



Grazing, Hunting, and Endangered Species
Management are Compatible Practices:
Diversifying Income Through a
Multi-species Approach



Photo by Michael Male (Wikimedia Commons)

The Black-capped Vireo (*Vireo atricapilla*) is a small endangered bird found throughout the Edwards Plateau and eastern Trans-Pecos regions of Texas. Cowbird parasitism and habitat loss are primary threats to the species.



An important component of managing for white-tailed deer is brush (woody plants) management, given that leaves and buds, collectively called browse, are more reliable food sources throughout the year. (Photo by Guy J. Sagi, Shutterstock)

How Can Multi-species Management Benefit Texas Landowners?

Texas has experienced severe drought events, massive wildfires, water quantity and quality issues, and a substantial conversion of rural lands to other uses, all of which have affected how landowners manage farms and ranches for crops, timber, livestock, and wildlife. Mixing livestock and game species management has been the focal point for many people, but endangered species listings further compound management challenges by placing restrictions on what private landowners can and cannot do with habitat for these species that may be present on their land. With over 100 species currently being considered for listing in Texas under the Endangered Species Act (ESA), it is imperative landowners become increasingly aware of issues related to rare species. Many people are unaware that managing for game species is often good management for endangered or rare species. The black-capped vireo is an endangered bird that occurs throughout much of central-Texas, and represents

an ideal species, whose management results in good habitat for game species such as white-tailed deer and northern bobwhite. Financial incentives associated with endangered species management promote healthy rangelands. A rancher interested in managing for livestock, white-tailed deer, and black-capped vireos, diversifies his/her income by receiving additional money from 3 sources: livestock, hunting, and rare species management. Landowners can take advantage of state and federal incentive programs to diversify income through good land stewardship for livestock and wildlife. These programs include the Landowner Incentive Program (LIP; Texas Parks and Wildlife Department [TPWD]) and federal resources, like the Partners Program (US Fish and Wildlife Service), and Environmental Quality Incentive Program (EQIP), Wildlife Habitat Incentive Program (WHIP), and Wetland Enhancement Program (WEP) offered by the Natural Resources Conservation Service (NRCS).



Figure 1. Typical white-tailed deer habitat consists of clearings dominated by forbs and grasses interspersed in surrounding brush-land. (Photo courtesy of Mike Marshall)

Managing for White-tailed Deer

Landowners are inundated with requests for permission to lease their property for hunting, and white-tailed deer are one of the more popular game species. Depending on the location and amenities of the property, such as dwellings that can be used as camps, access to rivers, creeks, ponds, lakes, or marshes, electric service, water service, as well as tract size and other factors, the value of the lease can be as much as \$15.00/acre/year. Comparatively, *Farm and Ranch Guide* quotes a profit of \$200 per head of cattle each year, and assuming a stocking rate of 1 head to 20 acres, the profit generated for the rancher is \$10/acre/year. By supplementing ranching with white-tailed deer management a landowner can more than double his/her profits off of each acre of land. Many landowners have discovered that there is more money in managing for deer than there is in managing for cattle, but a better way to view this situation is that there is more money in managing for both deer and cattle rather than managing for one or the other.

In addition to income generated from hunting lease sales, there are incentive based programs available to private landowners, who manage for white-tailed deer habitat. The Managed Lands Deer Permit Program (MLDP) allows landowners involved in a formal management program to have the state's most

flexible seasons and increased harvest opportunities to balance deer populations with high quality habitat. Participation in the MLDP program requires a written Wildlife Management Plan (WMP) approved by a TPWD Biologist or Technician. The WMP can be prepared by TPWD for the landowner at no cost, but some elect to have a more detailed plan written by themselves or by wildlife consultants that offer this service. Because a landowner involved in MLDP increases harvest opportunities on their property, they can also increase their per acre profit. Clearly, the addition of deer management diversifies income, but in order to properly manage for deer, one must first recognize high quality deer habitat.

Deer eat only a small amount of grass (10-14% of their total diet), and forbs (weeds), although a very important component of their diet, are only available, seasonally. An important component of managing for white-tailed deer is brush (woody plants) management, given that leaves and buds, collectively called browse, are more reliable food sources throughout the year. For a better understanding of diet overlap among cattle, sheep, goats and exotic livestock, and deer see the Texas A&M AgriLife Extension Service publication E-299, "Using Livestock to Manage Wildlife Habitat". In addition to nutritional value, brush provides escape and

loafing cover, thermal protection for deer. Managing brush is a balancing act, where too little equates to inadequate cover and food, but excessive density can hinder movement, reduce visibility of predators, and diminish beneficial forbs and grasses, resulting in poor rangeland conditions. Brush thickets can present similar management problems with livestock, and a well written and executed WMP can benefit multiple objectives.

