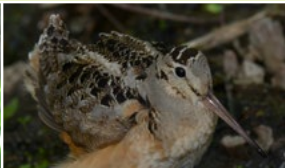
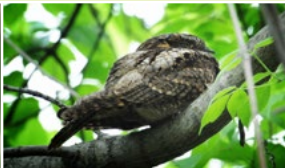


Forestry for the Birds

Pocket Guide for Landowners in Indiana and the Central Hardwoods Region



Created and produced by



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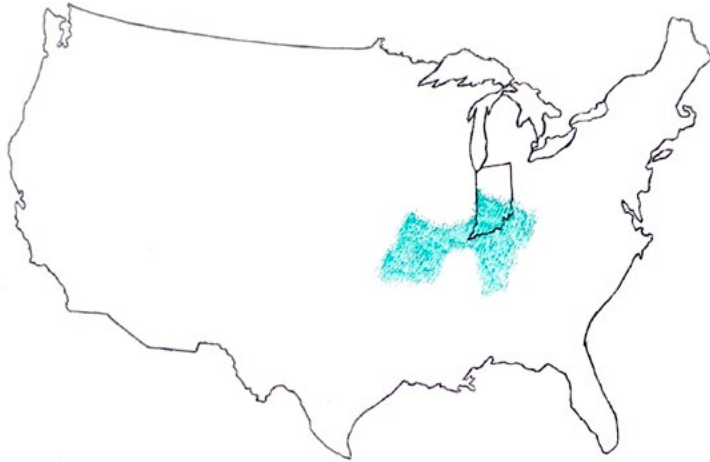
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Welcome to the Pocket Guide for Forestry for the Birds!

This is one of two publications in this project, the other being the silvicultural guide for professional foresters. *Forestry for the Birds* is a collaborative project developed by The Nature Conservancy in Indiana in collaboration with birders, ornithologists, foresters and wildlife biologists. Our goal is to provide strategies that can benefit both forest management and bird communities, facilitating and simplifying the management of bird-friendly forests.

This guide is intended as a supporting document for the silvicultural guide, which contains technical guidelines for foresters. Here we provide bird-focused information about habitat management for landowners and managers, but particularly those interested in managing their lands for birds.



Indiana and The Central Hardwoods Region, adapted from the U.S. North American Bird Conservation Initiative (NABCI) Bird Conservation Region (BCR) #24.

The Birders' Dozen — Indiana

The Birders' Dozen is a list of twelve species that were carefully selected for inclusion in this project by The Nature Conservancy and an independent team of birders, ornithologists and conservationists. In general, the species on this list:

- Nest in the Central Hardwoods ecoregion
- Are easy to identify by sight and/or sound
- Need conservation action through targeted management, often due to range-wide or local population declines

These birds, with a wide range of habitat requirements, offer a place to start for landowners and professional foresters. Management options are presented for each of these twelve birds. However, these options will almost certainly benefit wildlife beyond these twelve birds, and this list should not be considered exhaustive. Instead, we hope it is a starting point for a more bird-friendly forest management.



How to Use This Guide

This guide is intended to be used with the more technical silvicultural guide but is more pocket-friendly with information about each of the dozen birds. This publication is not exhaustive as either a field guide or silvicultural manual but is intended to help users understand how some birds might benefit from forest management.

The guide includes identification tips, a description of the song or vocalizations and a description of the species' habitat, territory, nesting behavior and food sources.

Identification tips are provided for birds in the breeding season, though plumage can change throughout the year. For most species, the male's territorial song is described; many birds have multiple types of vocalizations, so this is not a

replacement for a complete field guide. Unless otherwise noted, the remaining descriptions are based on each species' preferred habitat with the highest chance of reproductive success, though birds often use multiple habitats throughout the year.

The guide also describes forestry recommendations across a landscape, allowing landowners to determine appropriate management techniques for their woods. We have also included descriptions of some target tree and shrub species for each bird. Very few birds on our list require a certain tree species, so habitat structure is often a better indicator of suitability. Instead, these trees and shrubs are a starting point for habitat management from a forestry perspective.

Non-native and invasive plant species

Non-native plant species that have overtaken areas are termed invasive. Common examples of invasive woody shrubs in the Central Hardwoods region include bush honeysuckle, multiflora rose and autumn olive. These species outcompete native shrubs and provide less nutritious food for wildlife such as migrating birds. Management plans that seek to benefit native, breeding bird species such as the twelve presented here would benefit greatly from including plans for treatment and removal of invasive species. Resources about management of invasive species for landowners can be found at <http://www.sicim.info>.

