



## Managing Brush Near Rio Grande Wild Turkey Roosts



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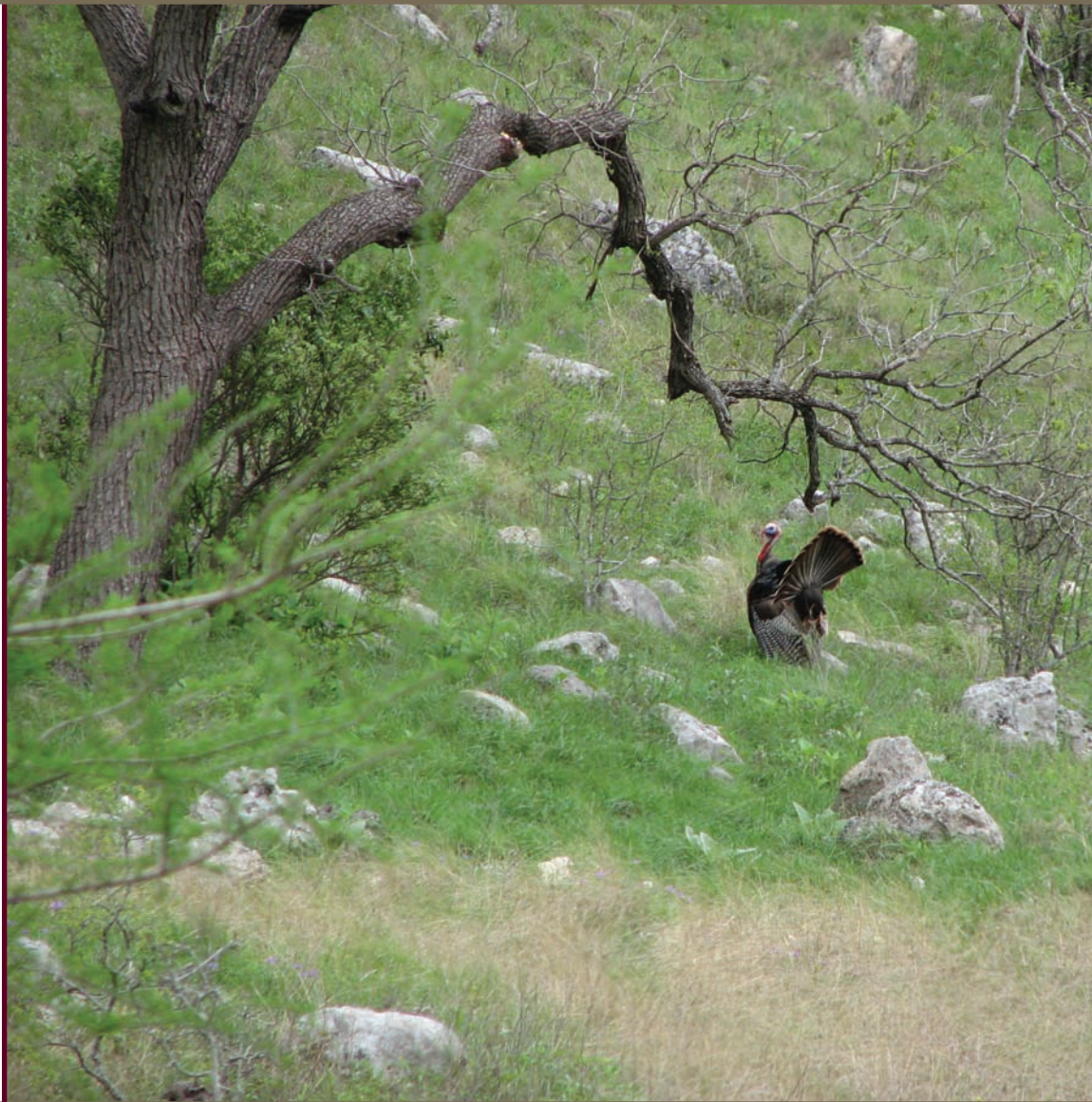
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## ACKNOWLEDGEMENTS

We would like to thank Texas Parks and Wildlife Department, Upland Game Bird Program for providing funding for this resource. Photographs were provided by Jason Hardin and James R. Cathey. We thank Mike McMurry (Texas Department of Agriculture) and Scott P. Lerich and Gene Miller (National Wild Turkey Federation) for editorial review of this manuscript.