White-tailed deer prefer landscapes consisting of interspersed mixed brushlands and openings dominated by forbs and grasses (Figure 1). Management planning should focus on maintaining or creating stands of brush or openings throughout one's property. The objective is to provide food, cover, and travel corridors, thus increasing the value of the property to meet the life needs of wildlife and livestock. For instance, in a brush-choked pasture, if there are not enough clearings to meet the needs of deer, or they are poorly distributed, then openings could be created as long as interconnected woody cover remains. However, if openings are too large, a manager may decide to allow brush to reestablish in selected areas to reconnect stands of brush. A good mixture of openings and brush and their arrangement on the landscape has multiple benefits for wildlife and livestock.

Important factors influencing deer habitat in Texas are stocking rates and grazing practices. Stocking rates and frequency of grazing have direct impacts on the quantity and quality of food plants, cover (escape, loafing, and fawning), and to some extent, on brush cover. Cattle grazing can be very compatible with deer management provided that stocking rates are low to moderate and flexible and the grazing frequency allows for plants to recover after being consumed. Cattle primarily eat grass (85-90%) and occasionally use browse and forbs when they are available, while deer prefer forbs and browse, with light use of grasses. Heavy stocking rates and continuous grazing will result in declining quantity and quality of grasses, and competition for forbs and browse will increase between cattle and deer. The same is true of other livestock, such as sheep, goats and exotic livestock like fallow, sitka, and axis deer (and many others), but with these animals, diet overlap with each other and deer is much more pronounced. Managing for cattle

or other livestock groups and healthy populations of deer is a balancing act, but one that can be profitable, if good grazing management is applied.

Grazing Management

Many times rangeland health and condition are affected by forces out of the control of landowners, such as drought and wildfire. Grazing management however, is under control of the manager. Choosing where, when, how much, and how often livestock graze can optimize economic reward. Whether the ranch is 100 acres or 100,000 acres, setting proper stocking rates and grazing management is the first step toward sustainability.



Figure 2. From Franklin Crider 1955- As grazing pressure increases, root mass decreases. Notice the second plant from the left has about 50% of its top growth removed, and root development is relatively unaffected, but a small increase in grazing pressure leads to a dramatic loss of root development for the 2 plants on the right..

Warm season perennial grasses are efficient food producers, producing about twice as much as they need to sustain themselves. Thus, from a grazing management perspective, about half of the current year's production can be "taken" without any adverse effects to the plant. Studies indicate, if half of the plant is removed, root development is not negatively affected, but if 70% of the plant's production is

removed, half of the root growth is stopped for 17 days, nearly 3 weeks (Figure 2). If 90% of the top growth is removed, the situation is much worse: all root growth is stopped for 17 days! Root development is crucial to the health and vigor of this year's plant health and next year's production. Deep and vigorous root growth means survival!

This concept laid the foundation for the old "rule of thumb" take-half-leave-half. Utilizing about half the annual production ensures that the plant will continue to be healthy, vigorous, and productive. The key, however, lies with the utilized 50% of the plant. This means half of the key plants, not half of all the plants in the pasture. Unfortunately, a portion of that half to be consumed never gets into the cow; approximately 25% will be lost due to trampling, insect damage, and other factors. Therefore on rangeland, in a proper grazing management plan, only about 25% of the total forage produced should be grazed.

These concepts are very important to remember when setting stocking rates on rangeland. Two things are required to set a stocking rate, an accurate assessment of annual production (lbs/ac) and animal demand (lbs forage needed/animal/year). There are many methods of determining annual production, however the simplest way, is with a yard stick. Clip a one square yard plot to the ground across the pasture at several representative locations. Bag the forage from each clipping and allow to air dry for 48-72 hours. Once air-dried, weigh each sample with a gram scale and average the weights. Multiply this average by 10.7 to get pounds/acre. This method works on rangeland and pastureland.

Once annual production has been estimated, determine animal demand. Animal demand is the pounds of forage needed by one standard animal unit (AU) or 1,000 lb. cow and calf per year. An animal unit will eat about 10,950 lbs of air dry forage per year to sustain one cow and calf.

