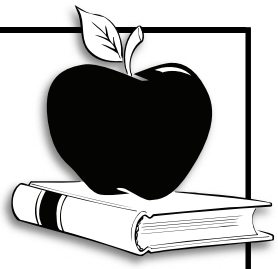
SUGGESTED GRADE LEVEL: 4

NEXT GENERATION SCIENCE STANDARDS:
4-LS1-2

SKILLS/PROCESSES: grouping, communications, problem-solving, decision-making, role-playing, reasoning, observation, classification, inference

OBJECTIVE: Students will describe the function of bird **courtship** and recognize that courtship and mating consume a great amount of time and energy.

TEACHER'S GUIDE



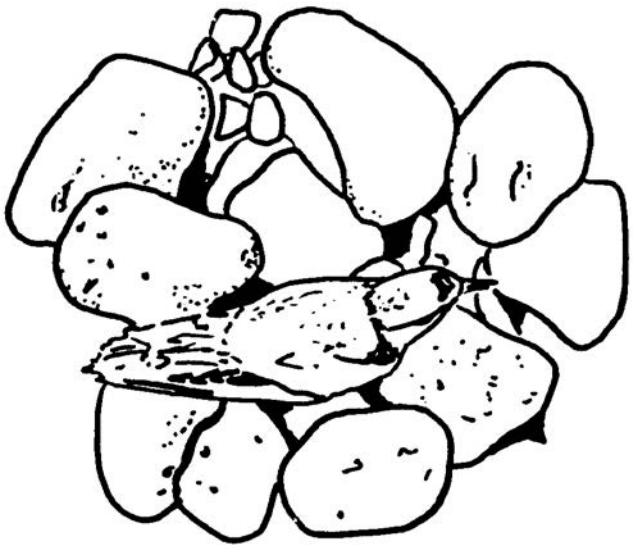
UNIT 2 ■ LESSON 3

Hello, Mate

BACKGROUND

Most birds are **passerines** (perching or songbirds). These small birds migrate great distances each year. Passerines have a short life span and seek a new mate each year; thus, song is very important in attracting a **mate**. The beautiful songs and colorful feathers of males are used to establish and protect **territory** and attract and **compete** for females.

camouflage



Many females are drab in color, usually to **camouflage** them while on the nest. Some **species**, however, lack sexual **dimorphism**, meaning the males and females appear the same. Blue jays, American crows and chickadees are three bird species which lack sexual dimorphism.

In the courtship ritual, birds need to seek out their own species. Males establish a territory and call females to lure them in to mate with them. Mating is a very tiring procedure to birds in terms of **energy expense**.

Most pairs of birds remain together throughout the breeding season. Greater prairie-chickens and ruffed grouse meet, mate and separate. Ruby-throated hummingbirds remain together only a few days, while ducks remain together until **incubation** begins. A few bird species, such as Canada geese, mate for life.

Most birds (songbirds, ducks, ring-necked pheasant) mate a year after hatching. Geese, hawks, owls and swifts mate at two years of age, with some of the large birds of prey mating for the first time at four or more years of age.

Many adults that produce several **broods** each year receive assistance in raising young from offspring of early-season nests (rails, barn swallow). Birds slow to reach maturity may help mated pairs raise young (eastern bluebird, scarlet tanager).

PROJECTS AND ACTIVITIES

Materials Needed: large feathers (made of construction paper); noisemakers (party favors, whistles, kazoos); long pieces of several types of bright and dark fabric to be used as bands of coloration; handkerchiefs; reference material about displaying behaviors of various birds; clothes pins and safety pins to attach fabric to clothing.

1. Read the "Sky Dance" from *A Sand County Almanac* by Aldo Leopold (Oxford University Press, New York, 1949, 226 pp.) to the students. It describes the **mating ritual** of the American woodcock.

2. Discuss the different rituals of several types of "real" birds with your group. Another example to research would be the spring courtship of the sandhill crane, which includes pointing the beak skyward, walking in a circle, jumping, leaping, tossing grass, whooping and trumpeting. The greater prairie-chicken and common snipe are other good examples of birds with complex mating rituals that could be discussed in class.

3. Divide the class into groups of two to four. Explain to the students that each group is a subspecies of a bird known as "*Burdis humanis*," commonly known as "bird people." "Bird people" are found in different parts of the world in small, isolated colonies. Each subspecies has developed its own particular courtship ritual and display behaviors.

