

SUMMARY: THE MOST IMPORTANT THINGS YOU CAN DO

Each person makes a difference in the world. You can make a positive change by helping protect and/or restore our natural world — through birds. It takes knowledge, motivation and time. When individuals join together with groups and communities, your actions can have even more impact. Below we have summarized 22 actions you can take. To get started, pick any one or two of these that interest you. They will direct you to places in this book with more information. Remember, even small changes can make a big difference. We invite you to join us in our work to help conserve birds.

USFWS/DONNA DEWHURST



Blackpoll Warbler

BWB-ASF STAFF



Black-throated Blue Warbler

BWB-ASF STAFF



Northern Parula

JACK BARTHOLMAI



Swainson's Thrush

BWB-ASF STAFF



Tennessee Warbler

USFWS/DONNA DEWHURST



Yellow-rumped Warbler

USFWS/DAVE MENKE



Cedar Waxwing

USFWS/STEVE MASLOWSKI



Scarlet Tanager

During migration, songbirds like these feed on insects and fruits found on native plants.

1. Provide food and habitat for birds when they stop to rest during migration.

During their long migrations, most birds stop to rest and feed. Private landowners can help birds by providing the right kinds of plants, shelter and food.

➤ *Make your property "bird-friendly." Offer food, but learn what birds like.* During spring migration many songbirds feed on insects that are found on native plants, although some feed on seeds. During fall migration, birds supplement their insect diet with fruits. For more information about migration, see pages 11-16 and Appendix 7. For information on the foods eaten by birds during migration at the Pewaukee, Wis., study site, please see pages 54-58.

➤ *Create bird habitat and provide food for birds in your yard or on your land by growing native plants.* Plant a mixture of grasses, flowers, shrubs and trees. This will create a diverse habitat similar to natural areas. If you have native plants growing

KARI WILLIAMS



Pussy willow

VICKI PIASKOWSKI



Red-osier dogwood

K. KANOTI, MAINE FS, BUGWOOD.ORG



Black cherry

VICKI PIASKOWSKI



Red oak

These and other native Wisconsin plants provide insects and fruits for birds during migration.

on your land, preserve and protect them. (Native plants are those that are naturally found in your area.) Why native plants?

- They provide fruits, insects and nectar for many birds.
- They provide shelter and places for birds to build nests.
- They tolerate seasonal climate changes better than non-native (exotic) plants.

If you must clear part of your land, leave as many native trees and plants as possible. To learn more about native plants, please see page 33. For other sources of information that can help you enhance your land to benefit migratory birds, turn to page 137. For more information, see Wild Ones (www.for-wild.org) and publications by Mariette Nowak included in the Literature Cited section.

➤ **Remove invasive plants (the ones not native to the area).**

Some plants can become invasive after they are introduced to an area. They out-compete native plants for nutrients, light and moisture, changing the composition of natural habitats. They have very few insects and do not provide food needed by birds. If large areas of natural habitat are taken over by these non-native plants, there is less food for birds in that area.

(Please see Appendix 11 for a list of invasive plants.) *You can work to remove non-native plants from your property. Or join with others to remove non-native plants from parks and forests.* Many conservation groups, nature centers, and parks are working to remove and control invasive plants such as garlic mustard and buckthorn. They need volunteers.

➤ **Preserve even small spots of land. Do you have a backyard or isolated park in the middle of a suburb? If they contain native plants, these areas can provide important stopover sites for migratory birds.** Research by the Birds Without Borders – *Aves Sin*

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Tartarian honeysuckle

VICKI PIASKOWSKI



Glossy buckthorn

These non-native plants are very invasive and provide very few insects for birds. Please work to remove them from your land.

Fronteras® (BWB-ASF) project at its Pewaukee, Wis., study site showed that small fragments of land can be important for migratory birds. The oak forest, transition zone, and a wetland at the site were used by 152 species of birds during migration. For some species like the Tennessee Warbler, high numbers were captured (2,339 individuals were banded during migration from 1998 to 2001.) So, this small fragment of habitat (121 acres) in a suburban area was very important to migratory birds. (Please see pages 49-61 for information about our research at the Pewaukee study site. For very detailed information, please see Appendix 7.)

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Small forests and wetlands like these are very important to birds during migration.

➤ **Preserve wetlands, grasslands and small forest areas. These are important to many species of birds during migration, including songbirds, shorebirds and waterbirds.**

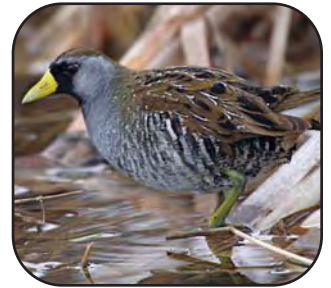
At the Rosendale, Wis., study site, BWB-ASF researchers found that 163 species of land-birds, shorebirds and waterbirds used the restored native grassland, oak forest and restored wetland during spring migration. (Please see pages 61-67 for information about our research at the Rosendale study site. For very detailed

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American Black Ducks breed in wetlands.

JACK BARTHOLMAI



Rails, like this Sora, breed in wetlands.

information, please see Appendix 8.) The extensive wetland at Rosendale provided habitat for many bird species during migration and the breeding season. Wetlands also protect and improve water quality, store water, prevent flooding, and provide fish and wildlife habitat. Learn where wetlands exist near your home and support their protection. Let others know how important wetlands are to birds and other animals. Encourage neighbors, developers, and state and local governments to preserve wetlands.



JACK BARTHOLMAI

Solitary Sandpipers use wetlands during migration.



USFWS/DONNA DEWHURST

Least Sandpipers use wetlands and muddy edges of wet areas during migration.

2. Provide a safe place for birds to breed and raise their young. It should have a good supply of insect food, which can be found on native plants.

A good nesting area should have food for both the adults and young. During the breeding season birds need a high-protein diet. That’s when most birds switch to a diet containing a lot of protein, which is provided by spiders and insects. You can provide this insect food with native plants and undisturbed natural habitats. (For more information on what birds need during the breeding season, please see pages 17-19.) You also can provide places for birds that nest in holes or cavities; see pages 30-32.

You can create a safe place for birds to breed by working to remove some of the threats that may be present on your property. Please see pages 35-37 to learn how to avoid and reduce threats from bird-window collisions, outdoor cats, nest predators, and nest parasites like Brown-headed Cowbirds.

If you own land, reduce the mowed areas and allow shrubs to grow at the edges of your land. Why? Open land allows predators easy access to bird nests. You also can allow unused trails and roads to grow and change back into forest.

If you are building a home near a forested area, it is best for birds if it is next to rather than embedded in the woodlot¹. This decreases the possibility of access by Brown-headed Cowbirds and nest predators.

