

Managing Pastures and Haylands for Wildlife

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Many livestock and hay producers enjoy the sights and sounds of wildlife on their land. Species such as rabbits, quail and a variety of songbirds thrive in pastures and haylands. Turkey and deer use small pastures and openings as a food source and for rearing young. Landowners can either help or hinder wildlife by how they manage their land. In the southeastern United States, recent declines in quail populations have been attributed to changing land use practices that provide marginal habitat and increased predation on quail. However, this trend could be curtailed and marginal wildlife habitat improved by implementing a few farming practices that benefit both wildlife habitat and livestock production.

Forages and Wildlife

Perhaps one of the most important tools for enhancing wildlife on Arkansas lands is improving the year-round availability of food and cover. Many wildlife species consume plants for food. Beneficial plants provide seeds, fruits, buds and leafy vegetation for wildlife and livestock. Often these are produced or available only during particular seasons of the year. Typically, wildlife have adequate food resources in the summer and fall, but food becomes scarce in winter and early spring. A lack of plant cover, which protects wildlife from predation and extreme temperature changes, might also contribute to the absence of wildlife. Growing seasons of various plant species and availability of cover from tall grasses, shrubs and brushpiles can be integrated into a farm management plan that accommodates the year-round needs of both wildlife and livestock production.

A first step toward improving wildlife habitat in pastures and haylands is to increase the diversity of grasses and forbs (Table 1). Native warm-season grasses, millets, lespedezas and clovers can be part of your pasture management plan. Although fescue and bermudagrass may provide high-quality forage for agriculture production, these grass species tend to be of no value to quail and turkey and are of limited value for rabbits, deer and other wildlife. Thick mats of fescue or bermudagrass prevent growth of other desirable plants for wildlife. When in its dormant summer stage, fescue provides extremely poor wildlife nesting and rearing sites as well as poor forage for livestock. Ground-dwelling species like quail and rabbits need



White-tail deer are just one wildlife species which relies on field borders for food and cover.

travel lanes, and the thick growth of these grasses reduces ease of travel and ability to seek food.

Livestock and hay producers can enhance pastures for wildlife as well as livestock by establishing mixed-instead of single-species stands of forages to provide a diversity of foods

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Table 1. Recommended Forage Cultural Practices for Livestock and Wildlife

