Curtis Smalling

Best Management Practices For

Golden-winged Warbler Habitat on Grazed Forestland and Montane Pastures in the Appalachians

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This supplement for Grazed Forestland and Montane Pastures accompanies *Best Management Practices for Golden-winged Warbler Habitats in the Appalachian Region*, which includes general information that applies to all habitat types in this area. In this insert we discuss grazing practices that help meet Golden-winged Warbler habitat requirements and management strategies for maintenance or restoration of habitat where the stage of plant succession is unsuitable for breeding. Users should refer to both documents to develop a comprehensive management strategy for Golden-winged Warbler. The following are guidelines and not absolute rules for the creation of breeding habitat, thus prescriptions that fall outside the numerical ranges presented can provide habitat, too. Consult a Golden-winged Warbler or young forest habitat expert for assistance in tailoring a management plan to your property.

Many of the sites currently supporting Golden-winged Warbler in the Appalachian region are used as grazing areas for cattle (Figure 1), horses, and other grazing livestock species. With a more than two hundred year history of these practices in many areas of the region, these mid-to-high elevation, often steep slope areas can support a diverse mix of plant species like grasses, hawthorne (*Crataegus* sp.), blackberry (*Rubus* sp.), goldenrod (*Solidago* sp.), and pioneering tree species like locust (*Robinia* sp.) wild cherry (*Prunus* sp.), and maple (*Acer* sp.). This diversity coupled with varying densities and timing of grazing creates the "clumpiness" preferred by Golden-winged Warbler and other shrubland specialists. Simple changes in grazing intensity, timing, or additional practices can significantly enhance habitat suitability.

Kyle Aldinger

Figure 1. *Cattle or other grazers can be an efficient way to maintain or create habitat.*

Key Landscape Scale Requirements

- within defined focal areas or < 5 miles from known breeding populations and < 1 mile from other early successional patches (e.g., timber harvests, old fields)
- > 60% (preferably > 70%) deciduous forest cover within a 1.5-mile radius of the site, preferably < 1 mile from other early successional patches
- > 2,000 ft elevation in GA, TN, NC, KY, VA, WV, MD and > 1,300 ft in PA
- limited co-occurrence with Blue-winged Warbler

How to Manage for Golden-winged Warbler Breeding Habitat

Specific management prescriptions for Golden-winged Warbler should strive to create a complex, patchy mosaic of grasses, forbs, shrubs, saplings, a few canopy trees, and a forested edge (Figure 2). Transitional areas between dense vegetation and open areas are important for nesting and can be managed with grazing, mowing, or prescribed fire (Aldinger 2010). At the patch level, maintain less than 30% tree canopy coverage and up to 50% of area in shrubs and saplings clumps, with extensive forb and grass coverage (more than 80% of ground surface). See Appalachian BMP guide for more details.

Laura Patton

Figure 2. *Excellent Golden-winged Warbler breeding habitat with clumped shrub distribution and a prominent forest edge.*

Grazing for Habitat Maintenance

Maintaining early successional habitat with grazing is a balancing act of not overgrazing, versus not enough grazing intensity to curb the natural encroachment of canopy producing tree species. In general, if habitat has become too woody (> 30% tree canopy cover or too high stem density [see Appalachian BMP guide]), increasing grazing intensity coupled with mechanical treatments or other means is a preferred option. If the lack of woody stems and structural complexity is the issue, decreasing grazing pressure for varying periods is a simple solution.

Table 1. *Common plants associated with Golden-winged Warbler habitat. Tree species with asterisks are typically early successional.*

