

# 5 Grassland Management



North Carolina supports a variety of planted and natural grassland habitats ranging from coastal marshes to pasture and hay land, to lawns and mowed rights of way, to young forest regeneration areas, to mountain balds. Wildlife needs can be encompassed in management objectives in all of these grassland types, but, as in most other habitats, the importance of wildlife in landowner management objectives will dictate opportunities.

The list of wildlife that will benefit from improved management of grasslands is long. Meadowlarks and sparrows including field, grasshopper, Bachman's, and Henslow's sparrows are open grassland nesters. Rabbits, quail, turkeys, and deer use grasslands extensively. A variety of reptiles, amphibians, and beautiful butterflies are dependent on grass-dominated habitats. Grasslands benefit aquatic wildlife by controlling soil erosion.

Birds that depend on native grasslands are declining at a rate greater than any other group of North American birds. Many declining grassland bird species depend on large areas of habitat and will benefit most where management activities are applied on a large scale or in expansive landscapes. For instance, one grassland bird, the Bachman's sparrow, occurs almost exclusively in large open-canopied and frequently-burned pine stands with a high grass component or in very large (greater than 100 acres) pine-regeneration areas with a high grass component.

Much of North Carolina's 2,000,000-plus acres of grasslands are managed to produce forage. Unlike extensive grassland ecosystems of the Midwest, our grasslands are often interspersed with woodlots, residential areas, and row crop lands. Opportunities to benefit declining grassland birds are greatest in those areas where grasslands occupy a significant portion of the landscape. (See the N.C. cover map on page 9.)

Management is necessary to keep grasslands productive. Without some type of disturbance, grasslands become choked with dead stems and litter and, on most sites, will revert to forest. Five management tools commonly used in grassland management are grazing, haying, fertilizing, overseeding with legumes, and prescribed burning.

## Warm- and Cool-Season Grasslands Dominated by Introduced Grasses

Today, most privately owned grasslands are planted to non-native grasses to produce forage, manage nutrients as part of a waste disposal system, or for aesthetics. Introduced grasses are popular with farmers because they are easy to establish, withstand heavy grazing, and respond to heavy fertilization.

Cool-season, non-native grasses include tall fescue, orchard grass, and timothy. Cool-season grasslands predominate in the northern Piedmont and Mountains. Non-native, warm-season grasslands, which predominate on the Coastal Plain and southern Piedmont consist of Bermuda and Bahia grass. Non-native grasslands are typically managed as short (less than six inches tall) monocultures. Turkeys, deer, and geese will use these grasslands, but grasslands dominated by non-native grasses provide poor habitat for most species of declining wildlife because they are deficient in cover, produce a thick sod at ground level, and produce few seed foods.

The predominant cool-season grass used in North Carolina is fescue. Fescue provides good grazing during the fall and spring. However, many varieties of fescue seed carry within them a fungus, which produces toxins in the

plant. The fungus benefits the plant by discouraging browsing by insects and animals. The toxins in fescue can impact livestock health and weight gains and have been shown to be detrimental to wildlife.

Cool-season grasslands can be improved by overseeding with legumes such as clovers and annual lespedezas. The legumes remove nitrogen from the air and add it to the soil where it is then available for other plants. Pastures overseeded with legumes will provide improved livestock performance and provide greater benefits to wildlife. The addition of a legume to fescue pastures will also help offset the toxic effects of the fungus, which infects many varieties of fescue. Consult your USDA Service Center for recommendations on legume varieties, seeding dates, and methods.

Grasslands planted to warm-season-introduced grasses can be improved by overseeding to a winter annual grass such as oats, wheat or rye. The annuals will provide forage during the period when warm-season grasses are dormant. Here again, consult your USDA Service Center for recommendations on seeding dates and methods.

Introduced grasses are usually hayed or grazed to a height of two to four inches. Grasses below this height will result in lower production, increased soil erosion and less wildlife use. Grazing can be continuous or rotational. Continuous grazing is where all animals are placed in one pasture and allowed to selectively graze. Rotational grazing may be as simple as switching livestock between two pastures or, if practical, livestock may be moved frequently among several pastures.

Continuous grazing reduces forage production and eliminates wildlife cover and food. Cattle trampling also destroys wildlife nests. Under certain management objectives and pasture conditions, continuous heavy grazing may be used as part of an overall program to improve grazing distribution.

Rotational grazing allows you to pasture more cattle together and also allows wildlife to use the rested pastures and areas adjacent to the fenced pasture. Rotational grazing permits the use of forages when they are at peak production, protein content, and palatability. It also helps the growth of legumes, such as clovers, and allows wildlife nests to survive, if the rest period is not too short. Rotating between pastures with native warm-season forages and those with cool-season forages increases productivity but requires careful management.