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VICKI PIASKOWSKI



Wetland areas like these are very important to birds during migration and the breeding season.

Get government support.

Learn about help that is available from the state and federal government to create and maintain bird habitat. Landowners at the Rosendale study site invested in bird conservation by managing and restoring valuable bird habitats on their land. They received some assistance and support from state and federal conservation agencies to restore native grassland. These landowners also carefully managed their high-quality wetlands. Please see page 78 for more information on government programs and financial assistance available to help landowners restore habitat.



STEPHEN LANG

American Redstart



USFWS/JAMES LEUPOLD

Gray Catbird



USFWS/STEVE MASLOWSKI

Black-throated Blue Warbler



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Yellow-bellied Flycatcher

You can provide a safe place for birds to breed and raise their young. To be sure it can provide necessary amounts of insect food, plant native plants.

USFWS/JOHN & KAREN HOLLINGSWORTH



Blue-winged Teal

STEPHEN LANG



Bobolink

VICKI PIASKOWSKI



Grasslands like these are disappearing. They are very important to many bird species during the breeding season

JACK BARTHOLMAI



Eastern Meadowlark

trees. Forest diversity is the key to bird diversity².

The deciduous and mixed (coniferous-deciduous) forests found in the northern United States and Canada are extremely important to breeding birds. At the Land O' Lakes study site, BWB-ASF studied birds that bred in a coniferous bog forest, and an area that had been clear cut four years before the research began. Of the 49 species of birds that bred at the site, 51% are at risk and require help and planning to survive.

LARRY HOPWOOD



LARRY HOPWOOD



Northern hardwood and coniferous-deciduous forests are very important to many species of birds during migration and the breeding season.

3. Help to restore or work to preserve native grasslands. Many grassland bird species are declining. The grasslands they need for all stages of their life cycle are disappearing. The larger the grassland, the better chance birds have to successfully breed and raise their young.

At the Rosendale study site, BWB-ASF researchers studied birds breeding in the 97-acre restored native grassland. Although the grassland was small, it was surrounded by many other public and privately owned restored grassland and wetland habitats. Together, these provided large-scale habitat for breeding grassland birds. (Please see pages 61-67 for information about our research at the Rosendale study site. For more detailed information and nest success results, please see Appendix 8.)

You can receive assistance from state and federal conservation agencies to restore or maintain grasslands on your land as the landowners at the Rosendale study site did. Please see page 78 for more information on government programs and financial assistance available to help landowners restore habitat.

4. Work to preserve northern forests. Large, unfragmented core areas of forest are important to preserve and restore. If you are a landowner, you can be an active participant in managing your forest and receive professional help by working with your local university extension service, Department of Natural Resources, woodland owners association, land trust, or federal agencies. These organizations can provide professional help managing your forest to benefit birds and other wildlife. Nurture a variety of native

The high number of at-risk birds that bred at the site indicates that the forested habitats in the Land O' Lakes area are extremely important to these species of breeding birds. (Please see pages 68-74 for information about our research at the Land O' Lakes study site. For more detailed information and nest success results, please see Appendix 9.)

5. Pick your favorite birds. Find out which bird species in your area are at risk. You can help them by working to provide and/or preserve the habitats that they need.

Go to the Web sites listed below such as the Breeding Bird Survey or the Wisconsin Breeding Bird Atlas. Or, look at the *Atlas of the Breeding Birds of Wisconsin*³. Then, you can decide on the species that you would like to help. Learn about the specific habitat needs and management suggestions for this species on the Wisconsin Bird Conservation Initiative Web site listed below. Work to provide and/or preserve those habitats on your land. You also can preserve habitats for at-risk birds by supporting or volunteering to help conservation organizations that are working to protect larger areas of habitat for birds.

The habitats at the three BWB-ASF Wisconsin study sites were used by 102 at-risk bird species during migration and breeding season. Please see pages 45-49 for a complete list of the at-risk birds found at the three study sites. For the Pewaukee site list, please see pages 94-95. For the Rosendale site list, please see pages 109-110 and for the Land O' Lakes site list, please see pages 116-117.

Web sites mentioned previously:

Breeding Bird Survey:

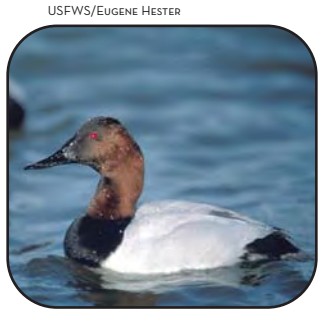
www.mbr-pwrc.usgs.gov/bbs/trend/rtehtm07a_nlcd.html

Wisconsin Breeding Bird Atlas:

www.uwgb.edu/birds/wbba

Wisconsin Bird Conservation Initiative:

www.wisconsinbirds.org/plan/species/priority.htm



Canvasback



Common Loon



Common Moorhen



Killdeer



Red-headed Woodpecker



Canada Warbler



Golden-winged Warbler



Red Crossbill

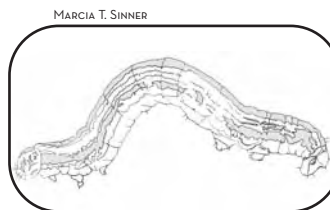
These bird species are of conservation concern and need help to survive. You can provide habitat on your land to help these at-risk birds.

6. Think before you use pesticides, and avoid using them whenever possible.

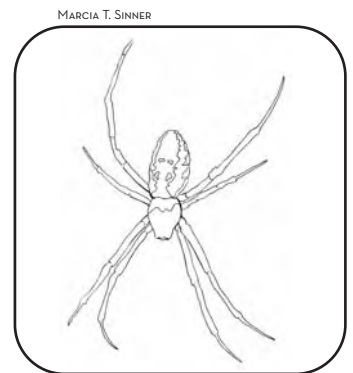
Because insects and spiders are some of the main foods for songbirds, avoid using insecticides or biological controls on your land. Remember, birds control insects naturally.

Insecticides don't just kill pests, but good insects and spiders as well. This can disrupt the natural balance between good insects, spiders and pests. After treatment, you may end up with increased numbers of pests. Chemicals we use to control pests and weeds in our lawns, gardens, fields, orchards and plantations can be very toxic to both adult and young birds.

