NRCS MARYLAND

FY13 Working Lands for Wildlife - Golden-Winged Warbler

The Golden-winged warbler (*Vermivora chrysoptera*) is a migratory songbird that is experiencing steep population declines caused by loss of early successional forests, hybridization with the Blue-winged warblers (*Vermivora cyanoptera*) which is expanding into GWW habitat, and habitat loss on the wintering grounds. Declines of 6.8% and 5.5% have been documented annually since 1966 for Pennsylvania and Maryland, respectively. Breeding GWW populations require a dense vegetation structure, often found in early successional patches within forested landscapes. At this time the GWW is neither a species listed or proposed for listing under the Endangered Species Act (ESA) nor a candidate for listing.

This document describes the Working Lands for Wildlife (WLFW) Golden-winged Warbler initiative for implementation in Maryland.

Eligible Lands in Maryland

- Lands within the focal area at elevations of 950 feet or greater
- Lands within 10 miles of the focal area in Washington County at elevations of 950 feet or greater

Application Ranking and Priority

- Highest Priority – Land in the focal area where a core practice or a supporting practice required to implement the core practice is applied on all acres
- Medium Priority
  - Land outside but within 10 miles of the focal area in Washington Co. where a core practice will be applied; or
  - Land in the focal area, but where a core practice or supporting practice required to implement the core practice is not applied on all acres
- Low Priority – Land where a core practice will not be applied

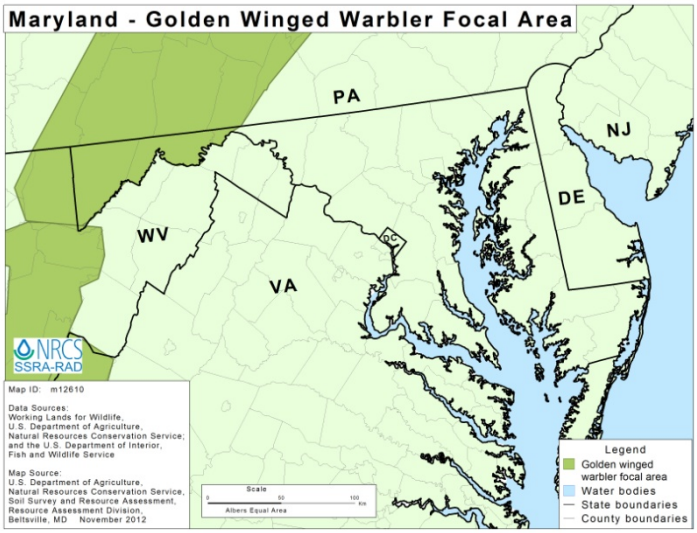

Figure 1. Golden-winged Warbler Focal Area - Maryland

Implementing Core and Facilitating Practices

- Plans must have at least one of the following core practices for GWW: Upland Wildlife Habitat Management (645), Restoration & Management of Rare & Declining Habitats (643), Wetland Wildlife Habitat Management (644) or Early Successional Habitat Development/Management (647).
- Facilitating practices may be used to facilitate implementation of the core management practices (see table 1 for list of practices)
- For each core practice, a wildlife habitat evaluation will be conducted using the GWW Wildlife Habitat Evaluation Guide (WHEG) to identify limiting factors to be removed or reduced in order of their significance. The application must achieve an "After Score" of 0.75 or better to be eligible for WLFW.
- Only core and facilitating practices are eligible for funding through the WLFW - GWW.
- Plans should result in no less than 10 acres of GWW habitat, either 10 acres of new habitat or 5 acres of existing treated and 5 acres of new habitat, or some similar combination totaling 10 acres.
- To the extent practical, management activities for GWW should not occur from April through August to minimize disturbance during the breeding season.

Conservation Practices and Measures

Described below are conservation measures associated with each NRCS conservation practice to be applied through Working Lands for Wildlife for the Golden-winged warbler (GWW) and its habitats. Specific conservation measures were developed to assure that there are no negative effects to the GWW or that such effects are minimized. Implementation of the NRCS conservation practices and their associated conservation measures described in this document for the warbler are anticipated to result in a positive population response by addressing known threats. However, implementing the conservation practice standards and associated conservation measures may also result in short-term adverse effects to individual birds in order to secure long-term benefits to the species as a whole.

