

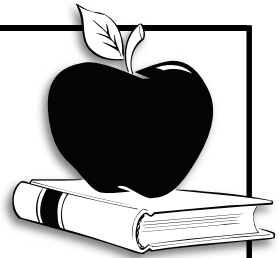
SUGGESTED GRADE LEVEL: 4

NEXT GENERATION SCIENCE STANDARDS:
4-LS1-2

SKILLS/PROCESSES: observation, inference, prediction

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

TEACHER'S GUIDE



UNIT 3 ■ LESSON 1

Moving Day

BACKGROUND

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



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

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

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

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

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

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

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

nocturnal migration



PROJECTS AND ACTIVITIES

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

EVALUATION

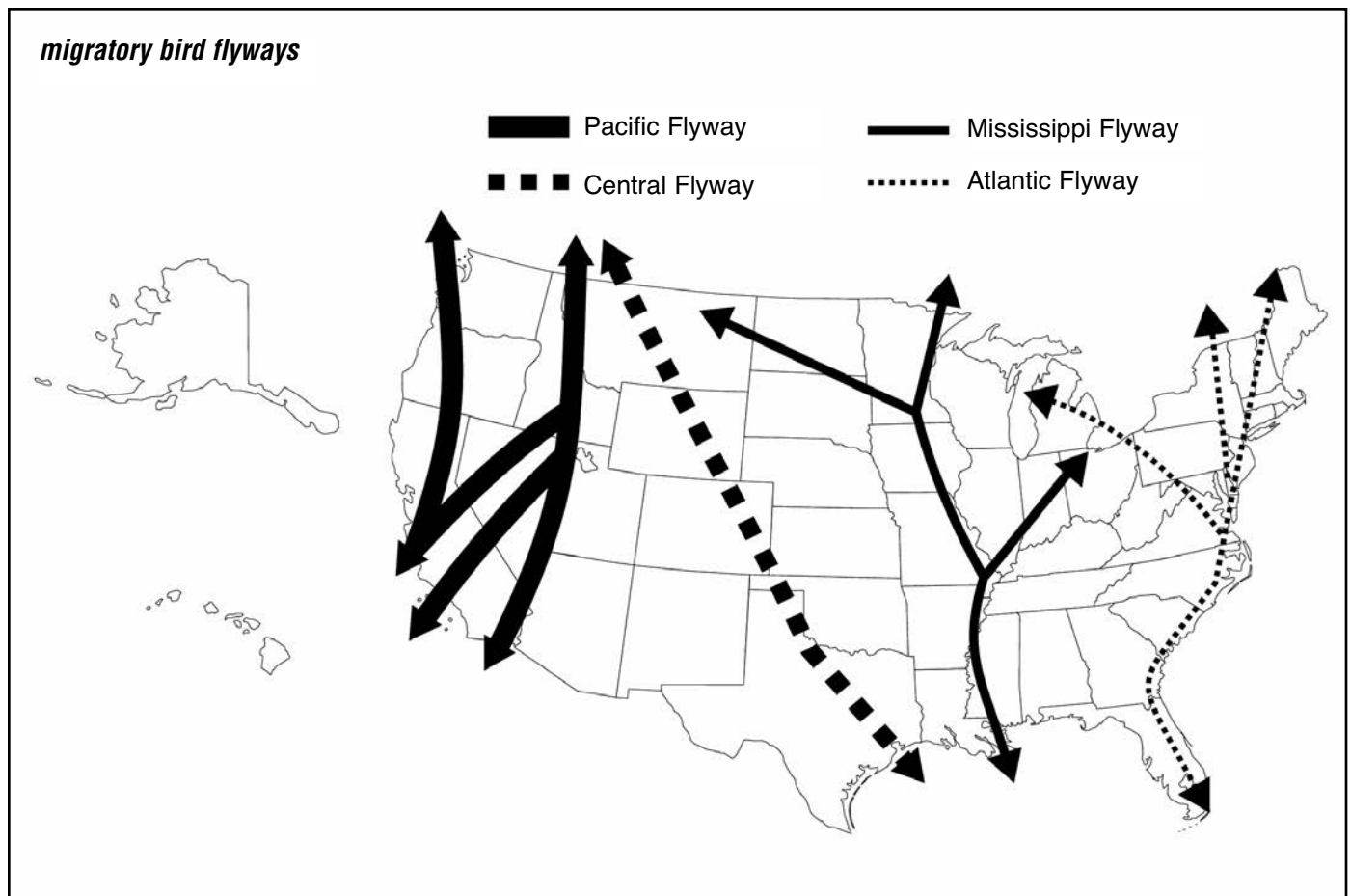
1. In a written report, students will explain how and why birds migrate and the hazards encountered during the trip.

