



hooded warbler



Wood Warblers

Like jewels strewn through the woods, Pennsylvania's native warblers appear in early spring, the males arrayed in gleaming colors. Twenty-seven warbler species breed commonly in Pennsylvania, another four are rare breeders, and seven migrate through Penn's Woods headed for breeding grounds farther north. In central Pennsylvania, the first species begin arriving in late March and early April. Louisiana waterthrush (*Parkesia motacilla*) and black-and-white warbler (*Mniotilta varia*) are among the earliest. The great mass of warblers passes through around mid-May, and then the migration trickles off until it ends in late May by which time the trees have leafed out, making it tough to spot canopy-dwelling species. In southern Pennsylvania, look for the migration to begin and end a few days to a week earlier; in northern Pennsylvania, it is somewhat later. As summer progresses and males stop singing on territory, warblers appear less often, making the onset of fall migration difficult to detect. Some species begin moving south as early as mid and late July. In August the majority of warblers start moving south again, with migration peaking in September and ending in October, although stragglers may still come through into November. But by now most species have molted into cryptic shades of olive and brown: the "confusing fall warblers" of field guides.

The wood warblers (family Parulidae) are found only in the New World. The group includes 116 species, with more than 50 found regularly in North America. Wood warblers are small lively birds that use a range of habitats. All of the North American species are migratory and spend only a small portion of their annual cycle on breeding territories in North America. Wintering grounds and migration routes are equally critical for wood warblers to exist. Almost certainly most warblers developed in the tropics and extended their ranges northward to exploit new breeding zones. The name "warbler" is a misnomer, because few species possess warbling voices, and many have thin, scratchy, unmusical songs. Males use two types of vocalization: a song to advertise territory, and a shorter call to attract a mate and to communicate with her.

Wood warblers breed in May and June in woods and brushland that may be dry, moist, or wet. A few are habitat generalists, but most warbler species are associated with specific habitat types and show a preference for specific

characteristics within a breeding habitat. They forage from ground level to the treetops and eat mainly small insects and insect larvae plus a few fruits; some warblers take flower nectar. When several species inhabit the same area, their feeding strategies are usually different enough that they do not compete directly with one another.

Nesting habits vary widely. The prothonotary warbler (*Protonotaria citrea*), a rare breeder in wetlands and bottomland forest in Pennsylvania, builds its nest in a tree cavity, often an old downy woodpecker hole. The Nashville warbler (*Oreothlypis ruficapilla*) is one of several species that nest on the ground. Some warblers, such as the pine warbler (*Setophaga pinus*), nest in conifers and are closely associated with eastern hemlock and pine forest; others use hardwood trees; and others such as the golden-winged warbler (*Vermivora chrysoptera*) occupy young forest and early successional habitats. The northern parula (*Setophaga americana*) is found in mature riparian forest with tall trees, usually with scattered conifers, often along steep slopes and weaves its nest into hanging clumps of lichens, twigs, or pine needles. Most species are thought to be monogamous. Generally the female builds the nest. The eggs, usually two

to five per clutch, are whitish with dark spots. Typically, the female does most or all of the incubating, and both parents feed the young.

Warblers are Neotropical birds that winter in the rainforests of Mexico, Central America and South America, where they forage in mixed flocks. These winter and stopover habitats are critical for the prolonged health of these species. There has been more emphasis in recent years for a “full life cycle stewardship” approach to bird conservation that addresses all phases of a bird’s migratory path. Wood warblers are found in a wide variety of woods, thickets, and wetlands in the Neotropical countries including mangroves, seaside scrub, forest edge, and mountain forests. A few cold-hardy species such as the yellow-rumped warbler, *Setophaga coronata*, stay in North America all year, wintering in the southern United States and Mexico. Warblers are small birds with limited fat reserves, and many perish from the rigors of migrating, particularly when suitable habitat is lost or degraded along migration routes. A route followed by many species in the spring requires a nonstop flight from the Yucatan Peninsula across the Gulf of Mexico to Louisiana, Mississippi, Alabama, and Florida, about a 600-mile flight. If migrating birds encounter headwinds, many exhaust their energy and fat reserves, fall into the ocean, and drown. Tremendous numbers of warblers and other night migrating birds die when they fly into communications towers, wind energy turbines and tall buildings, particularly on cloudy nights when migrating birds sometimes become disoriented and attracted to artificial lights on or near these structures. Many individuals are preyed upon by smaller hawks and owls and nests are vulnerable to a variety of predators including small and medium-sized mammals. Warblers have been documented to live for more than 12 years in the wild; most die before reaching that age.

