



Managing Iowa Habitats

Grassed Waterways

Introduction

Wildlife habitat in agricultural areas is disappearing at an alarming rate. Without habitat, wildlife cannot survive. Grassed waterways provide wildlife with a habitat that includes food, cover, and water. With the rapid decline in the miles of fencerows originally found in Iowa, grassed waterways have become more important to Iowa's wildlife population. By following some basic management steps, many species of birds can nest and live in grassed waterways.

What Are Grassed Waterways?

Since 1947, the U.S. Soil Conservation Service (SCS) has promoted grassed waterways to reduce soil erosion. Grassed waterways are natural or constructed channels shaped to

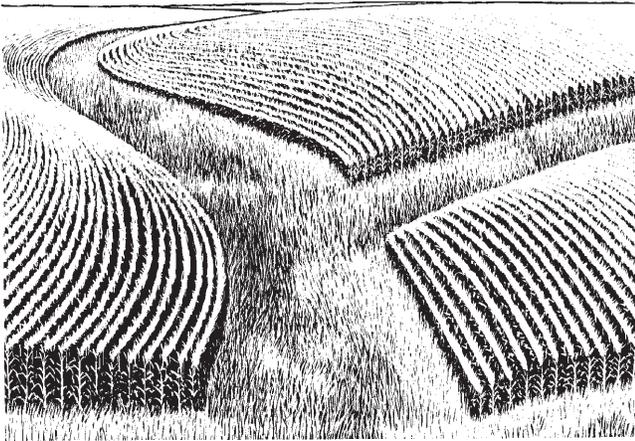


Figure 1. Grassed waterways are used in crop fields to prevent soil erosion, but they can also be managed for wildlife.

transport water at a nonerosive velocity from fields, diversions, terraces, and roadside ditches. These channels are protected against erosion by a grass cover. The kind of grass planted in the channel is determined by the site and soil type. Cool-season grasses usually are grown because they can be established quickly and provide even, dense growth; however, some warm-season grasses have been used (figure 1).

Waterways are "critical areas" that need rapid grass establishment. Therefore, a much higher seeding rate must be used for waterways than the rates often cited for pastures. Plant grassed waterways in a smooth brome-alfalfa mix for wildlife. For a tiled and/or dry waterway, seed at a rate of 20 lb./acre smooth brome with 6 lb./acre alfalfa. Pastures can be seeded at lower rates because rapid establishment usually is not necessary, and the cost of the extra seed is prohibitive on the larger areas covered by pastures. For information on the establishment of warm- and cool-season grasses, refer to Pm-1008, *Steps To Establish and Maintain Legume-grass Pasture*, and Pm-569, *Warm-season Grasses for Hay and Pasture*. For more information on grassed waterways see U.S.D.A. leaflet no. 477, *Grassed Waterways in Soil Conservation*, or go to your local Soil Conservation Service or Extension office to borrow the video tape, *How To: Conservation on Your Own*. To get the maximum erosion control benefit, contact your local Soil Conservation Service for help in shaping and establishing your grassed waterway.

Why Are Waterways Important for Wildlife?

All wildlife need habitat that includes:

- Food,
- Cover,
- Water, and
- Space (territory).

Grassed waterways provide food. Many birds eat the seeds of grasses and forbs, the broad-leaved plants. Other birds need the nutritious insects found in waterways. Insect protein is essential for the growth of young birds, such as pheasant chicks.

Grassed waterways provide places for wildlife to live. Many birds build nests on the ground or hanging from the grasses and other plants in the waterway. Partridge chicks and other young birds use the grass as cover to escape from danger. Other birds use the grass for hiding as well as resting places.

Some male birds use the grassy areas for courting females. In the spring, brightly colored male birds sing loudly to attract mates. This singing also tells other birds that this is the male bird's territory. The male bird chooses places that have good nesting cover and food sources. Territories can be different sizes, depending on the species of bird. Later in the summer, the male birds continue to sing to defend their territory and keep other males of the same species away from their mates and nests.

Waterways became even more important as potential wildlife habitat with the passage of the 1985 Farm Bill. The Conservation Compliance Provision requires landowners to implement a conservation plan if they continue to farm annually tilled crops on highly erodible land. This is expected to increase conservation tillage, terracing, and the number of grassed waterways. In Marshall county, over 50 waterways were constructed from 1983 to 1987. If the same rate of waterway establishment is found in a fraction of Iowa's 99 counties, it adds up to many acres of potential wildlife habitat.