EXTENSIONS

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

VOCABULARY

diurnal
flyway
migration
nocturnal
predation
thermals



Moving Day

STUDENT'S GUIDE

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

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

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

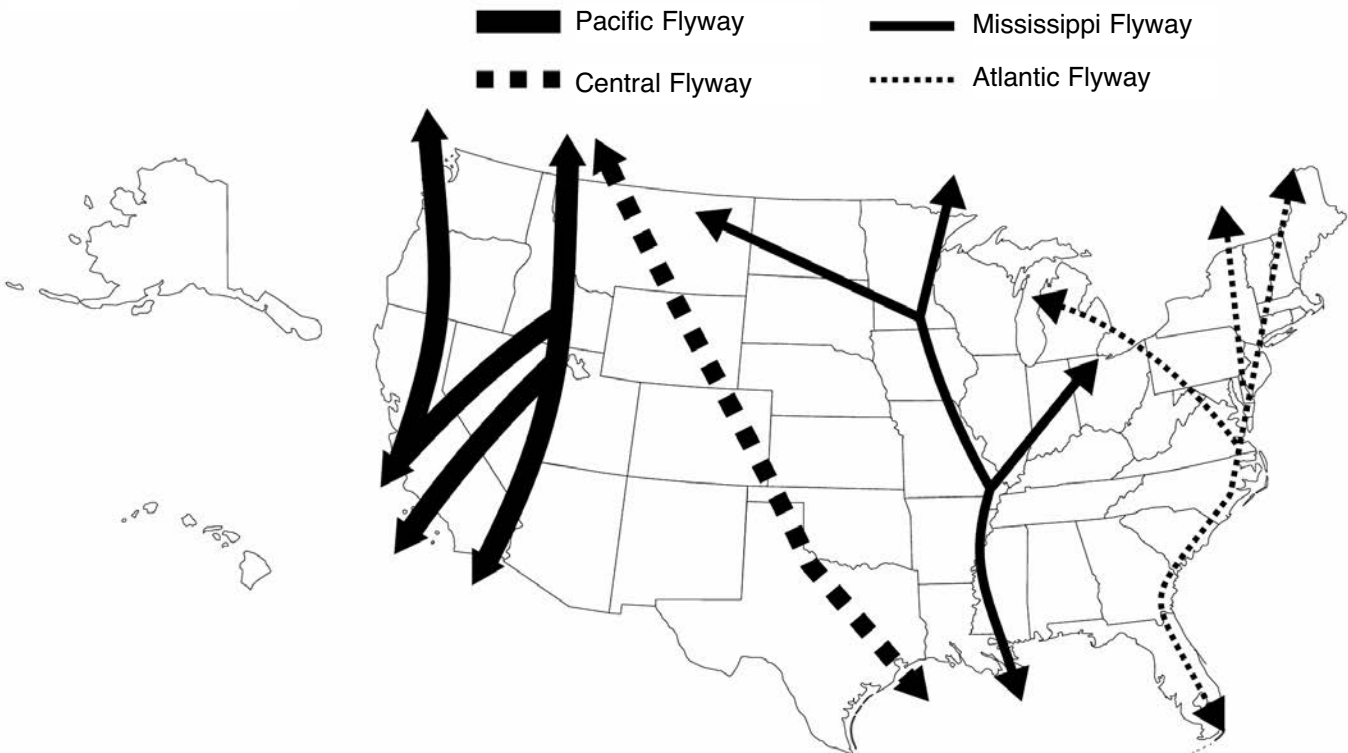
The ability of birds to migrate great distances and return to the same general area year after year is a

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

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

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

migratory bird flyways



ACTIVITY PAGE

Migration Maze

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

