



*Photo by Laura Erickson.*

# **HEALTHY FORESTS FOR GOLDEN-WINGED WARBLER**

## **WORKING LANDS FOR WILDLIFE**

### **FY17-21 CONSERVATION STRATEGY**

## WLFW FY17-21 CONSERVATION STRATEGY

The golden-winged warbler (*Vermivora chrysoptera*) is one of many spectacular warblers breeding in the deciduous forests of the Great Lakes and Appalachian regions of the United States that winters in Central and South America. Golden-winged warblers have suffered one of the steepest population declines of any songbird in the last 45 years. Since the 1960s, habitat has decreased by an estimated 22 percent in the Great Lakes region and 43 percent in the Appalachians.

Golden-winged warblers nest in shrub lands and young forests and other early successional habitats, and their decline has been directly linked to a shortage of these younger forest stages in the eastern United States.

A balance in forest ages across large landscapes, from sapling stands to mature trees, creates economic and ecological stability. U.S. Forest Service data (Figure 1) demonstrates that Eastern deciduous forests are not well balanced, generally lacking both young and older stands. This imbalance has financial and ecological implications that can be addressed in part through Farm Bill conservation programs.

Clearing of forests for development and public sentiment against cutting trees have both contributed to the large-scale loss of younger forests. Meanwhile, mid-successional forests often suffer from repeated “high-grade” or “diameter-limit” cuts where only the most valuable trees are harvested. These types of harvests result in immediate financial returns and are better tolerated by the general public because not all trees are harvested at once. But without proper management, these practices are unsustainable and can leave timber stands of such low value that no future harvests are financially feasible. Managed understory vegetation and well-planned harvest approaches result in healthier and more valuable mature forests, which are equally scarce in Appalachia.

### Forest Stewardship Supports Wildlife and Industry

With about 70 percent of the region under private ownership, management decisions of

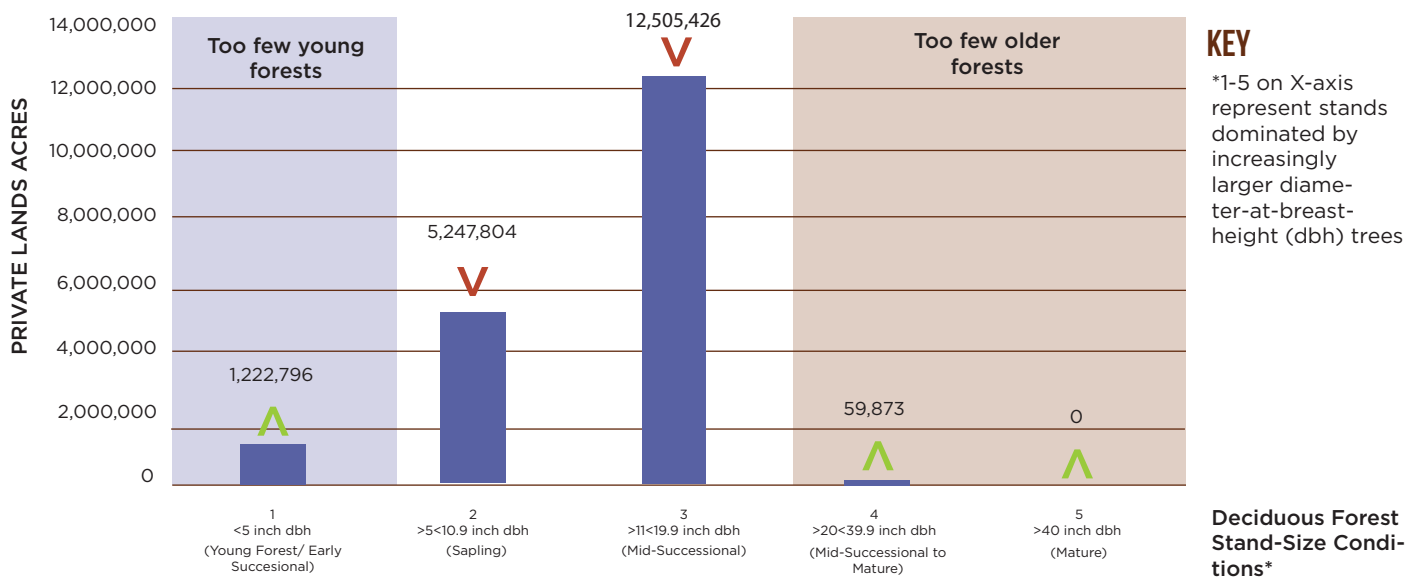


**Golden-winged Warbler Male.** *With bright yellow touches of color on its wings and head, and a black-and-white facial pattern, this striking species is easy to identify. Photo by DJ McNeil.*

landowners are important to the golden-winged warbler and other wildlife species. USDA’s Natural Resources Conservation Service (NRCS) offers technical and financial assistance — funded through the Farm Bill — to help landowners sustainably manage forests. NRCS is part of a broader network of partners seeking practical solutions to stabilize timber markets while providing quality wildlife habitat that can be enjoyed by hunters and wildlife watchers alike.

Through Working Lands for Wildlife (WLFW), NRCS focuses conservation on declining species that have needs compatible with rural land management. The golden-winged warbler is one of eight nationally identified WLFW target species. NRCS and its partners work closely with the public to design conservation approaches for at-risk species that enable working forests, farms and ranches to continue to be profitable while precluding the need to list those species under the Endangered Species Act (ESA). Since WLFW was launched in 2012, NRCS, its partners and participating landowners have worked together to restore 16,000 acres of golden-winged warbler habitat.

