NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

UPLAND WILDLIFE HABITAT MANAGEMENT

(acre)

Code 645

Texas Supplement, Zone 3

ATTWATER'S PRAIRIE CHICKEN

HABITAT REQUIREMENTS

General

The Attwater's Prairie Chicken was endemic to the Gulf Coast Prairies from southwestern Louisiana west and south along the Texas coast to the Nueces River. The pre-settlement range of this species was some 8.4 million acres of which about 5.9 million acres was good prairie chicken habitat. It has been estimated that this habitat supported some one million birds in peak years. At the current time, known existing populations are limited to birds in Colorado County and one group in Galveston County. Major causes of habitat loss associated with human activities or elimination of the native prairies include (1) conversion of prairie into agronomic fields, (2) woody plant invasion of prairie, (3) disturbances associated with oil and gas production, (4) overstocking with livestock, and (5) urban development. Adverse weather conditions, i.e. drought and flood, have also impacted the bird, especially as total numbers declined. Early excessive hunting pressure as late as the 1930's also impacted population numbers. The hunting season was closed in 1937.

Food

On an annual basis, adult Attwater's prairie chickens are very dependent upon forbs, especially the foliage. Diets may consist of > 70% foliage = 17% seed and about 8% insects. In diet studies, foliage was the major component of the diet in all seasons of the year, making up 97% of the diet in the spring, 70%, summer, 40% in the fall and 88% in the winter. Seeds were the second largest component, making up 3%, 23%, 39%, and 9% of the diet respectively. Both the foliar and seed portions are mostly from native forbs.

Important forbs in the diet include yellow falsegarlic, upright prairie-coneflower, leavenworth vetch, karnes sensitivebriar, dogshade, burclover, bracted sida, blue-eye grass, showy primrose, and violet ruellia. Significant grasses include panicums, winter bentgrass, buffalograss, scribner's rosettegrass, little barley, longtom, Florida paspalum and many others. Overall, foliar parts of 55 plant species and seeds of 9 plant species have been identified in adult prairie chicken diets.

According to one study, the most important grass seed in the diet were Florida paspalum and gaping panicum. The most important forb seed included yellow woodsorrel, violet ruellia, Texas broomweed, yellow falsegarlic, and Karnes sensitivebriar.

Cover

The Attwater's prairie chicken prefers true prairie type habitat consisting of primarily warm season bunch-type mid-grasses. Some of the species associated with this type habitat include little bluestem, yellow Indiangrass, brownseed paspalum, tall dropseed, and big bluestem. Prairie chickens appear to avoid cover types that exceed 22 inches in height, although they occasionally use taller habitat types. This habitat type becomes most desirable when manipulated by grazing, mowing, or burning which allows such forb species as sumpweed, broomweed, western ragweed, ruellia, and others to inter-mix with the grass component, with the grass component being dominant.

Prime nesting habitat will consist of the above mentioned mid-grass cover type with last years stubble remaining at the 10-14 inch height and with at least 300-500 nesting clumps per acre being present. Good nesting habitat will be inter-mixed with or in close proximity to good brooding habitat which consists of an overhead screening cover of taller forbs and sparse grass. This allows for open areas underneath the canopy for young chicks to move through and provides for an abundance of insects which are critical during the first 6-8 weeks of a chick's life.

Booming grounds or leks are associated with much of the life cycle of prairie chickens. The booming grounds are generally small in size, ranging from .1-3 acres in size. In a natural landscape setting, booming grounds are provided on the claypan prairie ecological site. This site is made up of tight, poorly drained clay, clay loam, and sandy clay loam soils which provide a preferred site for grazing and are typically overgrazed. The vegetative community consists of short grasses and forbs such as dwarf spikesedge, buffalograss, oldfield threeawn, little barley, bracted sida, karnes sensitivebriar, and violet ruellia. These areas are used by males for their courtship ritual and are frequented by hens during the breeding season and at other times. Nest sites are typically in close proximity to the booming grounds, usually within 300-400 feet, but nesting sites may occur at greater distances from the booming grounds.

When natural booming grounds are not present, prairie chickens will use mown pipeline right-of-ways, paved and unpaved roads, oil-field locations, and even landing strips.

Woody cover is not necessary for prairie chickens as they use tall grasses for escape and loafing cover. Some authors have indicated that prairie chickens will use woody cover during mid-summer as loafing areas. It should be noted that brush encroachment is one of the major factors associated with prairie chicken decline.