Use weed killers and fungicides only if all else fails; choose those that are very specific rather than general. Be careful to follow the instructions on the label. For safe alternatives to lawn and garden pesticides, see the suggestions given on the Audubon at Home Web site: www.audubon.org/bird/at_home/pdf/Reduce_Pesticides_ACTION_PLAN.pdf

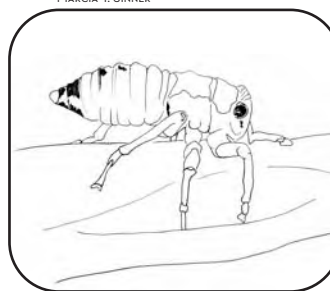


MARCIA T. SINNER

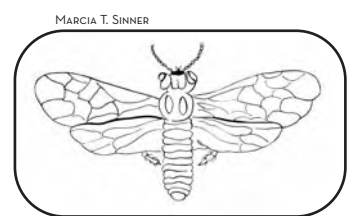


MARCIA T. SINNER

Using pesticides kills these important insect foods that birds eat during migration and breeding season.



MARCIA T. SINNER



MARCIA T. SINNER

7. Provide a source of fresh water for birds.

Birds need clean, fresh water to drink and bathe in. You can provide water for birds with a pond or birdbath. If you use a birdbath, be sure to rinse and clean it often. Naturally occurring ponds, streams and seasonally flooded areas also attract birds and supply them with both water and food. (Please see page 32 for more information.)



T. SPIVEY, USDA-FS, BUGWOOD.ORG

Birds need clean fresh water to drink and bathe in.

8. Help preserve dead trees (snags) and stumps where birds nest.

Many birds nest in holes found in living and dead standing trees and stumps, on cliffs and in walls. You can help cavity-nesting birds by saving dead trees instead of cutting them down. You also can put up nest boxes for cavity-nesting birds. (Please see pages 30-32 for more information.)



Dead trees like this one provide places for birds to nest.

9. Create a brush pile for birds.

Instead of removing or burning logs, branches and brush, use these to build a brush pile for birds in a corner of your yard or property. Brush piles provide birds with cover, places to nest, and protection from predators and harsh weather.

You can create a brush pile by making a pile of branches, stumps, logs and brush of any size. Put them together loosely so that birds can find shelter. You can cover the top with evergreen branches for extra protection; to make it more attractive to neighbors, you can grow native vines over the top of the brush pile. You can provide a winter haven for birds by placing your Christmas tree outdoors after the holidays. Lean it against a tree trunk or add it to your brush pile. You also can add evergreen wreaths and boughs to your brush pile when done using them. For more information on brush piles, see a 2007 book by Mariette Nowak⁴.

10. Prevent bird-window collisions.

Glass is invisible to birds. Both tinted and clear glass can reflect images of the sky, trees and other plants. When these are reflected on the outside of windows, a bird may think that it is flying toward the sky or a tree. Instead, it strikes the window and is injured or killed. If indoor plants are placed next to a window, birds may try to perch on the plant and strike the window. About half of the birds that strike windows will die as a result. Preventing bird-window collisions is important year-round, but especially during bird migration periods. For more information, please see pages 35-36.



Glass can reflect images of trees, other plants and the sky. Because glass is invisible to birds, bird-window collisions kill millions of birds each year.

11. Prevent bird-vehicle collisions

Collisions with cars, trucks and other vehicles are a well-known cause of bird deaths. Birds can't "learn how to fly across the street" safely. You can prevent these unnecessary bird deaths by watching for birds when driving and slowing down if you see a bird in your path. (For more information please see page 37.)



American Robin



Barn Swallow



Red-winged Blackbird

These bird species are often killed by vehicles.

12. Keep your pet cat indoors; the cat will live longer, and so will the birds.

Cats that roam free don't just kill rodents. They also kill many wild birds and other wildlife. Even cats that are well-fed by their owners still have a natural instinct to hunt. What is best for your cat (staying indoors) also helps birds. For more information, please see page 37.



Free-roaming cats like these don't kill only rodents; they also kill many wild birds.

13. Drink shade-grown coffee. Shade-grown coffee tastes better, and supports winter habitats for migratory birds and year-round habitats for tropical resident birds. Traditionally, coffee has been grown under a canopy of shade trees on small farms in modified forests, with minor disturbance to the surrounding forested areas. Newer coffee hybrids have been developed that can be grown in full sun. Sun coffee can produce more fruits than shade coffee but requires more chemical input, such as fertilizers, herbicides, and pesticides, as well as the removal of shade trees⁵. Fewer birds are found in sun-coffee plantations than

in shade-coffee farms. So, to purchase coffee that benefits birds (and farmers and small farms), look for the following designations on the coffee you purchase: Shade-grown, Organic, Fair-trade, and Bird Friendly Coffee®. For more information, see:

Wisconsin Bird Conservation Initiative “Coffee and Birds...The Basic Facts”:

www.wisconsinbirds.org/International/coffee.htm

Northwest Shade Coffee Campaign:

www.shadecoffee.org

Smithsonian Migratory Bird Center Bird-Friendly Coffee®:

www.nationalzoo.si.edu/ConservationAndScience/MigratoryBirds/Coffee

14. Buy a Federal Duck (Migratory Bird) Stamp.

Duck stamps support habitat conservation for all species of birds. You can buy these stamps at your local post office or through the U.S. Fish and Wildlife Service online. They cost just \$15, and 98 cents of every dollar goes directly to acquire habitat in the National Wildlife Refuge System. To learn about the refuges in your state that have benefited from this program and where to purchase Duck Stamps, please visit: www.fws.gov/duckstamps.

15. Support or volunteer for conservation groups. There are many conservation and conservation-education organizations working to protect our environment and its birds and other wildlife. Many of these groups are looking for volunteers as well as financial support.

16. Get people excited about birds. Teach others and share your enthusiasm about birds. When you are out birding, view questions asked about what you are seeing as an opportunity to teach others about the wonders of birds. Help count birds by participating in citizen science projects. For more information about volunteering, see:

RICHARD BRODZELLER



These students learned about bird migration and the wonders of birds during a bird banding demonstration.

Christmas Bird Count: www.audubon.org/bird/cbc
Great Backyard Bird Count: www.birdsource.org/gbbc
Cornell Lab of Ornithology Citizen Science Projects: www.birds.cornell.edu/LabPrograms/CitSci

Learn about birds and other animals in programs led by bird clubs, conservation and conservation-education organizations.

17. Help migratory birds where they breed.

Although this manual provides information about the bird species that bred at the three BWB-ASF Wisconsin study sites, many of the birds that migrate through Wisconsin breed in the North American Boreal Forest (1.5 billion acres of forest extending from Alaska across Canada to the Atlantic Ocean). Portions of these forests are destroyed each year to supply paper and lumber. Use recycled paper products (including tissue and toilet paper) whenever possible. To learn other ways to help protect the boreal forest, visit: **Boreal Songbird Initiative:** www.borealbirds.org
Canadian Boreal Initiative: www.borealcanada.ca

USFWS



Lesser Yellowlegs can be seen in Wisconsin during migration; 94% breed in the North American Boreal Forest.

