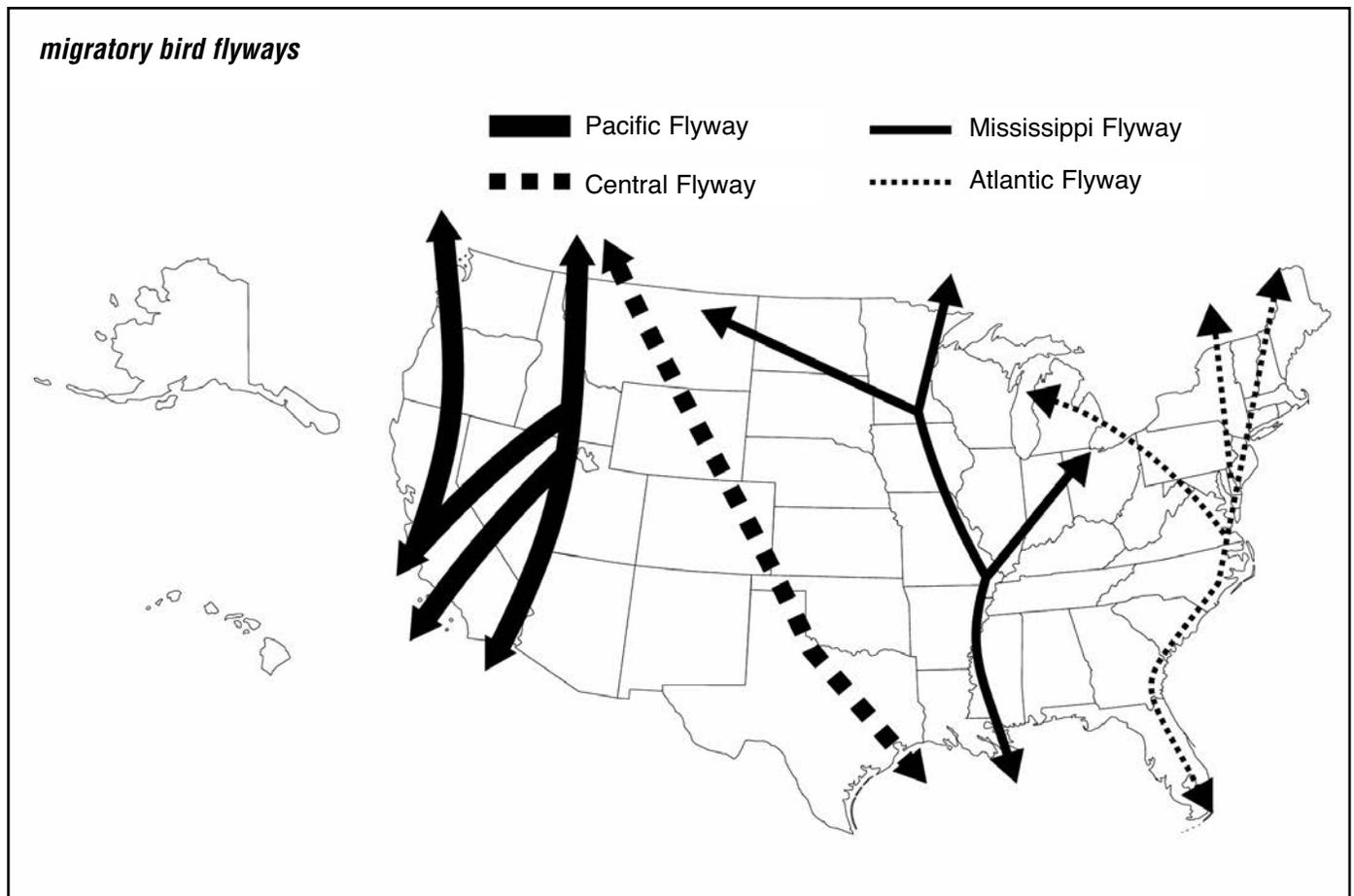
1. In a written report, students will explain how and why birds migrate and the hazards encountered during the trip.

## EXTENSIONS

- Research other migratory animals such as bats, monarch butterflies and salmon. Compare why, when and how each migrates.
- Complete some or all of the activities from the *One Bird—Two Habitats* unit.
- Complete the “Migration Mural” activity.

### VOCABULARY

diurnal  
flyway  
migration  
nocturnal  
predation  
thermals



# Moving Day

# STUDENT'S GUIDE

More than one-third of the world's birds migrate. Migration is an instinct triggered by seasonal changes in weather and lack of food.

What causes the urge to migrate? Changes in the angle and amount of sunlight may trigger migration. Low pressure areas in the fall trigger a southward migration. High pressure in the spring encourages movement to the north. A lack of food in the fall and winter may also send birds toward areas where food supplies are more readily available.

Birds migrate during the day or night. Daytime, or diurnal, migrators are generally larger (geese) or are predators (hawks). These birds navigate by sight and have few, if any, predators. Songbirds migrate in darkness (nocturnal). Their daylight hours are spent searching for food and resting for the next leg of their trip.

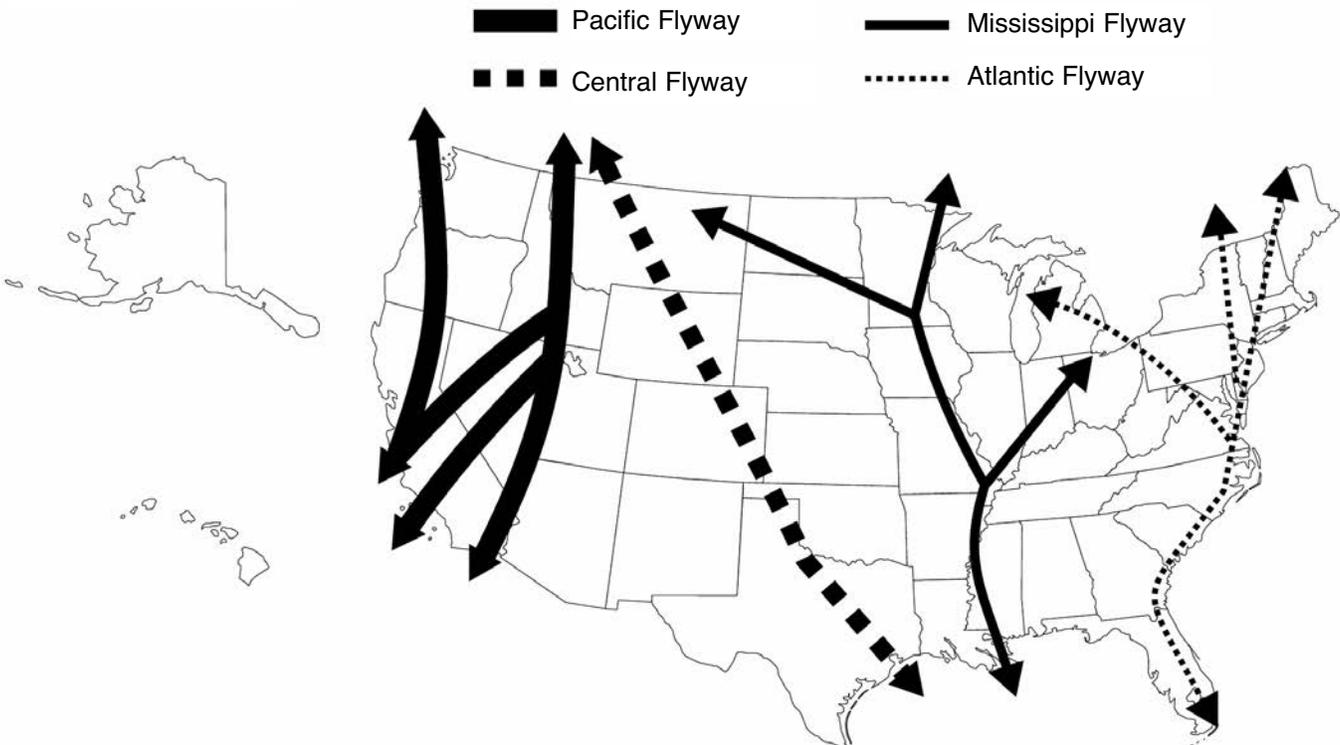
The ability of birds to migrate great distances and return to the same general area year after year is a