**FIGURE 1: SIZE DISTRIBUTION OF FOREST STANDS IN WLFW PROJECT BOUNDARY FOR GOLDEN-WINGED WARBLER**



Source: U.S. Forest Service's Forest Inventory Data (FIA) recorded as Field Stand-Size Condition (FLSSZCD). See link for User's Manual [https://www.fia.fs.fed.us/library/database-documentation/current/ver70/FIADB%20User%20Guide%20P2\\_7-0\\_ntc.final.pdf](https://www.fia.fs.fed.us/library/database-documentation/current/ver70/FIADB%20User%20Guide%20P2_7-0_ntc.final.pdf)

## Changing Forest Dynamics

Historically, Eastern forests had diverse forest age classes, and young patches were created within older stands through natural processes and disturbances such as openland succession, fire, insects, diseases, wind storms and floods. Pre-European colonization forests were dominated by mature trees but due to this host of natural events, forests also contained different sized gaps of younger trees, brush or herbaceous vegetation that benefited wildlife diversity. In modern times, the threats to Eastern forests are unsustainable logging, mineral extraction, development, fire suppression and invasive plants. NRCS can help landowners create habitat and reach economic goals through technical and financial assistance for timber stand and understory vegetation management, prescribed burns, and implementation of mechanical and chemical control plans for invasive plants.

## The Importance of Diverse Forests

The golden-winged warbler breeds in young forests but fledglings move among forest stands of varying ages, making the bird a great flagship species for demonstrating the value of diverse age-class forest management. Many game and non-game species also use different ages of forests at different life stages and different times of year. Good forest stewardship

that encourages a diverse distribution of forest stages across large landscapes, from young to mature stands, is critical to supporting diverse and abundant wildlife. To maximize golden-winged warbler breeding habitat, scientists have estimated that about 15 percent of the forest landscape should be in a young forest condition. Mid-successional forests in poor condition should be targeted for creation of young forest habitat. Assistance is also available for sustainable harvests in mature forests, and/or site management (thinning, invasives control, etc.) to improve the health of stands.

With good stewardship across all forest age classes, the need for wildlife habitat and demand for wood products can both be met. In this best-case scenario, the habitat availability and harvest levels remain relatively constant over time. Unsustainable timber harvest practices exacerbate existing shortages — the remaining trees in a stand may be mature, but they often do not have any market value. Better stewardship of forests can reverse negative outcomes for the timber industry, forest landowners and wildlife. NRCS programs can support objectives of forest landowners by removing low-value timber and regenerating new healthy forests. This is a win-win for rural communities and wildlife.

## WLFW FY17-21 CONSERVATION STRATEGY

In addition to the golden-winged warbler, a number of other species in Appalachia are classified as at-risk, threatened or endangered. The red-shouldered hawk, loggerhead shrike, several rare bat species, and a large number of migratory songbirds (e.g. wood thrush and Eastern whip-poor-will) use young forest habitats for cover or forage. Many game species are also attracted to young forest habitat, including grouse, deer, elk and woodcock.

NRCS is targeting the golden-winged warbler's breeding range in the Appalachian Mountains, where declines in young forests are highest. This region includes significant portions of New Jersey, Maryland, Pennsylvania, West Virginia, Virginia, North Carolina and Tennessee (Figure 2). WLFW conservation practices focus on helping landowners manage for healthy forests.

Many other rare species occur in older forests, such as a number of plant and wildlife species including land snails, salamanders and orchids. These would benefit from land protection efforts through the Healthy Forests Reserve Program and partnerships efforts through Regional Conservation Partnership Program (RCPP), both authorized through the 2014 Farm Bill.

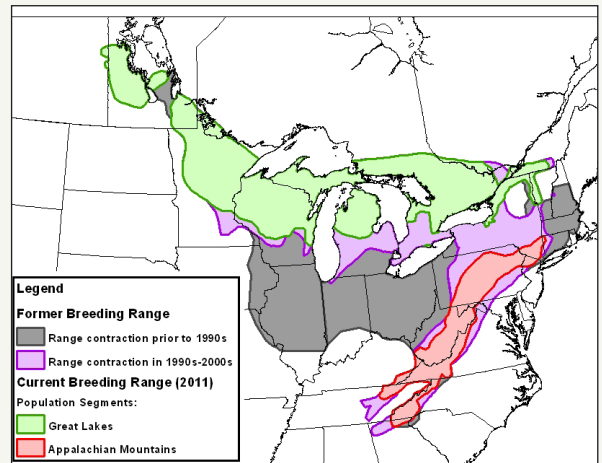
### The At-Large Effort

Ornithologists have been concerned about the golden-winged warbler for decades and conservation planning and delivery have been conducted by other federal and state agencies, universities and non-profit organizations. Because of the golden-winged warbler's steep population decline, the U.S. Fish and Wildlife Service (USFWS) was petitioned in 2010 to list the species under the federal Endangered Species Act. The petition was deemed "substantial" justification for listing, and a final decision by the agency is pending. Habitat degradation and losses are widely accepted as the primary threats to the species. NRCS and its partners seek to reverse downward population trends in hopes of precluding the need to list this species.

The Golden-winged Warbler Working Group is a coalition of government agencies, universities and



**FIGURE 2: CHANGES IN BREEDING RANGES**



The golden-winged warbler's breeding range has decreased significantly. Map courtesy of the Golden-winged Warbler Working Group.

nonprofit organizations that first met in 2005. In 2012, the working group released a Status Review and Conservation Plan. The plan's primary goal is to increase the population size of the golden-winged warbler by increasing the quantity and quality of breeding habitat – a key factor limiting populations. That same year, NRCS launched WLFW and began implementing voluntary habitat restoration projects toward the working group's goals.

Long-term partnership goals include: stopping the golden-winged warbler population decline within 10 years; recovering populations back to 1980s levels within 30 years; eliminating the risk of extirpation of the golden-winged warbler in the Appalachians; and doubling that regional population within 40 years. Sustained progress toward these goals are likely to heavily influence USFWS' future listing decisions for the species. Habitat restoration on private lands are critical.

