
Management Guidelines for the Golden-cheeked Warbler

The descriptions presented in this document are intended to help landowners determine if they have Golden-cheeked Warbler habitat on their property. Not all sites within the habitat types described will be used by Golden-cheeked Warblers. It is only where individuals of this species occupy the identified habitat types during the breeding season that special management considerations such as those provided in these guidelines need to be considered.

Private landowners have a tremendous opportunity to conserve and manage the fish and wildlife resources of Texas. The objective of these guidelines is to provide landowners with recommendations about how typically-used land management practices could be conducted so that it would be unlikely that golden-cheeked warblers would be adversely impacted. The guidelines will be updated periodically to make them more practical and useful to rural landowners. The guidelines are based on the best available information and current understanding about the biology of the warbler, but may be refined as more complete biological data are collected. TPWD biologists have prepared these guidelines in consultation with USFWS biologists to assure landowners who carry out land management practices within the guidelines that they would know, with the greatest certainty possible, that they would not be in violation of the E.S.A.

This document also provides information on land management practices that are appropriate for protection and/or enhancement of habitat. The categories were chosen to represent commonly encountered vegetation types and to address common questions regarding the effect of management practices on Golden-cheeked Warblers. In addition, suggestions are offered that promote conservation of soil, water, plant, and wildlife resources.

Habitat Descriptions

Habitat Types Where Warblers Are Expected To Occur

Woodlands with mature Ashe juniper (cedar) in a natural mix with oaks, elms, and other hardwoods, in relatively moist (mesic) areas such as steep canyons and slopes, are considered habitat types that are highly likely to be used by warblers. These areas generally will have a nearly continuous canopy cover of trees with 50 to 100 percent canopy closure. This habitat type is also important for deer, turkey, songbirds, and a variety of other wildlife due to the diversity of vegetation and topography and, in many cases, proximity to water. Woodlands of this description should be retained wherever they occur, especially along creeks and draws, and on steep slopes and generally rough terrain. Landowners with woodlands that fit the above description should assume that warblers may be using the area and are advised to follow the management guidelines presented here. Additional information regarding habitat types and their potential to support Golden-cheeked Warblers is presented in Table 1.

Habitat Types That May Be Used By Warblers

It is relatively easy to recognize the above described high quality habitat types where Golden-cheeked Warblers are likely to occur. However, there are a number of other vegetation types that may also be used by warblers, depending on the location, size of tract, land use, adjacent landscape features, and vegetation structure. These habitat types are most often used by warblers when they are located adjacent to or near areas of high quality habitat.

The four habitat types discussed below are associated with a variety of tree canopy cover, ranging from 35 to 100 percent. Although not representative of what

is typically thought of as the “best” warbler habitat, these areas may support Golden-cheeked Warblers, especially fledglings (young birds that have left the nest). These habitats may be relatively more important to warblers nesting in the western and northern portions of the species’ breeding range, or in areas where optimal habitat no longer exists. Although these habitat types may occupy a large geographic area within the Hill Country, little is known about warbler occupancy when the sites are not close to the optimal habitat types. Landowners are advised, however, to treat the following vegetation types as occupied habitat until technical assistance is obtained or a survey done to determine whether or not specific areas support warblers:

1. Stands of mature Ashe juniper (trees with shredding bark), over 10 feet in height, with scattered live oaks (at least 10% total canopy cover), where the total canopy cover of trees exceeds 35 percent.
2. Bottomlands along creeks and drainages which support at least a 35 percent canopy of deciduous trees, with mature Ashe juniper growing either in the bottom or on nearby slopes.
3. Mixed stands of post oak and/or blackjack oak with scattered mature Ashe juniper (10-30% canopy cover), where the total canopy cover of trees exceeds 35 percent.
4. Mixed stands of shin (scaly-bark) oak with scattered mature Ashe juniper (10-30% canopy cover), where the total canopy cover of trees exceeds 35 percent (See Table 1).

Table 1. Ecological site types and Range Sites with plant communities that may provide habitat for Golden-cheeked Warblers. On flat or rolling uplands, warblers are most likely to occupy larger patches of woodlands adjacent to canyon systems. Most of the flat and rolling uplands within these Range Sites have other plant communities, like open savannahs, that do not support warblers. Sites that are not used by warblers are described in the Habitat Descriptions section of this leaflet.