Each group is to design a mating ritual that represents their colony. Things for the group to consider are:

- Does the ritual involve a dance or series of movements?
- Does the ritual have one or several distinguishing traits (color, call, bands of color on any part of the bird)?
- Does the ritual involve only the male? Only the female? Both?
- What time of day does the ritual take place?

Give students time to develop their group's ritual. Then have each group perform the ritual. Have them explain where the bird lives and the reasons for its particular ritual. Challenge older students to interpret the displays of other groups in the class.

EVALUATION

1. Have students summarize in writing the functions of bird courtship. Ask them to explain why the birds expend so much time and effort in courtship.

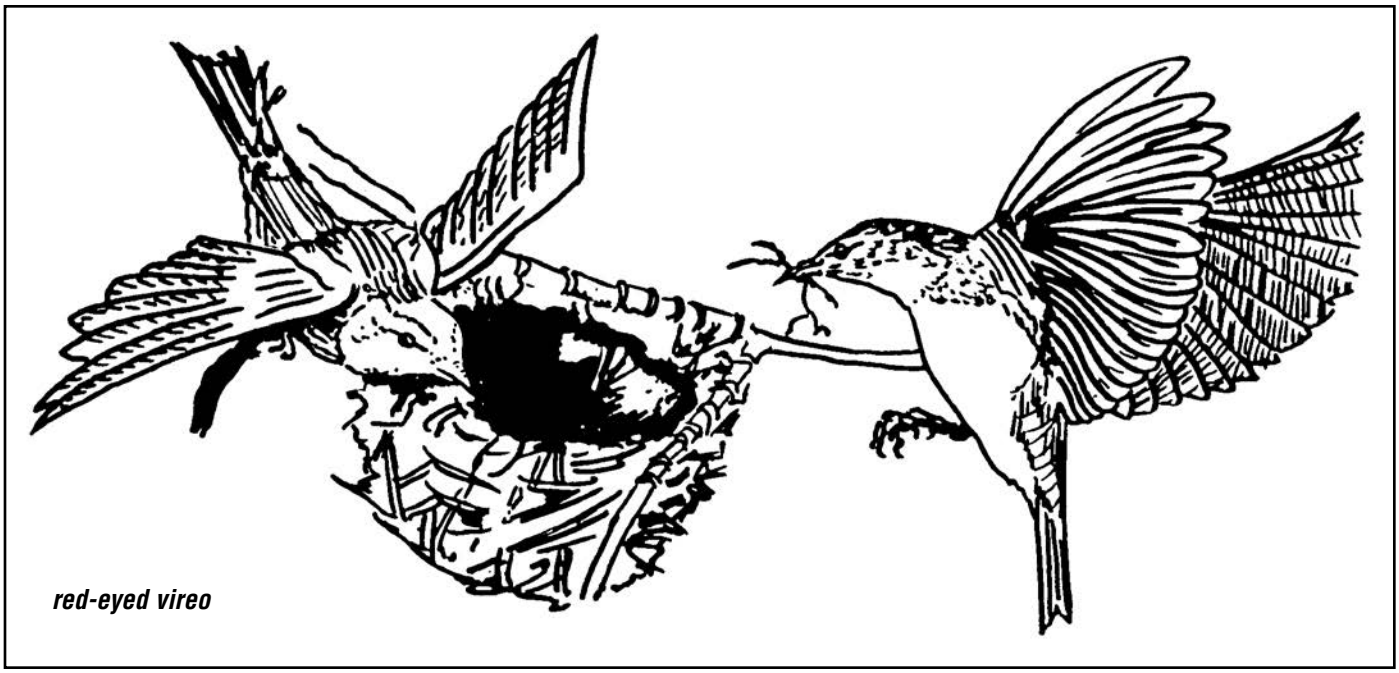
2. How does the male of one species recognize the female of the same species, and vice versa? (song, markings, behavior)

EXTENSIONS

- In the spring have the class watch, listen to and describe the courtship rituals of a bird.
- Research traditional cultural dances such as the Native American dance patterned after grouse.
- Demonstrate solitary and colonial nesting using students to represent the nests. Discuss advantages and disadvantages of each (food supply, warning).

VOCABULARY

brood
camouflage
competition
courtship
dimorphism
energy expense
incubation
mating ritual
passerine
species
territory



red-eyed vireo

Hello, Mate

STUDENT'S GUIDE

Song is very important in the attraction of a mate for birds that have a short life span and seek a new mate each year. The beautiful songs and colorful feathers of males are used to establish and protect territory and attract females. Many females are drab in color, usually to camouflage them while on the nest.