Table 1. Conservation Practices Evaluated

Conservation Practice Code	Conservation Practice Name	Conservation Practice Type
643	Restoration and Management of Rare and Declining Habitats	Core Management
644	Wetland Wildlife Habitat Management	Core Management
645	Upland Wildlife Habitat Management	Core Management
647	Early Successional Habitat Development/Management	Core Management
314	Brush Management	Facilitating Vegetative
315	Herbaceous Weed Control	Facilitating Vegetative
324	Deep Tillage	Facilitating Vegetative
327	Conservation Cover	Facilitating Management
338	Prescribed Burning	Facilitating Management
342	Critical Area Planting	Facilitating Vegetative
382	Fence	Facilitating Structural
386	Field Borders	Facilitating Vegetative
394	Fire Break	Facilitating Vegetative
472	Access Control	Facilitating Management
484	Mulching	Facilitating Vegetative
490	Tree Shrub Site Preparation	Facilitating Structural
528	Prescribed Grazing	Facilitating Vegetative
612	Tree/Shrub Establishment	Facilitating Vegetative
655	Forest Harvest Trails & Landings	Facilitating Structural
666	Forest Stand Improvement	Facilitating Vegetative

Facilitating Practices and Conservation Measures

Brush Management (314)

- Whenever possible avoid during nesting season.
- Post implementation goal is patchy distribution of 30-60% tree sapling/shrub cover across the targeted work area.
- If trees are targeted for removal, maintain a minimum of 10-15 trees/acre of which no more than 4 should be conifers.

Herbaceous Weed Control (315)

- Preferably avoid during nesting season.
- Herbaceous cover in silviculturally derived habitats (from cutting trees), 5-25%; and in non-forested habitats, 10-30%. Note the grass component must not exceed 40% (of total herbaceous component. Ground cover (i.e., bare ground/leaf litter) in silviculturally derived habitats, 10-15%; and in non-forested habitats, 10-15%. In either scenario, no herbaceous patch should exceed a 20 ft x 20 ft dimension.

Deep Tillage (324)

Resource Concern: Only used in reclaimed mine sites. Tree/shrub site prep also used.
Conservation Measures:

- Follow recommendations from Appalachian Regional Reforestation Initiative – Forest Reclamation Advisory No. 7 (at www.arri.osmre.gov) for planting hardwoods (8 ft by 8 ft spacing).
- If planting, favor a lower percentage of trees and a higher percentage of shrubs.

- Contact ARRI, (see above) for assistance.
- Establish planting approximately 330 ft (100m) distance from residual (existing) forest edge. Once established along forest edge, can establish plantings into the interior of the mine site. Do not plant open areas > 330 ft from existing exterior forest edge.

Conservation Cover (327)

- Herbaceous planting should not exceed 20 x 20 ft dimension.
- Silviculturally derived management (from cutting trees): A minimum of 5-25% herbaceous ground cover; grass component not to exceed 40% (of the total herbaceous component)
- Shrubland creation/management: A minimum of 10-30% herbaceous ground cover; grass component not to exceed 40% (of the total herbaceous component).
- Grain crops such as wheat, corn, milo, millet are not appropriate and should not be planted.
- Seed mixes shall be state-certified, meeting the appropriate state certification criteria as being free of state declared noxious and invasive vegetative material, if it exists.

Prescribed Burning (338)

Resource Concern: Fire has played an important role in creating and maintaining habitat for the GWW across many parts of its range. In the absence of wildfires, prescribed burns are a likely management tool for both creating and maintaining GWW habitat, particularly in upland sites.

Potential Beneficial Effect(s): Prescribed burning is used to maintain or restore forest conditions needed for GWW. Target areas and defined objective(s) will be clearly stated with intended goals to be addressed for each client defined management unit.

