

Grackles

Michael J. Bodenchuk
State Director
USDA-APHIS-Wildlife Services
San Antonio, Texas

David L. Bergman
State Director
USDA-APHIS-Wildlife Services
Phoenix, Arizona



Figure 1. Common Grackle (*Quiscalus quiscula*)

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Human-Wildlife Conflicts

Numbering in the tens of millions of birds, grackle populations in North America can cause a variety of conflicts with people. Grackles eat agricultural crops and livestock feed, damage property, spread pathogens, and collide with aircraft. Their large roosts can be a nuisance in urban and suburban areas. A combination of dispersal techniques, exclusion, and lethal removal may help to reduce grackle damage.

Agricultural Crops and Landscapes

Grackles feed upon and damage grain and fruit crops, including rice, corn, wheat, tomatoes, watermelon, lettuce, figs, citrus, and cantaloupe. Newly planted rice in

southern states is often consumed by grackles prior to the birds' spring migration. In peanut-growing areas, common grackle (*Quiscalus quiscula*) (Figure 1) damage can result in crop losses up to 25 percent after windrowing. A 1969 to 1971 study in Oklahoma showed that more than 72 percent of common grackles captured in peanut-growing areas had peanuts in their gizzards.

Where producers grow sunflowers and corn simultaneously, sunflowers receive more damage than corn. Grackles feed on sunflowers during the early ripening stage. Sunflower fields located near wetlands receive 2 to 4 times more damage than



Figure 2. Grackle damage to grapefruit.

fields in other locations. Common grackle damage to sunflowers does not subside until late fall.

Common grackles will pull up sprouting corn, feed on corn during the milk and dough stages when the kernels are soft, and on mature field corn in the dent stage, removing the entire kernels from the cob. Throughout the Midwest, common grackles cause extensive damage to ripening corn. In Southern Ontario, common grackles are most active in corn fields during May and June and in grape vineyards during July.

Great-tailed grackle (*Quiscalus mexicanus*) damage to ripening oranges and grapefruit (Figure 2) in south Texas varies in type and economic importance. Fruit with cosmetic damage, small pecks and/or scratches on the fruit peel are downgraded and reduced in value. Holes poked in the fruit or pulp cause blemishes that make the fruit unfit for direct consumption. Grackles damage citrus to acquire monoterpenes from the peel. The birds spread the monoterpenes on their feathers to kill ectoparasites.

Grackle damage to fruit starts in the spring on immature citrus and extends through the fall and winter on ripening fruit. The most significant damage occurs after the breeding season during July through September as birds prepare for migration.

Because it is difficult to disperse great-tailed grackles from citrus groves during the summer, producers and managers often resort to lethal removal.

Droppings from grackle winter roosts change soil pH and damage ornamental trees, (e.g., Bradford pear trees), harvestable trees (e.g., loblolly pine), and turf. Small ornamental plants, especially when sprouting, are damaged directly by foraging birds.

Livestock and Aquaculture

Grackles are agricultural pests at feedlots and dairy farms. They eat livestock feed and spread bacterial pathogens that may impact cattle and milk production. Rates of feed consumption vary with the weather and number of birds. *Salmonella* and *Escherichia coli* O157:H7 may be spread mechanically (i.e., on feathers and feet) and through droppings by grackles and other blackbirds in mixed flocks both within a feedlot and between feedlots.

Great-tailed grackles, pigeons (*Columbia livia*), European starlings (*Sturnus vulgaris*) and mourning doves (*Zenaidura macroura*) cause the greatest economic losses in southwestern cattle feeding operations.

Common grackles also have been known to prey upon fish in fish hatcheries, natural ponds and aquaculture facilities.

Structures

In some winter roosts, grackles concentrate on powerlines, as well as on nearby trees and shrubs. When grackles depart *en masse* from powerlines, the lines oscillate wildly, often contacting other lines or structures and causing power outages. A single power outage caused by birds can easily cost over \$10,000 in repairs and lost productivity.

