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# Controlling Blackbird Damage to Sunflower and Grain Crops in the Northern Great Plains



*Cover photo:* Flocks of red-winged black-birds, sometimes numbering in the tens of thousands, can destroy a grain field in a few days. (APHIS photo by David Bergman.)

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# Controlling Blackbird Damage to Sunflower and Grain Crops in the Northern Great Plains

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## Introduction

Red-winged blackbirds (*Agelaius phoeniceus*), common grackles (*Quiscalus quiscula*), and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) cause severe damage to ripening crops in North Dakota, South Dakota, and Minnesota. Scientific surveys show that blackbirds damage \$4 million to \$11 million worth of sunflower each year in these three States. On occasion, blackbirds have destroyed entire fields of sunflower in a few days. Preventing this magnitude of crop damage requires knowledge about the blackbird's habits and various methods available to prevent damage.

In late summer, after the nesting season, blackbirds form flocks and roost at night in numbers varying from a few to over a million birds. These flocks and roosting congregations are sometimes comprised of a single species, but often all three species mix together. Although some blackbirds roost in trees in the northern Great Plains, the birds prefer to roost in dense cattail marshes. Between 40 and 50 percent of the blackbird population dies every year. But these mortality figures are offset by the birds'



Blackbirds often use alternate feeding sites when available. (APHIS photo by George Linz.)

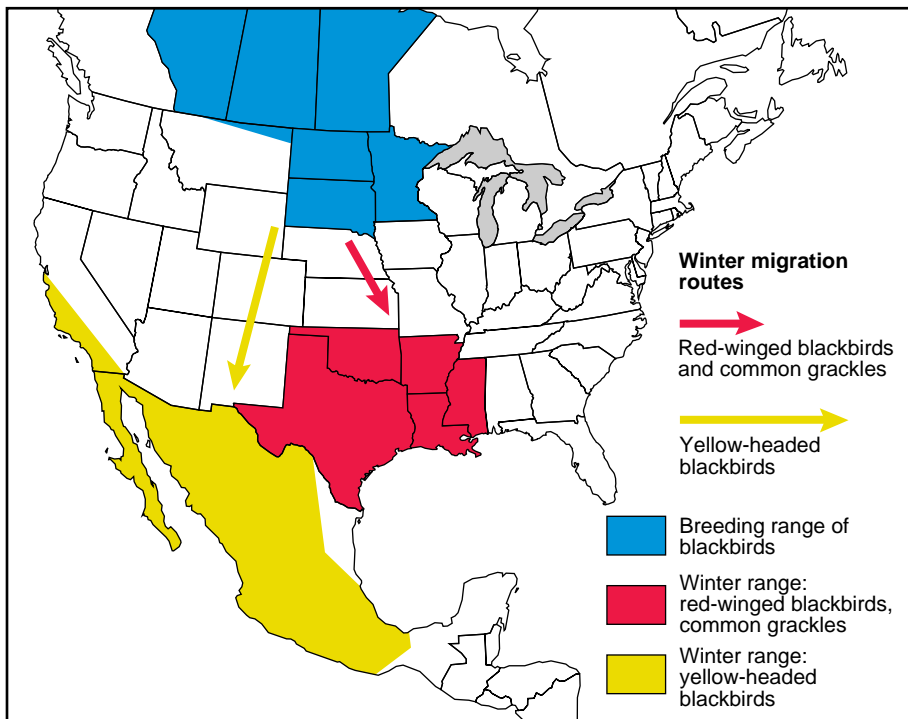
reproductive success. On average, a female produces two to four fledglings per year. The three common blackbird species have many differences in their nesting biology, food preferences, feeding habitats, and migration patterns.

### **Red-Winged Blackbird**

Red-winged blackbirds are the most numerous breeding blackbird in the Dakotas and Minnesota and perhaps the most abundant bird in North America. The male, a little smaller than a robin, is black with red and yellow shoulder patches. The brownish female, which is smaller than the male, is often mistaken for a large sparrow. Redwings nest throughout North America in marshes, hayfields, and ditches. Often adult males mate with more than one female. Insects are the dominant food during the nesting season (May–July), with the diet shifting to predominantly grain crops and weed seeds in late summer through winter. Redwings from the Dakotas and Minnesota migrate to the lower Great Plains and gulf coast region in winter.



Red-winged blackbird (immature male) on an ear of corn. (Photo courtesy of the U.S. Department of the Interior, Fish and Wildlife Service.)



Winter range of red-winged blackbirds, yellow-headed blackbirds, and common grackles breeding in the northern Great Plains.