Some wood warbler populations are stable. However, 13 warblers have been identified as priority species, designated as Birds of Conservation Concern in Pennsylvania’s Wildlife Action Plan (PGC-PFBC 2005). One species, the blackpoll warbler (*Setophaga striata*), is listed as state endangered. It is a warbler of northern boreal forests and a rare breeding bird in the state. Another warbler, the cerulean (*Setophaga cerulean*), which breeds in mature forests dominated by oaks, has declined significantly. This forest interior warbler is classified as a species of “High-level Concern” in Pennsylvania and has shown steep declines between the first breeding bird atlas period (1983-89) and the second atlas period (2004-09), losing an estimated 28 percent of the state population during that time. It is among the most seriously threatened songbirds of eastern North America with long-term declines exceeding 70 percent since Breeding Bird Surveys began in 1966. Approximately nine percent of the world’s cerulean warblers breed in Pennsylvania giving the state a high responsibility for this species.

When northern woodlands are broken into smaller patches by logging, coal and natural gas extraction, wind energy projects or home development, warblers lose habitat. In fragmented woods, native birds and mammals, including blue jays,

raccoons, foxes, squirrels, and free-roaming house cats can prey more easily on warblers and their nests. Brown-headed cowbirds, which live in open areas, find greater access to warblers’ nests: the female cowbirds surreptitiously lay eggs in the nests, and when the young cowbirds hatch, they are raised by the host adults, whose own smaller, slower to develop young often do not survive. Another wood warbler sensitive to edge effects is the worm-eating warbler (*Helmitheros vermivorum*), a ground-nesting warbler of the understory. This warbler is strongly associated with Pennsylvania’s deciduous forest. It inhabits steep slopes and ravines with dense patches of understory (such as mountain laurel) and also thick shrubby woodland swamps. Approximately 10 percent of the global population of worm-eating warbler breeds in Pennsylvania giving the state a high stewardship responsibility.

The following is a closer look at some common wood warblers of Pennsylvania.

Ovenbird (*Seiurus aurocapilla*)

This bird gets its name from the covered dome-shaped nest which it builds on the ground; early observers were reminded of a Dutch oven. An ovenbird looks like a little thrush, olive brown above and with a dark streaked (rather than a spotted) breast and an orange, black-rimmed stripe atop the head. Ovenbirds prefer dry mature deciduous woods, but they also inhabit other forest types including swamplands. As a forest interior species, they do best in extensive wooded tracts and are sensitive to forest fragmentation. Forest quality plays a strong role in the localized abundance of the ovenbird. When forests are degraded by invasive plants, deer overbrowsing and other factors, ovenbird populations experience declines in those areas. Acid atmospheric deposition degrades the soil and decreases forest quality for ovenbirds and other forest birds. Ovenbirds feed on the ground in the leaf litter, taking beetles, ants, caterpillars, bugs, worms, spiders, and snails. The song is an emphatic *Teacher! Teacher! Teacher!*, repeated about 10 times at increasing volume, three to four sessions per minute. The species nests statewide, although it is absent from heavily farmed and urbanized districts. The ornithologist Hal Harrison found cowbird eggs in six of seven Pennsylvania



ovenbird

ovenbird nests that he monitored one summer, but research at Hawk Mountain Sanctuary found that few nests in deep forests contained those unwanted guests. Ovenbirds arrive in Pennsylvania in April and May, and depart in September and October. They winter in Mexico, Central America, Florida, and the Caribbean.

