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Nebraska 4-H Bird Club Manual : Extension Circular 5-01-2

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E.C. 5-01-2

EXTENSION CIRCULAR 5-01-2
SEPTEMBER, 1938



Nebraska
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LINCOLN, NEBRASKA
**4-H BIRD CLUB
MANUAL**



THE UNIVERSITY OF NEBRASKA
AGRICULTURAL COLLEGE EXTENSION
SERVICE AND UNITED STATES
DEPARTMENT OF AGRICULTURE
COOPERATING.
W. H. BROKAW, DIRECTOR, LINCOLN



CLUB MOTTO:
To Make the Best Better

CLUB COLORS:
Green and White

CLUB EMBLEM:
The four-leaf clover with an H on each leaf

CLUB PLEDGE:
I pledge
My Head to Clearer Thinking
My Heart to Greater Loyalty
My Hands to Larger Service
and
My Health to Better Living
for
My Club, My Community, My Country.

Printed first in September, 1938, and reprinted with additional matter on certain pages in August, 1939.

Nebraska 4-H Bird Club Manual

By M. H. SWENK¹

THE material in this circular has been prepared to aid Nebraska 4-H bird clubs. It contains an outline of activities suitable for each month and descriptions of 58 birds. The descriptions of the birds have been arranged so that a few may be given special study each month. The objectives of the club are:

- To learn the economic value of birds through a study of food habits.
- To become familiar with Nebraska laws that protect birds.
- To learn to appreciate birds and encourage bird life on the farm.
- To learn to describe a bird so that it may be recognized by others.

A charter will be issued when the standard requirements as outlined in the program are met, with local leader and officers functioning. A seal is issued for the charter when the program of the year has been completed, including: at least six meetings, a judging contest, a public demonstration, an exhibit of products, an achievement day, the filing of a final report by at least 60 per cent of the enrollment. Certificates are awarded annually to individuals who have met these requirements:

Identified 30 birds by sight, 10 by call, and 6 nests the first year; the second year, identified 20 birds by sight, 5 by call, and 4 nests, all in addition to those of the first year.

Attended at least four bird hikes, of which one or more were in the early morning (each year).

Built a bird house (each year).

Made a bird lunch counter or built feeding quarters for game birds (each year).

Made a bird bath or planted trees and shrubs to make a cover for birds (each year).

THE best time to begin the study of birds is in the late fall or winter. There are fewer kinds of birds about at this time, the leafless trees and shrubs permit them to be seen more easily, and there are but few immature birds with puzzling plumage to be encountered at this season of the year. Most of the birds to be seen in November are *resident* species, that is, kinds of birds that are present in the same locality the year round. Some may be *winter residents* and *winter visitors*—birds that either regularly or occasionally spend all or part of the winter with us, summering to the northward—and possibly a few kinds of late fall *migrants*, some perhaps delayed in their migration. Our chief interest, at least at the beginning of our bird studies, will be with the resident birds.

Like the peoples that inhabit the earth, birds are divided into families. Each family is chiefly distinguished by the characteristics of its body structure and form, but the families differ also in the size, food, nesting habits, and migration of their members. In these families there are many varieties

¹ Acknowledgment is due to Pearl M. Nelson and to R. T. Prescott for their work in bringing this material into publishable form.

(species and subspecies), and each variety has its own particular markings that enable its identification. Below is a list of the number of varieties of Nebraska birds in each of fifty-nine families found in the state. In all there are 479 varieties. The names of the families of introduced birds (birds that are not native to Nebraska) are marked with an asterisk (*).

Loons 3	Other Owls 15
Grebes 5	Whippoorwills, Nighthawks 6
Pelicans 2	Swifts 2
Cormorant 1	Humming Birds 3
Water Turkey 1	Kingfisher 1
Man-O'-War Bird 1	Woodpeckers 17
Hérons 13	Flycatchers 17
Wood Ibis 1	Larks 5
Ibises 3	Swallows 7
Swans, Geese, Ducks 41	Jays, Crows, Magpies 12
Vultures 2	Titmice 3
Kites, Hawks, Eagles 21	Nuthatches 3
Falcons 8	Creepers 2
Grouse 6	Dipper 1
Partridge * 1	Wrens 10
Bob-whites 2	Mockingbirds, Thrashers 6
Pheasant * 1	Thrushes 15
Turkey 1	Gnatcatchers, Kinglets 3
Cranes 3	Pipits 2
Rails 8	Waxwings 2
Plovers, Turnstones 8	Shrikes 4
Snipes, Sandpipers 29	Starling * 1
Avocets, Stilts 2	Vireos 10
Phalaropes 3	Warblers 49
Jaegers 3	Bobolinks, Meadowlarks, Blackbirds,
Gulls, Terns 15	Orioles 15
Auk 1	Tanagers 3
Doves, Pigeons 2	Grosbeaks, Buntings, Finches,
Parrot 1 (extinct)	Sparrows 73
Cuckoos 2	English Sparrow * 1
Barn Owl 1	

As we go about our work in the gardens and fields, in the orchards and woods, and among the trees around our homes, many of us fail to realize how much there is to be learned about the birds that live there. Hundreds of them cross our paths, perhaps unnoticed, every day during the spring and summer seasons, and many remain with us through the fall and winter. They are our friends and are worthy of consideration. Birds and flowers add tremendously to the joy of living and to the atmosphere of culture of any home. If we would have beautiful flowers we must plant and cultivate them. If we would have birds we must make our home surroundings attractive to them. This we can do by providing nesting places and planting the fruit-bearing shrubs and trees that not only provide nesting places but are a source of food. Most animals like to secure their food close at hand and birds are no exception. For example, a mulberry tree in the orchard will go a long way toward saving a cherry crop from fruit-eating birds. Table 5 (page 34) will give you some helpful suggestions for attracting birds.

November

THE first meeting of the Club should, if possible, be held during the month of November. The first thing to do in organizing a 4-H Bird Club is to elect the officers who are to serve during the year. One of these should be a president, whose duty it is to preside at the club meetings. There may also be elected a vice-president, to take charge of the club meetings at such times as the president cannot attend. There should be a secretary, who will keep a record of what is done at the meetings and conduct any necessary correspondence in the name of the club. If there are to be any club dues, a treasurer should also be elected to take care of the money and to keep accounts.

At the first meeting of the club, each member should write down a list of all the different kinds of birds that he or she knows by name. The members may then compare their lists and determine how many kinds of birds are known by name. Each member should save his own list of names, and as he learns to recognize those which he now knows only by name, he may check them on his list. And when he learns to recognize and name birds not on his list, he may add them. The list at the end of the year will constitute the "Year Bird List" of the individual member. From that time on, as new birds are added, the list becomes a "Life Bird List."

The principal project for the month of November is to construct, put up, and provision some kind of a bird "lunch counter." During the late fall and winter the natural food supply of our resident birds is at its lowest point. For that reason during this period many birds soon learn to visit regularly all places where suitable food is obtainable. Birds visiting food put out for them, if also otherwise protected, usually become very tame and friendly, and enable us to study them and understand them much better. For this reason, the late fall and winter feeding of birds has become very popular among bird lovers.

Window Food-Shelf.—There are numerous devices for offering food to birds. One of the most popular is the window food-shelf (Fig. 1). Such shelves are usually placed under the outside of the most protected and sheltered window of the house. Sometimes a shielding of the shelf with evergreen branches on



FIG. 1.—Food shelf (Farmers' Bul. 912, Revised 1931, U. S. D. A.).

the house. Sometimes a shielding of the shelf with evergreen branches on

one or more sides will make it more attractive to the birds and will help to prevent the wind from blowing away the food, or dashing rains from washing it off the shelf. A raised ledge about the edges of the shelf also offers protection of the food. The ledge may well be made much higher at the more exposed north end to give added protection. When the birds become accustomed to feeding at a window food-shelf, they may be observed through the window glass from the inside of the house at a distance of only a few feet.

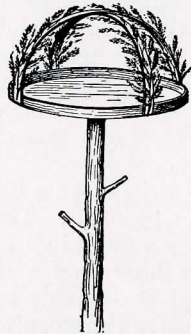


FIG. 2.—Food tray (Farmers' Bul. 912, Revised 1931, U. S. D. A.).

Food Tray.—The food tray (Fig. 2) is a round or square shelf with a ledge around the edge and mounted on the top of a pole, or in a tree, or strung upon a wire or other support, in a suitable place at some distance from the window. Sometimes birds can be induced to visit such food trays placed some distance from the window when they are too shy to visit a window food shelf. Because of the constant danger that bird food will be blown or washed off these food trays, more substantially constructed food houses are frequently used.

Food Houses.—One type of food house is the pivoted food house illustrated in Figure 3. This oblong-shaped house is closed at the bottom, top, and the narrow sides, with glass

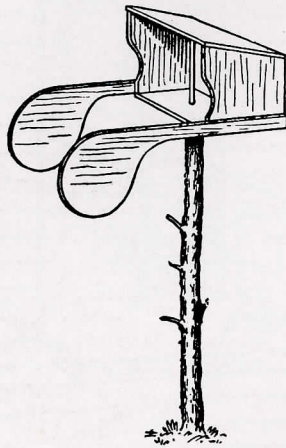


FIG. 3.—Food house on pivot (Farmers' Bul. 912, Revised 1931, U. S. D. A.).

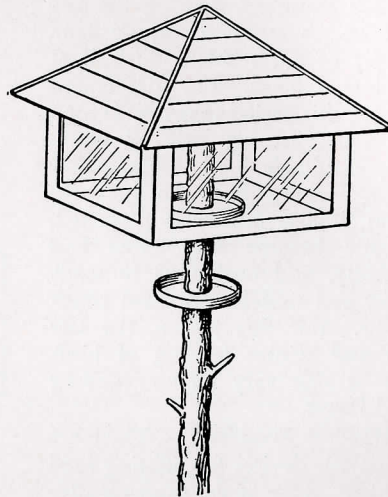


FIG. 4.—Roofed food house (Farmers' Bul. 912, Revised 1931, U. S. D. A.).

in one of the long sides and the other long side wholly open. The house is mounted on a pivot and provided with large wind vanes, which keep

the long, open side through which the birds enter to feed, always away from the wind. Another type of food house is one with a sloping roof and glass sides (Fig. 4), mounted on the end of a pole.

Food Hoppers.—Food hoppers, which are commonly used also, may be simply cages of half-inch-mesh wire in which suet can be placed, attached to a tree or post. Plain seed hoppers, the food hoppers commonly

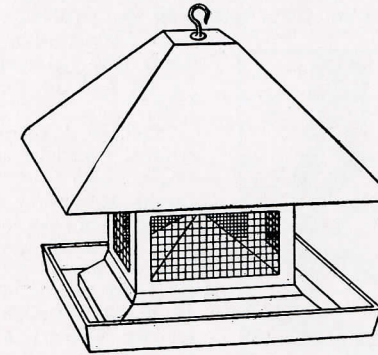


FIG. 5.—Food hopper, detachable roof (Farmers' Bul. 912, Revised 1931, U. S. D. A.).

used for feeding chicks, or elaborately constructed hoppers such as the one shown in Figure 5 may be used. A simple bird-food larder can be made by removing the meat from a coconut through a small hole in one end (Fig. 6), or similarly emptying a tin can through an opening in one end, filling the cavity with chopped suet, peanut butter, nut meats, or other such bird food, and suspending it from a convenient limb by a wire. Such a food larder is not affected by the weather. Food baskets of any desired size may be made of one-half-inch netting and hung up or fastened to the trunk of a tree. Game birds like bob-

white quail, prairie chickens, pheasants, and ground-feeding horned larks, or sparrows, may be provided with feeding places by erecting low hutches or using the protection of corn shocks under which food may be scattered. The opening should be to the south.

Suitable Foods.—Suet is one of the best winter bird foods. Among the birds that are attracted by it are hairy and downy woodpeckers, black-capped chickadees, and white-breasted nuthatches. The slate-colored junco and black-capped chickadees are very fond of peanut butter. Cardinals are especially fond of sunflower seeds. Hemp seed, millet seed, pumpkin or squash seeds, whole or rolled oats, wheat, cracked corn, popcorn, rice (raw or boiled), screenings (a cheap waste product of grain mills), buckwheat, bread or cracker crumbs, peanuts, and various other nut meats including coconut meat, pork rinds, cooked meats, diced apples, and other fruits are all good foods that appeal to birds.

Birds of the Month.—During the month of November, try to identify the Hairy Woodpecker, Downy Woodpecker, Black-capped Chickadee, White-breasted Nuthatch, and Slate-colored Junco. All of these are common birds at this season and may be



FIG. 6.—Coconut-shell larder (Farmers' Bul. 912, Revised 1931, U. S. D. A.).

among those attracted to your bird "lunch counter." Otherwise they may be identified in the woods and weed thickets.

Hairy and Downy Woodpeckers

The Hairy Woodpecker is a winter resident of the Woodpecker family. It closely resembles the Downy except in size. The Hairy is about $9\frac{1}{2}$ inches long, and the Downy is $6\frac{1}{2}$ inches.

Appearance.—Underparts white; above, mostly black. Head with white bands above and below the eye; back with white median stripe; wings with white spots; tail with outer feathers white. Males have red spot on the back of the head.

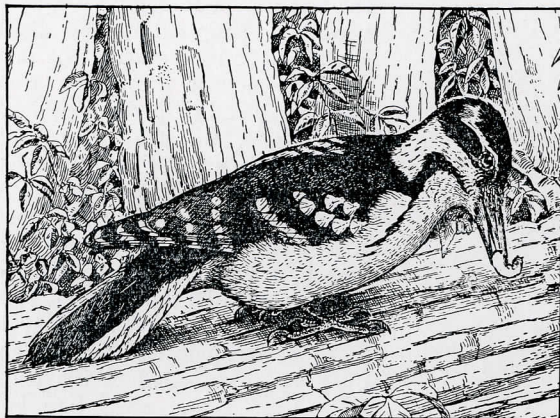


FIG. 7.—Hairy Woodpecker ($\frac{1}{2}$) (Farmers' Bul. 54, U. S. D. A. 1897).

Call. — A sharp whistle; sometimes a single high note rapidly repeated.

Nest.—In holes in trees, 25 to 60 feet from the ground for the Hairy and from 15 to 30 feet high for the Downy; a two-inch entrance for the Hairy and about half an inch smaller for the Downy. Eggs are white.

Food.—Larvae of wood-boring insects, ants, and a small amount of wild fruit.

Black-capped Chickadee

The Black-capped Chickadee, belonging to the Titmouse family, is a small winter resident only about 5 inches long.

Appearance.—It is a grayish bird with underparts whitish, slightly washed with brownish on the sides; the whole top of the head and the throat shiny black, and the cheeks clear white.

Song.—One of its calls is a plaintive "phee-bee" repeated again and again. The call from which it gets its name, however, is a chuckling, gurgling repetition of its name, "Chick-a-dee-dee-dee."

Nest.—In holes in trees or stumps, made of moss, fur, hair, and sometimes feathers. Eggs, 4 to 8, white, spotted with reddish brown and lilac, chiefly around the larger end.

Food.—Injurious insects and their eggs, including plant lice, tent caterpillars, cankerworms, etc. Also seeds and small fruit.

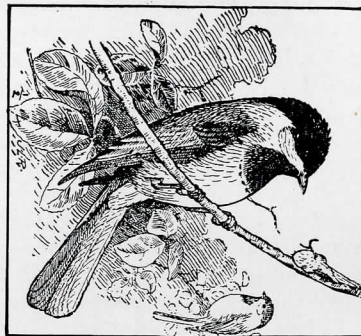


FIG. 8.—Black-capped Chickadee ($\frac{1}{5}$) (Yearbook for 1898, U. S. D. A.).

White-breasted Nuthatch

A member of the Nuthatch family and a winter resident in our state is the White-breasted Nuthatch. It is a little larger than the Chickadee, being about 6 inches long.

Appearance.—The males have blue-gray backs with contrasting, glossy-black crowns; the females have both crowns and back blue gray. The tail is short and dark with feathers tipped with black and white; the side of the head and entire underparts are white. The Red-breasted Nuthatch, which has a dark line through the eye and the underparts pale reddish buff, is less common.

Nest.—In holes in trees. Felted materials and feathers are used to build it. There are 5 to 9 white eggs spotted with reddish brown.

Food.—Insects, insect eggs and larvae, and nuts. The habit of descending the tree head first as the bird hunts for food makes it quite correct to say that it "eats its caterpillars up."

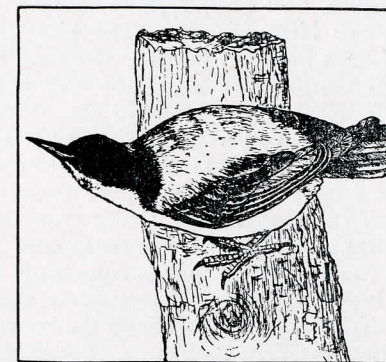


FIG. 9.—White-breasted Nuthatch ($\frac{1}{5}$) (Bruner's Notes on Nebraska Birds, 1896).

Slate-colored Junco

The Slate-colored Junco belongs to the Finch family. It is about 6 inches long, which makes it about the size of the Nuthatch.

Appearance.—The Slate-colored Junco, commonly called the "Snow-bird," has a general slaty-gray coloration, with darker wings and tail, a pink bill, the lower breast and belly contrastingly white, and the outer tail feathers pure white, showing conspicuously in its zig-zag, twittering flight. It is very common about weed patches and thickets from early October to early May. It is a sociable bird and is usually found in small flocks. It does not nest in Nebraska.

Song.—Tinkling single notes often repeated.

Food.—Insects and weed seeds.

Where Found.—In thickets—plum brush, low trees, and shrubs.

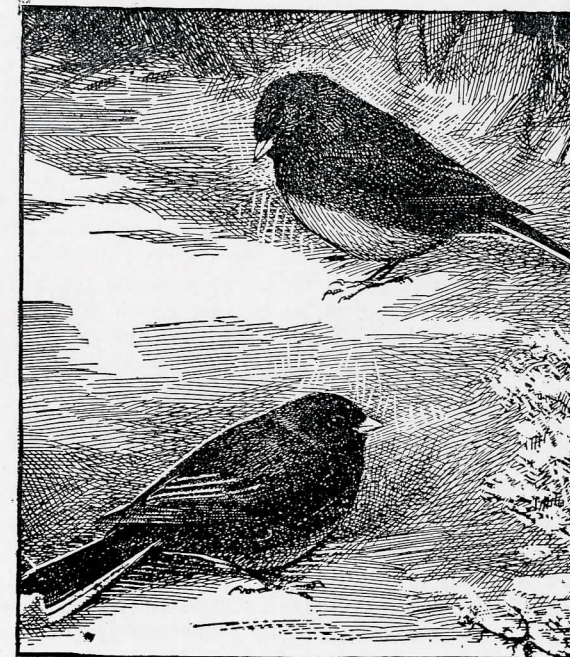


FIG. 10.—Slate-colored Junco ($\frac{1}{5}$) (Farmers' Bul. 506, U. S. D. A., 1912).

December

THE study of winter birds begun in November will be continued through December and January. During these two months it will be interesting to decorate a Christmas tree for the birds, take a bird hike, learn how to describe a bird properly, and make a study of Nebraska laws that concern our birds of prey. The bird hike should take place during the Christmas holidays, but it is described under the month of January.

At the last meeting of the club you started your individual bird list, which is a beginning toward your "Year Bird List," and also your "Life Bird List." You might also compile a composite "Club Bird List." As your knowledge of birds grows and you become more skillful in finding birds new to you, there will be some kinds that you will not be able to identify promptly, and probably some that you will need the help of others in identifying. It will not do to trust your memory as to what the bird that you saw looked like. You should write a description of it while you are looking at it, or immediately thereafter, to use as a reference in identifying the bird later from the books.

How to Make Notes and Descriptions.—In order to observe accurately and to make adequate notes of a bird's appearance, you should know the correct names for the different parts of a bird's body. Study the diagram (Fig. 11), which shows the names of the different parts of a bird, until you can remember and name every part. Use these names in making notes or describing a bird. Be sure to note size, coloring, and general shape—whether long and slender, plump, etc.—and any characteristics, such as crest, type of feet, beak, tail, etc., which make the bird under observation different from any other bird. It is important to know whether the bird was seen on the prairie, in the woods, along a stream, on a lake, or in a marsh; and whether it frequents tree tops, underbrush, buildings, or lonely country places. It is well to note the time of day—morning, night, afternoon—as well as the season of the year. If you are always sure to date your notes, you need not mention the season, but it is sometimes interesting and important to know the kind of day, whether cloudy, sunny, rainy, cool, or hot, on which you saw a particular bird. If you hear the bird sing, try to describe the call. If it is feeding, note if possible the type of food it eats. Note whether it walks, runs, or hops, and the manner of its flight. Birds have characteristic ways of flying; for instance, a goldfinch flies swiftly with many small dips and often utters a musical chirp as it goes upward; brown thrashers fly in straight lines; mourning doves start up with a whirl of wings; owls fly quietly; swallows like to make large swooping circles; some kinds of hawks soar high in the sky upon wings extended but relaxed; the wings of crows beat the air.