Prescribed fire

The use of prescribed fire, when done responsibly and considered carefully, can be appropriate in many situations. Controlled burns can influence forest structure, which has indirect benefits for many of our target bird species. In particular, prescribed fires can benefit forest understory development, create snags (standing dead trees) and generate coarse woody debris. These results of fire can benefit some species such as the eastern whip-poor-will and red-headed woodpecker, while potentially removing habitat for others like the wood thrush. The benefits of fire in fire-adapted forest ecosystems are well-documented, and we recommend managers consider its use to create and maintain habitat types and structures.

Resources about controlled burns in forest systems can be found at:

Prescribed fire: 6 things to consider before you ignite:

www.purdue.edu/fnr/extension/prescribed-fire/

Indiana Prescribed Fire Council:

www.inpfc.org/

Illinois Prescribed Fire Council:

www.illinoisprescribedfirecouncil.org

Safety equipment while conducting a fire:

research.cnr.ncsu.edu/blogs/southeast-fire-update/2019/09/09/ppe-for-landowners-practical-clothing-options/

Migratory birds need habitat, too

For many species, habitat requirements during the migratory and wintering seasons are often less stringent than those during the breeding season. In migration especially, a bird's entire goal is to find sufficient fuel for their journey and shelter from predators. An isolated woodlot or a single tree in a yard, as well as large tracts of contiguous forest, can fulfill these roles for migrating birds, even if they don't breed in that specific patch. Provision of high-lipid fruit-bearing shrubs such as dogwood (rather than non-nutritious, invasive honeysuckle) and native trees such as oaks that support greater abundances of native insects can benefit migratory birds, even in small forest patches or backyards.

In addition, simple actions, such as keeping domestic cats indoors and turning off unnecessary lights at night during the migratory season, can help reduce mortality due to cat predation and window collisions.

Small-scale management

A question we receive frequently is, “How can I benefit birds when I don’t have much land, or just a small backyard?” As mentioned above, even simple actions like keeping your cat inside can have huge benefits for birds, regardless of how much land you own. Backyard management for birds can be easy, effective and enjoyable.

Planting native trees, shrubs and flowers, avoiding insecticide use, letting clover and grass grow between mowings and providing water features can have beneficial impacts on native pollinators

such as bees and butterflies, which many of our target bird species feed on. Birds like Baltimore orioles often use isolated trees in backyards for nesting, and birds such as red-headed woodpeckers and eastern screech-owls use snags, which are easily created in even small woodlots. In short, even simple management actions in the smallest of properties can be important for these charismatic species and others.

References

Birds are named and ordered according to their current taxonomic classifications (American Ornithologist Society’s 2020 checklist of North and Middle American Birds, <http://checklist.americanornithology.org/taxa/>). The majority of the information in this publication was derived from each species’

Birds of The World (<https://birdsoftheworld.org>) and All About Birds (<https://www.allaboutbirds.org>) accounts. These are resources managed by the Cornell Lab of Ornithology and available online. *Silvicultural considerations* for each species were developed in consultation with several foresters as well as our integration of both ornithological and silvicultural research.

Acknowledgements

This work was sponsored by a generous grant from the Alcoa Foundation, and was inspired by *Foresters for the Birds*, produced and distributed by Audubon Vermont and the Vermont Department of Forests, Parks, and Recreation, who were instrumental in the conception and production of these publications. Initial funding was provided by the Indiana Forestry Educational

Foundation, without which the project could not have succeeded. Numerous people provided helpful guidance and feedback, and we are grateful for their support. In determining the list of species—Brad Bumgardner and members of the Indiana Audubon Society; Dr. Jane Fitzgerald, Kyle Brazil, and Cara Joos from the American Bird Conservancy; Robert Ripma from Amos Butler Audubon; Allisyn-Marie Gillet from Indiana Department of Natural Resources, Division of Fish and Wildlife; Jeffrey Kiefer from the US Fish and Wildlife Service; Dr. Michael Baltz, coordinator of Let the Sun Shine In; and several representatives from Purdue University, including Elizabeth Jackson and Dr. John B. Dunning, Jr.

Yellow-billed and Black-billed Cuckoos (*Coccyzus americanus* and *erythrophthalmus*)



Yellow-billed cuckoos can be found in woodlands and young forests, often in shrubby habitats along riparian and forest edges. Nests are placed low in dense thickets, most often in humid or moist areas.



