



BIRD FRIENDLY FORESTS:
OPPORTUNITIES for
Private Forest Owners in the
Southeastern United States



Swallow-tailed Kite by Steve Byland, Shutterstock



Wild Turkey by Tom Reichner, Shutterstock



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Bird Friendly Forests:

Opportunities for Private Forest Owners in the Southeastern U.S.

Working forests owned and managed by private landowners like yourself support many species of birds found in the southeastern United States. First and foremost, thank you for owning and managing a working forest and providing a home for birds!

You may be asking yourself, “Why should I worry about birds on my property?” First, birds hold widespread public interest, with an estimated 45 million Americans observing and feeding birds at home and on bird-related trips. Most people that watch birds — 93 percent — live in metropolitan areas, and birds can connect those people to forest lands and their many values. In addition, birding is big business. In 2016, the U.S. Fish and Wildlife Service reported an estimated annual revenue from wildlife-watching expenditures of \$75.9 billion!

Not only are birds fun to observe, their presence is a sign that your forest is healthy and providing important environmental functions, such as wildlife habitat and clean water. Birds help keep insect populations in check, provide food for predators and, in some cases, aid in keeping forest plant communities healthy by dispersing seeds and pollen.

Birds are also interesting to study. Did you know that many of the birds that nest on your property in the spring arrive from their winter retreats thousands of miles away in Mexico, Central America and the Caribbean? For example, Prairie Warblers, that are common in young forests in the Southeast during April through August, spend the winter months in Caribbean islands including Cuba, Jamaica, Hispaniola, and the Bahamas. Swallow-tailed Kites arrive to nest in the Southeast from their wintering grounds in Brazil! Other species, such as Barred Owls, Wild Turkeys, and Northern Cardinals depend on your property all year.

Because birds use a variety of forest types and conditions, management prescriptions intended to benefit birds can be complicated. Some birds use recently harvested areas, while others prefer older forests and/or wetlands and deep swamps. Although there is no single management tool that will benefit most or all bird species, we hope this guide provides you with helpful on the ground management options you can use to further enhance habitat conditions for birds on your property.



Prairie Warbler © Michael Subbiefeld

Prairie Warblers nest in young forests in the Southeast after wintering far south of the U.S.



In pine-dominated landscapes, small groups of hardwoods provide diversity, cover, and food for birds and wildlife. Photo by Jeremy Poirier



Small wetlands with a sufficient buffer can attract wading birds and provide habitat for amphibians. Photo by Jeremy Poirier



Prescribed fire improves habitat conditions, increases nutritional value of understory plants and can reduce competition from hardwoods for pine crop trees. Photo by David J. Moorhead, University of Georgia, Bugwood.org



With planning, special habitat features like tall pines will support nesting by Swallow-tailed Kites. Photo by Mac Stone



THINGS TO CONSIDER: The Overall Property

Variety is a key to supporting different types of birds across your property. If your property contains a variety of forest types (e.g. pine areas, hardwood areas, wetlands, etc.), you will have a higher diversity of birds than a property dominated by a single forest type. By providing a diversity of stands and varying forestry practices within these stands across your property, you can help sustain diverse and healthy bird populations.

- When pine stands are the predominant forest type, maintaining any existing and/or creating additional hardwood patches are critical for some bird species.
- Retaining a few tall pines within streamside zones or hardwood stands may provide specialized nesting sites for some birds, such as Swallow-tailed Kites or Mississippi Kites.
- Retaining or adding small ponds and wetlands will attract wading birds and waterfowl.
- Removing invasive plants and animals will improve habitat conditions for birds and other native plants and animals.

- In pine forests of the southeastern U.S., behind thinning, prescribed fire is probably the second most important management tool that you can use to improve stand level wildlife habitat. Prescribed fire should be used as soon as possible after thinning within mid-rotation pine stands. Prescribed fire will increase the nutritional value of understory plant species and reduce potential hazardous fuel loads. Additionally, using an herbicide treatment to remove midstory hardwoods followed by repeated prescribed burning is a proven management technique to improve habitat conditions for many birds and other wildlife species, such as white-tailed deer. Always be sure to follow state permitting requirements when conducting a prescribed fire.
- When prescribed fire is not feasible, some herbicide treatments can improve stand conditions and may mimic habitat conditions created with prescribed fire.

These recommendations are most likely to benefit birds when your property is surrounded mostly by large forested areas. If your property is surrounded by intensive agriculture or development, be aware that small stands or narrow strips of vegetation or forest could result in loss of nests and reduction of young birds fledging due to predators and Brown-headed Cowbird nest parasitism.