Try to find out as much as you can from first-hand observation about a bird's habits. Make notes as soon as you have observed anything distinctive about a bird. If you trust your memory, you will find that when you try to set down what you know about a bird you will have forgotten some things completely and are unsure about other things. It

is better to have more notes than are necessary for filling out your record book than either fewer or just enough.

When you find a bird's nest, try to make sure what kind of bird owns it. Observe it carefully and compare and contrast it with other birds' nests. It is possible for an experienced person to identify a bird just by looking at the nest alone. As you learn about birds, you will find that certain birds always build on the ground; others never do; some build in bushes and shrubs; some only in the highest branches of trees; and still others, like the red-winged blackbirds, fasten tall grasses together and build two feet or more from the ground. Some birds nest in colonies, but more prefer to live like farmers, at considerable distance from one another.

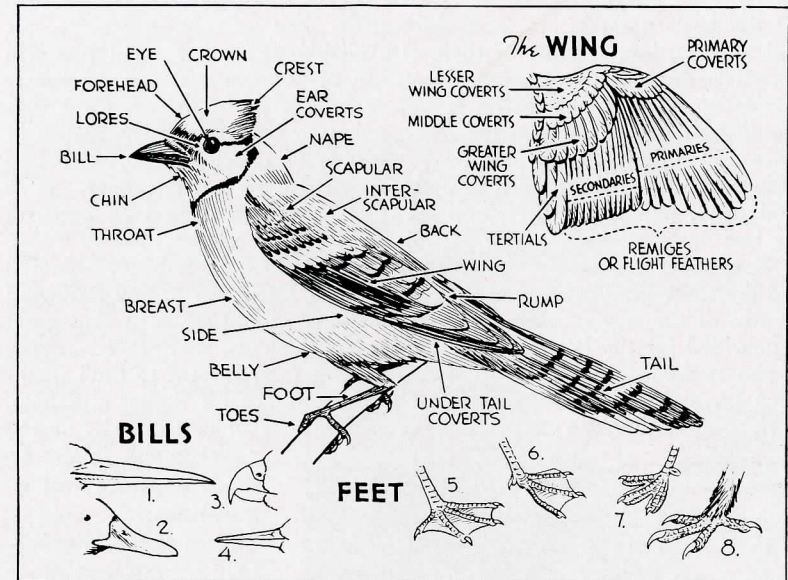


FIG. 11.—Outside parts of a bird.

Types of bills and feet: (1) shore bird's bill, (2) waterfowl type, (3) bird-of-prey type, (4) woodpecker type, (5) completely webbed foot (pelican), (6) webbed (duck), (7) lobed (grebe, coot), and (8) bird of prey.

And there are a few birds, like the cowbirds, which do not bother to build nests but sneak into other birds' nests to lay their eggs and impose upon the stranger the responsibility for bringing up their own young. Table 4 (page 27) contains a list of birds that nest in houses built for them. The materials used for nest-building vary, too, with the kind of bird. A goldfinch, for instance, selects the finest grasses of which to weave his cup-shaped nest and lines it with thistledown. A crow uses sticks and coarse materials; a cliff swallow moulds a nest of mud, daubing patches of mud under the eaves of a barn and shaping a cup which it lines with feathers. The Baltimore oriole weaves a bag and suspends it from the highest branches of a tree. The downy woodpecker is neither

a mason nor a weaver; it is a carpenter and carves out a hole in a tree. No doubt in your study of birds and bird nests you will be able to add many interesting items to this list.

At your December meeting, each member should write from memory a description of four selected birds, agreed upon in advance, using some of the names given in the diagram in preparing these descriptions. Each member should then read his or her description to the other members of the club, for corrections and suggestions. In case of any doubt about the coloration of any part mentioned in any one's description, the bird books should be consulted.

Birds' Christmas Tree.—Another major project for December will be for the club members to decorate a live Christmas tree and provide food for the birds upon it. A small spruce, fir, pine, or other evergreen tree will be best, but, if none of these is available, any other small tree will do. The decorations may include strings of popcorn and colored winter berries of any available sort. If winter berries are gathered, great care should be taken to see that the roots, stems, or branches of the shrubs or vines are not injured in any way. Strands of tinsel and small colored electric lights may be used if available, but these are not necessary. Bird-food trays, hoppers, larders, or baskets of some sort should be hung in the tree and provisioned with appropriate food.

Remember the Game Birds, Too.—Should there be a heavy snowfall and the snow lies heavy on the ground during December or any following months of the winter, each 4-H Club member should see to it that grain is provided for the bob-white quails, prairie chickens, sharp-tailed grouse, or ring-necked pheasants on his farm. When food is hard to find, quails often leave the fields and come near farm buildings for shelter and food. Corn and small grain scattered under the shelter of corn shocks or the

undergrowth in the orchard or grove will attract them.

Birds of the Month.—During the month of December, if you do not already know them, try to identify the Bob-white Quail, the Yellow-shafted Flicker or Red-shafted Flicker, or both, the Horned Lark, and the Crow.

Bob-white Quail

The Bob-white is a member of the Quail family and is a year-around resident with us. It measures about 10 inches long.

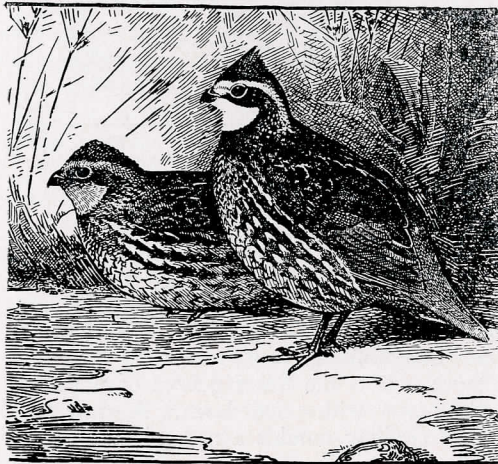


FIG. 12.—Bob-white Quail ($\frac{1}{4}$) (Farmers' Bul. 755, U. S. D. A., 1916).

Appearance.—This is a plump bird with upper parts and breast mottled with pinkish-brown, buff, black, and white. The head is blackish, mottled with gray and red-brown, with white line above the eye. The throat is also white in the male, buffy in the female, and the belly is white, finely crossbarred with black.

The young, when frightened, squat close to the ground and remain motionless. You must look with sharp eyes to see them because they look so much like the surrounding vegetation.

Nest.—Of grass and straw on the ground, usually sheltered by weeds, sometimes built with a dome. Twelve to 24 dull white eggs.

Call.—A clear, whistled "Bob White, Bob, Bob White," is the best known call.

Food.—Insects, grain, weed seeds, wild berries.

Where Found.—In fields in summer; in thickets, weed patches, hedge rows, flocking in winter.

Horned Lark

This bird, a little over 7 inches long, is a member of the Lark family.

Appearance.—Underparts pale-colored, throat yellow, black patch on upper breast. Beak, eyes, and feet black. Black patch in front of and below the eye and on forehead with lines leading to the "horns" (black tufts of feathers). Broad line above the eye and the forehead whitish, sometimes tinged with yellow. Back of head and upper parts pale grayish brown tinged with red on neck, back, and wings. Middle tail feathers brown, the outer tail feathers black.

Song.—A companionable twittering except in the mating season, when the bird flies singing through the air like an English skylark.

Nest.—A cup of grass and straw on the ground. Eggs 3 to 5 greenish or grayish, marked with brown.

Where Found.—Horned larks are common ground-living birds that gather in flocks in the open fields in the winter.

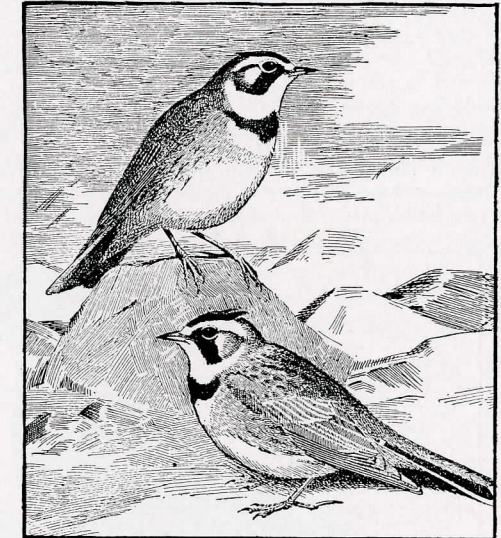


FIG. 13.—Horned Lark ($\frac{1}{2}$) (Farmers' Bul. 506, U. S. D. A., 1912).

Yellow-shafted Flicker

This bird is a member of the Woodpecker family, and is about 12 inches long.

Appearance.—Head grayish and brownish with a scarlet nape patch, a black crescent on the breast, the back and wings olive-brown crossbarred with black, the rump white, and the under side of the wings and tail bright yellow. The male has conspicuous black "mustache" marks. The more westerly Red-shafted Flicker is similar, but the under side of the wings and tail are bright orange-reddish instead of yellow and "mustache" marks of the male are red.

Call.—Loud, clear ringing calls, often rapidly uttered.

Nest.—In holes in trees. Eggs usually 5 to 9, white.

Food.—Ants, beetles, bugs, grasshoppers, crickets, caterpillars, weed seeds and berries. The Flicker is less like a woodpecker than any other member of the family, as this diet of ground-living insects indicates.

Crow

This relative of the Jays and Magpies is about 20 inches long.

Appearance. — Everyone knows the Crow, that large, wholly glossy bluish-black bird with the coarse "caw" call that gathers in large flocks in the winter. Crows have recently been increasing in Nebraska to such an extent that they have become more destructive to other birds' nests and to crops than their considerable consumption of insect pests pays for, and therefore the population of the state is being reduced.

Food.—Chiefly insect pests, field mice, rabbits, and other harmful rodents. Poultry and newly planted corn are both in danger where crows have become numerous.

Nest.—A large structure of coarse materials built high in trees. The 4 to 8 eggs are pale bluish green, olive green, or olive buff blotched with gray or brown.

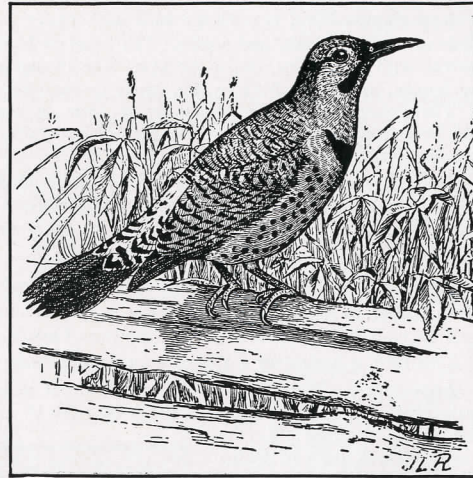


FIG. 14.—Yellowshafted Flicker ($\frac{1}{2}$) (Farmers' Bul. 54, U. S. D. A., 1897).

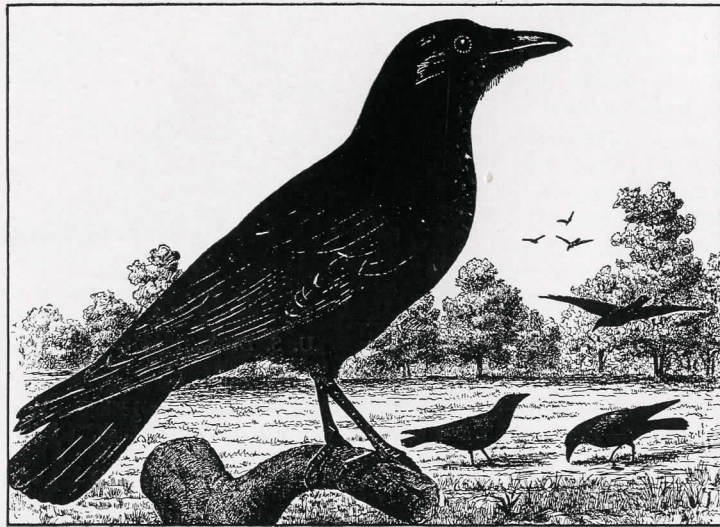


FIG. 15.—Crow ($\frac{1}{2}$) (Bul. 6, Div. Ornithology, U. S. D. A., 1895).

January

SOMETIME during the Christmas holidays the club should go on a bird hike. If more convenient, this may be done in December instead of early in January. The main project for January will be a study of Nebraska birds of prey, their habits, their economic value, and the laws concerning them.

Bird Hike.—A holiday-season bird census should be made on this hike. Every kind of bird seen should be listed, and also the number of individual birds of each kind. Can you explain why some kinds of birds are more numerous than others? Large flocks of such birds as horned larks or crows should be estimated as carefully as possible if the number cannot be accurately counted. At the end of the hike the number of kinds of birds seen and the total number of individual birds seen should be recorded, along with a memorandum as to the exact hours of the day spent in the field on the hike, the places visited, the total distance covered, the temperature at noon, the direction and strength of the wind, the amount of cloudiness, and the amount of snow, if any, on the ground. The complete record of this hike should form a part of the Club report at the end of the year.

Birds of Prey.—The principal project for the month of January will be to obtain a better knowledge of the habits and economic value of our Nebraska birds of prey. We have in Nebraska thirty-three distinct species of birds of prey, consisting of two species of vultures, nineteen species of hawks, and twelve species of owls.

Vultures are represented in Nebraska by the Turkey Vulture and the Black Vulture. Our commonest one is the Turkey Vulture, found in small numbers in both eastern and western Nebraska. The Black Vulture with us is but a rare straggler from the south. Vultures feed only upon carrion.

Hawks include the Osprey or Fish Hawk, which feeds almost entirely upon coarse fish and is uncommon in Nebraska. The Swallow-tailed Kite and Mississippi Kite are now both very rare stragglers from the south in Nebraska. The Goshawk is an uncommon but destructive visitor in Nebraska in some winters. The Bald Eagle, Duck Hawk, and Pigeon Hawk are uncommon, even as migrants, throughout the state. The Red-shouldered Hawk and the Broad-winged Hawk are found, rather uncommonly, in eastern Nebraska. The Ferruginous Rough-legged Hawk and Prairie Falcon are found in small numbers in western Nebraska only, except during migration. The Golden Eagle wanders over most of Nebraska during the fall and winter, coming into the state from farther west. The American Rough-legged Hawk is a very common hawk visitor from the north during the winter. Our commonest hawks are the Cooper Hawk, Red-tailed Hawk, Marsh Hawk, and Sparrow Hawk. The Sharp-shinned Hawk and the Swainson Hawk are common in the state during the periods of migration.

Owls are fairly numerous. Our twelve distinct species of owls include several common ones, such as the Barn Owl, Long-eared Owl, Short-

ered Owl, Great Horned Owl, Barred Owl, Screech Owl, and Burrowing Owl. The Long-eared Owl, Great Horned Owl, and Barred Owl prefer heavy woodlands. The Screech Owl also lives only where there are trees. The Barn Owl lives in clay banks and old buildings. The Short-eared Owl lives in open fields, preferably low grasslands. The Burrowing Owl is found living in burrows on our western plains and prairies. The Great Gray Owl, Saw-whet Owl, Richardson Owl, and Hawk Owl are all rare or very rare winter visitors from the north. The big Snowy Owl, another northern winter visitor, sometimes comes in considerable numbers.

What Birds of Prey Eat.—Table 1 is based upon the examination of more than 6,500 stomachs of species of hawks and owls that occur in Ne-

TABLE 1.—*Food Habits of Twenty-nine Species of Nebraska Hawks and Owls.*

Name of Hawk or Owl	No. Examined	Mammals	Poultry or Game	Other Birds	Other Vertebrates	Insects	Miscellaneous	Empty
Swallow-tailed Kite.....	30	0	0	0	12	30	0	0
Mississippi Kite.....	28	0	0	0	0	28	0	0
Goshawk.....	881	233	447	49	2	3	8	168
Sharp-shinned Hawk.....	1030+	28	16+	844	0	45	0	106+
Cooper Hawk.....	422	65	78	146	6	5	10	129
Red-tailed Hawk.....	1013+	857	112	85	118	92	40	146
Red-shouldered Hawk.....	444	287	7	25	127	54	38	38
Broad-winged Hawk.....	254	95	0	17	85	114	25	20
Swainson Hawk.....	44	10	1	1	6	31	0	3
American Rough-legged Hawk.....	202+	221	1	9	8	19	3	21+
Ferruginous Rough-legged Hawk.....	24	21	1	1	2	2	0	0
Golden Eagle.....	80	60	7	7	1	1	5	5
Bald Eagle.....	80	9	12	0	35	0	15	11
Marsh Hawk.....	418	259	10	176	27	11	1	26
Prairie Falcon.....	40	13	11	13	0	5	0	6
Duck Hawk.....	102	3	11	70	0	12	0	9
Pigeon Hawk.....	184	8	3	141	3	68	1	19
Sparrow Hawk.....	427	147	0	69	13	269	30	29
Barn Owl.....	39	34	1	2	0	4	0	0
Screech Owl.....	255	102	1	38	7	100	25	43
Great Horned Owl.....	127	78	31	8	1	10	1	17
Snowy Owl.....	38	20	2	9	0	0	0	12
Barred Owl.....	109	64	5	13	7	14	11	20
Long-eared Owl.....	107	89	1	15	0	1	0	15
Short-eared Owl.....	101	84	0	11	0	7	0	14
Saw-whet Owl.....	22	17	0	1	0	1	0	3
Great Gray Owl.....	9	11	0	1	0	0	0	0
Hawk Owl.....	1	1	0	0	0	0	0	0
Burrowing Owl.....	32	3	0	0	3	30	4	1

braska. All of the thirty-one distinct species of Nebraska hawks and owls are included in the table except the entirely fish-eating Osprey and the very rare Richardson Owl, which feeds on mice, small birds, and insects in the Canadian forests, and only very rarely comes as far south as Nebraska. In this table, the first column shows the total number of stomachs

of each kind of hawk or owl that have been examined; the second column shows the number of these stomachs that contained destructive rodents, such as mice, rats, ground squirrels, prairie dogs, pocket gophers, and other kinds of mammals; the third column shows the number of stomachs that contained poultry or game birds; the fourth column shows the number of stomachs that contained remains of other kinds of birds; the fifth column shows the number of stomachs that contained remains of snakes, frogs, toads, salamanders, fish, and back-boned animals other than mammals or birds; the sixth column shows the number of stomachs containing insects; the seventh column shows the number of stomachs containing other kinds of food than that already classified in the preceding five columns; and the last column shows the number of stomachs that were found to be empty. The figures regarding the food of the hawks were taken from a book recently published by the National Association of Audubon Societies, called the *Hawks of North America*, by John B. May, while the figures regarding the food of the owls were taken from a report on the *Hawks and Owls of the United States* by Dr. A. K. Fisher, published by the United States Department of Agriculture. These are high authorities, and the figures are entirely reliable.

Economic Value of Birds of Prey.—Study this table very carefully. Then list these different kinds of hawks and owls into three groups as follows:

1. Those kinds that you think are destructive and harmful enough that they should not receive any protection under the Nebraska law.

2. Those kinds that you feel are somewhat injurious, but in which you think the evidence shows that their useful destruction of harmful rodents and insects outweighs their harmful traits.

3. Those that you think are largely beneficial, or that the evidence shows are practically wholly beneficial, and should unquestionably receive full protection under the Nebraska law.

You will find that many kinds will go rather easily into Group 1 or Group 3, but that it will be harder to place those that should go into Group 2.

Nebraska Laws.—According to the present Nebraska law, passed by the Fifty-second Session of the Nebraska legislature in 1937, it is unlawful for any person to shoot, kill, destroy, or catch, or attempt to shoot, kill, destroy, or catch, any song, insectivorous or non-game bird other than an English Sparrow, Blue Jay, Crow, Cooper Hawk, Sharp-shinned Hawk, Goshawk, European Starling, Bronzed Grackle, or Magpie. Nearly every other state, like Nebraska, denies its protection to the Cooper Hawk, Sharp-shinned Hawk, and Goshawk. Do you think the Nebraska law as it now stands reflects the best results of a scientific study of the food habits of our hawks?

Birds of the Month.—During the month of January, try to identify two hawks and two owls. We suggest that probably the Cooper Hawk and the American Rough-legged Hawk, for the hawks, and the Screech Owl and Great Horned Owl, for the owls, may most readily be identified during this month.

Cooper Hawk

The male Cooper Hawk is smaller than the female, the male being about 16 inches long and the female about 19 inches. These birds closely resemble the Sharp-shinned Hawk in appearance but they are larger.

