

Migration Mysteries: Disappearing Neotropicals

Migration is the movement of animals from one place to another. We are all familiar with the migration of birds like the American robin that arrives in our backyards with the coming of spring. These birds have returned from the

places where they spend the winter, to our area where they will nest and raise young birds.

So what do we know about migration? Where do the birds go? How? Why?

When you see flocks of birds flying overhead in the fall, they usually are flying south toward their *wintering grounds*. How far south they go depends on the type, or species, of bird. Some birds travel farther than others. For example, in some species females and young birds fly farther south than males. In the spring, these birds return north to their breeding grounds.

The largest group of birds that we see during migrations is called *neotropical migrants*. They got this name because these species of birds migrate in the fall all the way to Mexico, the Caribbean islands, and other Central American and South American countries in the tropics. This means these birds fly thousands of miles every fall and spring. About 300 of the 650 bird species that nest in North America are neotropical migrants. They include warblers, vireos, orioles, hummingbirds, swallows, swifts, shorebirds, and some birds of prey. The neotropical migrants make up 50-70 percent of the bird species of deciduous forests and prairies in the central and eastern United States.

Birds migrating through the United States follows some general bird highways know as *flyways*. The four main

Why should we care?

- ¥ Many neotropicals like warblers, vireos, flycatchers, and swallows are some of our best insect controllers, eating tons of insects annually.
- ¥ Neotropical migrants like thrushes, warblers, tanagers, and vireos are among the most beautiful birds in the world, both in song and color, and are much admired by bird watchers.
- ¥ Neotropical migrants may be indicators of the health of our environment. If their populations continue to decline, our quality of life declines with them. It is in our own best interest, then, to try to correct whatever is causing their problems.

flyways are the *Pacific, Central, Mississippi, and Atlantic*. These flyways run north and south and are really not single lines but rather broad areas of travel. Many birds cross open ocean during their migration between North and South America. This means that birds need

stars, 3) sun, 4) earth's magnetic field, and 5) sense of smell.

Some birds need to stop to rest and feed during the day. This is when insects they eat are most active and available. These birds, then, migrate at night. They can find their way at night because they learn to follow the rotation of the stars. On cloudy nights, things like wind direction also help them to orient themselves.

Other birds, like barn swallows, migrate during the day and feed on flying insects while they are in the air. That way, they are not limited to traveling at night because they can feed during flight.