Worm-eating Warbler (*Helmitheros vermivorum*)

The worm-eating warbler is surely one of the most poorly named birds because it eats caterpillars (previously called “worms”) rather than earthworms and does not warble. This is one of the most nondescript of Pennsylvania’s forest songbirds that blends in very well in the deciduous forests where it is found. The worm-eating warbler spends most of its time foraging the shrubs and saplings of the forest understory. It has olive-brown plumage with distinct black stripes on its crown and through its eyes. These head stripes are its best field mark on an otherwise unobtrusive little bird. The Appalachian Mountains are the core of its breeding range and Pennsylvania accounts for about 10 percent of its total nesting population, so it is critical that the state maintains healthy forests for the future of this and other forest birds. It is found primarily east of the Allegheny Front and can be common in the forests of the Ridge and Valley Province. It specializes in reaching into dead leaf clusters and finding arthropods with its long, slim bill. The worm-eating warbler’s song is a very dry, insect-like, trill, easily confused with a cricket, and is like a shortened version of the song of the more familiar chipping sparrow, but deep in the woods. Its song is generally less than two seconds long while a chipping sparrow’s song is usually over two seconds. In Pennsylvania, the worm-eating warbler may arrive back on breeding territory in late April; however, the peak of their return falls in the first two weeks of May. This warbler nests on the ground, typically at the



worm-eating warbler

base of a sapling and often on a slope near water. Against the trunk of a young deciduous tree, the female builds an open cup nest of leaves and lines it with moss and grass. While incubating her three to six eggs, the female blends well with the surrounding leaf litter. These ground nests are vulnerable to nest predators especially small snakes and rodents like chipmunks and shrews. Worm-eating warblers are among the forest birds that are especially vulnerable to fragmentation. They migrate south to their wintering grounds in Mexico and Central America where deforestation continues at an alarming rate.

Louisiana Waterthrush

(*Parkesia motacilla*)

In April, anglers see this shy warbler walking on stones along the edges of streams, turning over wet leaves with its bill and flitting out over the water to catch prey. A Louisiana waterthrush looks like a thrush and acts like a sandpiper, teetering and dipping, elevated



Louisiana waterthrush

above slick rocks on its long legs, stabilized by large, long-toed feet. It is a warbler of mature riparian forest, a forest interior species that is strongly associated with rolling headwater streams that wind through forests especially where hemlocks line the stream banks. Waterthrushes eat bugs, beetles, adult and larval mayflies and stoneflies, dragonflies, crane fly larvae, ants, caterpillars, and other insects, plus centipedes, small crustaceans, salamanders, and snails. They breed from late April to June along rushing brooks, sluggish swamp streams, and moist hillsides, always in woods. A pair builds their nest in a hole in the stream bank, hidden by tree roots, weeds or grass. An estimated eight percent of the world’s population of this species breeds in the state. Its streamside presence during spring and summer is an indicator of excellent stream quality. Louisiana waterthrushes nest throughout the East. They winter in streamside forests in Mexico, Central America, the Bahamas and the Greater Antilles.

Northern Waterthrush

(*Parkesia noveboracensis*)

A close relative of the Louisiana waterthrush is the similar looking, northern waterthrush. It is a songbird of the north woods, a ground-dwelling warbler of wooded swamps, thickets, and bogs. Although their ranges overlap in Pennsylvania, the northern waterthrush has a much more limited distribution, occurring in the state’s higher-elevation forest wetlands primarily in the glaciated portions

golden-winged warbler



of northern Pennsylvania, also in areas of the Ridge and Valley Province. The northern waterthrush prefers cool, dark woodland with standing water and slow moving streams and is found in thickets bordering streams, dense rhododendron swamps, shrub-scrub wetlands, woodland bogs and boreal conifer swamps.

Golden-winged Warbler (*Vermivora chrysoptera*)

This is a species of early successional forest. The golden-winged warbler has experienced dramatic long-term declines across the northeastern United States and is a Species of Greatest Conservation Need in Pennsylvania. Habitat loss has played a role in this decline but hybridization with the blue-winged warbler is also a major factor. Golden-winged warblers nest in disturbed and young forests and thickets as well as scrub barrens and wooded wetlands. It spends winter in Central American and northern South American forests.