Plant Type	Seeding Rates in Lbs Per Acre (PLS = pure live seed)	Planting Date(s) (N Ar = Northern Arkansas, S Ar = Southern Arkansas)	Planting Depth (inches)*	Potential Production (per acre)
Big Bluestem	5-10 PLS drilled	Dec 15 - Apr 10	1/4 - 1/2	4 tons/A
Little Bluestem	5-10 PLS drilled	N Ar Dec 1 - Apr 20	1/2 - 3/4	1.5 tons/A
Switchgrass	8-10 PLS drilled	N Ar Dec 15 - Apr 10 S Ar Dec 1 - Apr 20	1/4 - 1/2	4 tons/A
Eastern Gamagrass	8-10 PLS	N Ar Nov 10 - hard ground S Ar Dec 1 - hard ground	1	5 tons/A
Bahiagrass	15-20 broadcast	Nov 1 - June 1	1/4 - 1/2	3 tons/A
Matua (Rescuegrass)	20-30 drilled	Mar 15 - Apr 15 Sept 1 - Oct 15	1/4	4 tons/A
Sorghum-Sudangrass	30-45 broadcast 20-30 drilled	N Ar May 15 - July 15 S Ar May 1 - July 15	1/2 - 1	5 tons/A
Orchardgrass	12-15 broadcast or drilled	Mar 1 - Apr 15 Sept 1 - Nov 1	1/4 - 1/2	4 tons/a
Ryegrass	30 broadcast 20-25 drilled	Sept 1 - Nov 1	1/4 - 1/2	4 tons/A
Browntop Millet (45-60 day maturity)	20-30 broadcast 5-10 drilled	Apr 1 - Aug 15	1/2 - 1	2 tons/A
Japanese Millet (Barnyard) (45-60 day maturity)	20-40 broadcast 10-15 drilled	Apr 1 - Aug 15	1/2 - 1	4 tons/A
Proso Millet (60-75 day maturity)	30-40 broadcast 20-30 drilled	Apr 1 - Aug 15	1/2 - 1	Primarily planted for wildlife, sometimes a seasonal source of livestock forage
Pearl Millet (60-70 day maturity)	25-40 broadcast 15-30 drilled	N Ar May 15 - July 15 S Ar May 1 - July 15	1 - 2	4 tons/A
German Millet (Foxtail) (75-90 day maturity)	20-30 broadcast 5-10 drilled	Apr 1 - Aug 15	1/2 - 1	Primarily planted for wildlife, sometimes a seasonal source of livestock forage or hay
Bicolor Lespedeza	20 broadcast 10 drilled	N Ar Apr 20 - June 1 S Ar Mar 20 - May 1	1/2 - 1	Usually planted for wildlife, not livestock
Annual Lespedeza (Kobe or Korean)	20-25 broadcast 15-20 drilled	Feb 1 - Mar 1 Mar 1 - Apr 15	1/4 - 1/2	1.5 tons/A
Partridge Pea	10-15 broadcast 4-6 drilled	Feb 1 - Apr 15	1/4 - 1/2	Usually planted for wildlife, not livestock
Oats	120-130 broadcast or drilled	Sept 1 - Apr 1	1 - 1 1/2	2 tons/A
Rye	110-120 broadcast or drilled	Sept 1 - Apr 1	1 - 1 1/2	2 tons/A
Wheat (Forage)	120 broadcast or drilled	Sept 1 - Apr 1	1 - 1 1/2	2 tons/A
Alfalfa	20-25 broadcast 15-20 drilled	Mar 1 - Apr 15 Sept 1 - Oct 15	1/4	5 tons/A
Red Clover	10-12 broadcast 6-8 drilled	Mar 1 - Apr 1 Sept 1 - Oct 1	1/4 - 1/2	3.6 tons/A
White Clover	3 broadcast 2 drilled	N Ar Feb 15 - Mar 15 Sept 15 - Oct 15 S Ar Feb 1 - Mar 1 Oct 1 - Nov 1	1/4 - 1/2	1.9 tons/A
Arrowleaf Clover	8-15 broadcast 5-10 drilled	Sept 15 - Oct 15	1/4	2.5 tons/A
Berseem Clover (use Bigbee cultivar)	20 broadcast 10-15 drilled	Sept 1 - Oct 1	1/4	4 tons/A
Crimson Clover	15-30 broadcast 10-20 drilled	N Ar Sept 1 - Oct 15 S Ar Sept 15 - Nov 1	1/4 - 1/2	1.2 tons/A
Vetch (Common, Hairy, Bigflower)	25-30 broadcast 15-20 drilled	Sept 1 - Nov 1	1/2 - 1	1.5 tons/A

*When planting mixtures, set planting depth for species having the shallowest recommended planting depth.

Table 2. Forage Mixtures for Livestock and Wildlife

Plant Mixes	Seeding Rate (lbs per acre) (Broadcast)	Planting Date
Alfalfa and Orchardgrass	16 5	Sept 1 - Oct 10 Mar 20 - Apr 20
Matua Rescuegrass and Red Clover or White Clover or Crimson Clover	25 6 2 10	Sept 1 - Oct 1
Switchgrass and Big Bluestem and Partridge Pea	3 pure live seed 3 pure live seed 3 pure live seed	Dec 15 - Apr 10
Orchardgrass and Red Clover or White Clover	10 8 2	Sept 1 - Oct 10
Grass sod: Overseed Lespedeza	15 - 20	Jan 1 - Mar 15
Bermuda sod: Overseed Arrowleaf or Crimson Clover	5 - 10 20 - 30	Sept 15 - Oct 15
Fescue sod: Overseed Red Clover or White Clover	6 - 8 1 - 2	Jan 1 - Mar 15
Wheat and Orchardgrass and Red Clover and White Clover	60 5 6 1	Sept 1 - Oct 10