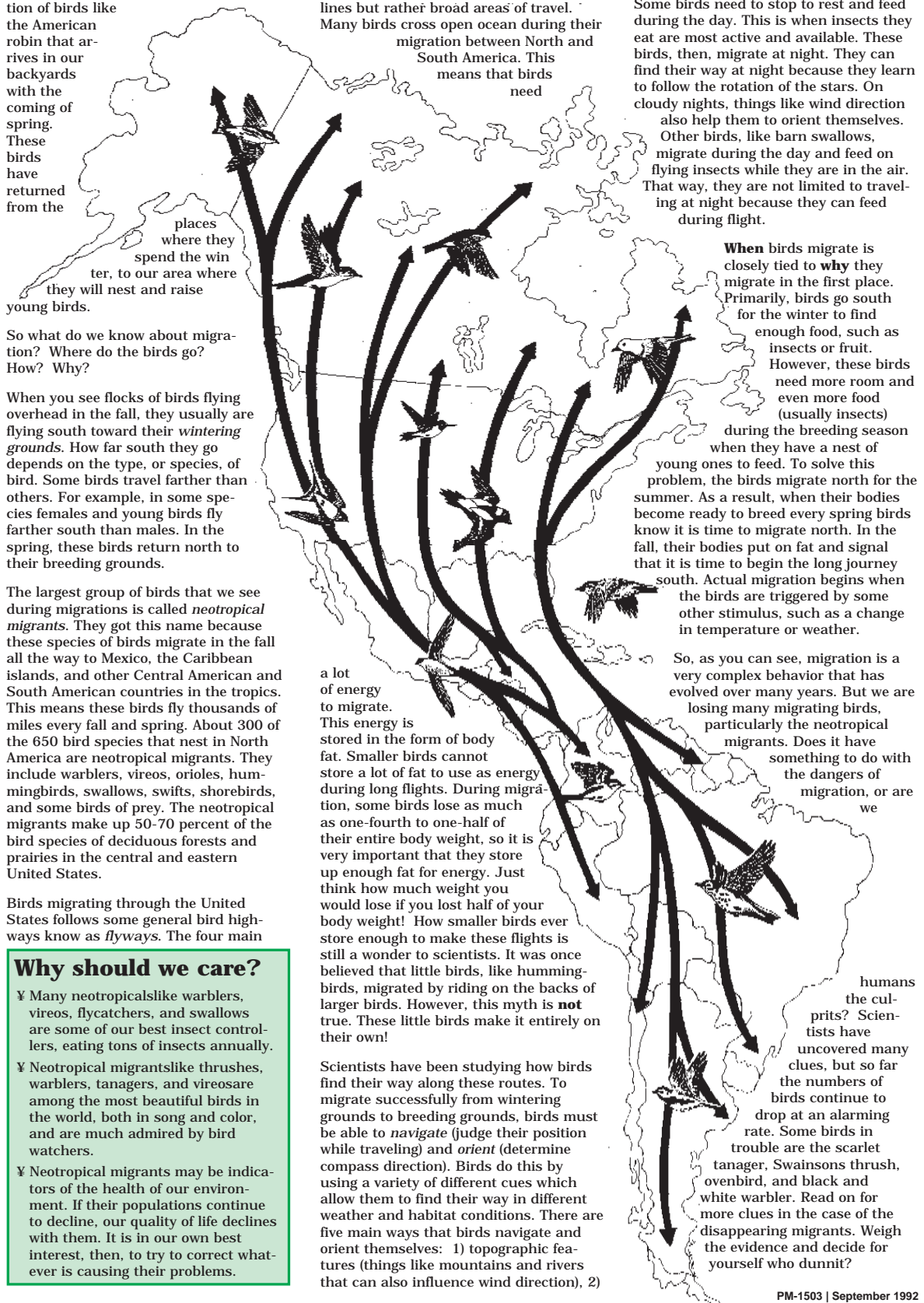
When birds migrate is closely tied to **why** they migrate in the first place. Primarily, birds go south for the winter to find enough food, such as insects or fruit. However, these birds need more room and even more food (usually insects) during the breeding season when they have a nest of young ones to feed. To solve this problem, the birds migrate north for the summer. As a result, when their bodies become ready to breed every spring birds know it is time to migrate north. In the fall, their bodies put on fat and signal that it is time to begin the long journey south. Actual migration begins when the birds are triggered by some other stimulus, such as a change in temperature or weather.

So, as you can see, migration is a very complex behavior that has evolved over many years. But we are losing many migrating birds, particularly the neotropical migrants. Does it have something to do with the dangers of migration, or are we

a lot of energy to migrate. This energy is stored in the form of body fat. Smaller birds cannot store a lot of fat to use as energy during long flights. During migration, some birds lose as much as one-fourth to one-half of their entire body weight, so it is very important that they store up enough fat for energy. Just think how much weight you would lose if you lost half of your body weight! How smaller birds ever store enough to make these flights is still a wonder to scientists. It was once believed that little birds, like hummingbirds, migrated by riding on the backs of larger birds. However, this myth is **not** true. These little birds make it entirely on their own!

Scientists have been studying how birds find their way along these routes. To migrate successfully from wintering grounds to breeding grounds, birds must be able to *navigate* (judge their position while traveling) and *orient* (determine compass direction). Birds do this by using a variety of different cues which allow them to find their way in different weather and habitat conditions. There are five main ways that birds navigate and orient themselves: 1) topographic features (things like mountains and rivers that can also influence wind direction), 2)

humans the culprits? Scientists have uncovered many clues, but so far the numbers of birds continue to drop at an alarming rate. Some birds in trouble are the scarlet tanager, Swainson's thrush, ovenbird, and black and white warbler. Read on for more clues in the case of the disappearing migrants. Weigh the evidence and decide for yourself who dunnit?



The Suspects

Migration Perils

Because birds travel such long distances during migration; it is not surprising that they face many dangers. Bird deaths due to natural causes such as storms and predators are just part of the natural control of the population. However, human-caused sources of bird deaths can cause populations to decline. These human-caused deaths result from things like lighthouses, television and radio station antennas, airport control towers, and tall buildings (particularly those with mirror-like windows). Birds also die when the land that was their homes is broken into pieces because houses or cities or farms are constructed there. This is called *habitat fragmentation*. The permanent loss of habitat means they have fewer places to rest and refuel during migration or to nest.