In 2012, NRCS worked with USFWS to designate the golden-winged warbler as a national target species under its new (at that time) WLFW effort. WLFW is serving as a mechanism to achieve the species' habitat and population goals, and relationships with private landowners are ensuring the conservation work is done in a manner that continues to support economic goals for working lands.

## Other Regional Young Forest Efforts

NRCS also has a six-state young forest effort underway in the Northeast for the New England cottontail, another of the WLFW national target species. From 2012 to 2016, the agency has conserved more than 8,500 acres of young forest for the species. RCPP has two active projects for forest management in Appalachia and the Great Lakes region that will benefit golden-winged and cerulean warblers. Other opportunities also exist, such as the Joint Chief's Landscape Restoration Partnership administered as a USDA partnership with the U.S. Forest Service since 2014 to improve the health of forests where public forests and grasslands connect to private lands.

## Broader Opportunities

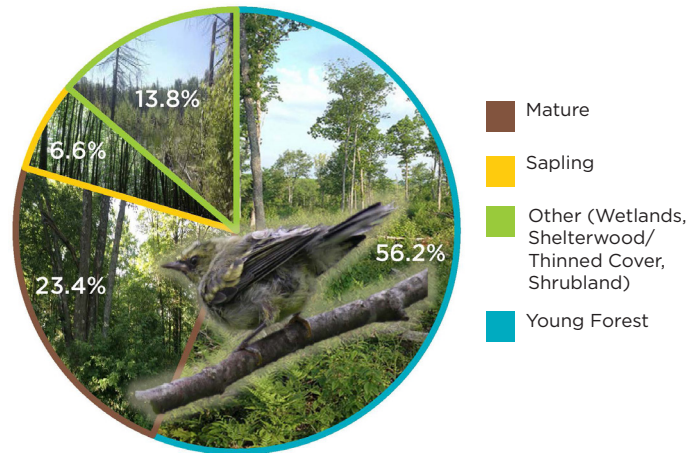
WLFW is part of the agency's broader effort to help landowners improve the health of forests. Through Farm Bill conservation programs, NRCS and its partners help landowners plan and carry out a variety of conservation practices. As part of this process, they work together on a forest management plan that will serve as a roadmap for good forest stewardship. In addition to technical assistance, programs like the Environmental Quality Incentives Program (EQIP), provide landowners with financial assistance to help cover the costs of carrying out these practices.

### **Banding Birds.**

*IUP students are among those banding and tracking golden-winged warblers. NRCS photo.*



**FIGURE 3: USE OF DIFFERENT FOREST AGE CLASSES BY GOLDEN-WINGED WARBLER FLEDGLINGS**



Through monitoring work since 2014, IUP has tracked golden-winged warbler fledglings, noting what types of forests they use after leaving the nest. Graphic by Cam Fiss, IUP.