Trees	Shrubs and Small Trees	Grasses
white oaks (*Quercus* spp.)	hawthorn (*Crataegus* spp.)	broomsedge (*Andropogon virginicus*)
tulip poplar (*Liriodendron tulipifera*) *	elderberry (*Sambucus* spp.)	little bluestem (*Schizachyrium scoparium*)
black locust (*Robinia pseudoacacia*) *	beaked hazel (*Corylus cornuta*)	Virginia wildrye (*Elymus virginicus*)
American chestnut (*Castanea dentate*) *	viburnums (*Viburnum* spp.)	sideoats grama (*Bouteloua curtipendula*)
black cherry (*Prunus serontina*)	beautyberry (*Callicarpa americana*)	panicgrass (*Panicum* spp.)
pin cherry (*Prunus pensylvanica*) *	strawberry bush (*Euonymus americana*)	**Forbs**
flowering dogwood (*Cornus florida*) *	blackberry/raspberry (*Rubus* spp.)	partridge pea (*Chamaecrista fasciculata*)
white ash (*Fraxinus americana*)	dogwood shrubs (*Cornus* spp.)	goldenrod (*Solidago* spp.)
sugar maple (*Acer saccharum*)	smooth sumac (*Rhus glabra*)	perennial sunflowers (*Helianthus* spp.)
hickories (*Carya* spp.)	wild plum (*Prunus americana*)	tick-trefoils (*Desmodium* spp.)
American beech (*Fagus grandifolia*)	serviceberry (*Amelanchier* spp.)	Joe-pye weed (*Eupatorium fistulosum*)

Depending on pasture quality, the recommended stocking level for maintenance of habitat is around one grazing unit (brood cow and calf) per 5–10 acres during the growing season. Avoid higher densities during May – July and increase if necessary during the non-breeding season. It is also important to avoid other management techniques during the breeding season.

When using grazing to manage early successional habitats, care must be taken to manage against invasives like autumn olive and multiflora rose, and manage for native plant species suitable for Golden-winged Warbler (Table 1). A simplified decision support matrix can be used for addressing specific habitat problems (Table 2).

Table 2. *Management options to maintain and restore Golden-winged Warbler habitat on grazed lands.*

Symptom	Management Technique	Description of Technique
Excessive canopy cover	Grazing	Winter and early spring grazing (especially horses and goats) to encourage browsing or cribbing
	Timber Management	Harvest to remove canopy trees and promote shrub growth
	Prescribed Burning	Use fire to kill intolerant trees and reduce canopy cover
Shrubs too evenly distributed	Grazing	Increase density of cattle or use other species to encourage browsing
	Prescribed Burning	Conduct micro-burns to selectively remove shrubs
	Mechanical Treatment	Mow in patches to create large shrub clumps interspersed with herbaceous openings
Too little herbaceous cover	Grazing	Exclude grazers to allow for recovery of herbaceous cover
	Timber Management	Harvest canopy trees to create gaps and allow greater sun penetration
	Mechanical Treatment	Cut or mow woody cover; apply herbicide to prevent re-growth; light fall disking
	Prescribed Burning	Use late growing season burns to promote grass/forb growth and frequent (annual) burning to reduce shrub cover
Too little edge (when residual canopy trees not present)	Grazing	Exclude grazers from edge zone or site to allow shrub and edge development
	Timber Management	Create irregular patch margin through timber harvesting
	Mechanical Treatment	Mow some shrubs and small trees to create feathered edges
Too few canopy trees	Grazing	Reduce grazing intensity for extended periods of time
	Timber Management	Create feathered edge; retain select saplings and poles of desirable species as future residual trees
High herbaceous cover, but low woody cover	Grazing	Reduce grazing intensity
	Mechanical Treatment	Reduce frequency and/or intensity of mowing
	Prescribed Burning	Reduce frequency and/or intensity of burning
	Plant Desired Species	Plant woody shrubs or trees

Resources/References

- Golden-winged Warbler Status Review and Conservation Plan, **www.gwwa.org**. Each Appalachian state has working group members available for assistance.
- NRCS Working Lands for Wildlife provides technical and financial assistance to private landowners in the Appalachian region, **www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/financial/whip/?&cid=stelprdb1046975**
- Aldinger, Kyle. 2010. Playback Surveys and Breeding Habitat Characteristics of Golden-winged Warblers (*Vermivora chrysoptera*) on High-Elevation Pasturelands on the Monongahela National Forest, West Virginia. Thesis submitted to the Davis College of Agriculture, Natural Resources, and Design at West Virginia University, Morgantown.

Prepared by Curtis Smalling, Kyle Aldinger, Ron Rohrbaugh, Petra Wood, and Sara Barker Swarthout with additional information from the *Golden-winged Warbler Status Review and Conservation Plan*. **www.gwwa.org**