Black-and-white Warbler (*Mniotilta varia*)

This common bird acts more like a nuthatch or a creeper than a warbler, foraging methodically in tree bark, circling trunks and limbs of trees while looking for insects and their eggs. An unusually long back toe and claw allow it to easily move about the bark's surface. Both males and females have zebra stripes on their back and crown. Next to the Louisiana waterthrush, the black-and-white warbler is the earliest spring migrant; individuals are easily observed before the leaves push out.

They often feed low in trees and usually nest on the ground in deciduous woods and show a preference for dense forest with a thick understory. The male sings a thin *weeseee, weeseee, weeseee*, repeating the phrase at least seven times. The female builds a nest out of dry, dead leaves and lines a central cup with grasses, strips of grapevine bark, rootlets, and weed fibers. The nest is built at the base of a tree or tucked partway under a log, stump, or rock. Cowbirds often heavily parasitize black-and-white warbler nests. Black-and-white warblers winter in Florida, the Gulf Coast states, the West Indies, and from Mexico south into South America.

The somewhat similar-looking blackpoll warbler (*Setophaga striata*) nests in very few boreal conifer forests and wetlands in the state, reaching the southern extent of its nesting grounds in Pennsylvania. More about this Pennsylvania Endangered Species can be found on the agency's website.

Common Yellowthroat (*Geothlypis trichas*)

Witchity, witchity, witchity sings this olive-yellow bird with a gray back, black mask, yellow throat, and whitish belly. (Females lack the black mask). In Pennsylvania, yellowthroats nest in cattail marshes, alder swamps, shrubby bogs, wet meadows, forest edges and openings, utility corridors and old fields. They like thick briary cover and take advantage of small habitat patches with dense undergrowth: an ornithologist once found 17 nests in a half acre swamp in Illinois. As a result of this broad habitat use, they are the most widespread of the warblers. Nests are built on or near the ground, hidden

black-and-white warbler



common yellowthroat



in tussocks, weed stalks, and shrubs; they are bulky, made of dry leaves and coarse grasses lined with finer plant matter. Yellowthroats eat insects (grasshoppers, dragonflies, mayflies, beetles, moths, ants, aphids, and many others), spiders, and seeds. They nest statewide across Pennsylvania, except in major urban centers and their surrounding developments, and winter in southern United States, Mexico, and Central America. Draining and filling of wetlands, even very small ones, harms yellowthroats and many other forms of wildlife. Common yellowthroat nests are often parasitized by brown-headed cowbirds. This spunky, active bird is among the most numerous songbirds in Pennsylvania with a population of more than 1.2 million singing males as estimated during the Second Breeding Bird Atlas period (2004-09).

American Redstart (*Setophaga ruticilla*)

Males are an eye-catching mix of black, orange, and white; orange patches show on the wings and tail, which the bird often flashes open and shut, flushing insects in this way. Redstarts flutter about in treetops, hovering among leaves, leaping up or darting out like a flycatcher to grab a passing insect: a redstart even has bristles framing its mouth to help it catch flying prey. The song is a variable series of high pitched, indistinct *tsee* notes. American redstarts inhabit moist second growth sapling woods, forested wetlands, river groves, forest edges, and tree-lined creek banks. A Wisconsin study found the species to be three times as common in woods of greater than 80 acres than in woodlots comprising less than 14 acres. In Pennsylvania the American redstart is common and widespread over much of the state, especially in forested areas of northern and central Pennsylvania. It is less common and more locally distributed in the highly agricultural areas of the southeast Piedmont region and in the area surrounding Pittsburgh. Redstarts eat insects, spiders, seeds and berries. The female builds a cup-shaped nest in a tree fork or shrub 4 to 70 feet above the ground. Some males breed with more than one female in their territories. Redstarts may begin to head south in late July and migration continues well into October with a peak during the first three weeks of September. They winter in the Gulf Coast states and from Mexico south to northern South America. The species is named after a European bird whose name means "red tail."