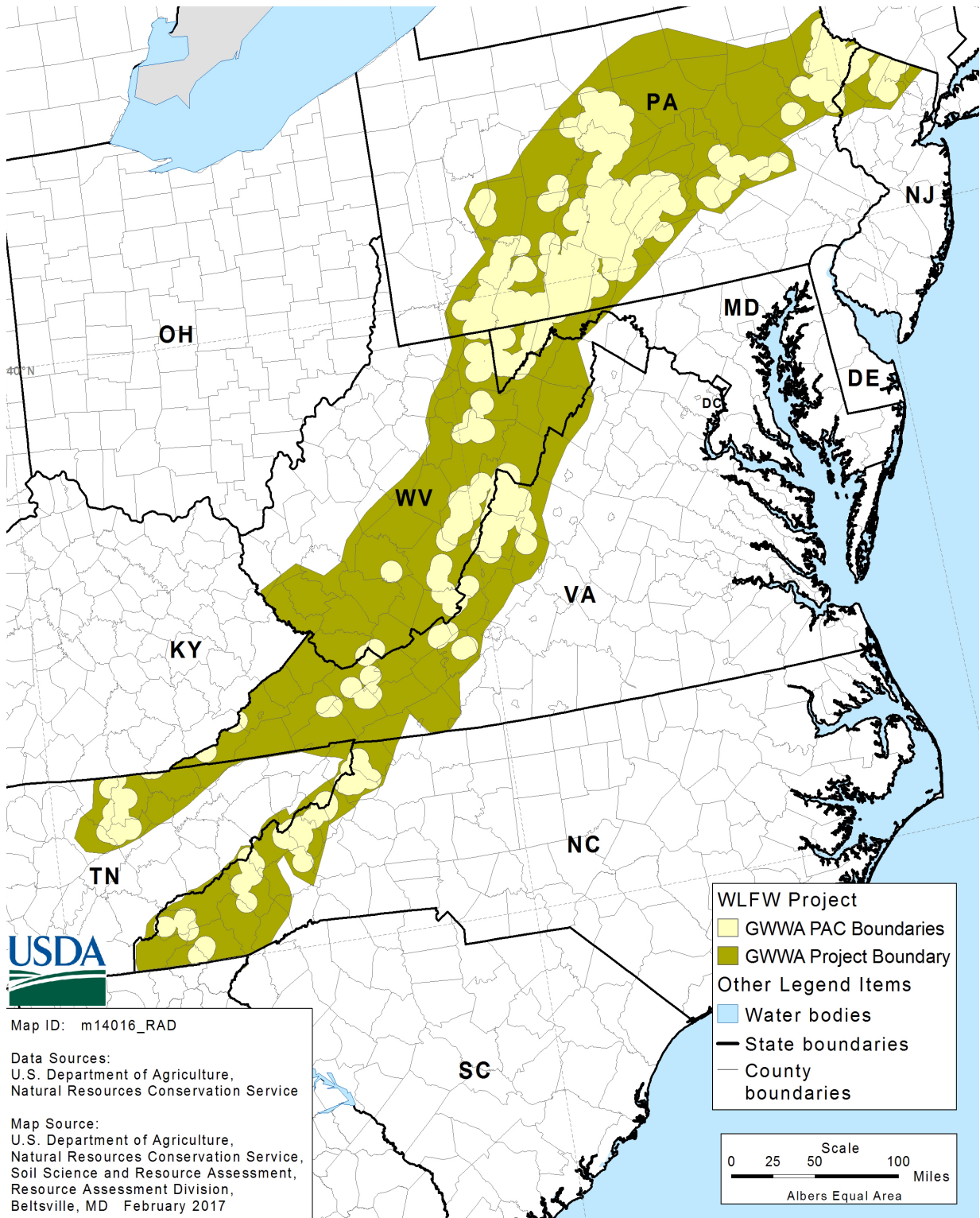
## Measuring Outcomes

One critical element of WLFW is measuring outcomes, such as forest health improvements and species responses, that result from on-the-ground conservation. Applied science projects supported by NRCS and partner universities help with reaching this objective. NRCS is funding a Conservation Effects Assessment Project (CEAP) with Indiana University of Pennsylvania (IUP) to lead a team of scientists representing several universities, state and federal agencies, and non-governmental organizations to assess the response of golden-winged warblers to NRCS practices implemented through WLFW. The first three years of this assessment (2013-2015) have demonstrated high nest success rates on lands managed with these conservation practices. The assessment also underscored the need for diverse forests with a mosaic of forest age classes to ensure success in the breeding and fledgling stages (Figure 3). Additional work is underway to build upon the initial findings and to assess benefits to other bird and wildlife species.

Additionally, NRCS released in 2016 a Science to Solutions report summarizing two peer-reviewed science articles that stress the importance of residual trees and other habitat characteristics in timber harvests targeted for golden-winged warbler nesting habitat development.

# WLFW FY17-21 CONSERVATION STRATEGY

**FIGURE 4: WLFW PROJECT BOUNDARIES AND PRIORITY AREAS FOR CONSERVATION**



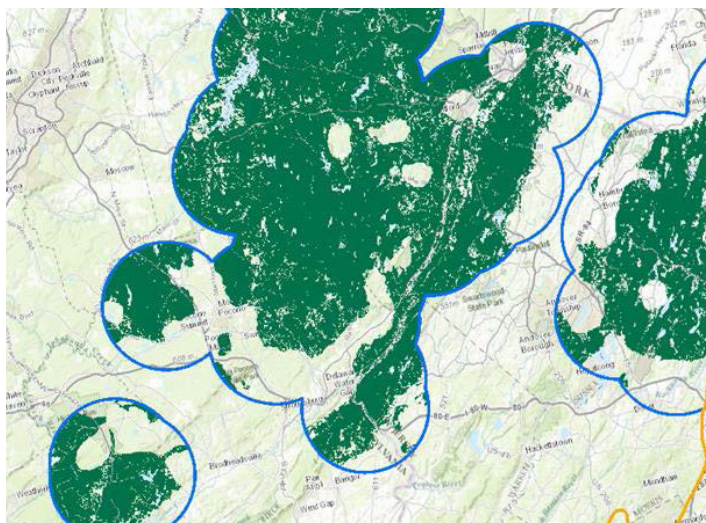
## Building a WLFW Strategy

In November 2016, about 25 private landowners and partner organization representatives joined NRCS at a forum to share insights and recommendations with NRCS staff working in Appalachia. Based on the technical and public input received, NRCS leadership in the Appalachian states developed this five-year strategy outlining approaches and milestone goals for implementing private lands projects to support breeding habitat for golden-winged warblers. At the forum, the Appalachian Conservation Region (designated by the Golden-winged Warbler Work Group) as one of two areas in the United States most critical for breeding was adopted by NRCS as the project boundary for the agency's efforts (Figure 4). Within this project boundary, the majority of projects will be implemented in Priority Areas for Conservation (PACs).

The PACs are based on golden-winged warbler occurrence data provided by state and federal agencies, Indiana University of Pennsylvania and Cornell Lab of Ornithology as well as data from the ongoing CEAP assessment. They were developed by staff from WLFW with American Bird Conservancy (ABC). Species occurrence data was combined with land cover data to focus on areas with the greatest opportunity to benefit golden-winged warblers through habitat development. The PACs are undergoing further peer review by partners, and NRCS will accept recommendations for methodology or boundary adjustments annually.



**Refining Conservation.** NRCS and conservation partners frequently hold meetings and field days to show landowners the outcomes of forest management practices. NRCS photo.



**Priority Areas for Conservation.** Land use and species occurrence data were used to develop maps of target areas for WLFW. Graphic courtesy of ABC.

## Regulatory Peace of Mind

WLFW participants receive regulatory predictability for ongoing practices implemented using specific conservation measures from their plan, so that any future potential listing of the golden-winged warbler will not affect them. This ESA predictability was secured when NRCS consulted with the USFWS in 2012, resulting in an inter-agency agreement that covers WLFW participants. The protections remain in place for up to 30 years if a landowner continues to manage their property in the same manner, regardless of whether their NRCS contract expires. Our long-term partnership goal is to reverse declines and stabilize golden-winged warbler populations so that the species never becomes listed under the ESA, and thus no regulatory protections would be needed. In the meantime, USDA participants have peace of mind that management activities on their properties will not incur additional regulation.

# WLFW FY17-21 CONSERVATION STRATEGY

## STRATEGY OVERVIEW

### GOAL

Increase the quantity and quality of golden-winged warbler breeding habitat across the Appalachian breeding range.

### LANDSCAPE THREAT

Loss and degradation of breeding habitats (i.e. healthy forests with diverse age classes, including young forest and shrubland).