subject which has fascinated people for centuries. Diurnal migrators fly along broad air routes established by physical features such as major rivers, coastlines, mountains and lakes. The position of the stars and moon and the earth's magnetic field are used by nocturnal migrators.

Birds encounter many hazards during their migration. Nocturnal and low-flying migrants risk flying into humanmade objects such as tall buildings, power lines and towers, windows and aircraft. Songbirds may encounter predators (hawks) migrating at the same time. Habitat destruction and pollution are also migrational hazards.

Storms during migration kill migrant birds. Hunting seasons are established for some species (ducks, geese, mourning doves) during the fall migration. Even though birds are harvested, hunting is only allowed within limits that a population can withstand.

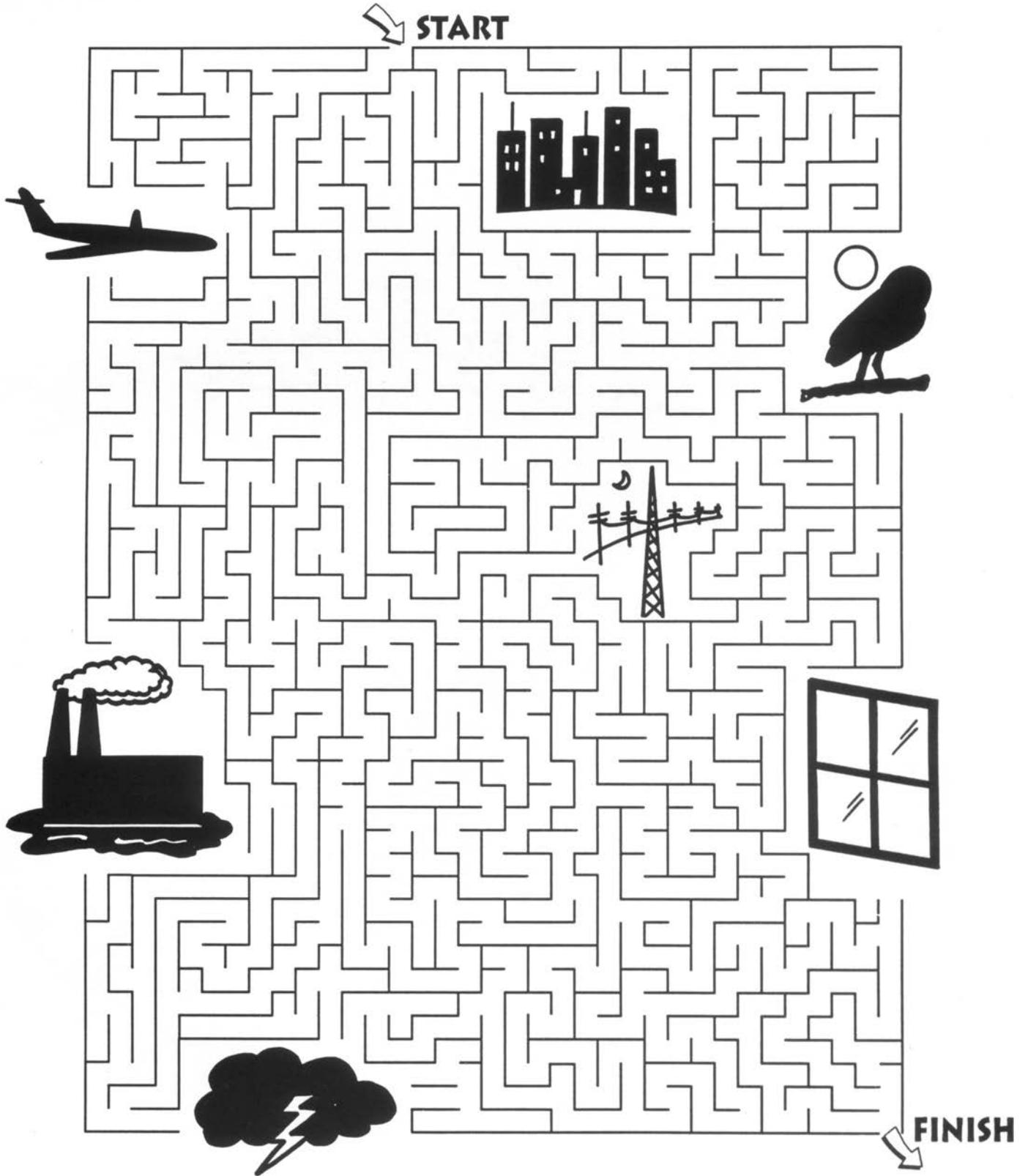
## migratory bird flyways



# ACTIVITY PAGE

## Migration Maze

When birds migrate great distances there are many natural and human-made obstacles in their path. Can you find your way from start to finish and avoid the hazards along the way?



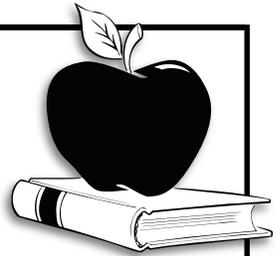
**SUGGESTED GRADE LEVEL:** 3

**NEXT GENERATION SCIENCE STANDARDS:**  
3-LS4-3, 3-LS4-4

**SKILLS/PROCESSES:** observation, prediction, communication, mapping, graphing

**OBJECTIVE:** Students will recognize how the actions of people have altered habitats and impacted wildlife populations.

# TEACHER'S GUIDE



## UNIT 3 ■ LESSON 2

# Right or Wrong – You Decide

### BACKGROUND

Natural threats (predation, drought, lack of food, disease) to populations of wildlife are minimal when compared to the threats caused by humans (acid rain, introduced species, selling of bird parts, egg collecting, habitat destruction, domestic pets). Human presence and use of the land has caused the **extinction** of some species (passenger pigeon *Ectopistes migratorius*, Carolina parakeet *Conuropsis carolinensis*), while other species have benefitted from human presence and their numbers increased (rock pigeon, European starling). Population levels of other species, such as the wild turkey, dropped following settlement, but have rebounded dramatically as a result of people's ability to manage the species and preferred **habitats**.