### Common Grackle

Common grackles are slightly larger than robins, with iridescent black feathers and a long keel-shaped tail. The male, slightly larger than the female, has more iridescence on the head and throat. Grackles are common nesters throughout North America east of the Rockies, nesting in shelterbelts, farmyards, marshes, and towns. The male grackle usually mates with one female. Flocks feed in fields, lawns, woodlots,



Common grackle (mature male). (USDI, Fish and Wildlife Service, photo by Roger Clopp.)

and bottomlands. Grackles have a diet somewhat similar to that of redwings, but grackles are more predatory, feeding occasionally on small fish, field mice, songbird nestlings, and eggs. Grackles also feed on acorns and other tree fruits in winter. Grackles often roost in cattail marshes with other blackbirds in late summer, but grackles prefer roosting sites in upland deciduous or pine trees in their wintering locations in the Southern United States.

### Yellow-Headed Blackbird

A robin-sized bird, the male yellowhead has a black body with a conspicuous yellow head and breast and a white wing patch seen only when the bird is in flight. The female is smaller and browner with yellow throat and breast and does not have a white wing patch. Yellowheads are locally abundant nesters in deep-water marshes of the northern Great Plains and western North America. Like redwings, male yellowheads often mate with more than one female. This species feeds extensively on insects during the nesting season and in late summer and fall on weed



Yellow-headed blackbird (mature male). (USD, Fish and Wildlife Service, photo by James Leupold.)

seeds, sunflower, corn, and small grains, often in association with redwings and grackles. An early migrant, yellowheads leave the northern Great Plains area before redwings and grackles, wintering in Mexico.

### Other Bird Species

Other birds are sometimes seen feeding with redwings, yellowheads, and grackles but cause only minor damage to agricultural crops. The brown-headed cowbird (*Molothrus ater*) is a small, sparrow-sized blackbird. The male is black with a brown head, and the female is gray. Cowbirds feed primarily on weed seeds and insects, often in association with grazing livestock. The European starling (*Sturnus vulgaris*) is robin sized and is dark with light speckles and a distinctively short tail. Although starlings sometimes forage in grain and sunflower crops, these birds are usually searching for insects and do not feed on the crop. However, starlings will damage ripening fruit crops. House sparrows (*Passer domesticus*) are small brown birds sometimes mistaken for female redwings. House sparrows can cause significant local damage to small grain crops and sunflower grown near farmsteads and towns. Rusty blackbirds (*Euphagus carolinus*) are robin sized and can be recognized in fall and winter by their rust-colored plumage. Their diet consists largely of insects. Brewer's



## Estimating Crop Damage

blackbirds (*Euphagus cyanocephalus*) are similar in size to male redwings. Males are black with whitish eyes; females are brownish gray with dark eyes. These birds feed primarily on weed seeds and insects.

### Legal Status

Blackbirds are native migratory birds and thus come under the jurisdiction of the Federal Migratory Bird Treaty Act, a formal treaty with Canada and Mexico. Blackbirds are protected by Federal law (Title 50, Code of Federal Regulations, Part 21.43) in the United States except that they may be killed when found "committing or about to commit depredations upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance." Some States and local governments may have additional restrictions on killing blackbirds. Starlings and house sparrows were introduced from Europe and are not protected by Federal law.

Blackbird damage to agricultural crops is readily discernible because flocks of birds are conspicuous and signs of damage are obvious. However, superficial surveys of agricultural fields often overestimate blackbird damage and thus exaggerate the overall severity of the economic threat for four reasons: (1) the high visibility of blackbird flocks tends to heighten the awareness of bird damage compared with other, more subtle forms of loss caused by weeds, insects, other pests, and harvesting; (2) observers naturally seek out the conspicuously bird-damaged plants; (3) bird damage is often most severe along field edges, where an observer is most likely to check; and (4) damage caused by other animals such as raccoon and deer or by wind is sometimes mistaken for bird damage.

Damage to sunflower and grain crops can be economically severe and quite frustrating to the farmer when relief is not easily available. During the past two decades, studies on blackbird damage to various crops such as corn and sunflower indicate that on statewide or regional level, overall damage is low,

generally 1 to 2 percent of the crop. If all farmers lost less than 2 percent of their crops, there would be little concern; however, the damage is not equally distributed. While most farmers escape economically serious blackbird damage (that which affects more than 5 percent of their crops), profit margins for other farmers are significantly reduced. Some growers would like to plant sunflower in their crop rotation, but the threat of bird depredation precludes this option. Farmers whose crops are seriously damaged by blackbirds may find various damage control measures cost effective.

It is important to obtain objective estimates of potential damage levels in a field before investing large amounts of money on control. The person making the final decision on control measures must consider the value of the crop, the cost of control, and the degree of effectiveness of the control measure in relation to the probable levels of damage. Estimates of damage levels in previous years for the same or nearby fields are another means of predicting future damage levels because local bird damage is often fairly consistent from year to year.