BWB-ASF STAFF



Although Tennessee Warblers are common in Wisconsin during migration, 97% breed in the boreal forest.

STOCK PHOTOGRAPHY



Dark-eyed Juncos can often be seen during the winter in Wisconsin; 80% breed in the boreal forest.

18. Help migratory birds in their winter homes.

Researchers found that the breeding success of American Redstarts in North America was influenced by habitat quality on their wintering grounds⁶. Many of Wisconsin's migratory birds spend winters in Central and South America and the islands

RICHARD BRODZELLER



Wood Thrush

BWB-ASF STAFF



Blue-winged Warbler

LYNN MILLER



Black-and-white Warbler

These bird species can be found in Wisconsin during migration and the breeding season. BWB-ASF research in Belize found that the Runaway Creek Nature Preserve is one place these birds use during our Wisconsin winters. The 6,000-acre preserve is owned by the Foundation for Wildlife Conservation, Inc. (Visit www.saveanacre.org to learn more about helping to preserve this habitat for birds.)

in the Caribbean Sea. These areas are being cleared to produce fruits (like bananas), lumber, paper, and coffee, among other things. Use only certified lumber; be sure that the picture frames you buy are not made with non-sustainably harvested tropical woods. Find out ways to protect tropical forests by visiting the Rainforest Alliance Web site: (www.rainforest-alliance.org).

19. Vote with birds in mind. Learn how candidates view the environment and study their records on conservation-related matters. Let your elected officials know that you support policies that benefit birds and their habitats.

20. Participate in an International Migratory Bird Day celebration or other bird festival. Many organizations, schools, parks and zoos in the United States, Canada and other countries hold International Migratory Bird Day celebrations every May. These are good opportunities to teach people about the wonders of birds, their long migrations and how to help them.



RICHARD BRODZELLER
Children receive a "band" from BWB-ASF staff and learn about bird migration during the annual International Migratory Bird Day celebration at the Milwaukee County Zoo.

21. To slow the effects of climate change, think about how you can reduce your energy consumption.

Some bird species are being affected by climate change. Gray Jays breed in late winter or very early spring, usually when there is still snow on the ground and not much food available. They store insects and berries in the fall to help them survive during the winter and when they begin breeding. Climate change has resulted in warmer autumns, causing stored food to spoil. In some areas, this has decreased the number of young birds that survive⁷.



BWB-ASF STAFF
Gray Jays are one of the bird species being negatively affected by climate change.

22. When you buy food, think about how your choices affect birds as well as our world community.

Seasonal and locally produced foods require less energy to transport than those grown some distance away. Buy organic foods whenever possible. Heavy pesticide use is bad for birds, farmers, workers, consumers who eat the foods, and the environment. Some fruits, like bananas, are grown with large amounts of pesticides.

Areas where bananas are grown become heavily contaminated with pesticides, which are harmful to the birds, wildlife and people who work or live in the area.



©B.K. WHEELER/VIREO
Broad-winged Hawk



USFWS/STEVE MASLOWSKI
Bobolink



VICKI PIASKOWSKI
Yellow Warbler



JACK BARTHOLMAI
Ruby-throated Hummingbird

Your food choices can affect these birds.

The above action list is not comprehensive, but will get you started helping birds. For many other tips on helping birds, see a resource list in Appendix 13.

Landowners can work together to create, conserve and protect larger areas of habitat. Talk with your friends and neighbors to see if they are interested in joining forces to help save or establish bird habitats. Large areas of habitat are best for most bird species; so working with others to preserve or create these areas will enhance bird survival during all stages of their life cycle.

- ¹Philips, J., E. Nol, D. Burke, and W. Dunford. 2005. Impacts of housing developments on Wood Thrush nesting success in hardwood forest fragments. *Condor* 107: 97-106.
- ²Pearson, C. and M. Keirstead. 1998. *Planning for the Birds: Things to Consider when Managing your Forest*. Minnesota Department of Natural Resources, St. Paul, MN.
- ³Cutright, N. J., B. R. Harriman, and R. W. Howe (eds). 2006. *Atlas of the Breeding Birds of Wisconsin*. Wisconsin Society for Ornithology, Waukesha, WI.
- ⁴Nowak, M. 2007. *Birdscaping in the Midwest: A Guide to Gardening with Native Plants to Attract Birds*. Itchy Cat Press, Blue Mounds, WI.
- ⁵Baicich, P. 2005. Coffee lessons, coffee links. *Passenger Pigeon* 67: 77-83.
- ⁶Norris, D. R., P. P. Marra, T. K. Kyser, T. W. Sherry and L. M. Ratcliffe, 2004. Tropical winter habitat limits reproductive success on the temperate breeding grounds in a migratory bird. *Proceedings of the Royal Society B* 271: 59-64.
- ⁷Waite, T. A. and D. Strickland. 2006. Climate change and the demographic demise of a hoarding bird living on the edge. *Proceedings of the Royal Society B* 273: 2809-2813.

HELPING BIRDS THAT NEST IN HOLES OR CAVITIES

Cavities in dead trees and branches: Many birds nest in cavities, or holes. These cavities can be made in dead branches on living trees, dead standing trees (known as snags), stumps, on cliffs and in sand banks. Most people don't have cliffs or sand banks in their yards. You may have dead trees or branches. You can provide habitat for cavity-nesting birds by leaving dead branches on living trees and not removing dead standing trees (unless there's a risk that these could fall on a building and cause damage). Dead branches and trees also provide food for birds that search for insects in and under tree bark. Don't have a dead tree? Well, do you have a tree that is diseased, a non-native species like buckthorn, or one that is crowded by other trees? This is your chance to "save two birds with one stone," to put a new twist on an old phrase. You can kill the unwanted tree by removing a ring of bark from around the tree as suggested by Mariette Nowak in *Birdscaping in the Midwest* (Itchy Cat Press, 2007). This is called "girdling" and will eventually kill it. Then, leave the main trunk and large side branches of the dead tree for birds to use to make nest cavities and find insect food.

Dead trees also provide lookout posts for birds like hawks and owls. If the trees are near water, Belted Kingfishers often perch in them to look for fish in the water.