Human Health and Safety

Winter roost sites for mixed blackbird flocks, including grackles, typically result in large concentrations of fecal droppings that can serve as a fertile medium for the fungus *Histoplasma capsulatum*. If the soil under these *Histoplasma*-positive roost sites is disturbed, the fungal spores can be released resulting in a human health hazard. If inhaled, the fungal spores cause a lung infection in people called histoplasmosis.

Grackles can be a significant threat to aviation safety where large winter roosts or croplands used for feeding

coincide with aviation flight paths. According to a U.S. Federal Aviation Administration report, from 1990 to 2013, the following number of aircraft-bird collisions occurred by species: boat-tailed grackle (*Quiscalus major*) (22), great-tailed grackle (37), common grackle (122), unidentified grackle species (125), and blackbirds (1,271). The blackbird category likely included grackles due to their tendency to join mixed flocks.

Nuisance Problems

In urban and suburban settings, large grackle roosts can be noisy. The noise can last throughout the night, if the area is well lit. Nuisance complaints also arise because of droppings, especially on houses and cars located under roost trees and structures.

Grackles can attack people and pets when they perceive a threat to nests or young. Minor injuries to people have been documented.

Damage Identification

Because of their gregarious nature, grackles are easily observed and identified. Nuisance complaints are determined from visual observations, noise, and fecal droppings.

Citrus damage requires close inspection, as grackles may peck only one small hole in the fruit that is not visible until picked. Systematic searches of ripening fruit must be made if grackles are observed in orchards. Inspect hanging fruit from a ladder to determine the whether fruit is being damaged.

Blackbird damage to agricultural seed crops often is easy to identify because the flocks of birds and the visible signs of the damage are conspicuous. However, correct identification of the species of birds in the agricultural field is important, along with evidence that the birds are actually feeding on the crop. For example, European starlings superficially resemble blackbirds and sometimes feed in cornfields, yet they usually feed on concentrations of

insects, such as armyworms, and cause little, if any, damage to corn. Also, red-winged blackbirds often are attracted to agricultural fields, such as corn and sunflower, initially feeding on rootworm beetles, sunflower weevils, and other insect pests. They will not damage the crop itself until the grain has reached the milk stage. Blackbirds often forage in newly planted grain fields, such as winter wheat, feeding on previous crop residue, weed seeds, and insects without bothering the sprouting grain. Blackbirds can, however, cause serious damage to newly sprouted rice.

Blackbird damage also can be confused with other forms of loss. Deer, raccoon, and squirrel damage to corn can be mistaken for blackbird damage. Also, seed shatter in sunflower caused by wind may resemble bird damage; however, the difference usually can be detected by examining sunflower heads for the presence or absence of bird droppings and by looking on the ground for hulls or whole seeds. Careful observation of the birds in the field and a little detective work usually will result in the correct identification of the cause of damage.

To accurately estimate the amount of blackbird damage in an agricultural field, examine at least 10 locations widely spaced throughout the field. For example, if a field has 100 rows and is 1,000 feet long, walk staggered distances of 100 feet along every 10th row (for example, 0 to 100 feet in row 10, then 101 to 200 feet in row 20, and so on). In each of the 100-foot lengths, randomly select 10 plants and visually estimate the damage on the head or ear of each plant to the nearest 1% (for instance, 2% destroyed, 20% destroyed). For corn, six kernels usually represent about 1% of the corn on an ear; for sunflower, it may be easiest to visually divide the head into four quarters and then estimate the percentage of seeds missing. When finished, simply determine the average damage for the 100 plants examined. This will give an approximation of the percent loss to the field. Multiply the percent loss by expected yield to get a rough estimate of yield loss. In small grains, such as rice, 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.

Management Methods

Grackles adapt easily to human-dominated environments, and exploit human food and other features of human landscapes. Thus, an integrated damage management approach to grackle damage focuses on reducing and eliminating the damage, rather than simply controlling grackle populations.

The effectiveness of management methods varies considerably by bird species and crops. Strategies that work in one situation might not be applicable in another. For example, a strategy to manage damage in rice fields where blackbirds feed and roost will likely differ from a strategy to protect sunflower fields where blackbirds only feed. Additionally, a repellent application that is effective with common grackles might not be as effective with larger species, such as great-tailed grackles.