### PURPOSE AND NEED

Dominant management approaches in deciduous forests have resulted in an uneven age-class distribution that is driving young forest wildlife, including the golden-winged warbler, toward steep population declines. Increasing young forest and improving habitat for forest-dependent species has the potential to stabilize and reverse wildlife declines and strengthen landowner returns and local economies.

### ADDITIONAL INFORMATION

The loss and degradation of breeding habitats is the primary threat to the golden-winged warbler being addressed by WLFW and its partners. This threat is most intense in the Appalachian Mountains, and therefore NRCS will work to create breeding habitats strategically placed across this region. NRCS has multiple overarching objectives in pursuing the actions described in this conservation strategy:

- Restoration of golden-winged warbler breeding habitats in Appalachia to reverse declining population trends, preclude ESA listing and prevent further regulation of working forests.
- Collaboration with landowners, foresters and forestry experts to design and create a sustainable working Eastern deciduous forest landscape that maximizes but balances timber production with wildlife use. Collectively for the seven states involved, NRCS aims to restore,

## MILESTONES BY STATE

STATE	FY17-21 MILESTONES
Maryland	3,125 acres
New Jersey	1,680 acres
North Carolina	600 acres
Pennsylvania	6,465 acres
Tennessee	852 acres
Virginia	1,000 acres
West Virginia	1,925 acres
<b>TOTAL</b>	<b>15,647 acres</b>

create and protect more than 15,600 acres of golden-winged warbler habitat by the end of fiscal year 2021. To address site-specific threats, NRCS is focusing on four conservation actions, detailed on the next page. With support from partners, NRCS helps landowners plan and carry out these actions, providing free technical assistance for planning plus financial help with implementation. The Environmental Quality Incentives Program (EQIP) is the main Farm Bill program that NRCS will use to assist landowners.

The remainder of this strategy outlines how NRCS will prioritize and implement these conservation actions in the seven participating states within the golden-winged warbler's breeding range in Appalachia. Each state has provided narrative to describe the conservation practices, geographic priorities and milestone goals for WLFW implementation within their boundaries.



## CONSERVATION ACTIONS

### VEGETATION MANAGEMENT

#### Site-specific Threat

Vegetation lacks beneficial shrub/tree species composition and/or structural diversity due to a lack of site management, unsustainable forest practices, over-grazing, and/or invasive exotic or undesirable vegetation over-growth.

#### Purpose and Need

Golden-winged warbler populations in Appalachia are in steep decline due to lack of young forest habitat required for successful breeding. Thousands of acres of Eastern deciduous forests are of low timber value and require restoration actions to renew their economic values.

#### Practices

- Brush Management (314 )
- Early Successional Habitat Development/Management (647)
- Herbaceous Weed Control (315)
- Forest Stand Improvement (666)
- Mulching (484)
- Prescribed Grazing (528)
- Fence (382)
- Forest Harvest Trails & Landings (655)

### VEGETATION ESTABLISHMENT

#### Site-specific Threat

Vegetative cover is lacking or inadequate to meet land stewardship objectives.

#### Purpose and Need

Appropriate vegetation is established to enhance timber and wildlife values (e.g. oak reestablishment), reduce soil erosion and control undesirable vegetation.

#### Practices

- Conservation Cover (327)
- Critical Area Planting (342)
- Tree/Shrub Site Preparation (490)
- Tree/Shrub Establishment (612)

### FIRE MANAGEMENT

#### Site-specific Threat

Fire suppression has contributed to poor forest health. Used to control larger areas with undesirable vegetation or other site management needs.

#### Purpose and Need

Prepare sites for harvesting or planting, control invasive plants and plant diseases, reduce wildfire hazards, remove slash and woody debris and improve wildlife habitat.

#### Practices

- Prescribed Burning (338)
- Firebreak (394)

### MONITORING

#### Site-specific Threat

Adaptive management of sites cannot occur without an effort to monitor the outcomes resulting from prior site management actions.

#### Purpose and Need

Provides landowners with a means to monitor cause-and-effect for management practices conducted on their properties, determine if all site objectives have been met and create a feedback loop whereby the landowner and NRCS can adapt their approaches to site management.

#### Practices

- Restoration and Management of Rare and Declining Habitats (643)
- Upland Wildlife Habitat Management (645)



**Residual Trees.** A few large and healthy deciduous trees are retained as seed trees. They also serve as song perches and foraging locations for golden-winged warblers and other songbirds. These residual trees provide hard mast like acorns, an important food for a wide variety of wildlife. Photo by Emily Bellush.

## TARGETING BY STATE

# MARYLAND

**Sustainable Forestry Practices.**  
*NRCS-recommended practices can help landowners increase the value of their forests.*



**State Objective:** Forests within the PACs in Maryland are generally of high quality but lack age-class diversity. NRCS efforts will focus on overstory removal. Some landowners may be reluctant to conduct sufficient overstory removal in mid-successional forests to benefit the golden-winged warbler due to the anticipated economic value of older, overstory oaks. Therefore, lower intensity harvests will also be used to encourage oak regeneration while meeting landowners' financial objectives. Tree planting with or without deer exclusion fence will be used in small patch plantings to increase the amount of white oaks on the landscape.

### Recommended Practices:

- Early Successional Habitat Development (647): Removing overstory.
- Forest Stand Improvement (666): Opening canopy to encourage regeneration of desirable species.
- Brush Management (314) or Tree/ Shrub Site Preparation (490): Using a herbicide to treat invasive and undesirable species in understory.
- Tree/ Shrub Establishment (612): Supplemental planting of oaks.
- Fence (382): Using fences to exclude deer.

**WLFW Targeting:** Most of the PACs (Figure 4) in Maryland are located in the Allegheny Plateau, which is mainly in Garrett County. Garrett County contains many high-quality forests dominated by red oak. Due to higher elevations, this area has the potential to provide high-quality habitat for the golden-winged warbler.