 **SCAN ME**

Listen to the
Yellow-billed
cuckoo

ID info Brown upperparts, cream underside, and yellow bill with distinct pattern of six white spots on long tail (YBCU) or dark bill with red eyes (BBCU); YBCU are more widespread than BBCU

Song or vocalizations Hollow-sounding single “kik” or “kow” call repeated multiple times (YBCU); triplicate “ku-ku-ku” call repeated multiple times (BBCU)

YBCU = Yellow-billed cuckoo
BBCU = Black-billed cuckoo

Habitat Open woodlands, shrubby, riparian habitats on edges of or near forests

Territory Unknown territory size, and home range area is variable, but has been measured between 20-120 acres

Nesting Placed in low branches in dense thickets or groves, often near water or with high humidity

Food Larger invertebrates, may also consume berries and vertebrates (amphibians, small reptiles)

Fun fact Cuckoos are sometimes called “raincrows” due to their habit of singing on cloudy days or in response to thunder.

Silvicultural considerations

Foraging Cuckoos are especially fond of caterpillars, cicadas and large insects. Open forest provides better visibility for the bird to perch, spot prey and catch insects on the wing. Keep some hawthorn, blackberry, elderberry, mulberry, and grape as soft mast—all important food sources as well.

Nesting and brood rearing Open forests with clearings with dense shrubs. Riparian areas are attractive. Single tree or group selection is appropriate.

Eastern Whip-poor-will (*Antrostomus vociferus*)



Eastern whip-poor-wills use young forest with open understories and open canopies to allow foraging. They nest on the ground, often near fallen logs.

© Charles Sorenson



 SCAN ME

Listen to the
Eastern
whip-poor-will

ID info Mottled gray and brown plumage for daytime camouflage, tiny bill surrounded by bristles for catching insects in flight, white patches on outside corners of tail

Song or vocalizations Distinct, melodious “whip-poor-will” call given at dawn and dusk, occasionally on moonlit nights

Habitat Young forests with open understories and open canopies, possibly close to large forest tracts (rather than isolated patches)

Territory Approximately 10-15 acres, though relatively understudied

Nesting Ground-nesting, lays eggs directly on leaf litter, often near downed limbs; susceptible to nest predation

Food Nocturnally-flying insects

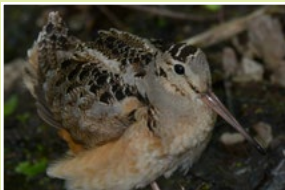
Fun fact Clutches of eggs appear to be timed to the lunar cycle, so that parents have greater levels of moonlight available for foraging when young are growing rapidly.

Silvicultural considerations

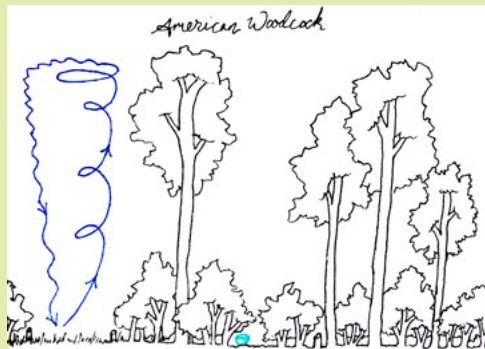
Foraging Feeding on moths and other flying insects, this bird would benefit from forestry practices that create increased line of sight and maneuvering space. Open midstory and moderately dense canopy preferred. Consider midstory removal such as the first phase of a shelterwood harvest.

Nesting and brood rearing Ground nesting bird. Prefers leaf litter near small shrubs for cover in open forests, woodlands, and edges. Uncommon in mature forests with closed canopies. Needs an open understory and has shown an affinity for forests treated with repeated controlled fires.

American Woodcock (*Scolopax minor*)



From below, American woodcocks utilize habitats with open areas for courtship displays (blue flight pattern), young forest with dense shrub layers for nesting, and relatively open forest floors for foraging for earthworms.



SCAN ME

Listen to the
American
woodcock

ID info Mottled gray and brown upperparts, orange belly, long bill, and eyes set far back on their head

Song or vocalizations Distinct “peent” call given as part of a dramatic courtship display at dawn and dusk in early spring

Habitat Young forests or old fields with openings for displaying and foraging habitat with dense shrub canopies and open floors

Territory Display areas average 0.02 acres, not territorial otherwise

Nesting Ground-nesting, lays eggs either directly on leaf litter or in simple, shallow hollows

Food Invertebrates, particularly earthworms

Fun fact When feeding, the woodcock uses its flexible bill to probe for earthworms; when foraging, it often rocks back and forth to shift weight on its feet, which may cause earthworms near the surface to move, increasing detectability.