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Of the 3 subspecies of wild turkeys in Texas, the Rio Grande wild turkey (*Meleagris gallopavo intermedia*; RGWT) is the most numerous and has the widest range. Since the 1970s, Texas Parks and Wildlife Department has documented a steady decline in some populations of RGWTs, particularly in the Edwards Plateau or Texas Hill Country. Specific causes are unknown, but it is thought that poor nest success and poult survival associated with changes in vegetation structure are limiting factors. Fragmentation of large landholdings into smaller parcels of property and changes in land use are also likely factors contributing to RGWT declines. Brush encroachment near and under roost sites is believed to have a negative effect on RGWTs, and it is thought that dense understory brush may degrade roost site quality.

**Table 1.** Rio Grande wild turkeys use several species of trees for roosting depending on the region.

American elm  
Bald cypress  
Black willow  
Blackjack oak  
Cedar elm  
Eastern cottonwood  
Emory oak  
Hackberry  
Honey mesquite  
Juniper  
Live oak  
Netleaf hackberry  
Pecan  
Plains cottonwood  
Post oak  
Sugar hackberry  
Sycamore  
Texas oak  
Texas walnut  
Western soapberry

Rio Grande wild turkeys are social animals roosting in flocks that can sometimes exceed 100 individuals during winter months. Roosts serve many functions including predator detection and avoidance, thermal regulation, and a place to create social structure within the flock. Protection and/or improvement of roost sites may be critical to RGWT persistence over time.

Roost site quality can be determined by tree height, canopy cover, and degree of brush encroachment. Not all trees offer the same roost site value and RGWTs are particular in choosing roost sites. Roosting areas should consist of at least 10–15 acres (Swearingen 2007). In south Texas, Haucke (1975) found the average height of a roost tree was 43.3 ft and the average diameter at breast height (dbh) was 24.6 inches. In the Trans-Pecos, Perlichek (2005) found turkeys using an average tree height and dbh of 44.6 feet and 22.7 inches, respectively. In these studies turkeys preferred taller roost trees with a greater diameter than non-roost trees. Studies have suggested canopy cover is greater at roosts sites than in surrounding areas (Haucke 1975, Phillips 2010 unpublished data). Haucke (1975) concluded larger canopies appear to produce more horizontal branches and were therefore more desirable as roost trees (Figure 1). Due to the wide range of habitats that RGWTs occupy, preferred tree species vary among regions (Table 1).

Few landowners actively manage roost sites required by RGWTs throughout the year; however, the quantity and quality of roosting sites could be a limiting factor for sustained populations (Boeker and Scott 1969, Healy 1992). Some wildlife managers believe disturbance around roosts may cause turkeys to abandon the site, while others recognize increasing brush density may compromise the roost and cause abandonment. Neither theory has been well studied, but wildlife management calls for active conservation practices to be applied to the landscape under specific prescriptions and timelines. Currently, regeneration of quality roost trees may be hampered by excessive browsing by native and exotic wildlife, making it all the more important to maintain or enhance existing roosts. Approach roost management thoughtfully and perhaps incrementally to ensure that RGWTs will thrive on your piece of Texas.

## Brush Management at Turkey Roosts

Given the length of time it takes for trees to grow to desirable size, and scarcity of suitable roosts in the South Texas Plains and the High Plains regions, it is imperative to protect roost trees. Brush management should be considered to maintain quality RGWT roost trees. Dense understory provides fuel for fires and brush structure may serve as a ladder for flames to reach and destroy a tree's canopy. Reducing brush





**Figure 1.** A large cottonwood tree makes an excellent roost site, given its height, broad crown, and many horizontal branches (photo provided by Jason Hardin).



**Figure 2.** Encroachment of brush species like tasajillo, juniper, and mesquite, may limit access to roost trees. Notice that five wild turkeys are present in the photo. Three are heavily screened by brush in the center of the picture. (photo provided by James R. Cathey).

**Table 2.** Some woody species can be invasive, and given their presence in high density, they can hamper the ability of Rio Grande wild turkeys to detect and avoid predators near roost sites. Common problem woody species are listed below.

Agarito  
Blueberry juniper  
Eastern red cedar  
Greenbriar  
Huisache  
Lotebush  
Mesquite  
Prickly pear  
Redberry juniper  
Russian olive  
Salt cedar  
Shin oak  
Tasajillo  
Whitebrush  
Yaupon

will decrease the risk of losing a roost tree to fire. Additionally, thick brush may provide concealment for predators and offer easier access for climbing into roost trees (Figure 2). Rio Grande wild turkeys prefer an open understory beneath the roost and nearby clearing(s) in close proximity for landing when leaving the roost (Haucke 1975). Turkeys also use these open areas to detect and avoid predators (Perlichek, et al. 2009) when traveling to and from roosts. Managers should think of open areas within 100 yards from roost trees as launching and landing pads for turkeys while ascending or descending from roosts. Having more than one open area will make it more difficult for predators to pattern and kill turkeys as they perform these predictable daily movements.