Most of the area outside of the PACs and within the larger WLFW project boundary is in the Ridge and Valley physiographic province within Allegany County. Although Allegany County has high-quality forests, much of the private forestland has been high-graded and is subject to significant pressure from invasive species. Here, a greater proportion of resources will be needed to address invasive species and prepare forestlands for eventual overstory removal. Control of invasive species is desirable prior to opening up the tree canopy to deter their spread and increase the opportunity for oak regeneration. In addition, landowners have a high level of desire to control invasive species on their forestland, so a significant portion of the expected accomplishments will be activities to improve stand conditions for future harvest as well as wildlife benefits. Where high-grade harvests have occurred, overstory removal likely will require supplemental oak plantings afterward to provide sufficient oak regeneration and survival.

**State Milestones:** As part of this strategy, NRCS aims to conserve 3,125 acres of habitat between fiscal year 2017 and 2021, bringing WLFW's total for conserving GWWA habitat in Maryland to 3,786 acres. NRCS expects to accomplish this milestone with the support of a new partner forester who will focus on WLFW and EQIP forestry practices.

## TARGETING BY STATE

# NEW JERSEY

### **Forest Stand Improvement.**

*NRCS is working with landowners to create forest openings in an even-aged stand.*



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**State Objective:** The forests of New Jersey consist primarily of 75- to 100-year-old stands composed of oak and hickory trees that regenerated after widespread clearing in the early 20th century. Given its proximity to New York City, this area of New Jersey is a desirable location for residential communities and has experienced a significant amount of development pressure during the past 40 years. To counter sprawl, a number of groups are working to preserve the remaining undeveloped areas from further fragmentation. The combination of land use changes and public support to preserve forests in the region caused a widespread cultural shift away from working forests and forest management in general. This cultural shift in land management ideals brought about at least two significant consequences for wildlife habitat management. First, young forests are virtually absent in this area of New Jersey. Right now, less than 2 percent of the state's forests are considered young forest with a continued annual projected loss that would eliminate young forests from the landscape without some intervention. Second, the forest products industry has deteriorated to such a degree that it's difficult to find logging vendors. Where vendors are available, we've found it economically viable to use wood product value to offset labor and equipment costs for wildlife projects.

NRCS in New Jersey, working in concert with its partners, has the ability through WLFW to help reverse current trends by creating more young forest on private lands, thus benefiting the golden-winged warbler and other wildlife species that depend on this habitat. In addition, NRCS conservation practices can help promote active forest management by offsetting landowner

expenses, helping projects be more economically viable and providing new forest management opportunities.

### **Recommended Practices:**

- Forest Stand Improvement (666): Creating forest openings in an even-aged stand to create young forest habitat. May also be used for other silvicultural practices or to buffer young forest habitat.
- Early Successional Habitat Development and Management (647): Creating forest openings in an even-aged stand resulting in young forest habitat.
- Brush Management (314): Removing woody invasives, and managing undesirable plant species.
- Herbaceous Weed Control (315): Managing herbaceous invasives and undesirable plant species.
- Tree and Shrub Establishment (612): Placing fences to protect natural regeneration of trees and shrubs from deer browse.
- Forest Trails and Landings (655): Providing access to forested areas planned for management or to create log landings.
- Restoration and Management of Rare and Declining Habitats (643): Monitoring the response of wildlife to completed young forest habitat projects.



**WLFW Targeting:** The PACs (Figure 4) in New Jersey are found in the northwest and north-central areas of the state and span two physiographic provinces, the Highlands Province and the Ridge and Valley Province. The PACs are primarily forested with contiguous mixed deciduous trees of a similar age class. This area of the state is situated at the intersection of two forest types — northern hardwood and oak/hickory. The region is bordered on the west by the Poconos of Pennsylvania and to the north by Sterling Forest in New York. Elevation within the PACs ranges from 200 feet to 1,800 feet.

The broader WLFW project boundary surrounds the PACs and encompasses the northwest corner of the state. While the PACs contain primarily contiguous wooded ridges, the project boundary contains much of the valley areas between the PACs. Because of flatter topography and fertile soils, the landscape is highly fragmented by human development and agriculture. Forested areas generally occur in fragmented patches dotted throughout the landscape. The project boundary contains the same physiographic provinces and forest types as the PACs. While some higher elevations occur in the southern areas of the project boundary, much of the land contained within the boundary is at elevations of 500 feet and lower.

The land within the project boundary are subject to additional stressors, such as excessive deer browse and invasive plant species. These forest stands typically are managed minimally to meet the state's farmland assessment tax laws, or are woodlots on farms that are either not well managed or managed very poorly. NRCS' objective is to promote healthy forest management practices and establish wildlife habitat.

**State Milestones:** As part of this strategy, NRCS aims to conserve 1,680 acres of habitat between fiscal year 2017 and 2021, bringing the total amount of managed habitat in New Jersey to 2,494 acres. In cooperation with conservation partners, NRCS anticipates adding five landowners a year for the next two years to WLFW with an average forest size of 15 acres, totaling 75 acres of young forest habitat being created (225 acres total). In years three through five, NRCS anticipates an addition of 10 landowner contracts with an average forest size of 15 acres, totaling 150 acres of young forest habitat being created (450 acres total).

To meet these milestones, NRCS in New Jersey is providing additional outreach, such as regularly scheduled meetings solely focused on expanding landowner and private forester outreach efforts. NRCS is collaborating with the New Jersey Forest Service and others.