Silvicultural considerations

Foraging In mature forest the canopy should be moderately open so that sunlight reaches the forest floor to encourage ground vegetation for cover. Old fields are often used as well. Maintain fields through annual to biennial mowing or fire, allowing enough time between treatments for woody shrubs, briars, and small trees to persist.

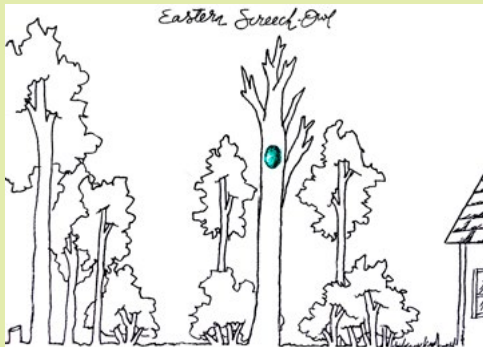
Nesting and brood rearing Create thickets of dense, young hardwoods that provide shelter and concealment, near areas with rich moist soil that it prefers for seeking food. Ideally, the thickets have trees less than 30 feet tall and generally one-half inch to six inches in diameter. Once trees get beyond this size the value of the habitat diminishes.

Courtship The woodcock male requires a rather open area up to 0.5 acres with very short vegetation, so his spring courtship display is visible to a female. The courtship ground is often less than 100 yards from good foraging or nesting cover. (See illustration).

Eastern Screech-Owl (*Megascops asio*)



Eastern screech-owls occupy a wide variety of habitats, most often with snags for nesting and open subcanopy space for hunting. They can also benefit from human-provided nest boxes and can be found near urban and suburban habitats.



 **SCAN ME**

Listen to the
Eastern
screech-owl

ID info Small owl with a disproportionately large head and ear tufts; two color morphs, one a mottled gray-brown and the other a brighter red or “rufous” color

Song or vocalizations

Descending, high-pitched “whinny” is primary song for territory defense, also gives a monotonic, long trill for pair bonding

Habitat Woodlands and forests with a suitable cavity tree, ideally with open subcanopy space for hunting

Territory Area including and adjacent to cavity tree, often defends polyterritories of multiple nesting trees

Nesting Nests in natural cavities in hollow trunks, stumps, limbs, as well as former woodpecker cavities; cavities usually deep with small entrances (approximately 6 inches diameter)

Food Both invertebrates such as insects and earthworms and vertebrates such as rodents and songbirds—a diverse range of prey

Fun fact Both males and females give the whinny call that gives the screech-owl its name, though males call most frequently; this call is often used to strengthen pair bonds, as these small raptors mate for life.

Silvicultural considerations

Foraging Being a generalist, this owl forages in open woodlands, forests and open areas. One can make a reasonable attempt to determine if this bird is nesting or foraging in the area by listening for its call for several nights during the nesting season.

Nesting and brood rearing During timber inventories, attempt to identify den trees that may be used by screech owls. Creating snags from cull trees may enhance the likelihood of eventual cavity use but is not long lasting. Screech owls will nest in appropriately sized boxes even near human habitation. Known to use apple, cottonwood, oak, elm and pine, among other trees.

Red-headed Woodpecker (*Melanerpes erythrocephalus*)



Red-headed woodpeckers need snags for nesting and mating displays, as well as dead wood for foraging. They also prefer open woodlands and oak savannas. Open canopies and light shrub layers create good habitat for these birds.



 **SCAN ME**

Listen to the
Red-headed
woodpecker

ID info Distinctive crimson red head, bold patchwork of white and black on wings and body; juveniles have brown head that molts into red as they age

Song or vocalizations Loud, high-pitched call note sometimes described as “churr” or “queear”; also drum on trees and other tall structures as territory defense and pair formation

Habitat Woodlands or forests, usually open and edge habitats; occupy savannas and woodlands consistently; in winter, mature stands of oak forest

Territory Summer territories (between 7 and 20 acres) larger than winter (0 to 3 acres)

Nesting Excavate cavities in dead trees or limbs in open areas with little to no understory

Food Omnivorous—hard mast in winter, arthropods (both flying and wood-boring insects) and fruits in breeding season

Fun fact Unlike most woodpeckers in eastern North America, both sexes of the red-headed woodpecker look similar (sexually monomorphic), and the bold coloration has earned them the nickname “flying checkerboard.”

