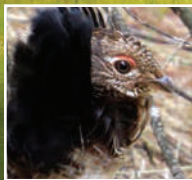


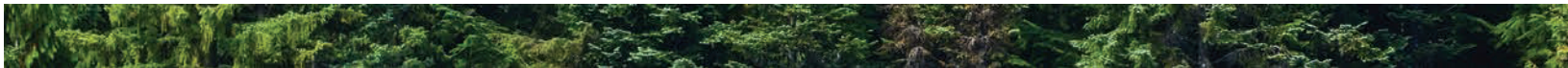


Forestry for the Birds

Forest Bird Pocket Guide

18 Priority Species for Pennsylvania Foresters & Landowners





Acknowledgements

Financial support for production of this guide came from the Richard King Mellon Foundation and the Pennsylvania Department of Conservation and Natural Resources.

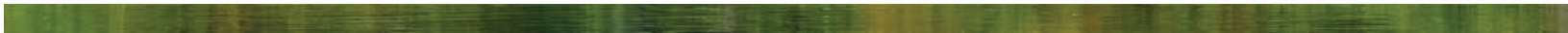
This guide borrows heavily from a publication produced by Audubon Vermont in partnership with Vermont Department of Forests, Parks, and Recreation, entitled "Birds with Silviculture in Mind: Birders Dozen Pocket Guide for Vermont Foresters", available online at <http://vt.audubon.org/foresters-birds>

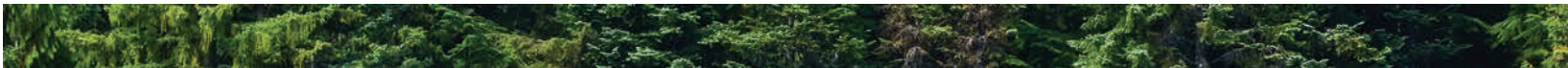
Distribution maps for each species are based on those found in the Second Breeding Board Atlas of Pennsylvania (2012, Penn State University Press) and courtesy of Dr. Andrew Wilson.

Diagrams of forest profiles, diet items, forest types, etc., for nine species were created by Audubon Vermont. Keri Tucker (Allegheny College intern) created diagrams in the same style for nine additional species (HOWA, AMRE, EATO, LOWA, OVEN, PIWO, RUGR, YBCU, YTVI).

Photographs are courtesy of Powdermill Avian Research Center / Carnegie Museum of Natural History. RUGR photo: Ruffed Grouse courtesy of Linda Ordiway, Ruffed Grouse Society.

Ron Mumme, PhD, Scott Stoleson PhD, and Emily Thomas, MS, kindly reviewed the content for accuracy.





Pennsylvania is well-known for its extensive forests which are vital to many species of forest dependent birds. As forests are diminished in size by roads and development, and are degraded in quality by invasive pests and poor management, they become less able to support the full complement of bird species.

Foresters and land owners play a vital role in helping to protect and improve Pennsylvania's forests to support the birds that live here. By supporting forest birds, we also support a vast array of native wildflowers, beetles, salamanders, mosses and numerous inconspicuous life forms that together make up our rich natural heritage. These intact forest ecosystems in turn support us by filtering our air and water.

More than 100 species of birds use trees and forests in Pennsylvania, but we have selected 18 species for foresters and land owners to get to know first. Some occur throughout the state, but others are only found in part of Pennsylvania. Each of them uses particular aspects of forest structure and composition. By providing the elements needed by the birds included in this guide, forest managers will ensure that their forests are able to support healthy

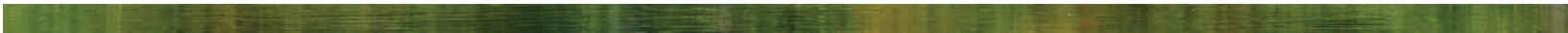
populations of a wide variety of birds and other forms of wildlife.

How to Use This Book

This is not meant to serve as a field guide to bird identification or to provide detailed ecological information on the birds shown here. More complete information is available elsewhere (allaboutbirds.org, or one of the many field guides available).

For each species, we provide a few pointers on identification: what it sounds like and looks like. In the habitat diagram, we show where it forages (pink shaded area), where it places its nest (height along right side) and what structural or compositional features are most important to the species. Finally, we describe the desired forest conditions that each species prefers.

How different bird species respond to forest management techniques is an area of ongoing research. We hope in the future to be able to give more detailed information about how best to manage forests for the complete suite of forest dependent birds in Pennsylvania.



American Redstart AMRE



Setophaga ruticilla



Desired Forest Conditions: Dense, older second growth on moist soils. Shrubby patches within gaps of mature forests. Area sensitive in some areas but not others.

ID Tips Males black with orange in wings and tail, females gray with yellow.

Song Highly-variable sequence of four or so repeated phrases like *sip sip sip sissewa*.

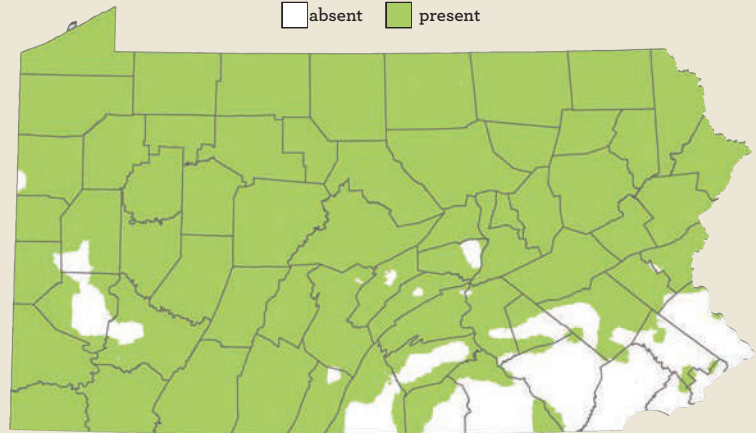
Habitat Moist, deciduous second-growth woodlands with dense midstory and shrub layers.

Territory Generally less than 2.5 acres.

Nest 20-40 feet high, near trunk of tree.

Food Insects and other arthropods. Actively forages, fanning tail and sallying after startled insects.

absent present



American Woodcock.....AMWO



Scolopax minor

ID Tips A plump bird with a long bill, no neck, and short legs; mottled cryptic coloration.

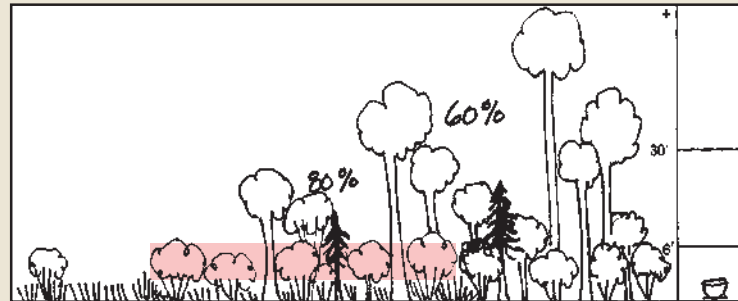
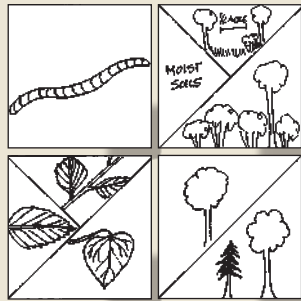
Song A nasal beeping peent heard mostly at dusk; also, twittering wing sound when in flight.