There are three critical factors when managing the understory of roost trees and open areas in close proximity to roosts: (1) timing of the treatment, (2) density of encroaching brush species [Table 2], and (3) type(s) of treatment (mechanical, chemical, or a combination of mechanical and chemical). Frequent human activity around a roost site may disturb the flock and cause RGWTs to abandon the roost location. Therefore, brush treatment should be conducted after turkeys leave their winter roosts during the nesting season (late spring and summer months; Table 3.) Further, human activity should only take place during midday when wild turkeys are away from the roost foraging. For most woody species, management around turkey roost sites will involve Individual Plant Treatment (IPT), which will be the safest for roost trees and the most effective means of controlling unwanted brush. When managing brush for RGWTs, consider both the encroaching brush under roost trees and maintenance or creation of open areas near roost trees for launching and landing sites.

**Table 3.** Rio Grande wild turkey nest over several months. Condition of the habitat and timing of spring green-up will likely influence the nesting interval throughout the RGWT's broad range. It is important to know general nesting intervals and monitor local conditions to discern the timing and implementation of brush management.

Reference	Nesting Interval	Region of State
Cook 1972	February-August	Edwards Plateau
Melton (unpublished data)	April-July	Edwards Plateau
Hohensee and Wallace 2001	March-August	Rolling Plains
Huffman 2005	April-July	Rolling Plains
Bailey and Rinell 1967	April-June	South Texas Plains
Beasom 1973	April-August	South Texas Plains

## ISSUE

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## Brush Encroachment Under Roost Trees

### Mechanical Treatments

Mechanical treatments typically include shredding with a mower/shredder or IPT using a chain saw or hand-held shears. Choosing which technique to use among these options will depend on brush species, density (stems/acre), and size (dbh). Benefits of mechanical treatments include instant results from the operation and there is little chance of adverse effects on desirable roost trees. Plants severed by hand, however, will need to be removed from the site. Consider removing only 25–50% of the encroaching brush, and assess how turkeys respond to the treatment. If turkeys show little or no reaction to treatment after returning to the roost, then remove another 25–50% of encroaching brush the following year. Remember, mechanical treatments rarely, if ever, actually kill woody species. Thus, depending on the species and its particular re-growth pattern, frequent re-treatments (1–3-year intervals) will be required.

### Chemical Treatments

Chemical treatment is a cost-effective method for controlling unwanted woody species degrading RGWT roost sites. There are two IPT treatment strategies to be considered; stem treatment and cut-stump treatment. The decision regarding which strategy to use depends on whether one wishes to open the understory over time or open the understory immediately by the cut-stump treatment and top removal. If there is concern disturbance might cause turkeys to abandon their roosts, stem treatments would be the better choice, as it can be done quietly and brush species die over 12–18 months, giving an appearance that mimics natural plant mortality. Using the cut-stump and top removal method would open the area right away and be more obvious. There is no evidence that this strategy will disturb wild turkeys. As a precaution, however, consider using the same 25–50% treatment the first year, with another 25–50% treated the following year, as was suggested for the mechanical treatments.

### Stem Treatment

The stem treatment method uses a 15–25% mixture of triclopyr in diesel. Apply the mixture to the lower 12–18 inches of any smooth bark plant. The 25% mix should be used on rough, corky bark of more



Use spot soil treatment only to maintain or create open



areas near roost trees. Do not, use spot soil treatment on brush under roost trees. This will kill valuable roost trees. Beware that hexazinone (trade name Velpar) is not selective and will destroy any woody species. Likewise, tebuthiuron pellets (trade name Spike) are non-selective and will kill valuable roost trees. It is also mobile in soil through leaching and should not be used within three drip lines of the roost tree canopy.



mature plants. This treatment may be made at any time of year unless there is frozen ground or standing water. Remember, however, to avoid roost disturbance—the best time is midday, during late spring and summer months when winter roosts are being used by fewer turkeys. Due to the lack of residual soil activity, the use of triclopyr-diesel as a stem treatment is a highly selective method for controlling woody species and an extremely safe treatment for non-target species in the immediate vicinity. This treatment method is most useful when there are only one or two stems per plant or when plants are >8 feet in height. Anticipate plant mortality in 12–18 months as the chemical is working its way to the root zone. After this time period, top removal (if desired) may be conducted, but cutting and removal too early may preclude a true kill and encourage re-sprouting.

