Making Old Fields Productive for Wildlife

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Figures 1. *Tall fescue (left) and orchardgrass (right) should be eliminated to enhance wildlife habitat. These grasses grow dense at the ground level, making travel for small wildlife difficult. The growth structure and thatch presented by these grasses suppress the seedbank and make finding desirable seed (if any are present) most difficult for birds. Further, both of these grasses are least preferred among white-tailed deer for forage. Photos courtesy of the authors.*

Most forest landowners have portions of their property that are not wooded and not in production agriculture. Usually, these are old fields or "odd areas" bushhogged each year to keep them from "growing up." Many are fields once planted to tall fescue that now have some broomsedge and a few blackberry brambles arising from the seedbank (seed occurring naturally in the top few inches of soil). Some are overgrown fallow fields or recently cut-over areas that soon will be consumed by small trees if left alone. These areas certainly can add to the diversity of habitats available, but they can be made much more productive for wildlife if managed correctly.

Get rid of the carpet

The first step in improving old fields and odd areas for wildlife is to eradicate any sod-forming perennial grasses. Non-native grasses, such as tall fescue, orchard grass, and bermuda grass, grow dense at ground level, making travel and foraging difficult for small animals (e.g., young turkeys, quail, and rabbits and sparrows). In addition, leaves of these grasses droop upon senescence, creating a deep thatch layer. The dense growth structure and thatch layer can preclude birds from picking seed from the ground and prevent the seedbank from germinating. Thus, plant diversity and weed seed available as food for wildlife are reduced considerably. Forced movement by some wildlife through such areas causes increased energy expenditure, which requires additional feeding to meet physiological and nutritional demands.

Herbicides used to eradicate these problem grasses include glyphosate (e.g., Roundup, Gly-4), imazapic (Plateau, Journey), and imazapyr (Arsenal AC). Before spraying, however, the area should be burned, hayed, grazed, or mowed and allowed to regrow several inches. This allows the herbicide to come in direct contact with the target plant while actively growing. Herbicide labels provide recommendations for rates, timing of application, and species controlled.

Evaluate the seedbank

The next step after eliminating sod-forming grasses is to evaluate the composition of plants occurring naturally. In many cases, the seedbank contains a rich assortment of forbs (broadleaf herbaceous plants) and grasses desirable for wildlife. This is especially true in recently cleared wooded areas. Plants such as ragweed, blackberry, partridge pea, beggar's-lice, pokeweed, native lespedezas, wild strawberry, annual sunflowers, bluestems, indian grass, and low panicgrasses provide either an excellent canopy of brood-rearing cover for quail and wild turkeys, and/or seed and soft mast that is an important source of energy for many wildlife species through summer and into fall and winter. Many

of these plants also provide structure for nesting bobwhites, wild turkeys, rabbits, field sparrows, dickcissels, indigo buntings, and other songbirds. If seed from desirable plants are present in the seedbank, planting may not be necessary, which saves time and money.

Prescribed fire and discing stimulate the seedbank. Using these techniques at different times, however, may elicit a different response. Burning in late winter/early spring may favor grass growth, while burning or discing in late summer/early fall generally favors forb growth. Discing after a burn accelerates germination of the seedbank. Discing in fall/winter may result in a different plant community than discing in spring/summer. It is a good idea to disc at different times to realize how the seedbank in a particular area will respond. It may take a few years of burning and discing to develop the community and structure desired.

When planting is necessary

When the desired plant composition and structure differs from what is available from the seedbank, quality early successional habitat can be planted. Native warm-season grasses (NWSG) and various forbs can be used to complement the existing seedbank and enhance conditions for an array of wildlife species. The composition and structure of the field is determined by the seeding rate, response by the seedbank, and management practices used. It is important to note that NWSG are established for wildlife primarily for the structure of cover provided. Suitable cover is more often a limiting factor for species such as quail, rabbits, and various songbirds than food. Fields of NWSG should not be considered food plots.

Wildlife benefits

Because most NWSG grow in erect "bunches," open space at ground level is provided when bunches are not too dense, allowing mobility for small wildlife (e.g., quail, rabbits, sparrows, and young turkeys). Forbs planted with NWSG should provide canopy cover, seed, and/or soft mast through summer and fall. During winter, fields of NWSG are magnets for rabbits, over-wintering songbirds, and deer, provided the field is not previously bushhogged or otherwise destroyed. This can be especially critical for small wildlife at a time when quality cover is at a premium. Tall NWSG, such as big bluestem, indian grass, and switchgrass, are especially valuable as their stems "lodge" (remain somewhat upright, leaning against each other), continuing to provide cover even after winter rains, snow, and wind.

Juxtaposition and area sensitivity

When a property is managed specifically for wildlife, the most important consideration is meeting the preferred habitat composition and arrangement for focal species (Figure 1). Arranging cover, food, and water in close proximity helps minimize travel and exposure, especially for animals with small home ranges, such as quail and rabbits. Size, shape, and placement of the field in the arrangement should be considered. While the amount of NWSG acreage needed varies among wildlife species, quality early successional habitat should be well interspersed across the entire property.

Another consideration is the amount of available habitat on surrounding properties as well. It is unrealistic to expect wildlife populations to increase when an island of habitat is created in an inhospitable sea. Stable populations result when animals can disperse from one local area to another. In addition, some species require relatively large expanses of habitat before a population response is realized. Grasshopper sparrows, for example, rarely use blocks of grass habitat less than 100 acres.