In the past, fencerows were one of the most important habitats for birds in areas with intensive agriculture. However, fencerows have been removed at a high rate. In light of the decreasing number of fencerows, the increasing number of grassed waterways could make them even more important as wildlife habitat. Waterways may serve as an alternative habitat to many of the wild animals that used grassy fencerows in the past.

What Can Landowners Do To Help?

The landowner is the key to the future of wildlife in Iowa and the United States. This is because most of the land in the United States is privately owned by people, not by the government. In Iowa, less than 1 percent of the total acreage is publicly owned. Therefore, effective wildlife management must take place on private land. This can only succeed with a landowner's cooperation.

In agricultural areas, wildlife habitat is disappearing at an alarming rate. Without habitat, wildlife cannot survive. Grassed waterways provide some of this essential wildlife habitat. The increase in the number of grassed waterways expected by the Soil Conservation Service will take place primarily on private land. Therefore, it is up to the landowner to make new and existing waterways beneficial to wildlife.

Does Wildlife Really Use Grassed Waterways?

Research on bird use of 48 grassed waterways was conducted by Iowa State University in Story and Marshall counties in central Iowa during 1987 and 1988. The waterways selected for study were well-established, according to Soil Conservation Service specifications, and were planted to smooth brome grass or smooth brome mixes.

Table 1. Birds observed using grassed waterways in Story and Marshall counties, Iowa.

Red-tailed hawk	Western meadowlark
Northern bobwhite	Red-winged blackbird
Ring-necked pheasant	Northern oriole
Gray partridge	Common grackle
Killdeer	Brown-headed cowbird
Upland sandpiper	Northern cardinal
Mourning dove	Rose-breasted grosbeak
Great horned owl	Indigo bunting
Eastern kingbird	Dickcissel
Horned lark	American goldfinch
Tree swallow	Savannah sparrow
Barn swallow	Grasshopper sparrow
Cliff swallow	Vesper sparrow
American crow	Field sparrow
Black-capped chickadee	Song sparrow
Sedge wren	Greater yellowlegs
Brown thrasher	Rock dove
American robin	Red-headed woodpecker
Wood thrush	Hairy woodpecker
European starling	Downy woodpecker
Common yellowthroat	Blue jay
House sparrow	Gray catbird
Bobolink	Chipping sparrow
Eastern meadowlark	American kestrel



Figure 2. The birds most often seen in grassed waterways are (from top to bottom) barn swallow, brown-headed cowbird, red-winged blackbird, dickcissel, song sparrow, western meadowlark, and grasshopper sparrow.

Forty-eight bird species were observed in waterways, compared with only 14 in the surrounding corn and soybean fields (table 1). The most abundant bird species using waterways were red-winged blackbirds, dickcissels, barn swallows, grasshopper sparrows, brown-headed cowbirds, song sparrows, and western meadowlarks, all native birds (figure 2). In row crop fields, the primary species recorded were red-winged blackbirds, vesper sparrows, brown-headed cowbirds, and dickcissels. Three times more species were observed in the grassed waterways in the study than in the field plots. This demonstrates that waterways provide better habitat for a greater variety of species than the surrounding row crop fields.

Of the bird species seen in the grassed waterways, 10 species were found nesting. The most common nesting birds were red-winged blackbirds, dickcissels, grasshopper sparrows, common yellowthroats, western meadowlarks, vesper sparrows, and ring-necked pheasants. The density of nests in the waterways was five nests/acre compared to only two nests/acre found by other researchers in roadsides and fencerows in Iowa. This again shows that birds choose waterways over other habitats in agricultural areas.

Many times, when people talk about sparrows, they are referring to house sparrows. The house sparrow (or English sparrow) is a small brownish bird (figure 3). It is an exotic bird brought over from Europe, and is not related to native sparrows here in Iowa. The song sparrow, grasshopper sparrow, and vesper sparrow are native birds, and should not be confused with the house sparrow. These native sparrows do not cause the problems in grain bins, feed lots, and buildings that the house sparrow does.

What Attracts Birds To Grassed Waterways?

Birds are attracted to grassed waterways for a number of reasons that include the amount of forbs (broad-leaved plants) like alfalfa and many kinds of weeds. Also the amount of residue, either crop residue or dead vegetation, in the waterways attracts some species of birds.