Appearance.—The crown and nape are blackish, the eyes red, the upper parts bluish gray, the underparts basally white, streaked with brownish or blackish on the cheeks and throat but otherwise heavily cross-banded with reddish brown; the feet



FIG. 16.—Cooper Hawk ($\frac{1}{4}$) (Yearbook for 1894, U. S. D. A.).

yellowish; and the long tail bluish gray with three or four broad blackish cross-bands. Wings are comparatively short and rounded; tail long and square at the tip. Immature birds have yellow eyes, are dull brown above, and whole underparts white streaked (not barred) with brown.

Nest.—Built in trees, 20 to 50 feet from the ground. Eggs chalky or bluish white; 3 to 6.

Where Found.—An all-year resident in Nebraska, and one of our most destructive hawks. It courses over the country at a great speed, capturing its prey by suddenly darting upon it.

Closely resembling the Cooper Hawk in color and markings, but decidedly smaller (length about 12 inches in the male and 14 inches in the female), and with a square-tipped instead of a rounded-tipped tail, is the Sharp-shinned Hawk, one of our most destructive hawks to small birds. The Cooper and Sharp-shinned Hawks are not protected by the Nebraska law, and undoubtedly are the least deserving of protection of any of our hawks.

American Rough-legged Hawk

This hawk is about 22 inches long.

Appearance.—Birds vary greatly in color. Some are brownish black all over, except for three or four narrow whitish bands on the tail. Most individuals, however, have the head and neck blackish, streaked with white, the back dark brown, the tail whitish toward the base and blackish toward the tip, the throat and breast buffy streaked with



FIG. 17.—American Rough-legged Hawk ($\frac{1}{2}$) (Farmers' Bul. 497, U. S. D. A., 1912).

black, and a black belly-band which shows conspicuously, along with the pale wing linings, black quill tips and black spots at the wing wrists, as the bird soars overhead. The legs are always feathered down to the toes. This hawk is very common from December to March, and because it is relatively unsuspecting and sluggish in its movements it is often shot although it never should be shot. It does not nest in Nebraska.

Food.—Mice and rodents.

Where Found.—In fields, this valuable bird often perches on a haystack or low stump waiting for prey or it may be seen flying noiselessly over the tops of the grass and bushes and dropping upon its victim. It is often active at twilight.



FIG. 18.—Screech Owl (¼) (Farmers' Bul. 497, U. S. D. A., 1912).

Screech Owl

This little 9½-inch owl is one of our most common owls.

Appearance.—Prominent ear tufts and yellow eyes. Usually gray above, more or less mottled with brown, buff, and white and finely streaked with black, while below it is white both streaked and crossbarred with fine black markings. Sometimes the upper parts are a bright reddish brown, varied on the shoulders with buffy white and finely streaked with black, the underparts white with fine black streaks and reddish brown crossbars. The legs and toes are fully feathered.

Call.—Low and quavering, heard at night in nearly any Nebraska locality.

Nest.—In hollow trees. Eggs usually 4 or 5, white.

Great Horned Owl

This bird is about two feet long and is one of our biggest owls. The female is larger than the male.

Appearance.—Long and prominent blackish feather tufts or "horns" and big yellow eyes, each surrounded by a tawny to grayish buff facial disc. Upperparts mottled and speckled with gray, black, white, and buff. Throat white. Underparts white sometimes varied with buff and always finely and thickly crossbarred with black. Tail and wings inconspicuously barred. Feet are feathered to the claws.

Call.—A deep hooting "who-who-who" or a loud catlike scream, giving it the additional names of Hoot Owl or Cat Owl.

Nest.—A large cavity in a tree or cliff, or sometimes an old nest of either a crow or a hawk. Eggs 2 or 3, white.

Food.—Mostly rabbits and skunks, but also some poultry and game birds.

Other owls that breed in Nebraska are the Barn, Barred, Long-eared, Short-eared and Burrowing Owls, and winter visitors include the Snowy, Hawk, Great Gray, Richardson and Saw-whet Owls.



FIG. 19.—Great Horned Owl (½) (Yearbook for 1894, U. S. D. A.).

February

DURING the month of February the earliest bird migrants return to us from the South. In Nebraska, the first migrants among the song birds to return are usually the Robin, Western Meadowlark, Bluebird, and Red-winged Blackbird, all of which have normally put in an appearance before the end of February. During this month you should start your bird migration calendar for the year. This is to be done as follows:

Preparing a Migration Calendar.—Secure several sheets of good-quality unlined white paper of the regular business letter size (8½x11 inches). Rule these pages as shown in Figure 20. The squares are one-fourth inch

Nome of Bird	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Robin				x														x	x									
Western Meadowlark					x				x								x				x	x	x					
Canada Goose								x																				
Common Bluebird									x																	x	x	

FIG. 20.—Migration calendar.

in size. This size of square leaves a three-and-one-fourth-inch space at the left side of the page for the name-of-bird column and a one-inch margin at the top for: (1) your locality, (2) the name of your 4-H Bird Club, (3) your own name, and (4) the month of the year. Make up at least one sheet for each month in this way. You now have the blank sheets for a bird migration calendar.

How to Keep Migration Data.—On the date that you see your first migratory bird, write in the name of the bird and place a checkmark under the number corresponding to that date. For example, suppose the first bird you saw was a robin, and that you saw it on February 4; then your first entry on the calendar would be "Robin," and your first check mark would be in the "4" column. If you saw a robin the next day, you would place another check mark under "5," and so on through the month, continually adding the birds as you see them and checking each day thereafter that each kind of bird is seen until the birds become common. At the end of February you should start another sheet for the March birds, and so on through the whole migration season.

Migration Data Collected by the Nebraska Ornithologists' Union.—Note and study the two migration tables given on the following pages. Table 2 gives the first or earliest dates of arrival of 36 common Nebraska birds, all of which are included in this outline of study, for the vicinities of Omaha, Lincoln, Fairbury, Superior, Red Cloud, Hastings, and North Platte, and also the average first date of arrival for Nebraska as a whole. These dates are based upon an eleven-year cooperative bird-migration study

TABLE 2.—First Dates of Arrival of Thirty-six Common Nebraska Birds.

NAME OF BIRD	OMAHA	LINCOLN	FAIRBURY	SUPERIOR	RED CLOUD	HASTINGS	NORTH PLATTE	NEBRASKA AVERAGE
Robin	Feb. 1	Feb. 4	Feb. 1	Feb. 1	Feb. 4	Feb. 10	.....	Feb. 4
Western Meadowlark	Feb. 2	Feb. 3	Feb. 1	Feb. 7	Feb. 2	Feb. 20	Feb. 10	Feb. 6
Canada Goose	Feb. 4	Feb. 27	Feb. 8	Feb. 8	Feb. 8	Feb. 12	Jan. 22	Feb. 8
Pintail Duck	Feb. 24	Feb. 5	Feb. 6	Mar. 16	Feb. 8	Feb. 2	Feb. 11	Feb. 14
Mallard Duck	Feb. 24	Feb. 2	Feb. 26	Mar. 16	Feb. 8	Feb. 2	Feb. 3	Feb. 16
Common Bluebird	Feb. 22	Feb. 6	Feb. 3	Feb. 15	Feb. 12	Feb. 20	Mar. 16	Feb. 17
Red-winged Blackbird	Feb. 21	Feb. 22	Feb. 8	Feb. 21	Feb. 5	Feb. 8	Mar. 3	Feb. 17
Mourning Dove	Mar. 23	Mar. 12	Mar. 14	Feb. 15	Feb. 2	Mar. 11	Mar. 24	Mar. 6
Bronzed Grackle	Mar. 15	Mar. 13	Feb. 28	Mar. 2	Feb. 20	Mar. 5	Mar. 26	Mar. 8
Blue-winged Teal Duck	Mar. 14	Mar. 17	Mar. 9	Mar. 23	Feb. 24	Feb. 26	Mar. 17	Mar. 11
Eastern Phoebe	Mar. 18	Mar. 11	Mar. 9	Mar. 14	Mar. 13	Feb. 22	Apr. 20	Mar. 16
Eastern Meadowlark	Mar. 12	Mar. 9	Mar. 2	Apr. 6	Mar. 20	Mar. 13	Apr. 27	Mar. 17
Loggerhead Shrike	Mar. 25	Mar. 15	Mar. 2	Mar. 15	Mar. 19	Mar. 9	Apr. 6	Mar. 17
Cedar Waxwing	Mar. 7	Mar. 4	Mar. 3	Mar. 29	Mar. 3	Mar. 6	Feb. 14	Mar. 20
Eastern Towhee	Mar. 15	Mar. 13	Mar. 12	Mar. 10	Apr. 5	Apr. 10	.....	Mar. 21
Field Sparrow	Mar. 7	Mar. 13	Mar. 13	Apr. 5	Apr. 28	Mar. 24	Mar. 12	Mar. 23
Purple Martin	Mar. 10	Mar. 20	Mar. 2	Mar. 24	Mar. 25	Apr. 5	May 12	Mar. 27
Chipping Sparrow	Mar. 23	Mar. 28	Apr. 1	Apr. 19	Mar. 6	Apr. 11	May 5	Apr. 4
Franklin Gull	Apr. 11	Mar. 2	Mar. 27	Apr. 13	Apr. 9	Apr. 10	Apr. 19	Apr. 4
Mockingbird	May 1	Apr. 6	Apr. 4	Apr. 23	Apr. 3	Apr. 6	May 1	Apr. 11
Brown Thrasher	Apr. 11	Apr. 8	Mar. 30	Apr. 16	Apr. 16	Apr. 10	May 3	Apr. 13
House Wren	Apr. 14	Apr. 13	Apr. 13	Apr. 4	Apr. 18	Apr. 11	Apr. 23	Apr. 14
Blue Jay	.....	Mar. 28	Apr. 17	Apr. 16	Apr. 19	Apr. 14	Apr. 30	Apr. 16
Red-headed Woodpecker	Apr. 18	Apr. 4	Apr. 15	Apr. 20	Apr. 4	Apr. 18	May 9	Apr. 17
Barn Swallow	Apr. 12	Apr. 15	Apr. 20	Apr. 18	Apr. 17	Apr. 10	May 1	Apr. 18
Lark Sparrow	Apr. 27	Apr. 18	Apr. 6	Apr. 19	Apr. 18	Apr. 8	May 5	Apr. 19
Eastern Kingbird	May 1	Apr. 25	Apr. 20	Apr. 12	Apr. 28	Apr. 4	Apr. 24	Apr. 21
Arkansas Kingbird	Apr. 27	Apr. 29	Apr. 26	Apr. 24	Apr. 24	Apr. 13	May 3	Apr. 25
Baltimore Oriole	Apr. 25	Apr. 25	Apr. 26	Apr. 24	Apr. 23	Apr. 27	May 8	Apr. 27
Black Tern	May 3	May 5	May 10	Apr. 28	Apr. 16	Apr. 30	Apr. 15	Apr. 28
Rose-breasted Grosbeak	Apr. 29	Apr. 24	Apr. 17	Apr. 26	May 1	Apr. 23	May 21	Apr. 29
Dickcissel	May 3	Apr. 25	Apr. 24	Apr. 24	May 4	May 1	May 20	May 2
Catbird	May 3	May 3	May 1	May 5	May 2	May 3	May 11	May 4
Ruby-throated Hummingbird	May 15	May 8	Apr. 27	Apr. 28	Apr. 28	May 10	.....	May 4
Bobolink	May 16	May 8	May 12	May 7	May 20	May 3	May 6	May 10
Yellow-billed Cuckoo	May 15	May 12	May 6	May 4	May 10	May 6	June 5	May 13

NEBRASKA 4-H EXTENSION CIRCULAR 5-01-2

TABLE 3.—Average Dates of Arrival of Thirty-six Common Nebraska Birds.

NAME OF BIRD	OMAHA	LINCOLN	FAIRBURY	SUPERIOR	RED CLOUD	HASTINGS	NORTH PLATTE	NEBRASKA AVERAGE
Robin	Feb. 21	Feb. 19	Feb. 10	Feb. 14	Feb. 21	Feb. 20	.....	Feb. 16
Western Meadowlark	Feb. 24	Feb. 17	Feb. 19	Feb. 16	Feb. 20	Mar. 4	Feb. 10	Feb. 18
Pintail Duck	Mar. 14	Feb. 23	Feb. 20	Mar. 18	Feb. 16	Feb. 21	Feb. 11	Feb. 26
Canada Goose	Mar. 8	Mar. 10	Mar. 2	Mar. 2	Feb. 27	Mar. 13	Jan. 29	Mar. 2
Common Bluebird	Mar. 2	Mar. 6	Feb. 16	Feb. 24	Mar. 9	Mar. 7	Mar. 21	Mar. 4
Red-winged Blackbird	Mar. 7	Mar. 16	Mar. 1	Feb. 27	Mar. 4	Feb. 26	Mar. 4	Mar. 4
Mallard Duck	Mar. 27	Mar. 6	Mar. 19	Mar. 27	Feb. 22	Feb. 26	Feb. 3	Mar. 7
Bronzed Grackle	Mar. 24	Mar. 25	Mar. 9	Mar. 8	Mar. 7	Mar. 19	Mar. 29	Mar. 17
Mourning Dove	Apr. 2	Mar. 23	Mar. 23	Mar. 8	Mar. 21	Mar. 22	Apr. 2	Mar. 23
Blue-winged Teal Duck	Apr. 7	Apr. 9	Mar. 29	Mar. 29	Mar. 6	Apr. 2	Mar. 28	Mar. 29
Eastern Phoebe	Apr. 2	Mar. 27	Mar. 16	Mar. 18	Apr. 5	Mar. 20	Apr. 20	Mar. 29
Eastern Meadowlark	Mar. 31	Apr. 2	Mar. 24	Apr. 12	Mar. 20	Apr. 7	Mar. 28	Mar. 31
Loggerhead Shrike	Apr. 26	Apr. 1	Mar. 22	Mar. 19	Apr. 8	Mar. 26	Apr. 6	Apr. 2
Cedar Waxwing	Apr. 12	Apr. 3	Mar. 3	Mar. 29	Mar. 22	Mar. 27	April 19	Apr. 4
Eastern Towhee	Mar. 27	Apr. 13	Mar. 29	Apr. 3	Apr. 24	Apr. 20	.....	Apr. 8
Field Sparrow	Mar. 27	Apr. 5	Mar. 31	Apr. 16	Apr. 26	Apr. 14	Apr. 4	Apr. 9
Purple Martin	Mar. 27	Mar. 29	Apr. 3	Apr. 6	Apr. 5	May 1	May 22	Apr. 13
Chipping Sparrow	Apr. 8	Apr. 8	Apr. 11	Apr. 22	Apr. 11	Apr. 20	May 7	Apr. 18
Franklin Gull	Apr. 27	Apr. 15	Apr. 16	Apr. 16	Apr. 21	Apr. 18	Apr. 19	Apr. 19
Brown Thrasher	Apr. 20	Apr. 17	Apr. 17	Apr. 19	Apr. 23	Apr. 20	May 3	Apr. 21
House Wren	Apr. 22	Apr. 22	Apr. 18	Apr. 16	Apr. 23	Apr. 21	Apr. 24	Apr. 21
Mockingbird	May 10	Apr. 25	Apr. 12	Apr. 7	Apr. 22	Apr. 14	May 8	Apr. 23
Blue Jay	Apr. 24	Apr. 23	Apr. 23	Apr. 20	Apr. 25	Apr. 22	Apr. 30	Apr. 24
Lark Sparrow	May 9	May 1	Apr. 16	Apr. 24	Apr. 27	Apr. 24	May 6	Apr. 28
Eastern Kingbird	May 6	Apr. 27	Apr. 22	Apr. 22	Apr. 30	Apr. 25	Apr. 30	Apr. 30
Barn Swallow	May 2	Apr. 28	Apr. 30	Apr. 27	Apr. 29	Apr. 26	May 9	May 1
Baltimore Oriole	May 5	May 1	Apr. 30	Apr. 27	May 2	Apr. 30	May 10	May 2
Arkansas Kingbird	May 13	May 9	Apr. 30	Apr. 25	May 1	Apr. 29	May 5	May 3
Red-headed Woodpecker	May 1	May 1	May 5	Apr. 29	May 8	May 3	May 11	May 4
Rose-breasted Grosbeak	May 5	Apr. 30	May 2	May 1	May 8	May 3	May 21	May 6
Catbird	May 5	May 7	May 8	May 7	May 9	May 9	May 13	May 8
Black Tern	May 16	May 12	May 17	May 10	May 4	May 15	Apr. 30	May 10
Dickcissel	May 13	May 9	May 6	Apr. 29	May 11	May 12	May 20	May 10
Bobolink	May 19	May 12	May 18	May 7	May 23	May 16	May 7	May 15
Ruby-throated Hummingbird	May 22	May 20	May 16	May 10	May 16	May 8	.....	May 15
Yellow-billed Cuckoo	May 21	May 23	May 18	May 15	May 18	May 18	June 5	May 21

4-H BIRD MANUAL

made by members of the Nebraska Ornithologists' Union living at these places. The Nebraska Ornithologists' Union is the state bird organization for grown-ups. You will be eligible to become a member of this state organization, if you should desire, when you have creditably finished this 4-H Club bird study course and have reached the age of 16 years. Table 3 gives the *average* dates of arrival of these same 36 common Nebraska birds for the same localities. You will note that these average dates are usually considerably later than the known first dates of arrival for any locality. Study especially closely the dates given for the locality nearest to your location, and through the migration season compare the dates of first arrival that you secure with those given in the first table.

Read About Migration.—During the month of February, consult the library and read all of the material that you can get and have time for on the subject of bird migration. Try to learn what are believed to be the causes of bird migration, the different routes taken by various species, the distances traveled by different species of birds, and so on.

Birds of the Month.—During the month of February, identify the Robin, Bluebird, Western Meadowlark, and Red-winged Blackbird.

Robin

The Robin is a member of the Thrush family. It measures about 10 inches in length.

Appearance.—A blackish head, a broken white eye-ring, gray upper parts, dusky wings and tail, a white throat streaked with black, and the breast and sides bright brownish red in the male and dull brownish red in the female. The young birds have the breast spotted with blackish.

Song.—The Robin's song is a plaintive carol. In addition, the bird frequently utters sharp and petulant notes.

Nest.—Of twigs and mud in trees and shrubs. Eggs usually 4, greenish blue.

Food.—Insects, seeds, wild fruits.

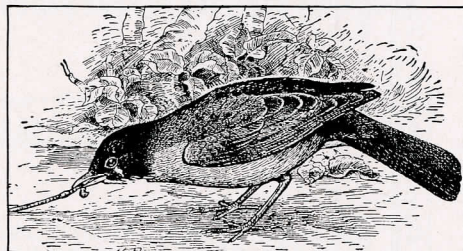


FIG. 21.—Robin ($\frac{1}{4}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Western Meadowlark

Nebraska's state bird belongs to the family of Blackbirds and Orioles. It measures about 10½ inches in length.

Appearance.—The upper parts are a mottled brown, black and whitish, with black cross-bars on the wing and middle tail feathers, outer tail feathers white. Throat and adjacent parts of cheeks, and other underparts bright yellow except for a horseshoe-shaped black chest band, and the sides heavily blackish-streaked. The Eastern Meadowlark is similar but

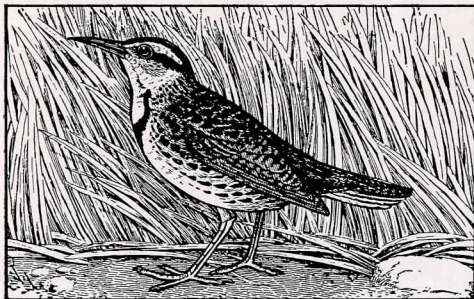


FIG. 22.—Western Meadowlark ($\frac{1}{4}$) (Yearbook for 1895, U. S. D. A.).

darker colored above and with the yellow of the throat not spreading upon the cheeks.

Nest.—Of dried grass on the ground. Eggs 3 to 7, white mottled with reddish brown.

Food.—Mainly grasshoppers and their eggs and other insects of the prairie.

Common Bluebird

The Bluebird is another member of the Thrush family. It is smaller than the Robin, measuring about 6 inches in length.

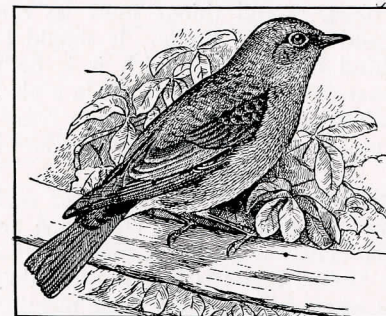


FIG. 23.—Common Bluebird ($\frac{1}{3}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Appearance.—The Bluebird is of a deep glossy blue color above, with the throat, breast and sides reddish brown and the rest of the underparts white. The female is similar, but with the upper parts grayish, tinged with blue on the wings and tail. The Western Bluebird is a paler blue, both above and below.