Potential Adverse Effect(s): Accidental injury or mortality of nesting bird or eggs may occur if the burn is conducted during the nesting or brood-rearing seasons. In addition, a temporary reduction of cover for GWW may occur for one to three years.

Conservation Measures:

- If possible, defer implementation outside of the GWW nesting season (mid-April to July). Timing may vary by latitude.
- From: Draft: Golden-winged Warbler Status Review and Conservation Plan," 2012, Table 3-4, page 3-33. Suggested management techniques:
  - Use prescribed burning to thin excessive canopy cover of fire intolerant trees.
  - To favor high herbaceous cover with low woody cover, reduce frequency and/or intensity of burning.
  - Use late, growing season burns to promote grass and forb growth.
  - Use annual burning for 2 – 3 successive years, or until shrub cover is reduced to the desired amount. Once desired shrub cover is attained, discontinue annual burning and burn as regularly as needed.

Critical Area Planting (342)

Resource Concern: When soil erosion concern trumps habitat (e.g. a steep skid trail) for treatment.

Conservation Measures:

- Management plan should indicate that the area treated should not be managed following establishment, in order to allow (natural plant) succession to occur.
- Grain crops such as wheat, corn, milo, millet are not appropriate and should not be planted. Use annual rye (50lb/acre to facilitate natural succession.

Fence (382): Only to be used with Access Control.

Field Borders (386)

Potential Adverse Effect(s): Creating sinks due to elevated predation associated with narrow strips of habitat.

Conservation Measures:

- Field borders must be adjacent to mature forest and/or additional GWW habitat. Field borders extend into the field, not into the forest.
- Planting must be in close proximity to a forest edge and must be >125 ft wide.
- Post implementation goal is patchy distribution of 30-60% tree sapling/shrub cover across the targeted work area, with a minimum of 10-30% herbaceous ground cover, and a grass component not to exceed 40% (of the total herbaceous component).
- If use of this practice results in less than 2 acres contiguous GWW habitat, it shall not be used. It is recommended that ANY (overall) project should result in no less than 10 acres of (contiguous) GWWA habitat. It was the consensus of the

Service (FWS), NRCS, and partners team reviewing and conditioning the proposed practices that all NRCS landowner plans associated with WLFW - GWW will require no less than 10 acres of GWW habitat, either 10 acres of new habitat, or 5 acres of existing treated and 5 acres of new habitat, or a similar combination equaling 10 acres.
- When possible, use this practice in conjunction with forest management practices that will create additional GWW habitat.

Fire Break (394): If possible, avoid nesting season.

Access Control (472): No conservation measures necessary.

Mulching (484): No conservation measures necessary.
Resource Concern: Facilitating practice used in conjunction with critical area planting.

Tree Shrub Site Preparation (490)
- When doing site preparation on compacted mine soils, follow : "Appalachian Regional Reforestation Initiative – Forest Reclamation Advisory No. 7," (www.arri.osmre.gov) for planting hardwoods (8 ft by 8 ft spacing). Also see also Conservation Practice 324 above).
- When possible, avoid GWW nesting season if working on a site with existing GWW.

Prescribed Grazing (528)
- In existing GWW habitat, avoid grazing during the GWW nesting season unless it is low intensity grazing (1 animal unit per 5 to 10 acres). When using this practice to create habitat in areas currently lacking GWW, use the US Forest Service's grazing allotment criteria with GWW that allows "3-6 acres per animal unit from 15 May to 1 October".
- Prescribed grazing plans should target creation or maintenance of GWW habitat. To create high herbaceous cover but low woody cover, reduce frequency and intensity of grazing since grazing can reduce shrub density.
- Use in conjunction with stream fencing (Conservation Practices 382 or 472) to create permanently ungrazed areas which will allow for additional habitat patchiness.
- Every 2 years cease grazing completely for 1-2 years to allow vegetation to recover.