A grazing system will work well only if the grass or forage is adequate to support the livestock numbers, so keep stocking rates in mind. If your main objective is to produce the maximum amount of forage from your grasslands, you may want to investigate the use of a management-intensive grazing program. Here, the livestock is rotated among smaller paddocks at short intervals.

Both haying and grazing will remove nutrients from the soil. Fertilizer and agricultural limestone should be added to a pasture or hay land, but only after the soil is tested. For assistance with pasture management, rotational grazing, or soil testing and interpretation, contact your local USDA Service Center.



### Native Grasses

Many landowners are rediscovering the forage value of our native warm-season grasses. In addition to providing superior forage during the summer, these grasses, such as native bluestems, switch grass, Eastern gamma grass, and Indiangrass, also are good for wildlife. The growth pattern of these grasses is compatible with legumes and other broad-leaf plants that are important to both wildlife and livestock.

*Diverse native grasslands provide forage and wildlife habitat.*



DON HAYES/NCWRC

*Well-managed native grass pastures provide wildlife with overhead cover and ample travel lanes between individual plants.*

the ground and, if cut or grazed too low, it cannot respond with rapid regrowth. Regrowth should not be grazed or hayed after mid-July. Late summer grazing and haying will reduce the vigor of the plants, weaken the stand, and eliminate important winter cover and spring nesting cover. Legumes may be overseeded on new warm-season grass plantings during the second year, after the grasses have become established.

While studies have shown that native warm-season grasses are efficient at removing nutrients from the soil, they do use large amounts of phosphorus (P) and potash (K). Studies also have shown that yields, crude protein, estimated net energy, digestibility, and relative feeding values were increased in big-bluestem/Indian-grass hay when the grasses were fertilized with nitrogen. The major increases occurred at rates of 50-100 pounds of nitrogen per acre with 50 pounds per acre giving the greatest return on the dollar. Nitrogen should be applied only in combination with prescribed burning to avoid problems with cool-season grasses and weeds.

Burning is an important management practice for native grasses. Fire releases nutrients, controls ground litter and some unwanted plants, stimulates seed production, and helps improve plant diversity within the grassland. This process helps distribute grazing pressure and benefits wildlife. Native grass stands should be burned in early spring as new growth begins to emerge.

Early travelers recorded that grass-dominated savannas and prairies were once common in North Carolina. These grasslands were dominated by warm-season grasses and supported several hundred species of plants. Today, most have been replaced by woodland, cropland or introduced grasses. The remaining remnants are referred to as pine savannas, piedmont prairies, oak glades, cane thickets, or mountain bals and are vital to the survival of many rare plants and animals and other grassland wildlife.

Historically, many of these grasslands were sustained by fire. If you are fortunate enough to have remnant native grasslands on your property, you have an opportunity to protect a resource that is valuable for conservation of grassland wildlife and plant diversity. Grassland remnants should not be fertilized or limed because the fertilizer may be used by undesirable weedy plants. Though no longer extensive in North Carolina, native grasslands, prairie remnants, cane thickets, and savannas provide high-quality habitat for many species of grassland-dependent wildlife.

Studies show that native grasslands that are prescribed burned in March and early April will contain more forbs (broad-leaf plants), while late April or May burns will favor the production of grasses. The timing of burning should be varied to maintain plant diversity. For assistance in identifying and managing native grasslands, contact the North Carolina Wildlife Resources Commission Division of Wildlife Management or your local USDA Service Center. See *A Landowner's Guide to Native Warm-Season Grasses in the Mid-South* (University of Tennessee Extension).

Managed native grasslands provide better habitat for many bird and wildlife species than introduced grasses. They are taller (one to six feet), and individual plants form clumps providing travel lanes and escape cover, bare ground for feeding, and room for other plants to grow between clumps.

When the soil reaches about 60 degrees in the spring, the warm-season grasses begin growing. They grow best during the warmest months of the year when the soil is about 90 degrees. Although warm-season grasses have a short growing season, they make more efficient use of water and soil nutrients (nitrogen, phosphorus and potassium) than do other grasses.

Native warm-season grasses should not be grazed or cut closer than eight inches because, unlike low-growing exotic grasses, native grass has little leaf surface near

## Grassland Wildlife Management Tips

- Rotating cattle through different pastures can improve cattle weight gains and wildlife habitat.
- Use both native warm-season and cool-season grasses in a rotation-grazing system.
- Avoid hayfields and pastures with only a single species of grass.
- Protect shrubby vegetation in drainages and along field edges with permanent fences.
- Adding a legume to perennial grass pastures and hay lands builds the soil, improves forage for livestock and wildlife, and supports abundant insects on which wildlife feed.
- Warm-season grass regrowth should not be grazed or hayed after mid-July.
- Establish fire lines around all warm-season grass stands and use fire to manage them.
- Consult an experienced land manager for details concerning the management of remnant native grasslands.