Now that the annual production and the animal demand are known, the initial stocking rate can be calculated. For example, assume 4,000 lbs of forage/ac. Utilizing the 25% Harvest Efficiency method, 1,000 lbs/ac would be the allowable forage. To calculate the stocking rate, divide the Animal Demand

(10,950 lbs/animal unit/year) / allowable forage produced (1,000 lbs/Ac), which equals a stocking rate of 10.95 ac/AU or ac/1,000 lb cow and her calf. The actual figure will need to be adjusted depending upon rainfall and forage production. For example, during drought conditions there may only be 2,000 lbs of forage/ac, resulting in 500 lbs/ac of allowable forage, and a stocking rate of 21.9 ac/AU. The point here is that stocking rates vary with precipitation and other factors, so it is imperative that you do not make assumptions about stocking rates based on previous years.

The last step in setting a stocking rate on rangeland is factoring useable grazing acres. There are areas in pastures that cattle do not graze such as steep topography, heavy brush, headquarters, gravel roads, ponds, etc. Remove these areas from the stocking rate calculation to reduce the risk of overgrazing. For example, assume 30% of the pasture or ranch is not available for grazing based on the reasons listed above, and 70% of the pasture is usable grazing land. Divide (10.95 ac/AU) by (70% grazing acres), which leaves a final stocking rate of 15.64 ac/AU or 15.64 ac per cow. Failure to compensate for the percentage of unusable grazing pasture is a common mistake when setting stocking rates.

**Proper grazing management
can complement and benefit
wildlife habitat components both
directly and indirectly.**

On average, about 70% of the warm season grass production is complete by 01 July in central Texas. This period is a good time to assess pastures to monitor how closely animal demand is balanced with forage production. Another time to monitor production is at first frost. This provides insight into the amount of forage available to support animal demand until spring green-up.

A balanced grazing management plan allows for management of the rangeland and livestock resources and has a positive effect on many wildlife species, including their habitat. Proper grazing management

can complement and benefit wildlife habitat components both directly and indirectly. It has been described that “good” range management is “good” black-capped vireo management. Proper grazing management is one of those rangeland management tools, which can be successfully applied and have positive effects for the rangeland, the livestock, the wildlife and the landowner.

Managing for Black-capped Vireo

A common saying around parts of Texas is “there is more money in birds than cows.” This is referencing the emerging practice and profitability of nature tourism, particularly “birding”. Birders are a passionate group of naturalists, who are often willing to pay for opportunities to access lands where they can view rare and elusive birds. In central Texas, the black-capped vireo is a federally endangered songbird that is coveted by many birders around the world due to its small breeding range and elusive behavior. Good black-capped vireo habitat is also good habitat for other birds that are also popular to view, including painted buntings and northern bobwhite.



FIG. 3



FIG. 4

Figure 3. Black-capped vireo male **Figure 4.** Black-capped vireo female in nest (Photos courtesy of Tiffany Harvey)

The black-capped vireo is a 4.5 inch insectivorous migratory songbird that was listed as endangered in 1987, with the main threats being habitat loss and brood parasitism by brown headed cowbirds. Brown headed cowbirds remove eggs and sometimes young from the nest of another bird (black-capped vireo and others) and then lay their own eggs in the same nest for the unsuspecting surrogate to incubate and raise as their own. Mature black-capped vireo males are olive green above and white below with a distinct black-cap and brownish-red eyes (Figure 3). Females are similar in appearance but are generally duller overall with a dark grey cap (Figure 4). Black-capped vireos arrive

on their breeding grounds in Texas from mid-March to mid-April (Figure 5). Males arrive first to select their territories. Once females arrive, nesting begins in late-March to early April. Their nest is cup-shaped and is suspended from its rim in a fork of a branch. Nests are often located approximately 1.5 yards from the ground in broad-leaved brush species like shin oak, redbud, plums, and sumacs. This vireo can nest multiple times in a breeding season. The male and female share the duties of nest construction, incubation of eggs, and feeding of nestlings and fledglings. Vireos may live for more than 5 years, and exhibit high site fidelity, typically returning to the same territory each year to breed. Vireos migrate back to Mexico to over-winter beginning in July, and are gone from Texas and Oklahoma by October.

Although vireo habitat throughout Texas is highly variable with regard to plant species, soils, temperature, and rainfall, all habitat types are similar in vegetation structure. They typically nest in shrublands and open woodlands with a distinctive patchy structure. Typical vireo habitat is very similar to white-tailed deer habitat, and is characterized by brush vegetation extending from the ground to about 6 feet or more and covering about 30-60% of the total area. Through most of the range, edaphic (soil) factors, fire history, and climate interact to produce the vegetation structure preferred by vireos.