This information also provides a good baseline for evaluating the effectiveness of management strategies. Of course, it is important that estimates of damage be objective and reflect the entire field, not just a small portion of the field that has high damage.

To estimate the amount of blackbird damage in an agricultural field objectively, at least 10 locations widely spaced throughout the field should be examined. For example, if a field has 100 rows and is 1,000 feet long, the estimator should walk staggered distances of 100 feet along every 10th row (for example, 0–100 feet in row 10, 101–200 feet in row 20, and so on). In each of the 100-foot lengths, the estimator should randomly select 10 plants and visually estimate the damage on the head or ear of each plant to the nearest 1 percent (for example, 2 percent destroyed, 20 percent destroyed). For corn, six kernels usually represent about 1 percent of the corn on an ear; for sunflowers, it may be easiest to visually divide the head into four quarters and then estimate the percentage of seed missing. When finished, determine the

average damage for the 100 plants examined, and this will give an approximation of the percentage loss to the field. Multiplying the percentage loss by expected yield can give a rough estimate of yield lost. In small grains, estimates of loss are more difficult to obtain. One possibility is to compare the yields from plots in damaged and undamaged sections of a field.

## Control Methods

### Cultural Practices

Most economically severe blackbird damage to agricultural crops occurs in fields within 5 miles of roosts. Thus, one strategy is to plant crops that do not attract blackbirds—such as soybeans, potatoes, or hay—in fields that are within a few miles of a roost. If crops vulnerable to damage, such as corn or sunflower, are planted near a roost, it is important that sources of alternative food be available to reduce the feeding pressure on these cash crops. When crops are ripening, one strategy for providing alternative feeding areas is to delay plowing or tilling previously harvested cropland near the roost. Also, farmers should synchronize planting of fields of vulnerable crops near roosts so that all fields mature at about the same time. In general, as the number of suitable alternative feeding areas declines, maturing grain or sunflower fields become more attractive to blackbirds, and protecting the crop becomes more difficult.

The timing of harvest can be very important for reducing damage to crops from flocks of blackbirds. Although field

corn generally becomes unattractive to birds when the kernels mature and harden, sunflowers continue to be attractive after they mature and thus should be harvested as soon as possible. Sweet corn should be harvested as early as possible in areas with extensive damage. Delaying harvest of sweet corn by only 1 or 2 days can result in substantially greater damage if flocks of blackbirds are in the area.

### **Bird-Resistant Crops**

Planting crop varieties known to be resistant to blackbird feeding should be part of a grower's bird-damage management plan. Bird-resistant sunflower hybrids may soon be available from commercial seed companies for use in areas subject to a high risk of depredation. The seed of these hybrids is protected by morphological traits, such as concave-shaped heads, horizontally oriented heads, and long head-to-stem distance. These traits make it difficult for birds to position themselves on the plant so they can extract seeds from the head. These hybrids must be planted in north-south rows to maximize their bird-resistant characteristics.

Corn hybrids vary greatly in their susceptibility to bird feeding. Hybrids of corn with long husk extension and thick husks have been shown to be more resistant to damage than other hybrids. Sweet corn is vulnerable to blackbirds for only a few days before harvest and, thus, may be easier to protect than field corn and sunflower.



Sunflowers with concave heads, horizontally oriented heads, and long head-to-stem distance appear to suffer less damage from birds than other varieties. (Photo courtesy of North Dakota State University; used by permission.)

### **Cattail Marsh Management**

Cattail marshes used as roost sites for blackbirds can be sprayed with glyphosate (®Rodeo Aquatic Plant Herbicide) to reduce the density of the cattails, which reduction in turn disperses the birds. Rodeo is the only herbicide registered for controlling cattails growing in standing water. (Other herbicides are available for use on cattails growing in marshes without surface water.) Generally, cattails must be treated 1 year



Cattail marshes can be managed using a registered aquatic herbicide to disperse roosting blackbirds. (APHIS photo by David Bergman.)

before vulnerable crops are planted in the vicinity of the marsh to allow time for the cattails to decompose, making the marsh unattractive to blackbirds for roosting for several years. For maximum effectiveness, the herbicide should be aerially applied at a rate of 4.5 pints/acre in August up to first frost. Sufficient cattails should be removed to create at least 70 percent open water in the marsh. Thinning out cattails in these marshes reduces blackbird use and improves the habitat for other, more desirable wildlife, such as waterfowl.