### **Cut-stump Treatment**

Using the cut-stump treatment, woody species are severed close to the soil surface to minimize tripping or vehicle hazards, and the fresh cut stem surface is immediately and thoroughly wetted using a combination of 20–25% trichlopyr in diesel. Apply enough herbicide to thoroughly wet the freshly cut surface, especially the edges of the stump. This treatment may be applied at any time of the year as long as standing water or snow does not interfere with treatment. Again, remember to avoid roost disturbance, and consider treatment only at midday, during late spring and summer months, when winter roosts are being used by fewer turkeys. As with mechanical treatments, brush severed by hand will need to be removed to another location.





### Mechanical Treatments

To maintain or create open areas (launching and landing pads) near roosts, use mechanical or chemical treatments to provide open spaces of 0.5–1.0 acres. The area should be similar in size to half a football field (0.65 ac), or a bit larger. Consider having two open areas, placed about 100 yards from the roost tree on both the northern and southern sides of the trees. This will allow RGWTs to take advantage of the prevailing winds during flight, and avoid looking directly into the rising or setting sun. Timing of treatment should be as described above and options using hand shears, hydraulic shears mounted on a bobcat, mowing, or grubbing should be matched to the density of prevailing brush.

### Chemical Treatments

As noted above, chemical treatment is a cost-effective method for controlling unwanted woody species degrading RGWT open areas near roost sites. There are several IPT treatment strategies to be considered. These strategies include: stem and cut-stump treatments, high volume foliar spray, and spot soil treatment. Stem and cut stump treatments should follow the same guidelines as shown above.

High volume foliar spray usually requires 1% total concentration of an herbicide or combination of herbicides, depending on the target species and 0.25% non-ionic surfactant with at least 90% active ingredient in water. Herbicide is applied to all foliage to the point that leaves glisten, but not to the point that herbicide runs off. Timing of application is during the late spring/early summer when growing conditions are good and foliage has turned dark green. This treatment method is most useful when there are multiple stems per plant and when plants are <8 feet in height. Be aware of wind speed and direction to reduce herbicide drift and safeguard against unintended damage to roost trees.

### Spot Treatment Delivery Gun

Depending on the size of the target species, a number of “spot” applications of the herbicide are applied directly to the soil surface midway between the base of the plant and the canopy edge. Hexazinone



does not require a license to purchase and treatment should be applied during good growing conditions. As an alternative, tebuthiuron pellets may also be used to control woody species. Tebuthiuron works best on sandy-textured soils. Beware that both hexazinone and tebuthiuron are *not selective* and will destroy *any* woody species. An additional concern associated with the stem treatment, high-volume foliar, or spot soil treatment strategies include the need to wait at least 12 months prior to removal of the treated species. During this interval, the herbicide is working its way to the root zone and early top removal again may preclude a true kill and encourage re-sprouting.

## Brush Management Resources

A good resource for land managers can be found on Texas AgriLife Extension Service's web-site Pestman ([pestman.tamu.edu](http://pestman.tamu.edu)). It provides expert treatment options for invasive brush and weed species. Simply input information such as, plant name, stem diameter, plants per acre, state and county, and Pestman calculates best mechanical and chemical treatments for the specific problem. Pestman also provides anticipated effectiveness, labor hours/100 plants, cost/acres, and list any caveats of the treatment. Another valuable resource for obtaining woody species chemical control information comes from the Texas AgriLife Extension Service Publication B-1466, Chemical Weed and Brush Control.



**PESTMAN**

Plant Name  [See the Plant](#)

Stem Diameter (in)  State

Plants per Acre  County

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Figure 3. Pestman Website



## Final Thoughts

Rio Grande wild turkey populations face many challenges and brush encroachment is one that can be resolved through management. It is difficult to understand all things important to wild turkeys, but it is thought that brush choked properties have lost their usefulness to wild turkeys forcing birds elsewhere or leading to population declines. To gain perspective from a turkey's point of view, get on your hands and knees and look in all directions. Repeat this activity from different angles as you approach a potential roost tree during twilight. If you cannot see more than 15 yards in all directions, then consider yourself the meal of a stealthy predator. Similarly, think of yourself in the canopy of a roost tree and with a bird's eye view look for a suitable place to land and begin the day. Aerial photography can be useful to help identify these important open areas near roost trees. If there are no open areas near roost trees, then there is little value in the site for wild turkeys.

Some may have concern about causing roost abandonment due to disturbance, but using management prescriptions outline here abandonment risk should be minimized. We offer these techniques as options to improve roosting sites, which are essential habitat components in the lives of wild turkeys.



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