Habitat Hardwood or mixedwood forest matrix with a mix of openings and young forest in early stages of regeneration (less than 20-years-old). Uses a mix of habitats depending on activity, time of day, and season.

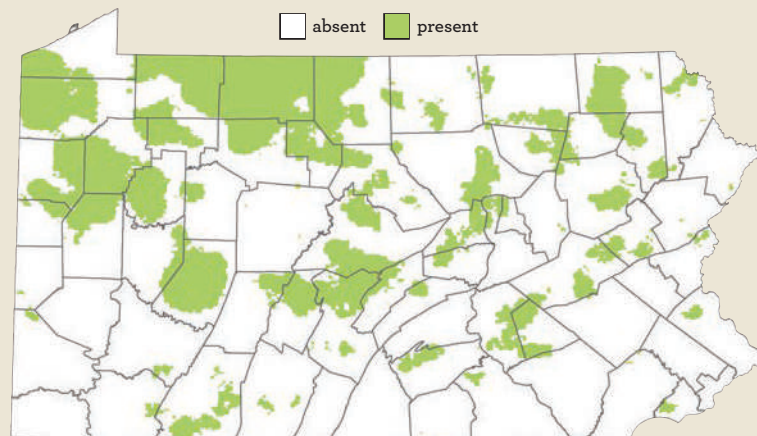
Territory Males defend peenting areas in singing grounds with average spacing between birds more than or equal to 150 feet. Birds are not territorial at other times of year or in other habitats.

Nest Scrape on ground in dead leaves.

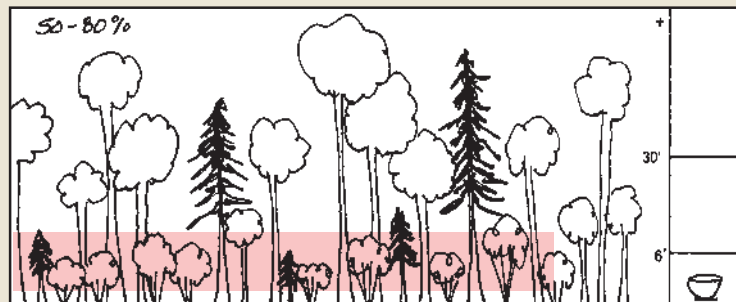
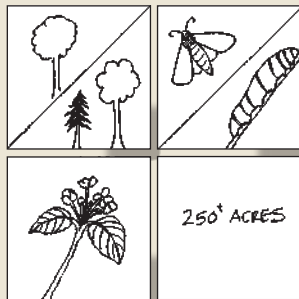
Food Primarily earthworms; also eats various insects and larvae, snails, millipedes, centipedes, spiders, and seeds.



Desired Forest Conditions: Maintain or create a mix of openings and young forest in early stages of regeneration preferably near older forests with moist soils or shrubby wetlands. Refer to the Woodcock Management Plan prepared by the Wildlife Management Plan Institute available at timberdoodle.org.



Black-throated Blue Warbler *BTBW*



Desired Forest Conditions: Hardwood or mixed stands with 50-80 percent canopy cover and a dense understory (0-5').

Setophaga caerulescens

ID Tips Deep blue on top with black mask and throat; white wing-patch "handkerchief".

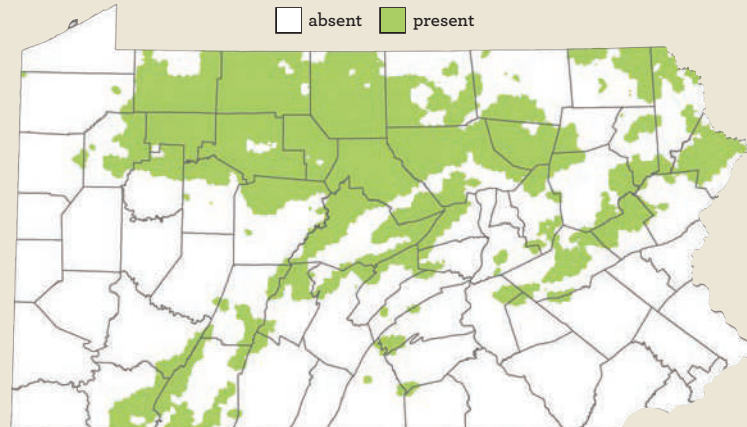
Song A thick & buzzy *I'm-so-la-zeee* with endnote rising up to the "blue" sky.

Habitat Large, continuous tracts (250+ acres) of hardwood or mixedwood with 50-80 percent canopy cover and a dense understory (0-5' layer) of mountain laurel and/or small saplings of American beech, striped maple, sugar maple and shrubs.

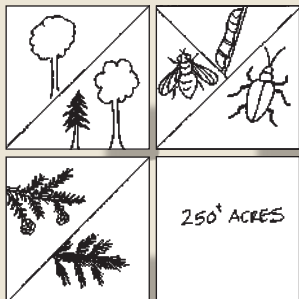
Territory 2.5-10 acres (smaller in forests with a dense and diverse understory).

Nest Open cup of bark strips held together with spider web and saliva placed in the fork of a sapling or shrub in 0-5' layer.

Food Insectivorous, feeding largely on moth and butterfly larvae and adults.



Black-throated Green Warbler. *BTNW*



250+ ACRES

Setophaga virens

ID Tips Bright yellow face, olive head and back; black throat drips down sides onto white belly; two white wing-bars.

Song To attract females, males sing zee-zee-zee-zoo-zee (also known as I'm black-throated-green); to defend territorial boundaries zoo-zee-zoo-zoo-zee (also known as trees-trees-murmuring-trees).

Habitat Prefers large, continuous tracts (250+ acres) of closed canopy (more than 80 percent cover) softwood or mixedwood forests. Often strongly associated with red spruce in boreal forests and with eastern hemlock in non-boreal forests.

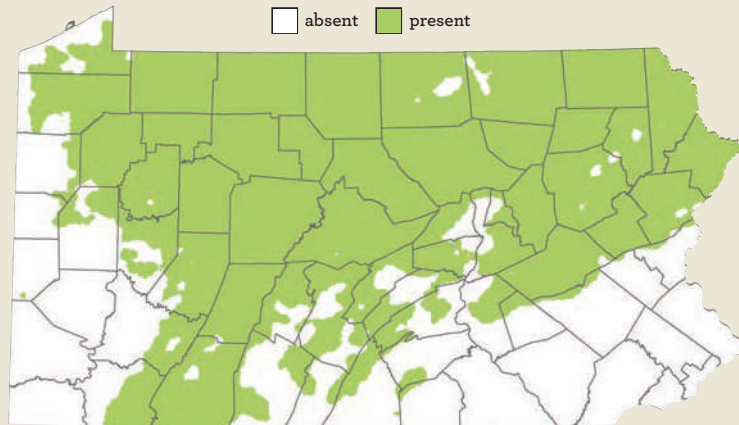
Territory Average of 1.6 acres in hemlock-beech forest in New York. Smaller in dense, softwood stands than in mixedwood stands.