The major natural cause of bird death during migration, however, is storms. Although bird migrations take place during the spring and fall, times of typically mild weather, sudden severe changes in weather can catch birds off guard. Storms with strong winds have been known to blow birds far off course. This can be very hazardous if the birds are crossing open ocean.

One example of this happened over the Gulf of Mexico when migrating warblers were caught in a strong wind. The birds were not able to fly against the wind, and hundreds were forced into the water and drowned. Unexpected spring snowstorms can also be disastrous. A March snowstorm in Minnesota once resulted in the deaths of 750,000 Lapland longspurs in an area of only two square miles.



Running out of energy to make these long flights would seem to be a common hazard of migration, but birds have evolved over many years to become very efficient fliers. For example, the golden plover flies 2,400 miles from Nova Scotia to South America. It flies non-stop for about 48 hours and uses less than 2 ounces of fat! If you were to fly this in a very small airplane, to be as efficient as the plover you could use only one gallon of fuel for every ten gallons you would really need! Do you think you could make it? Usually, the only time birds run out of energy on these flights is if they are fighting strong winds.

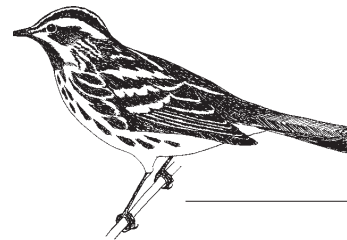
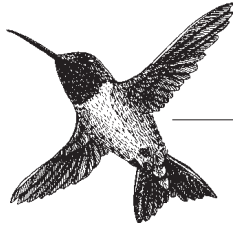
Human-made migration hazards can be as deadly as storms. One million birds die each year from colliding with tall structures. Many birds die during each migration by colliding with wires attached to television and radio towers that they cannot see in the dark. The birds are attracted to the towers by the bright lights, and they fly into the wires while they are circling the lights. The lights from lighthouses, spotlights on buildings like the Empire State Building in New York City, and airport control towers also attract birds to their deaths. Buildings with mirror-like windows are an even greater source of bird deaths during migration. Birds do not see the glass as a barrier. Instead, they see the reflection of the sky and trees and think that they can fly through it. Scientists estimate that as many as 100 million birds die each year from running into glass windows!

So the next time you see that first robin arrive in your yard in the spring, think about the many dangers it overcame to get there!

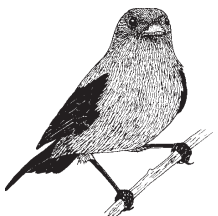
Neotropicals in Your World



Match the bird with the description by drawing a line between the two. Write the birds name on the line below each picture. Answers on page 4.



1. The male of this species is brilliant red with black wings and tail. In spring, it migrates from tropical forests in South America to nest in deep forests of mature trees in the central and northeastern United States.
2. This short-tailed migrant is sooty in color, much like the chimneys in which it nests. Its long wings are ideal for catching insects in the air and for carrying it back and forth between the eastern half of the United States and South America.
3. Unlike most other birds, the male of this species is light-colored on its back and dark colored on its belly. That helps it to be seen in the dense grasslands in which it nests. It migrates from its summer home in the northern United States to as far south as Argentina.
4. This tiniest of birds builds its one-inch lichen nest on a tree limb, using spider webs to bind it to the branch. Despite its small size, it migrates from the eastern United States across the Gulf of Mexico to winter in Mexico and other Central American forests.
5. This black and white striped insect eater is often found searching for insects on the trunks and branches of trees. It nests on or near the ground of deep forests in the central and eastern United States. Winters are spent along the coasts of Texas and Florida or in the Caribbean or countries of Central America.
6. Nesting in dense mature forests, this raptor feasts on rodents, insects, reptiles, and some birds. It migrates, often in large flocks, to the forests of Central and South America, all the way to Brazil.