It is important to note that habitat structure is essential for good prairie chicken habitat. Vast expanses of ungrazed or non-manipulated tall and mid-grass prairie are not prime habitat. Optimal habitat will consist of some ungrazed areas, heavily grazed areas and moderately grazed areas which will provide good to adequate structure needed by the birds.

Water

Water requirements for prairie chickens are met from the food consumed, dew, and any available standing water. Free water is not essential for prairie chickens although it certainly may be used by the birds at different times.

Habitat Arrangement and Size

Prairie chickens occupy and utilize relatively large blocks of habitat. The home range size for males in a native prairie setting is about 1800 acres, while for females the home range size is about 1500 acres.

The minimum land area needed to maintain a breeding population of Attwater's prairie chickens is an area of prime nesting and brood rearing cover of approximately 1500-2000 acres surrounded by a minimum of 30,000 acres of native rangeland with minimal amounts of brush. This area may have some cropland fields associated but should be predominantly rangeland suitable for feeding and loafing. All habitat components, including booming grounds should be in relatively close proximity. It is critical that good brood rearing cover be close to nesting cover.

Ideal interspersion of habitat components consist of short grass for booming grounds (natural or artificial), substantial areas of mixed mid and tall-grass prairies, and overgrazed interspersions of forb dominated sites. These habitat types are best provided by large expanses of open prairies that are moderately grazed by livestock and which are periodically burned.

HABITAT MANAGEMENT TECHNIQUES

Brush Management

Well over 60 percent of prime prairie chicken habitat has been lost to moderate to heavy infestations of woody plants. These species include but are not limited to mesquite, huisache, macartney rose, running live-oak and Chinese tallow.

Brush management is best approached with integrated management techniques employing appropriate herbicides and prescribed burning. Where brush densities are light to moderate (50-350 plants per acre), individual plant treatment

(IPT), should be the tool of choice as this provides efficacious and relatively inexpensive treatment. Heavier densities require aerial and/or ground broadcast methodologies and repeated follow-up treatments as woody plant mortality will be substantially less than IPT.

Mesquite control is best accomplished with mixtures of triclopyr and clopyralid for foliar sprays and triclopyr and diesel fuel for basal applications. Huisache is best controlled with mixtures of triclopyr and picloram as foliar applications with greatest efficacy being accomplished in the fall of the year. Basal applications of triclopyr and diesel are also recommended.

Macartney rose, a stem sprouting introduced species is best controlled with foliar applications of picloram or picloram plus 2,4-D in high volumes of water by either ground or aerial broadcast. Chinese tallow, another introduced species, is best controlled with aerieal or ground broadcast of picloram or triclopyr and picloram tank mixes.

Running liveoak is controlled only by applications of tebuthiuron, a pelleted herbicide. Dense stands of running liveoak lend themselves only to aerial application while scattered stands can be controlled with ground treatments. Where aeral applications is used, 2# of active ingredient is required for complete control.

For additional guidance for control of woody species, the NRS Brush Management Standard and/or the Texas Agricultural Extension Service Publication B-1466 should be consulted.

All of the above treatments should be coupled with prescribed burning and/or mechanical control such as roller-chopping, mowing or disking to maintain the herbicidal control and maintain a reduced woody plant stature.

Prescribed Burning

Fire is an important tool in the manipulation of prairie habitats. Ecologically the Gulf Coast Prairies developed in conjunction with periodic natural or man induced fires. Prescribed burns should be conducted at 3 to 5 year intervals depending on objectives of the burn. These burns should be conducted from first frost until early spring. Generally, fall burns encourage forb growth while spring burns are more conducive to perennial warm season grass growth. Summer fires may be utilized but care must be exercised to avoid nest sites where hens may still be nesting.

Burning should be conducted using some type of strip pattern or block design leaving a mosaic quilt-work pattern on the landscape. This type of pattern provides greater diversity and different stages of succession within the rangeland plant community. Effects of prescribed burning are enhanced by the use of cattle grazing following the burn to further manipulate plant diversity, plant density, thatch buildup, and species composition.

Consult the NRS Prescribed Burning Standard for additional information and guidelines relating to range burning.

Prescribed Grazing

Duration and intensity of grazing must be utilized to improve species composition, maintain optimal nesting and brood rearing habitat, and maintain rangeland health and vigor. Full growing season rests may be called for on severely depleted ranges or where agronomic practices such as rice farming have depleted or destroyed better native range plants.