(Table 2). Establishing legumes in cool-season pastures provides added benefits to livestock, as detailed in FSA2117, *Growing Clovers in Arkansas*. Mixtures of forages can provide food and travel lanes for ground-dwelling wildlife. Legumes fix atmospheric nitrogen, an element which improves plant growth. Grass and legume mixtures can produce excellent livestock performance with reduced expense for nitrogen fertilizer compared to pure, single-species grass stands. Red, white, crimson and arrowleaf clovers can fix 90 to 100 pounds of nitrogen per acre annually in Arkansas soils. Therefore, growing legumes with grasses can be more profitable than growing grasses alone.

Following are some considerations when establishing specific forages and natural plants for pasture and wildlife habitat improvement.

- *Legumes* can be incorporated into existing fescue or bermudagrass pastures. Options for pasture management range from incorporating some red or white clover, lespedeza or alfalfa into fescue to completely converting fescue pastures to wildlife/livestock-friendly forages. Annual clovers such as crimson and arrowleaf work well in bermudagrass pastures since they grow in fall and spring when bermudagrass is dormant.
- *Clovers* grow mainly in spring and fall with only limited production in summer. Clovers provide forage for wildlife and attract insects which serve as high-protein feed for young quail and turkey.

Soil fertility levels must be higher for maintaining clover than for most grasses.

- *Annual lespedeza* grows mainly in summer and can provide ample amounts of seed in fall. These seeds are a valuable food source for quail and other birds during the critical fall and winter months.
- Proper *fertilization and liming* normally results in dramatic increases in forage production, which simultaneously benefits livestock and wildlife. A soil test can provide information on the fertility status of a field as well as recommendations for lime and fertilizer applications. Periodic testing of soils is necessary to determine proper rates for obtaining and maintaining forage stands. Contact your local county Extension agent for details about soil testing.
- *Native warm-season grasses* provide good habitat for quail, turkey and songbirds. These ground-nesting birds prefer dry, dead grass for building nests. If pastures or hayfields are harvested cleanly in the fall, no grass residue and cover will be left for building nests the next spring. Therefore, some growth must be left from the previous year for creating good nesting areas. Nesting for quail, turkey and songbirds can begin as early as April and conclude as late as August, depending on seasonal fluctuations in weather and temperature. Tall grassy areas around pastures and woodlands should be disturbed very little through mid-July to allow for successful nesting.
- *Native or natural plant species* can be encouraged with minimal expense by “letting it grow” and restricting access of livestock in marginal areas. Some selective thinning or weeding may be necessary to remove aggressive, invasive species which outcompete other natural plants.

Tips for Grazing Lands

On many farms, livestock production is the primary enterprise for pasture land, with wildlife being desired but secondary to the livestock operation. While livestock are confined in a pasture by a fence, wildlife can move freely across the farm to areas where food and cover are available. Grazing livestock can destroy significant amounts of potential wildlife cover if allowed to graze field borders and woodlands. Since little wildlife cover is left in a grazed pasture, small game animals tend to be confined to the limited areas where both cover and food are available. Limited cover confines wildlife to fewer acres much the same as a fence confines livestock to a single pasture. Applying just a couple of the following practices can greatly improve your land for wildlife.

- *Practice rotational grazing.* With careful maintenance, rotational grazing can improve livestock and forage production as well as wildlife habitat. Rotational grazing gives wildlife undisturbed access to rested pastures adjacent to the fenced pasture where livestock are grazing. Forages at peak production provide high protein

and palatable feed for both cattle and wildlife. Well-planned rotational grazing also provides livestock with forage later into the fall and early winter, which means less reliance on feeding operations due to a shortage of pasture. Rotating pasture use can give ground-nesting wildlife time to raise their young-of-the-year, if the rotational period is not cut short. If possible, set aside a pasture in the rotation from April 1 to July 15 which will allow time for wildlife to hatch and rear their young. Various grazing strategies are described in FSA2129, *Comparing Various Grazing Management Systems*.

