

Fuel Treatments in Juniper and Oak-Juniper Woodlands throughout the Range of the Golden-cheeked Warbler

Purpose

The purpose of this document is to provide voluntary Best Management Practices (BMPs) for treating vegetation that may pose a hazardous wildfire threat and may be associated with the federally endangered golden-cheeked warbler (*Setophaga chrysoparia*)(GCWA). The BMPs were developed to help reduce the intensity of wildland fire and reduce potential impacts to the GCWA from the effects of the fuel treatment. The U.S. Fish and Wildlife Service (USFWS) has completed an intra-Service Endangered Species Act consultation on these BMPs and when followed no further consultation is required with the USFWS for impacts to GCWA. We recommend that anyone planning treatments that do not follow the specification of these BMPs, or may impact other federally listed species, should consult with the Austin Ecological Services Field Office (see contact information below). **Any treatment shall only be done during the non-breeding period (September-February).** Specifications within these BMPs do not indicate the need for a treatment nor do they allow for treatments that are not authorized by the property owner. Following these BMPs does not relieve responsibility for obtaining or complying with any local permits, codes, ordinances, or restrictions. These BMPs do not apply to hazard fuel reduction activities on lands that have been identified and protected as mitigation for the take of GCWA or GCWA habitat. Please note this document may be revised as new information becomes available. For further guidance and specific questions concerning these BMPs, please contact the Balcones Canyonlands National Wildlife Refuge (Refuge) Fire Program at (512) 339-9432, USFWS Austin Ecological Services Office at (512) 490-0057, or the Texas A&M Forest Service, Mitigation and Prevention Office at (979) 458-7362.

Overview of Golden-Cheeked Warbler Habitat Needs

The GCWA was listed as endangered by the USFWS in 1990, and Texas Parks and Wildlife Department in 1991, due to past, ongoing, and imminent habitat loss and fragmentation resulting from urban encroachment, widespread clearing of juniper as a range management practice, and other threats such as oak wilt, nest predation and parasitism, and browsing of deciduous species by white-tailed deer, goats, and various exotic ungulates. The GCWA breeds in only one location in the world, central Texas. High quality breeding habitat for these birds is characterized by mature woodlands of Ashe juniper and a mix of oaks and other broad-leaved species with a closed canopy cover (70-100%). However, GCWA may also occur in woodlands with canopy cover as low as 35%, especially in proximity to high quality habitat. Many of the closed canopy woodlands (70-100% cover) that are optimal warbler habitat have a lower risk of fire because the trees' shade limits growth of fine fuels such as grasses. Proper implementation of these BMPs can reduce the risk of fire still further, so long as the closed canopy is retained, which also minimizes (though it does not eliminate) disruption of the warblers' habitat.

How to Use the BMPs

This document outlines a progression of tasks for determining wildland fire risk and performing associated treatments to reduce wildland fire risk.

1. Have a wildland fire risk assessment completed and documented by your local fire department, Texas A&M Forest Service, or other appropriate land management office.
2. If your home is at risk, begin with improvements to the home and the landscaped area immediately adjacent to the home. Studies show the most effective treatments that reduce wildland fire risk, occur within the area immediately adjacent to a home (see Section on Home Ignition Zone)
3. If the vegetation located outside the landscaped area but within 150 feet of your home or other occupied structure requires treatment, determine if it is suitable GCWA habitat (http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_bk_w7000_0013_golden_checked_warbler_mgmt.pdf)
4. After improvements have been made to the home and adjacent landscaped areas, and if the remaining vegetation is suitable GCWA habitat, follow the BMPs in this document. If the vegetation is not suitable GCWA habitat then the BMPs are not applicable. Consult your local fire department, Texas A&M Forest Service, or other appropriate land management office for additional assistance.
5. If during the wildland fire risk assessment, vegetation adjacent (within 30 feet) to a road right-of-way has been identified as requiring treatment to protect homes or other occupied structures, determine if it is suitable GCWA habitat. If it is, follow the BMPs for an Edge Zone Treatment. **Treatments along road right-of-ways may only occur within the first 30 feet of vegetation.**
6. In order to be covered under these BMPs for potential impacts to GCWA, a report must be submitted to the Refuge Fire Program within 10 days of the completion of any treatments. The report must include at a minimum; 1) an estimate of the acreage of habitat impacted, 2) a copy of the wildland fire risk assessment, 3) a map depicting the exact locations of any treatment areas, and 4) a description of the types of treatments (closed canopy or open woodland) that were completed. Reports must be submitted to: Fire Program, Balcones Canyonlands NWR, 24518 FM 1431, Marble Falls, Texas 78654.