Birds you can expect when you allow for these overall recommendations: Barred Owl, Swallow-tailed Kite, Wild Turkey, Hooded Warbler, Indigo Bunting, Bachman’s Sparrow, Great Blue Heron, Eastern Towhee, Northern Cardinal, Carolina Wren and so many more.



Bachman's Sparrow by Greg Lavaty



Indigo Bunting by FotoRequest, Shutterstock



Living trees left after harvest provide important structural diversity and foods like acorns and fruit.
Photo by Jeremy Poirier



Snags can serve as perches, contain insects for food, and provide cavities for nesting by many species, including Wood Ducks. Photo by Joe McDonald, Shutterstock



Slash piles may look messy but provide nesting places and cover for birds and other wildlife.
Photo by Ben Wigley



Streamside Management Zones can provide valuable wildlife habitat and protect water quality.
Photo by Jeremy Poirier

THINGS TO CONSIDER: Final Harvest

Conducting a final harvest, generally a clearcut in southern pine forests, will have a significant effect on bird habitat. Although some birds associated with older age class forests will most likely be negatively affected by a harvest, particularly if there is not older forest nearby, the new forest will create habitat conditions suitable for many bird species that require younger forests. These are known as early successional bird species or birds that are dependent on young forest conditions. Managers have several opportunities to enhance habitat conditions for birds after the final harvest:

Retention is a term commonly used to describe live trees and snags (dead trees) left following a harvest. These retained trees and snags are used by many bird species for perching, foraging, and nesting. Retention also provides a great opportunity to observe a variety of bird species and for you to see some of their behaviors. There is no recipe for how many trees to leave, the type of trees to retain, whether they should be alive or dead, or how to arrange them. However, you may wish to consider the following opportunities:

- Overall, be generous and leave as many as possible. The more the better is a good rule of thumb, and some studies have shown that patches of 10-15 retained green trees increased bird species richness. In terms of variety, leave live and dead trees, large and small, and pine and hardwood. However, in terms of size, larger trees and snags are preferred because they will last longer and continue to contribute diverse structure and functions as the stand matures. Aggregating trees and snags, such as in “stringers” along ephemeral drains or in patches near the edge of harvested areas, is preferred compared to leaving isolated single live trees or snags across harvested areas; clumping trees also reduces working around scattered trees during subsequent forest operations.
- If possible, leave a few large pine trees. Some of them will die and provide excellent structure for cavity nesting birds such as woodpeckers, Eastern Bluebirds, Great-crested Flycatchers, etc. If these snags are large enough and near water, they may even host a family of Wood Ducks as they decay!
- Safety should be a primary concern when planning the distribution pattern of snags. Consider proximity to high activity areas (e.g., roads, food plots) and safety of planting crews.



Red-headed Woodpecker feeding young by Brent Barnes, Shutterstock

When retaining hardwoods:

- Consider leaving a few oaks scattered or in stringers to provide mast production for game and non-game species. Fruit producing trees such as black gum and mulberry are also very valuable for wildlife.
- Streamside management zones (SMZs) can provide for much more than water quality protection including a mature forest component for wildlife food, shelter, and travel corridors.
- When designing SMZs, consider opportunities to increase width beyond state BMP's where appropriate to further enhance habitat conditions for birds associated with riparian forests. As a general rule, the wider the better.

Vary clearcut size and shape as this “mix” will enhance bird diversity on your property. Stands should have irregular shapes, i.e., avoid square and rectangular shaped stands as much as possible.

Keep it messy: leave snags, downed tops, small trees, and other structure. Nature is not tidy, and this cover can attract more species of birds and wildlife to harvested stands.

If you retain enough snags and residual pines and hardwoods, you may see: Red-bellied Woodpecker, Red-headed Woodpecker, Red-tailed Hawk, Red-shouldered Hawk, Great-crested Flycatcher, Eastern Bluebird, Eastern Kingbird, Orchard Oriole, Brown-headed Nuthatch, and others.



Site preparation that allows for some shrubs adds nesting places and a diversity of foods.
Photo by Jeremy Poirier



Snags left near a streamside zone provide perches for birds and avoid operational conflicts and safety hazards. Photo by Jeremy Poirier



Less intensive site preparation allows for growth of native grasses and forbs that attract native insects and provide native seeds. Photo by Jeremy Poirier



Birds like the Prairie Warbler need the young stands created in managed forests. Photo by Ryan Sanderson



THINGS TO CONSIDER: Stand Establishment

Decisions made at regeneration such as site preparation, tree spacing, and retention areas will have lasting influences throughout the life of the stand. The choices you make at stand establishment will determine habitat quality for birds both within the stand and in adjacent stands.