The availability of logging contractors has limited these efforts. The state lacks a timber industry, and only a handful of loggers operate in the area. Additionally, regulatory timing restrictions for the federally listed Indiana bat (*Myotis sodalist*) limit forestry activities to the November to April hibernation window, which is an additional impediment to forest management geared toward timber production. NRCS and its partners are working on ways to overcome these impediments. NRCS' long-term goal (beyond this FY17-21 strategy) is to achieve a 1 percent increase in young forest habitat within the PAC. This would require an eventual increase in habitat created to between 200-300 acres annually. There is enough available private land in the state to meet and sustain such an effort if obstacles are overcome.

## TARGETING BY STATE

# NORTH CAROLINA

**Mechanical Removal.** In many cases, trees are removed mechanically to jump-start young forest growth.



**State Objective:** NRCS and its partners continue to work with western North Carolina landowners to manage for shrub and young forest habitat with an emphasis on:

- Maintenance of mid- to high-elevation sites with existing populations or those adjacent lands within one mile of known occurrences inside the PACs.
- 14** • Promoting practices that support the maintenance and enhancement of suitable habitat such as brush management, prescribed grazing, access control and upland herbaceous management while at the same time retaining the ability to use forestry practices that match landowner interests.
- Continuing to work with partners to strengthen communications and develop targeted outreach and recognition programs for landowners.
  - Maintaining a high level of post-treatment monitoring that helps evaluate project success.

### Recommended Practices:

- Brush Management (314)
- Conservation Cover (327)
- Early Successional Habitat Development/Management (647)
- Firebreak (394)
- Forest Stand Improvement (666)
- Herbaceous Weed Control (315)
- Prescribed Burning (338)
- Prescribed Grazing (528)
- Restoration and Management of Rare or Declining Habitats (643)
- Tree/ Shrub Site Preparation (490)
- Upland Wildlife Habitat Management (645)

**WFW Targeting:** NRCS in North Carolina will focus resources in PACs (Figure 4) and meet milestone goals entirely due to anticipated landowner interest.

**State Milestones:** As part of this strategy, NRCS aims to conserve 600 acres of habitat between fiscal year 2017 and 2021, bringing the total amount of conserved habitat in North Carolina to 2,498 acres.

North Carolina is fortunate to have multiple years of occurrence data, and NRCS and partners have a good sense of the state's golden-winged warbler population. It is estimated the state has 500 pairs of golden-winged warblers, and NRCS in North Carolina has a goal to grow the population to 1,000 pairs. Given this population estimate, it would take approximately 25,000 acres of habitat (nesting and adjacent forests) to support the desired number of pairs. Given partner habitat restoration activities on public and private lands, NRCS's milestone goal is to provide cost share for 600 acres on private lands at a rate of 120 acres per year for 5 years; we anticipate up to an additional 1,000 acres will be established on private lands annually through NRCS and partner technical assistance.

# PENNSYLVANIA

**Habitat Heroes.** Natalie and Ron Love are using NRCS practices to reduce invasives and improve the health of their forest. NRCS photo.



**State Objective:** In Pennsylvania, the greatest threat to the golden-winged warbler is the lack of habitat to support their entire life cycle. Unsustainable forest management practices plus land use changes have resulted in a serious lack of healthy young forest habitat. Across the landscape, forests are high-graded, with even-aged canopies of largely undesirable trees (of low economic and wildlife value). There is also considerable threat from invasive plants.

NRCS in Pennsylvania leads the region in managing young forests through WLFW. Research efforts have documented encouraging bird response to these efforts, as well as good forest response to the management actions.

## Recommended Practices:

- Forest Stand Improvement (666)
- Early Successional Habitat Development/Management (647)
- Brush Management (314)
- Herbaceous Weed Control (315)

**WLFW Targeting:** NRCS in Pennsylvania will focus all resources in PACs (Figure 4) because anticipated landowner interest there will be sufficient to meet annual goals.

**State Milestones:** As part of this strategy, NRCS aims to conserve 6,465 acres of habitat between fiscal years 2017 and 2021, bringing the total amount of conserved habitat in Pennsylvania to 13,868 acres. Pennsylvania plans to maintain a consistent effort from 2017 through 2021. NRCS in Pennsylvania anticipates being able to obligate all WLFW funds annually and implement the contracted practices through two- or three-year contracts. Due to the time lag associated with some forestry practices, such as treating invasives prior to any overstory thinning, the establishment of the full 6,465 acres of habitat may not occur until 2023 or later.



## Biodiversity in Young Forests.

IUP student Cameron Fiss holds an American redstart, a species which uses well-managed forests. NRCS photo.

## TARGETING BY STATE

# TENNESSEE

*Forest Regeneration.* Timber harvests open forests, enabling young forests to grow.



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**State Objective:** Eastern Tennessee, along the Appalachian Mountains where golden-winged warblers are known to breed, is primarily dominated by mature oak/hickory forests at elevations above 2,400 feet. In the Plateau region, this corresponds to about 1,900 feet in elevation and above. The Plateau region has some existing early successional habitat as a result of strip mining activity there. Efforts will continue over the next five years to identify sites with opportunity to increase young and mid-stage forest habitats in close proximity to occupied habitats. Most of our work will occur in mature oak/hickory hardwood mixes with closed canopies, and pastureland of mostly tall fescue — neither of which is habitat. NRCS in Tennessee aims to restore younger forests and create edge habitat and field borders around existing pasture fields.

### Recommended Practices:

- Upland Wildlife Habitat Management (645)
- Early Successional Habitat Development/Management (647)
- Brush Management (314)
- Herbaceous Weed Control (315)
- Conservation Cover (327)
- Prescribed Burning (338)
- Critical Area Planting (342)
- Fire Break (394)
- Mulching (484)
- Tree/ Shrub Site Preparation (490)
- Tree/Shrub Establishment (612)
- Forest Stand Improvement (666)

**WLFW Targeting:** Most of the PACs (Figure 4) are located in mature oak/hickory forests in closed canopy systems with very little early to mid-successional habitat suitable for golden-winged warbler nesting. The revised WLFW project boundary in Tennessee will include portions of seven additional counties to expand from the 10 counties previously targeted through WLFW. This will include the higher elevations within the new PAC and add lower elevations within the Ridge and Valley region between the Appalachian Mountains and the Cumberland Plateau. Efforts within the project boundary will focus predominately on wooded areas and neighboring pasturelands within these new counties with the potential to improve early and mid-successional habitats.