Song.—A soft, enquiring warble.

Food.—Caterpillars, grasshoppers, crickets, and such wild berries as the hackberry and woodbine.

Nest.—In holes in trees, stumps, bird-boxes; made chiefly of dried grasses. Eggs 4 to 7, pale greenish blue.

Red-winged Blackbird

Like the Meadowlark, the Red-winged Blackbird is a member of the Oriole and Blackbird family. It is about 9½ inches long.

Appearance.—Plumage is shiny black with the shoulder feathers contrastingly bright scarlet red. The female is grayish brown suffused with pinkish on the face and throat, heavily streaked with dark brown and buff above and with dusky below, and about an inch shorter than the male.

Song.—When perched or flying, the Red-winged Blackbird often utters a sharp click much like the sound a man makes when he drives a team. The song of the bird is a musical "o-ka-lee," with a liquid quality.

Where Found.—In meadows, along streams, and marshes. Flocks of males come in the spring before the females arrive.

Food.—Insects, grain, and weed seed.

Nest.—Attached to upright stems of tall prairie plants; made of grasses. Eggs, 3 to 6 bluish marked with darker color on the larger end.

In addition to the Red-winged Blackbird and the Bronzed Grackle (page 31), we have as other "blackbirds" breeding in Nebraska the Yellow-headed and Brewer Blackbirds and the Cowbird, while the Rusty Blackbird visits us in flocks in winter.

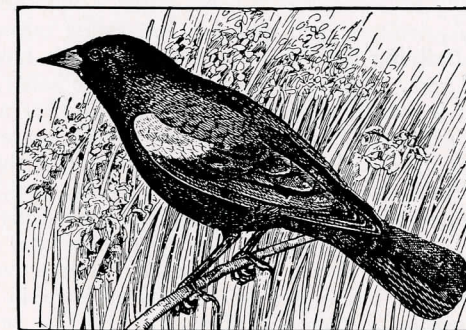


FIG. 24.—Red-winged Blackbird ($\frac{1}{4}$) (Farmers' Bul. 54, U. S. D. A., 1897).

March

WITH birds returning, ready to set up house-keeping, every club member who has sharp eyes and a keen, sympathetic interest in their domestic affairs, will want to build a bird house. There is no better way to learn to know birds than to erect a few houses and successfully "let" them during the summer.

In providing nesting places for birds, several things must be considered. It is not enough to make and set up a house. It should be planned to meet the needs of the kind of bird for which it is built. Abundant food and water should be near. And it should be set in a place that is safe from prowling cats and other bird enemies. A house cannot be considered a success unless it is occupied at least once during the breeding season.

Bird Population in the United States.—Bird houses, except for such gregarious species as martins and swallows that seem to enjoy one another's society, should not be placed too closely together. Remember that the average number of birds over the United States is a little more than one pair per acre. Of course in places where food and water are plentiful there are more than this. In some of our parks the number has been increased as much as four hundred times this many, and in residential districts it may easily be increased to 10 pairs per acre. Such increases are secured by providing protection from enemies, building houses for nesting and roosting, and increasing the food supply in winter and supplying water throughout the year.

Why Increase Bird Population.—There are authentic records in the United States and in Europe of instances where insect depredations have been avoided or reduced by an increase in the bird population of a region. Farmers' Bulletin 1456, "Homes for Birds," and Farmers' Bulletin 506, "Food of Some Well-Known Birds," published by the U. S. Department of Agriculture, will give you interesting information on the subject.

Building a Bird House.—A well-built bird house must be rain-proof and cool. If it is durable, so much the better. And it should be so built that it can be cleaned and disinfected after a pair of birds have used it for rearing a family. Like poultry, birds are subject to diseases, and an unsanitary bird house endangers the life of the nestlings.

Although various materials may be used, none is better than wood. Cypress, pine, and yellow poplar are especially good woods to use because they are easy to work. The bird house may be painted or varnished, or better yet it may be left to weather. Attractive houses may be made from bark. In building a house, always keep in mind that protection from rainstorms is especially important and that protection against the heat of the sun is but little less so. This means that you will take care to see that the roof does not leak and that ventilation is provided. Eaves that extend well over the house will keep rain from blowing in at the entrance. Two or three small holes bored in the bottom of the box will permit any water that should gain entrance to drain out. Likewise, small holes just under

the eaves will permit ventilation in the house without creating a draft. Perches before the entry have been found to be of more assistance to bird enemies than to the birds themselves. Sometimes a smooth, metal ring around the entrance, placed on the inside of the house, will make it safe from the attacks of such gnawing enemies as squirrels.

Table 4 will give you the correct dimensions of houses for various types of birds, together with the size of the entrance and the correct height above the ground at which to place them. Figures 25, 26, and 27 give you suggestions for types of houses, and also illustrate ways of building houses so that a portion may be removed to permit observation of the nest and cleaning. Houses built to permit observation should be fitted with a pane of glass inside the portion that can be lifted. This makes it possible to look at the nest

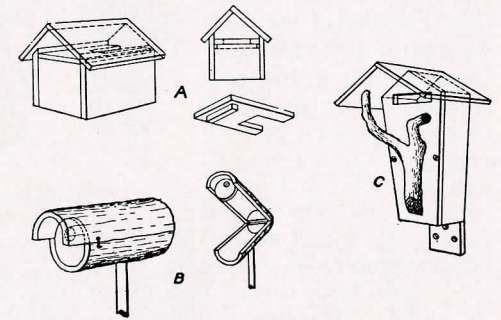


FIG. 25.—Nest boxes suitable for wrens. In A the bird enters under the roof and goes down below through notch in removable board. The slot in C permits bird to carry in cumbersome material more easily. All three offer protection from enemies. (Farmers' Bul. 1456, U. S. D. A., 1930).

TABLE 4.—Forty-eight species of birds in the United States are known to have nested in bird boxes or on supporting devices; dimensions of nesting boxes and the height at which they should be placed above the ground are given for 17 Nebraska birds.¹

Bird's Name	Floor of cavity	Depth of cavity	Entrance above floor	Diameter of entrance	Height above ground
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Feet</i>
Bluebird	5x 5	8	6	1½	5-10
Robin	6x 8	8 one or more sides open			6-15
Chickadee	4x 4	8-10	6- 8	1⅛	6-15
Nuthatch	4x 4	8-10	6- 8	1¼	12-20
House wren	4x 4	6- 8	1- 6	¾	6-10
Barn swallow	6x 6	6 one or more sides open			8-12
Purple martin	6x 6	6	1	2½	15-20
Song sparrow	6x 6	6 all sides open			1- 3
Phoebe	6x 6	6 one or more sides open			8-12
Flicker	7x 7	16-18	14-16	2½	6-20
Red-headed woodpecker	6x 6	12-15	9-12	2	12-20
Downy woodpecker	4x 4	8-10	6- 8	1¼	6-20
Hairy woodpecker	6x 6	12-15	9-12	1½	12-20
Screech owl	8x 8	12-15	9-12	3	10-30
Barn owl	10x18	15-18	4	6	12-18
Sparrow hawk	8x 8	12-15	9-12	3	10-30
Wood duck	10x18	10-15	3	6	4-20

¹ From Farmers' Bul. 1456, U. S. D. A. 1930.

without disturbing it or causing a draft which might injure the nestlings.

Such birds as the robin, barn swallow, song sparrow, and the phoebe ordinarily do not build in houses, but sometimes they will appreciate brackets or shelves such as shown in Figure 28.

Protection against Invaders.—Cats, squirrels, mice, English sparrows, starlings, blue jays, red-headed woodpeckers, bronzed grackles, magpies, and crows are among the chief enemies of the birds we wish to protect and encourage. Tree guards such as those shown in Figure 29 will help to protect bird nests and houses from cats and squirrels. A far-overhanging and sloping roof close over the nest often is adequate protection against cats. With birds smaller than enemy birds, the size of entrance can often be used as a measure of protection. Sometimes it is practicable to use a vermin-proof fence to protect birds. Such fences must have a mesh of not

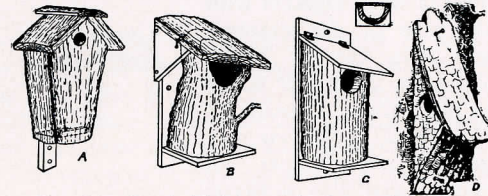


FIG. 26.—Rustic bird houses having various types of removable sections. (Farmers' Bul. 1456, U. S. D. A., 1930).

more than an inch and a half, should be about six feet high, and should have an outward overhang of two feet at the top.

Roosting Shelters.—After the breeding season, bird houses may continue to be of use to birds. Often they are used to sleep in at night or as places of shelter from storms. Houses may be built especially to fill this need of the birds. Roosting shelters like those shown in Figure 30 serve several birds and may be made considerably larger than the ordinary bird house. Perches are inserted, and these should be so placed that none is directly over another. The entrance to the nesting house is usually placed nearer the

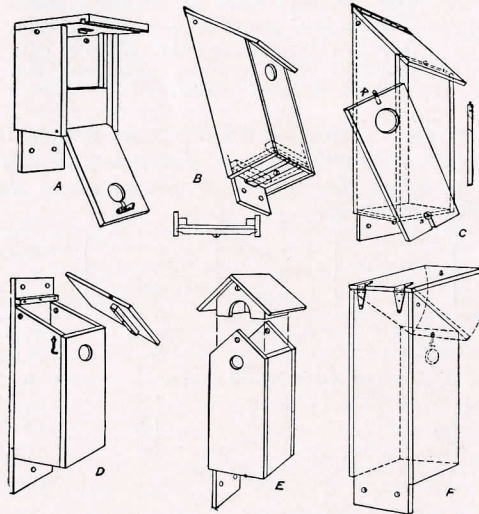


FIG. 27.—Accessible nest boxes. A, hinged front held by a catch; B, removable bottom held by cleat; C, swinging front held by removable pin; D and E, removable tops; F, hinged top. (Farmers' Bul. 1456, U. S. D. A., 1930.)

roof than the floor. In the roosting shelters, the entrance may be placed close to the floor. To be useful to the greatest number of birds, such houses may be placed from 8 to 10 feet from the ground, with a southerly

exposure for the entrance. If they are placed in sheltered spots and are protected by metal guards, they will be of most use. Even hollow trees may be fitted with perches and divided into compartments. Such shelters are often occupied by a number of different species of birds.

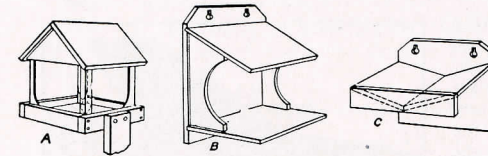


FIG. 28.—Nest brackets and shelves (Farmers' Bul. 1456, U. S. D. A., 1930).

stupefy such intruders as mud-daubers, paper-wasps, and bees, and they can then be destroyed. Houses infested with fleas, bird lice, etc., may be treated with liberal applications of derris powder, pyrethrum powder, or sodium fluoride powder, while being used by birds, but care should be taken not to injure nestlings nor to disturb the birds so often that the parents will desert the nest. A good rule to follow is never to interfere with a bird's domestic affairs unless it is in evident distress. After the nestlings have gone, the old nest should be burned and the interior of the house sprayed with cresol to destroy pests.

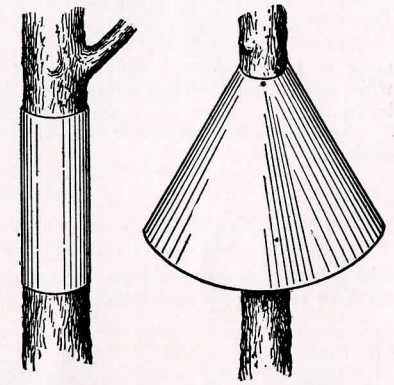


FIG. 29.—Tree guards made of sheet metal.

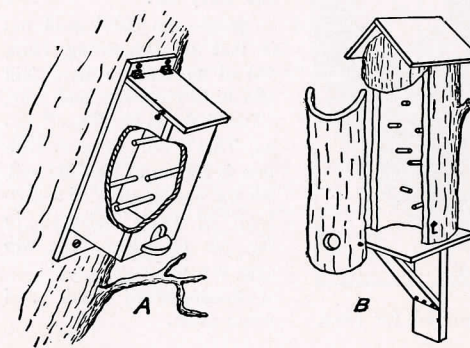


FIG. 30.—Roosting shelters (Farmers' Bul. 1456, U. S. D. A., 1930).

Sanitation.—Bird houses and roosting shelters should both be built so that they can be kept clean, and they should be regularly inspected. Carbon bisulphide, carbon tetrachloride, sulphur, ordinary smoke, or the like may be used to

Take Second Bird Hike.

—Sometime toward the close of the month, the early bird migrants will begin to appear in force. Take a second bird hike and list the kinds of birds that you see and the number of individuals of each kind.

Birds of the Month.

—During this month, make a special study of the Song Sparrow, Mourning Dove, Bronzed Grackle, and Loggerhead Shrike.

Song Sparrow

The Song Sparrow is a member of the family of Finches and Sparrows, and measures slightly over 6 inches in length.

Appearance.—Brown crown narrowly streaked with black and with a narrow gray median stripe; a rather distinct grayish line over eye; scapulars and interscapulars streaked with black; wings and tail brownish, middle and greater wing coverts have paler edge, middle tail feathers have blackish streaks or shafts. Underparts white, chest with wedge-shaped streaks of black edged with rusty brown that tend to form a blotch in the center of the breast; sides and flanks streaked with black and rusty brown. It does not nest in Nebraska.

Song.—Short and tuneful, but not one that attracts much attention. It frequently sings during its spring migration through Nebraska.

Nest.—In low bushes or on ground, made of grasses; 4 to 5 dull greenish white eggs thickly speckled with reddish brown.

Food.—Injurious insects and weed seeds.

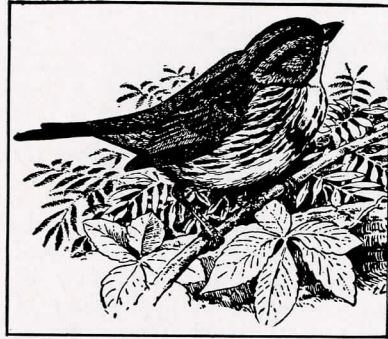


FIG. 31.—Song Sparrow ($\frac{1}{2}$) (Yearbook for 1898, U. S. D. A.).

Mourning Dove

The Mourning Dove is a member of the pigeon family and is about 12 inches long.

Appearance.—The top of the head is bluish gray; the sides have a blue-black spot with a bare space about the eye. Upper parts brown with a number of black spots on the back of the body and wings. Underparts are of brownish color tinged with pink.

The tail has fourteen feathers, graduated and more than two-thirds the length of the wings. The wings are pointed.

Song.—The cooing notes of this bird are low and deep and carry far.

Nest.—An old legend has it that the Mourning Dove started to build a nest, laid two sticks crosswise, and sang, "That'll do-oo-oo; That'll do-oo, That'll do." The description is correct at least in spirit, for the nest consists of a platform of twigs balanced in the fork of a tree. The two eggs are white.

Food.—Weed seeds and waste grain.

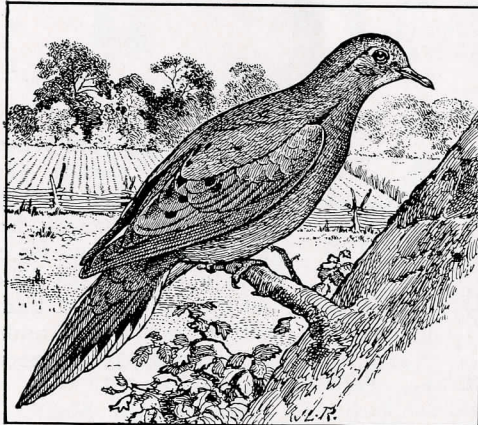


FIG. 32.—Mourning Dove ($\frac{1}{4}$) (Yearbook for 1898, U. S. D. A.).

Bronzed Grackle

This member of the Blackbird and Oriole family is about $12\frac{1}{2}$ inches long.

Appearance.—The whole head and neck of the adult male is an iridescent dark greenish blue which is in contrast to the bronze-colored body. The wings and tail are of a darker shade of iridescent olive brown.

Song.—Gurgling, unmusical, squeaky notes.

Nest.—In trees, made of dried grasses. Usually coarse and bulky. Eggs, 3 to 7, pale greenish or greenish blue, olive or olive whitish, spotted, scrawled and lined with brown and black.

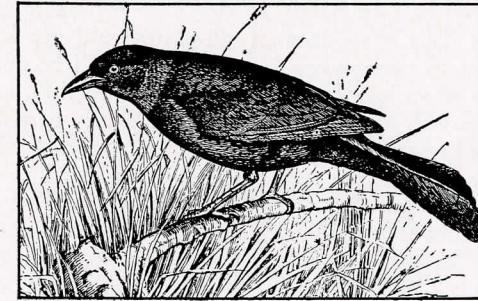


FIG. 33.—Bronzed Grackle ($\frac{1}{2}$) (Yearbook for 1894, U. S. D. A.).

Loggerhead Shrike

This member of the Shrike family is 9 inches long. On the whole, it is a useful bird. Pairs may be induced to nest by the growing of thorn trees and shrubs in out-of-the-way corners of the farm.

Appearance.—The hooked bill, lores, and forehead, and a broad line through and under the eye are entirely black. Upper part of wings and body light gray. The ends of the outer feathers of the tail are white, and the underparts of the body are pure white.

Song.—Harsh and unpleasant in quality.

Nest.—Built in hedges, thorn, and brier patches and made of sticks, feathers, leaves, and other coarse materials, lined with hair and grasses. Eggs 4 to 7, dull white, spotted with gray, olive, and brown.

Food.—Mice, insects, and especially grasshoppers. The bird resembles a bird of prey in its food habits, sometimes attacking and killing other birds. It hangs its surplus food on thorns or barbs of wire fence for which reason it is sometimes called a "butcher bird."

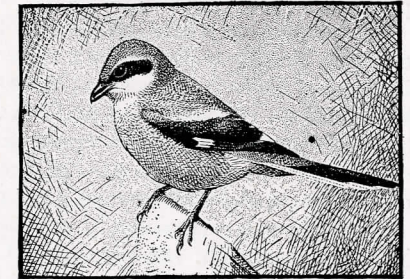


FIG. 34.—Loggerhead Shrike ($\frac{1}{4}$) Farmers' Bul. 506, U. S. D. A., 1912).

April

DURING this month, the major projects will be the building of a bird bath, the planting of trees or shrubs that are attractive to birds, the study of nest-building and rearing of young, and the usual study of special birds of the month.

Observing Nesting Habits.—From now on, you will find that birds are building nests and rearing families. You will want to begin making as intensive studies of bird habits as you have time for. If you keep a notebook of your daily observations (and you should not fail to do this) you will find that as time passes your notebook will become a complete record of the life of various families of birds during the summer. It will tell you when the birds arrived, when and where they nested, of what the nest was made, when the eggs were laid, how many and what color they were, which bird sat upon the eggs, when the nestlings hatched, how they were fed, and how often and upon what kind of food. It will be well worth while to count the number of trips for food each parent makes in a given length of time. From this you can estimate the amount of food supplied per day. As the nestlings grow older, do the number of trips for food increase?

Your notebook will enable you to check back and find how old the nestlings were when they first left the nest, how long they returned at night, and how long they were dependent upon the parents for food. You should make note of the difference between the plumage of the young birds and the mature parents.

When studying birds, move quietly and do nothing to excite their suspicions of your good intentions. A pair of field glasses is very helpful, but one can learn a great deal about birds without one. If you can afford to buy a pair, satisfactory glasses may be secured at from \$5.00 to \$15.00 a pair.

Ornithologists sometimes arrange blinds or hiding places from which they can quietly and unobtrusively watch the rearing of some especially interesting bird. You may find that you can watch the affairs of some bird from an upstairs window, from a tree, or from the roof of another building. Your hiding place should be large enough so that you can watch comfortably and make notes, near enough to the nest to permit easy observation, and yet far enough away so that the birds are not disturbed.

Sometimes it is possible to establish friendlier relations with birds by imitating their calls. To say the least, this is an amusing pastime, and it may be definitely of value in securing information about birds.

When birds are building nests, they do not scorn a little help from human sources. Short pieces of string, ravelings, or bits of cloth will often be picked up by birds, to be used in the nest. Sometimes colored strings produce brightly colored nests of orioles or other birds. Excelsior, cotton, straw, hair, and hay are also used. Wire holders such as those used for

suet in the winter may be used to display some kinds of nesting materials. Robins, phoebes, and swallows appreciate a spot of soil made muddy by pouring water on it, for these birds use mud to plaster their nests. They are especially appreciative of such assistance in dry weather. Very likely you can think of a number of ways to help the birds with their domestic affairs. You must, however, use good judgment in the things you do to help, because if you do not, you are likely to frighten them away instead of attracting them.