- *Do not overstock your pasture.* Pastures overgrazed with too many cattle have reduced forage production, increased potential for soil erosion and low-quality wildlife habitat. Cattle weight gains will also be reduced due to poor plant vigor and lower yield. Overstocking pastures also allows cattle to overgraze clovers and other high-quality forages, thus eliminating these plants from the stand. To maintain vigorous stands and to optimize benefits for wildlife and livestock, graze native warm-season grasses such as big bluestem and switchgrass no shorter than 8 inches and cool-season grasses such as orchardgrass and ryegrass no shorter than 4 inches. Appropriate grazing strategies and rates can be found in FSA2130, *Controlled Grazing Management Systems*.
- *Protect fencerows.* A clean fencerow provides few, if any, benefits for wildlife. Woody fencerows provide windbreaks and winter protection, and can serve as natural travel lanes and food sources for wildlife. Encourage plant growth by avoiding spraying herbicides or mowing next to the fence, planting clumps of trees or shrubs and spreading seeds of vines and shrubs along fencerows. If fence maintenance is a concern, an alternative is to maintain a 6- to 8-foot strip of cleared area or legumes adjacent to the fence, while providing wildlife cover at other locations. Light discing on a 2- to 3-year rotation on the non-pasture side of the fence will encourage new plant growth and improve habitat for wildlife.
- *Protect ponds, streamsides and other waterways from livestock.* Fence livestock away from the bank of the pond, stream, creek or river. Given the opportunity, livestock will reduce wildlife cover around waterways because of foraging and trampling. Such activities shorten the life of ponds and can reduce the water quality of ponds, lakes, streams and rivers. Pond enclosures can provide excellent habitat for many wildlife species. Many non-game species benefit from clean water sources including insect-eating frogs, toads and songbirds such as meadowlarks, bluebirds, indigo buntings and song sparrows.

Providing a wooded or grassland buffer strip will reduce erosion, protect water quality and protect fish and other aquatic life. A buffer will provide essential habitat and corridors for many wildlife

species. Ideally, the fenced area should equal twice the pond size or stream width to provide wildlife habitat and help prevent soil erosion and siltation, although more narrow fenced borders are still beneficial. Water gaps can be left at required locations if livestock need access to the pond or stream, but the best solution is to build tanks away from the water body to keep livestock completely away from the water's edge. Trees can be established along these water bodies to maintain bank stability. See FSA1028, *Soil Erosion and Clear Streamwater*, for additional soil conservation and sediment reduction practices.

- *Reduce or avoid pure fescue pastures.* Pure fescue pastures not only provide minimal benefits for wildlife but can be a problem for both livestock and wildlife if infected with endophyte. Studies show that both livestock and wildlife that consume endophyte-infected grasses and seeds experience higher respiration rates and body temperatures, a decline in fertility and live births, reduced milk production and slower weight gains. A survey of tall fescue pastures in 21 Arkansas counties indicated a high (78 percent) endophyte infection level. Recommendations in FSA2140, *Managing Endophyte-Infected Fescue*, include diluting endophyte-infected fescue with clover or eliminating fescue. Replacing fescue with native warm-season grasses such as big and little bluestem, switchgrass and eastern gamagrass can provide summer pastures for cattle and nesting/rearing sites for wildlife (Table 1). Native warm-season grass seed tends to be more expensive and takes longer to establish than other grasses, though benefits of native grasses for wildlife are numerous. Besides providing food and cover for quail and turkey, seeds from warm-season grasses are a preferred food of goldfinches, indigo buntings and other grassland dwelling songbirds. Private lands biologists with the Arkansas Game and Fish Commission can provide technical assistance and, in many cases, equipment and materials for converting fescue pastures to native warm-season grasses or other wildlife forages. Contact the Game and Fish Commission state office, (501) 223-6300, and ask for the private lands biologist in your area.
- *Provide ungrazed borders.* Landowners can increase the value of their pastures for wildlife without taking large amounts of land out of agricultural production by protecting ungrazed borders around fields and woodlands. For example, a 10-foot wide ungrazed border that is one mile long only requires 1.2 acres of land (Figure 1). Pasture land along edges of woods and along some fence lines is often less productive than the rest of the pasture, so productivity losses will be minimal. Small game animals will use pastures up to 300 feet from ungrazed woody cover. Simple math shows that each acre of ungrazed border can allow wildlife to use 25 more acres of the pasture area (Figure 2). Increased access to grasslands increases wildlife habitat and can improve wildlife populations especially for small game animals.