**State Milestones:** As part of this strategy, NRCS aims to conserve 852 acres of habitat between fiscal year 2017 and 2021, bringing the total amount of conserved habitat in Tennessee to 1,115 acres. During the first two years, NRCS in Tennessee will primarily focus on projects with habitat restoration plans already completed. NRCS in Tennessee is looking for ways to build capacity and working with partners to help develop habitat restoration plans.



**Golden-winged Warbler Female.** This species builds its nests on the ground in patches of dense vegetation.



# VIRGINIA

**Brush Management.** One way to manage for young forests is through the removal or reduction of woody saplings.



**State Objective:** Efforts will address the primary threat to the golden-winged warbler, loss and degradation of young forest habitat on private lands. Unsustainable forest management practices and land use changes have resulted in a serious lack of healthy young forest habitat in Virginia, and instead there is a large amount of high-graded, even-aged canopies of largely undesirable trees.

## Recommended Practices:

- Brush Management (314)
- Herbaceous Weed Control (315)
- Prescribed Grazing (528)
- Early Successional Habitat Development/ Management (647)
- Forest Stand Improvement (666)

Using the listed practices above, NRCS in Virginia and partners will primarily employ two strategies:

- **Timber Management:** Using silviculture treatments such as clearcutting, seed tree harvests, overstory removal with residuals and shelterwood harvests to provide the proper structural conditions. Timber management is expected to be the primary strategy.
- **Grazing:** Grazing management in pastures and old fields to maintain early successional conditions by reducing over-growth of woody vegetation.

**WLFW Targeting:** NRCS in Virginia will focus resources in PACs (Figure 4) and then direct remaining funds to the larger WLFW project boundary area. The project boundary outside of the PACs comprises approximately 75 percent of the total area of work. NRCS is working with partners to hire a full-time staff person for project management in Virginia.

**State Milestones:** As part of this strategy, NRCS aims to conserve 1,000 acres of habitat between fiscal year 2017 and 2021, bringing the total amount of conserved habitat in Virginia to 1,569 acres. Virginia NRCS anticipates being able to obligate all our available WLFW funds annually, and implement the contracted practices through two- or three-year contracts. Due to the time lag associated with some timber management practices (such as treating invasives prior to any overstory thinning), completion of the full acreage goal within the PACs and 775 acres within Project Boundary may not occur until 2023 or later.



**Forest Stewardship.** By using NRCS-recommended forestry practices, landowners can help wildlife while also profiting from their working forests.

## TARGETING BY STATE

# WEST VIRGINIA

**Structural Diversity.** Good habitat has trees and shrubs of different heights and composition. Photo by Kyle Aldinger.



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**State Objective:** Managing for young forests is the keystone practice within West Virginia for creating golden-winged warbler habitat. Other conservation practices listed below support the establishment of early successional habitat. In young forests, landowners can harvest timber as a financial benefit while leaving valuable seed stock for forest regrowth. Brush management, herbaceous weed control, restoration of declining habitat and forest stand improvement are used to manage the understory, control invasive species, and maintain areas before and after cuts. The remaining practices are primarily for the benefit of the landowner to meet longer-term goals for their land and do not negatively impact the target species, which will continue to use the habitat regardless of tree planting, grass planting and the piling of woody debris.

### Recommended Practices:

- Brush Management (314)
- Herbaceous Weed Control (315)
- Conservation Cover (327)
- Tree/ Shrub Site Preparation (490)
- Tree & Shrub Establishment (612)
- Restoration & Management of Rare & Declining Habitats (643)
- Early Successional Habitat (647)
- Structures for Wildlife (649)
- Forest Stand Improvement (666)

**WLFW Targeting:** NRCS in West Virginia will continue to target projects in the PACs (Figure 4) as highest priority, as well as maintain the priority elevations within the PACs, at least initially. Historically, it has been difficult to expend funds on private lands within the PAC due to the majority of the higher elevation area being located in the Monongahela National Forest and not on private lands.

NRCS in West Virginia is better poised to try to move some outreach efforts outside of PACs and expand into five counties within the project Boundary — Pendleton, Grant, Hardy, Hampshire and Mineral counties. The agency also removed the previous project elevation requirements within those counties.

**State Milestones:** As part of this strategy, NRCS aims to manage 1,925 acres of habitat between fiscal year 2017 and 2021, bringing the total amount of conserved habitat in West Virginia to 3,944 acres. By expanding some of our focus beyond the PACs to the broader project boundary, NRCS in West Virginia hopes to boost interest as well as leverage support from a current RCPP project that focuses on forest management for the cerulean warbler, another migratory songbird in decline.

Currently, the State Division of Forestry has suffered tremendous budget cuts resulting in the loss of almost 40 foresters. This has put a large strain on the development of NRCS forest management plans. NRCS is looking for ways to boost capacity and help with planning in these state.



**Working Together.** Jeff Larkin, WLFW science adviser, visits with Laura and Mike Jackson to see the progress following sustainable forestry practices on their land. NRCS photo.



**Fire and the Ax.** Prescribed fire and forest stand improvement are among the practices available to landowners to manage for young forest habitat. Photo by Ben Jones and Kaitlyn Yoder.



**Monitoring Outcomes.** By studying the bird's use of habitat, NRCS and conservation partners are able to target conservation efforts for maximum biological returns. NRCS photo.



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Photo by Matt Cimitile.

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