

P. Verdes  
Dist. Lib.



APR 18 1988

OCT 7 1989

APR 24 1991

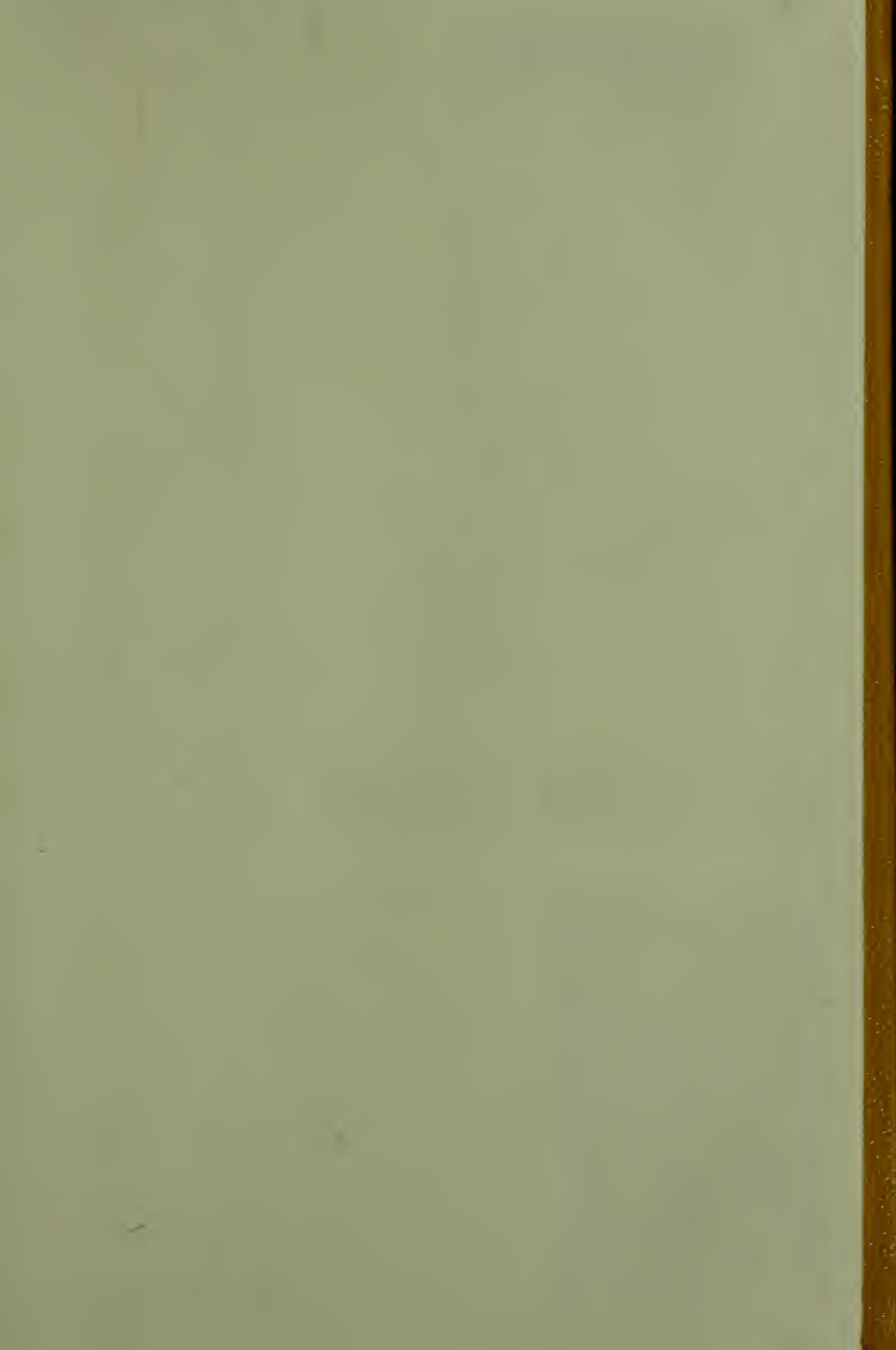
MAY 8 1991

NOV 29 1991

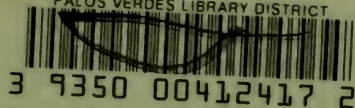
JUN 7 1995

AUG 9 1999









# BIRD STUDY

J 369.43  
Boy



# Requirements

1. Spend 3 hours in each of two different kinds of natural habitats or at two different elevations.
  - a. List the different bird species you see.
  - b. List the numbers of each seen.
  - c. Explain why all birds do not live in the same kind of habitat.
2. Spend 3 hours on each of 5 days in a large area. List the bird species you can identify by sound or sight.
3. Recognize, by sound, 10 birds usually found in your neighborhood.
4. List eight families of birds usually found where you live.
5. Write a 500-word history about a bird of your choice. Include the following information, if available:
  - a. Nesting habits
  - b. Behavior and territory
  - c. Food habits and diet
  - d. Description and size of the young and adult birds
  - e. Migratory habits, if it is not a permanent resident
  - f. Any unusual characteristics about the bird you find interesting
6. Do ONE of the following:
  - a. Make eight field trips during one season, about 3 months. Keep records of all the birds you see.
  - b. Carefully observe a bird for an hour a day for 10 days. Record your observations.



- c. Go on an 8-hour Christmas census with a bird club. List all the birds you see.
  - d. Go on an 8-hour May bird census with a bird club. List all the birds you see.
  - e. Visit a bird refuge. Describe its purpose and give the management techniques used.
  - f. Attend a meeting of a bird club such as the local chapter of the National Audubon Society. Report on what you learned.
  - g. Write a 300-word paper on bird behavior.
7. Do ONE of the following:
- a. Build a backyard sanctuary by planting trees and shrubs for food and cover. Describe what birds you hope to attract and why.
  - b. Build three bird feeders of different kinds. Keep them stocked with food for 3 months in winter. Describe what birds are attracted to them. Indicate what kinds of foods were liked best.
  - c. Take 12 clear, sharp, recognizable pictures of 12 species of birds.
  - d. Build a watering device for birds. Keep it filled for 3 months. Tell which kinds of birds used it. Describe any interesting things you saw.
8. Do ONE of the following:
- a. Select one species of bird that eats other animals. Indicate its place in nature and briefly discuss its importance.
  - b. Make a migration (flyway) map of the United States. Name some of the birds that use each flyway or migration route. Tell where they nest. Tell where they winter. Describe birdbanding.
  - c. Make a list of the extinct or declining birds of the United States. Describe some of the chief causes for this decline.



**Loggerhead shrike**

## **Contents**

Introduction .....	5
Where to Find Birds .....	10
Bird-Watching Techniques .....	18
Adaptations of Birds .....	20
Bird Territories and Habitats .....	24
Bird Sounds .....	27
Orders and Families .....	29
Writing a Bird History .....	33
Field Trips and Records .....	35
Projects .....	37
Birds of Prey .....	49
Bird Migration .....	51
Extinct and Endangered Birds .....	57
Books About Birds .....	62

# Introduction

If you're looking for a hobby filled with fun and adventure that you can follow any time of year wherever you are, try bird watching. The more you put into it and the more skilled you become, the more fun you have.

Watching birds is an exciting hobby. Don't be fooled by newspaper or magazine cartoons showing a group of odd-looking people peering up into a tree. Serious bird watchers are as much at home in the rugged outdoors as backpackers and mountain climbers. Serious bird watchers are experienced hikers and campers, expert canoeists, and knowledgeable backcountry travelers. They must be so physically fit that they can spend a day in the field in any kind of weather without tiring.

Bird watching can be as thrilling as a safari to deepest Africa, a fishing trip to the offshore waters of the Gulf Stream or the Humboldt Current south of California, or a mountain climbing expedition to Switzerland. It's a hobby filled with adventure.

On birding field trips you may meet members of Congress, business and industrial leaders, writers, lawyers, physicians, actors, scientists, television celebrities, radio commentators, and many other well-known people. Large numbers of people from all walks of life enjoy watching, listening to, and studying birds.

There are almost as many different aspects to bird watching as there are bird watchers. Some people are interested in how many different kinds of birds they can spot in a day, a month, or a year. They may keep a "life list" or try to see as many new birds as possible each year. Others are interested in rare birds—birds that are unusual at a particular time or place. Some study bird behavior, trying to figure out why birds act the way they do. Many are interested in photographing birds or in recording birdsongs on tape. Thousands of bird watchers thoroughly enjoy just looking at birds in their yards or at nearby parks. Amateur bird watchers have made many worthwhile contributions to our knowledge of birds.

Whatever your interest, bird watching is fun. It is an outdoor hobby that is becoming more popular each year. Whether you watch birds near your home or on a trip to unfamiliar territory, it's an exciting, satisfying way to learn more about the living world around you.

## Getting Started

The first thing you'll want to do is talk with your merit badge counselor and review the requirements for the Bird Study merit badge. Ask which birds are likely to be found in your area at the time of year you are starting and which are "permanent residents" that remain all year. (Most local Audubon Society chapters have lists for their areas.) Find out the best places to look for birds. Look at pictures in a bird guidebook so that you can recognize the birds you may see.

Find out if there is a bird club in your area and when it meets. Bird clubs usually meet at museums, nature centers, community houses, or schools, but they may meet in members' homes.

If you live in a large city, do not think that bird watching is impossible as a hobby. Large city parks frequently are excellent places to find birds. The edges of golf courses or cemeteries, city reservoirs, and the landscaping around public buildings often have interesting and unusual birds. Most Scout camps are excellent for the beginning birder, too.





## Basic Equipment

A good field guide, a sturdy and comfortable pair of walking shoes or boots, and binoculars are bird watching's basic equipment.

### Field Guides

You can get a field guide to the birds of all of North America or just the region of the country where you live. If you live east of the Rocky Mountains, you might want a copy of Roger Tory Peterson's *A Field Guide to Birds East of the Rockies*. If you live in the western part of the country, try Peterson's *A Field Guide to Western Birds*. If you live in the south central United States, in or near Texas, Peterson's *A Field Guide to the Birds of Texas and Adjacent States* will cover your entire area. There also are good books by other authors for various states and regions.

The National Geographic Society's *Field Guide to the Birds of North America* and Robbins' *Birds of North America* are up-to-date guides covering the entire continent. They will give you an idea of how different birds are distributed around the country. Since these and similar books include all birds of North America, one of them is all you would need if you live in the middle of the country, near the dividing line for Peterson's guides, or if you travel from one region of the country to another.

### Clothing

Outdoor clothing, important to birders, should be no problem for a Scout. Whatever you wear for your outdoor Scouting activities also is suitable for birding field trips. A hat or cap is recommended, since it will shade the binoculars, helping you to see better.

### Binoculars

Lightweight enough to take along no matter how far you go on foot, and powerful enough to bring distant birds within range for study or identification, binoculars are considered essential by many experienced bird watchers. But trying to find, from the dozens of models available, the ones exactly right for you can be a problem.

Try to get 7X35 binoculars. The "7X" means the binoculars magnify seven times—a bird will look seven times larger, or seven times closer, through the binoculars than it does when you look at it unaided.

Most binoculars meant for birding are 7X, 8X, 9X, or 10X. The higher the power of magnification, the heavier the equipment (10X binoculars can weigh 3 pounds). The higher the power, the more the image you see through the binoculars tends to jump; not only is the image magnified,

the tremor in your hands is, too. And the greater the magnification, the smaller the area you can see; the "field of view" is restricted. (A 420-foot field of view means that a viewer, focusing on an object 1,000 yards away, would see an area 420 feet across.) For these reasons, binoculars with a power of 7X are best for general, all-around birding.