Cerulean Warbler (*Setophaga cerulea*)

The male Cerulean warbler is said to wear the sky on its back, but that beautiful blue plumage is difficult to see in the treetops where it normally dwells. Penn's Woods are home to many Cerulean warblers, so Pennsylvania has a high stewardship responsibility for this species. Due to its declines and the state's high responsibility for it, the Cerulean warbler is considered a High Concern species in the Pennsylvania Wildlife Action Plan. The Cerulean warbler is a small warbler that forages in the tree canopy, usually associated with tall trees in mature forests. It returns to breeding grounds in Pennsylvania in May. Males begin to sing from high perches to establish and defend breeding territory. Their song is a fast buzzy series of notes that sound like *zee, zee, zizizizi, zzzzet!*

American redstart



cerulean warbler



similar to the black-throated blue warbler but faster. Male cerulean warblers seem to prefer to sing from trees that leaf out later or have “airy” foliage such as bitternut hickory, black walnut, or sycamore trees. They often forage lower in the mid-story of the forest where there are vines and many other places to find insects and spiders. Within a day or two of arriving on territory, the female begins building a nest which is placed on a lateral limb of a deciduous tree 30 or more feet above ground. The nest often sits over an open space or gap in the forest. The female constructs the nest from bark fiber and grass stems held together with spider webbing. Nests are typically concealed by overhanging leaves or vines. Females lay and incubate one to five eggs but once hatched, both parents feed the nestlings. The Cerulean warbler can be found in ridgetop and mountainside deciduous forests, generally where oak trees dominate, and also riparian forests where there are tall sycamores and maples. They prefer large forests but often are found in small gaps within that forest including along hiking trails and near tree-falls. The Cerulean warbler spends the winter in the forests of the Andes Mountains, primarily the broad-leaved evergreen forests of the eastern foothills. This is among the forest species that benefits from shade-grown coffee plantations which offer better foraging opportunities than sun-grown coffee or cattle pastures that are so common in the mountains of Latin America.

yellow warbler



Yellow Warbler (*Setophaga petechia*)

This showy all yellow bird has a rufous-streaked breast. The male's song is a lively *sweet-sweet-sweet-I'm-so-sweet*. One of the most widespread of all wood warblers, the species breeds statewide in Pennsylvania. Look for yellow warblers in low brush or shrubs, wet thickets, woods edges, field edges, orchards, parks, and gardens, along streams, near swamps, and in alder and dogwood stands. Caterpillars may make up two thirds of the diet. Yellow warblers also snatch up mayflies, moths, mosquitoes, beetles, damselflies, treehoppers, and other insects, plucking their prey from twigs and leaves, hovering to glean from the undersides of foliage, and making short flights. The nest is a neat open cup built of plant materials and lined with plant down or fur.

Yellow warblers are often parasitized by cowbirds. Foreign eggs cause some yellow warblers to desert their nests or to build a new nest on top of the cowbird eggs. Because of this brood parasite, yellow warbler nests may contain multiple tiers. Yellow warblers arrive in Pennsylvania in mid-April and early May and head south again as early as July or early August. They winter in Mexico, Central America and northern South America where they typically inhabit forest lowlands, mangrove forest, marshes and dry scrub habitat

Chestnut-sided Warbler

(*Setophaga pennsylvanica*)

Given its scientific name, this is the only bird named after Pennsylvania. In spring, both sexes sport a yellow crown, black face markings, and chestnut streaks on their sides. The song is similar to the yellow warbler's song and has been rendered