Building a Bird Bath.—Before you build a bird bath, make a survey of your neighborhood or of some nearby town and see how many bird baths have already been built. Find out which ones have been most attractive to birds, and pattern yours after the type that is most used. Look also for natural places where birds drink and bathe and see what characteristics these places have which you may duplicate in the bath that you will make.

Just as birds prefer houses that are safe from enemies, so do they prefer a bath that is not easily reached by cats and other enemies. Neither do they like a bath that is too deep. Shallow sloping baths (about two inches deep at the deepest place) kept filled with water throughout the year and placed at some distance from the ground (three to six feet) in an open space seem to be most popular. You are likely to find that such bird baths are more popular than those in unprotected natural places. If there are trees with low branches a few feet from the bath, birds seem to enjoy sunning themselves on the branches after bathing and use such branches as places to wait their turns at the bath.

The bird bath need not be elaborate. A discarded bread-pan or shallow wash pan may be repaired so that it doesn't leak and placed on a tree stump that is banded with metal. Concrete pedestals with shallow basins on top are sometimes made.

As you become familiar with bird ways, you will find that some birds like a dust bath just as much as a chicken does.

Arbor Day.—The usual celebration of Arbor Day consists of planting trees or shrubs. This year choose trees that are particularly attractive to birds. Table 5 lists a number of kinds of plants that attract various kinds of birds. From a study of this table you will be able to make a wise choice of trees and shrubs to plant on Arbor Day.

Some birds prefer to nest in dense thickets, and shrubs and vines may be so arranged as to provide ideal nesting conditions for these birds. Barberry, sumac, and plum, for instance, may be used with such vines as the spiny smilax, which will afford additional protection.

Birds of the Month.—The Phoebe, Purple Martin, Cedar Waxwing, Eastern Towhee, and Field Sparrow are birds that should receive especial attention during this month. The Cedar Waxwing mostly passes through Nebraska during this month, on its way northward to its summer home, but a very few remain in the state to nest in highly suitable locations.

TABLE 5.—How to attract birds—preference of birds among tree and shrub fruits that may be grown in Nebraska.

Common Name	Kinds of birds that are most fond of the fruit
Juniper (cedar)	Yellow-shafted flicker, starling, evening grosbeak, pine grosbeak, purple finch, cedar waxwing, myrtle warbler, mockingbird, robin, eastern bluebird.
Smilax	Cardinal, mockingbird, brown thrasher, catbird, robin.
Hackberry	Yellow-bellied sapsucker, yellow-shafted flicker, starling, cardinal, cedar waxwing, mockingbird, brown thrasher, robin, eastern bluebird.
Mulberry	Yellow-billed cuckoo, red-headed woodpecker, red-bellied woodpecker, downy woodpecker, kingbird, starling, Baltimore oriole, orchard oriole, cardinal, purple finch, scarlet tanager, cedar waxwing, red-eyed vireo, yellow warbler, mockingbird, catbird, wood thrush, robin.
Strawberry	Towhee, catbird, brown thrasher, wood thrush, robin.
Raspberry; blackberry	Bob-white, red-headed woodpecker, yellow-shafted flicker, kingbird, starling, Baltimore oriole, orchard oriole, pine grosbeak, song sparrow, fox sparrow, white throated sparrow, towhee, cardinal, rose-breasted grosbeak, blackheaded grosbeak, cedar waxwing, red-eyed vireo, mockingbird, catbird, brown thrasher, tufted titmouse, wood thrush, robin, eastern bluebird.
Rose	Sharp-tailed grouse, prairie chicken, bob-white.
Mountain ash	Red-headed woodpecker, Baltimore oriole, evening grosbeak, pine grosbeak, cedar waxwing, Bohemian waxwing, catbird, brown thrasher, robin.
Red haw	Pine grosbeak, purple finch, robin.
Dwarf apples	Ring-necked pheasant, red crossbill, pine grosbeak, purple finch, cedar waxwing, mockingbird, robin.
Juneberry	Yellow-shafted flicker, Baltimore oriole, cedar waxwing, catbird, robin.
Wild cherries (sand cherry wild plum, chokecherry).	Bob-white, mourning dove, red-headed woodpecker, yellow-shafted flicker, kingbird, starling, Bullock oriole, Baltimore oriole, orchard oriole, evening grosbeak, purple finch, rose-breasted grosbeak, black-headed grosbeak, western tanager, red-eyed vireo, cedar waxwing, mockingbird, catbird, brown thrasher, wood thrush, robin, eastern bluebird.
Sumac	Bob-white, downy woodpecker, red-bellied woodpecker, red-shafted flicker, yellow-shafted flicker, phoebe, starling, goldfinch, towhee, white-eyed vireo, Audubon warbler, mockingbird, catbird, brown thrasher, Carolina wren, black-capped chickadee, robin, eastern bluebird.
Buckthorn	Mockingbird, catbird, brown thrasher, robin.
Wild grape	Bob-white, red-bellied woodpecker, red-shafted flicker, yellow-shafted flicker, kingbird, starling, cardinal, cedar waxwing, mockingbird, catbird, brown thrasher, wood thrush, robin, western bluebird, eastern bluebird.
Virginia creeper	Red-headed woodpecker, red-bellied woodpecker, yellow-bellied sapsucker, yellow-shafted flicker, starling, evening grosbeak, purple finch, scarlet tanager, red-eyed vireo, mockingbird, brown thrasher, tufted titmouse, robin, eastern bluebird.
Buffaloberry	Sharp-tailed grouse, pine grosbeak.

TABLE 5.—(Continued).

Common Name	Kinds of birds that are most fond of the fruit
Russian olive	Sharp-tailed grouse, prairie chicken, cedar waxwing, catbird, robin.
Dogwood	Bob-white, downy woodpecker, yellow-shafted flicker, kingbird, starling, evening grosbeak, pine grosbeak, purple finch, white-throated sparrow, song sparrow, cardinal, cedar waxwing, warbling vireo, red-eyed vireo, catbird, brown thrasher, wood thrush, robin, eastern bluebird.
Elderberry	Red-headed woodpecker, yellow-shafted flicker, eastern kingbird, Arkansas kingbird, starling, white-crowned sparrow, rose-breasted grosbeak, black-headed grosbeak, red-eyed vireo, mockingbird, catbird, brown thrasher, robin, western bluebird, eastern bluebird.
Buck bush, (Coralberry)	Sharp-tailed grouse, evening grosbeak, pine grosbeak.
Honeysuckle	Bob-white, pine grosbeak, white-throated sparrow, catbird, brown thrasher, robin.

This list is by no means complete but contains many of the commoner bird-food plants. Information is adapted from Farmers' Bulletin 912 (Revised 1931), How To Attract Birds in the East Central States, U. S. Department of Agriculture.

Phoebe

The Phoebe is a member of the Flycatcher family. It is about 7 inches long. Sometimes a pair may be attracted by a nesting box with one or more sides completely open, placed on one of the farm out buildings.

Appearance.—The upper parts are olive gray with a darker-shaded crown. There are two pale wing bars. The underparts are of a whitish color tinged with pale yellow. The breast is olive gray. The bird often flicks its tail nervously.

Song.—An unmusical "phee-eur."

Nest.—Built of moss or other vegetable material and mud; lined with feathers, fine grass, or other softer materials. Usually attached to rafters in farm buildings, on bridge beams, and sometimes on rocks. Eggs 3 to 6, usually pure white, sometimes finely speckled around the larger end with brownish.

Food.—Chiefly injurious insects.

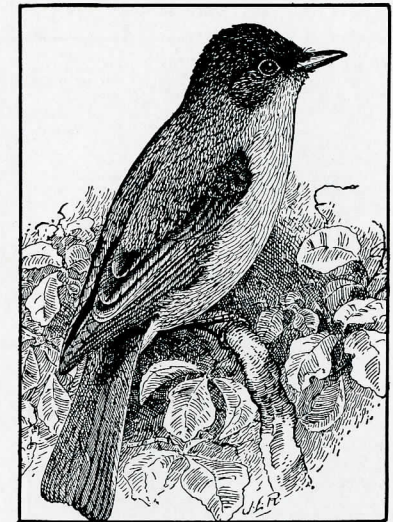


FIG. 35.—Phoebe (½) (Farmers' Bul. 54, U. S. D. A., 1897).

Westwardly occurs the Say Phoebe, which differs conspicuously from the Phoebe described above in its tawny brownish belly. The Crested Flycatcher of the eastern Nebraska woodlands has a grayish head and breast, yellow belly, and rufous tail. The migratory Olive-sided Flycatcher is distinguishable by a contrasting white line down the center of the brownish breast. Several smaller, grayish species of flycatchers nest in Nebraska, including the Eastern Wood Pewee and Acadian and Least Flycatchers eastwardly, the Alder Flycatcher over most of the state, and the Western Wood Pewee westwardly.

Purple Martin

The Purple Martin is a member of the Swallow family. It is about 8 inches long.

Appearance.—Entire body glossy bluish black in the male, less glossy black above and grayish below in the female. Wings and tail black, tail forked.

Song.—A pleasant and companionable twitter.

Nest.—In holes of trees or natural cavities in cliffs, crevices in buildings, or in martin houses. Eggs 3 to 6 pure white.

Food.—Insects caught on the wing.

Cedar Waxwing

The Cedar Waxwing is a member of the family that bears its name. It measures about 7 inches in length.

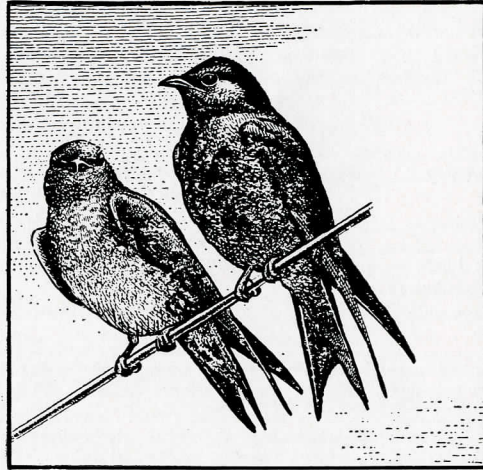


FIG. 36.—Purple Martin ($\frac{1}{4}$) (Farmers' Bul. 755, U. S. D. A., 1916).

Appearance.—Crest and head are glossy olive brown, with forehead, line through eye, and throat velvety black. Wings and tail blue-gray. Underparts shading into an olive yellow on the flanks and white on under tail coverts. Tip of tail yellow, sometimes with red wax-like appendages at ends of tail and longer wing feathers.

Song.—Talkative, well-mannered birds with soft, pleasant voices. They usually come in flocks, but for all their numbers they do not attract attention by noisiness.

Nest.—In trees. Made of small twigs, stems of weeds and grass, lined with soft leaves and rootlets. There are 3 to 6 bluish or purplish gray eggs spotted with brown or black.

Food.—Insects, especially beetles, and berries of wild shrubs and trees.

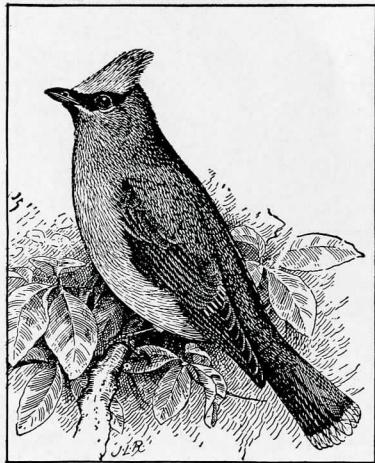


FIG. 37.—Cedar Waxwing ($\frac{1}{2}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Eastern Towhee

This member of the family of Finches and Sparrows is $8\frac{1}{2}$ inches long. They frequent brushy woodlands, usually feeding on the ground, but singing from the tops of the shrubbery or trees in the vicinity.



FIG. 38.—Eastern Towhee ($\frac{1}{3}$) (Farmers' Bul. 630, U. S. D. A., 1915).

Appearance.—Black head and neck, black back and wings. White underneath the body. Sides brownish, corners of tail white, and the iris of the eyes bright red.

Song.—A loud call note, often repeated, resembling the syllables "tow-hee," which gives the bird its name, and also a longer, softer, and pleasing song.

Nest.—Built on the ground or rarely in woods, usually at the base of a tree. Made of vines, twigs, coarse grass and leaves, lined with grass and rootlets. Eggs white or pinkish white, thickly speckled with reddish brown.

Food.—Insects and weed seeds.

Field Sparrow

The Field Sparrow is about $5\frac{1}{2}$ inches long.

Appearance.—Reddish or pinkish bill, crown patch of brown, sides of head gray with a brownish streak back of eye and the back grayish and rusty streaked with black. There are two distinct bars on the wings. Underparts are whitish, slightly tinged with rust.

Song.—A simple but prolonged repetition of the same high note beginning slowly and becoming faster until it ends in a high-pitched, plaintive trill.

Nest.—Made principally of grass and small weed stems, lined with fine grass, and built in old weed patches or in thickets or bushes in pastures and other open fields; 4 to 5 whitish eggs.

Food.—Insects and weed seeds make up its food ration.



FIG. 39.—Field Sparrow ($\frac{1}{2}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Many people think that the name "sparrow" means only the imported English Sparrow. As a matter of fact, the English Sparrow is not a true sparrow at all, and we have many species of native true sparrows, of which the Field Sparrow is but one. Closely related to the Field Sparrow is a sparrow of about the same size with the ear coverts brown, a light stripe through the center of the crown, and a buzzing song, that migrates through Nebraska abundantly each spring and fall, known as the Clay-colored Sparrow; its western relative, grayer and more sharply streaked and without the central pale stripe on the crown, known as the Brewer Sparrow; the Chipping Sparrow described on page 41; and a sparrow larger than any of these (6 to $6\frac{1}{2}$ inches long), with a round black dot in the center of the breast that comes to us abundantly in winter, known as the Tree Sparrow.

May

DURING May, June, and July, you will be very busy identifying as many birds as you can and learning to recognize them by their appearance, their habits, their flight, and their calls. Your notebook during these months should be growing rapidly, and it may be well for you to read again the paragraphs on notes and descriptions (page 10) and on the bird hike (page 15). Read over your notes from time to time and ask yourself whether you have included all the information that was available to you at the time of taking them. Remember that at the end of the year you will wish to check over your notes and choose the most interesting experience as the material for a story.

Morning Bird Hike.—During this month plan to make an early-morning bird hike. You may like to have a picnic breakfast on this day. If you have a kodak or camera, you may be able to get some interesting bird pictures as well. If you start before dawn, it will be interesting to note which is the first bird to sing in the morning, and which ones follow. Continue to look for birds until noon, and at the end of the hike compare your lists and see how many different kinds of birds have been seen altogether during the morning.

Bird Enemies.—Begin to organize the information you have gathered about bird enemies. Make a list of the kinds of enemies you have observed and try to find ways to prevent them from destroying birds. Review the section on "protection against invaders" on page 28 and try to add to this information. If you can, collect data on the amount of damage done to birds by various enemies. Information available indicates that probably 70 per cent or more of the nests of song and insectivorous birds are destroyed in the United States in one way or another. On the ordinary American farm, more than 50 per cent of the upland game-bird nests are destroyed.

So far as stray or unowned cats are concerned, the most effective remedy is to kill them. It is unfortunately true, however, that it is often impossible to dispose of all cats and retain friendly relations with your neighbors. No doubt it is always a kindness—both to the birds and to the victims—to kill stray cats. Such animals have a lean and hungry life at best, and they are the ones that cause most injury to birds. The greatest depredations of cats that have owners are probably done at night and in the early morning. It is quite possible to prevent a great deal of such injury by keeping the cats locked up in some building at night, not letting them out until the chores are done next morning. If they are locked up in granaries or barns, they are encouraged to keep down the rat and mouse population and thus their value to the owners may be increased. Every effort should be made to keep cats away from those parts of the farm where birds are nesting. Of course you can control the cats that belong to your own family, and if you approach your neighbors wisely on the subject, you may persuade them to do likewise. Dogs also should be controlled, but do not forget that dogs are comparatively harmless.

The numbers of such birds as the English Sparrow and probably also the European Starling should be regulated, for both of these birds are capable of becoming so numerous as to prevent more desirable species from living in the same region. Persistently destroying their nests will prevent their increase in numbers. Other ways of controlling bird enemies are discussed in such publications as Leaflet No. 50, "How to Make a Cat Trap," Leaflet 61, "English Sparrow Control," and Farmers' Bulletin 1456, "Homes for Birds," all published by the United States Department of Agriculture. These bulletins also contain information about protecting birds against cats, squirrels, rats, mice, and other enemies.

Be Sure You Are Right.—Before deliberately killing any bird or animal, be sure that it is making a pest of itself. Inform yourself well about its food habits and make sure that it is not doing enough good in the world to make up for its faults.

Birds of the Month.—The Franklin Gull, Mockingbird, House Wren, Brown Thrasher, and Chipping Sparrow are birds that should be especially studied this month.

Franklin Gull

This member of the family of Gulls and Terns measures about 15 inches in length. It appears about the middle of April in Nebraska and again in October. It is not known to nest here.

Appearance.—Feet with two webs (three front toes connected). Beak red; head blackish with white eyelids. Wings are mostly white underneath and the quills are gray tipped with white. Outer primaries

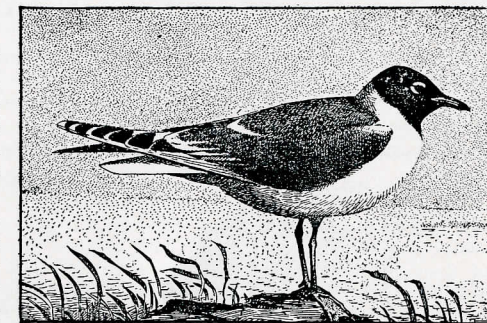


FIG. 40.—Franklin Gull ($\frac{1}{2}$) (Farmers' Bul. 497, U. S. D. A., 1912).

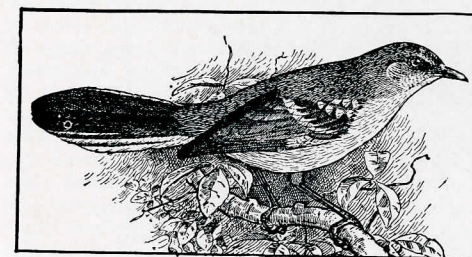


FIG. 41.—Mockingbird ($\frac{1}{4}$) (Yearbook for 1895, U. S. D. A.).

have wide black spaces near the ends. Underparts are white, tinged with pinkish in the spring.

Food.—Insects, including grasshoppers and crickets. In Utah, crops have been saved from crickets by a related species of gull.

Mockingbird

This bird is a member of the family of Thrashers and Mockers. It measures $10\frac{1}{2}$ inches in length.

Appearance.—Light gray above with wings and tail of

dark brownish-gray. The edges of the primaries and the outer tail feathers are white. The eye is pale yellow with a whitish line above.

Song.—As the name implies, this bird imitates the songs of other birds. He is a great singer and may often be heard at night.

Nest.—Made of sticks lined with rootlets and built in thick bushes, hedges, and thorny thickets; 4 to 5 bluish green eggs marked with reddish brown.

Food.—Earthworms, insects, and berries.

House Wren

This small bird, measuring five inches in length, usually returns about the third week in April.

Appearance. — Brownish-gray with wings and tail finely barred with black. The underparts are grayish; sides, flanks, and under tail coverts are barred with blackish. The bird usually holds the tail erect.

Song. — A short bubbling melody. When angered, it makes a sizzling sort of chatter.

Nest.—Of quantities of small sticks lined with feathers. Commonly nests in bird houses even though not well built or properly placed. The bird is an enthusiastic nest-builder and frequently makes many nests which it never uses; 6 to 8 white eggs thickly and minutely speckled with pinkish brown.

Food.—Caterpillars, moths, grasshoppers, ants, spiders.

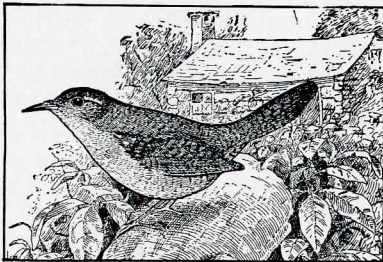


FIG. 42.—House Wren ($\frac{1}{2}$) (Farmers' Bul. 54, U. S. D. A., 1897).