The number after the X refers to the width of the front lens. The common widths in binoculars useful for birding are 35mm, 40mm, and 50mm. The width of the front lens is important because it determines how much light the binoculars let in. The wider the lens, the brighter the object you are viewing will appear. However, a wider lens will make the binoculars weigh more, too, something you'll need to consider when choosing your binoculars.

Most birders prefer, and most binoculars are built with, central focus. The notched wheel or lever on the hinge between the eyepiece barrels lets you focus quickly. It takes only seconds to move from a hummingbird hovering 20 feet in front of you to a waterbird flapping to its nest 200 feet away. If your binoculars have individual focus, each time you sight a new bird you must focus the right eyepiece, then the left eyepiece. This takes time, and may cause you to miss the bird.

All binoculars, whether central or individual focus, have an individual focus knob for the right eyepiece. Most of us see slightly differently through each eye. You'll need to fit the binoculars to your eyes before you use them in the field.

Look through the binoculars, and push the two sides together or apart until the left and right images blend into one. Next, adjust the right eyepiece for any variation in vision between your left and right eyes. To do this, block the right side with your hand, and, keeping both eyes open, focus on an object through the left lens. If the image is blurred when you remove your hand, turn the right eyepiece left or right until that side also is in focus.

It's important in birding to be able to focus your binoculars on near objects as well as those far away. Close focusing is especially useful for identifying the smaller land birds. There are more than 30 kinds of sparrows in North America. Except for a few with distinguishing marks of red, yellow, or black about the head, these birds look pretty much alike. You may spot one only 50 feet from you, but if it's half obscured by foliage you'll need to bring it even closer to identify it. For this reason, and for watching birds around a feeder or birdbath, your binoculars should focus to within 15 feet.

Before buying any pair of binoculars, test them for quality. Be sure you can answer "yes" to these questions.

- Is the magnification at least 7X?
- Are the binoculars light enough that you can carry and use them for at least 3 hours in the field?
- Is the central hinge not too tight and not too loose? Is the same true of the focusing levers or wheels?
- Held at a slant, do the front lenses reflect a colored tinge? (The colored coating cuts internal glare, increasing the amount of light that reaches your eyes.)
- Can you bring the barrels close enough together that the image seen through each merges into a single, clear image in a perfect circle? (This test is important. If you don't get a clear image in a circle, your eyes and head soon will begin to ache.)
- Can you hold the binoculars steady enough to keep an image a block away from jumping?
- Do the binoculars provide a clear image of an object 15 feet away?
- When you focus on a brick wall or hedge that fills your field of view, is the image sharp both in the center and at the edges?
- When you focus on a license plate two blocks away, are the numbers clear?

To "see" well with binoculars, raise the binoculars to your eyes as you look at a bird without moving your eyes. You do not "see" well if you search for a bird with binoculars to your eyes.

If you want to get other people's opinions about different kinds of binoculars before you buy, join a group of bird watchers for a field trip. That will give you a chance to try out various brands and models that others own and to ask them for recommendations.

Be sure you get a carrying case for your binoculars. You'll also want to get a lens cleaning kit and clean the lenses of your binoculars regularly. Don't leave your binoculars or even the empty carrying case on the seat or floor of a parked car, even if it's locked. Windows are easy to break.

One other item of equipment you'll want to carry is a pocket-size notebook and pencil, useful for taking notes in the field. You may want a larger notebook at home in which to put your records after each trip.

A holder for your field guide also is helpful.



# Where to Find Birds

There are different natural areas in which to find birds: farm fields and pastures, chaparral or brush, woodlands and woodland borders, seacoasts, swamps or marshes, lakes, rivers or bays, deserts, prairies, and above timberline on high mountains. There also are man-made areas such as city parks, cemeteries, village streets and backyards, and brushy roadsides. Cemeteries can be excellent birding places because they are not as heavily used as city parks, they often are the only open areas in big cities where much of the land area is not covered by concrete and asphalt, and in many cases they will have been there long enough to have mature vegetation as well as brush, making them attractive homes for many kinds of birds.

Particular types of areas are associated with particular kinds of birds. Each *species* or kind of bird generally has a favorite place where it looks for food, lives, and nests. This place is known as the bird's *habitat*. For most birds, the nesting and feeding areas are not far apart. During their spring and fall migrations, birds often are found in places different from those where they nest. But, in general, field birds are found in fields, swamp birds in swamps, woodland birds in wooded areas, and so on. The edges where two of these habitats meet also are good areas for seeing birds of many species. Birds that prefer one or the other of the habitats may appear in the edges between the areas. The edges between fields and woods are especially popular with many kinds of birds.

Knowing the kind of place that is the favorite nesting and feeding area for a bird species frequently is helpful in identification. Finding a bird out of place can be a real thrill.

Following are some of the birds found in the major U.S. habitats. As you observe birds in different habitats, you will begin to know what kinds of birds are likely to be found in any particular type of area.

Eastern meadowlark ►



## **Prairies and Grassy Fields**

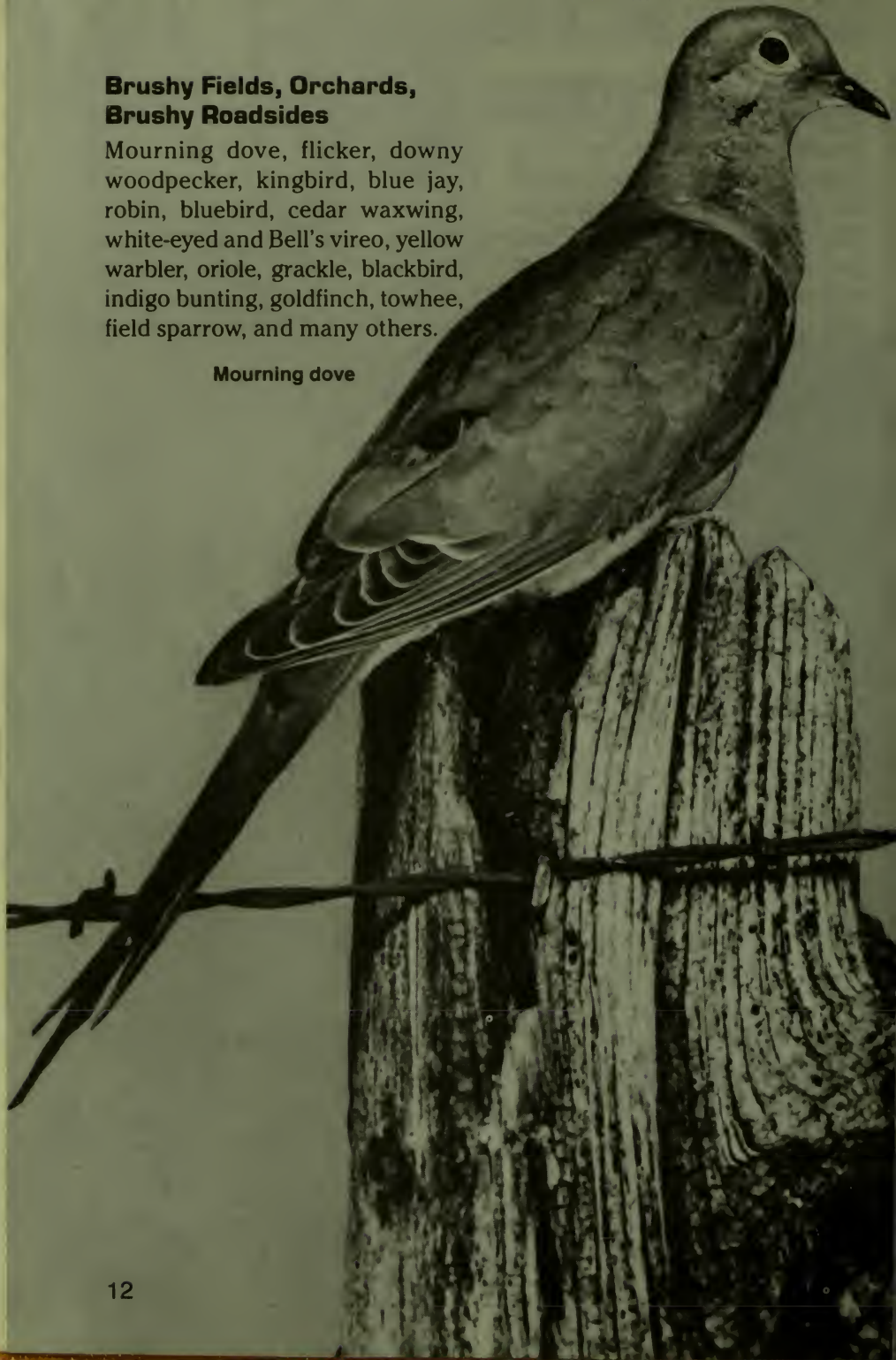
Swainson's hawk, sharp-tailed grouse, prairie chicken, burrowing owl, scissor-tailed flycatcher, horned lark, magpie, pipit, meadowlark, dickcissel, lark bunting, Savannah sparrow, vesper sparrow, lark sparrow, and many others.



**Brushy Fields, Orchards,  
Brushy Roadsides**

Mourning dove, flicker, downy woodpecker, kingbird, blue jay, robin, bluebird, cedar waxwing, white-eyed and Bell's vireo, yellow warbler, oriole, grackle, blackbird, indigo bunting, goldfinch, towhee, field sparrow, and many others.

**Mourning dove**







## **Deserts**

Harris' hawk, Gambel's quail, mourning dove, elf owl, roadrunner, Gila woodpecker, vermilion flycatcher, cactus wren, curved-bill thrasher, black-throated sparrow, and many others.

**Gilded flicker**



**Brown pelicans**

### **Beaches and Oceans**

Loons, petrels, cormorants, eiders, shorebirds, gulls, terns, auklets, puffins, and many others.

### **Wooded Swamps, Reedy Marshes, Lakes or Ponds**

Ducks, herons, bitterns, marsh hawk, rails, gallinule, coot, shorebirds, gulls, terns, short-eared owl, marsh wren, yellowthroat, red-winged blackbird, swamp sparrow, and many others.

**Mallard duck**



## **Upland Woodland and Woodland Borders**

Wood duck, red-tailed hawk, ruffed grouse, screech owl, horned owl, hummingbirds, pileated woodpecker, hairy woodpecker, crested flycatcher, wood pewee, crow, chickadee, titmouse, brown creeper, hermit thrush, wood thrush, veery, red-eyed vireo, ovenbird, redstart, tanager, junco, white-throated sparrow, white-crowned sparrow, and many others.

**Spruce grouse (female)**





## **Above Timberline**

Golden eagle, ptarmigan, raven, water pipit, rosy finch, and a few others. California scouts may be fortunate enough to see the extremely rare California condor, the largest bird in North America and one of the largest in the world. The rosy finch, shown below, builds its nest among the rocks.

**Brown-capped rosy finch**





**Barn swallow**

### **Around Human Dwellings**

Some birds commonly are found in close association with humans. The robin, mourning dove, house finch, starling, mockingbird, blue jay, barn swallow, tree swallow, purple martin, and many others have successfully adapted to living among people. Can you tell how the “artificial habitats” they have adopted as their own are similar to their natural nesting areas?

# Bird-Watching Techniques

One of the most important skills to develop in searching for birds is the “roving eye.” Learn to recognize unusual colors, sizes, shapes, movements, and silhouettes as you look for birds. Many times a quick look around will result in locating a “lump” on a tree or elsewhere that a keenly developed roving eye knows does not belong.