Risk Assessments

Before beginning any hazardous fuel treatment in GCWA habitat, an assessment of wildland fire risk must be completed. A wildland fire risk assessment provides an appraisal of hazards to your home. This risk assessment focuses primarily on two levels of concern: (1) your home and the landscaped area immediately adjacent to your home, and (2) wildland fuels located beyond the landscaped area extending outward to approximately 150 feet. Your home's risk from wildland fire should be evaluated using Firewise standards, which will determine the vulnerability based

on a number of factors including; building materials and condition, location of the home on the property, wildland vegetation that is close and adjacent to buildings, terrain, and risks to outbuildings. The risk assessment should also determine if there is a risk to your home from vegetation that occurs adjacent to any roads in the area. Contact your local fire department, Texas A&M Forest Service, or other appropriate land management office for further guidance and assistance on risk assessments.

Home Ignition Zone

The Home Ignition Zone, as described by Firewise standards, includes a house and its immediate surroundings (within 150 feet) or to the property boundary or lot line, whichever is nearer. The condition of the Home Ignition Zone principally determines the potential for home ignitions during a wildfire. A house burns because of its interrelationship with everything in its surrounding Home Ignition Zone. To minimize the chance of a home ignition, the homeowner should eliminate a wildfire's potential relationship with his/her house. This can be accomplished by interrupting the natural path a fire takes. Flammable items such as dead vegetation should be removed from the area immediately around the house to prevent flames from contacting it. Also, reducing the amount of live vegetation will affect the intensity of the wildfire as it enters the home ignition zone, possibly reducing the intensity. For more information on the home ignition zone visit: <http://www.firewise.org>

Modifications within the home ignition zone are proven to be the most effective treatment to reduce wildland fire risk. Treatments within the Home Ignition Zone that are within a regularly irrigated and maintained landscape are addressed under these BMPs.

General BMP Objectives

1. Reduce the chance of a surface fire transitioning into a crown fire by providing a shaded (closed canopy) fuel break.
 - 1.1. Maintain or promote a shaded canopy to keep grass from growing. Leaf litter and duff that accumulate from a closed canopy woodland burn with less intensity than grass. Therefore, it is important not to remove trees; rather they should be pruned to facilitate further closure of the canopy.
 - 1.2. Remove small junipers and live oak in the understory to reduce “ladder fuels.” Ladder fuels are those fuels that increase the chance that a surface fire will transition into a crown fire (i.e. they provide vertical continuity).
 - 1.3. Remove dead vegetative material (branches, stumps, landscape debris, trash, etc.). These materials are a significant threat and act as ladder fuels.
 - 1.4. Raise the canopy base height of taller trees by removing lower limbs. Increasing the height to the lowest limb of a tree reduces the chance that a surface fire will ignite lower limbs and initiate a crown fire.
 - 1.5. Seal all wounds on oaks, including stumps and cuts resulting from pruning, to prevent transmission of the oak wilt fungus.
2. Reduce the chance of a crown fire sustaining in the canopy.
 - 2.1. Thin woodlands by removing juniper and live oak where these trees are competing for the same canopy space as deciduous hardwood trees. Deciduous hardwood trees have

less canopy bulk density and are less likely to sustain crown fire as compared to juniper and live oak. The percent canopy cover should be the same before and after treatment.

- 2.2. In areas consisting of mostly juniper, thin subdominant junipers. Removing juniper in the understory will reduce canopy bulk density and increase canopy base height that would otherwise contribute to a sustained crown fire.
- 2.3. In areas consisting of mostly juniper, thin juniper in the over-story where trees or branches overlap, while maintaining full canopy closure. Promoting fewer, but larger and taller trees will reduce canopy bulk density near the ground reducing the likelihood of a sustained crown fire.

Best Management Practices

The intent of the BMPs is to offer guidance on how to modify vegetation that poses a potential fire hazard to private property. The strategies and specifications for hazardous fuel reduction treatments are intended to reduce the likelihood of tree crown fire initiation and the sustained spread of fire through the tree crown. To reduce the likelihood that a fire occurring on the surface would transition into the tree canopy (crown fire initiation), the surface fire intensity must be reduced, ladder fuels removed, and the height to the lowest part of the canopy (canopy base height), must be increased. The concept here is to provide a shaded fuel break where ladder fuels are reduced and shade from the remaining canopy prohibits grasses (fine fuels) from growing, thereby reducing the intensity of a wildfire. As such, it is very important to maintain full canopy closure. To reduce the spread of fire through the tree crown, the amount of fuel in the tree canopy (canopy bulk density) must be reduced through a very specific tree thinning and removal process. Determining the location of a treatment is critical. Treatments that are not located and implemented correctly and/or do not follow these BMPs can be ineffective and possibly increase the fire risk. Protecting stubs, stumps, and other wounds on oaks from the oak wilt fungus is also critical; introducing oak wilt will cause the death of many trees, which then become fuel. Some locations where treatments are most effective are at the edge of woodlands, along travel corridors, and at the edge of landscaped yards. Locations of necessary treatments should be identified during the risk assessment and should be used only after other mitigation measures, including modifications to your home and landscaping, have been completed. **Any treatment to GCWA habitat shall only be done during the non-breeding period (September-February).**

Precautionary Information

Importance of Canopy Closure – The importance of maintaining canopy closure is to; 1) prohibit grasses from growing thus reducing the intensity of a wildfire, and 2) preserve GCWA habitat.