Weighing the Evidence: Fragmented Habitat

FRAGMENTATION is a big word that means the breakup of something large into smaller pieces or fragments. What does it have to do with wildlife, especially neotropical migrants? LOTS! It is one of the most important problems facing these migrants today. Fragmentation of habitats like forests, prairies, and wetlands affects birds in both North and South America. It affects their breeding grounds, wintering grounds, and migration.

To understand fragmentation in the United States though, we have to look at what the country was like 150 to 200 years ago. Before European settlers moved west, the central United States was an area with millions of acres of forests and grasslands, dotted with hundreds of thousands of wetlands.

What has happened to those resources in the years since?

Housing, industry, agricultural fields, roads, railways, power lines, and fences have spread out.

Large areas of natural forests and prairies have been broken up into smaller pieces

by a network of developed land. The wildlife species that once inhabited these lands had three alternatives: *die, adapt, or move.*

While species can and have adapted to these

changes, the speed of the changes has caused the decline of many populations.

Forests and woodlots have disappeared quickly. Some states have more than 70 percent fewer forested acres than they had 150 years ago.

Those forests that are left are often used for homes, resorts, and other commercial developments. This breaks up the remaining forests into even smaller pieces. Populations of forest-dwelling birds like the wood thrush, rose-breasted grosbeak, yellow-billed and black-billed cuckoos, Tennessee warbler, worm-eating warbler, and ovenbird have dropped because they do not have enough places to live.

The Midwest and Great Plains states used to be covered with *prairie* huge grassland areas. Almost all the prairie, however, has been made into farms, small towns, and cities. The small plots of prairie that remain are few and unconnected even more fragmented than the forests. Many grassland bird populations, like those of the bobolink and dickcissel, are suffering from habitat loss and frag-

mentation like the deep forest neotropicals.

Wetlands, too, have been lost. Nationally we have drained, filled, and converted to other uses some 54 percent of all our wetlands. In the Midwest, 70-99 percent of the wetlands have been drained. Many migrating birds need wetlands. The wetlands are their reststops along the flyways. They stop and use them to rest and refuel with food. Even wetlands that have water only during a few weeks during the spring are very important to migrating birds. It used to be that birds flying north had lots of choices, many wetlands at which to stop. Now there are few, and the distances between them are often great. Migrants like the black tern, piping plover, and many sandpipers are affected by this loss, both during migration and when they try to find places to nest.

Habitat loss and fragmentation is also occurring in the forests,

How does fragmentation affect birds?

Most often those in trouble have some things in common:

- ✘ they arrive rather late (after travelling hundreds or thousands of miles from their wintering grounds in the south);
- ✘ they attempt to raise young only once during the summer;
- ✘ they build open nests, often near or on the ground;
- ✘ they prefer the interior parts of forests and large grasslands.

Fragmentation increases the chance of *predation* because it decreases the distance from the edge to the interior. It makes these birds nests more available to predators. Predators, like skunks and raccoons and egg-eating birds like crows, jays, and grackles, prefer forest edges

rather than forest interiors. When forests are fragmented with roads, houses, and other development, predators have easier access to more nests.

Fragmentation also gives easy access to another type of problem: *brood parasites.* A bird called the