Here are other suggestions to help you find more birds and to make identification easier:

- Early morning and late afternoon are the best times to look for birds.
- Move slowly; do not make sudden or jerky movements.
- If possible, stand with the sun at your back, shining directly on the bird.
- Observe a bird carefully at a distance before you move closer. That may be the only view you get.
- Note carefully important field marks such as relative size as compared with a sparrow, robin, or crow; color of back, breast, head, throat, tail, wing bars (if any); eye ring or line over or through the eye (if any). Note flight pattern—straight line, up and down, rapid wingbeat then rest, slow lumbering wingbeat. Note size and shape of the bill. Note whether the bird walks or hops, perches upright or not, or clings to bark. Note what the bird is doing generally. Based on your observations, write a detailed description of the bird in your notebook.
- Learn one bird at a time. It is better to become thoroughly familiar with one bird than to try to learn four or five all at once and not know any of them well.
- Stop and listen carefully if you hear a bird sing or call. Try to remember the sound and associate it with the bird you see. Try to put the song or call into phrases or words that will help you remember it. For example, the words “kill deer” can help you remember the call of the killdeer bird.
- Learn to use your field guide. Read the introduction carefully—it has many helpful hints on bird watching. Read the descriptions of families so you’ll know which ones the birds you see belong to.



11 September 1984, 6:40  
p.m. Webster's field, 2  
miles N of New Albany,  
In. Wind light; cloudy;  
78°F.

Sparrow-size. Creamy  
breast, brownish-gray  
head and back, all  
streaked. Dark, notched  
tail with white outer  
feathers. Whitish  
eyering. Some chestnut  
at bend of wing.

Hops on ground then  
flies to maple tree at  
edge of field. chirps  
a few times—2 notes  
followed by 2 higher-  
pitched notes, then  
a quavering trill.  
Flies to another  
branch, then flies back  
to ground. Moves  
head from side to  
side and pecks at  
stubble in the field.

### Sample description

## Keeping Notes

Notes are important. Keep detailed notes on each bird you see until you become expert and can recognize most birds at a glance. Be sure to put down the full date, time, locality—including direction and distance from the nearest town, and the name of the state—and the prevailing weather conditions. In your notes, describe the bird's behavior as well as its identifying marks.

## Birding Etiquette

When you're out in the field watching birds, you'll want to be considerate both of other bird watchers and of the creatures you're observing. Be respectful of property—don't wander onto private land without permission or trample someone's lawn in the excitement of the chase. Stay on paths in parks and refuges. If you're birding with a group, make sure everyone has had a chance to get a look at a bird before you move closer and risk scaring it off. If you've brought your camera, don't push ahead of others to get a picture. Don't step in front of someone else's binoculars or scope.

When observing a nest, do so from a distance. If you beat a path to the nest by repeated visits, you are likely to show predators the way and place the birds in danger. Never handle eggs or baby birds. *Don't collect birds' nests.* It is not legal. A permit is required to possess the nest of a wild bird, a bird egg, a feather, or a bird, whether living or dead.

# Adaptations of Birds

In the many millions of years that birds have been on earth, they have adapted to feeding in different ways. All birds are basically alike in their general structure because of the requirements of flight. But there are differences among birds in their bills, legs, feet, wing size, and shape. These differences are related to their methods of getting food.

You usually can tell what a bird eats and how it gets its food by studying its bill, feet, legs, and wings. Hawks, for example, have strong hooked bills and strong talons. These enable them to capture other birds or mammals with their talons and tear the flesh apart with their bills.

The red-tailed hawk has broad, rounded wings and a broad tail that enables it to soar on air currents while watching the ground for a mouse or rabbit. When food is sighted, the bird can drop quickly and break its fall with its broad wings at the moment it reaches its prey.

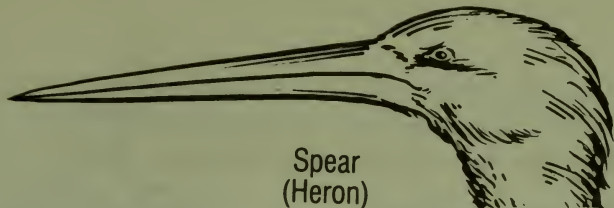
A prairie falcon has long, pointed wings and a narrower tail. These enable it to pursue its prey and capture it in flight.

An osprey has rough-soled feet with long claws adapted to holding slippery fish until it can fly to a treetop or rock to feed. Herons also are fish eaters. They capture fish with their long, pointed bills as they stalk carefully along a pond or river edge. They have long legs and large feet so they can wade and not sink in the mud.

Loons eat fish, too, but they dive underwater, pursue the fish, and capture it. Their long legs are set well back on their bodies and, unlike herons or ospreys, their feet are webbed to enable them to swim quickly underwater to catch fish.

Woodpeckers have toes arranged like tongs and stiff tail feathers that help them cling to tree bark and climb up and down the trunk or branches. They also have strong, pointed bills that enable them to chisel holes in trees and pry bark loose in search of insects.

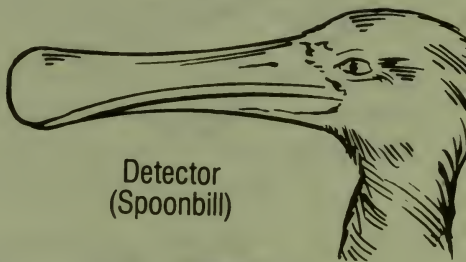
Other birds, such as swallows, flycatchers, and swifts, are adapted to capturing insects on the wing. Their wings permit them to fly quickly, change directions suddenly, and dive or fly upward as necessary to catch flying insects.



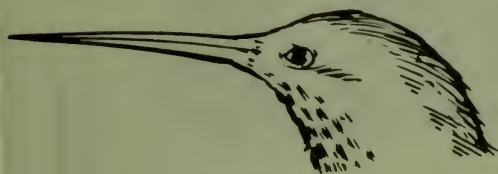
Spear  
(Heron)



Hooked  
(Flesh-eater)



Detector  
(Spoonbill)



Prober  
(Hummingbird)



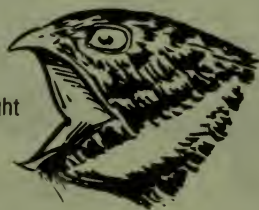
Cracker  
(Seed-eater)



Closed



Prober  
(Insect-eater)



Open in flight

Trap  
(Nocturnal insect-eater)



Chisel  
(Woodpecker)

**Types of bills**





Running



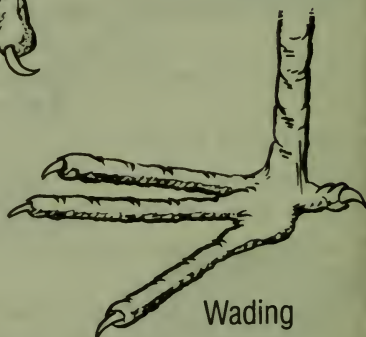
Scratching



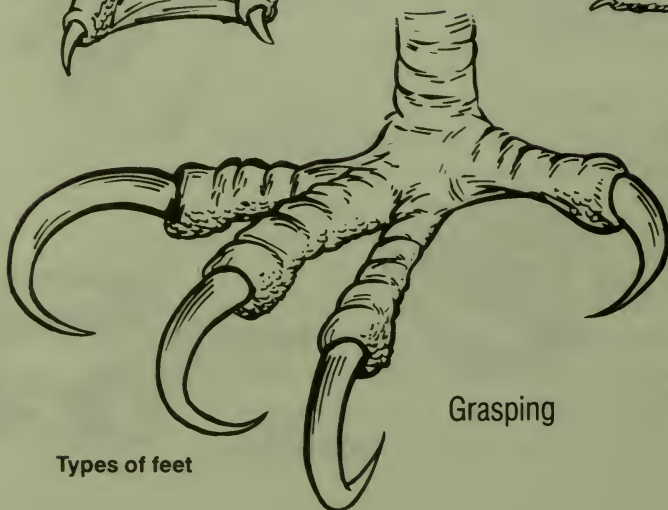
Climbing



Swimming



Wading



Grasping



Perching

Types of feet

Some birds have strong cone-shaped bills for crushing seeds. Cardinals, grosbeaks, and sparrows are examples. The tiny warblers are adapted to flitting around the tips of high branches, picking off insects with their small, needlelike bills.

Ducks have webbed feet that enable them to swim and, for some, to dive. Their flat bills help them gather plants from the bottoms of lakes and rivers, or in muddy fields. Many waterfowl also feed in grain fields and eat grass or other plants.

Birds live where they do because of the nature of their food and the different ways they get it. There are exceptions; herons, ospreys, kingfishers, hawks, and some other birds fly a long way to find food. Most birds, however, find nest sites reasonably close to their food supply.



Soaring  
(Eagles and hawks)



Swift flight  
(Falcons)

# Bird Territories and Habitats

To fulfill requirement 1, you will explore different kinds of natural areas and find out what kinds of birds live in them. Those areas may be fairly small—5 acres of marsh,  $\frac{1}{2}$  mile of a country roadside, 10 acres of woods or prairie. You will make a list of the different species and the number of each species you see in different habitats.

Except during migration in spring or fall, a winter “roost” of crows or blackbirds, a winter gathering of gulls, or a similar situation, the chances are that you will not find too many individuals of one species in a small area anytime. There are at least two reasons for this.

Some birds such as robins or song sparrows establish territories. They drive other birds of the same species from these private territories.

In addition, an area of land is capable of providing food, living space, nesting sites, and protective cover for just so many birds. If more birds try

Birds must have . . .



Food



Living space



Cover



Water



to live in that area than it can support, some are driven away, usually by the ones that nested there previously. As populations increase, some birds must nest and feed where conditions are less favorable, unless houses, food-producing plants or seeds, and water are provided for them by people. As you explore a larger area to meet requirement 2, the chances are that you will see this for yourself.

Some birds nest in colonies or in large groups. Bank swallows may occupy hundreds of holes in a bank along a stream or a new road. Herons or egrets may nest close together in forest treetops. Gulls, terns, or black skimmers may nest in a large colony on an ocean beach or rocky island. Purple martins often nest in "apartment house" nest boxes. An old barn may have several barn swallows. A number of cliff swallow nests of mud may be plastered on the outside of the barn.

These are birds that will fly some distance to find food, and the food they eat generally is plentiful. There is enough for all. Most birds, however, need private territories largely because of competition for food.

## **Habitat**

A bird's habitat is the place where it lives. Within its habitat, a bird must find everything it needs: food, cover, water, and space. If any of these things is missing or in short supply, then the number of birds that can live in that area is limited.

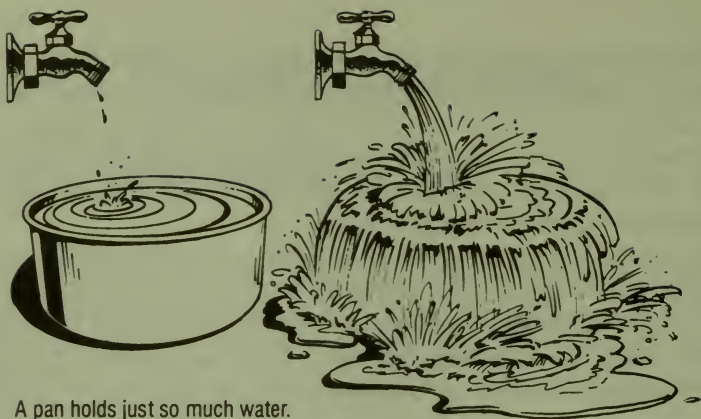
**Food.** Every bird eats specific foods, no matter what other kinds are available in its habitat. Both the amount and the quality of the food available to a bird is important.

**Cover** is anything that provides shelter and protection. It can be plants, burrows, rocks, or other natural features of the land. Birds need cover while they are feeding, roosting, breeding, and nesting.