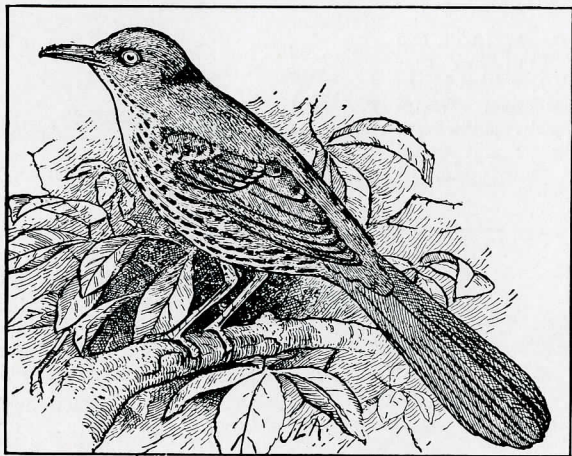


FIG. 43.—Brown Thrasher ($\frac{1}{4}$) (Yearbook for 1895, U. S. D. A.).

Brown Thrasher

This bird belongs to the same family as the Mockingbird and the two have many characteristics in common. The Thrasher is $11\frac{1}{2}$ inches long.

Appearance.—Slender bird with long tail and short wings. Upper parts are rich red-brown with whitish wingbars. Underparts are whitish heavily streaked with black. Eye yellow with buffy line above.

Song.—Rich and varied, with each phrase repeated twice. The bird commonly sings for long periods, usually choosing to do so from high branches. When disturbed, the bird makes a snapping noise with its bill.

Nest.—Made of twigs, lined with rootlets and strips of weed stalks, usually in thorny trees or thickets but occasionally in vines and bushes; 4 to 5 whitish eggs speckled with reddish brown.

Food. — Caterpillars, bugs, grasshoppers, various kinds of beetles, fruit, and weed seed.

Chipping Sparrow

This sparrow is barely $5\frac{1}{2}$ inches long.

Appearance.—Under parts grayish with white chin and throat. Bill black. Crown bright reddish brown with forepart of crown and line through the eye black. Line above eye whitish. Back, wings, and tail grayish brown streaked with black.

Song.—A long-drawn-out trill.

Nest.—Weed-stalks and grasses used to form a cup lined with horse-hair in low bushes; 4 to 5 bluish green eggs speckled around large end with blackish brown.

Food.—Caterpillars, insects, and weed seed.



FIG. 44.—Chipping Sparrow ($\frac{1}{2}$) (Farmers' Bul. 506, U. S. D. A., 1912).

The sparrows mentioned on page 37 are only a part of these interesting and valuable birds that are native to Nebraska. The "crown sparrows" include several large, handsome species, such as the White-crowned Sparrow, which in the adult has a broad median white stripe on the crown and similar ones on each side of the head running backward from the black lores over the eyes to the nape, and the throat and chest plain, clear light gray, and in the immature bird the head stripings darker and lighter shades of brown instead of black and white; the Gambel Sparrow, which differs only in having the side stripes on the head extending quite to the base of the bill and including the lores; the White-throated Sparrow, which also is similar but has the throat contrastingly white and the lores yellow; and the Harris Sparrow, which has the whole crown, face and throat forming a black mask in the adult, and in the immature bird, which has black on the breast only, a peculiar "scaly" color pattern on the crown. The smaller-sized "song sparrows" include not only the true Song Sparrow (page 30), recognizable by its streaks below forming a large dark blotch on the wholly white breast, but also the Lincoln Sparrow, which is shorter-tailed and darker colored with finer and well separated streaks on the cream-buff breast and the Swamp Sparrow, which has a dark red crown and white throat contrasting with a grayish breast and the underparts without streaks in the adult. The related Fox Sparrow is larger, and mostly bright brown, with the neck grayish and the tail fox red. The small "sharp-tailed sparrows," so called because they all have short tails and narrow feathers, include the Savannah Sparrow, which is streaked both above and below and has a yellowish stripe over the eye and a whitish median crown stripe; the Baird Sparrow, which is somewhat similar but has the median crown stripe buffy and the head suffused with that color; the Leconte Sparrow, which is still more buffy, this color suffusing the throat and breast also, and has the nape broadly pinkish brown; the Henslow Sparrow, which has the head suffused with olive and much reddish on the wings; and the Grasshopper Sparrow, which differs from the other "sharp-tailed sparrows" in having the underparts unstreaked in the adult.

June

IN addition to a study of certain birds, June may be devoted to learning bird songs and studying and protecting the nests of prairie birds.

Learn to Recognize Twenty Birds by their Songs.—The singing of birds is at its height in June. This is a good month to learn to know twenty different birds by their songs. Try to associate every bird call, note, and song that you hear with the bird that makes it, and try to remember this association. You will find that most birds have several calls. Some birds, like the Cardinal, have many different calls, but there is something about each call which is so characteristic of the bird that you are not likely to fail to recognize it as his own. In other cases you will be surprised to find that a beautiful singer can also utter harsh and unlovely notes. Try to learn which calls are made for sheer love of singing, which are uttered when the bird is frightened or hurt, which when angered, which are notes of warning.

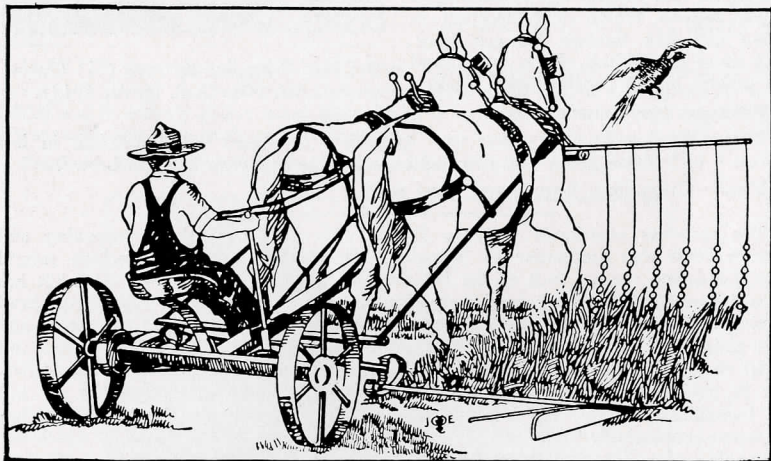


FIG. 45.—Protective device for flushing birds (American Wildlife Institute).

Nests on the Ground.—Make visits to meadows and alfalfa fields, looking for nests of birds that live in these places. Before it is time to mow the hay, locate as many such nests as you can and devise some way of protecting them. Meadowlarks, horned larks, dickcissels, quails, bobolinks, etc., are all birds that render enough service to the farmer to make it worth his while to leave their nests undisturbed in a patch of alfalfa or prairie grasses when he cuts the field. Remember that when one of these birds builds a nest, he has, according to statistics, only about one chance in two to rear his family.

These birds of the open fields are sometimes injured bodily when mowing time comes. This may be prevented by attaching a guard to the mowing machine which flushes the birds from the grass before the sickle

reaches them (see Figure 45). This device will not only flush the bird but it will give the farmer ample time to lift the cutting bar over the nest and leave a small patch of uncut hay around it. If not protected, many birds' nests are destroyed at the first cutting of alfalfa or clover. In view of the hazards in the lives of upland birds, it is necessary to do all that one can to protect and encourage them.

Birds of the Month.—The Black Tern, Eastern Kingbird, Arkansas Kingbird, Barn Swallow, and Catbird should be carefully studied this month.

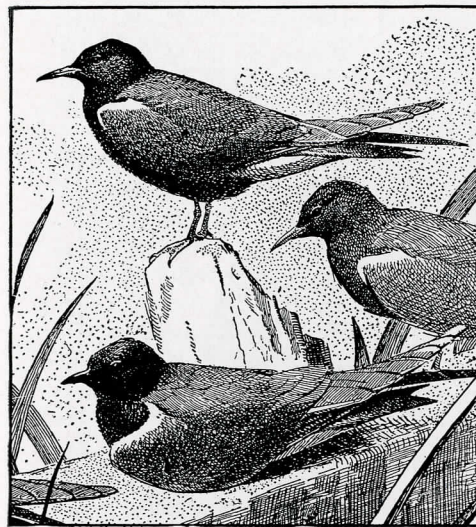


FIG. 46.—Black Tern ($\frac{1}{4}$) (Farmers' Bul. 497, U. S. D. A., 1912).

Black Tern

This member of the Gull and Tern group breeds in lakes and marshy areas in Nebraska. It is about 10 inches long.

Appearance.—Immature birds and adults in winter are white with pearl-gray back and wings. The bill and feet are dusky and there are dusky marks on the head. Adults in summer have head and underparts black, except the under tail coverts which are white.

Nest.—On dead floating rushes in shallow water or on old muskrat houses. Reeds and grasses are the materials used; 2 to 4 greenish drab to olive brown eggs spotted with blackish brown.

Food.—Insects for the most part; also crawfish and minnows.



FIG. 47.—Eastern Kingbird ($\frac{1}{4}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Eastern Kingbird

This Flycatcher is about 8½ inches long.

Appearance.—Underparts white, washed with grayish on throat and breast. Upper parts dark gray with head, wings, and tail darkest. Wing coverts edged with lighter gray and the tips of the tail feathers are white. There is a concealed patch of orange-red on the crown.

Call.—A metallic "pi-tink."

Nest.—A well-built nest of weed-stalks, string, and plant fibers, lined with softer material; 4 to 5 creamy eggs speckled with reddish brown.

Food.—Grasshoppers, butterflies, crickets, weevils, and bees. Ninety per cent of his food consists of harmful insects.

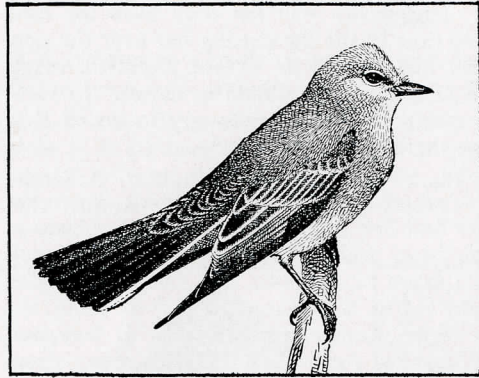


FIG. 48.—Arkansas Kingbird ($\frac{1}{2}$) (Farmers' Bul. 506, U. S. D. A., 1912).

Barn Swallow

This bird is 7 inches long.

Appearance.—Long and pointed wings and a very long, deeply-forked tail. The male is somewhat more brightly colored than the female. Underparts are pale reddish-brown; chin, throat and forehead rich reddish brown. Upper parts blackish glossed with steel-blue. Band across breast and line through eye blackish. Inner margins of tail-feathers marked with white spots.

Song.—Twittering notes.

Nest.—Of mud and straw lined with feathers, usually attached to timbers; 5 to 7 white eggs spotted with reddish brown.

Food.—Insects and flies.

Catbird

This member of the Mockingbird and Thrasher group is about 9 inches long.

Appearance.—The bird is of a dark slaty gray color, crown and tail black, under-tail feathers rich red-brown.

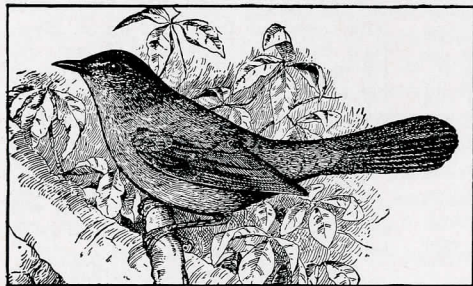


FIG. 50.—Catbird ($\frac{1}{2}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Arkansas Kingbird

This member of the Flycatcher group is 9 inches long. Like its relative, the Eastern Kingbird, it is a brave, noisy fighter.

Appearance.—Upper parts and breast a light gray, underparts lemon yellow. The tail is black with white outer feathers. Wings brown. Red patch concealed in crown.

Nest.—In bushes or trees, made of weeds, twigs, rootlets and string, lined with paper and thistledown. Eggs creamy white spotted with brown.

Food.—Insects.



FIG. 49.—Barn Swallow ($\frac{1}{2}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Song.—The Catbird is an able mimic, and if you listen carefully you will hear bits of the Brown Thrasher's song, the Goldfinch's, the Robin's, and others. When the nest is disturbed, both birds make snapping noises with their beaks or perhaps the taunting "miaow" of a cat.

Nest.—Of twigs lined with bark or rootlets, in thickets; 4 greenish blue eggs.

Food.—Insects and some fruits and wild berries.

July

BY midsummer the birds are busily engaged in rearing families. Some will already have reared one brood and are making preparations for a second. This will give you an opportunity to check your earlier observations on nesting habits and to get more complete information on questions and problems that interest you.

Club Nest Collection.—During the season so far, you will have discovered where several kinds of birds have built their nests. Of course you will not have disturbed these nests in any way as long as the birds were using them. But when the young birds have deserted the nests, and the old birds are not paying any attention to them any more, it is permissible to collect the old birds' nests and study them. Describe the construction of each kind of nest that you collect in this way. Keep a nest thus collected of each kind of bird and thus build up a Club birds' nest collection which may be kept in the district school house where everyone in the community may use it for reference.

Knowing Birds' Eggs.—Never disturb a bird's nest with eggs in it, but visits to the nest when the bird is away will permit you to look at the eggs. Never handle the eggs. Birds are cautious and sensitive and will frequently desert a nest that has been molested. But you can look at the eggs, note their color and markings, their size, and the number. You can always supplement such first-hand information with pictures and books. Try to know about the size, shape, and coloration of the eggs of ten different kinds of birds. Keep a list of the kinds of eggs you have seen and in your list briefly and accurately describe the eggs.

Birds of the Month.—July is a good month to make a special study of the Rose-breasted Grosbeak, Baltimore Oriole, Lark Sparrow, Dickcissel, and Bobolink. Check back on your migration calendar and see when you first saw them, and compare this with Table 3.

Rose-breasted Grosbeak

This Grosbeak is a member of the Finch and Sparrow family. It is 8 inches long.

Appearance.—Head and upper parts are black except white markings on the wing, tail, and rump. The underparts are white except triangular red-rose patch on breast and light-red wing linings. The female is mottled brown and white and quite different in coloring from the male. The beak is large and strong.

Song.—Somewhat resembles the robin's but softer and sweeter. Both birds sometimes utter weak notes of a "tsweck" nature.



FIG. 51.—Rose-breasted Grosbeak ($\frac{1}{2}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Nest.—A thin cup made largely of small roots, built in bushes and low trees. Eggs 3 to 6 pale blue-green with brown spots.

Food.—Insects, especially the potato beetles; seeds, blossoms, and buds of trees.

Baltimore Oriole

The Orioles and Black-birds belong to the same family. The Baltimore Oriole measures $7\frac{1}{2}$ inches long.

Appearance.—Males have black head, neck, and front half of back. Breast, sides, belly, and rear half of back bright orange. Tail and wings black with orange and white markings. Female's head, neck, and back are black streaked with dull yellow; two white wing bars in place of male's one; rump and tail dull yellow; chin and throat white mottled with black; sides of neck, breast, and sides dull orange; belly white tinged with orange.

Nest.—Long, bag-shaped, and hung from a slender branch or limb. It is woven of horsehair, string, or hemp, and lined with grass and hair. Eggs 4 to 6, white scrawled with black.

Food.—Insects, caterpillars, grasshoppers, weevils, plant lice.



FIG. 52.—Baltimore Oriole ($\frac{1}{2}$) (Yearbook for 1895, U. S. D. A.).

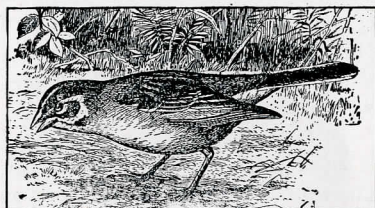


FIG. 53.—Lark Sparrow ($\frac{1}{2}$) (Yearbook for 1898, U. S. D. A.).

Appearance.—Sides of crown and ear coverts are chestnut brown; sides of throat and spot on breast are black. Back broadly streaked with black. Tail-feathers tipped with white, except the middle ones.

Song.—Loud and musical, rather like the Song Sparrow's.

Nest.—Built in bushes or trees and sometimes on the ground. Made of stems, dried grass and weed fibers. Eggs 3 to 6, whitish marked with black and brown on large end.

Food.—Grasshoppers, weevils, weed and grass seed and waste grain.

Dickcissel

This member of the Finch and Sparrow family is $5\frac{1}{2}$ to 6 inches long.

Lark Sparrow

The Lark Sparrow is about $6\frac{1}{2}$ inches long.

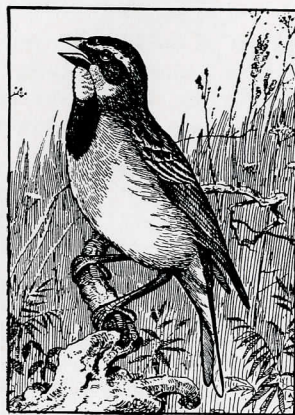


FIG. 54.—Dickcissel ($\frac{1}{2}$) (Yearbook for 1898, U. S. D. A.).

Song.—Even on the hottest summer days the bird enthusiastically repeats its song.

Nest.—Of dried grass built near the ground in weeds or bushes or on meadow lands. Eggs 3 to 5, pale blue.

Food.—Mostly crickets and grasshoppers with some weed seed and grain.

Bobolink

This member of the Black-bird and Oriole family is 7 inches long.

Appearance.—Male in spring is mostly black with a broad buffy patch on the back of the head and neck. Scapulars, lower back, rump, and upper tail coverts are white. Eyes are brown, bill black, and feet mahogany red. The female is sparrow-like in appearance.

Song.—A tinkling, bubbling song poured forth in flight.

Nest.—In slight depressions in the ground, made of stems, grasses, and rootlets with finer lining. Eggs 3 to 7, pale gray spotted with brown and gray.

Food.—Insects, grasshoppers, weevils, caterpillars, rice, oats, weed seed.

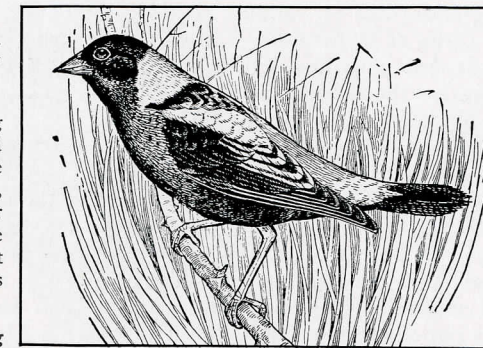


FIG. 55.—Bobolink ($\frac{1}{2}$) (Farmers' Bul. 54, U. S. D. A., 1897).

In addition to the Rose-breasted Grosbeak (page 45), there are several other members of the Finch and Sparrow family that are commonly known as grosbeaks. These include the related Black-headed Grosbeak, which in the male has the underparts tawny yellow instead of rose and white, and the wing linings yellow in both sexes; the Cardinal, recognizable in the male by the all-red color, except for a black ring around the base of the bill, and the conspicuously crested head, and the female by her crest, reddish "grosbeak" bill and reddish suffusions on the crest and otherwise largely yellowish brown body; the Blue Grosbeak, by the deep blue color and two chestnut-brown wing bars in the male, and the brownish color above and grayish below, with buffy wing bars, in the female; the Evening Grosbeak, by the enormous pale bill, bright yellow band on forehead, and otherwise largely yellowish body with black and white wings and black tail in the male, and gray color suffused with yellowish on the breast, and black wings and tail both marked with white, in the female; and the Pine Grosbeak, by the rose-red general color and conspicuous white wing bars in the male, and general gray color with yellowish on the head and rump, and white wing bars, in the female.

In addition to the Baltimore Oriole (page 46), in western Nebraska we have a similar species, the Bullock Oriole, which differs in the male in having the cheeks and a line over the eye orange, instead of the head solid black as in the Baltimore Oriole; and all over the state occurs the Orchard Oriole, which is black with the rump and belly dark chestnut-red in the adult male, and olive greenish above and yellowish below, with two white wing bars, in the adult female and younger males. Older immature males have a black throat.

Many Nebraskans misidentify the Lark Bunting as the Bobolink, because both birds frequent open country and are largely black and white in the male, which sings ecstatically in the air. The Lark Bunting male, however, is black with large white patches on the wing, but no buffy patch on the back of the head and neck, or white on the upperparts, as in the Bobolink.

August

WITH August the end of summer is drawing near. This is a proper time to review your year's work, organize your notebooks, complete migration data on summer residents, and take another bird hike.

Dates of Departure.—You will note during this month that some of the birds that have raised their young are more or less quietly preparing to leave for the South. Some species tend to flock together, and practically all of them are eating as much as they can to store up food for the long flight ahead. Keep watch and try to discover when each kind of bird leaves. Get out your migration calendar, to which you have probably not paid much attention during the middle of the summer, and note down the birds you see each day. Sooner or later a time will come when several days will pass without your seeing, for instance, a single robin. You will know that the last date on which you saw a robin marks the time of its fall migration. By comparing dates when last seen with arrival dates you can determine how long the summer residents are with us.