Site Description	Range Site	Typical Plant Communities that may support Golden-cheeked Warblers	Potential for Golden-cheeked Warblers
Slopes and canyons, and associated creek bottoms ¹	Adobe Clay Loam ² Loamy Bottomland ² Steep Adobe Steep Rocky	Continuous canopy woodland* of Ashe Juniper, Texas Oak, Live Oak, Lacey Oak, Cedar Elm, Escarpment Blackcherry, Texas Ash, Pecan, and other deciduous trees	Highly likely to be used
Flat or rolling uplands with shallow, rocky soils of variable depth ³	Adobe Low Stony Hill Shallow Very Shallow	Continuous canopy woodland* of Live Oak, Shin Oak, Vasey Oak, Cedar Elm, Hackberry, Redbud, Ashe Juniper, and other hardwood trees	Highly likely to be used
		Patchy woodlands ⁺ or interspersed mottes of mature Live Oak, Shin Oak, Ashe Juniper, and other shrubs	May be used
Flat or rolling uplands with reddish soils ⁴	Deep Redland ⁵ Gravelly Redland ⁵ Redland ⁵	Continuous canopy woodland* of Live Oak, Blackjack Oak, Post Oak, and Ashe Juniper	Highly likely to be used
		Patchy woodlands ⁺ or interspersed mottes of mature Live Oak, Blackjack Oak, Post Oak, and Ashe Juniper	May be used
Flat or rolling uplands with shallow but more continuous rocky soils over limestone ⁶	Low Stony Hill	Continuous canopy woodland* of Ashe Juniper, Live Oak, and Shin Oak	May be used
		Patchy woodlands ⁺ or interspersed mottes of mature Live Oak, Ashe Juniper, Hackberry, Cedar Elm, and Mesquite	May be used

*Defined as 50-100% canopy cover of trees at least 15 feet in height or greater.

+Defined as 35-50% canopy cover of trees at least 15 feet in height or greater.

¹Common woody plants include Ashe Juniper, Texas Oak, Live Oak, Lacey Oak, Chinkapin Oak, Cedar Elm, Escarpment Blackcherry, Texas Ash, Bigtooth Maple, Redbud, Hackberry, Texas Persimmon, Deciduous Holly, Arizona Walnut, Carolina Buckthorn, Carolina Basswood, Roughleaf Dogwood, Pecan, Sycamore, and Bald Cypress.

²Stream bottoms in and near canyon systems.

³Common woody plants include Live Oak, Shin Oak, Vasey Oak (West), Cedar Elm, Hackberry, Redbud, Ashe Juniper, Texas Persimmon, Texas Ash, Texas Oak, and Lacey Oak.

⁴Common woody plants include Live Oak, Blackjack Oak, Post Oak, Shin Oak, Lacey Oak, Texas Oak, Ashe Juniper, Cedar Elm, Hackberry, and Texas Madrone.

⁵Golden-cheeked Warblers may occur on Redland Range Sites adjacent to slope and canyon habitat. It is not known whether or not warblers occur on Redland Sites isolated from canyon systems.

⁶Common woody plants include Hackberry, Texas Persimmon, Texas Ash, Live Oak, Texas Oak, Ashe Juniper, Evergreen Sumac, Cedar Elm, and Mesquite.

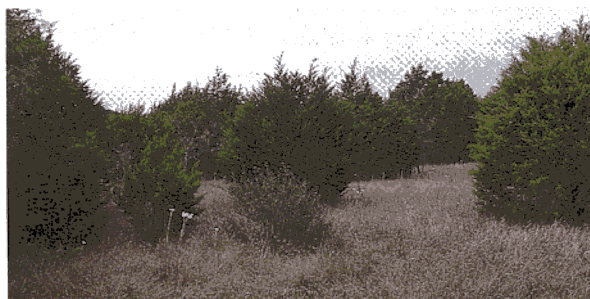
Areas Where Warblers Are Not Expected To Occur

Although junipers occur abundantly over much of the Hill Country, a relatively small portion of them are actually a part of good warbler habitat. The following types of areas are not warbler habitat and are unlikely to be used by warblers. As long as these areas are not in close (within 300 ft.) proximity to warbler habitat, neither surveys nor permits are required for activities within these areas.