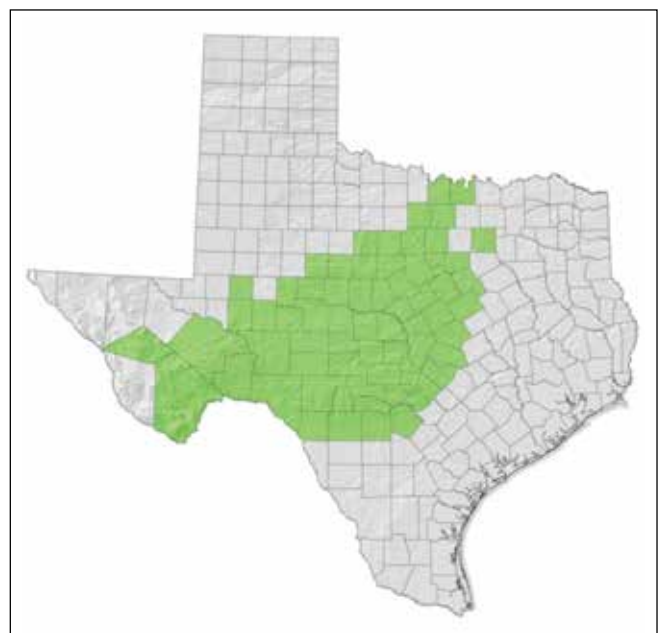


Figure 5. The breeding range of the black-capped vireo in Texas (U.S. Fish and Wildlife Service).

Stable Habitat: Western Edwards Plateau/Eastern Trans Pecos



Figure 6. Vireo habitat in a canyon at Devil's River State Natural Area (Del Rio, TX). (Photo courtesy of Katy Smith.)



Figure 7. Vireo habitat along a slope at Devil's State Natural Area (Del Rio, TX). (Photo courtesy of Katy Smith.)

Disturbance Habitat: Edwards Plateau/Central Texas



Figure 8. Typical vireo habitat in central-Texas and the Cross Timbers region is regrowth after a disturbance (Fort Hood, Texas). (Photo courtesy of Mike Marshall.)

Vireo habitat can be broken down into 2 broad categories: stable habitat and disturbance habitat. The most stable vireo habitats are maintained primarily by soil characteristics. Areas in the western part of the nesting range on steep slopes with dry, rocky soils tend to maintain vegetation in a configuration suitable for nesting longer than other areas (Figures 6 and 7). In central Texas, habitat is often brush regrowth following disturbances such as clearing, fire, and browsing (Figure 8).



Figure 9. The brown headed cowbird is a brood parasite and a primary threat to black-capped vireos. (Photo courtesy of Keith Arnold.)

The brown-headed cowbird (Figure 9) is a threat to many songbirds throughout Texas, and cowbird management is an important consideration in establishing and maintaining a healthy black-capped vireo population (Table 1). As mentioned previously, cowbirds remove the vireo eggs from the nest and lay their own egg, essentially making that nest a failure from the perspective of the vireo. Brood parasitism by cowbirds is thought to be the number one threat to black-capped vireos, so simply managing for habitat will not ensure establishment of a healthy breeding population of vireo, especially when taking into account livestock. Livestock and cowbirds go hand-in-hand, so managing for cowbird impacts on grazed land is critically important.

Table 1. Cowbird management considerations when managing for black-capped vireos

| Managing for vireos: cowbird control |
|---|
| <ul style="list-style-type: none"> • Cowbirds are attracted to areas with compacted soils and sparse vegetation, so avoiding these conditions (e.g. through frequent movement of supplementary feeding areas) is key. |
| <ul style="list-style-type: none"> • Minimize spilling and scattering of grain, as well as accumulation of waste grain. |
| <ul style="list-style-type: none"> • The mere presence of livestock in an area can be a cowbird attractant, so livestock should be rotated away from nesting habitat during the breeding season of mid-March – September |
| <ul style="list-style-type: none"> • Resting pastures during the spring and summer seasons can help to reduce nest parasitism, as well as improve overall range quality. |
| <ul style="list-style-type: none"> • Shooting cowbirds at areas where they congregate and selective shooting of female cowbirds in vireo habitat can help to reduce parasitism. |
| <ul style="list-style-type: none"> • Cowbird traps placed near watering sites can be used successfully to reduce cowbird numbers. Traps designed to be mobile have multiple benefits. |
| <ul style="list-style-type: none"> • Persons trapping cowbirds must be certified by TPWD before handling non-target birds (see, http://www.tpwd.state.tx.us/huntwild/wild/nuisance/cowbirds/trapping_program/) |