chestnut-sided warbler

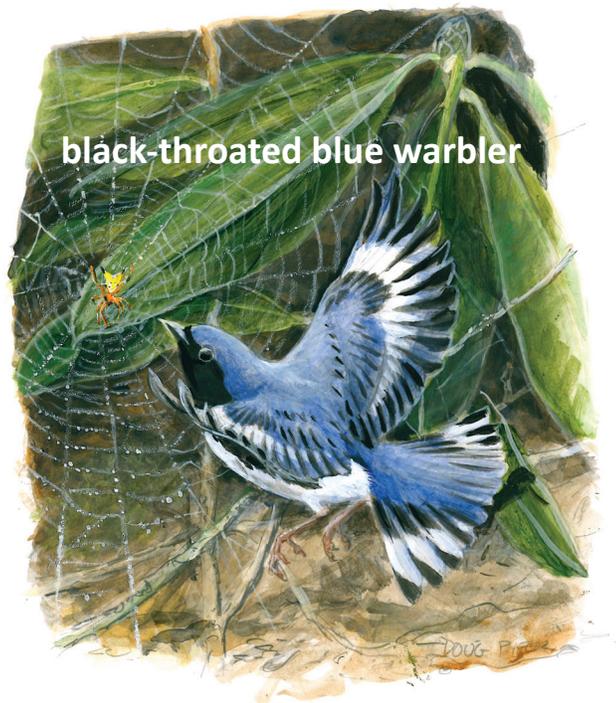


as *please please please ta meetcha*. This now common species increased its numbers after Pennsylvania's virgin forests were logged. Chestnut-sided warblers are a species of early successional deciduous forest. They inhabit brush and briars, slashings of cut over woods and reverting fields. It is also found in open forests with thick stands of mountain laurel. It is a common species in many state game and forest lands. They forage for insects by hopping from branch to branch searching the undersides of leaves for insect prey, darting out now and then to intercept prey in midair. The nest is built in low, dense shrubs or blackberry tangles and is woven out of strips of cedar or grapevine bark, weeds, grasses, and roots, with a soft lining. Immature birds and adults in autumn wear a dull greenish plumage which does not resemble their bright spring plumage. The winter range extends from Mexico through Panama.

Black-throated Blue Warbler

(*Setophaga caerulescens*)

One of the handsomest birds in the forest, the male black-throated blue warbler is aptly described by its name. The slate blue is set off by a white breast. This forest interior species typically nests in deep woods, deciduous and mixed forest. They often nest in cove forests well-stocked with hemlocks and a bubbling stream with plenty of gnats, moths, crane flies, caterpillars, and other insects. The black-throated blue warbler prefers large contiguous forest tracts with varying levels of vegetation. It is an indicator species of high quality forest with good vertical vegetative structure and is designated a Species of Maintenance Concern in the Pennsylvania Wildlife Action Plan. It mostly forages at low and mid-levels of the forest. Males usually forage higher in the understory than do females; some black-throated blue warblers steal insects from spider webs. Males sing a buzzy, drawn out *zur, zur, zree*. The nest is a bulky cup hidden in a rhododendron, laurel, or



black-throated blue warbler

black-throated green warbler



shrubby conifer. The species nests commonly in the heavily forested mountains (particularly above 1,650 feet in elevation) of central and northern Pennsylvania and north into Canada. It winters in tropical forest habitats in the Bahamas and Caribbean particularly in the Greater Antilles.

Black-throated Green Warbler

(*Setophaga virens*)

The dreamy, buzzy song of the black-throated green warbler is one of the most frequently heard natural sounds of Penn's Woods. This is a common nesting bird of Pennsylvania's forests especially the northern hardwood and mixed forests of the mountains. They often are found near conifers and are especially associated with the state tree, the eastern hemlock (*Tsuga canadensis*) which is threatened by the hemlock woolly adelgid and other pests. They can achieve high population densities in conifer forests especially mature stands. Their nests are built fairly low on the forks of tree branches, usually far from the trunk. Their song is a lazy ascending *zee-zee-zoo-zoo-zee* or sometimes rendered *trees, trees, murmuring trees*. This common species has been increasing in range and population in the state over the last several years as the forests have become more mature, but it may be affected by loss of hemlocks and the effects of forest fragmentation. The black-throated green warbler spends the winter in Mexico and Central America.

The other Pennsylvania breeding warblers that were not described in detail include the blue-winged, Nashville, northern parula, magnolia, yellow-rumped, Blackburnian, pine, prairie, Kentucky, mourning, hooded, Canada, and yellow-breasted chat. Rare breeders include Brewster's, blackpoll, prothonotary and Swainson's warblers. Seven other warblers migrate through Pennsylvania and may be seen during spring and fall: Tennessee, orange-crowned, Cape May, bay-breasted, palm, Connecticut, and Wilson's.