On good and excellent condition ranges, the prescription may call for moderate continuous stocking to provide for optimal prairie chicken habitat which includes closely grazed areas for booming grounds, moderately grazed areas with good structure and abundant weeds for brood rearing habitat, and relatively ungrazed sites for nesting habitat.

Forage inventories and grazing plans should include forage quantity and quality if known, supplemental feed requirements, recommended livestock numbers, timing and duration of grazing for each pasture, and drought plans. Grazing plans must be flexible to enable producers to manipulate numbers of animals and timing and intensity of grazing. Cattle grazing, if properly utilized, can be used as a tool to mimic grazing by wild ungulates and maintain or improve prairie chicken habitat.

Refer to the NRCS Prescribed Grazing standard for additional information on grazing management.

Supplemental Food Plots

Supplemental food plots are not an essential element in Attwater's Prairie Chicken management. Diet studies show that prairie chickens will consume seeds of peanuts, hay grazer, rice, corn, milo, soybeans, and mung beans when these crops are available. Management may include planting of small food plots of the above mentioned crops. Since high levels of aflatoxins may be a potential problem associated with many seed crops, extra care must be taken in the management of these type crops. Food plots may be more beneficial in dry periods when forb seeds are lacking.

It should be emphasized that prairie chickens do not need supplemental food plots and in fact food plots may create problems for the birds because of aflatoxins, increased predation due to concentration of prairie chickens and others.

Where native grass stands are so dense as to inhibit forb growth, disking may be done in strips are blocks to promote annual and perennial forb production. Comb inations of prescribed burning and/or grazng management may also be used to create weedy plots suitable for brooding habitat and feeding areas.

Use Exclusion

Excluding livestock for an extended period of time from extremely deteriorated sites to improve these areas may be beneficial to improving prairie chicken habitat.

References

Kessler, Winifred B. 1978. Attwater Prairie Chicken Ecology in Relation To Agricultural and Range Management Practices. PhD Thesis. Texas A&M University, College Station. 158 p.

U.S. Fish and Wildlife Service. 1983. Attwater's Prairie Chicken Recovery Plan. Albuquerque, N.M. 48p.

Horkel, John D. 1979. Cover and Space Requirements of Attwater's Prairie Chicken (Tympanuchus Cupido Attwateri) in Refugio County, Texas. PhD Thesis. Texas A&M University, College Station. 96p.

Cogar, Virginia Faye. 1980. Food Habits of Attwater's Prairie Chicken in Refugio County, Texas. PhD Thesis. Texas A&M University, College Station. 119p.

Morrow, Michael E., Adamcik, Robert S., Friday, Jenny D., McKinney, Floyd B. Factors affecting Attwater's prairie-chicken decline on the Attwater Prairie Chicken National Wildlife Refuge. 1996. Wildlife Society Bulletin 1996, 24 (4): 593-601.

Jurries, Royce W., Attwter's Prairie Chicken. 1979. Texas Parks and Wildlife Department. 36p.

Lehmann, Valgene W., U.S. Fish and Wildlife Service. 1941. Attwater's Prairie Chicken Its Life History and Management. North American Fauna 57. 62p.

Approval

/s/ Gary Valentine

State Wildlife Biologist

Table 1. Important Native Attwater's Prairie Chicken Food Plants (seed, fruit, and foliage)

Forbs
Yellow falsegarlic
Upright prairie-coneflower
Leavenworth vetch
Karnes sensitivebriar
Limnosciadium
Prairie Brazoria
Burclover
Bracted sida
Blue-eye grass
Showy primrose
Seacoast sumpweed
Sawtooth frogfruit
Violet ruellia
Aster
Yellow woodsorrel
Groundsel
Prairie senna
Southwest bedstraw
Western ragweed
Yellow fugosia
Largefoot pepperwort
Erect dayflower
Southern dewberry
Texas broomweed
Manystem fasedandelion
Texas geranium
Panicled tickclover
Tufted flax
Low wildmercury
One-seed croton
Snow-on-the-prairie
Knotweed leafflower
Silky evolvulus
Drummond phlox
Slender vervain
Carolina wolfberry
Bushy sea-oxeye

Grasses
Winter bentgrass
Gaping panicum
Panicum spp.
Buffalograss
Love grass
Longtom
Scribner's rosettegrass
Little barley
Tumblegrass
Little bluestem
Silver bluestem
Red lovegrass
Ozarkgrass
Hall's panicum
Vine mesquite
Tall dropseed

Sedge
Flatsedge
Eleacharis spikesedge