Many brush species important for black-capped vireo also offer quality browse for white-tailed deer (Table 2), and good grazing practices are compatible with managing for either of these species. For a better understanding of beneficial brush used by deer, see the Texas A&M AgriLife Extension Service publication B-6130, “White-tailed Deer Browse for South Texas and the Edwards Plateau”. There are also financial incentives and technical support available to those interested in managing their land for multiple purposes. A great incentive program for landowners interested in managing for vireos and/or deer is the Taxation of Certain Open Space Land (OSL), commonly known as 1-d-1 wildlife tax valuation. In 1995, Texas voters approved Proposition 11, which amended Article VIII, Section 1-d-1 of the Texas Constitution to permit agricultural appraisal for land used to manage wildlife. H.B. 1358 implemented the constitutional amendment by making wildlife management an agricultural use that qualifies the land for agricultural appraisal. In 2001, the Legislature passed H.B. 3123, requiring TPWD to develop and the Comptroller to adopt rules for the qualification of agricultural land in wildlife management use. Land used for wildlife management must meet all the legal requirements of land qualified for agricultural appraisal.

For appraisal purposes, wildlife management is defined as “*Actively using land that at the time the wildlife management began was appraised as qualified open-space land under this subchapter in at least three of the following ways to propagate a sustaining breeding, migrating, or wintering population of indigenous wild animals for human use, including food, medicine, or recreation: habitat control, erosion control, predator control, providing supplemental supplies of water, providing supplemental supplies of food, providing shelters, and making census counts to determine population.*” Landowners must submit a wildlife management plan that includes 3 of the 7 practices listed above. For more information see the Texas A&M AgriLife Extension Service publication ESP-377, “Wildlife Management and Property Valuation in Texas. With this use, livestock grazing is a tool to manipulate wildlife habitat. Wildlife species are the primary focus and it is the choice of the landowner to have livestock annually, periodically, or not at all. Having the flexibility to stock properly and at the right times results in healthy rangelands that benefits multiple species and maximizes potential income from livestock sales, deer hunting and nature tourism.

Table 2. A list of some of the most common broad-leaved brush species in black-capped vireo habitat and the associated browse value to white-tailed deer. Note, the degree of preference often varies relative to plant diversity at a given site.

| Common plants | Deer forage |
|--------------------|-------------|
| Texas oak | class 1* |
| Shin oak | class 3* |
| Live oak | class 3* |
| Skunkbush sumac | class 3* |
| Flameleaf sumac | class 2* |
| Redbud | class 2 |
| Texas persimmon | class 4* |
| Carolina buckthorn | class 1 |
| Elbowbush | class 2 |
| Ashe juniper | class 4* |
| Mexican plum | class 2* |
| Blackjack oak | class 2* |
| Roughleaf dogwood | class 2* |

*These brush species have seasonal high value in the production of acorns, fruits, beans, or flowers eaten by deer. Class 1= highly preferred; Class 2= desirable; Class 3= common in diet, but not highly preferred; Class 4= least preferred.

Multi-species Management on Public Land: Kerr Wildlife Management Area, Kerr County, TX

Combining multiple species management may sound well and good, but how does it work in the real world? Is there an example of an area that successfully manages for cattle, deer, and black-capped vireo? How did they do it? How difficult is it really?

The Kerr WMA was purchased as a research and demonstration site in 1950 and is owned and operated by the TPWD. Located at the headwaters of the North Fork of the Guadalupe River in Hunt, TX, this 6,493-acre property has investigated interactions of livestock and natural resources throughout its history. If you visit the Kerr WMA today, it may be hard to imagine the changes that have occurred since its inception. White-tailed deer, cattle, endangered resources, game and non-game species prosper in shared habitats. The father of wildlife management, Aldo Leopold wrote in 1933, “The central thesis of game management is this: Game can be restored by the creative use of the same tools which have

heretofore destroyed it, axe, cow, plow, fire and gun.” These tools are applied on the Kerr WMA and have evolved over time to yield the abundant natural resources found on the property.