Nest boxes: Did you know you could put up nest boxes for cavity-nesting birds? Before choosing a nest box, decide which bird species you would like to attract. Then learn about the habitats used by that species. (See information sources at the end of this section.) Be sure that you can put the nest box in the right habitat and at the height needed for that bird species. To prevent predators from

VICKI PIASKOWSKI



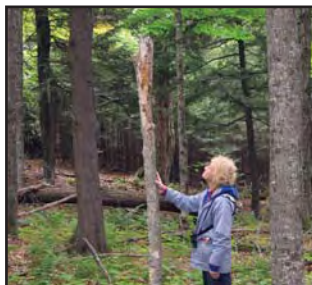
Dead trees like these provide places for cavity-nesting birds to make nests.

VICKI PIASKOWSKI



Birds make nest cavities like these in dead or soft wood.

LARRY HOPWOOD



Even small snags are important. When the wood becomes soft, this one may be used by Black-capped Chickadees to make a nest cavity.

JACK BARTHOLMAI



Nest boxes like this one provide a place for Tree Swallows and Eastern Bluebirds to nest.

Wisconsin habitats, and they compete with native birds for breeding cavities; the intruders usually win.

If you have dead trees on your land, save them and watch to see which birds use them to find food and to build nest cavities.

VICKI PIASKOWSKI



This snag was a source of insect food for Pileated Woodpeckers.

JACK BARTHOLMAI



If you decide to put up nest boxes, be sure that they are not used by non-native species like these House Sparrows.

Birds that nest in holes, or cavities:

- Wood Duck
- Hooded and Common Mergansers
- American Kestrel
- Owls (Barred Owl, Eastern Screech-Owl, Barn Owl, Northern Saw-whet Owl)
- Woodpeckers
- Great Crested Flycatcher (prefers natural cavities)
- Purple Martin
- Tree Swallow
- Black-capped Chickadee
- Tufted Titmouse
- Red-breasted and White-breasted Nuthatches
- House Wren
- Eastern Bluebird
- European Starling
- Prothonotary Warbler (these use natural cavities and nest boxes in flooded bottomland forests)
- House Sparrow

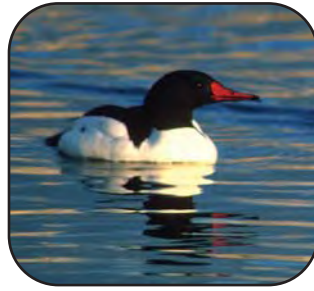
Some cavity-nesting birds are pictured below.

USFWS/DAVE MENKE



Wood Duck

USFWS/JOHN & KAREN HOLLINGSWORTH



Common Merganser

USFWS/DONNA DEWHURST



Downy Woodpecker

USFWS/DONNA DEWHURST



Hairy Woodpecker

USFWS/DAVE MENKE



American Kestrel

JANE HARTWIG



Northern Saw-whet Owl

USFWS/DAVE MENKE



Northern Flicker

USFWS/DONNA DEWHURST



Black-capped Chickadee

©J. JANTUNEN/VIREO



Black-backed Woodpecker

USFWS/DAVE MENKE



Red-headed Woodpecker

JACK BARTHOLMAI



Tree Swallow

USFWS/DAVE MENKE



Eastern Bluebird

JACK BARTHOLMAI



Yellow-bellied Sapsucker (This species also drills holes in wounded or weakened trees and feeds on the sap as shown in this picture.)

JACK BARTHOLMAI



Pileated Woodpecker

KEVIN BRONSON



House Wren (Note: Before you provide nest boxes for House Wrens, you should be aware that they sometimes destroy the eggs or nestlings of other cavity-nesting birds.)

USFWS/DAVE MENKE



Red-breasted Nuthatch

Other birds that use dead trees to build nests:

Turkey Vulture (builds a nest inside and at the base of large hollow trees)

Chimney Swift (traditionally used tree cavities, now often uses chimneys)

Brown Creeper (builds a nest behind loose strips of bark on dead trees)

There are many Web sites that have information on as well as blueprints for nest boxes. You may wish to start with one of the following:

• **Cornell University Lab of Ornithology:** Cornell’s Web site hosts the Birdhouse Network, with information on constructing nest boxes and where to place them: www.birds.cornell.edu/nestinginfo/nestboxref/

• **U.S. Fish and Wildlife Service:** Online publications, including *Homes for Birds*: library.fws.gov/Bird_Publications/house.html

• **North Prairie Wildlife Research Center:** Information on building and placing nest boxes: www.npwrc.usgs.gov/resource/tools/ndblinds/index.htm

PROVIDING WATER FOR BIRDS

Birds need clean, fresh water to drink and bathe in. You can attract birds to your yard by providing a source of fresh water. Birds will visit water in shallow trays or saucers, bird baths or backyard ponds.

Adding branches, logs, or stones for the birds to stand on allows many different birds to use the water. Providing water at varying depths will make it possible for different sizes of birds to bathe. Be sure to keep the water in bird baths fresh by changing it

often. This will also help keep mosquitoes from breeding there. Birds are often attracted to moving water. So solar-operated fountains or dripping water will make your water



T. SPIVEY, USDA-FS, BUGWOOD.ORG

These Cedar Waxwings are enjoying a drink of water.



American Robins are using this water for drinking and bathing.

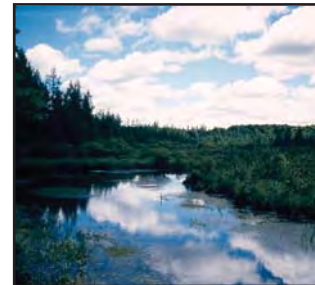
source more attractive to birds. You can buy a commercial dripper or make one by poking a small hole in a large plastic container and securing it over your bird bath.

Water is also used by birds during the winter. You can

keep water from freezing by heating your bird bath or pond. *Do not add antifreeze to the water to prevent it from freezing; antifreeze is poisonous to all animals, including birds.*

If you have a farm, woodlot, marsh or waterfront property: Naturally occurring ponds, streams and seasonally flooded areas also attract birds and supply them with both water and food. Mudflats (areas where water has drained) and areas with very shallow water provide an important place for shorebirds to find the worms and insects that they eat during migration. Ponds and wetlands are a source of aquatic animals like fish, frogs, and crabs for wading birds and kingfishers.

VICKI PIASKOWSKI



VICKI PIASKOWSKI



KARI WILLIAMS



Streams and wetlands provide birds with both water and food.

USFWS/C. SCHLAW



Belted Kingfishers eat mainly fish.

USFWS/DONNA DEWHURST



Greater Yellowlegs feed on insects, worms and small fish.

USFWS/GARY KRAMER



Green Herons feed mainly on fish.

USFWS/DAVE MENKE



Red-breasted Mergansers eat fish and shellfish.

FEEDING BIRDS

Insects found on native plants

(Some information in this section has been adapted from two books written in 2007, one by Mariette Nowak and one by Douglas Tallamy. Complete information on these books appears below.)