Nest Open cup placed adjacent to vertical stem(s) 30 to 50 feet high. Preference for conifers in some places.

Food Insectivorous, gleans from small branches and needles on conifers.



Desired Forest Conditions: Well-stocked, uneven-aged hardwood or mixed stands with >80 percent canopy cover. Prefers areas at least 200 meters from roads or other edges. Retain conifer patches (hemlock) if present.



Blue-headed Vireo BHVI



Vireo solitarius

ID Tips Bluish-gray head with strong white spectacles (circles around eyes); greenish back with white belly and yellow-olive flanks.

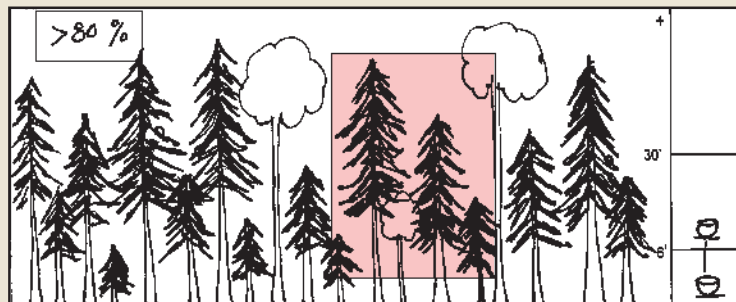
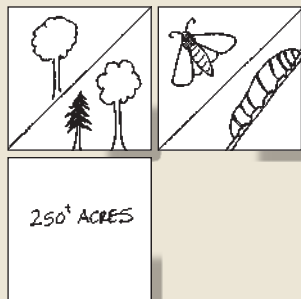
Song See you...be-seeing ya'...so long...repeat; slow with pauses inbetween phrases.

Habitat Extensive, moist, hardwood or mixedwood forests with spruce, hemlock, and/or pine. Often associated with mid- to late-successional stages with more than 80 percent canopy cover and some shrubs and saplings in the understory.

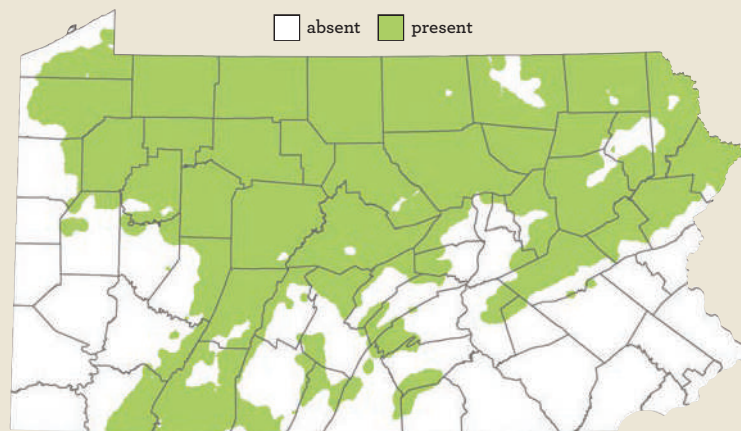
Territory About 11.8 acres in the Allegheny Plateau region.

Nest Open cup suspended by rim from a fork of a branch in a tree or sapling with spider web. Decorated on outside with spider egg cases and birch bark. Generally placed 6-30 feet from ground.

Food Insectivorous.



Desired Forest Conditions: Well-stocked, uneven-aged hardwood or mixed stands with more than 80 percent canopy cover. Prefers areas at least 200 meters from roads or other edges. Retain conifer patches (hemlock), if present.

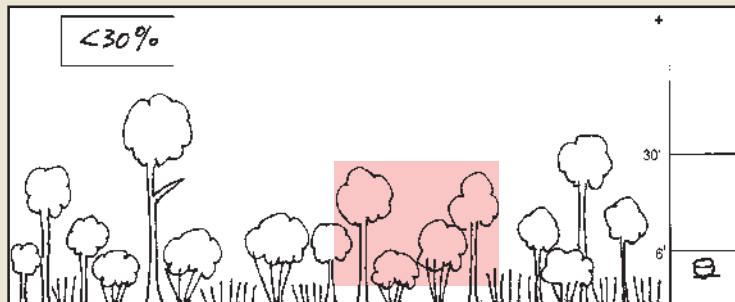
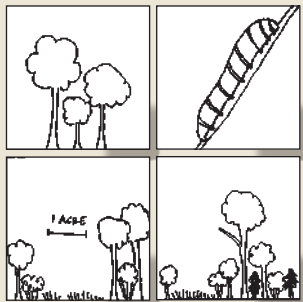


Chestnut-sided Warbler

CSWA



Setophaga pensylvanica



Desired Forest Conditions: Maintain or create well-stocked hardwood seedling/sapling stands more than an acre in size with less than 30 percent canopy cover.

ID Tips Yellow crown, black moustache stripe and chestnut sides following contour of wings; tail held cocked above wingtips.

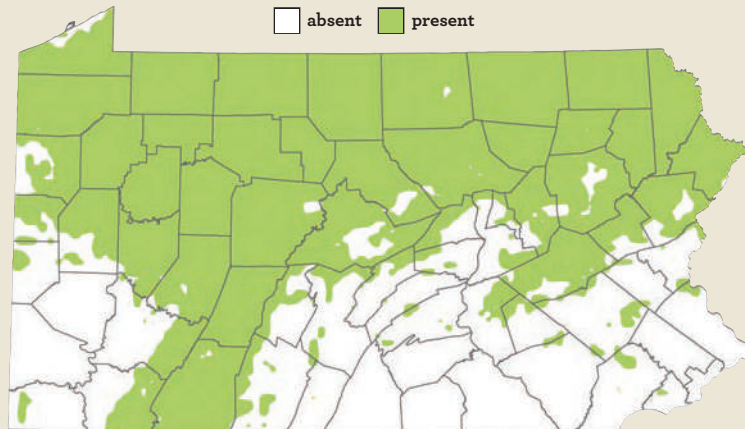
Song Fast *Please-please-pleased-to-meet-cha* with emphatic ending.

Habitat Young (5-15 years old) hardwood forest with less than 30 percent canopy cover and dense shrubs and saplings. Three to ten feet high for nesting and foraging. Some larger saplings used as singing perches and to obscure nests.

Territory 2-2.5 acres.

Nest Open cup placed in crotch of small shrub or within a group of small-diameter, vertical stems less than 6.5 feet off the ground.

Food Insectivorous, prefers caterpillars and fly larvae.



Eastern Towhee.....EATO



Pipilo erythrophthalmus

ID Tips Male black above, rusty underparts, with white belly and tips of tail feathers. Female is chocolate brown rather than black.