Tree/Shrub Establishment (612)
- Conifers shall not be used.
- Use native deciduous trees and shrubs. Preferred species for planting will be identified by the state biologist and results from range-wide GWW breeding range study.
- Ultimate goal is a minimum of 10-15 surviving trees per acre. If planting, factor in survival rates.
- Post implementation goal is patchy distribution of 30-60% tree sapling/shrub cover across the project area.
- Select a suite of shrubs that will enhance vertical diversity (a mix of short and tall statured shrubs).
- If possible, >50% of planted shrubs should be planted in clumps (<7 ft. apart).
- Shrub management composition target: tall woody, 7 ft at maturity, 5-25%; and short woody, <3 ft at maturity, 5-15%.
- In silviculturally derived habitats (from cutting trees) composition target: tall woody, 5-35%, and short woody, 10-30%.

Forest Harvest Trails & Landings (655)
Potential Adverse Effect(s): Landings of two acres or larger do not benefit GWW.
Conservation Measures:
- Do not mow landings. Landing should be allowed to revert to young forest with no herbaceous patches exceeding a 20 ft x 20 ft dimension.
- Restore and maintain GWW habitat on landings once their initial use has ceased and desisted.

Forest Stand Improvement (666)
Resource Concern: GWW are disturbance-dependent; stands must be re-treated on short rotations or new young stands must be created continuously over time to provide habitat.
Conservation Measures:
Reference: "Golden-winged Warbler Habitat: Best Management Practices for Forestlands in Maryland and Pennsylvania," Appalachian Mountain Joint Venture, 2011. Bakermanns, M. H. etal. (http://amjv.org/index.php/library)
- If possible, harvests should be within one mile of other habitats, such as wetlands, barrens, old fields, or other timber harvests.

- Cluster harvest patches within one mile of each other.
- Recommended minimum residual basal area is 10-40 ft^2/acre, or retain 10-15 trees per acre > 9 inches dbh. If the residual basal area is < 10 ft^2/acre, then timber harvested stand should be ≤ 10 acres in size to provide adequate edge habitat.
- Do not high grade stands by removing only highest quality trees.
- Retain a range of sizes of residual trees per acre for different residual basal areas following the recommendations in Table 2, p. 17.
- Residual coniferous component should not exceed 4 out of the 10-15 remaining stems.

Example Conservation Systems for Achieving WLFW–GWW Objectives Using FY13 Mid-Atlantic Payment Scenarios

These systems are not requirements but are only examples of how practices can be scheduled within the context of regional payment schedules to achieve WLFW-GWW objectives. Treatments may be removed and/or added depending upon objectives, needs, and participant interests.

Note about Developing Conservation Systems: A practice may not be scheduled more than once on the same land (i.e. footprint) within the lifespan of the practice. For example, Brush Management (314) has a 10 year lifespan, so it can only be scheduled once every 10 years on the same land. Practices with lifespans of 1 year are considered management practices, and may be scheduled annually for up to 3 years.

Example System 1. Objective – Develop 10 acres of early successional habitat for golden-winged warbler and associated species in existing forest with very little commercial value. Use combination of tree harvest and aerial herbicide application to prepare site and remove woody vegetation. Use Critical Area Planting to reclaim access roads and other areas disturbed during tree harvest.

Plan Date	Code	Practice Name	Scenario Name	Amount	Unit	Payment Rate	Payment Amount	Practice Lifespan
Year 1	647	Early Successional Habitat Development and Management	Wildlife opening, heavy density	10.0	Ac	987.21	9,872.10	1
	314	Brush Management	Chemical, Aerial Applied	10.0	Ac	30.85	3,085.00	1
Year 2	342	Critical Area Planting	Native Seeding – Moderate Grading	0.5	Ac	811.27	405.64	10

Example System 2. Objective – Develop 20 acres of early successional habitat for golden-winged warbler and associated species in existing forest with commercial value. Use combination of tree harvest, mechanical and chemical brush removal, and herbaceous weed control to control undesirable species and remove woody vegetation. Upland Wildlife Habitat Management – Herbaceous Hand Treatment in year 1 is used to control undesirable/invasive species (e.g. hay-scented fern). Herbaceous Weed Control scheduled in year 2 is for follow-up treatment on invasive/undesirable species. *Conservation Cover – Pollinator Habitat included to establish small plots (20' x 20') of native forbs within treated areas, if desired to enhance vegetative diversity.