Understanding how land management practices affect the Edwards Plateau plants and animals is a priority at Kerr WMA. This ecological region experienced swift and dramatic change in the early 1900s. By 1950, heavy stocking rates of several livestock classes and the absence of fires had significantly shifted climax vegetation from historic tall grasses and oak savannahs, to a short grass and brush dominated landscape, compromising the land’s productivity. Although brush species, including Ashe juniper, naturally occurred in this landscape, they were typically restricted to rocky slopes, drainages and riparian (creek) corridors due to the lack of fire in these areas. As fire became more and more suppressed and grazing pressure increased, Ashe juniper became the dominant plant on area rangelands. Furthermore, white-tailed deer became so numerous, population die-offs were frequent occurrences. The numbers and classes of grazing and browsing animals increased and exceeded the carrying capacity of the rangeland, further degrading the condition of the land. Food habit and diet competition studies of white-tailed deer and exotic ungulates such as axis deer revealed some plants were preferred over others. Deer, considered concentrate selectors, preferred forbs and browse in their diet, while cattle demonstrated a grass and roughage preference. By 1966, shifts from continuous grazing systems, strategic removal of Ashe juniper and initiation of white-tailed deer either sex public hunts resulted in a diverse plant system. As range health increased, animals from surrounding areas were attracted to the Kerr WMA. An 8-foot high-fence was constructed in 1968 to prevent neighboring deer and exotic livestock from entering the property. The fence provided a measure of control over the property’s deer and exotic livestock populations. Currently a sustainable carrying capacity is maintained at 1 deer per 10-12 acres through a public hunting program (Figure 10).

Grazing systems for cattle were modeled on grazing patterns of bison prior to European settlement. Several systems underwent experimentation, including 3 pasture-4 herd, 3 pasture-1 herd, High Intensity



Figure 10. Sound land, harvest, and grazing management has benefits to multiple species, which can improve profitability for landowners. Mature bucks, like this one taken on a public hunt at the Kerr WMA are sought by many hunters. (Photo courtesy of TPWD.)

Low Frequency (HILF) and short duration. Studies showed longer rest periods and shorter grazing periods yield faster recoveries, stronger root systems, and better general plant health. Since 1984, a 25-pasture short duration grazing system has been implemented on the Kerr WMA. One herd of cattle is rotated every 90-120 days and stocking rates are adjusted according to climatic conditions. Shipping weights per calf under the short duration system have averaged over 500 lbs (1984-2008). This style of adaptive management promotes a healthy landscape that includes several stages of plant growth, which meets the needs of many game and nongame species.

Examining effects of wildfires and learning how to manage and conduct prescribed fires under set conditions benefitted land health on the Kerr WMA. Low humidity and high winds swept wildfire across portions of the Kerr WMA in the 1950s, 1971 and 1984. These fires, along with experiments in the

mid-1970s demonstrated a new understanding and appreciation for fire. Research revealed that 80-95% of juniper less than 2 feet tall was killed during a burn. Juniper management suddenly became affordable, which led to wider application of prescribed fire on the property. Following fire events brush palatability, structure, and plant diversity on the rangeland improved, all of which are favorable for black-capped vireo and white-tailed deer. Currently, prescribed burns are conducted in the cool season then burned areas are deferred from grazing to allow for plant recovery and reestablishment. Acreage burned per year varies due to climatic conditions and production of plants used as fuel.

The diversity within plant communities improved by these practices, and wildlife diversity also increased (Figure 11). Black-capped vireos increased from 27 territories in 1987 to 463 territories in 2012. Hunter harvest of mature (4.5+ years old) white-tailed deer increased and weights increased from an average of 79 pounds to over 118 pounds. Antler productivity has increased to include harvests of deer exceeding 160 gross Boone and Crockett scores. These are simply natural resource benefits generated from the application of a diverse set of land management tools. Emulating historic ecological processes and creative applications of land management tools have demonstrated a stable and productive environment wherein wildlife populations and livestock programs interact for greater overall productivity.



Figure 11. Because deer and cattle are at sustainable populations, vireo habitat is much improved and widespread at the Kerr WMA. (Photo courtesy of TPWD.)

Table 3. Kerr WMA management practices and timing benefits multiple species. Mechanical and prescribed fire methods are used in the non-nesting season (September – February). All practices follow U.S. Fish and Wildlife Service's no take guidelines for black-capped vireo (http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_bk_w7000_0013_black_capped_vireo_mgmt.pdf)

| Management Practice | Timing | Frequency | Considerations |
|--|---------------------------------------|-------------|--|
| Prescribed Fire ¹ | Cool Season (December - February) | 5 – 7 Years | Each pasture or burn unit is planned for prescribed fire in a 5-7 year rotation. |
| Cattle Rotation ² | Grazing cycle varies from 90-120 days | 7 - 10 days | Frequency is dependent on pasture size and grazable acres. |
| White-tailed deer harvest ³ | General Season | Annual | Harvest dependent upon population survey results. |
| Brush Reduction ⁴ | September 15 – March 1 | Annual | Multiple procedures are employed, primarily skid steer and shears. |
| Cowbird Trapping ⁵ | March 1 – May 31 | Annual | Certification is required. |

¹Prescribed fire plans are assembled prior to burning season and pastures deferred from grazing. Fire weather involves humidity levels between 25-35% and wind speeds less than 10 mph in most prescriptions.