During courtship, birds need to seek out their own species. Males establish a territory and attract females. Mating is a very tiring procedure to the birds.

Most pairs of birds remain together throughout the breeding season. However, greater prairie-chickens meet, mate and separate. Ruby-throated hummingbirds remain together only a few days. Ducks remain together until incubation begins. Canada geese mate for life.

Most birds mate when they are one year old. Some species wait two to four years to mate (geese, bald eagles). Some birds hatch several broods each year. These parents may get help raising young from early-season offspring.

northern shovelers

ACTIVITY PAGE

Hello, Mate

Make one copy of this page. Cut out the cards and distribute one to each student. The students move around the class and compare clues until they think they've found their correct mate. Students share with the class who they think their bird match is and explain why.

Note to teacher: *Consult this complete sheet for the answers. Matching cards are printed in left/right pairs. If additional clues are needed, print half of the bird name on each card of the pair.*

RED-BELLIED WOODPECKER	"I live in trees and get insects out of trees with my sharp beak. My tail is stiff and serves to prop me up as I move up and down the tree."	"I love to eat insects and have a very hard bone on my forehead that keeps me from getting a headache when I get my lunch."	"I am a very small bird and make my nest in a chimney of a house."	"I have a very small house that I make with my mate and if there are no other places for our nest, we build it in part of people's houses."	CHIMNEY SWIFT
BALD EAGLE	"I am a very large bird and make an enormous nest in the top of a tree."	"I am a symbol of the United States, and my nest in a treetop can be 10 feet wide and 10 feet high!"	"I have long legs and eat fishes and other wetland species."	"Look at my lovely plumes hanging from my neck. I migrate in the spring and summer and live in wetlands."	GREAT BLUE HERON
WOOD DUCK	"I live in wetlands. I eat plants and have short legs and webbed feet."	"Check out my fabulous colors and my handsome crest! I nest in hollow trees in wetlands."	"I nest in hollow trees. I am one of the most successful species on earth, but many people don't like me because I'm noisy."	"I'm a noisy, small bird with an attractive feather coat which reflects iridescent colors. I can imitate the beautiful songs of dozens of birds."	EUROPEAN STARLING
CEDAR WAXWING	"I get my name from the red waxy tips on my wings. I am usually in a flock with others of my species."	"Large flocks of us can be seen feeding on the fruits of trees each fall."	"I have good night vision, so I hunt for my food at night."	"I can turn my head 3/4 of the way around so I can almost see behind me. I fly nightly on silent wings to catch mice and other nocturnal species."	OWL
YELLOW-BELLIED SAPSUCKER	"I am a winter resident in Illinois and peck neat horizontal rows in the bark of trees. I eat the inner bark of the tree and return later to eat the sap."	"I am a type of woodpecker. My name describes both the color of my belly and my preferred food."	"Watch me move headfirst down the tree. I find foods that other birds have missed."	"I am a cavity-nesting bird and have a different view of life than other birds."	WHITE-BREASTED NUTHATCH
BLACK-CAPPED CHICKADEE	"I eat several hundred insect eggs each day. Look for me hanging upside down."	"I call out my name. I am one of the smallest birds in the woods, but I am noisy and fun to watch as I hang upside down."	"My mate and I both have a crest on our head, but I am red. I live in Illinois year-round, and people think I look pretty against the snow."	"I am brown and have a crest on my head. I use my heavy seed-eating bill to gather food throughout the year."	NORTHERN CARDINAL
RED-WINGED BLACKBIRD	"I don't look anything like my mate. I am the male and am black with bright red shoulder patches. Look for me in wet areas."	"I am drab compared to my mate but that helps me protect my nest and young. I often build my nest in cattails."	"People call me the buffalo bird because I followed herds of buffalo to eat the ticks off their backs. Many people don't like the way I nest."	"I am a nest parasite, which means I look for nests of other birds and lay my eggs there so I don't have to care for my young."	BROWN-HEADED COWBIRD
HOUSE SPARROW	"We've only been in North America for about 150 years but have become one of the most common bird species."	"We've really made ourselves at home in this new land! Some people don't like us because we take nesting sites from some native species."	"My natural habitat was cliffs and rocky ledges, but I do very well living on the ledges of city buildings and bridges."	"I have been domesticated by man for thousands of years. I can fly more than 80 miles an hour but still like to live downtown."	ROCK PIGEON