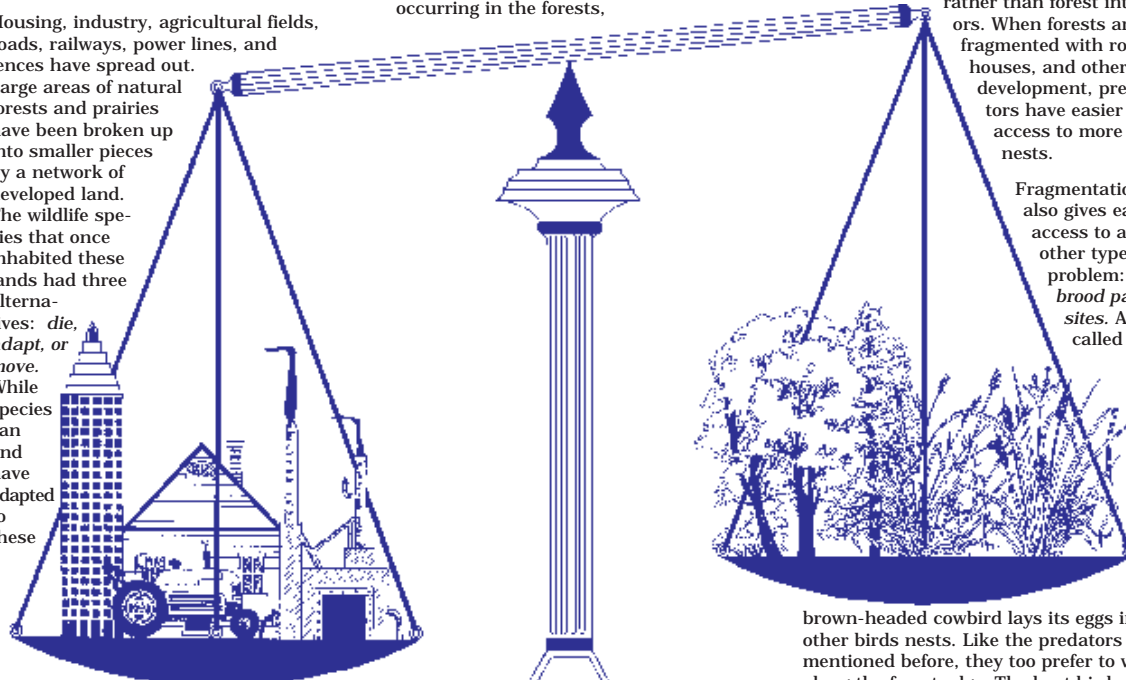
brown-headed cowbird lays its eggs in other birds nests. Like the predators mentioned before, they too prefer to work along the forest edge. The host birds end up raising the cowbird young, thinking they are their own, and then don't raise young of their own species!

With such forest fragmentation, there is essentially no safe place for the deep forest birds to raise their young.

The effects of habitat loss and fragmentation are many:

- ✘ During migration, habitat loss and fragmentation cause birds to have few choices. This concentrates them into the few forest, grassland, or wetland areas that are left. While it is exciting to see thousands of birds in one area, it also leaves them open to disease, predators, or large dieoffs from storms or lack of food.
- ✘ During the breeding season, habitat loss and fragmentation mean few nesting areas and often mean that birds are vulnerable to predators and brood parasites.
- ✘ During the wintering season, it means fewer and fewer areas in which to find food and to roost.

grasslands, and wetlands of Central and South America where neotropical migrants spend the winter. These areas are also being developed as humans in those countries grow in number, spread out across the land, and develop the land for industries and agriculture. Even the stopping places for birds during migration the coastal areas around the Gulf of Mexico (bordering the southern United States, Mexico and all of Central America) are being developed to suit human needs. Fragmentation is like having a puzzle with lots of missing pieces. With some pieces missing, many birds are struggling to migrate and survive.



YOU Solve the Case

Things **are** being done by people around the nation and the world to help stop the negative effects of humans on migrating birds and **you** can help!

¥ The Conservation Reserve Program helped U.S. farmers plant over 40 million acres of land back into permanent cover, especially grasses and trees.

¥ In many states, thousands of miles of roadsides are being replanted to native grassland and trees. Many roadside managers now use mowing, herbicides, and insecticides sparingly to control problems. These newer methods help provide and protect nesting areas of grassland bird migrants.

¥ Many conservation agencies, private organizations, and businesses have banded together in Joint Venture groups to help restore wetlands. This is part of the North American Waterfowl Management Plan. In the central United States and Canada, the Prairie Pothole Region Joint Venture has restored over 150,000 acres of wetlands in the last few years.

¥ Hunters provide millions of dollars each year for habitat restoration through taxes they pay on firearms and ammunition. In addition, they buy licenses and special stamps. This money is used to plant trees and to restore wetlands and grasslands on thousands of acres.



¥ The National Wildlife Refuge System is part of the U.S. Fish and Wildlife Service and has over 90 million acres of wildlife habitat. Many states also have aggressive open spaces programs that purchase and restore wildlife habitat.

¥ Much research is being done to understand habitat fragmentation and find ways to stop the negative effects. Researchers are also identifying other hazards to migrating birds and designing ways to help the birds avoid them.

¥ Most nations of the world (except the United States) signed a new treaty sponsored by the United Nations to help identify and solve problems for wildlife species all over the world. Called the biodiversity treaty, it tries to help developing countries use their natural resources without destroying forests, wetlands, and grasslands.