Another characteristic of the waterway that appeals to birds is the height and density of the vegetation. Tall, dense vegetation is required by many species of birds for nesting and cover. Vesper sparrows and horned larks, however, like bare ground and sparse grass, so they are found more often in waterways with less dense vegetation.

The width of the waterway also affects bird usage. The wider the waterway, the more birds nest there. Most nests are found in waterways that are 50 to 100 ft. wide.

Many of the bird species observed in the waterways eat insects, and are attracted to those found in the waterways and the surrounding cropland. These birds are beneficial to the farmer because they help control insects, including those that damage crops.

Can a Waterway Be Managed for Wildlife?

Many of the bird species nesting in grassed waterways are native grassland or wetland birds. Because most of the native grasslands and wetlands are gone in Iowa, these birds look for

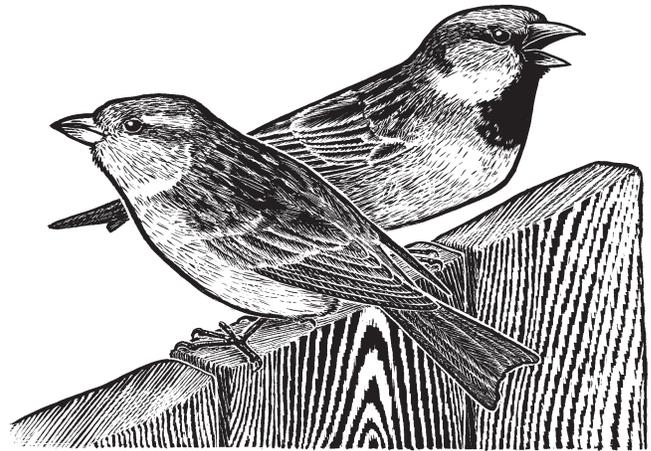


Figure 3. The female (left) and male house sparrow is a non-native nuisance bird that commonly is found around farmsteads, and is not related to the native sparrows found in grassed waterways.

similar habitats as alternatives. To these birds, the waterways are tiny pieces of their natural grassland or wetland habitat. In this sense, the waterway becomes a kind of “trap.” The waterway lures the birds to it because it looks like natural habitat, but in reality, the birds chances of successfully raising young are much lower in the waterway than in larger pieces of their natural habitat. This is primarily due to nest loss from unnatural causes like mowing or machinery. These two factors can be controlled by landowners to increase the number of birds and the success of their nests so that the waterway is not a trap.

Landowners can indirectly control the number of birds and their nesting success in their waterways. Greater vegetation height and density,

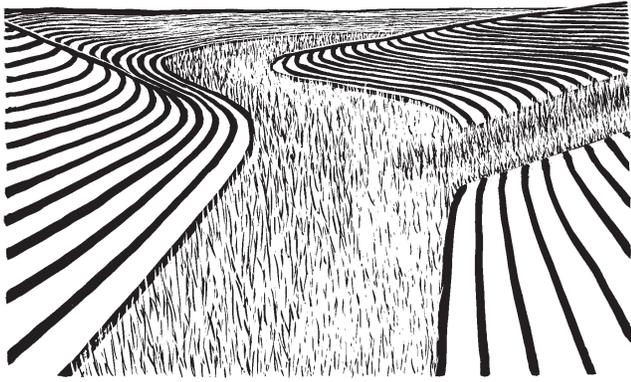


Figure 4. Crop rows that follow the contour of the land (waterway A) result in less disturbance to birds.

increasing the amount of forbs, and greater waterway width all increase the number of birds.

Restrict Mowing

Mowing is a primary cause of nest loss in the waterways. Mowing affects the number of birds and nests in two ways. First, vegetation height and density are affected by mowing. This, in turn, affects the bird species that nest either in waterways with tall and dense or short and sparse vegetation. Second, the timing of mowing is of primary importance to birds nesting in the waterways. In the past, it has been recommended that mowing be deferred until after July 15 because, generally, most of the birds are finished nesting by then. In the case of waterways, however, most of the birds do not begin nesting there until mid-July. This may be because these birds are reneesting in the waterways after being driven out of hayfields and other mowed areas. As a result, a large number of nests in the waterways are lost because waterways are often mowed at the time that most of the birds nest there. Therefore, to increase nesting success of birds in waterways, do not mow until the end of August or early September.