The timing of management activities is important. Management is most effective when done just prior to planting a vulnerable crop or just prior to the crop ripening. Producers should also be knowledgeable of grackle movement and behavior. For instance, southern rice growers can best protect their crops if they are planted after most blackbirds have migrated north, usually after late March.

The effectiveness of certain methods to prevent bird damage to citrus varies considerably from season to season. From April to July, the birds congregate in small breeding colonies which makes them more susceptible to baiting and toxicants. From August to October, the birds can be baited into and treated with toxicants. Intensive shooting and use of pyrotechnics can also be successful at this time of year at groves with high grackle concentrations. From late October to March, birds travel widely each day and are easily frightened from groves by pyrotechnics and shooting. Depending on the cost and duration of the damage to citrus and other fruits, exclusion with netting and hazing may be successful. Otherwise, habitat modification, repellents and lethal removal may be tried.

Habitat Modification

Habitat modification to disperse roosts may be effective when trees are used for thermal cover in the winter. Pruning trees to open the canopy reduces the thermal cover and forces the grackles to roost elsewhere. Pruning trees is not effective in southern climates, however, where trees and powerlines are selected for predator defense and not for thermal cover. Roost structures may be completely removed, but the birds may relocate to a new roost location nearby.

Mechanical methods (e.g., mowing, disking or burning) for managing cattail roosts and nesting areas used by mixed flocks are labor-intensive, expensive, and often ineffective because the stands quickly reestablish themselves. Cattails can be managed by flooding, but cattail-dominated wetlands in the prairie pothole region seldom have water controls to facilitate flooding.

Sometimes glyphosate herbicide is aerially applied for controlling cattails due to the limitations associated with mechanical treatments and flooding. Aerial application is recommended for managing cattails because basin areas usually are too large for ground-based sprayers. Cattails should be treated with glyphosate during the late summer when the plants are most actively metabolizing and transporting carbohydrates to their rhizomes (i.e.,

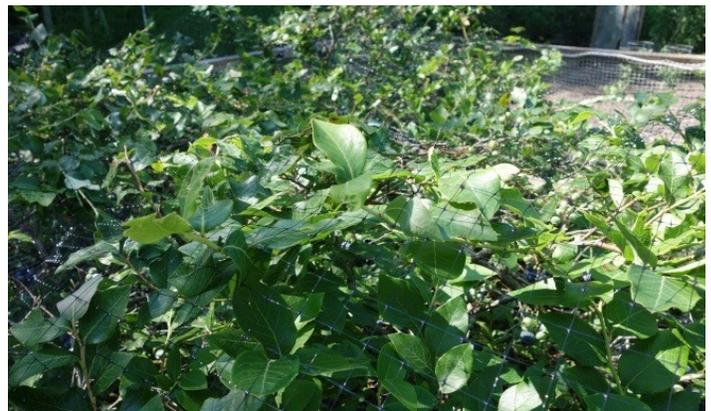


Figure 3. Netting may offer some protection for blueberries.

underground stems). Treatments can last for more than 4 years, if water levels remain stable. To prevent blackbird use of cattail, the ideal ratio of open water to cattails is 70:30. For greatest success, water levels should remain stable at a depth of more than one foot.

Exclusion

Nets are used to exclude grackles from small trees, gardens, or vines with ripening fruit. The use of netting for large-scale applications is often cost-prohibitive. Exclusion wires, such as porcupine wires, may prevent grackles from roosting on some human-made objects, such as light fixtures, and reduce damage associated with droppings on cars and equipment.

Netting is effective in the protection of blueberries (Figure 3). Netting is expensive to use and many owners of small plantings do not invest in it. Unfortunately, it is these small producers who tend to experience more severe bird damage.

In south Texas, several citrus grove owners used monofilament lines placed in grids of 10, 23, and 36 feet apart and 3 feet above the canopy of their trees to prevent damage from great-tailed grackles. These protected groves experienced less damage than unprotected groves; however, preliminary results indicated that the grids only were cost-effective when damage levels were high.