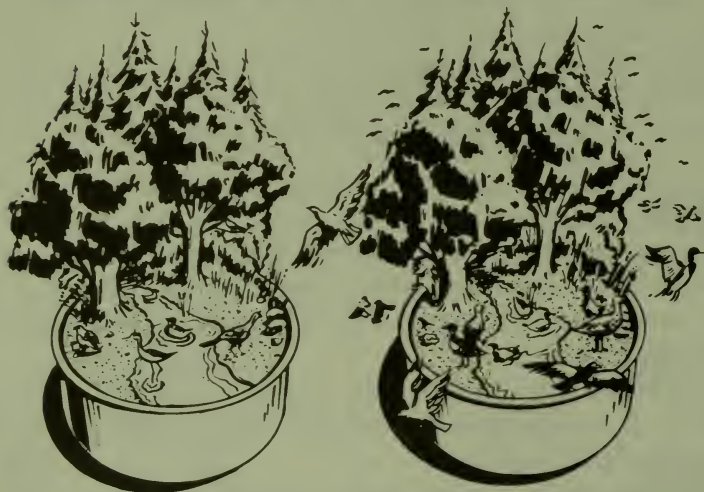
**Water** is necessary for any animal to live. Water available to birds may be in the form of surface water (ponds, lakes, drainage ditches), dew, snow, or succulent (juicy) plants.

**Space.** All animals must have space in which to live. Overcrowding leads to competition for the other essential things in a bird's life; therefore, only a limited number of birds of a single species may live in an area.

**Arrangement.** All the essential elements must be arranged within the bird's habitat so that the bird can get to them easily. For example, if there is water in an area but no cover or food nearby, then the water is not very useful to the bird.



A pan holds just so much water.



A particular habitat holds just so many birds and other wildlife.

**Carrying capacity** is the number of birds and other animals a habitat can support throughout the year without damage to the animals or the habitat. Carrying capacity can be compared to a 1-gallon bucket of water. No matter how much water you pour into the bucket, it only holds 1 gallon. Just as the extra water overflows the bucket and is lost, the extra birds and other animals die from starvation or other causes when wildlife numbers are larger than the carrying capacity of a habitat, or they migrate from the overcrowded area. Many bird species have expanded their ranges—the areas where they normally are found—in recent history. Cardinals and tufted titmice are examples.



# Bird Sounds

You probably know a few birds by their calls already. The common birds like the robin, blue jay, chickadee, catbird, mockingbird, house wren, starling, cardinal, and crow all have distinctive sounds. If you have spent much time fishing you may know the sounds made by gulls, terns, and kingfishers. In some parts of the country, the call of the bobwhite quail or whippoorwill is commonplace. At dusk the rasping call of the nighthawk can be heard between the blares of auto horns and other noises in many cities.

## Why Do Birds Make Sounds?

Some birds are silent. Storks don't make sounds, and neither do pelicans outside their breeding grounds. Vultures can only hiss. But most birds sing, squawk, hoot, and call. They use sounds to drive away enemies, to keep a flock together, to get their young to take food, and to identify themselves to others of their kind. Many male birds sing to attract a mate and to warn other males of the same species away from their territory.

## Why Learn Bird Sounds?

Learning the sounds made by different birds will help you identify them. A ruby-crowned kinglet and a Hutton's vireo look much alike. Their songs, however, are different. By seeing a bird and playing a recording of its voice again and again, you'll quickly learn that bird's identity.

Being familiar with bird sounds also will help you identify the birds you never see. According to one estimate, bird watchers don't see 80 percent of the land birds they hear. If you can identify a bird by its call, you'll still have the pleasure of knowing a certain bird is "out there" even if you don't actually see it on one of your birding field trips.

There are three ways to learn bird sounds. The first is to go out in the field, carefully observe a singing or calling bird, identify it, and try to memorize its song. Some people describe the songs with words or sounds. This may be helpful to you. Peterson's guides describe birdcalls or birdsongs in various ways.

The second way is to go out with an experienced birder and have him or her help you.

The third way is to get one or more of the records of bird voices that are available. There is a companion set of recorded songs and calls to use with Peterson's field guides. Listening to the sound and looking at a picture of the bird at the same time is helpful. You may be able to borrow records of bird songs from your school or public library.

Of course, you may want to record bird voices yourself. Many amateur bird watchers have added to our knowledge of birds through the recordings they've made. In 1968, John Dennis, using a tape recorder costing less than \$50, caught the "hant, hant" of an unseen ivory-billed woodpecker, proving that the bird, though rare, was not yet extinct. Many opportunities exist for you to make important contributions. More than half of the world's bird species have never been recorded.

Having a tape to play back after a birding field trip is like having a movie of a vacation. Long after you've returned home, you'll be able to recall the excitement of your trip by listening to your recordings of birds.

In addition to preserving bird sounds and helping you to identify birds, you can use recordings to bring birds into view on field trips. If you play a recorded song in the field, often you can bring a bird of the same species closer. If you play an owl's hoot, you can bring several species into view. Songbirds and hawks attack owls in the daytime—they know owls can't see in the bright sun.

Birding etiquette dictates that you refrain from playing recordings of birdcalls in areas where there are likely to be other birders. And it is unethical ever to play a tape near nesting birds. Thinking you're a rival bird that's invaded their territory, the parents may get upset enough to abandon their eggs or young.

You may want to use a portable tape recorder to take field notes. You can tape your notes in far less time than you can write them down in a notebook. Speaking quietly into the recorder, you can describe what the bird is doing, where you found it, what it looks like, anything you notice about it, and never take your eyes from your subject. This can be a real advantage when you're trying to capture in words an elusive and fast-moving quarry.

# Orders and Families

The birds of the world are divided into 27 major groups, called *orders*. Twenty of these are found in North America. The orders are listed according to the time the birds in that group are believed to have appeared on earth. Among North American birds, loons come first, and perching birds such as the finches, sparrows, and crossbills, last. This means loons are thought to have been on earth longer than finches and other perching birds.

The 20 orders of birds found in North America north of Mexico are divided into dozens of *families*. Some orders have only one family; others have 10 or more. The orders and some of the major families of birds found in the United States are listed on page 31.



Tufted titmouse



Eastern kingbird



Cactus wren



Robin





**Roadrunner**



**Blue-winged teal**

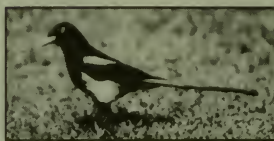


**Purple grackle**

**Starling**



**Song sparrow**



**Yellow-billed magpie**

**Tree swallow**



You probably have seen members of several of these bird families already. If you spent time in a wooded area when you were learning to identify birds, you may have seen a jay, thrush, warbler, woodpecker, flycatcher, and sparrow. That's six different families right there. With just a little time spent in the field, you should easily be able to identify at least one bird from eight different families.

Talk with your counselor about the families of birds commonly found in your area. Some birds may live there only at certain times of the year. You may not see them if you're working at a different time. Your counselor can help you learn as many different birds as possible. Go over the orders and families of birds listed in this chapter with your counselor and find out which may be found in your area, and when they are most likely to be found.

# **North American Bird Orders and Some Representative Families**

- 1. Loons**  
Water birds with three toes webbed
- 2. Grebes**  
Water birds with lobed toes
- 3. Albatrosses, shearwaters, and petrels**  
Seabirds
- 4. Pelicans, tropic birds, boobies, cormorants, and frigate birds**  
Water birds with four toes webbed
- 5. Storks, herons, ibises, spoonbills, and flamingos**  
Large water birds specialized for wading
- 6. Ducks, geese, swans, and screamers**
- 7. Hawks, eagles, falcons, and vultures**  
Birds of prey that hunt in the daytime
- 8. Grouse, pheasants, quail, and turkeys**  
Fowl-like birds
- 9. Cranes and rails**
- 10. Shorebirds, gulls, and terns**  
Plovers, woodcock, snipe, sandpipers, skuas, etc.
- 11. Pigeons, doves, and sandgrouse**
- 12. Parrots, macaws, and cockatoos**
- 13. Cuckoos, roadrunners, and turacos**
- 14. Owls**  
Birds of prey that hunt at night
- 15. Nightjars, frogmouths, and oilbirds**
- 16. Swifts and hummingbirds**
- 17. Trogons**
- 18. Kingfishers, rollers, and hornbills**
- 19. Woodpeckers, toucans, and honey guides**
- 20. Perching birds**

More than half of all living species. Includes blackbirds, bluebirds, bobolinks, cardinals, creepers, crows, dippers, finches, flycatchers, gnatcatchers, grosbeaks, jays, larks, meadowlarks, mockingbirds, nuthatches, orioles, pipits, redstarts, shrikes, sparrows, starlings, swallows, tanagers, thrushes, titmice, vireos, warblers, waxwings, wrens, wrentits.



**Great blue heron**



**Ruby-throated hummingbird**



**Downy woodpecker**

**Chestnut-sided warbler**



**Brown thrasher**



**Evening grosbeak (female)**



**White-winged dove**



There is no one place in North America where all of the continent's bird families are represented at any one time. After talking with your counselor about the birds common to your area and learning which are permanent residents and which just visit your part of the country during migration, you'll want to learn about birds rarely or never found in your vicinity. Study a field guide to the birds of a different region of the United States from your own. If you get a chance to travel to another region of the country, be sure to get a field guide for that area and do some bird watching while you're there. Bird watching is a "take-along" kind of hobby that you can enjoy wherever you are.



# Writing a Bird History

Which of the birds you've identified so far do you find the most interesting? By writing a natural history about a bird of your choice, you'll learn what is known about the bird's habits and way of life. You may even be able to add to the body of knowledge about that species through your own observations.

You are not expected to write a bird history only from personal observation, though you'll want to add notes from your fieldwork if the bird you're writing about is common to your area. Much of the information you'll need for your paper may be found in reference books. Helpful books generally available in libraries are listed in "Books About Birds" at the end of this pamphlet. Here are some of the things to include in your paper.

## Description

What are the bird's common and scientific names? (The scientific name of the California condor, for example, is *Gymnogyps californianus*. The wood duck is *Aix sponsa*. The common name for some birds vary from one locale to another. For example, the cuckoo is called a "raincrow" in some areas. If you have trouble finding the scientific name of the bird you're studying, refer to your field guide or ask a librarian to help you look it up.) What does the bird look like? How big is it, compared with a crow, robin, or sparrow? Does it have any special characteristics by which it can be easily identified? Do males and females look alike? What does the bird's song sound like?

## Habitat

Where does the bird live? Is it a water, shore, or marsh bird? Is it an upland bird? (Upland birds such as quail, pheasants, and wild turkeys often are called game birds because many of them legally can be hunted.) Does it inhabit open fields, woodlands, deserts, prairies, chaparral, or mountains?

## **Feeding Habits**

What does your bird eat? Is it a seed eater, an insect feeder, a bird of prey, a scavenger, or a general feeder? How is the bird's habitat related to its diet? How does the shape of the bird's bill, feet, legs, and wings help it to secure food?

## **Mating and Nesting**

Does the male bird set up a territory and drive away other birds of the same species? If so, how does he do it? When do males begin singing? Do they sing at the same time and from the same place every day? Do they stop singing once the nest is built?

Where is the nest built? On the ground, or above it? How high above ground? How big is the nest? What is its shape? What materials are used? Are there other nests of the same species or of different birds nearby?

How long after the nest is built is the first egg laid? How many eggs are laid? Which parent incubates the eggs? How long does it take for the eggs to hatch? Do all the eggs hatch? Do both male and female feed the young? How often? What do they feed them? How far do they fly to get food?

## **The Young**

How long after hatching is it before the young leave the nest? How long do they stay near the nest? Do the birds seem to have any enemies? Do both adults appear to defend the young?