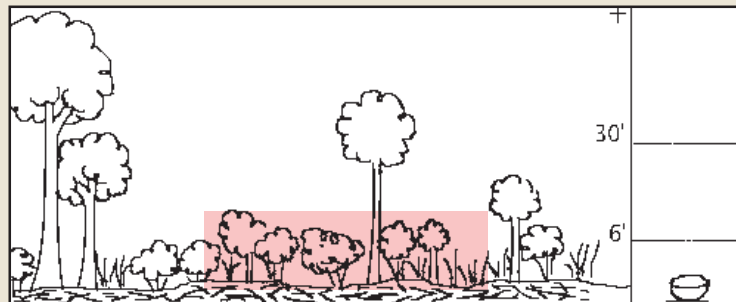
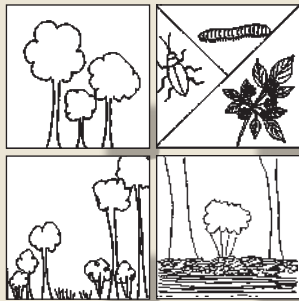
Song Chewink call, "Drink your tee" song.

Habitat Open canopy woodlands or young regeneration stands. Mesic or xeric, with well-developed leaf litter layer.

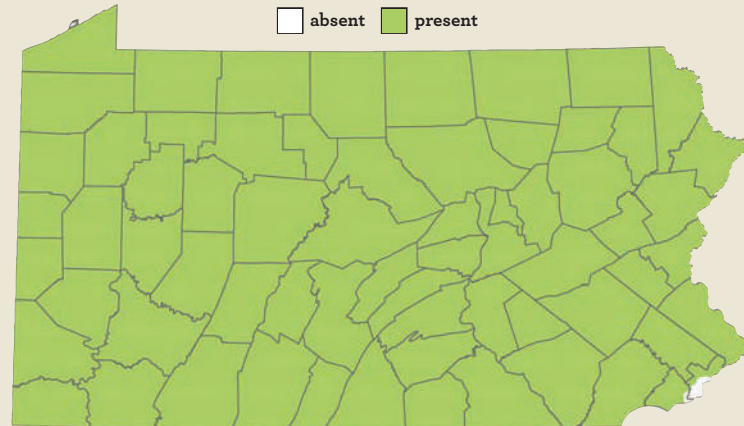
Territory As small as 0.5 acre, but usually 2 to 3 acres.

Nest On ground or in vegetation up to 1.5 meters at base of upright stems in shrubby patch.

Food Forages on ground (or low perch) for insects, seeds and some fruits.



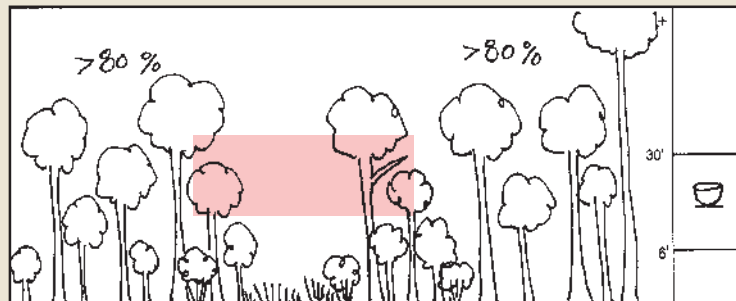
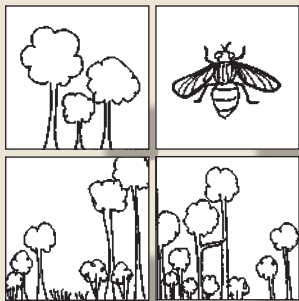
Desired Forest Conditions: Dense, low cover with patches of more open ground, with or without overstory trees. Not area sensitive.



Eastern Wood-Pewee.....EAWP



Contopus virens



Desired Forest Conditions: Hardwood pole/sawtimber stands with more than 80 percent canopy cover, with gaps, and open midstory (6-30') near forest openings and edges.

ID Tips A flycatcher; slender, small headed, and grayish-olive above with dull, white wing bars; "sallies" for insects (flying out from the perch and then back again).

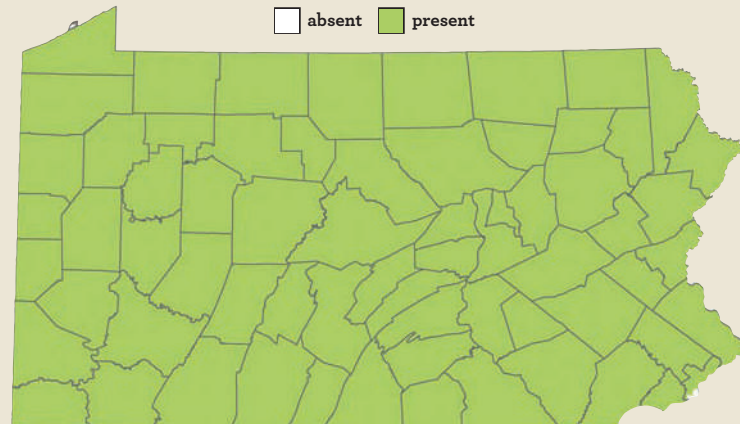
Song Plaintive *pee-uhh-weee*.

Habitat Mature hardwood forests with medium to high level of canopy closure and open midstory.

Territory Variable: depending on canopy closure. In Allegheny Plateau region, 14 acres in closed canopy forest, 6.8 acres in shelterwoods.

Nest Shallow cup of woven grass covered on outside with lichens placed on the horizontal limb of a tree.

Food Insectivorous, primarily catches flying insects taken in the air on forays from the prominent perch.



Hooded Warbler.....HOWA



Setophaga citrina

ID Tips Olive green above and bright yellow below. Males and older females have black "hood".

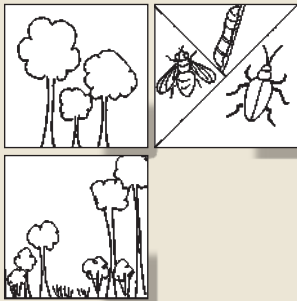
Song Loud, clear whistled *ta-wit ta-wit ta-wit tee-yo*.

Habitat Mature deciduous forests with canopy gaps containing dense patches of regenerating vegetation.

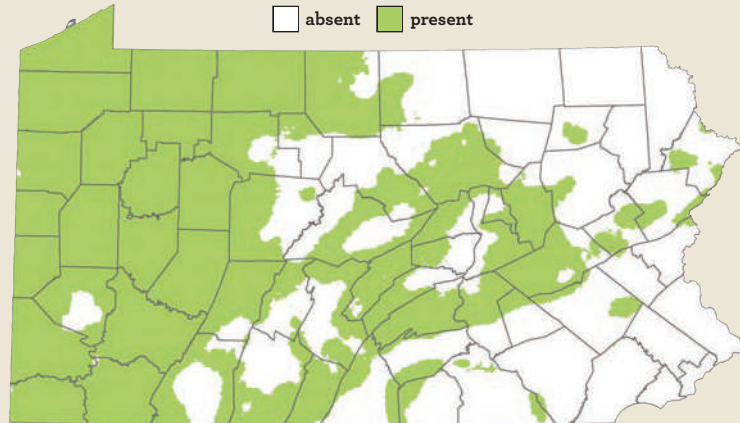
Territory As small as 0.5 hectares in good habitat, up to 2.2 hectares in smaller forest fragments.