One cannot open a newspaper or watch the evening news without seeing accounts on the **environment**. Too often that news is saddening: an oil spill killing marine life for miles; leaky underground storage tanks affecting water supplies; acres of quality habitat falling under the bulldozer; or the thinning of the ozone layer. We do have the power to change those stories!



Conservation of our natural resources is critical. One component of conservation is preservation of habitat and reversal and modification of actions that degrade or destroy quality habitat. Long-term planning and cooperation between the public and private sector must become the norm.

Conservation of natural resources may entail passage of laws. The Illinois Wildlife Code contains laws which protect natural resources, regulate the harvest of game species and specify fines for the illegal harvest or possession of natural resources. For instance, it is illegal to possess wild birds (except the house sparrow, European starling and rock dove) and parts of



birds (nests, eggs, feathers) unless taken legally by hunting or as authorized in a permit issued by the Illinois Department of Natural Resources and U.S. Fish and Wildlife Service. Nature centers that have displays of wildlife have obtained both state and federal permits allowing possession of animals for educational purposes.

Regulations to protect birds are also passed at the national level. Birds don't know about the artificial boundaries made to distinguish states and nations. The U.S. Fish and Wildlife Service is responsible for these **migratory species**. Through the Mississippi Flyway Council and Technical Section, the U.S. Fish and Wildlife Service works with state agencies to establish guidelines for harvest and protection of waterfowl based on detailed population and habitat analyses. The U.S. Fish and Wildlife Service is also responsible for designation and protection of species considered threatened or endangered at the national level.

Individuals play an important role in the conservation of natural resources. Citizens report to law enforcement officials thousands of natural resources violations each year. Passing legislation to further protect and manage natural resources requires citizen support and lobbying. **Boycotting** the purchase of wild-captured parrots and finches is a way people can assist in protecting these resources. Through hunting licenses, habitat stamp purchases, nongame check-offs and taxes, citizens also support public agencies that manage and preserve natural resources. Many people support conservation of natural resources through membership in private organizations dedicated to the purchase and management of habitats. Even something as simple as leaving what appears to be orphaned wildlife alone, practicing organic farming or using environmentally-friendly **pesticides** are important citizen roles.

### PROJECTS AND ACTIVITIES

1. Using information gained from previous lessons, mark off four areas as different "habitat types" with yarn and

assign each student a bird type. Have appropriate "birds" enter their habitat. Give each "bird" an ample supply of "food" (small, inedible objects). Include a story about habitat loss (reasons for), where "birds" die or lose their food supply or cannot survive in the "wrong" type of habitat. Students act out the "bird" roles. Make the area smaller/larger by moving yarn and have students discuss how changing habitat size affects birds. Students should discuss the role-playing and end results of the activity.

## EVALUATION

1. Compare original land documents and survey maps (available in your County Records Office) to current maps of the community. Determine and map out land use changes (habitats). Have students interpret how land use changes have affected local plant and animal populations.
2. Have each student research an Illinois bird species and prepare a report about it. Conduct a discussion on how the species has been affected by human actions (positive and negative).
3. Evaluate participation in the Activity Page activity.

## EXTENSIONS

- Wildlife populations are valuable for a variety of reasons. Select a bird species and research and discuss its values in the following categories: cultural; ecological; economic; educational; scientific; historical; recreational; aesthetic; symbolic; **intrinsic** (value merely by existence); and **ethical** (right to exist).
- Research population trends of the bald eagle, greater prairie-chicken or wild turkey in Illinois. Plot population levels since pioneer settlement using bar graphs to show increasing or decreasing trends.

## BIRDING ETHICS

- Leave nests alone and don't get close—you could cause the parent to abandon the nest or lead predators to the eggs or young.
- Show respect for landowners and lands. Respect the rights of others observing nature.
- Leave "injured" and "orphaned" birds alone. The parent is often nearby and will return to care for the young.
- Understand and obey hunting regulations.
- In nature, you are the guest. Be quiet and orderly. Move slowly.
- Don't "chase" birds. Observe birds from a distance using your binoculars to bring them close.
- Leave no litter. Some litter, especially fishing line, plastic soda can and bottle rings, bubble gum and cigarette butts, can be harmful to birds.
- If you are feeding birds, maintain fresh and adequate food supplies for them. Don't feed birds your food—they are healthiest when they eat natural foods.
- Don't bring predators along. Your dogs and cats belong at home.

## VOCABULARY

boycott	habitat
environment	intrinsic
ethical	migratory species
extinction	pesticides



# Right or Wrong – You Decide

# STUDENT'S GUIDE

We cannot open a newspaper or watch the evening news without seeing stories on the environment. Often the news is sad: an oil spill killing marine life for miles; leaky underground storage tanks affecting water supplies; acres of quality habitat falling under the bulldozer; or the thinning of the ozone layer. We have the power to change those stories!

Conservation of our natural resources is critical. One part of conservation is preservation of habitat. We must also reverse and change actions that degrade or destroy quality habitat. Conservation of natural resources may require new laws. The U.S. Fish and Wildlife Service is responsible for migratory species. This agency works with state agencies to establish guidelines for harvest and protection of waterfowl. It also designates and protects species considered threatened or endangered at the national level.

### ***What roles do people play in the conservation of natural resources?***

- report natural resource violations;
- work toward legislation to protect and manage resources and vote for legislators who support it;  
–boycott the purchase of wild-captured parrots and finches;
- purchase hunting licenses and habitat stamps;
- contribute to the Wildlife Preservation Fund;
- pay taxes;
- become a member in organizations that purchase and manage habitats;
- leave "orphaned" wildlife alone;
- practice organic farming;
- use environmentally-friendly pesticides.

### ***Can you name others?***

### **BIRDING ETHICS**

- Leave nests alone and don't get close--you could cause the parent to abandon the nest or lead predators to the eggs or young.
- Show respect for landowners and lands. Respect the rights of others observing nature.
- Leave "injured" and "orphaned" birds alone. The parent is often nearby and will return to care for the young.
- Understand and obey hunting regulations.
- In nature, you are the guest. Be quiet and orderly. Move slowly.
- Don't "chase" birds. Observe birds from a distance using your binoculars to bring them close.
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- If you are feeding birds, maintain fresh and adequate food supplies for them. Don't feed birds your food—they are healthiest when they eat natural foods.
- Don't bring predators along. Your dogs and cats belong at home.

# ACTIVITY PAGE

## Do the Right Thing

Make one copy of this page. Cut out the cards and distribute one to each group of students. After the group discusses their card, have the students explain what they think they would or should do in each situation.