Oak wilt – Caused by the fungus *Ceratocystis fagacearum*, it is the most destructive disease affecting live oaks and red oaks in Central Texas. Use care to prevent the spread of oak wilt during implementation of the hazardous fuels treatments. For more information visit: <http://texasoakwilt.org/2011/pruning-guidelines-for-prevention-of-oak-wilt-in-texas/>

Habitat Damage – It is the intent of this document to minimize impacts to the GCWA and its associated habitat. Before removing or pruning a tree, based on the specifications within this document, consider the tree's current and future contribution to the suitability of GCWA habitat.

Safety – Treatment specifications can be altered in coordination with the Refuge for areas that are unsafe to treat because of topography or other factors.

Fuel Reduction Specifications

All treatments described below for Closed Canopy Woodlands and Open Woodlands are applicable only to; 1) The vegetation within 150 feet of your home or other occupied structure, and 2) The vegetation within 30 feet of a road right-of-way.

Closed Canopy Woodland – If the vegetation is a closed canopy woodland the following specifications should be followed. A closed canopy woodland for this purpose is defined as a woodland where canopy closure **is sufficient to limit growth of tall grass to less than 50% of the ground cover**. Typically such areas exceed 70% canopy cover and are associated with high quality GCWA habitat. The beginning of the Edge Zone is defined as the line where continuous grass and other herbaceous ground cover ends. If the woodland is narrow, then an Edge Zone treatment should be completed at the perimeter of the closed canopy woodland and the remainder of the woodland treated with Interior Zone specifications as needed.

Edge Zone Treatment, 0-30 feet:

- Remove all dead wood, dead limbs, and dead vegetation.
- For junipers and live oaks, remove (prune) low branches on which all live foliage is within 6 feet of the ground. Do not remove any branch that has foliage above 6 feet (i.e. contributing to canopy layer). Do not prune or remove deciduous hardwood trees.
- Shrubs and small trees less than 4 inches in diameter and less than 10 feet in height should be removed unless, with continued growth, they are likely to close a canopy gap; otherwise prune as specified. Seal all wounds on oaks, including stumps, to prevent transmission of the oak wilt fungus.

Interior Zone Treatment, 30-150 feet:

- Remove fallen trees and dead branches that create ladder fuels to a height of 4 feet. Any dead trees or branches above four feet that are considered ladder fuels should also be removed. For any standing dead trees, remove branches within 10 feet of the ground. Fallen tree trunks and standing snags (without small branches) are acceptable to leave in place.
- For junipers and live oaks, remove (prune) low branches on which all live foliage is within 4 feet of the ground. Do not remove any branch that has foliage above 4 feet (i.e. contributing to canopy layer). Do not prune or remove deciduous hardwood trees. Seal all wounds on oaks, including stumps, to prevent transmission of the oak wilt fungus.
- Thin juniper and live oak trees less than 4 inches in diameter, but maintain dominant (larger) tree canopy cover. Thinning should involve removing the whole tree and not pruning the tree. Focus on trees in the understory and mid-story first. Trees should only be thinned if the thinning does not result in a reduction in canopy cover or spacing of more than 16 feet between remaining tree trunks. Thinning more than this will also negatively impact the habitat needs of the GCWA and will have the potential to increase surface vegetation which will increase the chance of crown fire initiation.

- Thin large diameter juniper trees or branches from multi-stemmed trees, greater than 4 inches, if they overlap and do not contribute to the canopy. These trees and branches are usually identified as leaning in one direction into small openings in the canopy.

Open Woodland – If the vegetation is characteristic of an open woodland or there are open woodlands leading into closed woodlands, the following should apply. An open woodland for this purpose is defined as a woodland where the **lack of canopy closure allows tall grass to cover more than 50% of the ground.**

All Treatments:

- Trees should be pruned to a height of 8 feet. Seal all wounds on oaks to prevent transmission of the oak wilt fungus.
- Tree canopy spacing can touch but not overlap.
- Shrubs need to be removed from within 10 feet of the canopy of a tree.
- Grass needs to be removed from within 10 feet of the canopy of a tree or kept in a mowed or grazed condition.

Debris Removal

The debris or slash created from the treatments will create an increased fire risk. The debris must be removed and not allowed to accumulate through the duration of the treatment. If the slash cannot be removed through one of the listed options, the treatment should not be implemented. Options for removal of the slash, listed in order of preference, are as follows:

- Remove all slash from the treatment site.
- Chip all slash on site and leave the remaining chips in piles not to exceed 6 feet in diameter and 3 feet in height.
- Chip all slash on site and leave the remaining chips in contour rows not exceeding 1 foot wide and 1 foot in height.