About half of the birds that breed in the United States are insectivores, meaning that they feed on insects and spiders; these birds do not visit the typical back-yard bird feeder that offers seeds. During the breeding season, most birds switch to a high-protein insect diet, which they also feed their young. The Northern Cardinal, a bird often seen at feeders, feeds its nestlings insect food almost exclusively (Halkin and Linville 1999). So, as Mariette Nowak suggests, it's time to think "beyond the bird feeder" and provide this important food for birds by including native plants on your property. Native insects feed on native plants, and these insects are a rich food source for birds.

In the U.S., we consider native plants to be those that grew here before European settlement. Plants function as true natives when they are grown in areas and with other plants with which they historically grew. Many species of native plants are native only to specific geographic regions, also called ecoregions; plants native to a particular location or ecoregion are referred to as "local ecotypes." Information on where to purchase native plants of local ecotypes can be found at nature centers in your area, from the Wisconsin Department of Natural Resources (see below) and natural resource agencies in other states. Another resource is Wild Ones® Natural Landscapers, Ltd., a national, not-for-profit, natural-landscaping group that was founded in Milwaukee, Wis. Its Web site is listed below, and the group has a handbook on natural landscaping.

Insects have adapted to the chemicals in native plants and so can feed on the leaves and flowers without being harmed. Many non-native plants contain chemicals that native insects have not had a chance to evolve and adapt to. This is why non-native plants like buckthorns contain few insects and are a very poor source of insects for birds.

All native plants are not equal in providing insect food for birds. To ensure insect diversity, plant a variety of native plants.

For a wealth of information on the native plants that do provide food for birds please see:

Nowak, M. 2007. *Birdscaping in the Midwest: A Guide to Gardening with Native Plants to Attract Birds*. Itchy Cat Press, Blue Mounds, WI.

Tallamy, D. W. 2007. *Bringing Nature Home: How Native Plants Sustain Wildlife in our Gardens*. Timber Press, Portland, OR.

Web resources for information on native plants:

Wisconsin Department of Natural Resources booklet on sources of Wisconsin native plants:

<http://dnr.wi.gov/org/water/wm/dsfm/shore/documents/nativeplants.pdf>

Information about native plants and natural landscapes at Wild Ones® Natural Landscapers, Ltd.: www.for-wild.org/landscap.html

KARI WILLIAMS



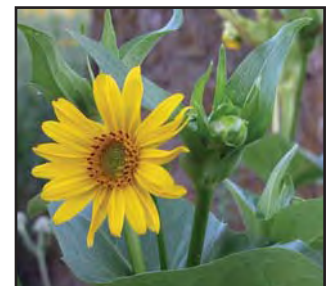
Pussy willow

BWB-ASF STAFF



Red-osier dogwood

B. TAYLOR, JACKSON, MN, BUGWOOD.ORG



Cup plant

VICKI PIASKOWSKI



Wild bergamot

C. EVANS, RIVER TO RIVER CWMA, BUGWOOD.ORG



Blackberry

Native plants like these can provide insect foods, seeds and fruits for birds. The leaves of the cup plant also collect water for small birds to drink.

Bird feeders

Feeding birds gives people a way to enjoy the beauty of birds, observe their behavior and connect with nature. In winter, many bird species eat the seeds provided in bird feeders. Researchers have tried to learn if food from bird feeders helps birds to survive harsh winter weather conditions. In one study on Black-capped Chickadees,

Brittingham and Temple (1988) found that chickadees with access to feeders containing sunflower seeds from October through April had higher overall survival rates (69% vs. 37%) than those that didn't visit feeders. This difference occurred primarily during months with severe weather (more than five days with temperatures below zero Fahrenheit, or -18 degrees Celsius).

How to provide food for birds in winter:

1. First learn which bird species spend the winter in your area.
2. Decide which birds you would like to attract.
3. Visit the Cornell Lab of Ornithology and Audubon Web sites (listed below) to find the seeds and other foods that those birds like.
4. Place your feeder within three feet (one meter) OR more than thirty feet (nine meters) from any window to avoid bird-window collisions.
5. Make sure cats and other predators cannot reach your feeders.
6. Keep your bird feeder clean so that it does not spread disease among the birds that use it.

(Please see pages 35-36 for more information on avoiding bird-window collisions. To learn more about the importance of keeping your cat indoors, please see page 37.)

Providing foods other than seeds for birds

In addition to seeds, birds also can be fed fruits such as apple slices, orange halves and grapes, as well as suet and mealworms. Many people also put out grape jelly for birds. Since jelly is mainly a source of sugar, it's best to also provide fresh fruit such as grapes and oranges, which have more nutrition for birds. If you do put out grape jelly, use a small dish so that the jelly does not stick to the birds' feathers. And, again, make sure raccoons, mice and other predators can't get to the jelly or fruit.

Please do not feed bread, crackers, popcorn, or other human treats to birds. Some birds may eat these foods, but they have no real nutritional value for birds. Human treats also may attract non-native species like European Starlings and House Sparrows.

Hummingbirds can be attracted with nectar (sugar water) feeders. You can make nectar by mixing one part sugar (not artificial sweetener) with four parts boiled water. Refrigerate unused nectar for up to one week. Do not add red food coloring to the mixture; it is not necessary and may be harmful to hummingbirds. Most hummingbird feeders have red, flower-like portals that attract hummingbirds. It is important to change the nectar every

three to five days so that mold does not grow; mold may harm hummingbirds. Do not use honey, as it encourages mold growth.

RICHARD BRODZELLER



Mourning Doves visit feeders and prefer millet and corn.

RICHARD BRODZELLER



Black-capped Chickadees prefer sunflower seeds.

RICHARD BRODZELLER



Northern Cardinals like to eat sunflower and safflower seeds.

STEPHEN J. LANG



This Downy Woodpecker is visiting a suet feeder.

JACK BARTHOLMAI



Female and male Ruby-throated Hummingbirds are attracted to nectar feeders.

JACK BARTHOLMAI



RICHARD BRODZELLER



Baltimore Orioles enjoy oranges, especially during migration.

Do not provide food for nest predators

Bird feeders can also provide food for predators that eat birds' eggs and young. This additional food may help the nest predators to survive harsh winter weather and so increase their numbers. One researcher found that Blue Jays and American Crows can benefit from supplementing their winter food supply (Terborgh 1989). Predators such as eastern chipmunks, squirrels, mice and raccoons also can be attracted to food at bird feeders or on the ground below. You can deter them by using squirrel baffles and placing feeders properly (see online resources below for more information). Also, do not allow seeds to accumulate on the ground where nest predators can easily find them.