<p>You see a very small nest in a clump of shrubs. Do you. . .</p> <ul style="list-style-type: none"><li>A. take it home?</li><li>B. leave it alone?</li><li>C. sell it to your neighbor?</li></ul>	<p>You see a baby bird fall out of its nest. Do you. . .</p> <ul style="list-style-type: none"><li>A. pick up the bird and take it home to care for it?</li><li>B. leave it alone as its parents will feed it on the ground?</li><li>C. return it to its nest by climbing up the tree?</li></ul>	<p>You are walking in the park, and you see a family. One of the children in this family throws her bubble gum on the ground. Do you. . .</p> <ul style="list-style-type: none"><li>A. pretend you didn't see?</li><li>B. pick it up after they've left?</li><li>C. ask them to pick it up because it may harm the birds or other animals that mistake it for food and eat it?</li></ul>
<p>Your town is considering developing an area along a creek where there is prime wetland habitat. Some of the ideas for development include: a park with a swimming pool; a subdivision; a landfill; and a mini-mall. Do you. . .</p> <ul style="list-style-type: none"><li>A. write a letter to your city council explaining your concerns?</li><li>B. attend a council meeting to gain information?</li><li>C. cross your fingers and hope the adults will make the right decision?</li></ul>	<p>You are going away during winter break and have been feeding birds in your yard since Halloween. Do you. . .</p> <ul style="list-style-type: none"><li>A. let the birds fend for themselves while you're gone?</li><li>B. leave a map and direct the birds to your closest neighbor who has a bird feeder?</li><li>C. ask your neighbor to continue putting fresh seed out each day?</li></ul>	<p>On a fine spring morning you are walking your dog in the park. You notice a lot of small birds in the trees, an excellent indication that spring migration has started. You decide to go bird watching. Do you. . .</p> <ul style="list-style-type: none"><li>A. leave your dog in the car while you look at birds?</li><li>B. take your dog home then return to the park?</li><li>C. continue your walk letting your dog run free?</li></ul>
<p>Goose hunting season has started, and you want to provide a goose for the Thanksgiving table. You know that a lot of geese live on the ponds at the local golf course. Do you. . .</p> <ul style="list-style-type: none"><li>A. ask a friend to scare the birds off the pond and hope they fly over your hunting area?</li><li>B. enroll in a hunter safety education course and ask an adult to take you hunting?</li><li>C. lure the birds to your hunting area with a trail of corn?</li></ul>	<p>You think the bird you have been following for fifteen minutes is a bird you have never seen before. It has flown across a fence that has a "Private Property—No Trespassing" sign on it. Do you. . .</p> <ul style="list-style-type: none"><li>A. try to find the property owner and ask permission to go on the land to follow the bird?</li><li>B. tear the sign off the fence, bury it in leaves then jump over the fence?</li><li>C. look around the area for another bird like this one?</li></ul>	<p>You are walking down the street and see a man on the corner selling beautiful parrots. You can't believe that such beautiful birds are so cheap. Do you. . .</p> <ul style="list-style-type: none"><li>A. ask him where the birds were raised?</li><li>B. turn him in to the proper authorities?</li><li>C. buy a bird and take it home?</li></ul>

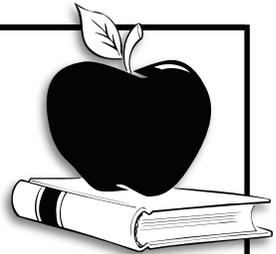
**SUGGESTED GRADE LEVEL:** 3

**CORRELATION TO NEXT GENERATION SCIENCE STANDARDS:** 3-LS4-3, 3-LS4-4

**SKILLS/PROCESSES:** observation, classification, inference, prediction

**OBJECTIVE:** Students will recognize that there are **threatened** and **endangered** bird species in Illinois and learn why they have been given this status.

# TEACHER'S GUIDE



## UNIT 3 ■ LESSON 3

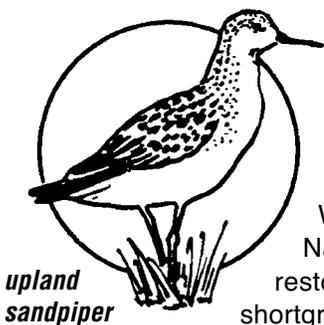
# Here Today... Gone Tomorrow

## BACKGROUND

Today, more than 9,900 species of birds inhabit the world, with 331 species listed as endangered or threatened as of 2015. In the United States, 100 bird species are listed as endangered or threatened. As of 2015, Illinois lists 24 endangered and seven threatened bird species.

Flocks of passenger pigeons (*Ectopistes migratorius*) once blackened the skies of North America for hours during their migrations. Passenger pigeons were a popular food item in the 1800s and were killed and shipped in large quantities to metropolitan areas. By 1895 these birds were considered **rare**. The last passenger pigeon died in the Cincinnati Zoological Gardens on September 1, 1914.

Numbers of the upland sandpiper, a state endangered species, have plummeted due to the loss of prairie.



**upland sandpiper**

Today, these birds may be found throughout the state on dairy farms or airports, but the largest known concentration of nesting upland sandpipers in Illinois is in Will County at the Midewin National Tallgrass Prairie. The restoration of large expanses of shortgrass prairies would provide attractive nesting **habitats** and

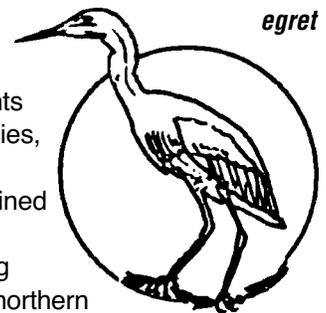
encourage recolonization.

Species are listed as threatened/endangered or become **extinct** for a variety of reasons. By law, changes to the endangered/threatened species list must be based on scientific evidence. Factors that are considered when evaluating a species include changes in population size, changes in range in the state, whether it occurs at protected sites, any known threats to its existence, as well as features of its life history which might have a bearing on survival. The Endangered Species Protection Board may remove from the Illinois endangered/threatened species list any nonfederally-listed species for which it finds satis-

factory scientific evidence that its wild or natural populations are no longer endangered or threatened in Illinois. A public hearing is held to consider the Board's action of listing, delisting or changing the list status of a species.

Historically, some bird species were jeopardized due to unregulated hunting. Today, loss or destruction of habitats is the primary reason for species' declines. Some birds are given the endangered/threatened designation because they are on the periphery of their range and may be more common in other locations (yellow-headed blackbird).

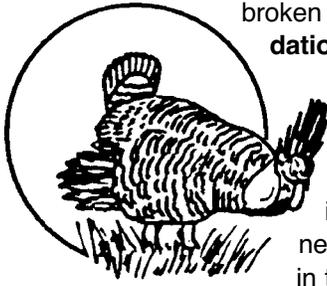
Habitat loss or destruction accounts for a significant number of the birds lost. Habitats may be destroyed through a variety of factors, including damming of rivers and streams, removal of vegetation, introduction of exotic plants which outcompete native species, and pollution of air, water and land. Wetlands have been drained for agricultural, industrial and urbanization purposes. Nesting populations of the black tern, northern pintail duck, great egret and American bittern have declined drastically as wetlands diminish. Loss of forests has affected nesting habitat for species like the wood thrush and brown creeper.



**egret**

Bluebird populations declined to dangerously low levels as meadows were converted to other uses. Intervention by people through agricultural set-aside programs and construction and placement of nest boxes in appropriate habitats has brought the bluebird back from the brink of extinction.