Nest 0.3 to 1.4 meters off ground in dense shrubs.

Food Insects. Usually forages in understory, but not uncommonly on ground or in subcanopy.



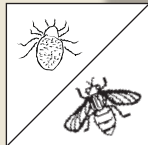
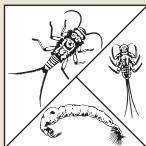
Desired Forest Conditions: Mature forests with regenerating gaps for nest sites, including saplings and dense understory.



Louisiana Waterthrush.....LOWA



Parkesia motacilla



Desired Forest Conditions: Mature forests with running water. May be deciduous or mixed conifer. Quality of the benthic invertebrate community affects territory size.

ID Tips Brown upper parts, white underparts streaked with brown. Strong white stripe above eye.

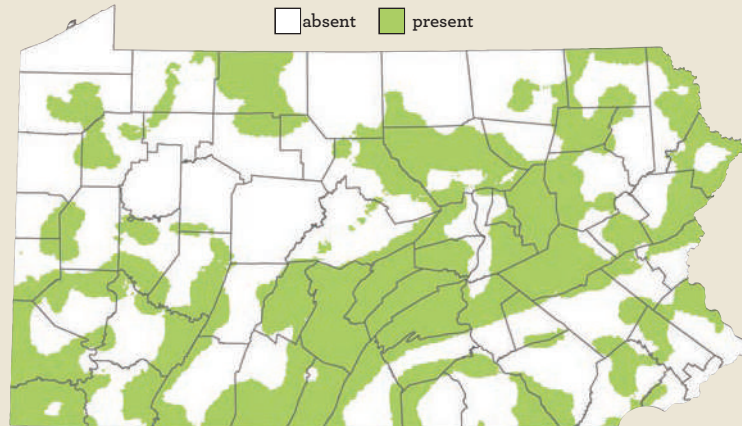
Song Loud babbling song starting with *seeup, seeup, seeup*. Carries over the sound of running water typical of their territories.

Habitat Nests along rushing, rocky streams in closed-canopy, hilly forests

Territory Territories are linear along streams, ranging from 600 to 1000 feet in length.

Nest Small hollow in stream bank or in root mass of fallen tree.

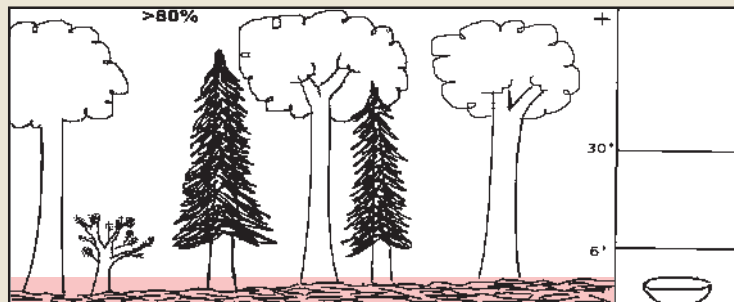
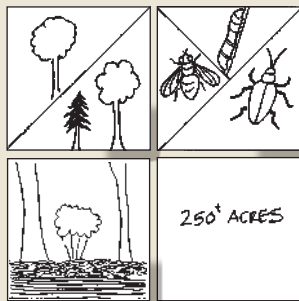
Food Adult and immature stages of aquatic invertebrates.



Ovenbird.....OVEN



Seiurus aurocapilla



Desired Forest Conditions: Canopy heights of 50 to 75 feet, canopy closure from 60 to 90 percent. Prefer low conifer basal area, low percent ground cover. Contiguous forest area of at least 250 acres.

ID Tips Grayish, olive upperparts. White below with blackish streaks. Orangish crown framed with two dark stripes.

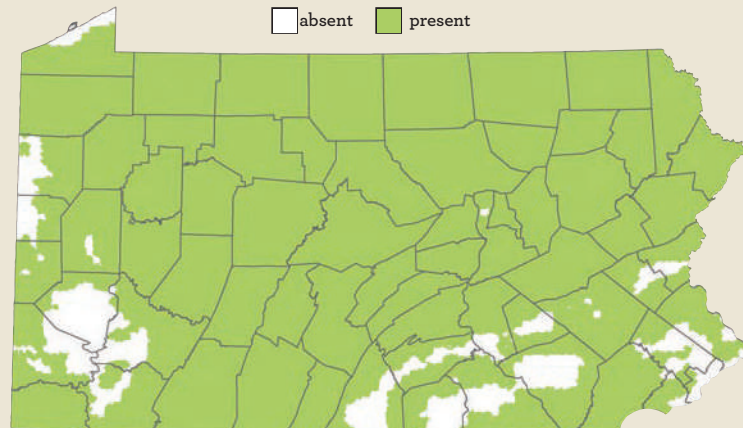
Song Loud, emphatic "Teacher, teacher, teacher".

Habitat Large tracts of mature deciduous (or mixed) closed, canopy forest. Prefers areas with less ground cover and deeper leaf litter.

Territory About 2 acres. Larger in fragmented forests.

Nest Distinctive domed nest on ground, in leaf litter. Avoids patches of dense woody understory vegetation.

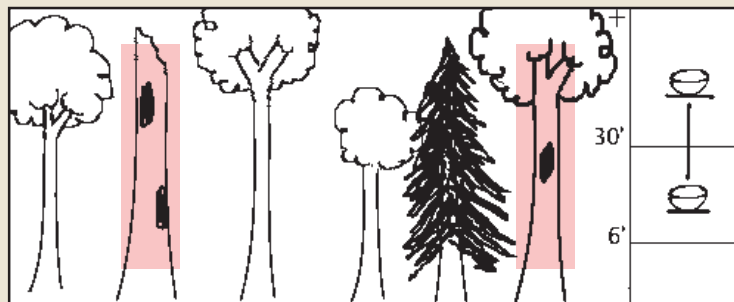
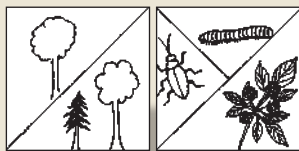
Food Invertebrates found in leaf litter.



Pileated Woodpecker.....PIWO



Dryocopus pileatus



Desired Forest Conditions: More successful in forests with greater basal areas and taller canopies. Abundance positively correlated with density of trees more than 12 inches in diameter at breast height and density of dead trees more than 22 inches in diameter at breast height.

ID Tips Large (crow-sized), black with red crest. White in wings and on sides of head.