¥ The Partners in Flight Program is a cooperative effort to conserve neotropical migrant birds. Partners in Flight has groups studying bird populations, habitat problems, and management of research and education.

What can you do?

Try some of these ideas:

☞ Study your local area. Find out what it was like 150-200 years ago and what changes in the forests, wetlands, and prairies have taken place. Make a list of the changes that you think are positive for migrants and a list of those that you think are negative.

☞ Talk to people in local conservation agencies or organizations. Help them raise money for purchasing or restoring a forest, wetland, or prairie in your area.

☞ Write to your local leaders and candidates for office and find out what they know and how they feel about migrating birds and fragmentation. Educate them with what you know about the problems neotropical birds face and what we can do to stop fragmentation. Educate yourself about legislation that effects migratory birds.

☞ Find out how your county or state manages its roadsides. Encourage them to restore native vegetation to the roadsides to provide wildlife habitat. Its cheaper than traditional methods, too!

☞ Find out more about the Partners in Flight Program. Write to the National Fish and Wildlife Foundation, 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

☞ Brainstorm with your friends, family, and classmates about other ways you can help migrating birds. Spread the word. Let others know what you've learned and get their help in protecting migrating birds.

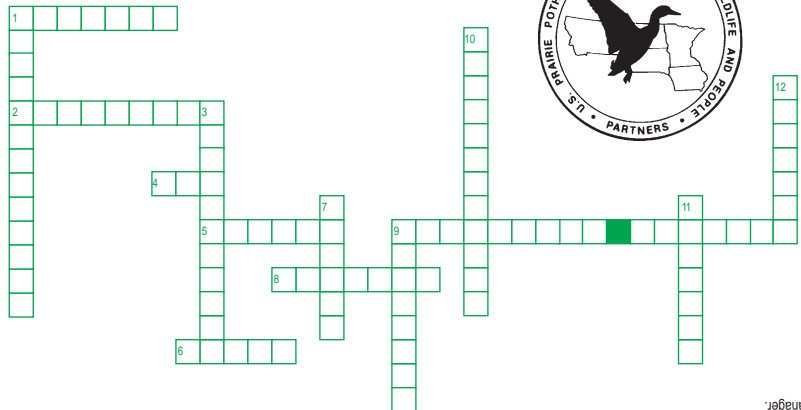
☞ Landscape your yard for wildlife to invite birds into your life. Contact your local or state conservation office to find out what plant species grow best in your area. Your local Extension office may have plans for building feeders and nesting boxes as well.

Down

- Habitat _____ is the breaking up of large blocks of habitat into smaller pieces.
- _____ migrants make up 50-70 percent of the bird species of deciduous forests and prairies in the central and eastern United States.
- The major natural cause of bird death during migration is due to _____.
- In most states in the Midwest, 70-99 percent of the _____ have been drained and used for farmland, roads, houses, and towns.
- The _____ Reserve Program has helped farmers plant some 40 million acres of land back into wildlife habitat, primarily grassland.
- The _____ lays its eggs in the nests of other birds, which has contributed to the decline of some bird populations.
- _____ provide millions of dollars each year for habitat restoration through the purchase of hunting licenses and taxes they pay on firearms and ammunition.

Across

- Bird migration follows bird highways known as _____.
- _____ is the movement of animals from one place to another.
- Birds store energy for migration in the form of body _____.
- To find their way during migration, birds must be able to navigate and _____.
- Millions of birds die each year from flying into _____ windows, because they see the reflection of the sky and trees and think they can fly through it.
- Some states have more than 70 percent fewer _____ than they had 150 years ago.
- Habitat fragmentation causes a loss of habitat in the birds breeding grounds and _____, which has led to declines in the populations of many bird species.



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...and justice for all

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Neotropicals in your World, page 2. Identification of birds clockwise from upper left: (3) bobolink, (4) indigo-banded gnatcatcher, (5) black and white warbler, (2) chimney swift, (6) broad-winged hawk, (1) scarlet tanager.

- Answers**
- Down
- fragmentation
 - migration
 - neotropical
 - fat
 - wetlands
 - grass
 - conservation
 - forests
 - wintering grounds
 - hunters
 - cowbird
- Across
- flyways
 - migration
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