

Appendix E

Vegetation Management Recommendations

In the Gulf Prairies and Marshes, managing native vegetation (browse, weeds, grasses) to prevent continuous overuse by deer or cattle so that the native vegetation provides the majority of nutrition year-around for deer and other wildlife should be of primary concern. Over 50 percent use of most species on a continuous basis will stress vegetation, causing less production or killing of the plant.

Managing or planning for the long term, considering wet years as well as drought years, and not carrying more livestock or deer than the land will support during poor as well as good years should be the overall goal.

Wildlife has a certain requirement for cover. Cover provides a sense of security from disturbance and protection from inclement weather and predators. The amount and kind of cover vary with the species. A stand of herbaceous plants may provide adequate cover for some bird species and small mammals, while other species require woody cover (trees and shrubs) in lieu of or in addition to herbaceous cover. The best cover for a large species such as white-tailed deer in the Gulf Prairies and Marshes is a pattern or mosaic of woody brush and trees interspersed within open areas at an approximate 1/1 ratio of open area to woody cover. Clumps or strips of brush should be wide enough so that an observer cannot see through them from one side to the other during the winter months when deciduous species are bare of leaves. Cover strips should be as continuous as possible to provide travel lanes. Deer and other wildlife can be displaced by disturbance from an area without adequate escape cover. A habitat that provides several different types and arrays of cover benefits more species of wildlife than a habitat that has limited types, amounts, and distribution of cover.

During the past 30 - 40 years, an estimated 25 percent or more of the Gulf Prairies and Marshes has been planted (often requiring the clearing of hardwood timber) to monoculture tame grasses such as Coastal or common bermuda, bahia, Klein grass, et cetera. Overseeding these existing pastures with clovers, or gradually returning this acreage to native grasses and forbs can make these areas more productive for wildlife.

Upland hardwoods and the associated understory vegetation over the area presently vary from heavily over-browsed by cattle and in some instances, deer to basically a stagnated state with dense yaupon understory shading out virtually all other browse and mast-bearing species. Good cattle management, utilizing rotation and/or excluding cattle from wooded areas via fences, coupled with periodic winter prescribed burning could revitalize these sites, making them much more productive. Sound deer and feral hog (including other large exotics, such as nilgai) harvest strategies are also needed to prevent overuse of food and cover. Native white-tailed deer and feral hogs (and large exotics if present) are the only wildlife species present in the Gulf Prairies and Marshes that can degrade or virtually destroy the habitat for not only themselves, but for the

many smaller mammal and bird species that rely on the same vegetation for food and/or cover.

Many bottomland hardwood sites have also been heavily grazed/browsed by cattle, and in some instances deer. As with upland sites, rotation or exclusion of cattle, coupled with sound deer and feral hog harvest strategies can improve these situations. Large (1,000 acres +), unbroken tracts of climax stands of bottomland hardwoods are scarce. At least 65 percent of bottomland hardwoods have been lost to reservoir construction and agriculture activities. Loss and fragmentation of this nesting habitat for neotropical migratory songbirds appears to be a prime factor in the decline of many species that require relatively unbroken tracts of hardwoods. Harvest of high quality (high-grading) large oaks and pecans (high mast producers) in the past in some sites has resulted in mostly "weedier species, less valuable for wildlife" such as ash, elm, hackberry, sweetgum, etc. dominating these sites. Good timber management, utilizing a competent agency or private timber consultant, can prevent this scenerio and help restore these abused sites to a more productive state.

Management of vegetation, whether it be deciduous post oak woodlands, running live oak, mesquite woods, or open grasslands, requires long-term planning. Any vegetation manipulation practice will have an impact on resident wildlife species, either good or bad, depending on the type of treatment used, the degree of use, and location. Before implementing vegetation control techniques, determine what the long-term effects will be for each wildlife species that occurs in the area and minimize the negative impacts. Consider the location and size of sensitive wildlife habitats that provide important nesting or roosting sites, feeding areas, desirable wildlife food producing plants, cover, water, and space needs. Wildlife can be displaced by disturbance from an area without adequate escape or security cover. The amount and distribution of cover on adjacent lands need to be taken into consideration when assessing the cover needs of wide-ranging wildlife species such as deer and turkey. A small ranch would need a larger amount of security cover on a percentage basis than would a larger ranch where the vastness of the area provides security.

The control of plant species such as huisache, eastern red cedar, mesquite, prickly pear, and oak species that invade a variety of rangeland sites is often warranted. When these species dominate an area, they diminish plant diversity and the quality of habitat for most wildlife species. Vegetation manipulation may be in the form of prescribed burning, mechanical, biological, or chemical control of trees, brush, or weeds. Most of these practices will require the use of specialized equipment or machinery for plowing, discing, bulldozing, spraying, or other vegetation or soil manipulation procedures. The cost effectiveness of the different control measures must be considered prior to initiation of control measures.