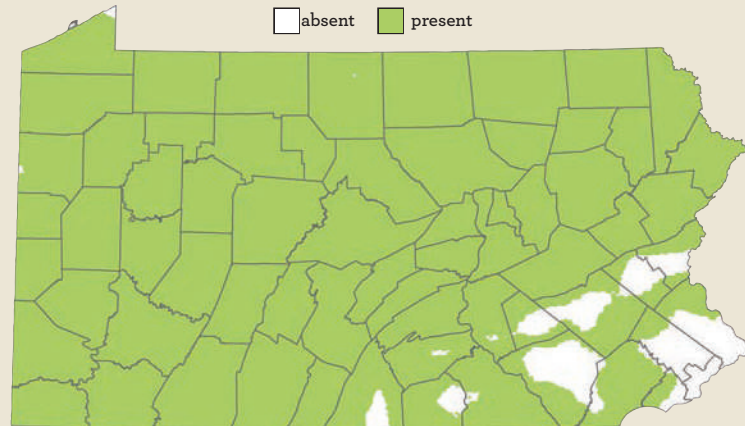
Song Loud irregular series of repeated syllable: *wuk wuk wuk wuk*.

Habitat Late successional stages of deciduous or coniferous forest, or younger forests with residual snags large enough for nesting.

Territory Defended year round. Home range of 125 to more than 250 acres.

Nest Cavity excavated in large tree, usually more than 20 inches in diameter at breast height. May be live or dead.

Food Wood-dwelling ants and beetle larvae extracted from live and dead trees. Fruits eaten in fall and winter.



Ruffed Grouse.....RUGR



Bonasa umbellus

ID Tips Large chicken-like bird, with mottled gray, brown and black plumage. Dark band near the end of the tail. Tufts of feathers on neck that can be erected into ruff.

Song No song. Weak vocalizations. Drumming display by males in spring, sound created by wings

Habitat Early successional habitat with aspen stands. Requires logs for drumming perches. Larger than 8 inches in diameter and 6 feet in length.

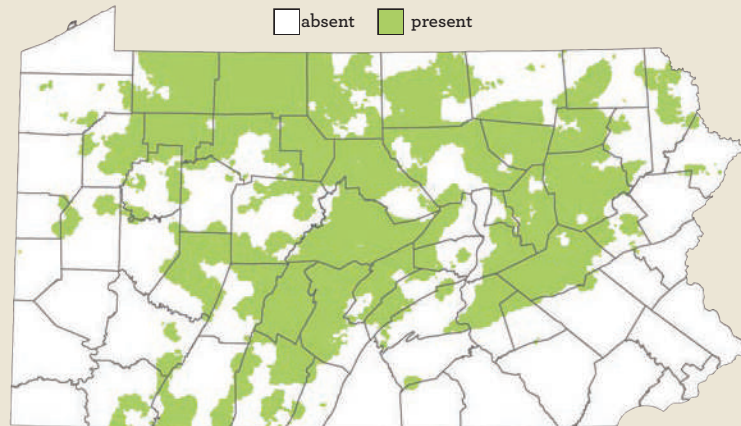
Territory About 5 acres.

Nest On ground, at base of tree, stump or rock. Also uses brush piles. Prefers areas that are open at ground level for detecting predators.

Food Buds, catkins, fruits, insects, acorns.



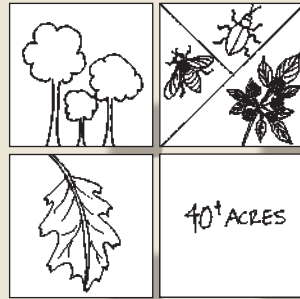
Desired Forest Conditions: High understory stem density, with some canopy cover. Aspen buds are a preferred food.



Scarlet Tanager.....SCTA



Piranga olivacea



ID Tips Slim, bright red bird with jet black wings and tail ("A Black-winged Red Bird").

Song Like a robin with a sore throat; call an abrupt *chick-burr*.

Habitat Interior, hardwood forests with more than 50 percent canopy cover - especially those with a significant oak component.

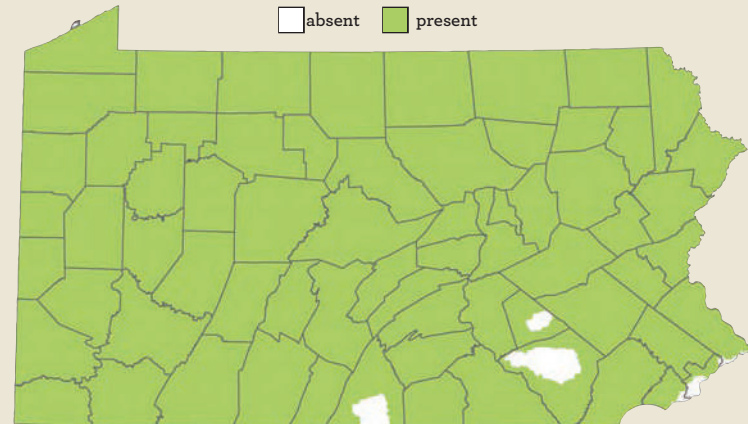
Territory Variable depending on size of forest area, location, and vegetation type. Males defend mating, nesting and foraging areas. Foraging areas are much larger than mating and nesting area.

Nest Flimsy, shallow cup usually placed among a cluster of leaves on a nearly horizontal branch in the canopy well away from the trunk. Prefers hardwood trees, particularly oaks.

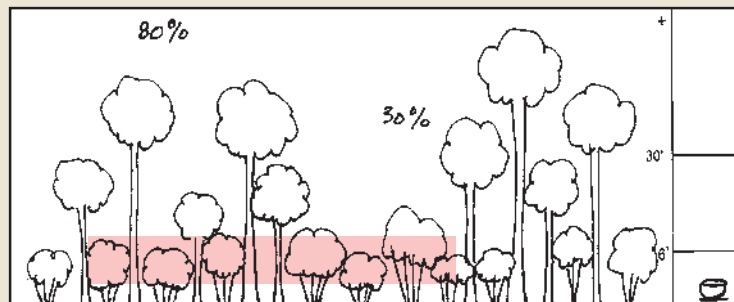
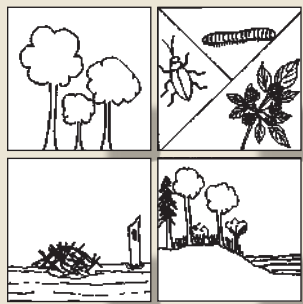
Food Mostly insectivorous; eats a wide variety of adult flying and non-flying insects, insect larvae, and spiders.



Desired Forest Conditions: Well-stocked, uneven-aged mature forest stands with more than 80 percent canopy cover. Minimum area of 40 acres needed in a heavily forested landscape (more than 70 percent). Larger areas are needed in less heavily forested landscapes.



Veery.....VEER



Desired Forest Conditions: Hardwood stands with 30-80 percent canopy cover and a dense understory (0-5') layer, near wetlands or riparian area. Leave slash, stumps, tip-ups and woody debris to provide shelter and nest sites.

Catharus fuscescens

ID Tips Tawny-brown above, weakly spotted on breast; least spotted of all the thrushes.