Frightening Devices

Grackles may be hazed from roost sites using pyrotechnics. However, continuous, multiple-night efforts are often required to move the birds from well-established roosts.

Propane cannons and pyrotechnics are effective in citrus groves to reduce great-tailed grackle damage. Both are used extensively in sunflower fields to reduce common grackle damage. Propane cannons can be made more effective by elevating them above the crop, using timers, and allowing the cannons to rotate and fire in alternative directions. The use of scarecrows can enhance the effectiveness of propane cannons.



Figure 4. “Eye-spot” balloons may help protect small areas from grackle damage for a limited period of time.

Mylar tape or helium-filled “eye-spot” balloons (Figure 4) may be used to protect small areas, such as gardens, for a limited period of time. However, long-term efficacy should not be expected. Mylar tape is ineffective for protecting large citrus groves from great-tailed grackles.

Although frightening techniques help reduce damage to citrus during the late fall and winter, site tenacity by great-tailed grackles makes these methods less effective during the post-breeding period of July through September.

Repellents

Methyl anthranilate (MA) is registered as a repellent for a wide variety of birds and situations (see EPA Reg. No. 33162-1). The naturally-occurring compound stimulates the trigeminal nerves in a bird’s beak, eyes, and throat causing discomfort. MA can be used on grass and turf to prevent grazing (particularly by geese) and on ripening fruit, rice, sunflowers, and other crops to prevent pecking. MA products may not be cost-effective for nuisance damage if their use requires repeated applications over a large area.

MA products are water soluble, so they must be reapplied following irrigation or rain. MA is not registered for use in feedlots or dairies, nor is it effective at preventing damage associated with roosting birds. Applicators should read and follow label directions and contact their state pesticide regulatory agencies to determine if MA requires special pesticide licensing. MA products may not be used in California or Nebraska.

Toxicants

DRC-1339 (3-Chloro-4-methylbenzenamine) is an oral toxicant registered for use with grackles in both commercial animal operations and non-crop areas where grackles gather and feed, loaf, or roost. DRC-1339 may only be used by USDA-APHIS certified applicators trained in bird control or by persons under their direct supervision.

DRC-1339-treated baits are fed to birds as part of a mixture of treated and untreated bait. Rice, fat pellets, cracked corn, distiller's grain, french fries, dog food, and watermelon have been used as bait. Birds consuming DRC-1339 metabolize the chemical and die of renal failure within 1 to 3 days, usually at roost sites. Applicators should carefully examine every application project to determine where birds may die. It is recommended that local authorities and the public be notified when large bird mortalities in populated areas are anticipated. Special local needs labels may be approved under certain circumstances.

DRC-1339 can be used to reduce migrating blackbird populations prior to nesting season. The application of DRC-1339-treated baits in corn stubble is more effective than soybean stubble, and rice bait is preferred over corn bait by blackbirds. However, the application of DRC-1339-treated rice bait down bait lanes in ripening sunflower fields does not reduce local blackbird populations or sunflower damage. The use of bait trays is also ineffective.

Trapping

Grackles can be trapped using decoy traps, funnel traps and drop nets. However, trapping usually is ineffective if food sources outside of the traps are readily available to the birds.

A decoy trap is a large poultry wire or net enclosure containing 10-20 decoy birds, food, and water. Birds enter the trap through an opening in the top of the cage that is covered with a wire mesh. The birds can fold their wings and readily drop through the opening to the food below. Decoy traps have been effective at capturing grackles in small areas, notably at airfields where off-site food is

unavailable. If decoy traps are used, care must be taken to prevent tampering by the public

Funnel traps (Figure 5) with entrances on the ground are more effective than decoy traps for capturing great-tailed grackles.

Drop nets have been used successfully for small scale trapping, particularly at food sources or small roosts. Drop nets are weighted nets set on poles above the ground with a triggering device to release the net and allow it to drop on top of birds. They are normally used at locations where birds gather to feed or roost and may be used over bait.