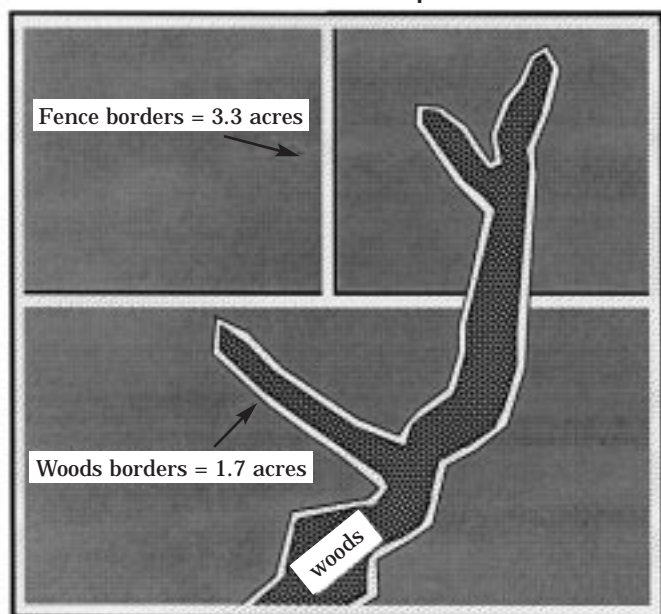
Grazing must be restricted from the border strip by a fence. If permanent fence is installed, barbed wire is better than woven wire since it allows better access for wildlife. A single strand of smooth electric wire will protect the border from grazing with minimal expense. A 10-foot border should be left for separating pastures, while a 20- to 30-foot border is recommended along woods and brushy draws. Ungrazed borders can be left in existing vegetation or a portion can be planted in more desirable species to add food and cover for wildlife. Woody plants including oak, blackberry and sumac are desirable in borders since they provide year-round cover. Sections of borders can be mowed every other year to keep brush from becoming too tall and woody. The entire farm should be considered when developing borders so that borders connect with woodland and other ungrazed areas, thus providing travel lanes over the entire farm.

Tips for Haylands

Many tips for managing pasturelands and livestock also apply to haylands. However, some specific hayland practices which benefit wildlife are as follows:

- *Time your hay-cutting with the nesting season in mind.* For increased wildlife nesting, delay haying until July 15 or later. This will allow ground-nesting birds time to hatch their broods. The nesting period for quail, turkey and songbirds utilizing pastures begins in early to mid-April and, depending on seasonal weather and temperature conditions, can continue through August. Normally, hay quality of most forages will be very poor if harvested as late as July 15.

Figure 1. Setting aside ungrazed borders for wildlife does not require large amounts of land. In this example of a 160-acre farm, only 5 acres (3% of the farm) were needed to provide a 10-foot border around all fences and woods. One mile of 10-foot-wide border requires 1.2 acres.



However, early-season rotational grazing can delay forage maturity so that acceptable quality hay can be harvested.