Establishment

NWSG do not compete well with non-native grasses (e.g., tall fescue, bermudagrass, crabgrass, johnsongrass), so it is critical to control these competitors (as well as problem broadleaf plants) before planting (as mentioned earlier). Although NWSG are adapted to nutrient-deficient soils low in pH, growth is better when the pH is raised to 6.0 - 6.5 and Phosphorus (P) and Potassium (K)

Figures 2. *Burning is the best way to set back succession in a field and improve plant composition and structure for wildlife. This field was burned in March (left). By early July (right), a variety of songbirds had nested in the field and rabbits were everywhere. Deer were feeding heavily on the fresh forbs made available by burning. This was a tall fescue hayfield a few years ago before it was sprayed to allow the seedbank to respond.*

Primary species managed	Percent NWSG & associated forbs	Arrangement of nwsg	Percent cool-season legumes and annual grains	Percent row cropland	Percent mast-producing hardwoods	Percent brushy cover (incl. 0—3-year-old harwoods and pine stands)
Bobwhite quail	20-80	Blocks ≥ 2 acres or strips ≥ 30′ wide	2; In firebreaks	5-50	5-20	20-50
Cottontail rabbit	10-80	Blocks 1-5 acres or strips ≥ 30′ wide	2; In firebreaks or small fields	5-50	10-40	20-50
Wild turkey	10-30	Blocks ≥ 2 acres	2-5; In firebreaks or fields	5-50	30-60	10-30
White-tailed deer	5-30	Blocks ≥ 2 acres	2-5; In firebreaks or fields	5-50	30-60	20-40
Grass/shrub songbirds (field sparrow, blue grosbeach, indigo bunting, yellow-breasted chat)	30-70	Blocks ≥ 5 acres or strips ≥ 50′	In firebreaks	< 10	0	50-70
Grassland songbirds (grasshopper sparrow, Henslow's sparrow, Eastern meadowlark, dickcissel)	70-100	Blocks or complexes ≥ 100 acres	In firebreaks	< 10	0	< 20

are brought to medium levels. Applications of Nitrogen (N) are not usually necessary when growing NWSG for wildlife.

NWSG should be planted in April or May. Seed can be drilled or top-sown. When planting bluestems or indiangrass, a drill with a specialized seed box containing "picker wheels" and agitators is necessary or the fluffy seed of these grasses lodge in the seed chute. Drills must be calibrated before planting. If top-sown, the seedbed should be cultipacked after seeding to ensure firm seed-to-soil contact. Seed must not be drilled or covered any deeper than ¼ inch.

Before seeding, percent pure live seed (PLS) must be calculated to determine the amount of bulk seed to be sown. PLS = % pure seed multiplied by germination rate divided by 100. Percent pure seed and germination rate are listed on the seed tag. A relatively light seeding rate (4 - 6 pound PLS per acre) is recommended when establishing NWSG for wildlife.

A mixture for wildlife might include the following:

1.5 lbs. big bluestem
1.5 lbs. little bluestem
1.0 lb. indian grass
0.5 lb. switch grass
0.5 lb. partridge pea
0.5 lb. purple prairie clover
4.0 oz. roundhead lespedeza

Just prior to or immediately after planting mixtures dominated by bluestems or indiangrass, a pre-emer-

Figure 3. Once the non-native carpet is removed from a field, naturally occurring forbs and grasses can flourish. Burning helps create an open condition at ground level, which allows small wildlife to travel through the field. Response from the seedbank is immediate and feeding conditions within the field are much improved.

gence application of an imazapic herbicide (e.g., Plateau or Journey) will provide competition control for several weeks, helping ensure seedling establishment. Patience is necessary after planting. NWSG establish slowly as most of the growth is dedicated to the root system in the first growing season. Remember, bare ground space between bunches is desirable for wildlife!

Manage for preferred structure and composition

Just like the old field or cut-over area described above, a field of NWSG is no better than the techniques used to manage it. Over time, NWSG can become rank and unattractive to many wildlife species. Management is needed to set back succession and create the vegetative composition and structure desired. Prescribed fire and discing should be used to manage fields of NWSG. Prescribed fire reduces litter buildup, sets back succession, increases nutrient availability, and stimulates herbaceous growth. Discing exposes soil, facilitates litter decomposition, and stimulates the seedbank. Fields should be burned on a 2-3-year rotation. Individual fields can be broken into smaller sections by discing firebreaks. Sections then can be managed on rotation. Firebreaks should be planted to various wildlife-friendly mixtures to provide increased food resources around NWSG fields. Bushhogging is not a recommended practice for managing NWSG because it increases the litter layer (thus reducing open structure at ground level) and inhibits the seedbank from germinating.

Conclusions

Unfortunately, many people relate declining populations of quail, rabbits, and other species to increased numbers of predators, especially hawks and coyotes. Although predation is a major factor in population dynamics, available habitat (especially lack of cover), surrounding habitat conditions (suburban sprawl, acreage in tall fescue, vast forest cover), and land-use practices ("clean" farming, double cropping) across the landscape have a larger negative impact on many wildlife species. Where isolated populations occur, it is possible to see little increase in quail/rabbit numbers even when efforts are made to improve habitat. This is frustrating to the landowner, who then often blames the lack of game on predators or some other "obvious" reason for the decline. Nonetheless, where viable populations of quail and rabbits are possible, habitat needs must be addressed before increases can be realized. While it is often not practical or possible to control predators, it is practical and possible to control predation. This is possible by creating quality early successional habitat. Establishing and managing NWSG and associated old field areas is an excellent way to provide the structure and cover needed while "controlling" predators, naturally.

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