Neither traps nor drop nets are considered effective for large roost problems or for reducing fruit or citrus damage.

Shooting

While night shooting of birds in roosts may remove some of the animals, shooting is rarely effective at stopping damage. Shooting birds coming into a feedlot, dairy, or a crop field may reinforce hazing with pyrotechnics, but it is rarely an effective stand-alone tool.

Other Control Methods

Decoy (lure) crops are used to entice feeding blackbirds away from valuable, commercial crops. The concept is simple—plant a small field (about 20 acres) of sunflowers

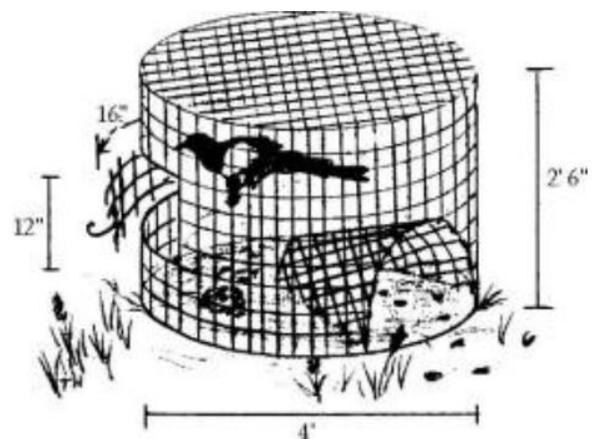


Figure 5. Funnel traps are sometimes used to capture grackles and other birds.

or another crop, such as corn, that is attractive to grackles. The decoy crop and the commercial crop should be synchronized so they mature at the same time, otherwise the decoy crop will be less attractive to the birds. Do not spray the decoy crop with insecticides, and do not harass the birds using it. The goal is to keep the birds in the decoy crop as long as possible, thereby reducing the time they spend in the nearby commercial field. To encourage the birds to stay in the decoy field, farmers can continue to spray registered repellents and harass birds in their commercial field. In essence, the decoy crop is sacrificed to grackles to protect the harvestable crop. North Dakota producers who used decoy crops saved \$2 to \$4 for every \$1 spent on the crops. Fields with associated decoy crops sustained less damage than fields without them.

In addition to decoy crops, bird-resistant, nontoxic coatings for rice seeds have been studied to evaluate their effectiveness at reducing bird damage. The coated rice becomes sticky when wet and fouls the birds' bills so that they cannot feed efficiently. In a study using clay-coated rice, the amount of sprouting rice lost to birds decreased from 36.5 percent to 17 percent. Bird resistant varieties of sorghum, corn, and sunflower have also been studied and limited varieties have been produced to alleviate blackbird damage.

Sodium lauryl sulfate (SLS) is a wetting agent (i.e., surfactant) used on grackles at roost sites. When applied to birds, SLS allows water to penetrate and saturate the feathers so that with low temperatures (< 41° F) and sufficient water, birds die of hypothermia. The product is for use on upland roosts located away from bodies of water. In some situations, it may be an appropriate alternative to DRC-1339. Check federal and state regulations before using SLS.

Relocation of roosting grackles in urban areas may be effective for reducing damage. Relocation of roosts can be accomplished with pyrotechnics, habitat modification or continued disturbance of the roost using low-powered lasers or water from a high-pressure hose. Relocation of the roost is particularly attractive as an alternative to lethal control. However, relocation may result in the movement of the roost to another area where damage may continue.

Because grackles often feed over a large area surrounding their roost site, relocation of the roost is not an effective method for protecting crops. The exception may be when crops are planted in southern states around the same time that birds are preparing to migrate north. In these limited situations, the dispersal of the roost may trigger a northern migration away from all freshly planted crops.

Handling

When handling birds, be sure to wear appropriate personal protective equipment, such as gloves and protective eye wear.

Translocation

Translocation of grackles is not considered effective for resolving most conflicts or significantly reducing roosting populations.