Silvicultural considerations

Foraging Among all woodpeckers, this species is the most likely to catch flying insects. They gravitate to open woods with large trees where they can perch and scan the forest for flying insects. First stage shelterwood harvests are

attractive to this bird. Mid-story removals used to enhance the amount of light for regeneration should benefit these birds. Occasional prescribed fire to reduce understory density should also be useful. Where possible, the area of treatment should be 10 acres or more. In winter they forage on acorns and beechnuts in areas with large trees and open understories.

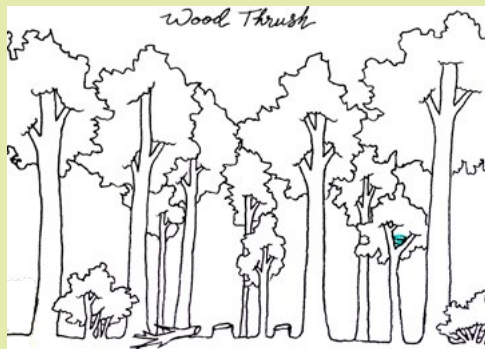
Nesting and brood rearing Leave and preferably even create large snags in areas with open understories.

Migratory needs The red-headed woodpecker is migratory but can be found in the Central Hardwoods Region all year. The management activities described above will benefit winter resident birds.

Wood Thrush (*Hylocichla mustelina*)



Wood thrushes depend on interiors of mature forest with open understories and a well-developed leaf litter layer. They nest in dense shrubs or saplings for concealment but utilize mature forests with open understories otherwise.



SCAN ME

Listen to the
Wood thrush

ID info Approximately robin-sized bird with rusty brown upperparts and tail and bold black spots on belly; distinguished from other thrushes by entirely rusty brown color from head to tail

Song or vocalizations At dawn and dusk, males give wood flute-like, melodic song, often with variable patterns

Habitat Interior of deciduous and mixed forests with open floors and moist leaf litter

Territory Between 0.25 and 10 acres

Nesting Grass, twig, and mud construction in trees or shrubs with dense cover for concealment

Food Soil invertebrates and native, lipid-rich fruits (especially later in summer)

Fun fact The structure of the wood thrush's syrinx (voicebox) is a unique Y-shape that allows it to sing two harmonious notes simultaneously, contributing to the ethereal quality of its song.

Silvicultural considerations

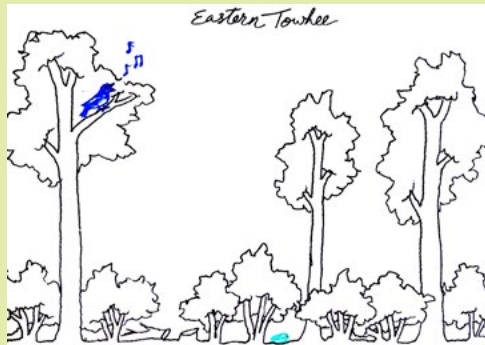
Foraging Feeds on invertebrates and seeks out native fruits prior to and during fall migration. Retain some black cherry, flowering dogwood, blackgum and fall berry-producing shrubs as a food source.

Nesting and brood rearing Susceptible to cowbird nest parasitism in mixed landscapes where short pasture, livestock and lawns are common. Larger tracts of forest and landscapes dominated by forest are highly desirable. Requires mature forest with a well-defined midstory and shrub layer. Use single tree selection in such a way as to keep much of the canopy intact. Crop tree release in sawtimber stands may also be beneficial. Mesic forests are preferred.

Eastern Towhee (*Pipilo erythrophthalmus*)



From left, Eastern towhees often use tall trees for singing and mate attraction, but spend the majority of their time near the forest floor in young forests, particularly ones with dense shrub layers that offer concealment for nesting and leaf litter for foraging.



 **SCAN ME**

Listen to the
Eastern
towhee

ID info Large sparrow with dark brown (female) or black (male) head, back and long tail; bold rusty orange flanks and white belly

Song or vocalizations Described as “drink your tee-ee-ea” or “see tow-hee-ee,” often given from high, visible perches

Habitat Edges with dense shrub cover, open canopies, and a well-developed litter layer for ground foraging

Territory Approximately 1.5 to 6 acres

Nesting Ground-nesting, forming nests in litter depressions at the base of shrubs or grass clumps

Food Terrestrial invertebrates, seeds and fruits in late summer and migration

Fun fact The color of a towhee's eye can tell you how old the bird is. Younger birds have dark brown eyes, while mature adults have red eyes. In some parts of the southeast, however, towhees have white eyes.