The decline of greater prairie-chicken populations is representative of how peoples' actions can compound to affect native wildlife populations. Conversion of prairies for agricultural purposes removed prairie-chicken "**booming**" grounds and nesting habitats. Unregulated hunting stressed population levels. As large areas of prairie were



**greater prairie-chicken**

broken up, an increase in nest **pre-  
dation** by foxes, coyotes, skunks  
and raccoons occurred as  
these predators moved  
along habitat edges. The  
ring-necked pheasant, a bird  
introduced from China, is a  
nest **parasite** and lays its eggs  
in the nests of prairie-chickens.

Pheasant eggs hatch earlier  
than those of prairie-chickens, causing the prairie-chicken  
hens to abandon their eggs to raise the pheasant  
chicks. Today, less than 75 prairie-chickens remain on  
specially managed **wildlife sanctuaries** in Illinois.

**Neotropical migrants**, birds that spend part of their year  
in North America and the remainder in Latin America or  
the Caribbean, are affected by **fragmentation** and  
destruction of habitat areas in both their breeding and  
wintering grounds. Neotropical migrants include a variety  
of bird groups, such as warblers, thrushes, humming-  
birds, swallows, flycatchers and orioles. Some species,  
such as the Kirtland's warbler, are in imminent danger of  
extinction. Others, while not as severely affected, have  
declined by millions over the last century and this down-  
ward trend could continue.

Population levels may be impacted not only through the  
direct loss of breeding and wintering habitat but also the  
indirect loss of food sources. The popularity of colorful  
and vocal birds as pets has created a black market for  
birds. More than 80 percent of the birds captured in the  
wild intended for sale to pet shops die before reaching  
the shop. **Pesticides**, such as DDT, were identified as  
the causative agent for the decline of bald eagle, pere-  
grine falcon and osprey populations. Excessive unregu-  
lated hunting (passenger pigeon) and excessive use of  
animal products (egret plumes for women's hats) histori-  
cally threatened populations.

A variety of other human-caused actions can lead to  
bird population declines. Thousands of migratory birds  
are killed each year when they fly into tall buildings, tel-  
evision towers, wind turbines and electrical power lines  
and towers.

However, several species are now on the comeback trail  
as a result of scientific studies to understand the life  
requirements of the species, establishment of hunting  
regulations, and public involvement in programs to pre-  
serve, protect and manage habitats and species. The  
peregrine falcon and whooping crane were close to  
extinction, but human intervention through population  
management and preservation of critical habitat areas  
has ensured their survival. At the turn of the century the  
wood duck population was dangerously low. Today, wood  
ducks are present in sufficient numbers to allow harvest,

thanks to strict hunting regulations, construction and  
placement of nesting boxes and sportsmen's commitment  
to the species.

## PROJECTS AND ACTIVITIES

1. Have the class participate in one or several of the  
neotropical migratory bird activities in the *One  
Bird—Two Habitats* unit from the Illinois Department  
of Natural Resources.

## EVALUATION

1. Have each student write a report on an Illinois threat-  
ened or endangered bird, including its habitat, feed-  
ing habits and reasons for being listed as endan-  
gered or threatened. Visit the Illinois Endangered  
Species Protection Board's Internet site at  
<http://www.dnr.illinois.gov/ESPB/Pages/default.aspx>  
for a current list of endangered/threatened birds in  
Illinois.
2. Make an atlas of endangered bird species including  
breeding and wintering areas, preferred foods and  
migration routes.
3. Have each student write a paragraph relating how  
he/she can make personal decisions which will  
assist the survival chances of endangered and  
threatened birds.

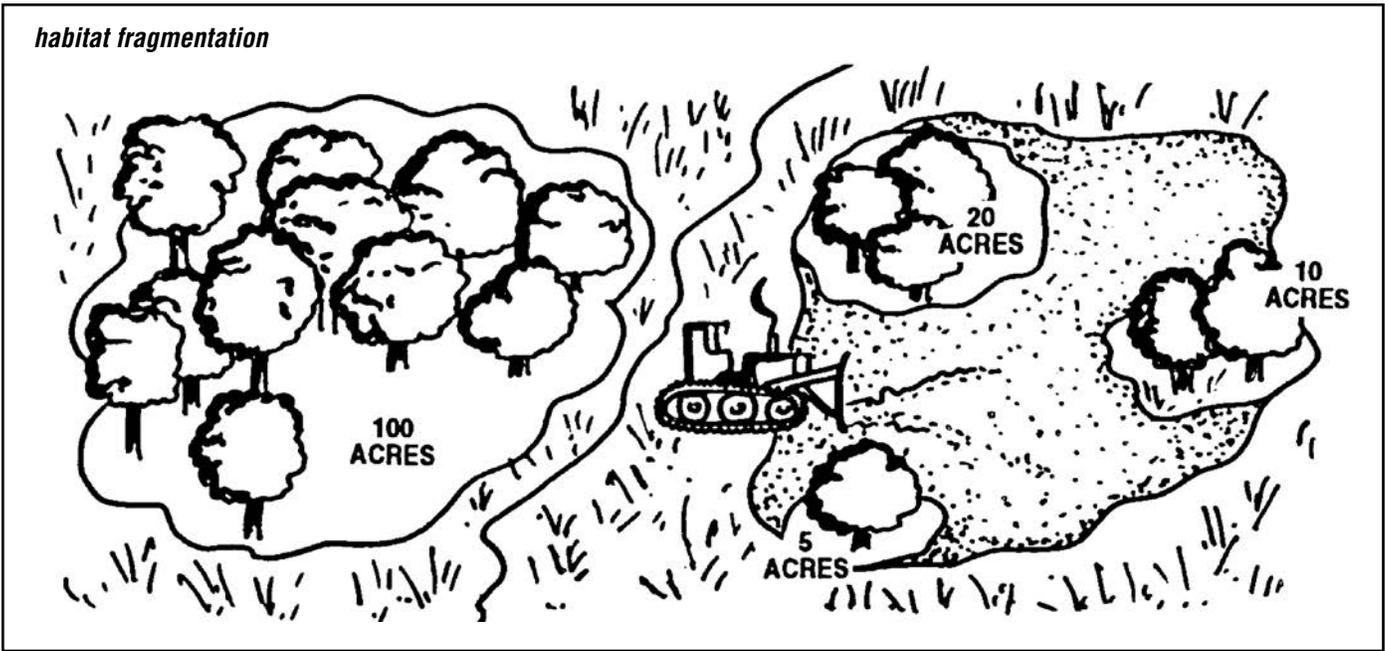
## EXTENSIONS

- Research adoption of a plot of ground, such as the  
"Adopt a Pothole" program coordinated by the Delta  
Waterfowl Foundation. For more information about  
this program, visit the Internet site at  
<http://www.deltawaterfowl.org/what-we-do/adopt.html>.
- Trace bird migration paths and identify areas the  
birds fly through and over.