1. Stands of small Ashe juniper, averaging less than 10 feet in height, are not habitat. This includes “regrowth cedar” that invades open rangelands, previously cleared areas, or old fields. These areas are often dry and relatively flat, and lack oaks and other broad-leaved trees and shrubs. Generally, areas such as those described above that have been cleared within the last 20 years are not considered habitat.
2. Pure stands of larger (greater than 10 feet in height) Ashe juniper, with few or no oaks or other hardwoods.
3. Open park-like woodlands or savannahs (even with old



Open savannah – not habitat
© Matt Wagner



Regrowth cedar – not habitat
© Matt Wagner

junipers) where canopy cover of trees is less than 35 percent. These areas often have scattered live oaks and other trees.

4. Small junipers and other trees coming up along existing fencelines.
5. Small junipers coming up under larger hardwoods where junipers have been removed in the past 20 years, unless the junipers have shredding bark.

Controlling juniper on these areas by prescribed burning, hand-cutting, or well-planned mechanical methods is often desirable to improve range condition and plant diversity, and is compatible with protection of Golden-cheeked Warbler habitat. Maintaining a 300 feet wide buffer of woodland (or woody) vegetation adjacent to and around Golden-cheeked Warbler habitat is beneficial. However, when necessary brush management and maintenance activities near habitat should not occur during the March-August nesting season to avoid disturbance of possible nesting and feeding activities. Since brush management activities can affect habitat for the Black-capped Vireo as well as the Golden-cheeked Warbler, landowners are encouraged to learn about the habitat requirements of both endangered songbirds.

It is important in wildlife management in general, and in endangered species management in particular, to consider the “big picture” with regard to how land types relate to one another. For example, when brush management practices are planned in non-habitat areas, one should consider the proximity of the area to habitat used by warblers.

Management Practices in Golden-cheeked Warbler Habitat

Disruption of the tree canopy should be avoided when planning ranch improvements or maintenance work in Golden-cheeked Warbler habitat. It is recommended that new fencelines and livestock watering facilities (pipelines, storage tanks, ponds) be planned to avoid areas of habitat whenever possible. However, narrow linear openings, such as those needed for traditional agricultural management

(fencelines, ranch roads, livestock water pipelines) will not harm Golden-cheeked Warblers. Typically, fencelines and other linear openings of about 16 feet in width are large enough to allow for maintenance, while permitting the hardwood tree canopy to grow over the gap. New developments in permanent electric fencing may enable landowners to crossfence areas of rough terrain with little or no disturbance to the tree canopy. Often, these power fences are the most cost effective way to crossfence areas of steep topography and shallow soils. Fencing and other ranch improvement work in Golden-cheeked Warbler habitat should be done during the non-nesting period (September-February).

Dozing or handcutting in habitat with closed tree canopy and steep slopes not only destroys warbler habitat, but mechanical disturbance also can create serious soil erosion problems. In addition, clearing these areas is generally not cost effective due to higher clearing costs, lower forage production potential, and grazing distribution problems associated with steep slopes. Selective removal of young “bushy” juniper less than 10 feet in height within habitat is not a problem as long as the tree canopy is not disturbed. Any selective removal of juniper within or adjacent to habitat should be done during the non-nesting period (September-February).

When mature juniper trees are abundant in the habitat, incidental removal of juniper for use as fenceposts on the ranch will have little impact on warbler habitat. The number of trees cut depends on the density of Ashe juniper in the habitat. For example, more trees could be removed from an area with a high density of juniper compared with the density of hardwoods. The idea should always be to provide a mix of juniper and hardwoods. When posting is done, trees should be selected to avoid disturbance to the tree canopy. One way to do this is to select trees with a relatively small individual canopy and scatter your tree selections over the area. Posting should

not occur in habitat during the nesting period (March-August).

In habitat areas and on rangelands immediately adjacent to habitat, it is important to manage grazing pressure by deer and livestock to prevent overbrowsing of broad-leaved shrubs and trees, and to maintain plant diversity and productivity. Controlling the number of browsing animals (deer, exotic animals, and livestock) is important to maintain hardwood seedlings and ensure eventual replacement of deciduous trees in the canopy. Range condition improvement in and adjacent to habitat areas, through proper grazing management and planned deferment, will likely prove beneficial to livestock and wildlife, including the Golden-cheeked Warbler.