²Acres available for grazing are calculated first by removing acres occupied by roads and other infrastructure, steep hillsides, and Ashe juniper or thick brush from the total pasture acreage. The stocking rate is dependent on range conditions. Kerr WMA stocking rate ranges from 40 – 120 animal units and is rotated in 1 herd. In severe drought cases, the entire herd is removed until range conditions improve.

³Deer harvest is structured to first maintain deer herd density at 1 deer to 10-12 acres with adequate doe harvest. Bucks with 4 points or less, or possessing at least 1 un-branched antler are legal during management hunts. Bucks with inside spread greater than or equal to 13 inches are legal during either-sex or “trophy” hunts. Spotlight surveys and daylight observations collected in the early fall determine recommended harvest for the year.

⁴Following prescribed fire, small juniper not killed by fire is removed mechanically with brush-cutters as a “mop-up” technique. Skid steer and shears are primarily utilized prior to a prescription of fire, selecting juniper greater than 3 feet tall using the slash-cut method. Ashe juniper in stands qualifying as golden-cheeked warbler habitat is not disturbed.

⁵The brown-headed cowbird is a brood parasite that affects more than 225 species of birds. Parasitism rates can be effectively reduced by aggressive trapping or shooting. The Kerr WMA operates 6 or more traps annually and rotates 1 trap with the cattle herd. Training and trap design plans are available on-line at: http://www.tpwd.state.tx.us/huntwild/wild/nuisance/cowbirds/trapping_program/

Multi-species Management on Private Land: Rocosa Ridge Ranch

Successful management of livestock and wildlife is found not only on public land, but private land as well. Rocosa Ridge Ranch has implemented many aspects of the Kerr WMA model to successfully manage for multiple species. Rocosa Ridge Ranch is a 5,973-acre property located in central Bosque County comprised of two distinct pieces: the north and south units. To better understand how good management decisions led to a successful balance of livestock and wildlife, we need to understand the ranch in a historical context. In the past, the 2,960-acre north unit consisted of a quarter horse operation, and much of the unit was underutilized for grazing, while other portions were used for annual crop production. The 2,547-acre south unit on the other hand was heavily utilized for

livestock production and suffered from heavy Ashe juniper encroachment. In order to support healthy wildlife populations and improve livestock interests, new management practices needed to be considered and implemented.

Recent management of the ranch has focused on restoration of wildlife habitat and native grassland restoration through livestock grazing. In an effort to jump start plant health, prescribed fire was conducted on all but 150 acres of the ranch over a 3 year period. On most of the ranch this provided good control of juniper, but on moderately sloping sites mechanical treatment was required to prevent future brush encroachment. Approximately 800 acres of juniper were grubbed and cleared on these sites, and prickly pear cactus reduction will be done in the near future.



Cattle grazing can be very compatible with deer management provided that stocking rates are low to moderate and flexible and the grazing frequency allows for plants to recover after being consumed. (Photo by Sheryl M Thompson, Shuttlesock)

Rocosa Ridge Ranch is a cow-calf operation that utilizes conservative stocking rates and a flexible one/two herd rotational grazing system, and to accomplish this, the ranch was divided into 17 pastures by constructing 12 miles of cross fencing. The majority of the cattle are rotated as one herd for most of the year, but after fall weaning, heifers are placed in a separate rotation and marketed as replacement females. Flexible stocking rates are set by balancing forage supply with animal demand, and adequate forage reserves are maintained on rangeland by utilizing introduced pasture as sacrifice areas. Sacrifice areas are designated livestock heavy use areas strategically located on the ranch that minimizes the negative environmental impacts of a confined and concentrated livestock operation. In the past, livestock grazing was confined to areas near existing water, flat hilltops, and draws. To improve grazing distribution, 13 miles of water lines were added, resulting in livestock utilizing more of the ranch because of multiple water sources within an average pasture size of 350 acres. By using conservative stocking rates, instituting rotational grazing, and improving grazing

distribution, native prairie grasses such as eastern gamma grass, little bluestem, and side oats grama have increased, while canyons and draws maintain their brush component for wildlife cover.