Unmowed waterways are important habitat in mid-to-late summer for two reasons. First, at that time, similar grassy habitats, such as hay fields and roadside ditches have been mowed, thereby concentrating the birds in the remaining unmowed fragments of habitat that waterways can provide. Second, uncut smooth brome in many waterways has an abundance of nutritious insects for young birds. The increase in the number of birds and nests in waterways in mid-to-late summer may therefore reflect birds trying to find places with more food to feed their young. Researchers also have found that ring-necked pheasant nesting success is higher in smooth

brome roadsides than in hay fields, pastures, small grains, and other strip cover. Grassed waterway habitats are comparable to roadsides, and, if left unmowed, ring-necked pheasant also may have similar nesting success in waterways.

Unless the grassed waterway is mowed for forage production, waterways should not be mowed annually. The number of successful nests is higher in waterways that are not mowed, and it can provide valuable winter cover. Annual mowing is not necessary to maintain grass vigor after the waterway is established, and weeds can be controlled by spot herbicide spraying or spot mowing. This does not negatively affect bird use of the waterway.

However, mowing is sometimes necessary for forage production. To make waterways better habitat for birds, the waterways should not be mowed until the end of August or early September, and at this time they should be clipped high (6 to 12 in.). Mowing later than this does not allow enough regrowth of the vegetation to provide cover for birds early the following spring. The shorter grass of mowed waterways does create habitat that is better for a few bird species, such as vesper and grasshopper sparrows.

Reduce Vehicle Disturbance

Vehicle disturbance should be kept to a minimum to make grassed waterways better habitat for nesting birds. Avoid using the waterways as a vehicle travel lane. Also, crop rows that are on the contour of the land result in less disturbance to birds in waterway A (figure 4) than if the rows were oriented lengthwise down the hill. This is because tractors and other machinery do not cross waterway A with each pass over the field if the crop rows are on the contour of the land. When there is less disturbance, there is a greater number of birds and successful nests. Row orientation is important for waterway maintenance, however, in addition to its affect on bird numbers. If crop rows are perpendicular to waterway A, soil from the field would run off into the waterway. Over time, this fills in the waterway so that it loses its trough-like shape and cannot properly channel excess water off the field. All waterways fill in over time, but when crop rows are perpendicular to the waterway, this happens more quickly, and the only recourse is to undergo the expense and effort to reshape and replant the waterway. In contrast, if rows are on the contour, they do not carry soil directly into the waterway.

If, however, the waterway is oriented lengthwise down a hill, as in waterway B (figure 4), the rows must run perpendicular to the waterway to

achieve contour planting. In this case, the benefits of contour planting in preventing soil erosion may outweigh the increased disturbance to the birds.

Another consideration in waterway management is the width of the waterway. Nests are more abundant in wide waterways (50 to 100 feet wide). Consequently, it is important to establish and maintain waterways as wide as possible.

Increase Broadleaved Plants

Nesting success of some species is associated with the amount of forbs (legumes and broad-leaved plants) present in the waterway. Most forbs present in waterways are invading weeds. If these forbs are not on the state noxious weed list and are not a seed source for problem weeds in cropland, they should be left for their benefits as nesting sites and/or food sources. Waterways are sometimes planted with a legume in the grass mixture for the nitrogen-fixing qualities of the legume. However, this practice is often discouraged because legumes are short-lived, leaving bare spots exposed to erosion.

Cool-season grasses, like smooth brome, need large amounts of nitrogen that can be provided efficiently and naturally by the addition of alfalfa to the grass seeding mix. In many cases, the benefits of nitrogen production by the legume may outweigh the cost of bare spots. Although alfalfa is relatively short-lived, it can be interseeded as its production decreases. Alfalfa also provides more height than other legumes recommended for waterways, and is attractive nesting habitat for many grassland species when planted alone or in a mixture with smooth brome. Consequently, for many bird species, alfalfa is an attractive addition to smooth brome plantings in grassed waterways.

Management Summary

- Annual mowing is not necessary after the establishment year; so, do not mow and control noxious weeds by spot spraying herbicides or spot mowing.
- Restrict mowing of the entire waterway to between August 30 and September 15.
- Plant grassed waterways in smooth brome-alfalfa mixes at a seeding rate of 20 lb./acre smooth brome and 6 lb./acre alfalfa.
- Plant crop rows on the contour of the land.
- Avoid using the waterway as a travel lane.
- Establish and maintain waterways as wide as possible (preferably 50 to 100 ft.).
- Control noxious weeds, but leave any other broad-leaved plants to increase the amount of forbs present in the waterway.

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