Nest predators will make it more difficult for birds to breed successfully on your property.

Watch your garbage: Predators such as raccoons and crows also feed on human food waste and garbage. This extra food may help them to survive and increase their numbers. Be sure that your garbage containers are covered securely so that they don't attract predators to your land and nearby bird nests. (Please see page 18 to learn more about nest predators.)

Brown-headed Cowbirds are nest parasites; they lay their eggs in the nests of other birds and let other birds hatch the cowbird chicks. Cowbird chicks often are bigger and noisier than the other chicks in the nest, and they get more food and crowd out the host chicks. You can discourage Brown-headed Cowbirds from visiting your bird feeder in spring by using safflower seeds, which cowbirds don't like (Nowak 2007). After cowbirds leave in the fall, you can provide other seed types. (Please see page 19 for information on Brown-headed Cowbirds.)

The following online resources provide detailed information on feeding and attracting birds:

Cornell Lab of Ornithology:

www.birds.cornell.edu/AllAboutBirds/attracting

Audubon at Home:

www.audubon.org/bird/at_home/bird_feeding/index.html

Operation RubyThroat (hummingbirds):

www.rubythroat.org/



STOCK PHOTOGRAPHY

Eastern chipmunk



RICHARD BRODZELLER

Eastern gray squirrel



USEFWS/DAVE MENIE

Raccoon



RICHARD BRODZELLER

Blue Jay



STOCK PHOTOGRAPHY

American Crow

Avoid providing food for these nest predators.

REMOVING THREATS TO BIRDS

Collisions

Preventing collisions with glass windows

(Note: Much of the information in this section comes from research conducted by Daniel Klem Jr.) Glass is invisible to birds. Both tinted and clear glass can reflect images of the sky, trees and other plants. When these are reflected on the outside of windows, a bird may think that it is flying toward the sky or a tree. Instead, it strikes the window and is injured or killed. If indoor plants are placed next to a window, birds may try to perch on the plant and strike the window. About half of the birds that strike windows will die as a result. In most cases, we don't find injured or dead birds under our windows because scavengers (like cats, dogs, raccoons, and gulls) remove them.

(Left) This untreated glass door reflects trees and shrubs and gives birds the impression that they can fly directly through it.

(Right) The same glass door is covered with CollidEscape, a film that makes the glass visible on the outside. The view from the inside is similar to a clear glass window.



Glass also poses a threat to birds at night. Many birds migrate at night and become confused by artificial lights coming from buildings. They are injured or killed when they collide with windows. This is especially a problem on foggy or rainy nights.

VICKI PIASKOWSKI



This window is covered with a Bird Screen, which has a cushioning effect if a bird does strike it.

VICKI PIASKOWSKI



This photo shows two bird collision-prevention treatments. The window at left is covered with decals and also has a screen. The window at right has tape on the outside and strings of shells that move in the wind. Both make this window visible to birds.

What you can do: In the U.S. it is estimated that window strikes kill hundreds of millions of birds each year. You can prevent bird-window collisions by doing the following:

- Close curtains or blinds when birds are active (especially during migration and the breeding season).
- Make glass visible to birds (see photos for some examples):
 - ✎ Change the appearance of windows by hanging ribbons or streamers outside of them.
 - ✎ Place objects on the glass (like decals or hawk silhouettes) to make the glass more visible to birds. These are effective only if they cover the full length and width of the glass.
 - ✎ Cover problem windows with CollidEscape, a film that makes the outside of the glass white but allows clear views from inside.
 - ✎ Reduce bird collisions by placing mesh screens in front of windows. (If you don't have a screen available for all windows in your home or business, special bird screens designed to prevent bird-window collisions can be purchased and attached to windows with suction cups.)
 - ✎ Place a fine netting used for fruit trees over problem windows.
 - ✎ Decorate the windows with stencils.
 - ✎ Use "fritted" glass that is etched with closely spaced rows of small circles.
- Cover windows with external shades or sunscreens to change their appearance.
- Move houseplants so that they are not directly in front of windows. Plants can be moved away from windows and still receive enough natural light to grow.

- Place bird feeders or bird baths within one meter (three feet) of your windows. When feeders or baths are placed within this distance, birds approaching them fly more slowly. Usually, this reduces injuries if they do collide with the window. You also can place feeders more than nine meters (about 30 feet) from windows – but avoid placing them where birds can collide with windows in their regular flight path to and from the feeders/baths.
- If you are designing a home or building with glass windows, angle the windows downward 20 to 40 degrees so that the glass reflects the ground, not the sky.
- For large buildings with glass windows, reduce bird collisions by turning off building lights after dark; also turn off (or dim) atrium and outdoor decorative lighting after dark. This is especially important when birds are migrating.

A number of cities have "Lights Out" programs to encourage building and home owners to dim or turn off lights at night. The original "Lights Out" program began in Chicago (Chicago Bird Collision Monitors), and resulted in many owners of major skyscrapers voluntarily turning off or dimming lights during the migration season. Similar programs are being implemented in New York and Toronto. The Wisconsin Humane Society started the Wisconsin Night Guardians for Songbirds (WINGS) program in the spring of 2005 to make the Milwaukee cityscape safer for the thousands of birds that migrate through the area. They invite corporate building managers to make their tall buildings bird-safe and also encourage everyone to do their part at work and at home to help protect birds from the hazards of window collisions.

Birds face many natural hazards that threaten their survival. Let's not add human-made hazards. Please work to make your home and business safe for birds by making your glass windows visible to them.

For more information, see the following Web sites:

- Fatal Light Awareness Program: www.flap.org
- Audubon Lights Out Chicago: www.lightsout.audubon.org
- Wisconsin Humane Society Wisconsin Night Guardians for Songbirds: www.wihumane.org/wildlife/wings/vision.aspx
- Bird Conservation Network Green Paper on window collisions: www.bcnbirds.org/window.html
- American Bird Conservancy information on bird window collisions and making homes and workplaces safe for birds: www.abcbirds.org/birdconservationalliance/members/window_paper.PDF
- International Migratory Bird Day fact sheet on birds and collisions: www.fws.gov/birds/documents/Collisions.pdf

Preventing bird-vehicle collisions

Collisions with cars, trucks and other vehicles are a well-known cause of bird deaths. Birds do not have the capacity to “learn how to fly across the street” safely. You can prevent these unnecessary bird deaths by watching for birds when driving and slowing down if you see a bird in your path.

USFWS/LEE KARNEY



American Robin

USFWS/DAVE MENKE



Barn Swallow

USFWS/DONNA DEWHURST



Red-winged Blackbird

These bird species are often killed by vehicles.