## **Migration**

Does the bird you're studying migrate? Or is it a permanent resident of one part of the country? If it migrates, when does it arrive at its summer feeding and nesting grounds? Do all birds of its species arrive together in a flock, or over a period of time? Where do the birds migrate from, and to? What route do they follow? Why do they migrate? How does migration allow birds to take advantage of different food supplies, or good breeding and nesting grounds in different areas? When do the birds leave in the fall? Do they form flocks before they leave?

## **Range**

Where is the bird commonly found in North America? How far does it fly? How large is its range?



# Field Trips and Records

Serious bird watchers take notes and keep accurate records. Carrying a notebook and pencil with you at all times makes it possible to keep a record of all the birds you see. Write down everything you notice about a bird. Record the date, time of day, and location of each bird you see. Describe the bird's size, coloring, shape of beak and feet, and habitat type (such as forest, grassland, city park, backyard). Include the kind of tree, shrub, bush, or other perch on which you saw the bird, how high off the ground it was, what it was doing (singing, feeding, nesting, bathing), and anything else you noticed about it. Even if you use a tape recorder to take field notes, you'll want to carry a notebook and pencil to make quick sketches of distinguishing marks or other details you find difficult to describe in words.

If you carry a bird book, you can check your observations directly with the book's description. If you will be using a book in the library, describe the bird carefully and completely in your notes so that you can compare descriptions later. When you identify the bird, write its name in your field notebook.

The records of each field trip that you take should include time of day; length of time in the field; temperature at beginning and end of the trip; wind direction and speed; description of weather; description of the area

AUDUBON  
DAILY FIELD CARD  
of  
BIRDS  
Occurring in North America

Observer \_\_\_\_\_  
Locality \_\_\_\_\_  
Date \_\_\_\_\_ Time \_\_\_\_\_  
Weather \_\_\_\_\_ Wind \_\_\_\_\_

Daily field card

covered; and numbers of each species seen, including the number of males and females, if possible, and any interesting or unusual things you saw.

In addition to your field notebook, you may want to keep a "bird calendar" as a permanent record of the birds you identify. Divide a sheet of paper into four columns, labeling them DATE, NAME, TYPE, and HABITAT. List the common name of each bird you identify, the date you saw it, the type of bird it is (such as waterbird, game bird, bird of prey), and its habitat (forest, grassland, city park, marsh, lake). Some field guides have a place for you to check off each bird as you see it, thus compiling a "life list" as you continue to see and identify new birds throughout your bird-watching career.

## **Birding With a Club**

Since 1900, the National Audubon Society has sponsored Christmas week bird counts. Thousands of bird watchers help with these counts each year. Your counselor may know who organizes the count in your area. If not, write to the Christmas Census Editor, National Audubon Society, 950 Third Avenue, New York, NY 10022. Enclose a stamped, self-addressed envelope.

Birders also may spend a day in May trying to see as many birds as possible. They may spend the entire day, sometimes as long as 20 hours, in the field. If such an event is held in your area, ask your counselor or a local bird club if you may go with them.

## **Visiting a Bird Refuge**

Ask your counselor, local conservation officer, or the outdoor writer of your local newspaper if there is a bird refuge near you. For a list of national wildlife refuges and their locations, write to the Division of Wildlife Refuges, U.S. Fish and Wildlife Service, U.S. Department of the Interior, Washington, DC 20240. For a list of state refuges, contact the parks and wildlife department or fish and game agency of your state.

Before you visit a bird refuge, try to get an appointment with a biologist or wildlife management expert connected with the refuge, who can tell you about the purpose of the refuge and the management techniques used there. Perhaps you and your counselor could arrange for your entire troop to visit the refuge and meet with the biologist.

# Projects

Birds can be attracted to your home in a variety of ways. You can provide plants for food and cover; or provide water, nesting boxes and nesting materials, or feeding stations. Any of these projects will help you enjoy birds in your backyard or outside your window.

## Building a Backyard Sanctuary

There are many plants that are used by birds for food and cover and as nesting sites. You can build a backyard sanctuary by planting trees, shrubs, and other plants to provide natural food and cover year round. This is the best way to gain a population of birds around your house. Habitat improvement is more beneficial to birds than the more temporary and artificial measures of building nest boxes and feeders, although these can be helpful to them as well.

A bird food patch can be established almost anywhere with a little effort. If you live on a farm, an unused corner of a field or an area next to a farm pond would be excellent locations. If you live in a city or suburb, consider using part of your garden or a corner of your backyard as a food patch. The birds will appreciate even a small one.

A food patch must be located near protective cover. Many food-producing plants also provide sufficient cover, thus serving a dual purpose.

Before planting shrubs, vines, or trees to attract birds, check with a horticulture expert who is familiar with your part of the country. No book listing bird-attracting plants can describe what is best for every type of soil, climate, amount of sun or shade, or other local factors. Chapters of the National Audubon Society, garden clubs, nurseries, wildlife refuges, or nature centers are good sources of information about the plants that are best suited to your part of the country. A good place to start is with the conservationist at the local Soil Conservation Service office. Look in the phone book under "United States Government; Agriculture, Dept. of; Soil Conservation Service" for the number of the local field office.

Try to include as many native plants as possible in your plantings. Birds are used to them, they are adapted to the climate of your area, and they probably will require less care and less water than "exotic" plants not normally found in your part of the country. Briar patches, brushpiles, thickets, and evergreen windbreaks provide shelter and cover for many



birds. Keep in mind that a variety of foods will attract the greatest variety of birds, and remember that water and cover must be readily available to birds before they will use a food patch.

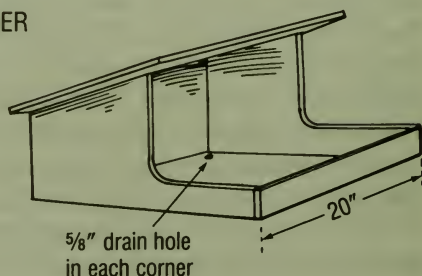
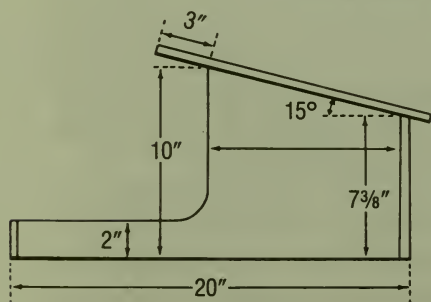
## Building a Bird Feeder

A feeder will attract birds and make it easier to observe them. More importantly, it will provide food for them, especially during the winter. Natural foods probably will be available in the spring, summer, and fall; birds may not use your feeder much during those seasons. Follow these guidelines when setting up a bird feeder.

- Locate the feeder near your house so that you can watch the birds and keep an eye on the food supply.
- Place the feeder near cover, such as bushes, trees, or shrubs.
- Place the feeder out of the reach of dogs, cats, and squirrels. If it is on a post, pole, or tree, put a metal shield below it to keep cats and squirrels away. Place the feeder so that cats cannot jump on it from fences, trees, or other perches.
- Keep food in it at all times in the winter. Birds will start to depend on it after they begin using it, and may starve to death if you stop feeding them before buds and insects appear in the spring.

Stock your feeder with a variety of foods to attract a variety of birds. The chart tells what foods to put out to attract which birds. Birdseed is available at most supermarkets, garden supply stores, and seed and feed dealers. Homemade food mixtures are as good as commercial ones and are less expensive. If the food becomes spoiled or moldy, remove it from the feeder. Also, place some food on the ground under or near the feeder to attract birds such as quail and doves.

SHELTERED FEEDER



Materials:  
1/2" plywood—1 piece 2' x 4',  
1 piece 1' x 2'; waterproof  
glue; 1 1/2" nails.  
Mount on post.



### **Winter Food**

Mixed seed (hemp, millet, Kaffir corn, cracked corn, sunflower seed, peanut hearts)

Sunflower seeds

Cut-up pieces of fruit such as apple or banana, wild fruit such as bayberry currants

Suet (hard beef fat)

Peanut butter mixed with cornmeal, nutmeats

Breadcrumbs, doughnuts, cold cereals

Sugar water

### **Birds That May Be Attracted**

Chickadee, titmouse, cardinal, goldfinch, blue jay, house sparrow, starling, mourning dove, white-throated and song sparrows, junco, brown thrasher, catbird, cowbird, red-winged blackbird, grackle, purple and house finches

Chickadee, cardinal, goldfinch, nuthatch, blue jay, downy woodpecker, evening and pine grosbeaks, house finch, purple finch

Downy, hairy, and redheaded woodpeckers; bluebird; California and brown thrashers; mockingbird; robin; flicker; myrtle warbler; cedar waxwing; orioles; tanagers

Chickadee, tufted titmouse, downy and hairy woodpeckers, red-breasted and white-breasted nuthatches, brown creeper, flicker, red-winged blackbird, kinglet

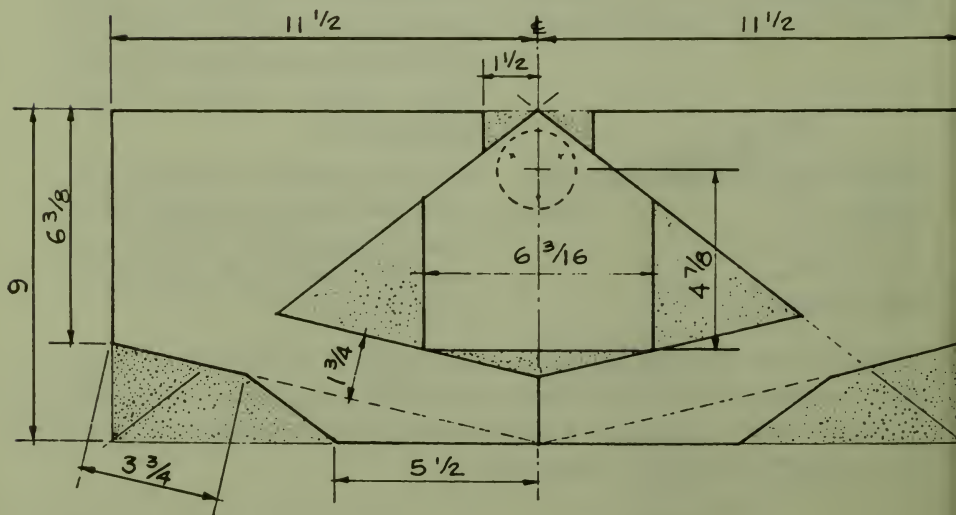
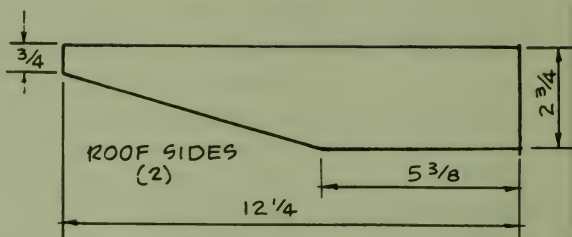
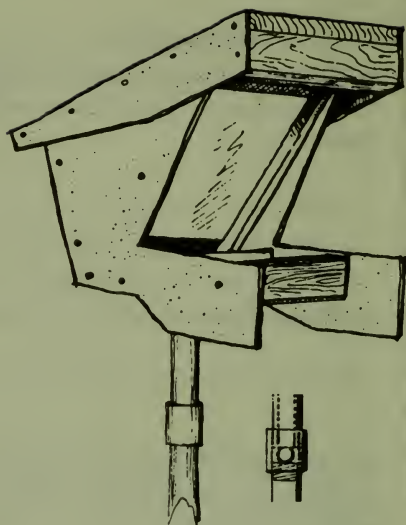
White-breasted nuthatch, downy woodpecker, chickadee, blue jay, titmouse, house and purple finches, pine and evening grosbeaks, cardinal, catbird, starling, house sparrow