- *Install wildlife flushing bars.* Flushing bars can be mounted on the front of a tractor to move wildlife from the path of dangerous wheels and cutters (Figure 3). A study showed that juvenile rabbit mortality was reduced by up to 80 percent when using a flushing bar. Make flushing bars by hanging lengths of inch chain about two feet apart from a piece of angle iron or other material commonly available on the farm. The bar should be at least 10 feet in length to be most effective and mounted offset on the front of the tractor. The 28-inch hanging chains should be long enough to ride just above the surface of the ground. A 6-inch piece of chain can be attached 6 inches above the bottom of the hanging chain to increase weight and noise. The first chain should be located 36 inches from the tractor frame.
- *Aim high.* Set your mower as high as possible to avoid ground-dwelling wildlife. Raising a disc mower as little as 4 inches off ground level using wear-plate spacers or slides can save terrapins and small mammals. Install plexiglass around the leading edge and sides of a mower to prevent wildlife and domestic pets from being drawn into mower blades.
- *Mow inside-out.* Cut hay starting in the middle of the field and mow towards the outer borders, thereby allowing young and adult wildlife to stay in existing cover during the haying operation period. Fewer wildlife will be killed by tractor wheels or cutter blades, since they will not become trapped inside an ever decreasing circle. This method also decreases predation by

Figure 2. Quail and rabbits will use pasture areas up to 250 feet from dense, ungrazed cover. On this 160-acre farm, 5 acres of ungrazed border adds 125 acres of pasture as useable habitat.

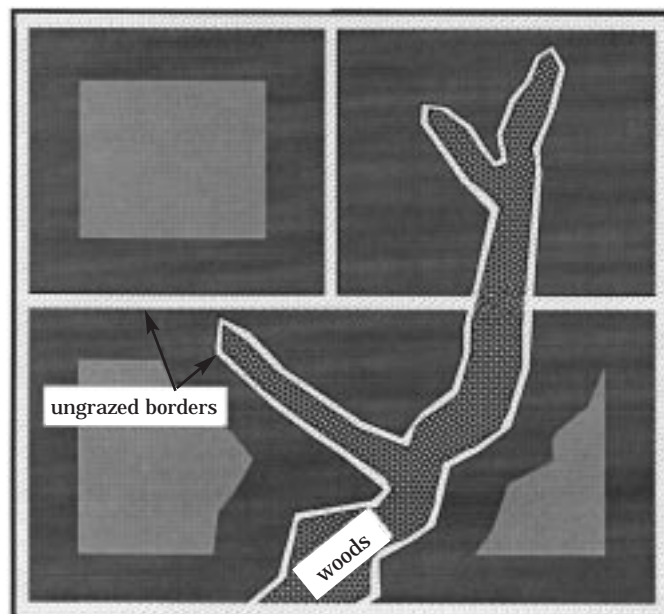
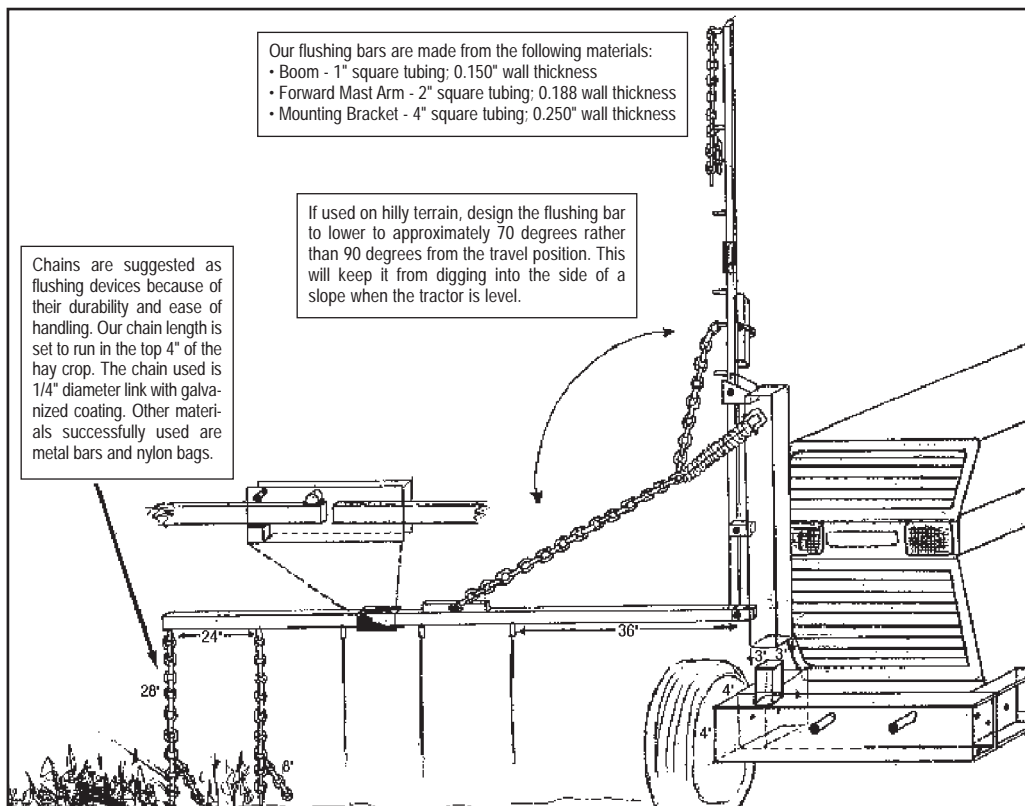