Nebraska lies in the path of two of the main "flyways" used by waterfowl and other birds in their migrations. These are the Mississippi flyway and the central flyway. This fact makes it possible for you to gain a fairly wide acquaintance with many strange birds by keeping on the alert during the spring and fall migration seasons. Scientists have learned through banding the legs of wild birds which have been caught and freed, and through other means, that the migration habits of different bird species vary. The Arctic Tern holds the record for long distance, flying 11,000 miles twice a year from Pole to Pole. Other birds, like the Robin, may spend three months in their journey from Colorado to Alaska. And the Bobolink leaves the grasslands of Argentina in February, dallies through Florida, and arrives in British Columbia in May.

Keep your eyes open, also, for the return of winter residents.

Organize Your Notes.—During the spring you noted how the resident birds of the winter were increased by new birds arriving from the South. Go over your notebook and arrange the birds that you have identified this year in the order of their arrival, with the dates of their arrival.

Bird Hike.—Toward the end of the month take another bird hike. As usual, list all the birds you see. Can you recognize the young birds in their youthful plumage? Try to find out how long it is before they assume the coloring that is characteristic of mature birds. If they resemble one parent more closely than the other in their immature plumage, which parent is it?

Birds of the Month.—The Turkey Vulture, Red-headed Woodpecker, Red-bellied Woodpecker, Yellow-billed Cuckoo, and Red-eyed Vireo are birds that can best be studied during this month. More often than at any other time of the year you will hear the calls of the cuckoo during this month, and likewise the Red-headed Woodpecker flashes from tree to tree and makes known his presence by beating a lively tattoo on any sounding board he can find.

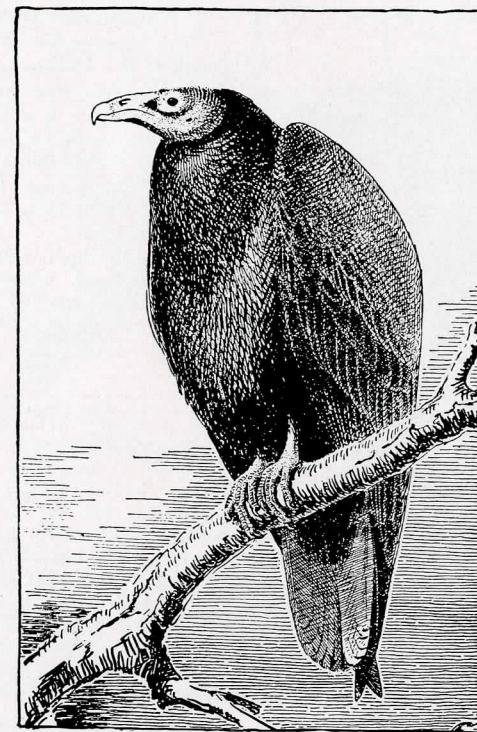


FIG. 56.—Turkey Vulture (1/7) (Farmers' Bul. 755, U. S. D. A., 1916).

Turkey Vulture

This member of the Vulture family is a very large bird, its length being 30 inches—only 6 inches less than a yard.

Appearance.—Head and upper part of neck without feathers and the skin red, wrinkled, and with whitish tubercles and some hairs and small feathers. Bill whitish, large, and hooked. Eyes brown. Plumage blackish brown with purplish cast when fresh; rusty and soiled in appearance when old. When in flight, under, lighter-colored feathers can be seen. Feet, dull flesh-color.

Nest.—Two whitish eggs are laid in a cavern or cavity between rocks or fallen tree trunks.

Food.—These birds live on carrion—that is, on dead animals. Because of their appetite for this type of food they are considered a useful bird, although unsightly in appearance. They are, however, exceedingly graceful in flight, as they circle high in the air on widely outspread and largely motionless wings. Rarely from the South, into southern Nebraska comes an occasional Black Vulture, which is a smaller species than the Turkey Vulture, with a shorter and broader tail and a whitish area on the under surface of the wings that is lacking in the Turkey Vulture. Also the Black Vulture does more flapping of its wings than the Turkey Vulture.



FIG. 57.—Red-headed Woodpecker ($\frac{1}{2}$) (Bul. 7, Div. Ornithology, U. S. D. A., 1895).

Red-bellied Woodpecker

This woodpecker is $9\frac{1}{2}$ inches long, also. It is shy and not so abundant or so often seen as other woodpeckers.

Appearance.—Top of head and back of neck, bright red; rest of head, neck, and underparts ashy gray. Upper parts barred black and white; upper tail coverts white with black markings.

Song.—The "chiv, chiv" of the bird somewhat resembles the cries of a squirrel. Some of its calls are like those of the Redhead or the Flicker.

Nest.—In tree trunks, branches, or telegraph poles. Eggs 3 to 6, glossy white.

Food.—Chiefly insects.

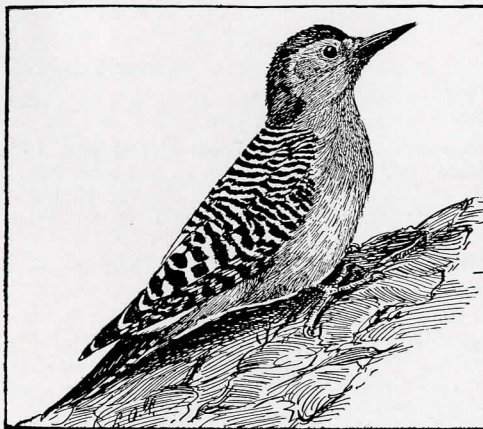


FIG. 58.—Red-bellied Woodpecker ($\frac{1}{2}$) (Farmers' Bul. 506, U. S. D. A., 1912).

Red-headed Woodpecker

This woodpecker has an average length of $9\frac{1}{2}$ inches.

Appearance.—The head, neck, and upper breast are a deep crimson red. Underparts, patch on wing, and rump are white. Rest of upper parts are black.

Song.—Sharp cries. Like the Flicker and other woodpeckers, it likes to drum on hollow trees.

Nest.—In high stumps, holes in dead trees, and, where there are no trees, in fence posts and telephone poles. Eggs, 3 to 5, glossy white.

Food.—Insects, larvae, and small fruits.

In extreme northwestern Nebraska occurs a close relative of the Red-headed Woodpecker and Red-bellied Woodpecker, known as the Lewis Woodpecker. It has the upperparts glossy greenish black except for a gray collar and a dull crimson-red face mask, while the bristly or almost hair-like feathers of the underparts are gray becoming suffused with rose-red on the belly. It is chiefly a species of the Black Hills and Rocky Mountains.

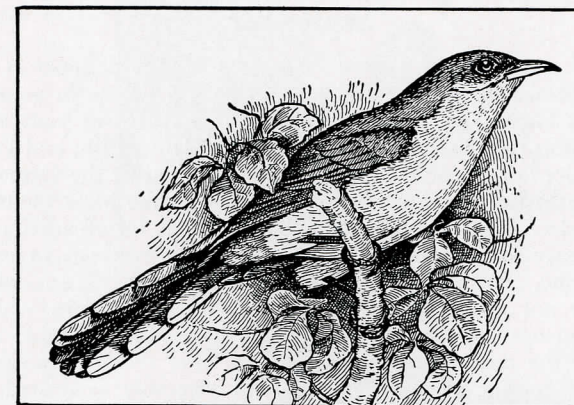


FIG. 59.—Yellow-billed Cuckoo ($\frac{1}{4}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Yellow-billed Cuckoo

This member of the Cuckoo family is 12 inches long and is sometimes called the rain crow.

Appearance.—A long, slender bird with lower half of bill yellow, upper half dark. Upper parts plain grayish brown, faintly glossed with green. Wings appear reddish brown in flight. Underparts ashy white. Outer tail feathers black tipped with white.

Song.—An unmusical series of "kucks."

Nest.—A loose platform of sticks built in trees. Eggs 3 to 6, pale greenish blue.

Food.—Caterpillars, grasshoppers, potato bugs, and other insects.



FIG. 60.—Red-eyed Vireo ($\frac{1}{2}$) (Department Bul. 1355, U. S. D. A., 1925).

Nest.—A cup made of string, strips of paper, leaves, and fibers lined with grapevine bark, stems, and rootlets; 3 to 5 white eggs lightly speckled with reddish brown. Hung from forked twigs of trees.

Food.—Insects and wild berries.

Red-eyed Vireo

This vireo is $6\frac{1}{4}$ inches long.

Appearance.—The top of the head is blue-gray with a narrow white stripe over the eye and a blackish line through the eye. Rest of upper parts are olive green. Underparts are white washed with olive green and pale yellowish on sides. Eyes reddish.

Song.—A flowing but frequently interrupted song, whistled rapidly over and over.

September

BESIDES studying the special birds of the month, make a study of the Nebraska game laws and plan to have a debate in your club.

Nebraska Game Laws.—From your County Agent or your local Conservation officer, you may secure copies of the Game, Fish, and Park Laws and Regulations of the State of Nebraska, published by the Game, Forestation, and Parks Commission whose offices are in the State House at Lincoln, Nebraska. The Commission publishes other information of interest which you may secure by request. It is well for everyone to be familiar with the game, fish, and park laws and regulations. Learn what kinds of birds are not protected, and why in each case. Learn which game birds have an open season and which ones have not, and why; and learn the dates of the open season on those that have them. Similarly, study the bird laws of the Federal Government, especially as related to game birds. From the County Agent or by writing to the United States Department of Agriculture (Washington, D. C.) you can find where to secure a pamphlet on the game laws of all of the states, and you will find it interesting to compare Nebraska laws with those of neighboring states.

In 1933, after years of drouth and overshooting of wild ducks and geese, the Chief of the U. S. Bureau of Biological Survey was convinced that these birds were doomed unless given help. Four years later, thanks to a national program of waterfowl restoration, he reported that these birds had increased to a point where they will not become extinct so long as proper restrictions upon hunting are maintained. Not only the ducks and geese profited from the program; a great many jobless Americans were put to work, and many dams and ditches were built. The dams and ditches aid in the control of waters, lessening the danger of floods, loss of property, and life, and lessening also the threats of erosion.

Organize a Debate.—After you have made a study of the game laws of the state, let the members of your Club prepare a debate in an attempt to determine whether or not certain kinds of birds should be protected. Or the Club may prefer to prepare a court trial at which some such bird as Jack Crow shall be the plaintiff, pleading for protection. Certain club members may speak in his defense and others may prosecute him. Others may be members of the jury, and perhaps the Club Leader can act as the Judge. In preparation, the various club members will wish to read as much as they can on the character of the bird on trial. Of course you will use the information you have gained through your own observations during the year. The University of Nebraska Extension Circular 0-31-2 contains a list of publications on "Bird Propagation" which will be useful for this purpose. All of them contain information which every Bird Club member should know. You can secure the list and the publications through your County Agent.

Birds of the Month.—Blue-winged Teal, Ruby-throated Hummingbird, Nighthawk, Ruby-crowned Kinglet, Goldfinch, and Blue Jay should receive especial study this month.

Blue-winged Teal

This duck has a length of 16 inches and is one of the commonest in Nebraska.

Appearance.—Male: Sides of head blue-gray with a purple gloss. White crescent in front of the eye. Crown dark brown. Back brown mottled with black. Wings gray-blue marked with green. Female: Less brilliantly marked than the male. Mostly gray and brown with glossy green on wings.

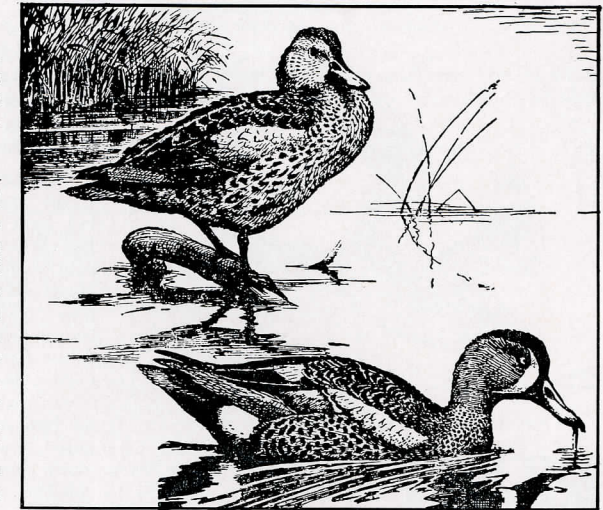


FIG. 61.—Blue-winged Teal ($\frac{1}{2}$) (Farmers' Bul. 1684, U. S. D. A., 1931).

Nest.—Built on dry ground or in reeds or grass in marshes; made of grass and lined with feathers; 8 to 12 pale buffy eggs. Common in the sandhill region.

Ruby-throated Hummingbird

The Ruby-throated Hummingbird is the smallest of the birds described in this outline, having a length of $3\frac{3}{4}$ inches. Usually seen about flowers in May and September during migrations; nests along the Missouri and lower Platte rivers.

Appearance.—Bill about twice as long as head; velvety black chin, throat brilliant crimson. Upper parts green, wings and tail tinged with steel blue. Underparts gray glossed with green. Feet small with downy plumage at base. Female similar but with white underparts and no red on throat. The tail is forked.

Nest.—Cup-shaped, made of soft vegetable fibers and coated with lichens and fastened with cobweb. It is placed on a twig or small branch 10 to 60 feet above ground. Eggs 2, white.

Food.—Small spiders and insects and nectar of flowers.



FIG. 62.—Ruby-throated Hummingbird ($\frac{1}{2}$) (Farmers' Bul. 506, U. S. D. A., 1912).

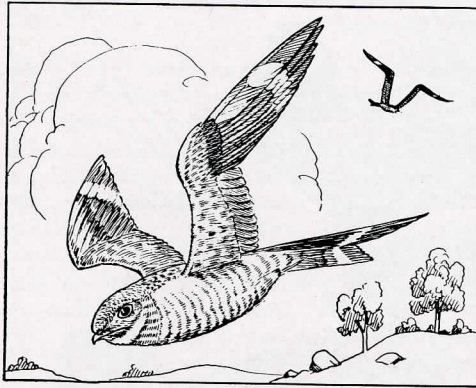


FIG. 63.—Nighthawk (By Oz Black).



FIG. 64.—Ruby-crowned Kinglet ($\frac{1}{2}$) (Farmers' Bul. 506, U. S. D. A., 1912).

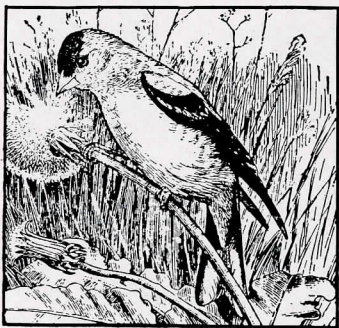


FIG. 65.—Goldfinch ($\frac{1}{2}$) (Yearbook for 1898, U. S. D. A.).

Nighthawk

The Nighthawk is a member of the Goatsucker family. It is 10 inches long. The bird is sometimes confused with the Whip-Poor-Will.

Appearance.—Long pointed wings and forked tail. Short bill, large mouth, no bristles on face. White patch on the throat, chin and upper throat black. Upper parts black, mottled with gray and buff. Underparts barred with black and white. White bar on wings very noticeable in flight. The mottled colors make it difficult to see the bird sitting on a fence post or on the ground. Female is similar with buffy throat patch and without white bars on outer tail feathers.

Call.—"Pee-ah, pee-ah" in a grating voice.

Nest.—No nest in the ordinary sense. Two dull white eggs marked with gray and light brown laid in the open on the ground.

Food.—Insects caught during evening flight in the large mouth.

Ruby-crowned Kinglet

The Ruby-crowned Kinglet is $4\frac{1}{2}$ inches long.

Appearance.—Male: A bright red crown, sometimes concealed. Upper parts olive gray shading into greenish on the rump. Wings have narrow whitish bars; underparts are dingy white. Tail somewhat forked. Female: without red crown.

Song.—For a small bird, it has a well modulated, voluminous song. Its scolding chatter, a rapid "chee-dah," makes it easy to identify.

Nest.—Half-hanging from end of a pine, spruce or other tree. It is made of bark shreds, green moss and feathers, and lined with hair and feathers. Eggs 5 to 9, white or buff faintly spotted around large end with light brown.

Food.—Insects, spiders, weed seed and fruit.

Goldfinch

This finch is five inches long.

Appearance.—Male: Body is canary yellow except for black on crown, wings, and tail. In addition the wings are barred with white and there are white patches on the tail. Female: Yellowish brown upper parts, crown unmarked; otherwise like the male except that marks are less striking.

Song.—An inquiring call note and a lively tinkling song. Brilliant "per-chic-o-ree" flight song repeated with each bound.

Nest.—A cup-shaped nest of plant fibers, lined with down and other soft materials in larger bushes and smaller trees. Eggs 3 to 6, pale blue. The Goldfinch nests later than most birds.

Food.—Mostly weed and grass seeds. Fond of sunflower, dandelion, thistle, and cosmos seeds.

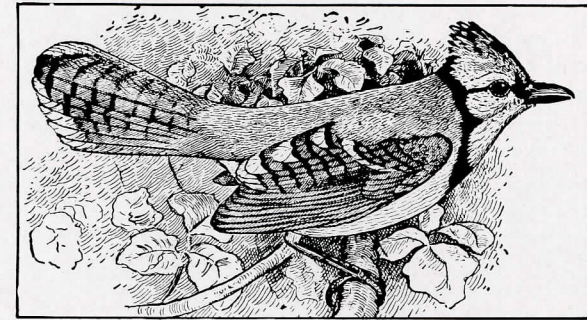


FIG. 66.—Blue Jay ($\frac{1}{4}$) (Farmers' Bul. 54, U. S. D. A., 1897).

Blue Jay

This member of the Crow and Magpie family is about 12 inches long.

Appearance.—The head, crest, and back are grayish blue with narrow black collar and black forehead. Wings and tail bright blue barred with black. Inner wing coverts have white tips. All but the center tail feathers have white tips. Throat, midbreast, and sides grayish; belly white.

Call.—The bird utters sharp cries but has no song that is pleasant.

Nest.—Of twigs and rootlets in orchard or other trees about the farmstead. Eggs 3 to 6, dull green spotted with brown.

Food.—Mostly insects, fruits, grain; sometimes eggs and young of other birds.

The Ruby-throated Hummingbird is the only one known to nest in Nebraska, but in western and central Nebraska two others are occasionally seen during migrations—the Broad-tailed and Rufous Hummingbirds, both of which nest in the Rocky Mountain region.

Nebraska members of the Goatsucker family other than the Nighthawk are the Whip-Poor-Will, of the eastern edge of the state, and the Nuttall Poor-Will of the northwestern corner of the state, neither of which has the wing bars of the Nighthawk.

The Golden-crowned Kinglet is of the size of the Ruby-crowned Kinglet, but has an always exposed bright orange (male) or bright yellow (female) crown, and a white stripe over the eye, instead of the white eye ring of the Ruby-crowned Kinglet.

Other Nebraska jays than the Blue Jay are the Steller Jay, which has the crested head and the back dull blackish gradually changing into blue on the rump and belly, and the wings and tail purplish blue barred with black, and the Canada Jay, which is dark gray with white on the crown and throat and the underparts brownish gray (individuals of both species occur in western Nebraska in winter) and the Pinyon Jay (no crest and almost uniform grayish blue all over, except for white streaks on throat) which nests in the Pine Ridge and wanders in flocks over central Nebraska in winter. A rare winter visitor of the Jay family that nests in the Black Hills is the Clark Nutcracker, which is ash-gray with black and white wings and tail.

October

THIS month closes the year's work. If you plan to continue the work for another year, a new set of officers should be elected to take charge of the meeting in November.

Closing the Year's Work.—Go over your notebooks and get them in final good form. Prepare a report on your bird observations made during the year to send to the headquarters office at Lincoln. Complete your year's work by writing a story telling of your most interesting experience during the year with some kind of wild bird.

Winter Habits of Game Birds.—Study the wintering habits of our game birds. Learn how to prepare shelters so that winter storms with heavy snows will not cover them.

One of the best ways of supplying food for birds in the winter is to place shocks or bundles of corn upright in protected places such as thickets, around hay and straw stacks, or in fence corners. As the snow becomes deeper during the winter, ears of corn at the higher levels become available to the birds, and the supply is maintained pretty well throughout the winter. If the snowfall should be light, the stalks may be broken over so that the birds can reach the grain. Straw stacks that contain a good deal of grain may be opened and reopened from time to time, thus providing an all-winter's supply.

Corn shocks may be set up and opened tee-pee fashion, or low hutches may be built and supplied with food. Corn, buckwheat, rye, wheat, barley, sorghum seed, sunflower seeds, soybeans, millet seed, popcorn, and cowpeas, are all foods that can be used. Corn on the ear, sorghum seeds in the heads, and sunflower seeds in the heads are just as acceptable as shelled grain if not more so. Feed may be spread upon the snow in protected places if the snow has a hard crust.