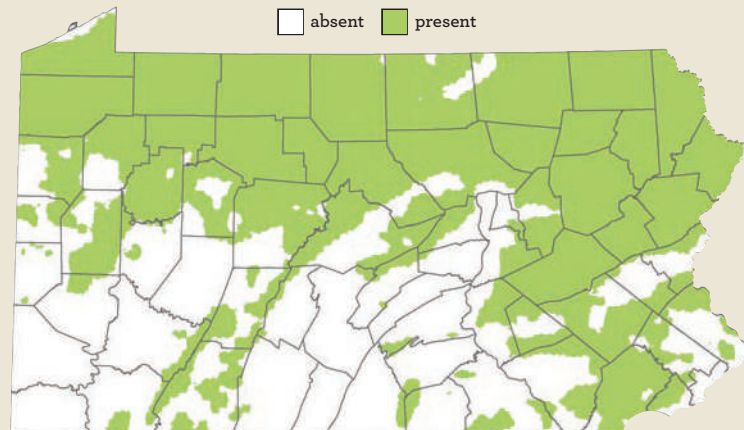
Song Flute-like and ethereal; ball spiraling down a tube; call an emphatic veer!

Habitat Damp, hardwood forest with intermediate (30-80 percent) canopy cover and a dense understory (0-5' layer). Often associated with riparian areas, regenerating forests and beaver wetlands.

Territory 0.25 to 7.5 acres in Connecticut.

Nest Cup of dead leaves, bark, and mud-like leaf mold lined with fine fibers placed on ground or in a low shrub or brush pile.

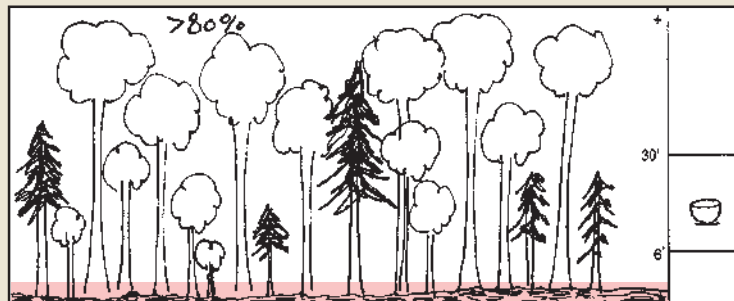
Food Insects, spiders, centipedes, pill bugs, and fruits. Primarily forages on the ground, but also in the foliage.



Wood Thrush WOTH



Hylocichla mustelina



Desired Forest Conditions: Well-stocked, uneven-aged mature forest stands with more than 80 percent canopy cover. Minimum area of 40 acres needed in a heavily forested landscape (more than 70 percent). Larger areas are needed in less heavily forested landscapes.

ID Tips Brown back, heavily spotted on white breast; large thrush a little smaller than American Robin.

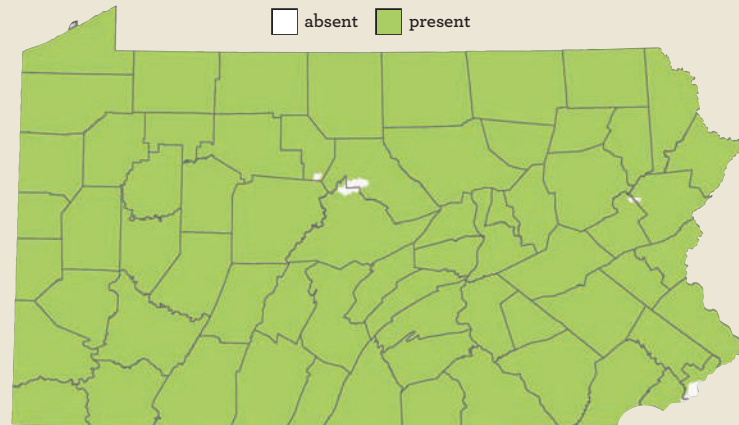
Song A flute-like *ee-oh-layyy*, ending in a sound like shattering glass.

Habitat Interior and edges of hardwood and mixed wood forests. Prefers stands with canopy more than 50' tall, moderate mid-story and shrub density, fairly open ground layer with moist soil, decaying leaf litter.

Territory 0.2 to 7 acres.

Nest Open cup of leaves and grasses lined with mud, placed on lower limb of a tree or shrub 6 to 15 feet off the ground and well-hidden among leaves in a shady area.

Food Mostly soil invertebrates; fruits later in a season. Primarily forages on ground under forest canopy.

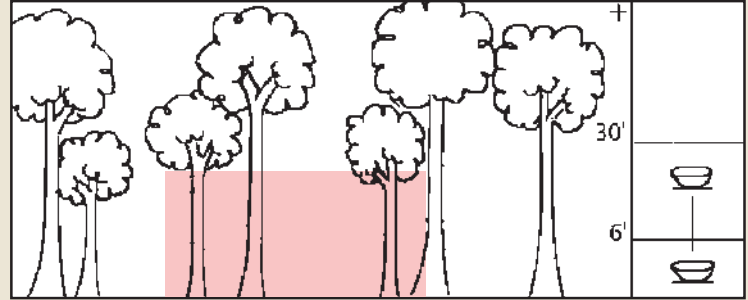
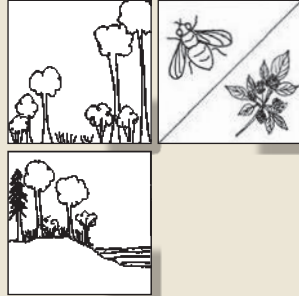


Yellow-billed Cuckoo

YBCU



Coccyzus americanus



Desired Forest Conditions: Open woodlands with patches of dense cover. Prefers riparian or bottomland areas. This species tracks outbreaks of tent caterpillars.

ID Tips Grayish-brown above, white below. Long tail. Yellow lower bill.

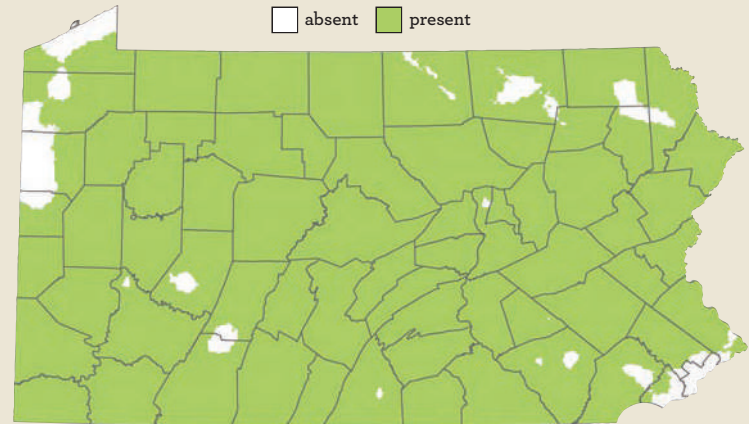
Song Rapid kuk-kuk-kuk.

Habitat Open woodlands and mature forest. Riparian areas.

Territory Variable.

Nest In a fork away from trunk of tree, 3 to 20 feet off ground, in dense foliage.