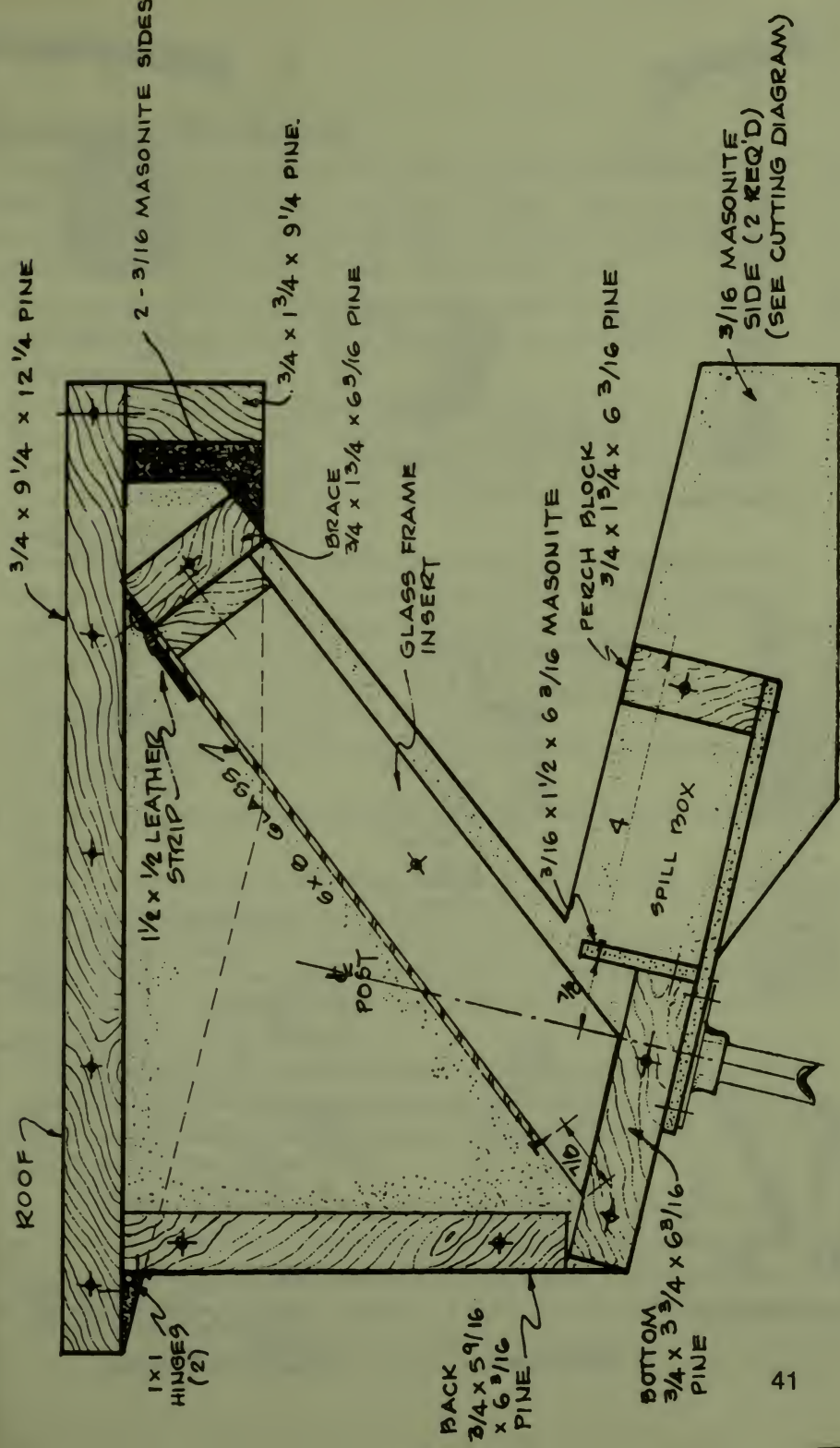
Blue jay, chickadee, titmouse, cardinal, woodpeckers, Carolina wren, brown thrasher, mockingbird, catbird, sparrows, purple finch, junco Hummingbirds

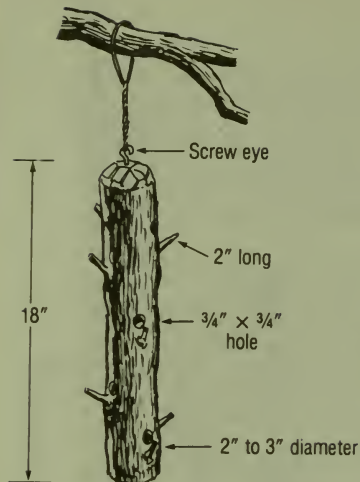
Several types of simple bird feeders are shown in this chapter. A scientific one designed by Ernest Kuhnel of Agawam, Massachusetts, is shown on pages 40-41. It turns like a weathervane, on an ordinary marble, to protect the birds even in a snowstorm.

The drawing shows how to cut both sides of the feeder and the bottom of the spill box out of one piece of masonite. The bottom will be two pieces to let moisture drain out.

The mounting is made with a  $\frac{1}{4}$ -inch pipe flange and a  $\frac{1}{4}$ -inch x 4-inch nipple mounted on the feeder. The standard is made from a 5-foot length of  $\frac{1}{2}$ -inch pipe, a  $\frac{1}{2}$ -inch coupling, and a  $\frac{1}{2}$ -inch x 3-inch nipple. The inset shows how a marble is used as a bearing.







Log suet feeder



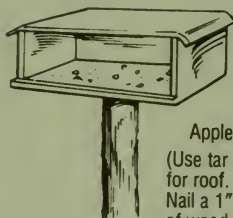
Coconut shell



Pine cone  
(Spread peanut butter over opened pine cone and hang from branch.)



Suet cage  
(Tack a small piece of  $\frac{1}{2}"$  hardware cloth to tree and add suet chunks.)



Apple box  
(Use tar paper for roof. Nail a 1" piece of wood across front to keep food from spilling.)



Simple shelf

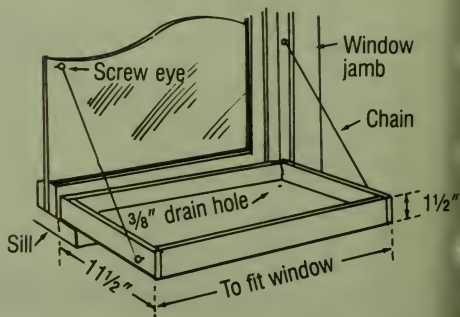


Sheet-metal tree guards



Plastic jug

## WINDOW SILL FEEDER



Materials:  
 $\frac{1}{2}"$  to  $\frac{3}{4}"$  plywood,  $\frac{1}{4}"$  plywood strips for edges,  $1\frac{1}{4}"$  nails, waterproof glue, 3' small link brass chain, 4 screw eyes or hooks.  
Mount on south side of house.

## Bird feeders



## Building a Birdhouse

A birdhouse will attract birds and make it easier to study their nesting habits. A well-built birdhouse should be durable, rainproof, cool, and easy to clean. The illustrations shown here will give you ideas for building different kinds of birdhouses. Follow these general rules.

- Make nest boxes and birdhouses for specific birds, such as wood ducks, chickadees, house wrens, or bluebirds. Do not make “just any old birdhouse.”
- Do not build apartment houses, except for purple martins.
- Make the hole to fit the bird. The chart in this chapter lists the proper house dimensions for several bird species, the height of the entrance hole above the house floor, and the height at which the house should be placed above the ground.
- Wood is the best building material; do not use metal, including tin cans, because it gets very hot in the sun. Cypress, pine, or yellow poplar are easy to work with. Painting makes birdhouses more durable; most birds like dull colors, so use brown, gray, or dull green paint.
- Do not set up too many boxes in a small area. Three or four to an acre, widely separated, is the most the birds will use.
- Do not hide boxes in dense foliage. They should be placed in the open or in open shade.
- Set up boxes so that the entrance holes face away from prevailing winds.
- Clean out houses after each nesting. Make bird boxes that are easily cleaned by using a hinged door, floor, or roof.
- Build bird boxes that are well ventilated and well drained. Slits or small holes drilled under the roof let air circulate and keep the house cool. Slant the roof to shed water. You may drill small holes in the bottom to drain any water that does get in.
- Roughen or groove the inside of the box under the entrance hole to help young birds climb to the opening when they are ready to leave. Perches at the entrance holes are unnecessary; in fact, they may help enemies get inside the birdhouse.

If a pair of birds decides to use your birdhouse, that will give you a great opportunity to study their nesting habits. Record the birds' common name and your observations of their nesting behavior. Note the materials used in the nest; which bird (male, female, or both parents) builds the nest,

## Nesting Box Specifications

Bird	Floor Size	Height of House	Height of Hole Above Floor	Diameter of Hole	Height of House Above Ground
Eastern, mountain, and western bluebirds. (Place the house in a sunny place.)	5" x 5"	8"	6"	1½"	5'–10'
House wren, Carolina wren. (For Carolina wren make hole 1½". Set houses out in early spring, not too close together.)	4" x 4"	6"–8"	6"	1"	5'–10'
Chickadee, nuthatch, titmouse, downy woodpecker. (For chickadee, make hole 1½". These birds prefer bark-covered boxes. For downy, put wood chips in bottom.)	4" x 4"	8"–10"	6"–8"	1¼"	5'–15'
Tree swallow, violet-green swallow. (Place houses in open on post.)	5" x 5"	6"	5"	1½"	5'–15'
Crested flycatcher. (Nail bark over house and place in woods or orchard.)	6" x 6"	8"–10"	6"–8"	2"	8'–20'
Flicker. (Make box of wood at least an inch thick. Place wood chips in bottom, place box in woods.)	7" x 7"	16"–18"	14"	3"	8'–20'
Wood duck. (Place house on pole or pipe driven in mud of pond or lake bottom or on tree at water's edge. Place 4" of sawdust in bottom and tack screening inside the front so young ducks can climb out.)	10" x 10"	28"	20"	3" x 5" (oval-shaped)	6'–20'
Robin	6" x 8"	8"	*	*	6'–15'
Barn swallow	6" x 6"	6"	*	*	8'–12'
Purple martin	6" x 6"	6"	1"	2½"	15'–20'
Song sparrow	6" x 6"	6"	†	†	1'–3'
Phoebe	6" x 6"	6"	*	*	8'–12'
Red-headed woodpecker	6" x 6"	12"–15"	9"–12"	2"	12'–20'
Screech owl	8" x 8"	12"–15"	9"–12"	3"	10'–30'

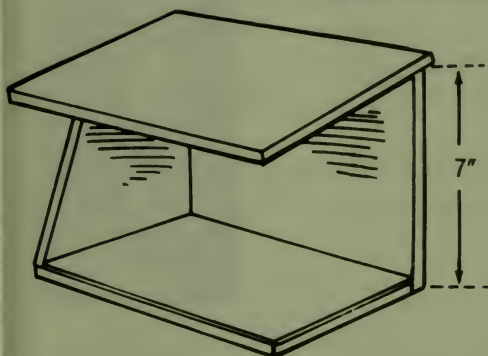
\* One or more sides open

† All sides open

Robins will nest in shelters made with one or more sides open.