### VOCABULARY

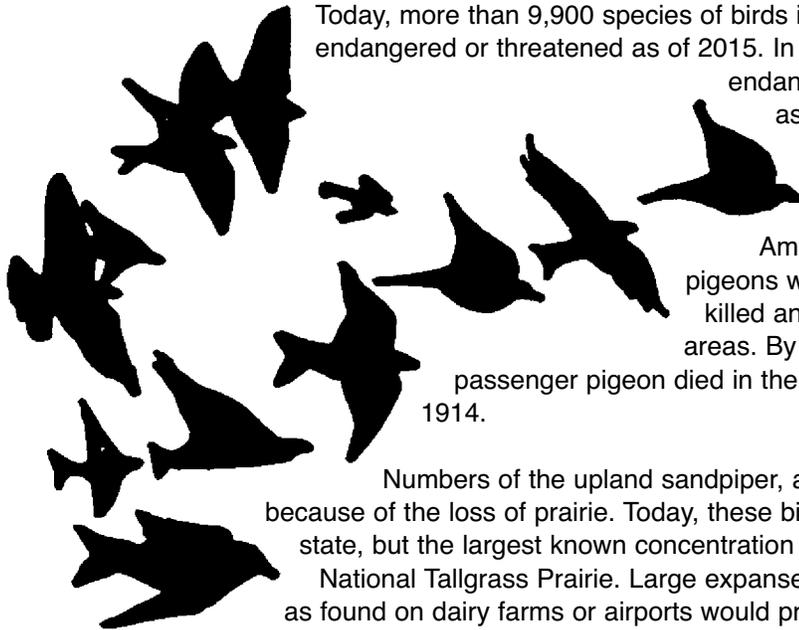
booming	parasite
endangered	pesticide
extinct	predation
fragmentation	rare
habitat	threatened
Neotropical migrant	wildlife sanctuaries

*habitat fragmentation*



# Here Today... Gone Tomorrow

# STUDENT'S GUIDE



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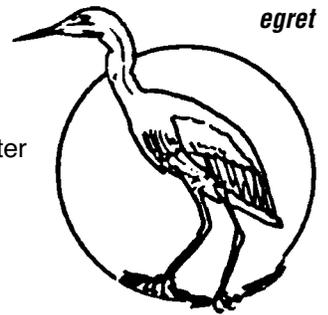
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Numbers of the upland sandpiper, a state endangered species, have plummeted because of the loss of prairie. Today, these birds may be found sporadically throughout the state, but the largest known concentration of nesting birds is in Will County at the Midewin National Tallgrass Prairie. Large expanses of short grass prairies or open pastures such as found on dairy farms or airports would provide attractive nesting habitats.

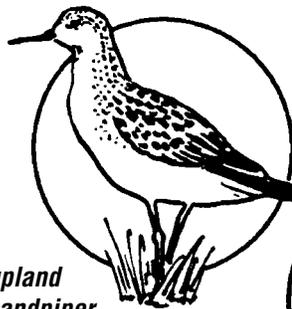
Why are species listed as threatened or endangered? By law, changes to the endangered/threatened species list for the state must be based on scientific evidence. Factors that are considered when evaluating a species include changes in population size, changes in range in the state, whether it occurs at protected sites, any known threats to its existence, as well as features of its life history which might have a bearing on survival. The Endangered Species Protection Board may remove from the Illinois endangered/threatened species list any nonfederally-listed species for which it finds satisfactory scientific evidence that its wild or natural populations are no longer endangered or threatened in Illinois. A public hearing is held to consider the Board's action of listing, delisting or changing the list status of a species.

Historically, species were jeopardized due to unregulated hunting, excessive use of animal products (egret plumes for women's hats) and pesticides. Today, loss or destruction of winter and breeding habitats is the primary reason for bird species' declines. Nest predation, nest parasites, loss of food sources and capture and sale of wild birds to pet shops affect some bird populations. Thousands of migratory birds are killed each year when they fly into tall buildings, television towers and electrical power lines and towers.

However, several species are now on the comeback trail. Scientific studies to understand the life requirements of the species, establishment of hunting regulations and public involvement in programs to preserve, protect and manage habitats and species are helping many birds.



egret



upland  
sandpiper



greater prairie-chicken

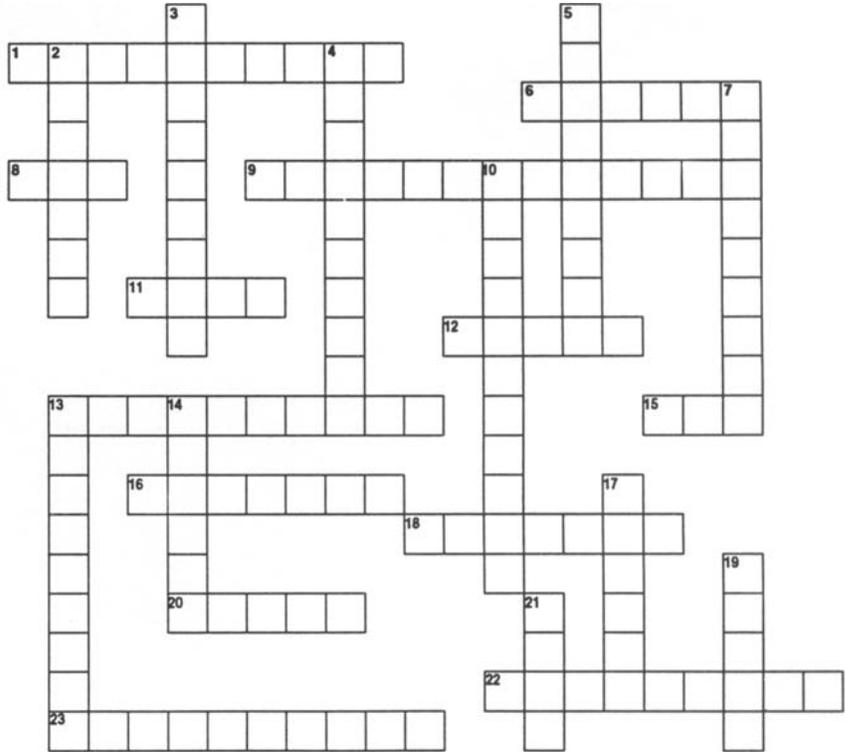
# ACTIVITY PAGE

## Bird Words

Use the clues below to complete the crossword puzzle. Note to teachers: The word list at the bottom of the page is provided for your use. You may elect to provide the word list to the students or photocopy the puzzle without the list.

### Across

1. A species with the potential to become endangered.
6. These large wading birds have declined in numbers as wetland habitat has disappeared.
8. Pollution here threatens birds.
9. This process occurs when large areas of habitat are broken up into smaller sections.
11. Eighty percent of captured birds intended for this purpose die before reaching stores and homes.
12. The whooping \_\_\_\_ is an endangered bird.
13. DDT and other similar chemicals contributed to the decline of the bald eagle.
15. Birds do it.
16. This kind of chicken numbers fewer than 75 in Illinois today.
18. The barn \_\_\_\_ has long, pointed wings and only spends part of the year in North America.
20. This species is responsible for most of the reasons that birds become threatened.
22. Birds that have the law on their side are \_\_\_\_.
23. \_\_\_\_ means that no more members of the species survive.



### Down

2. \_\_\_\_ is the natural environment providing food, water, shelter and space for organisms.
3. The upland \_\_\_\_ is a bird which lives in shortgrass prairies.
4. Having the potential to become extinct.
5. Birds that travel seasonally take part in \_\_\_\_.
7. A place where wildlife is safe.
10. \_\_\_\_ migrant birds include hummingbirds and orioles.
13. These falcons have adapted to city life.
14. The American robin is this type of bird.
17. The brown creeper has been affected by loss of this type of habitat.
19. Some birds build them on the ground.
21. Black \_\_\_\_ and northern pintail nesting populations have declined drastically as wetland areas diminish.