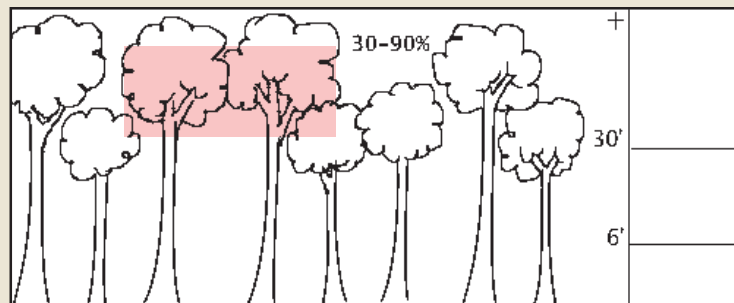
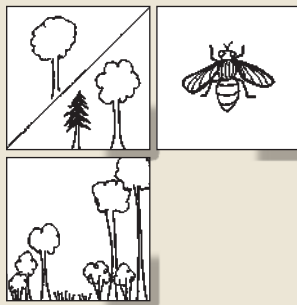
Food Large insects. Hairy caterpillars, including gypsy moth caterpillars.



Yellow-throated Vireo YTVI



Vireo flavifrons



Desired Forest Conditions: Tall canopy height. Canopy closure of 30-90 percent. Typically found at lower elevations in moist habitats. Prefers widely spaced, tall trees.

ID Tips Bright yellow spectacles, throat and breast.

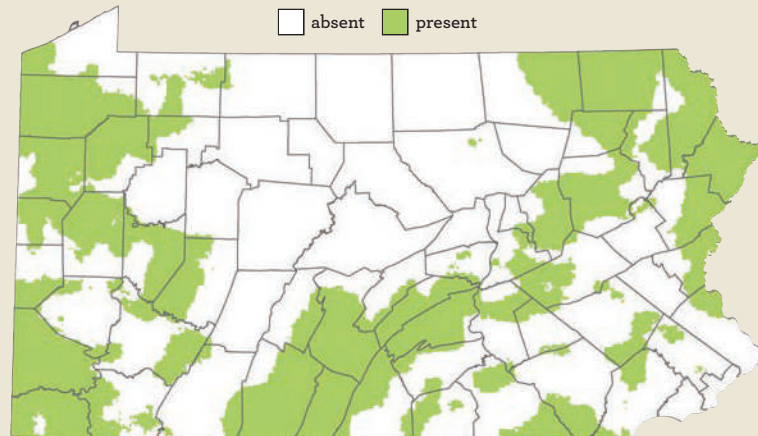
Song Slow, slurred “dearie-deer” followed by pause, then a rising “three-eight”.

Habitat Large areas of mature, closed canopy, interior forest. Lower elevation. Moist habitats. Widely-spaced, tall trees.

Territory More than 7 acres, although population is usually sparse.

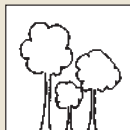
Nest In crown of tree. Up to 80 feet above ground.

Food Insects and other arthropods. Forages at mid and upper levels.



Key to Habitat Feature Icons

Forest type



hardwood

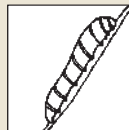


mixedwood

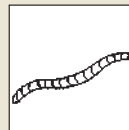
Food



beetles



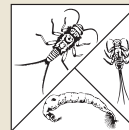
caterpillars



earthworms



flying insects



aquatic invertebrates



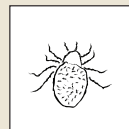
fruits/
soft mast



moths



soil invertebrates



spiders

Associated Woody Species



alder, birch
and aspen



eastern
hemlock and
red spruce



hobblebush



oak

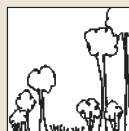
Other



1+ acre
opening in
forest matrix



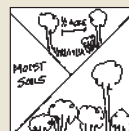
area sensitive;
requires large
forested patches



opening/edge



perch on edge
of opening



requires multiple
habitat types in
proximity to
each other



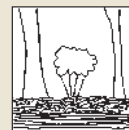
riparian areas



singing perch
in opening



snag or
cavity tree



thick leaf litter

Forest Bird Species of Conservation Concern in Pennsylvania

These species are included in Pennsylvania's 2015 State Wildlife Action Plan as
Species of Greatest Conservation Need.

American Woodcock	Eastern Whip-poor-will	Prothonotary Warbler
Blackburnian Warbler	Golden-winged Warbler	Red-headed Woodpecker
Blackpoll Warbler	Gray Catbird	Ruffed Grouse
Black-and-white Warbler	Kentucky Warbler	Scarlet Tanager
Black-throated Blue Warbler	Long-eared Owl	Sharp-shinned Hawk
Black-throated Green Warbler	Louisiana Waterthrush	Summer Tanager
Blue-winged Warbler	Nashville Warbler	Swainson's Thrush
Broad-winged Hawk	Northern Goshawk	Willow Flycatcher
Brown Creeper	Northern Saw-whet Owl	Winter Wren
Canada Warbler	Pine Siskin	Wood Thrush
Cerulean Warbler	Prairie Warbler	Yellow-breasted Chat

PGC-PFBC (Pennsylvania Game Commission and Pennsylvania Fish & Boat Commission). 2015.
Pennsylvania Wildlife Action Plan, 2015-2025. (C. Haffner and D. Day).
Pennsylvania Game Commission and Pennsylvania Fish & Boat Commission, Harrisburg, Pennsylvania.

Where are they in winter?

	Nonmigratory	Southern North American	Carribean Islands	Central America	Northern South America	Central South America
Pileated Woodpecker	X					
Ruffed Grouse	X					
American Woodcock		X				
Eastern Towhee		X				
Blue-headed Vireo		X		X		
Ovenbird		X		X	X	
Black-throated Blue Warbler			X	X		
Hooded Warbler			X	X		
American Redstart			X	X	X	
Black-throated Green Warbler			X	X	X	
Louisiana Waterthrush			X	X	X	
Yellow-throated Vireo			X	X	X	
Chestnut-sided Warbler				X		
Wood Thrush				X		
Eastern Wood-Pewee					X	X
Scarlet Tanager					X	X
Yellow-billed Cuckoo					X	X
Veery						X

Additional Information

Birds in Pennsylvania

Birds and birding information from the Pennsylvania Game Commission:

<https://www.pgc.pa.gov/Wildlife/Birding>

Pennsylvania Society of Ornithology:

<https://pabirds.org>

The Breeding Bird Atlases of Pennsylvania:

<http://www.pabirdatlas.psu.edu>

Current Bird Conservation Topics:

<https://ebird.org/pa>

Habitat Management for Wildlife

Penn State Extension:

<https://extension.psu.edu/forests-and-wildlife/wildlife/habitat-management>

Department of Conservation and Natural Resources, Bureau of Forestry:

<https://www.dcnr.pa.gov/Conservation/ForestsAndTrees/ManagingYourWoods>

Pennsylvania Game Commission:

<https://www.pgc.pa.gov/Wildlife/HabitatManagement>

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