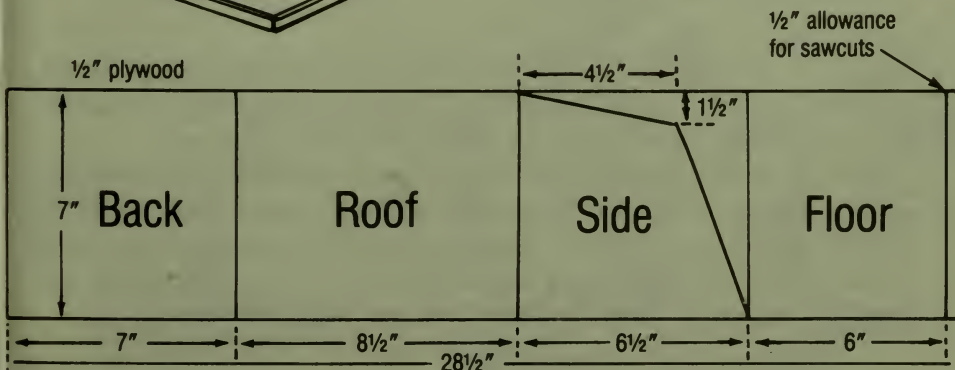


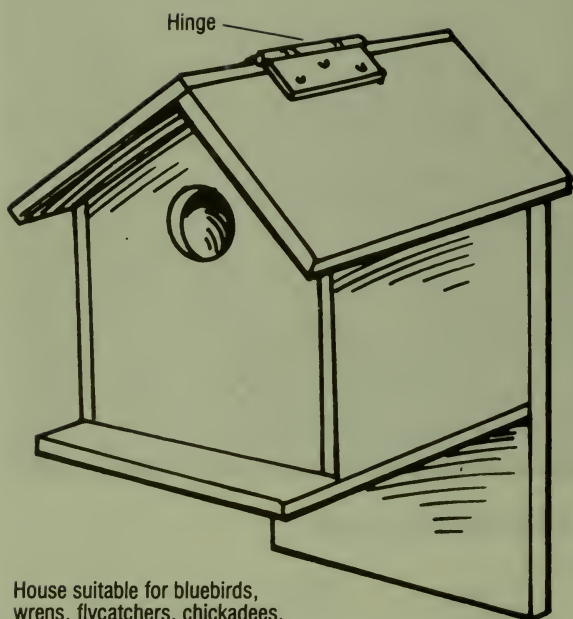
### ROBIN NESTING SHELTER



#### Notes:

1. There is only one side.
2. Roof hangs over sides and front.
3. To assemble—
  - a. Nail through back into floor.
  - b. Nail through side into floor and back.
  - c. Nail through roof into side and back.





House suitable for bluebirds, wrens, flycatchers, chickadees, titmice, and others.

Eastern bluebird



incubates the eggs, and feeds the young; and what the young are fed. Record the number of eggs and young, and the length of egg incubation. Do not scare the parents away by getting too close to the nest!

You may provide nesting materials for the birds. Robins, phoebes, and some swallows use mud in their nests, so make a small mud puddle for them. Put out 6-inch lengths of string or yarn, bits of grass and moss, tufts of horsehair, combings from a long-haired dog, cotton, wool, straw, and small, soft feathers. Observe which birds use these materials.



## Photographing Birds

If you are not a photography hobbyist, you may not want to attempt this project. If you are reasonably experienced and have good equipment, it should not be too difficult to get some good bird photos, particularly if you take pictures at a feeder or birdbath.

You will need to hide behind a blind or use a cable release to trip the shutter from some distance away. Your camera should be able to take pictures at a shutter speed of at least  $1/100$ th of a second; the faster the shutter speed, the less blurred your photos will be. Unless you have a telephoto lens, you should use a supplementary lens, called a portrait attachment. Ask your camera dealer how to use it. Carefully read the instructions that come with it.

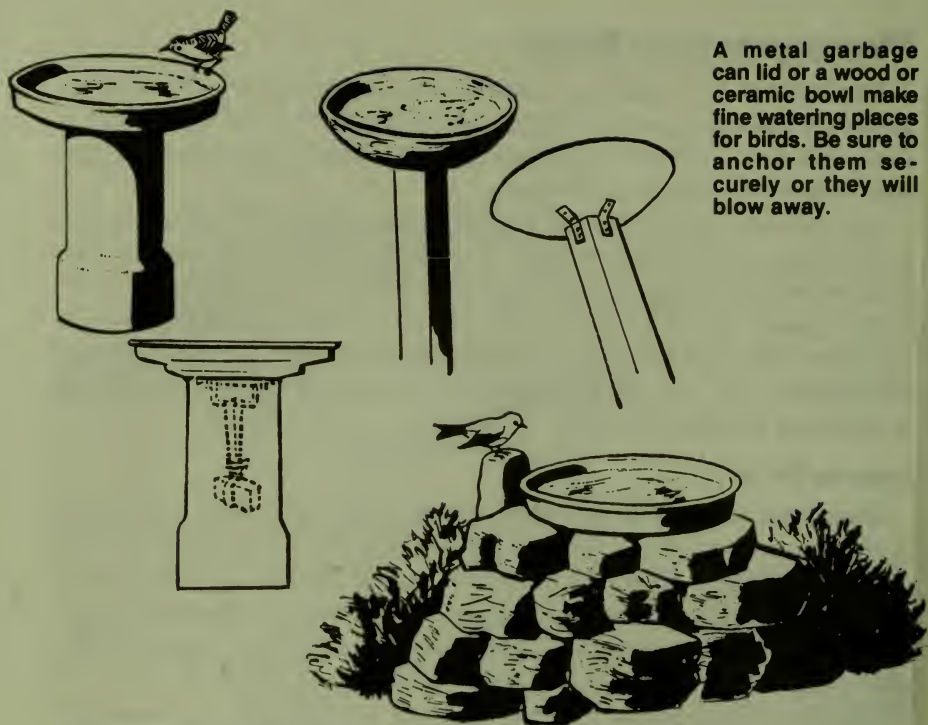
### How to Do It

When birds start using your feeder or birdbath regularly, you are ready to try for a picture. Pick a clear, sunny day unless you use a flash. Set the camera on a tripod so that the sun shines from behind the camera directly on the feeder or birdbath. This is especially important with color film.

Focus the camera on the part of the feeder or bath where birds usually alight first. Use a fast shutter speed— $1/100$ th to  $1/500$ th of a second. Open your lens accordingly, cock the shutter, and rig up the cable release. Hide where birds cannot see you, but where you have a good view of the feeder or birdbath. Wait for a bird to face the camera or stand so that you can get a profile. Trip the shutter; then advance the film, and get ready for the next picture.

The percentage of good pictures will be small, but the thrill of getting just a few good ones is worth all the effort.





A metal garbage can lid or a wood or ceramic bowl make fine watering places for birds. Be sure to anchor them securely or they will blow away.

## Building a Birdbath

Summer is the best time to observe a birdbath, although birds need water for drinking and bathing throughout the year and will use a bath at any time of year. If you place one just outside a window near a large shrub or other cover, you will see many interesting things and may get some good pictures.

Make the birdbath fairly large, shallow (1 to 2 inches deep), and easy to clean. Place it near protective cover. Give its sides a gradual slope, and leave the edges and bottom rough to provide sure footing. Change the water at least once a week.

Birdbaths can be ready-made or homemade. The illustrations in this chapter show several ways to build waterers for birds. You can place half of an old truck tire on the ground, or surround a cement-lined depression in the ground with rocks. Set a metal garbage can lid (birds tend to slip on plastic) on three or four posts of equal length and tie it down. Place one or two large, flat rocks in the lid to provide sure footing and a choice of water depths while birds are bathing. A shallow, gravel-lined cake pan or an old wooden bowl works well, too.

# Birds of Prey

Quite a few birds catch and eat other animals. Loons, pelicans, cormorants, herons, bitterns, mergansers, ospreys, and kingfishers eat fish. Hawks such as the red-tailed, red-shouldered, broad-winged, and Swainson's live chiefly on small rodents, although they also eat snakes and a few birds. Some hawks, such as the sharp-shinned and Cooper's, and falcons, eat other birds. Owls such as the barn and long-eared live on rodents.

**Eastern belted kingfisher**



**Barn owl**



**Cooper's hawk (immature)**



Some people believe birds of prey kill many domestic and game birds. Actually, these birds seldom steal poultry or kill game birds. Their usual diet consists of rats, mice, insects, and carrion (dead animals). So these birds are useful to us and should not be killed.

The purpose of requirement 8a is to show you these birds' places in the world of nature. Birds of prey have an important role in the food chain for animals living in a natural area. Plant life is the base of this chain; many animals eat only plants. As you go up the chain, animals eat animals that eat plants. There are fewer animals at each step. At or near the end of the chain are the hawks, owls, herons, ospreys, and other large birds that eat only smaller animals.

Wherever you study the relationships of wild animals, you usually will find they form a well-organized community. There will be many small plant-eating animals and fewer of the large predatory types.

The numbers won't stay the same. One animal will be plentiful, then another. The plant-eaters will not get so abundant that they destroy the plants they live on. When they get too numerous, their enemies have good hunting, catching the prey easiest to find. When populations of mice or ground squirrels are high, for example, hawks and owls will increase to feed on them.

The meat-eaters, however, do not increase to the point that they wipe out the animals they feed on. When meat-eaters get too abundant for their food supply, they move away from the area, die of starvation and disease, or stop having young until their numbers fall back in line with the numbers of the animals they eat.

Meat-eating birds play an important role in the world of nature. They help keep the populations of other animals under control and eliminate sick or unhealthy animals. Animals are healthier and produce more young after they have been thinned out.



An eagle's talon



# Bird Migration

The maps in this chapter show the major *flyways* of North America and some of the birds that use each. These flyways are the four main routes followed by North American birds when they migrate. Migration allows birds to take advantage of different food supplies during different parts of the year. For example, food may be most plentiful in the south during the winter and in the north during the summer.

Migration allows birds to take advantage of good breeding areas. Many shorebirds spend the winter in South America and migrate to Canada and Alaska in the summer to build nests and raise their young. Although many birds live in North America all year, there are many others that just spend the winter here or pass through on their way to the tropics each fall and back again in the spring.

Many birds migrate during the night and stop to rest and feed during the day. Others are daytime migrators. Individual birds follow the same migration routes and begin migrating at about the same time each year. Most return to the same area each year.

## Birdbanding

Banding is the method biologists use to learn about the migratory habits of different birds. The bands identify individual birds and help scientists to find out how long birds live in the wild and to determine their movements.

Birds are captured in traps or almost invisible nylon nets (mist nets). Aluminum bands are attached to their legs. On each band is a number and instructions such as "Notify F & W S, Washington, D.C." As each bird is banded, a record is made of the band number, date, place, species of bird, sex if known, age if known, condition of the bird (such as fat deposits and condition of feathers), and the name of the bander. The birds are released to return to the wild, and the records are sent to a central office.

Birdbanding is critical to the scientific study of the movements and behavior of birds. Research workers can obtain facts about birds that can only be learned by this method. Its success depends upon getting a sufficient number of individuals of a particular species banded at a particular time and place so that, when they are recaptured or found dead, the information will fill the gaps in our knowledge.



**Banding a duck**

Birdbanding requires special permits, granted only to specialists conducting studies.

Banded birds are recovered in several ways. Some birds—ducks and geese, for example—are shot by hunters who return the bands to the banding agency. Other banders may get some birds that have been banded before. They report the date, place, band number, species, and other important information to the central office. Some birds die and are found. The band numbers are reported.

In all these ways, the data is reported to the banding agency. The results are analyzed by modern data-processing methods. Migration patterns of a species, its population turnover, and many facts about its behavior and life history can be determined. Much of what is known about migration—long-range (Arctic to South America) or short-range (only a few miles)—is the result of birdbanding programs.

Pacific flyway





## Mountain flyway





Mississippi flyway



## Atlantic flyway



# Extinct and Endangered Birds



Whooping cranes



Since the first colonists arrived in North America, five birds have become extinct and many species have declined. In Hawaii, 26 birds have become extinct and 30 others are threatened with extinction.

The birds became extinct or endangered as a result of human activities—overhunting, altering habitats birds need for survival, or introducing a predatory animal or a disease against which a bird has no defense.