Landowners with questions regarding how ranch improvements and management practices will affect habitat are advised to seek technical assistance from the Texas Parks and Wildlife Department, U.S. Natural Resources Conservation Service (formerly Soil Conservation Service), or U.S. Fish and Wildlife Service. For activities other than those described above, land managers should seek assistance from the U.S. Fish and Wildlife Service, since permits may be required.

Other Management Suggestions

Reducing Impacts From Predation and Cowbird Parasitism

Reducing the impacts of predation and nest parasitism by Brown-headed Cowbirds may be important for successful reproduction in some populations of Golden-cheeked Warblers. This may be particularly true where warblers nest near grazed land or grain crops. Research is currently underway to better understand the impacts of cowbirds on Golden-cheeked Warblers.

Planned grazing systems designed to rotate livestock away from known nesting areas during the breeding season (March-August) may be desirable to reduce cowbird impacts. Periodic rest also has important benefits for improving

range condition and productivity. Since cowbirds are attracted to easily available food sources, spilling or scattering grain should be avoided. Supplemental feeding areas should be moved frequently, located away from nesting habitat, and kept free from accumulations of waste grain.

Leaving woodland vegetation adjacent to Golden-cheeked Warbler habitat is often desirable to reduce predation and nest parasitism by Brown-headed Cowbirds. Woodland strips of 300 feet or more are preferable.

Finally, controlling cowbirds through trapping may be effective in reducing warbler nest parasitism. Mounted mobile traps, placed near watering sites as livestock are rotated through pastures, have been used successfully to reduce cowbird numbers. Contact Texas Parks and Wildlife Department or the U.S. Fish and Wildlife Service for information and assistance in implementing a cowbird control program.

Habitat Restoration

The following suggestions are offered for landowners wishing to restore or create habitat for the Golden-cheeked Warbler in areas that currently do not support warblers. One type of restorable habitat is the relatively mesic (moist) area, with a diversity of deciduous trees, where junipers have been previously removed. Allowing the reestablishment of juniper on these sites would eventually result in the mature oak-juniper woodland preferred by Golden-cheeked Warblers.

Other situations where restoring habitat may be a possibility include relatively mesic areas dominated by juniper, where heavy browsing pressure by deer or livestock has prevented the establishment of hardwood seedlings. In these areas, control of deer numbers and planned deferment from livestock grazing would promote reestablishment of broad-leaved shrubs and trees, eventually resulting in a mature juniper-oak woodland.

In mesic areas where small junipers (10 ft. or less) are dominant, small junipers could be thinned to favor faster growth of remaining trees. Thinning would encourage hardwood regeneration,

especially if some slash is left in place to provide protection for hardwood seedlings. If large junipers are dominant, several small openings per acre would encourage hardwood regeneration. These openings should be protected from browsing and left to regenerate naturally, or planted to native hardwoods. In each of these examples, the idea is to restore areas that may once have provided habitat to the natural oak-juniper woodland capable of growing on the site.

Further Guidance Concerning the ESA

Good range management practices such as proper stocking, rotational grazing, prescribed burning, periodic deferments, carefully planned brush control, and attention to plant and animal resource needs will help prevent loss of Golden-cheeked Warbler habitat. Habitat where Golden-cheeked Warblers are likely to occur should be protected from activities that alter the composition or structure of trees and shrubs, except as provided for in these guidelines. Likewise, management activities in areas that may be used by warblers should be carefully planned to avoid altering vegetation composition and structure and timed to avoid the breeding season until a survey is done to determine if warblers are using the area.