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private land as well.**

Wildlife management is a primary goal on the ranch and thriving populations of white-tailed deer and golden-cheeked warblers are used as an indicator of the health of rangeland resources. The philosophy at Rocosa Ridge Ranch is to balance healthy habitats and rangelands with the nutritional demands of cattle and wildlife. This means keeping deer populations at an appropriate level through harvest. Prior to active management, the deer density was 1 deer / 8 acres, but now the populations are reduced to 1 deer / 15 acres.

The ranch relies on extended seasons, using MLDP to harvest enough deer each year to maintain stable numbers and they frequently call on TPWD biologists for recommendations. As range conditions improved on the ranch, a high fence was constructed to keep neighboring deer from entering. Because deer and cattle are kept at a sustainable level, abundant nesting and escape cover for quail is available, and black-capped vireo habitat is present. Golden-cheeked warblers, a federally endangered species of songbird, are present on steep hillsides, canyons, and draws, where mature juniper-oak woodlands, their preferred habitat, are present. Rocosa Ridge Ranch is a perfect example of a sustainable working ranch, and has opened the door to many people who are not familiar with the integration of wildlife management with an active cattle operation. The Kerr WMA model of mixing livestock and wildlife is solid and the Rocosa Ridge Ranch shows that it can be applied to private lands with great success.

Summary and Conclusions

Hopefully it is clear that balancing wildlife and livestock is not only possible, but economically beneficial. Sound grazing management principles

and a feasible wildlife management plan are critical aspects of running a sustainable working ranch. The history of Kerr WMA and Rocosa Ridge Ranch are becoming familiar stories to many landowners and land managers in Texas, as the increase in grazing pressure coupled with absence of fire across the landscape has led to an increase in undesirable brush species like Ashe juniper. This dramatic increase in undesirable brush species has degraded wildlife habitat and livestock grazing quality in native rangelands, ultimately leading to a decrease in the monetary value of the land. Hope is not lost though, as can be seen in the success stories of Kerr WMA and Rocosa Ridge Ranch. By applying the proper management tools to the landscape, even compromised rangelands can be improved to the point where game and non-game wildlife species can coexist with a profitable ranching operation. With drought conditions leading to a loss of income in the cattle industry, now more than ever it is important to diversify your income potential. There is money to be made in the wildlife arena, and organizations such as NRCS, TPWD, and Texas A&M Agrilife Extension Service provide valuable resources and guidance to meet livestock and wildlife habitat goals.

Useful Management Videos

- Shredding/Mowing for Wildlife Management – www.youtube.com/watch?v=u2i78QdR6MU
- Disking for Wildlife Management – www.youtube.com/watch?v=sX6JfN8N98c
- Grazing as a Tool for Managing Wildlife Management – www.youtube.com/watch?v=sOQjUFLps3E
- Rangeland Measurement Techniques for Livestock and Wildlife – www.youtube.com/watch?v=niIGel_tAsk
- Rangeland Monitoring Techniques for Livestock and Wildlife – www.youtube.com/watch?v=Sxb_xYk88fo
- Resources for New Landowners in Texas – www.youtube.com/watch?v=G8YK430MZyw
- Prescribed Burning for Quail – www.youtube.com/watch?v=IC8z0qGRDck
- Digital Plant Press – www.youtube.com/watch?v=1ktPBzj8DYc
- Brush Sculpting – www.youtube.com/watch?v=QX-d2ZHH8e4

Useful Web-resources

- Texas AgriLife Extension Service Wildlife and Fisheries Unit – wildlife.tamu.edu/
- Institute of Renewable Natural Resources – irnr.tamu.edu/
- Natural Resources Conservation Service – www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/
- Grazing Lands Conservation Initiative – www.glci.org/
- Texas Parks and Wildlife Department – www.tpwd.state.tx.us/



Photo courtesy Texas A&M Institute of Renewable Resources

Authors

Mike Marshall

Texas A&M Agrilife Extension Service
Institute of Renewable Natural Resources
Gatesville, Texas

Brian Hays

Texas A&M Agrilife Extension Service
Institute of Renewable Natural Resources
Gatesville, Texas

Ryan Reitz

Texas Parks and Wildlife Department
Kerr Wildlife Management Area

Jeff Goodwin

Natural Resource Conservation Service
Temple, Texas

Matthew Machacek

Natural Resource Conservation Service
Corsicana, Texas

Dr. James C. Cathey

Texas A&M AgriLife Extension Service
Department of Wildlife and Fisheries Sciences
College Station, Texas