Plan Date	Code	Practice Name	Scenario Name	Amount	Unit	Payment Rate	Payment Amount	Practice Lifespan
Year 1	314	Brush Management	Mechanical & Chemical, Small Shrubs, Heavy Infestation	5.0	Ac	313.32	1,566.60	10
	647	Early Successional Habitat Development and Management	Wildlife selective tree felling	20.0	Ac	368.20	7,364.00	1
	645	Upland Wildlife Habitat Management	Herbaceous Hand Treatment, Invasive or Weed Species Control	5.0	Ac	201.61	1,008.05	1
Year 2	315	Herbaceous Weed Control	Chemical, Ground	5.0	Ac	20.45	102.25	5
	327	Conservation Cover*	Pollinator Habitat*	0.1	Ac	894.11	89.41	5

Example Conservation Practice Narratives

Brush Management (314) – Noxious, invasive, and competing woody vegetation such as multi-flora rose, autumn olive, tartarian honeysuckle, and Japanese barberry will be controlled by chemical or mechanical methods.

Brush Management (314), Chemical – Noxious, invasive, and competing woody vegetation such as multi-flora rose, autumn olive, tartarian honeysuckle, and Japanese barberry will be controlled to improve young forest habitat (30-60% sapling/shrub cover). Late summer herbicide application will be favored to improve control and avoid nesting season.

Critical Area Planting (342) – Forest trails will be graded and have water bars installed as needed to minimize soil erosion. Trails will be seeded with a permanent vegetation mix of grasses and legumes. Inoculants will be added to legume seed. Tall fescue will not be used. 100 lbs. per 1,000 sq. ft. of mulch will be applied as mulch after seeding. Hay mulch containing tall fescue will not be used.

Early Successional Habitat Development and Management (647) – Young forest habitat will be created to benefit the Golden-Winged Warbler. Trees and invasive shrubs will be cut in these areas, leaving 10 to 25 trees of 10 inches diameter or greater (at breast height) per acre and leaving all non-invasive shrubs. The trees left will be evenly spaced throughout the cut area, or where sunscald or wind-throw is of concern, small islands of trees will be created within the cut area. Examples of trees that will be left are shagbark hickory, white oak, black locust, black cherry, and pin cherry. The shape of the cut area will be influenced by vegetation, soils, slope, topography, and accessibility. Where possible, the amount of edge will be increased by adjusting the shape of the cut area and/or creating feathered edges of gradual transition from cut area to mature forest. Control noxious and invasive plants. Consult NRCS for assistance in identifying trees to be retaining before beginning cutting operations. To minimize disturbance during the breeding season, when possible, management activities for GWW should not occur from April through August.

Herbaceous Weed Control (315) – Noxious, invasive, and competing herbaceous vegetation such as hay-scented fern and Japanese stiltgrass will be controlled by chemical or mechanical methods to improve young forest habitat.

Tree/Shrub Establishment (612) – Establish native hardwood trees and shrubs, as indicated on the plan map, to improve forest and forest-edge bird habitat. Trees and shrubs will be planted to create patches or islands of trees and shrubs within the young forest habitat. 300 bare root or 200 containerized tree and shrub seedlings will be planted per acre. Both tall and short shrubs species will be planted. One-half of the shrubs should be planted in clumps (6 ft. X 6 ft. spacing). Preferred trees are white oak, shagbark hickory, black locust, black cherry, and pin cherry. Conifers will not be planted.

Additional Sources of Information

Golden-winged Warbler Habitat: Best Management Practices for Forestlands in Maryland and Pennsylvania, Appalachian Mountain Joint Venture. Bakermanns, M. H. etal, 2011. Available at: (http://amjv.org/index.php/library).

Working Lands for Wildlife Wildlife Habitat Evaluation Guide for the Golden-winged Warbler – Appalachian Mountain Population. United States Department of Agriculture Natural Resources Conservation Service, August 2012.