Silvicultural considerations

Foraging This bird benefits greatly from uneven-age management. As a classic early successional species, it can become abundant in clearcuts. Fields replanted with hardwoods are also attractive to Towhees.

Feeds on grape, briars, ragweed, grasses, blackberries, blueberries, acorns, insects and seeds.

Nesting and brood rearing Nesting towhees should appear within one to two years of management. As a ground nester it requires dense ground or shrub cover to escape detection.

Yellow-breasted Chat (*Icteria virens*)



Yellow-breasted chats depend on dense shrub layers in young forest for foraging and nest concealment. Nests are placed in dense shrubs roughly 3 feet above the ground, so tall and well-developed shrub layers are important for these unique birds.



 **SCAN ME**

Listen to the
Yellow-breasted
chat

ID info Stocky little bird, both in body and beak, with bold yellow throat and chest, grey head and white “spectacles” on its face

Song or vocalizations Long, variable series of whistles, squirrel-like chatters, and high-pitched calls

Habitat Low, dense, shrubby areas with open canopies in early successional forests

Territory Approximately 2.5 acres (between 1.2 and 6 acres)

Nesting Cup nest formed in dense vegetation around 3 feet above the ground

Food Small invertebrates, fruits and berries

Fun fact This bird was once considered a warbler, but its unique lifestyle, song and behavior have made it the sole member of its own family.

Silvicultural considerations

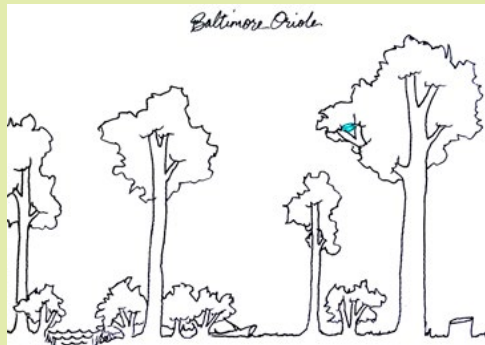
Foraging As an early successional specialist, clearcuts and shelterwood harvests 10 acres or larger will often lead to quick colonization if the understory is densely shrubby. Blackberry, dogwood and hawthorn are desirable when foraging for fruit.

Nesting and brood rearing Nests in bushes, brier tangles, vines and low trees, generally in dense vegetation less than 6 feet above ground. Some perching trees are desirable as chats will use them to advertise their territories.

Baltimore Oriole (*Icterus galbula*)



Baltimore orioles, while often seen at backyard feeders, can be found in a variety of wooded habitats such as riparian edges, open woodlands, and forest edges. They nest in large trees, often isolated or in forest edges.



 **SCAN ME**

Listen to the
Baltimore
oriole

ID info Bright orange and black patterning, black head (male) or yellow to orange head (female), white wing bars, and sharp gray beak

Song or vocalizations Rich, whistling song often given from treetops

Habitat Deciduous woodland edges, open areas with large trees, riparian zones

Territory Usually only defend nesting site

Nesting Construct woven gourd-shaped nests on outer tree branches, usually in isolated or edge trees

Food Soft-bodied insects, fruits, and nectar

Fun fact Both the city in Maryland and the bird were named for the same thing—the Baltimore family of England, whose heraldry bears striking orange-and-black coloration. For two decades, between 1973 and 1995, Baltimore and Bullock’s orioles were collectively considered the “northern oriole” until it was discovered that they were in fact separate species, much to the rejoicing of the city and the Major League Baseball team.

Silvicultural considerations

Foraging Native fruits are important for this bird. Management should include consideration for the presence of dogwood, mulberry, raspberry and blackberries, and black cherry. Non-native bush honeysuckle and autumn olive are

undesirable and should be controlled. Adults will forage for caterpillars and other insects as well.

Nesting and brood rearing Orioles often nest in large or isolated trees. The nest is usually built high off the ground in the outer branches of the tree.

Management that creates open woodland habitats and leaves large, isolated trees standing such as oak, elm, sycamore and cottonwoods can benefit oriole populations. Enhancement of riparian and wetland areas and maintenance of large trees along streamsides is desirable.

Worm-eating Warbler (*Helmitheros vermivorum*)



Worm-eating warblers are mature forest birds that prefer steep slopes and move into young forest and shrubby areas during some portions of its life. Nests are placed usually on slopes in patches of dense shrub cover.