**Word List**  
**Across:** threatened, egrets, air, fragmentation, pets, crane, pesticides, fly, prairie, swallow, human, protected, extinction  
**Down:** habitat, sandpiper, endangered, migration, sanctuary, Neotropical, peregrine, thrush, forest, nests, tern

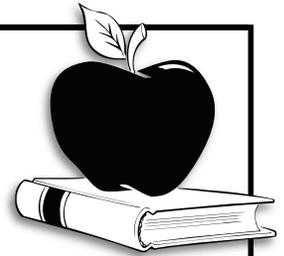
**Word List**

**SUGGESTED GRADE LEVELS:** 3 - 4

**SKILLS/PROCESSES:** observation, classification, data collection, art appreciation

**OBJECTIVE:** Students will demonstrate the ability to locate and identify birds.

# TEACHER'S GUIDE

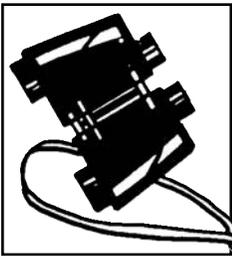


## UNIT 3 ■ LESSON 4

# Be a Birder

### BACKGROUND

**Birding** in America started with John James Audubon's (1785-1851) travels and publication of his collection of paintings of more than 1,000 birds. For the first time most people had the opportunity to "see" many of the birds and call them by a proper name. Birding was popularized in America in the 1930s when usable **field guides** were published.

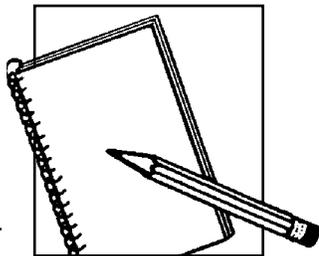


Why is birding a hobby or career that interests millions of people? Some enjoy the challenge of locating and identifying birds and seeing new places. Others see their birding time as a form of exercise and an opportunity to be outdoors.

No matter what the reason, birding is a fun sport that can be done year-round anywhere for little expense. Getting started is as easy as a trip outdoors with an experienced birder, joining a club or simply picking up a field guide and teaching yourself.

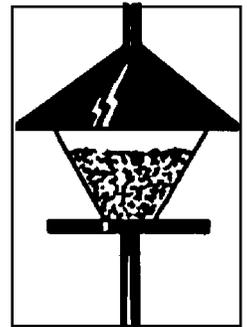
Your senses of sight and hearing are extremely important tools in birding. Observe the bird. The five basic **characteristics** used to visually identify a bird are its shape and posture, plumage and color, behavior, habitat preference and voice. Listen to its call or song. The best birders are able to identify 80 percent of the birds by sound only.

Becoming a birder requires studying bird habits and learning to move quietly and slowly. When you go birding remember to take comfortable shoes, a field guide, sketch book, pencil and **binoculars**. It is recommended that beginners use 7 x 35 power binoculars.

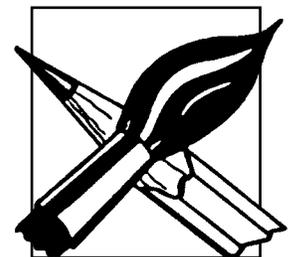


Birds can be found almost anywhere. Look in parks, forest preserves, your back yard, school yard and around a pond or wetland. The best times to look for birds are in the morning or early evening during their feeding times when they are most active.

You may want to attract birds to your school yard to observe them for extended periods of time. Feeding and watering stations will attract a variety of birds. Remember to offer a variety of feed to attract many types of seed-eaters. Provide suet in the winter to attract meat-eaters. Keep a daily record of the birds seen at your feeder. Over the years it becomes interesting to try and predict when the juncos first appear in winter or the red-winged blackbirds return for the summer. Recording data such as arrival and departure dates is called **phenology**.

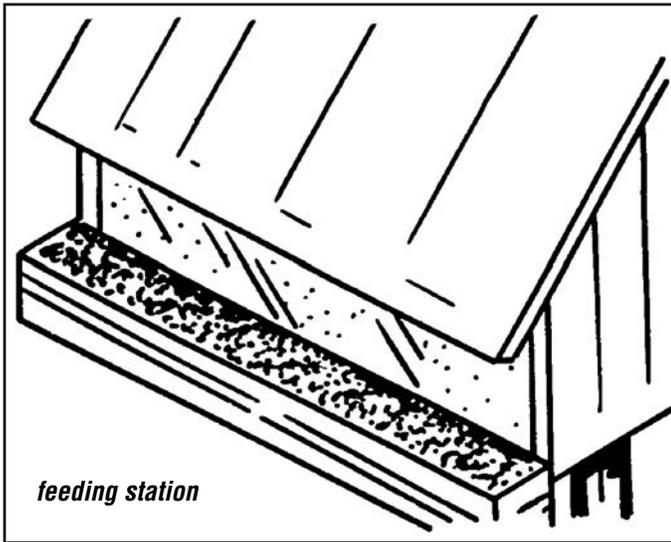


A variety of careers are available to people interested in birds. **Ornithologists** are people who study birds. **Biologists** and **naturalists** study the connections between birds and people, assist others in understanding the role of birds in the world and help people learn to identify birds. Most ornithologists, biologists and naturalists have a college degree. Birds are the focus for many famous artists, including John James Audubon and Roger Tory Peterson and writers such as Pete Dunne (*The Feather Quest*) and Donald Culross Peattie, a famous Illinois nature writer.



## PROJECTS AND ACTIVITIES

1. Create a **feeding station** with a watering source. Make feeders using recycled materials (plastic pop bottles, milk containers) to attract specific birds. Remember to feed birds from the first snowfall until spring. Suet should be placed only from November to the last frost in the spring. Feeding migratory birds in the fall may delay their migration and result in death. Don't use metal products for watering sources!



2. To encourage birding, teach students how to use binoculars. To practice locating birds, make "binoculars" out of toilet tissue tubes, and then progress to binoculars.
3. Visit <http://www.ilbirds.com/> or <http://www.illinoisbirds.org/> to find lists of the rare and notable birds seen in Illinois. The lists are updated often.