Figure 3. A flushing bar mounted on a tractor can improve wildlife survival. (Illustration courtesy of Ducks Unlimited Canada.)



because it promotes growth of weeds and forbs used by wildlife.

- *Provide supplemental forage for wildlife and livestock.* In hayfields with warm-season grasses, overseed a 30-foot strip to wheat, oats, rye, clover or annual ryegrass along the outside edge of hayfields in the fall (Table 1). If cattle graze the field, consider overseeding a larger area to provide forage for both livestock and wildlife. (Note of caution: Depending on circumstances, it may be illegal to hunt doves or waterfowl in the overseeded area. Check FSA9082, *Hunting Waterfowl and Doves on Agriculture Lands in Arkansas*.)

predators who make an easy meal of a rabbit or young quail trying to cross open ground.

- *Leave uncut field borders for wildlife cover.* Leave uncut a 10-foot or wider strip of hay around the outside of a field to provide food as well as nesting, escape and brood cover for wildlife. Predators can find nests easier in narrow border strips than in wider borders. Irregularly-shaped field borders provide even more cover for wildlife. Border width can vary but a minimum width of 10 feet is desirable. This amounts to a little over an acre of hay for wildlife in a field having a 10-foot-wide strip that is a mile in length.
- *Leave woodland borders.* Most hayfields next to woodlands are not as productive compared to areas away from the tree line. Little production loss may result, and savings in fertilizer and lime over the years could help offset production loss. Maintain early plant succession along woodland edges by mowing or lightly disking 10-foot strips every one to three years before April 1 or after July 15. Disking has greater wildlife benefits than mowing

Summary

Agricultural practices for pasture and hayland management can improve forage production for livestock and wildlife. Several practices can be integrated into existing hay and pasture operations without losing forage productivity. These include providing a diversity of plantings for livestock and wildlife, protecting waterways and allowing shrubs and woody fencerows to grow. Mixtures of warm-season grasses, cool-season grasses and forbs provide habitat components for wildlife species throughout the year, compared to a single species of grass. Shrubby vegetation in drainages and along field edges should be protected with permanent fences. Wildlife travel lanes can be created and native plant foods protected by installing fencing 10 to 30 feet from the field border. Irregularly-shaped field borders provide even more cover for wildlife. Leaving clumps of blackberry, sumac, plum, cherry, persimmon and other wildlife food-producing shrubs along fencerows, field borders and waterways provides numerous advantages for wildlife. By changing only a few land management practices, landowners can improve wildlife survival in pastures and haylands.

Special thanks to Ducks Unlimited Canada for their illustration of the wildlife flushing bar.

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