---

## Extinct and Endangered Birds of North America

### Extinct

Great auk—1844  
Labrador duck—1875  
Carolina parakeet—1914  
Passenger pigeon—1914  
Heath hen—1932

### Endangered

Short-tailed albatross  
Masked bobwhite  
California condor  
Mississippi sandhill crane  
Whooping crane  
Eskimo curlew  
Mexican duck  
Fulvous tree duck  
Bald eagle  
American peregrine falcon  
Arctic peregrine falcon  
Aleutian Canada goose

Hawaiian goose (nene)  
Snail (Everglade) kite  
Thick-billed parrot  
Brown pelican  
Attwater's greater prairie chicken  
Montezuma (harlequin) quail  
California clapper rail  
Light-footed clapper rail  
Yuma clapper rail  
San Clemente loggerhead shrike  
Cape Sable seaside sparrow  
Dusky seaside sparrow  
San Clemente sage sparrow  
Santa Barbara song sparrow  
California least tern  
Golden-cheeked warbler  
Bachman's warbler  
Kirtland's warbler  
Ivory-billed woodpecker  
Red-cockaded woodpecker

---

## Great Auk

This bird looked something like a penguin. It nested from Newfoundland to Labrador. Each fall it migrated down the Atlantic coast, and each spring it would swim back to nest. The great auk could not fly.



Unfortunately, the bird's thick plumage was almost like fur and made excellent bedding. The eggs and meat of the great auk were good to eat. They were easily killed with clubs. The last nesting pair was killed in 1844.

## **Labrador Duck**

The reason for this bird's becoming extinct has never been fully determined. This duck evidently was rare even in historic times and was seldom taken by market hunters. Its flesh was considered inferior for eating. It had a peculiarly shaped bill, which suggests that it may have been adapted to eat a specialized type of food. Loss of habitat or food supply might have been the cause of extinction. The last one died in 1875.

## **Carolina Parakeet**

This native parrot of the United States lived in large flocks in the southeastern and southern parts of the country. Although primarily a bird of heavily forested swamps, it occasionally raided fruited orchards. A slow-flying bird, and an easy target, its plumage was prized by feather hunters. It probably became extinct because of overshooting and capturing for the pet market. The last one died in 1914.

## **Passenger Pigeon**

This large pigeon once numbered in the billions. There were so many of these birds 150 years ago that they almost blacked out the sun as they flew by. Several factors contributed to its becoming extinct—its flesh was excellent to eat, it made an excellent target, and its feathers were used in mattresses and pillows.

Another important factor was that this pigeon was a "colonial" bird, nesting in large flocks in the northern Great Lakes timber country. Hundreds of thousands of trees were cut there during the 1800s.

Hunting and the destruction of its nest sites reduced its numbers from billions to hundreds. At that point the bird could not recover. The last wild bird was shot in 1900; the last bird in captivity died in 1914.

## **Heath Hen**

This bird, closely related to the prairie chicken, once was found over much of New England's coastal area. It, too, was hunted heavily, and its natural habitat was destroyed by humans. Finally, about a hundred of the birds remained on Martha's Vineyard. A combination of fires and wildcats is said to have caused its end. The last one was seen in 1932.

## **Whooping Crane**

This large bird once ranged over much of the Midwest and Canada; now it numbers about 120 wild birds. It nests in northern Canada and winters on the Gulf Coast of Texas. The whooping crane has suffered heavily from hunters. But more importantly, its former nesting range has been changed drastically by humans. The draining of potholes and marshes and the plowing of prairies have cut down its nesting area tremendously. A concentrated effort has been made by conservationists to save this bird.

## **Ivory-billed Woodpecker**

Once nesting from Oklahoma to North Carolina and south, this largest North American woodpecker has dwindled to only a few nesting pairs and was once thought to be extinct. This bird is dependent on spacious tracts of large trees and standing deadwood for food and nest sites. Cutting of the mature hardwood forests almost eliminated its nesting and feeding areas.

## **Everglade Kite**

This bird now lives only in a small part of Florida. It feeds on a single species of freshwater snail. Drainage of lakes and marshes together with marsh fires have destroyed much of the kite's food supply. This species is numerous in South America.

## **Attwater's Prairie Chicken**

This is a bird of the prairie country of Texas and is closely related to the extinct heath hen and the more numerous northern greater prairie chicken. Cultivation and grazing of the tall grass prairie is believed to be the cause of its decline. Destruction of its nesting and feeding areas has reduced its numbers to about 1,300.

## **California Condor**

This large member of the vulture family once ranged from Oregon to Mexico along the western side of the Rocky Mountains. Now only about 40 to 60 birds remain, mostly in Los Padres National Forest in California. This shy bird reproduces slowly, laying one egg every 2 years. Slow reproduction, human disturbance, shooting, and poisoning are responsible for its decline.



## **Nene or Hawaiian Goose**

The state bird of Hawaii was reduced to about 50 in the late 1800s. Its natural habitat was destroyed by cows, sheep, and goats; it was killed by other animals that had been taken to the islands by settlers from the United States; and it was hunted heavily. Protection, predator control, and propagation of captured birds have helped. There are now about 285 birds.

## **Aleutian Canada Goose**

This small Canada goose once nested widely over the Aleutian Islands off Alaska. Thought to be extinct, a small colony was discovered in 1963. Rats and foxes introduced on its nesting islands caused its decline.

## **Eskimo Curlew**

This bird is near extinction. Only occasional individuals are reported every few years. It nested above the Arctic Circle, migrating in August to South America and the Argentine pampas. In the spring it flew north through the central United States prairies to the Arctic Circle. Changes in agricultural practices in the pampas, in the Mississippi Valley, and in the western plains of the U.S., along with hunting, are believed to have caused its decline.



# Books About Birds

Recommended by the American Library Association's Advisory Committee to Scouting

*Attracting Birds*. U.S. Fish and Wildlife Service, Washington, DC 20240. Feeding, supplying water, protecting. Write for information on obtaining copy.

Audubon, John James. *The Birds of America*. Macmillan, 1950.

There are several editions of the famous 19th-century painter's 435 bird portraits.

*Audubon Society Master Guide to Birding*, 3 vols. John Farrand, Jr., ed. Knopf, 1983.

Excellent pictures of immature birds and female birds.

Bull, John, and Farrand, John, Jr. *Audubon Society Guide to North American Birds: Eastern Region*. Knopf, 1977.

Pocket-size collection of North American bird photographs, including species descriptions and habitat preferences with descriptions of nests and eggs.

Davison, Verne E. *Attracting Birds: From the Prairies to the Atlantic*. Crowell, 1967.

Food preferences, feeders, and an extensive list of birds, what they eat and where they nest.

Forbush, Edward Howe. *A Natural History of American Birds of Eastern and Central North America*. Houghton, 1955.

Illustrations by Fuertes, Brooks, and Peterson. If you are lucky, you also may find Forbush's *Birds of Massachusetts* in three large volumes, with never-surpassed paintings and a wealth of information on each species.

Halliday, Tim. *Vanishing Birds: Their Natural History and Conservation*. Holt, 1978.

General discussion of vanishing birds in North America, New Zealand, Europe, and Australia. Includes current conservation programs.

Harrison, George H. *The Backyard Bird Watcher*. Simon & Schuster, 1979.

Planning feeding stations and backyard habitats, water, when and how to help injured birds, photographing birds, and a birding calendar. List of birding organizations; bibliography. Comprehensive source.



Harrison, Hal. *A Field Guide to Birds' Nests in the United States East of the Mississippi River*. Houghton, 1975.

Photographs of nests and eggs of 285 eastern species with breeding ranges and nesting habitats.

Hickey, Joseph J. *A Guide to Bird Watching*. Dover, 1975.

Not a field book; Hickey carries on where Peterson leaves off. Notes on selecting field glasses, how to learn birdsongs, and taking field notes are especially useful. Extensive bibliography with notes.

Kitching, Jessie. *Birdwatcher's Guide to Wildlife Sanctuaries*. Arco, 1976.

A directory to preserves in the United States and Canada, with lists of unusual species seen and directions for visiting.

Kress, Stephen W. *The Audubon Society Handbook for Birders: A Guide to Locating, Observing, Identifying, Recording, Photographing and Studying Birds*. Scribner, 1981.

Comprehensive, illustrated handbook provides information on all birding techniques.

Laycock, George. *The Birdwatcher's Bible*. Doubleday, 1976.

A compendium of activities including photography, song recording, banding, and counts; equipment, a sample life list, and many other useful pointers.

Lloyd, Glenys and Derek. *Birds of Prey*. Grosset, 1970.

Vultures, hawks, eagles, and owls; longer notes than other field books.

Peterson, Roger Tory. *The Birds*. Time-Life, 1973.

Natural history of birds: anatomy, life cycle, migration, and environment.

Peterson, Roger Tory. *A Field Guide to Birds East of the Rockies*. Houghton, 1980.

The Peterson guides are the most basic, widely respected handbooks in the field. Identifies birds from field marks, range, habits, and manner of flight. How to avoid confusing similar species. Describes birdsongs. *Field Guide to Bird Songs*, on record or cassette, also available.

Peterson, Roger Tory. *A Field Guide to the Birds of Texas and Adjacent States*. Houghton, 1979.

See above.

Peterson, Roger Tory. *A Field Guide to Western Birds*. Houghton, 1972.

See above.

Pough, Richard H. *Audubon Water Bird Guide: Water, Game and Large Land Birds*. Doubleday, 1951.

Habitats of North American birds with a discussion of voice, nest, eggs, and range.

Robbins, Chandler, et al. *Birds of North America: A Guide to Field Identification*. Golden Press, 1966.

Clear, color illustrations and unusual songagrams, "pictures" of the bird's song.

Torres, John K. *Songbirds in Your Garden*. Dutton, 1980.

For 30 years this has been a standard work on how to attract birds.

Includes regional notes.

Wetmore, Alexander. *Song and Garden Birds and Water, Prey and Game Birds*. National Geographic, 1975.

Two volumes boxed with recordings. Handsome photographs.

Zim, Herbert S. *Birds: A Guide to the Most Familiar American Birds*. Golden Press, 1956.

A widely available field guide containing descriptions of 129 birds.

## Acknowledgements

The Boy Scouts of America wishes to acknowledge the contributions of Rhea Copening, National Audubon Society; the Texas Agricultural Extension Service; and Rosalie Cutrer; and the work of Deborah L. Sizemore, science and agriculture writer, in this revision of the *Bird Study* merit badge pamphlet.

### Photo Credits

#### Through the National Audubon Society

A. W. Ambler—starling, 30. Allan D. Cruickshank—red-shafted flicker, cover, gilded flicker, 13, barn swallow, 17, downy woodpecker, 32, cactus wren, 29, song sparrow, 30, robin, 29, yellow-billed magpie, 30, great blue heron, 32, purple grackle, 30, eastern kingbird, 29, road-runner, 30, brown thrasher, 32, chestnut-sided warbler, 32, eastern bluebird, 46. Hugh M. Halliday—tree swallow, 30. Hal H. Harrison—ruby-throated hummingbird, 32. Karl H. Maslowski—mourning dove, 12. D. Muir—eastern meadowlark, 11. Charles J. Ott—female spruce grouse, 15. Leonard Lee Rue, III—tufted titmouse, 29. Alvin E. Staffan—eastern belted kingfisher, 49. Pat Witherspoon—brown-capped rosy finch, 16.

#### Through the U.S. Department of the Interior, Bureau of Sports Fisheries and Wildlife

Nene, 61, brown pelicans, 14, barn owl, 49, duck banding, 52, white-winged dove, 32, blue-winged teal, 30, Cooper's hawk, 49, whooping cranes, 57, and eagle's talon (Luther A. Goldman), 50.