 **SCAN ME**

Listen to the
Worm-eating
warbler

ID info Olive-green songbird with black and tan stripes on forehead and through eyes; long, pink bill and pink legs

Song or vocalizations Insect-like trill, similar to chipping sparrow but differentiated by slightly higher pitch and smoother trill

Habitat Understory of shrub patches in large, mature forests, often on slopes, as well as regenerating clearings during post-fledging period

Territory Approximately 5 acres (between 1.5 and 12 acres)

Nesting Ground-nesting, creating cup nests on slopes or banks concealed near or against dense shrubs

Food Foliage-dwelling insects like caterpillars and spiders

Fun fact This small warbler, rather than directly foraging on the forest floor on which it nests, often hops through the understory and forages near the ground, but not on it.

Silvicultural considerations

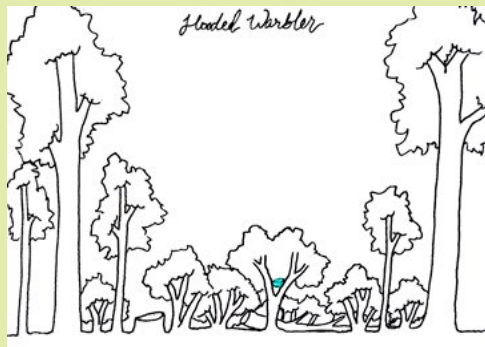
Foraging Primarily eats caterpillars, insects and spiders. Will forage in treetops as well as the understory. Associated species include upland oaks, dogwood and huckleberry

Nesting and brood rearing This ground nesting bird is almost always associated with hillsides. Found in heavily forested landscapes. Not likely to be found in woodlots. Closely associated with mature forest for nesting. However, after leaving the nest, fledglings and adults may seek out early successional habitats such as nearby patch cuts, clearcuts, and similar native thickets in search of safety and an abundance of insects and fruits. Frequent prescribed fire in nesting areas will result in at least temporary habitat loss if there is significant reduction in small trees and shrubs used for cover.

Hooded Warbler (*Setophaga citrina*)



Hooded warblers are mature forest birds that specialize in gaps such as tree-fall gaps, single tree selection harvests, and other areas with small, dense shrub areas for nest placement and an open canopy within a large forest context.



 **SCAN ME**

Listen to the
Hooded
warbler

ID info Yellow-green songbird with distinct black hood (male, some females) and white outer tail feathers

Song or vocalizations Rocking, melodic call described as “weeta-weeta-weeTEEyoo”

Habitat Gaps such as tree fall or selectively cut areas in mature forests, small clearings within large tracts of forest

Territory In large forests, territories between 1.2-2 acres; in smaller fragments, territories can be over 5 acres

Nesting Creates cup nests around 1-4 feet off the ground in dense shrub patches

Food Spiders and insects

Fun fact During the winter, males and females are territorial and defend different habitat types, males often being found in older, mature forest while females often defend younger, more shrubby forest areas.

Silvicultural considerations

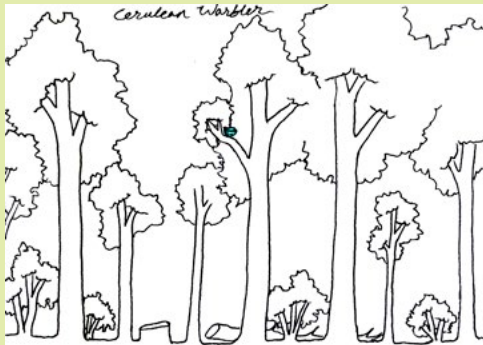
Foraging Feeds on insects and fruits in the low understory of mature forest. Frequent controlled fire that eliminates small trees and shrubs is not recommended for this bird.

Nesting and brood rearing Benefits from creating gaps in mature forest by using single-tree or group selection harvesting. Needs dense shrubs for nesting. Blackberry, black cherry and viburnum are desirable. Requires largely forested landscapes and not generally found in woodlots.

Cerulean Warbler (*Setophaga cerulea*)



Cerulean warblers are mature forest canopy specialists, preferring large areas of structural diversity with canopy gaps that provide concealment for nests and spaces to forage for insect prey.