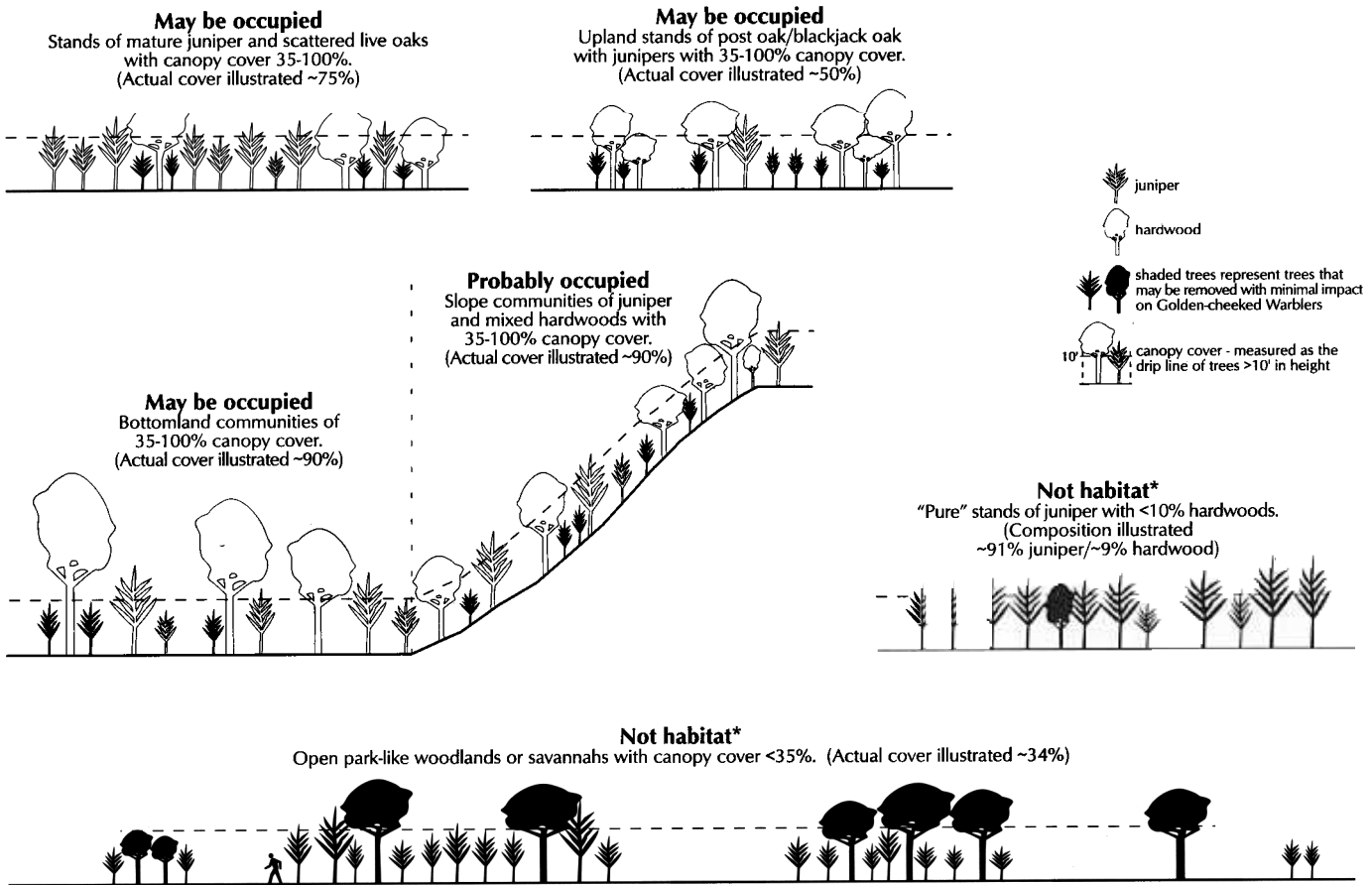
Landowners who are not sure whether or not they have suitable Golden-cheeked Warbler habitat, or whether a planned activity will affect these birds, may want to consult a biologist familiar with the species. An on-site visit by a biologist familiar with the warbler can determine if warbler habitat is present and whether the planned activity falls under the guidelines presented here. Also, a biologist who has a scientific permit from the U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department to do Golden-cheeked Warbler survey work will know how to conduct a breeding season survey (approximately March 20 to May 15) to determine if warblers are present in the area for which a management activity is planned. Finally, important habitat components such as the ratio of mature juniper to deciduous trees, and

canopy structure and height, should be retained whenever possible to enable population recovery.

Technical Assistance

Technical assistance in range and wildlife management, including management for endangered species, is available to landowners and managers by contacting the Texas Parks and Wildlife Department, U.S. Natural Resources Conservation Service, or U.S. Fish and

Wildlife Service. Additional information is available from the Texas Agricultural Extension Service. Further guidance and specific questions concerning Golden-cheeked Warbler research, endangered species management and recovery, and landowner responsibilities under the Endangered Species Act, should be directed to the Texas Parks and Wildlife Department or U.S. Fish and Wildlife Service.



*As long as these areas are not in close (within 300 feet) proximity to "probably occupied" or "may be occupied" habitat, neither surveys nor permits are required for activities within these areas.

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