Prescribed burning is an effective, low-cost habitat management tool that can be used to enhance plant diversity by stimulating the production of a variety of forb and grass species and to maintain woody plants at the low heights most beneficial to wildlife. Livestock as well as wildlife can benefit from a properly planned and conducted

prescribed burn. However, there are legal constraints and liabilities in the use of fire. The land manager should be well-trained and knowledgeable on the proper use of fire before attempting a prescribed burn. Refer to Texas Agricultural Extension Service bulletin "Prescribed Range Burning in Texas" for details on the use of fire as a range management tool.

Prescribed Burning Recommendations: To maintain oak woodlands with dense, diverse, understory, prescribe burn about 15 percent of upland woodland sites during late November (after frost and leaf drop) through February (before green-up) on a rotating basis, burning each site every 6-7 years to remove old growth and stimulate new growth of browse and forbs (weeds and wildflowers). About 50 - 100 acres per burn site would be the maximum size to burn on these particular land tracts. In order to have enough low-level fuel to produce a hot fire, one or two years of cattle exclusion from wooded tracts may be necessary to allow growth of vegetation normally grazed by cattle. Prescribe burning of these woods shortly after leaf drop, while they are still fluffed up with air space and before winter rains and time compact this leaf litter, may be necessary for some tracts and should be considered.

To restore and maintain native grasslands, prescribe burn about 20 percent of native grass openings each year, burning each site every five years, on a rotating basis, to remove old growth and young, invasive woody growth such as huisache, mesquite, and running live oak. This will stimulate new growth of plants that may have become dormant due to not having occasional fires to stimulate growth. Pasture burn locations can be as large as can safely be burned within daily time and man power limitations. Burn in late summer (late August through September), weather conditions permitting, to get the maximum kill of brush species. To maintain grasslands and enhance forb production, burn after the first killing frost and up to the time that spring green-up begins. See included TCE publication Prescribed Range Burning in Texas for good general guidelines, especially for native pastures. About seven times more insects are usually found in burned native grass areas compared to unburned areas, thus providing much more spring and summer high protein food for quail, turkey, and other birds (especially for the young).

Wetland vegetation should be burned every three years (33 percent per year) during October.

General burn prescriptions for Gulf Prairies and Marshes woodlands, wetlands, and native pastures are:

1. Prepare disced bare-ground fire guard around all sites before burning. Disked fire guards, which can include roads and right-of-ways, should be 20 feet wide. (These disced areas can be planted to winter supplemental food plots between burn years.)
2. Humidity should be between 25 - 40 percent.
3. Wind speed should be between 10 - 15 miles per hour.

4. Always burn into the wind first (backfire) 50 yards into the woods or pasture, then set fire with the wind (headfire). The entire burn may be conducted with a backfire, depending on fuel and weather conditions and burning experience of crew.

5. Initiate burns in the morning, after 9:00 a.m.

Consult with TPWD, Natural Resources Conservation Service (NRCS, formerly Soil Conservation Service, SCS), or Texas Forest Service, and notify the local volunteer fire department before conducting burns.

Cattle should be excluded from burned areas for at least 3 months to allow re-growth of new, tender vegetation.

Prescribed burning is the cheapest, most effective habitat management technique for the Gulf Prairies and Marshes area.

Prescribed burning under a predetermined set of guidelines and plans is the most cost-effective habitat management tool that can be used to enhance plant diversity by stimulating the production of a variety of forb and grass species. It is also effective in controlling low-growing woody plants and maintaining them at the low heights most beneficial to wildlife. Livestock as well as wildlife can benefit from a properly planned and conducted prescribed burn. However, there are legal constraints and liabilities in the use of fire. The land manager should be well-trained and knowledgeable on the proper use of fire before attempting a prescribed burn. Refer to Texas Agricultural Extension Service bulletin "Prescribed Range Burning in Texas" for details on the use of fire as a range management tool. It is often necessary for a pasture to receive a period of deferment from livestock grazing to allow for a build-up of enough fuel (herbaceous plant litter) to carry a fire.

The use of mechanical equipment to control woody plants will typically result in an initial growth of forbs and annual grasses and the re-sprouting of many woody species. Soil disturbance associated with mechanical controls releases the natural seed bank found in the soil, increasing the quantity, quality, and distribution of plants beneficial to wildlife. However, without periodic follow-up treatments of fire, herbicides, or additional mechanical manipulations, and/or without proper livestock grazing management, these sites will eventually again become dense stands of re-growth brush and trees. Mowing (shredding) areas of herbaceous plants and/or low density woody plants is another form of mechanical treatment. Mowing should be postponed until after the peak of the nesting/young-rearing period of local ground-nesting birds and mammals. One-third of open areas can be mowed per year, preferably in strips or mosaic types of patterns, to create "edge" and structural diversity.