For more detailed information about managing cattail marshes in the Dakotas, you may contact:

USDA, APHIS  
Animal Damage Control (ADC)  
Bismarck, ND (701 250-4405)  
Pierre, SD (605 224-8692)

or

U.S. Department of the Interior  
(USDI)  
Fish and Wildlife Service  
Wetland Habitat Office  
Bismarck, ND (701 250-4403)

### **Frightening**

Frightening devices can be effective in protecting crops from flocks of blackbirds but require considerable work and long hours. The efficient use of these

devices mandates that farmers persistently scare the birds before their feeding patterns become well established. Devices need to be employed especially in the early morning and in late



A propane exploder and a popup scarecrow powered by carbon dioxide. (APHIS photo by John Cummings.)

afternoon, when the birds are most actively feeding.

Propane exploders are a popular frightening device. In general, there should be at least 1 exploder for every 10 acres of crop to be protected. Exploders should be elevated on a barrel stand to “shoot” over the crop, and they should be moved around the field every few days. Exploders should be turned off (manually or with automatic timers) each night to save propane and reduce objectionable noise levels. In addition, exploders should be reinforced occasionally with other scare devices because birds lose their fear of frightening devices over time.

By shooting a .22-caliber rifle just over the top of the crop, a person on a stand or truck bed can frighten birds from large fields (40 acres or more). Obviously, care must be taken when shooting in this manner, and the use of limited-range cartridges is recommended. Also effective are pyrotechnic devices such as cracker shells, bird bangers, and screamers. These pyrotechnic devices, fired from shotguns or specially designed pistols, explode after

traveling up to 150 yards. Shooting birds with a shotgun, using standard bird shot, often can kill a few birds and reinforce other scare devices. However, this technique usually is not as effective in moving birds as the other devices that have greater range. Thus, a shotgun patrol should not be used as the sole means of frightening birds.

A variety of other bird-frightening devices, including electronic noise systems, helium-filled balloons tethered in fields, radio-controlled model planes, tape-recorded distress calls for birds, and various types of scarecrows, are also occasionally used to rid fields of blackbirds. The effectiveness of these devices is highly variable and depends on the persistence of the operator, the skill used in employing them, the attractiveness of the crop, and the number of birds and availability of alternative food sources. As mentioned with the use of propane exploders, birds tend to adjust or adapt to frightening devices. It is usually best to mix the use of two or more devices rather than to rely on a single device.

### **Airplane Hazing**

Harassing feeding blackbirds with an airplane can sometimes be an effective method of chasing flocks from sunflower fields. This technique appears to be most effective if combined with other mechanical methods on the ground, such as shotguns or pyrotechnics.



Airplanes can be used to scare blackbirds. (APHIS photo by David Bergman.)

## Summary

### Repellants

®Avitrol, the only chemical registered for control of blackbirds in corn and sunflower, is a cracked-corn bait in which 1 out of every 100 particles is treated with the active ingredient, 4-aminopyridine. The bait is applied by airplane along access lanes placed in the fields, at the rate of 3 pounds/acre. When a blackbird eats one or more treated particles, it flies erratically and emits distress calls. This abnormal behavior often causes the remaining birds in the flock to leave the field.

Careful consideration must be given to the timing of initial and repeat baitings. The first baiting should be when birds first initiate damage, and repeat baitings should occur as necessary, about 5 to 7 days apart. Weeds that hide bait, ground insects (e.g., crickets) that eat bait, and excessive rainfall can contribute toward making the product less effective. Instructions on the label, especially the avoidance of baiting field edges, should be carefully followed to avoid killing nontarget birds.

Although red-winged blackbirds, yellow-headed blackbirds, and common grackles significantly damage agricultural crops in the northern Great Plains, superficial surveys of fields sometimes overestimate damage and lead to unnecessary expenditures on blackbird control. If significant damage is likely to occur in a field, an integrated pest management approach is most effective in protecting crops from blackbirds. To reduce crop losses, individual growers will need to assess their particular situation and employ one or more of the techniques discussed in this bulletin. Finally, in implementing a damage control program, it is important to exercise caution and follow procedures on the label instructions before using pesticides or frightening devices.

## Research and Methods Implementation

The National Wildlife Research Center (NWRC), which is part of USDA's ADC program, is the only Federal entity devoted to wildlife damage-control research. NWRC scientists, located in Ft. Collins, CO, and at field research stations throughout the United States, design and test environmentally safe and cost-effective methods of reducing wildlife-human conflicts. University researchers and private industry also contribute valuable information for solving wildlife problems.

Wildlife management methods developed by these research programs are used under field conditions by ADC's wildlife specialists. Regional headquarters are located in Denver, CO (303 969-6560), and Nashville, TN (615 736-2007). ADC also maintains many State offices, which are usually located in State capitals. We encourage sunflower growers to contact their State's ADC office for assistance with wildlife damage problems.

The following bibliography lists a few useful materials on the subject of blackbird control.

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