Feeding stations for game birds should be placed as near as possible to the natural protective cover in which the birds spend their time. A field of corn that is near a thicket will give much more help to birds than one which is far removed from trees and brush. If it is necessary to feed far from a natural woodland or thicket, a protective cover for the birds can be made by piling brush over and around the feeding hutch. For quail, food should not be placed more than 75 yards from some kind of protective cover. Pheasants, prairie chickens, and sharp-tailed grouse usually range farther for their food. Where quail are abundant, it is well to provide one feeding station for each 40 acres. For prairie chickens, provide one station for every 5 or 10 sections (that is, every 5 or 10 square miles).

The feeding stations should be inspected regularly. Watch carefully for signs of enemies and when their tracks are present, move the shelter to another place and try to destroy the predators.

Birds of the Month.—The Mallard, Pintail, Redhead, and Canvasback ducks should be studied this month, along with the Canada Goose, the Greater Prairie Chicken, and the Ring-necked Pheasant.

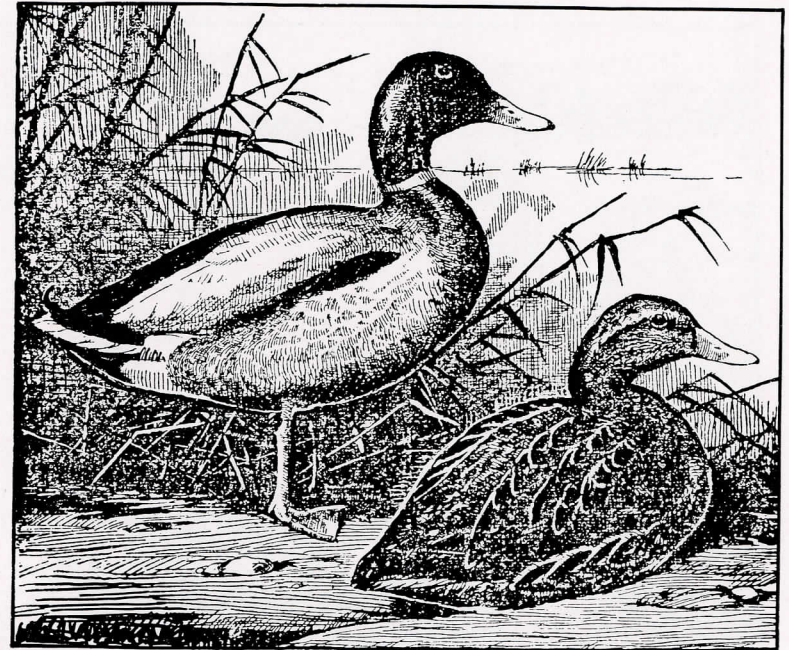


FIG. 67.—Mallard ($\frac{1}{8}$) (Farmers' Bul. 1505, U. S. D. A., 1926).

Mallard

These ducks are about 23 inches long.

Appearance.—Feet pink and bill yellow. The male has a green head and neck glossed with violet. Wings with a violet bar bordered with black and white. Rest of wings, back, and sides are gray, the sides finely barred. Belly white, breast chestnut. Rump and tail coverts black with tail feathers whitish. Female mottled grayish brown with violet bar on wings.

Nest.—Common in sandhill region. Nests lined with down, built in depressions in high grass near water; 6 to 10 pale olive eggs.

The Mallard, like the Blue-winged Teal (page 53) and the Pintail (page 58), belongs to the subfamily group of surface-feeding ducks, as contrasted with the diving ducks. When they start to fly from the water, they take wing without pattering along the surface. They have no lobe or web on the hind toes. Among the surface-feeding ducks are the Black Ducks, which are closely related to the Mallard, but have both sexes mottled, much like the female Mallard, only a darker, more sooty brown. The Common Black Duck breeds in the northeastern United States and southern Canada, and has dull reddish brown feet and a dull greenish bill, while the Red-legged Black Duck, which nests farther north, has bright red legs and a yellowish bill. Neither Black Duck is very common in Nebraska. The Gadwall and Baldpate are common ducks in Nebraska, and nest in our sandhill region. The Gadwall is a gray duck with the belly white, and the tail coverts black, that shows a white patch on the hind edge of the wing in flight, while the Baldpate is easily recognized in the male by its white crown and in the female by the ruddy brown general color, blue bill, and its white wing patch on the front edge of the wing.

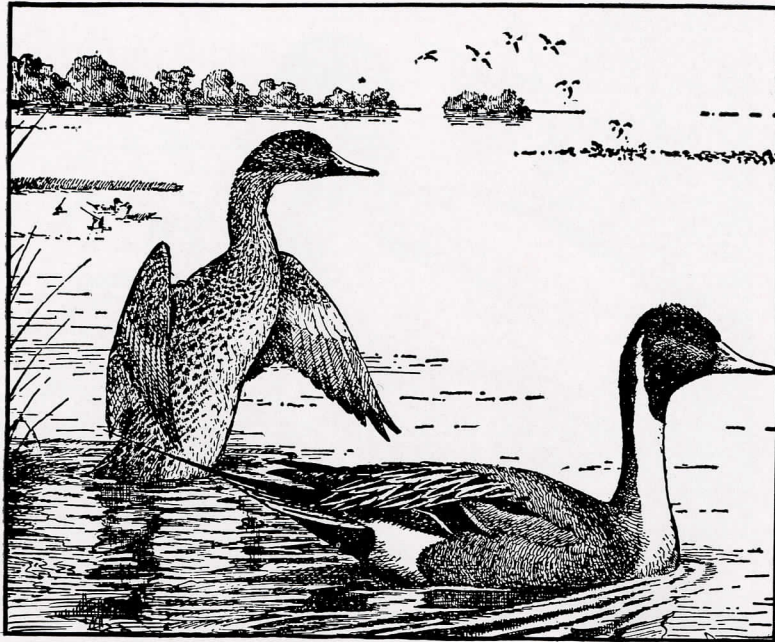


FIG. 68.—Pintail Duck (1/7) (Farmers' Bul. 1575, U. S. D. A., 1928).

Pintail

The Pintail male is 28 inches long; the female about 6 inches shorter.

Appearance.—Head brown glossed with violet on the cheeks. The back of the long, slender neck is blackish. The front of the neck, stripes up the back of the head, and underparts are white. Back and wings are brownish gray, with green bands narrowly bordered with white on the wings. Central tail feathers are very long and narrow, black. Female is duller—mottled brown, blackish, and buff, with white throat.

Nest.—The Pintail breeds commonly in Nebraska but mostly farther north. Nests are built in concealed depressions on the ground, lined with grass and feathers; 7 to 10 pale green to olive buff eggs.

Another common surface-feeding duck is the Shoveller or Spoonbill, so called because of its very large and flattened bill. The male has the head greenish black, the sides and belly brownish red, the breast white and a pale blue patch on the wing, while the female is mottled brownish with the blue wing patch. The Shoveller nests in all parts of Nebraska, as also does the Blue-winged Teal (page 53). In western Nebraska the Cinnamon Teal occurs, but uncommonly. It is the size of the Blue-winged Teal, and the male is cinnamon-red with blue wing patches, while the female is so much like the female Blue-winged Teal that it hardly can be told from it. Our smallest surface-feeding duck is the Green-winged Teal, in which the male is gray with a brown head having a green patch on the side, and a conspicuous white crescent in front of the wings while the female is small and speckled, with a green patch on the wing. The Green-winged Teal is common along our creeks, but breeds mostly north of Nebraska. The many-colored crested Wood Duck, formerly common in wooded parts of eastern Nebraska, is a surface-feeder.

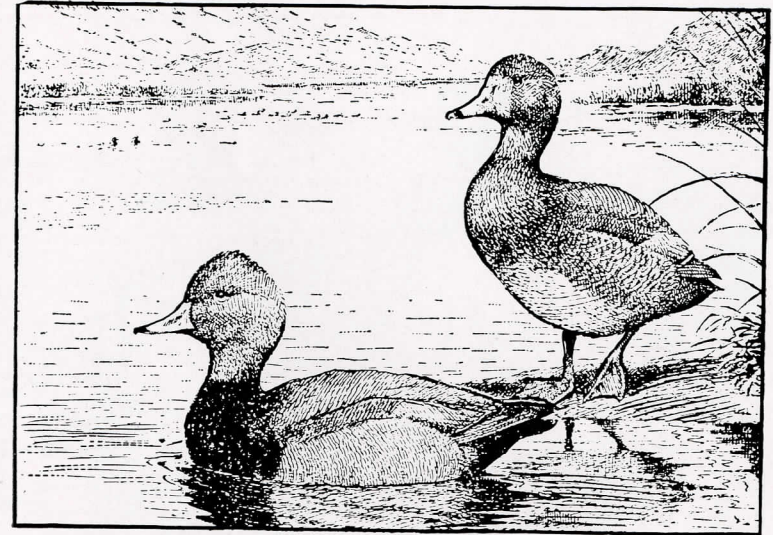


FIG. 69.—Redhead (1/2) (Farmers' Bul. 1647, U. S. D. A., 1930).

Redhead

This duck is one of the medium-sized members of the Wild Duck family, being 19 inches long.

Appearance.—Upper back, breast, and lower neck blackish; head bright reddish chestnut glossed with purple. Belly whitish, more or less barred. Wings are gray. Back is finely barred with black and white.

Nest.—Built on marshy ground near water and made of weeds and grass lined with down; 7 to 10 grayish white or pale olive eggs. Breeding range is farther north, but a considerable number summer in the Nebraska sandhills and some nest there.

The Redhead and the Canvasback (page 60) represent two of our well-known larger kinds of diving ducks. Like other diving ducks, they regularly dive under the water for their food, prefer the larger lakes and rivers, and patter along the surface of the water when they take wing. Each hind toe has a large lobe or web. Probably our commonest diving duck in Nebraska is the Lesser Scaup, sometimes called the "Little Bluebill" because of the blue color of its bill, which in the male has the head and neck black glossed with purplish and the tail and its coverts also black, while the back is light grayish and the underparts white, and in the female is wholly brownish except for a white band around the base of the bill. The comparatively rare Greater Scaup is larger, with the head and neck of the male black glossed with greenish. Both Scaups have a white wing stripe, conspicuous in flight, and longer in the Greater Scaup. A third duck of this group, the Ring-necked Duck, is of the size of the Lesser Scaup and has the back dark colored, black in the male and brownish in the female, instead of grayish, and the male further has two white rings on the bill and a white bar on the base of the bill and around the eye. Both Scaups and the Ring-necked Duck usually are smaller (15 to 20 inches long) than the Redhead or Canvasback (18 to 24 inches long).

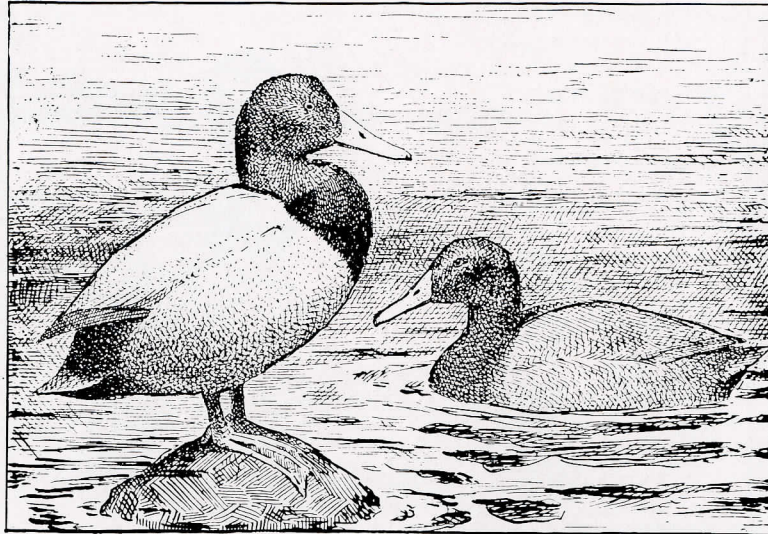


FIG. 70.—Canvasback (1/7) (Farmers' Bul. 1235, U. S. D. A., 1921).

Canvasback

The Canvasback Duck has a length of 21 inches. It feeds out in open water, far from shore. It is one of the most sought-after game birds.

Appearance.—The head and neck are rufous (reddish or reddish-yellow); crown, chin, lower neck, breast, tail, and upper back are black. Lower back and wing coverts are black barred with white and the belly is white. The female is less conspicuously colored. The birds have long, sloping bills and long, low heads.

Nest.—Among reeds or rushes over shallow water; uses stems to build a bulky mass and lines the inside with down; 7 to 8 pale olive green eggs.

We have in Nebraska several kinds of diving ducks other than those already mentioned. A common one that nests in the sandhill region is the Ruddy Duck, a small (14 to 17 inches) stout-bodied duck, the male being rusty red in the spring and gray in the fall, the female like the fall male, both sexes always with a blackish crown, white cheeks and large blue bill. The Bufflehead is another small (13 to 15 inches) diving duck, having in the male large white patches on the sides and top of the head, sides of the back and wings, and the underparts white, and in the female merely a spot on the cheek, wing patch and underparts white. We have also two Goldeneyes, large ducks (17 to 23 inches) that occur on the larger rivers and lakes in the late fall and winter, the adult males of which are distinguishable by the black head, glossed with greenish and with a large round white spot in front of the eye in the American Goldeneye and glossed with purplish and with a large crescentic white spot in front of the eye in the Barrow Goldeneye. The females of both species are gray with a white ring around the neck and a dark brown head. Other uncommon or rare winter ducks are the Scoters, of which there are three, the White-winged, the American, and the Surf Scoter, and the Oldsquaw.

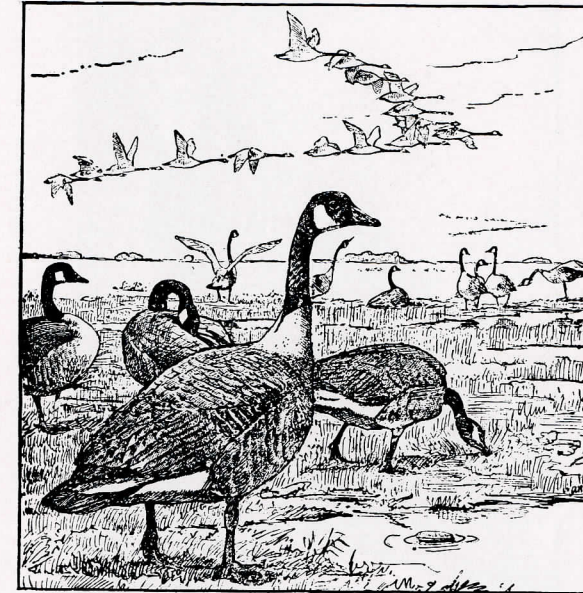


FIG. 71.—Canada Goose (1/9) (Farmers' Bul. 1138, U. S. D. A., 1920).

Canada Goose

This bird measures 38 inches long. Formerly it nested commonly in the sandhill region and on islands in the Platte and Missouri rivers.

Appearance.—Neck and head are black with a broad white chin-strap. Upper parts brownish gray; rump and tail black with white upper tail coverts. Belly white.

Nest.—On mounds in low marshy places, made of grass and leaves and lined with down; 6 to 7 dull white eggs.

In addition to the true Canada Goose, there are two other smaller races of similar coloration, including the black head and neck and white chin-strap, that are recognized by name by hunters and students of birds. One of these, known as the Lesser Canada Goose, breeds on the Arctic Coast east to Hudson Bay, and has a wing measuring only from 15 to 17.75 inches, instead of 18 to 21 inches as in the true Canada Goose. Each year, from early October to mid-December, and again each spring, from mid-March to mid-April, these Lesser Canada Geese migrate through Nebraska in abundance. Still smaller, but also similarly colored, is the Hutchins Goose, with the wing only 12.5 to 15 inches long, that also breeds in Arctic America, but to the eastward of the Lesser Canada Goose, and migrates through the Mississippi Valley in late October and November, and again in early April. We have commonly in Nebraska also the Lesser Snow Goose, which is white with black wing-tips, and the Blue Goose, which has bluish wing coverts and in the adult bird the head white, both of which breed in the Arctic regions and migrate through Nebraska abundantly each spring and fall, and the White-fronted Goose, which has the head and neck uniform gray, with a white ring around the base of the bill, that breeds in the Arctic and migrates, less commonly, through Nebraska each spring and fall.

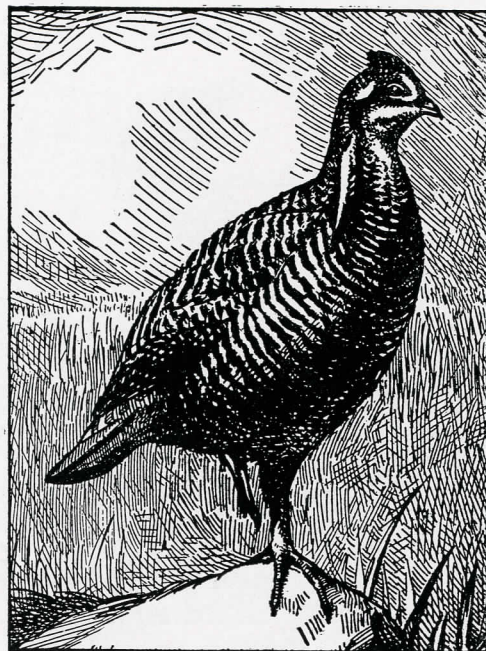


FIG. 72.—Greater Prairie Chicken ($\frac{1}{2}$) (Farmers' Bul. 497, U. S. D. A., 1912).

Greater Prairie Chicken

This bird is 18 inches in length. Formerly it was a common game bird found in large numbers throughout the state but has become scarce in recent years.

Appearance.—Upper parts are yellowish brown and white crossed by black bars. Head a deep buff except for blackish brown stripe and spots. Neck has tufts of feathers $2\frac{1}{2}$ inches long. Underparts white barred with brown.

Call.—A loud "booming".

Nest.—In open prairies in slight depressions in the ground, and made of grass and weeds lined with grass and feathers.

Food.—Grasshoppers, potato bugs, insects, berries, grain, buds, and green leaves.

There also formerly occurred uncommonly in southwestern Nebraska in winter the Lesser Prairie Chicken, a species similar to our Greater Prairie Chicken but smaller and paler, with the bars on the back composed of wide brown bars edged by black lines, instead of broad, solid black bars. Both kinds have short and rounded tails. We have also in western and central Nebraska the Sharp-tailed Grouse, which has the upperparts mottled grayish brown, buffy and black, and the underparts whitish with V-shaped markings, a pointed tail, and no feather tufts on the neck. A few Sage Grouse, a very large species with narrow and pointed tail feathers, formerly occurred along the extreme western edge. A few Hungarian Partridges have been established. But the Greater Prairie Chicken, Sharp-tailed Grouse, Ring-necked Pheasant (page 63), and Bob-white Quail (pages 12-13) are the principal upland game birds. The Mourning Dove is not regarded as a game bird in Nebraska, and is protected by law.

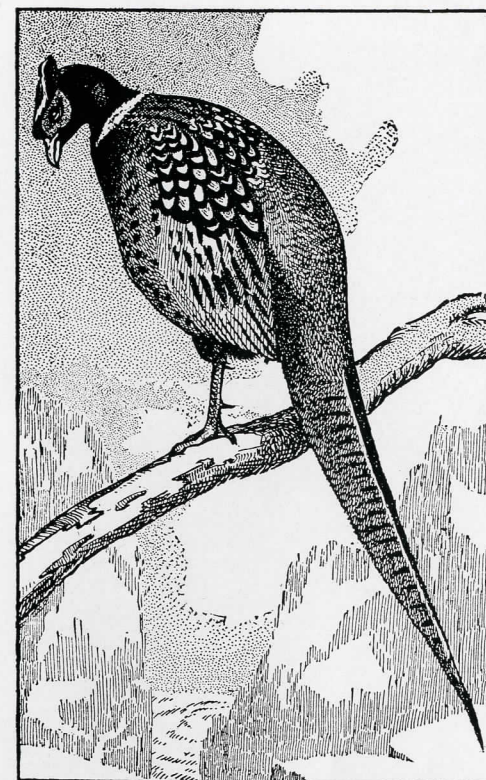


FIG. 73.—Ring-necked Pheasant ($\frac{1}{8}$) (Farmers' Bul. 497, U. S. D. A., 1912).

Ring-necked Pheasant

This native of China, Siberia, and Korea has become a popular game bird in Nebraska. It measures 40 inches in length. The Pheasant consumes an immense number of grasshoppers and other insect pests together with much grain. Its economic value is a good topic for discussion.

Appearance.—Back of head tufted, neck greenish or blue, breast rich coppery chestnut, light patch around the eyes, neck wholly or partly surrounded by white collar band. Back and wings mottled blue and white, wings becoming whiter near the ends. Female grayish brown, not brilliantly colored.

Call.—A squawking note when alarmed.

Nest.—In concealed places along fence rows, edge of timber, along streams, and in grassland on open prairie.

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