## EVALUATION

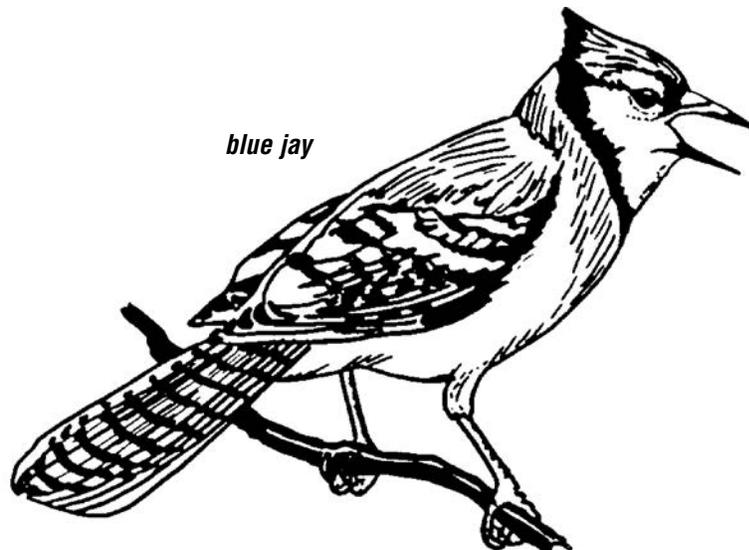
1. Students should identify five common birds in their area and describe behaviors observed throughout the year. Select one **species** of bird. Make a journal or diary and record bird behaviors and activities. Explore why a species is or is not present in a specific area. Include sketches and a section for field study data collection in the journal. Bind the journal and decorate the cover.

## EXTENSIONS

- Take a bird hike at a nature center, park or preserve.
- Set up a permanent feeding station at school. Keep phenology records and, after a period of time, compare recent records with preceding years.
- Invite speakers from the Audubon Society, a museum or a nature center to discuss birds and birding. Ask for a banding demonstration.
- Go to an art museum or gallery to see birds in art.
- Read about the artist John James Audubon and how he chronicled the birds of North America in his paintings and lithographs.

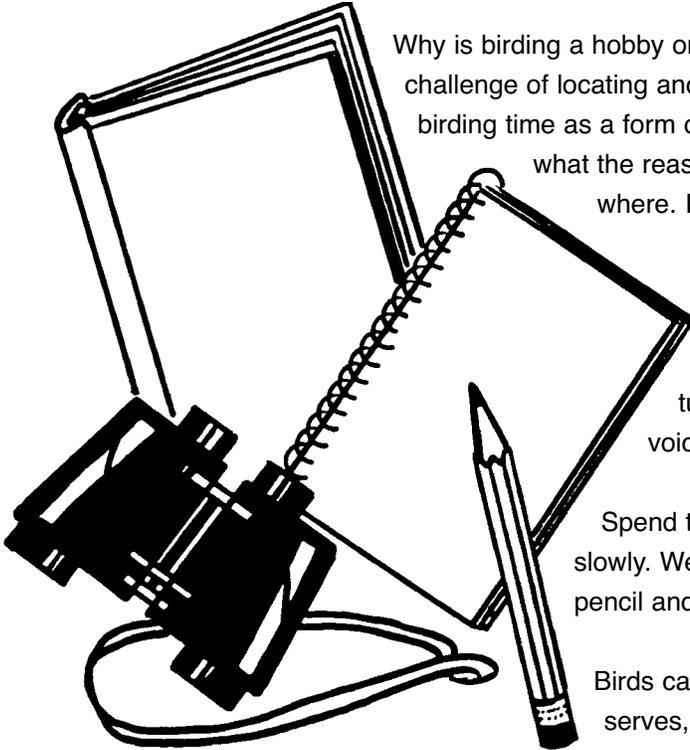
### VOCABULARY

binoculars	field guide
biologist	phenology
birding	naturalist
characteristics	ornithologist
feeding station	species



# Be a Birder

# STUDENT'S GUIDE



Why is birding a hobby or career that interests millions of people? Some enjoy the challenge of locating and identifying birds and seeing new places. Others see their birding time as a form of exercise and an opportunity to be outdoors. No matter what the reason, birding is a fun sport that can be done year-round anywhere. It costs little and getting started is very easy!

Your senses of sight and hearing are extremely important tools in birding. Observe the bird. The five basic characteristics used to visually identify birds are shape and posture, plumage and color, behavior, habitat preference and voice. Listen to its call or song.

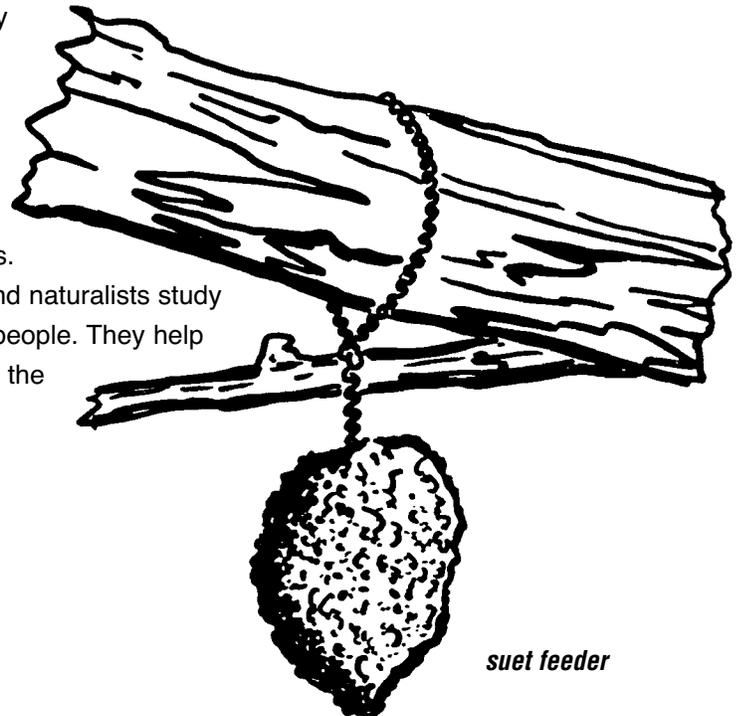
Spend time outdoors watching birds. Learn to move quietly and slowly. Wear comfortable shoes. Take a field guide, sketch book, pencil and binoculars.

Birds can be found almost anywhere. Look in parks, forest preserves, your back yard, school yard and around a pond or wetland. The best times to look for birds are in the morning or early

evening during their feeding times when they are most active.

You may want to attract birds to your yard so that you can observe them for long periods of time. Feeding and watering stations placed near your house will attract a variety of birds. Remember to offer a variety of feed to attract seed-eaters. Provide suet in the winter to attract meat-eaters. Keep a daily record of the birds seen at your feeder.

Many careers are available to people interested in birds. Ornithologists are people who study birds. Biologists and naturalists study the connections between birds, their environment and people. They help people understand and learn to identify birds. Birds are the subject for many famous artists and nature writers.



*suet feeder*

# ACTIVITY PAGE

## Feathered Friends Journal

Use the format below as a guide to start your own back yard bird behavior notebook. You may be surprised at the variety of birds seen in your neighborhood or during your outdoor adventures.

WHERE: BACK YARD FEEDER

WHEN: MARCH 2 - MORNING

WHAT KIND: CARDINAL



The sketches include a profile of a cardinal's head with a crest, a large feather with detailed barbs, and two sets of tracks. Labels with arrows point to the 'crest', 'Red (male)', and 'Tracks'.

Set up your bird journal with basic information about sightings. Leave room for sketches and notes. Feel free to personalize your birding journal.

WHERE: \_\_\_\_\_

WHEN: \_\_\_\_\_

WHAT KIND: \_\_\_\_\_

Look for different species in parks, forests, your back yard and around a pond or wetland. Move quietly and slowly. Look in the morning and early evening during the feeding time when birds are most active.