 **SCAN ME**

Listen to the
Cerulean
warbler

ID info Sky-blue with white and navy stripes, white belly, and dark necklace (male), or greenish turquoise with faint stripes and streaks (female)

Song or vocalizations Three-parted, low-pitched but rising and accelerating “tew-tew-tew-chee-chee-chee-BYZZ”

Habitat Structurally diverse canopies of mature, deciduous forests; area-sensitive, often needing tracts of 75 acres or more

Territory Varies based on region, but often between 1.2-2.5 acres

Nesting Cup nests built in leaf clumps near canopy gaps in the mid-story or overstory canopy

Food Foliage-dwelling insects

Fun fact The distinct sky-blue color of the male cerulean warbler and the aqua-green of the female is not due to pigment in feathers but is rather a result of feather structures that reflect blue wavelengths of light.

Silvicultural considerations

Foraging Often searches for insects in the upper canopy of large, tall trees. Needs heavily forested landscapes. Do not expect to find cerulean warblers in woodlots except when migrating.

Nesting and brood rearing Closely associated with large mature white oak and chestnut oak, but not red oak. Hickory and sugar maple may also be used. Will only nest in mature forest but has shown preference for canopy gaps, midstory removal or first phase shelterwood harvesting if many of the dominant trees remain. Since grapevines provide nest material, some should be allowed to persist post-timber stand improvement in white oak dominated forests.

Stand-level Habitat Associations

Note: While this is an approximate guide to which birds might be found in which forest stage, many birds may occupy more than one of these stages, especially at varying points in their lifecycle.

Stand stage	Structure	Species
Young forest	Young forest several years after a disturbance, usually with an open or no canopy and high shrub density; thickets	Yellow-billed cuckoo, Eastern whip-poor-will, American woodcock, red-headed woodpecker, Eastern towhee, yellow-breasted chat, Baltimore oriole, worm-eating warbler
Understory re-initiation	Moderate shrub density, closed-canopy forest with some gap formation	Red-headed woodpecker, Baltimore oriole, hooded warbler
Mature forest	Structurally diverse stands often with thin shrub layer, high numbers of snags, or canopy gaps due to treefalls or selective harvest	Eastern screech-owl, wood thrush, worm-eating warbler, cerulean warbler

Audubon WatchList

These are species identified by the National Audubon Society as species in significant conservation need, due to a variety of threats ranging from habitat loss to climate change, that targeted conservation can benefit.

The Indiana Birders' Dozen list includes the following WatchList species:

- American woodcock
- Wood thrush
- Cerulean warbler

Indiana Species of Special Concern

These species have been identified by the Indiana Department of Natural Resources' Division of Fish and Wildlife as in danger of disappearing from the state (state endangered) or requiring continued monitoring, often because of limited abundance (special concern).

The Indiana Birders' Dozen list includes the following species of greatest conservation need:

- Cerulean warbler – *state endangered*
- Eastern whip-poor-will – *special concern*
- American woodcock – *special concern*
- Worm-eating warbler – *special concern*
- Hooded warbler – *special concern*

Maple Syrup and Healthy Forests

The production of maple syrup is a \$1.3 million industry in Indiana.* Maple syrup production can provide an annual income generating activity for landowners while maintaining forest cover. Many of these forests contain a diversity of trees and include both live and dead standing trees that can provide bird-friendly habitat, particularly for some of the key birds that *Forestry for the Birds* has highlighted.

For example, the wood thrush depends on mature forests for habitat, which the syrup-producing maple forests can provide. For most of the year, maple forests are undisturbed. But during a few months of late winter and early spring, landowners tap their trees to collect maple sap. This sap is then converted to maple syrup, which is a breakfast staple as well as a healthier

substitute for many sweeteners. The challenge for landowners is ensuring they can maintain a balance between providing habitat for local and migratory birds—such as the cerulean warbler, wood thrush, and scarlet tanager as well as other wildlife—while maintaining a sustainable production of maple syrup.

Maple syrup producers should have a forest management plan. The plan can be written to enhance habitat for songbirds while also maintaining the health of the sugar producing woods.

Visit the [Vermont Audubon website](#) for guidelines on how to ensure bird habitat considerations are integrated into sugarbush management.

If done right, forests tapped for maple syrup can benefit human health and the local economy, as well as benefitting the birds that live in them.

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Honorable Mentions

Due to space considerations, these bird species were left off the list of the Birders' Dozen, though good arguments could be made for their inclusion. We decided against them due to their limited ranges and populations.

- Ruffed grouse
- Ovenbird
- Blue-winged and golden-winged warblers
- Prairie warbler
- Kentucky warbler
- Scarlet tanager



The Nature
Conservancy 

Find out how you can help birds in your forest at
[nature.org/indianaforests](https://www.nature.org/indianaforests)