- Plant the tree species that is best suited for the site.
- Spacing: wider spacing allows more sunlight to reach the forest floor and encourage growth of native plants.
- Soften stand edges: leave some areas adjacent to roads and SMZs untreated to allow for a transition of vegetation that can provide escape cover, nesting sites, and food for birds.

Site preparation: stands established without intensive chemical and mechanical treatments will have more plant diversity that will provide more food and cover for birds.

Herbicides: always follow product label requirements and use only the amount and type required to achieve your management objectives. Because the effects of herbicides on vegetation are highly variable depending on the chemical(s)

used and the associated site characteristics, you may want to consult a local forestry consultant or extension agent before you apply herbicides. The following are some general recommendations:

- Banded and spot applications allow managers to treat less area within the stand relative to broadcast applications; band and spot treatments provide competition control near trees while reducing expense and allowing quicker growth of vegetation that adds diversity for birds in much of the stand.
- Most of the birds that use your forest feed on insects, and native grasses and forbs provide insects and seeds that birds need as food for themselves and their young.
- Multiple broadcast applications of herbaceous weed control will suppress re-emergence of the native plant community longer than a single application, likely decreasing habitat quality for many species.
- By temporarily controlling woody plants and vine species, some herbicide treatments can promote the development of grasses, weeds, and forbs which is beneficial for many species, such as Northern Bobwhite.
- Although a heavy shrub layer can suppress native grasses and forbs, some native shrubs are important as nesting places and sources of late summer and fall fruits that provide energy during migration.

Birds you can also expect in young forest: Prairie Warbler, Yellow-breasted Chat, Common Yellowthroat, Northern Bobwhite, Blue Grosbeak, White-eyed Vireo, Eastern Kingbird, Field Sparrow



L to R: Eastern Kingbird by Robert L. Kothenbeutel, Shutterstock; Common Yellowthroat by Paul Reeves Photography, Shutterstock; Northern Cardinal by Danita Delmont, Shutterstock



This pine plantation in Mississippi was treated with the herbicide imazapyr, then burned to create an open understory with native grasses, forbs, shrubs, and small trees — favorable habitat conditions for birds and other wildlife. Photo by Darren Miller



White-eyed Vireo by Frode Jacobsen, Shutterstock



Eastern Towhee by Charles Brutlag, Shutterstock



After thinning and burning, this loblolly stand allows extensive sunlight and habitat that support bobwhite quail. Photo by Reggie Thackston



Brown-headed Nuthatch by Frode Jacobsen, Shutterstock

THINGS TO CONSIDER: Thinning

Thinning provides a financial return early in a stand's rotation, improves growth of remaining trees, and improves quality of wildlife habitat in planted pine stands. Open canopies allow sunlight to reach the forest floor, which in turn stimulates growth of grasses, forbs, and shrubs. Thinning should occur as soon as feasible after crown closure.

- **Spacing:** heavier thinning allows more sunlight to reach the forest floor, which will result in more understory plant diversity. The higher the plant diversity the higher your bird diversity.
- **Sunlight:** more is better. For example, the Northern Bobwhite Conservation Initiative recommends thinning a stand to a basal area of 40-50 square feet per acre. So, during summer when the sun is high in the sky, nearly directly overhead, a properly thinned stand of pines for quail will see about 60% – 65% sunlight on the forest floor at mid-day. This translates roughly to 35% – 40% canopy coverage. To note, thinning to 40-50 BA specifically targets habitat conditions for quail. If your thinning objectives result in a higher BA, many bird species will still benefit from the treatment and increased sunlight reaching the forest floor.
- **Fire:** if you can use fire, open forest conditions can be maintained after thinning for a longer period of time, which will benefit numerous bird and other wildlife species. Always be sure to follow state permitting requirements when conducting a prescribed fire.
- Stands that are thinned and fire-maintained are overall healthier. For example, stands with fewer trees per acre are better able to tolerate drought and less susceptible to insect outbreaks. Also with less of a fuel load, they are more likely to withstand stand-altering wildfire.
- **Herbicides:** selective herbicides can be used alone or in combination with prescribed fire to suppress mid-story hardwoods that interfere with growth of native grasses and forbs.

Birds you can expect to see after thinning:

Northern Bobwhite, White-eyed Vireo, Eastern Wood Pewee, Pine Warbler, Northern Cardinal, Wild Turkey, Brown-headed Nuthatch

We want our Southeastern forests to be sustainable — economically and ecologically.



We hope the recommendations in this guide help you achieve your forest objectives and make the most of your forest's potential for birds and other wildlife. Your local Extension Agent and State Wildlife Agency biologists are excellent sources for additional information and assistance.



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