In a study conducted in Wisconsin, William Mueller gathered records on road-killed birds. In 1999, 1,548 deaths of 109 species of birds were reported (from 64 of Wisconsin’s 72 counties). Mueller believes that this probably was just a fraction of the birds actually killed that year. That’s because many birds hit by vehicles are thrown far from the road, while others are taken from the road by mammalian predators and scavengers.

The five most commonly reported species killed by vehicles were the American Robin, House Sparrow, Red-winged Blackbird, Barn Swallow, and European Starling. For some species, the majority of road kills occurred during the breeding season and during fledging, when young birds leave the nest. For other species, such as the Mallard, American Crow, Mourning Dove, and Canada Goose, there were no seasonal patterns for roadkills (Mueller 2003).

What you can do: Many birds commonly killed by vehicles fly low across roads, making them more susceptible to being hit. You can prevent these unnecessary bird deaths by doing the following:

- driving at or below the speed limit,
- watching for birds that fly low across the road, such as American Robins and Barn Swallows, and

- being careful on cloudy nights. Because of the decreased visibility, birds may not see your vehicle and the sudden light from the headlights can disorient them.

Outdoor cats

Preventing your cat from killing birds

Cats hold a special place in the hearts of many pet owners. Farmers often use cats to control rodents (mice and rats) on their farms, in their barns, and in other buildings. Although many people believe that outdoor cats kill only rodents, studies done in the U.S. and Great Britain have shown that cats also kill many wild birds and other wildlife. Even cats that are well-fed by their owners still have a natural instinct to hunt when they are outdoors. A study done on free-ranging cats estimated that more than seven million birds are killed each year by rural cats in Wisconsin (Coleman and Temple 1993, 1996).

ROBB QUINN



ROBB QUINN



Free-roaming cats like these don't kill only rodents; they also kill many wild birds.

Free-roaming cats (house cats allowed to go outside as well as stray and feral cats) are often hit by vehicles and subjected to diseases, starvation, poisons, attacks by other animals and mistreatment by humans. The average lifespan of an outdoor cat is 2-5 years. Cats that spend their entire lives indoors can live 17 or more years, according to the American Bird Conservancy (see below). Spaying or neutering cats helps to prevent births of unwanted cats and overpopulation.

Staying indoors is best for your cat and will help to save birds.

For more information and to learn how to make an outdoor cat an indoor cat, visit the following Web sites:

American Bird Conservancy Cats Indoors! Program:
www.abcbirds.org/abcprograms/policy/cats/index.html

The Humane Society of the United States statement on free-roaming cats:

www.hsus.org/pets/pet_care/cat_care/keep_your_cat_safe_at_home_hsus_safe_cats_campaign/

GROUPS HELPING TO CONSERVE BIRDS

Birds are valuable to humans in many ways. Although many bird species remain common, some species have declined dramatically and require help and planning to survive. To help these at-risk birds, a number of coalitions have been formed that include diverse partners, including federal, state, and local government agencies; tribes; non-governmental organizations; universities; concerned individuals; conservation organizations; and private industry. These coalitions have worked together, and, utilizing the expertise of their members, published lists of birds at risk (of conservation concern) and plans to assist in bird conservation. To determine the bird species at risk at each of the Wisconsin study sites, we used the following bird conservation plans. (Note: All of these plans are available online and we have included the Web addresses in Appendix 12 so that you can learn more about how to manage your land for specific birds of conservation concern.)

U.S. Fish and Wildlife Service Birds of Conservation Concern (USFWS 2002). The goal of this plan was to identify populations of migratory non-game birds that, without additional conservation actions, would likely become candidates for listing under the Endangered Species Act. (Non-game birds are those that are not hunted.)

The Partners In Flight (PIF) North American Landbird Conservation Plan (Rich et al. 2004). This plan provides information on the landbirds of conservation concern that are found in Canada, the U.S. and Mexico. Landbirds are birds such as raptors (hawks and owls), hummingbirds, grouse, quail, doves, flycatchers, songbirds, and other birds that occupy terrestrial or land-based habitats.

- *Watch List Species (WL):* PIF designates species as Watch List species if there are many reasons for conservation concern across their entire ranges, which include their breeding, migration and non-breeding (wintering) habitats. So work to conserve all of these habitats is important for Watch List species.
- *Stewardship Species (SS):* PIF designates species as Stewardship Species if they have a high proportion of their worldwide population within a particular area. Because many bird species are habitat specific, PIF defines areas where a particular bird species is likely to be found during the breeding or wintering seasons as an "Avifaunal Biome." These biomes are further divided into Bird Conservation Regions, which are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues.

- The Wisconsin BWB-ASF Pewaukee and Rosendale study sites are in the Prairie Avifaunal Biome and Bird Conservation Region 23, the Prairie Hardwood Transition.
- The Wisconsin BWB-ASF Land O' Lakes study site is in the Northern Forest Avifaunal Biome and Bird Conservation Region 12, the Boreal Hardwood Transition.

Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1. (Kushlan et al. 2002, 2006). This plan provides a guide for the conservation and management of waterbirds, including seabirds, coastal waterbirds, wading birds and marshbirds utilizing aquatic habitats. The plan area includes 29 nations throughout North America, Central America, the islands in the Caribbean Sea and their coastal waters. (Please note that some species were evaluated in 2002; some were evaluated in an update issued in 2006.) Examples of waterbirds include loons, grebes, herons, rails, gulls, terns, and cormorants.

The U.S. Shorebird Conservation Plan (2001). This plan lists U.S. and Canadian shorebird populations that are considered highly imperiled or of high conservation concern. It includes shorebirds that use wetlands, shoreline habitats, and grasslands. Examples of shorebirds include plovers such as the Killdeer, the Solitary Sandpiper, Greater and Lesser Yellowlegs, Wilson's Snipe, and American Woodcock.

The Wisconsin Bird Conservation Initiative All-Bird Plan (WBCI 2007). This plan is designed to set the direction and highlight the opportunities and priorities for bird conservation in Wisconsin for the future. It incorporates the information present in a number of existing plans as well as species that are threatened or endangered in Wisconsin.

The Wisconsin Department of Natural Resources Wildlife Action Plan (WI DNR 2006). The Wildlife Action Plan identifies native Wisconsin species that are in greatest conservation need and outlines actions that people in Wisconsin can take to conserve wildlife and natural places before they become more rare and expensive to protect. Eighty-four bird species have been identified as being Species of Greatest Conservation Need in Wisconsin; 25 of these are currently listed as threatened or endangered in Wisconsin and 2 are listed as threatened or endangered nationwide.