Biological control is the use of heavy grazing pressure by livestock such as goats to control or suppress woody plants and sheep to control herbaceous weeds. Long-term heavy grazing pressure by goats, which prefer woody browse but will also consume

forbs, will eliminate all leaves from woody plants up to a height of four feet. The creation of this "browse line" and the resulting park-like appearance of the woody plant community will have negative effects on the wildlife species that also depend on the low-growing foliage of woody plants for both forage and cover. Heavy grazing pressure by sheep, which prefer forbs, will reduce or eliminate forbs that are also beneficial to wildlife. Under certain management goals, biological control of woody plants and forbs can be a legitimate practice if done correctly. However, it is not normally a recommended wildlife habitat management practice.

The use of chemical herbicides can have a significant negative impact on many plant communities and may suppress or eliminate plants other than the target species. From a wildlife habitat management perspective, the use of herbicides is one of the least desirable methods of vegetation control. If herbicides are used, selective applications, rather than broad-scale applications, are recommended to avoid the elimination of plants that are important to wildlife.

Control of Running Live Oak

Running live oak is invading native grassland prairies in much of the Gulf Prairies and Marshes ecological area. It is most effectively controlled with Spike herbicide applied by helicopter at a cost of approximately \$60.00 per acre. The herbicide also suppresses the forb component of the vegetation for up to five years after application, a negative aspect for wildlife. The dead live oak is left standing for up to two growing seasons, until a fuel load is established for burning. The control area is then burned to eliminate the dead plant material. Complete control of the live oak can be accomplished in this manner.

Another approach to running live oak control is to roller-chop the live oak and follow with three consecutive late summer burns of the control area. Near total control of the live oak can be attained. This is less expensive, but grazing of the pasture is limited during that time period to assure a fuel load for the burns. Roller-chopping costs run \$15 - \$20 per acre. This approach is better for wildlife because it enhances forb production.

Chinese Tallow Control

Chinese tallow trees are dominating moist soil sites on much of the mid to upper coastal areas and consequently eliminating species diversity of plants and animals at these sites. Mechanical control is difficult in moist soil areas and only compounds the spread of the trees from root sprouts. The best control method for large numbers of trees is application of herbicide by helicopter. Smaller numbers can be controlled by hand spraying basal cuts. Dead trees should be left standing, so not to disturb the moist soil site and possibly promote the growth of new trees. When conditions permit, the site should be burned as part of a prescribed burning plan.

Macartney Rose Control

Macartney rose hedge has invaded much of the native grass prairies and pastures,

especially in the mid to upper coastal region. This plant can be controlled by spot spraying with herbicides. It can also be controlled by periodic prescribed burning. If quail cover is lacking, a hedge can be left on a spacing of one hedge every 130 yards by discing a 20 foot border around the plant to protect it from the burn.

Mesquite Control

Mesquite is another woody invader infesting many rangesites in coastal Texas. Its growth form varies from a multi-stemmed shrub to an upright tree. Adaptable to a variety of soil types, mesquite can colonize and dominate open rangelands, old fields, and other areas where ground cover has been reduced and fire eliminated from the environment. Mesquite sprouts from buds along a compressed, buried section of the stem called the "crown". Control by grubbing, bulldozing, root plowing, and chaining of mature-size trees has proven successful under proper soil moisture conditions. Several approved herbicides are also available for control. Shredding, on the other hand, or other practices that only remove top growth but do not involve removal of the crown is not recommended and may result in further sprouting. Any control planning should proceed with good common sense and a sense of aesthetics.

Mesquite seed pods are readily eaten by wildlife and livestock, resulting in the dispersal of undigested seeds across the landscape. Seeds may remain dormant for extended periods of time and germinate when the right conditions or soil disturbances occur. Young mesquites can quickly become established and grow rapidly, particularly when competition from other plants is reduced by heavy grazing pressure.

Like red cedar, mesquite does have some redeeming qualities. It provides seed pods that are a beneficial although sporadic food source, microclimates for cool season grasses and forbs that may be important to plant diversity, nitrogen fixing roots, and cover, that make its occurrence beneficial to many wildlife species.

Farming Practices: Delaying of shredding or mowing of hay or native grass pastures until after the first of July will usually avoid the accidental killing of young fawns or ground nesting birds.

Keep use of herbicides to a minimum. If necessary, spot spraying with a low rate of one pint per acre of 2-4-D is much preferred over broadcast spraying of some of the newer herbicides which last longer. Spray early in the spring while plants are still small, requiring less spray. Many "weeds" are important to wildlife.

To provide weed seeds (ragweed, croton, sunflower, partridge pea, trailing wild bean, etc.) which are the basis of quail, dove, and other seed-eating bird's fall and winter diets, shallow disc 10 - 20 foot wide strips in sandy soil around the edge of brush and woods after the first freeze. This practice will promote growth of these important forbs the following spring and summer.