Euthanasia

Euthanasia of grackles may be done by cervical dislocation or by administering isoflurane or carbon dioxide gas to birds placed in a sealed container. Care should be taken to minimize stress and handling prior to euthanasia. Confined areas must be large enough to avoid stress to the birds as much as possible.

Disposal

Check your local and state regulations regarding carcass disposal.

Economics

There are no economic estimates for grackle damage to crops nationwide. Most national damage estimates are for mixed flocks that include grackles, European starlings, and several blackbird species. The following includes damage estimates in specific states.

In 1979 and 1980, results from a field survey indicated that sunflower producers in North Dakota sustained between \$4 and \$11 million in losses due to blackbird flocks that often contain a mixture of grackles, red-winged blackbirds (*Agelaius phoeniceus*), yellow-headed blackbirds (*Xanthocephalus xanthocephalus*), and brown-headed cowbirds (*Molothrus ater*).

A 2003 bioenergetics model estimated blackbird damage to sunflowers in North Dakota at \$5 to \$10 million annually. Losses by blackbirds continue to remain high. Annual blackbird damages to corn and sunflower crops in North Dakota from 2008 to 2010 averaged \$1.3 million and \$3.5 million, respectively. The economic impact to sunflower producers in North Dakota, South Dakota, and Nebraska for the years 2009 to 2013 had an annual average loss from blackbirds of \$18.7 million, \$7.3 million, and \$2.6 million, respectively.

In Florida, two types of tropical fruit—the lychee (*Litchi chinensis*) and longan (*Euphoria longana*)—are rapidly increasing in economic importance with a combined annual value of over \$19 million. During the late 1990s, estimates of bird damage to longan ranged from 1 to 28 percent (\$640 to \$43,546) per acre, with most of the damage caused by common grackles and monk parakeets. Bird damage to lychee was 11 percent or \$1,179 per acre in only 1 of 4 of the groves studied.

In 1989, producers identified European starlings, American robins (*Turdus americanus*), and common grackles as the 3 most common species causing damage to blueberries in 15 states and British Columbia. The survey also found that birds accounted for 10 percent of the losses to blueberry crops. With blueberries averaging \$2.42 per pound, birds caused an estimated \$8.5 million in blueberry damages nationwide. Common grackles also feed on cherries, showing a preference for sweet cherries over tart cherries.

Damage estimates associated with cattle feed depredation are dependent upon feed mixture, but a 2010 study showed the economic losses were as high as \$15.43 per 100 kilograms (\$6.99 per 100 pounds) of daily maintenance livestock feed. By eating the feed, birds deprive the livestock of important grain, starch and other nutrients.

Species Overview

Identification

Three species of grackles are present in North America: the common grackle, the boat-tailed grackle, and the great-tailed grackle. A fourth species, the greater Antillean grackle (*Q. niger*) is present in Puerto Rico. All are part of the Family Icteridae that includes blackbirds, orioles, cowbirds, meadowlarks, and bobolinks.

Physical Description

The common grackle is 12.5 inches long, with a wing span of 17 inches, and weighs 4 ounces. The bird has glossy black feathers and pale yellow eyes. The male's feathers are iridescent purple on the head, nape, and breast with bronze iridescence on the body and wings. Females are slightly less glossy than males. Young birds are dark brown with a dark eye. There may be a slight color variation between populations. Common grackles are larger than other blackbirds, such as red-winged blackbirds, Brewer's blackbirds, and rusty blackbirds, with longer wings and a keeled tail. Males have distinctive mating displays.

The male boat-tailed grackle is 16.5 inches long, with a wing span of 23 inches, and weighs 8.8 ounces. The female is slightly smaller (length 14.5 inches, wing span 17.5 inches, weight 4.2 ounces). The male boat-tailed grackle is glossy black with greenish-blue iridescence. The female is blackish above with a rufous-brown breast and throat. Eye color varies between populations from brown to pale to yellow. The boat-tailed grackle is larger than other blackbirds and the common grackle, with longer wings and a keeled tail. Males have distinctive mating displays. The boat-tailed grackle is located in coastal saltmarshes and adjacent open areas, generally not flocking with other birds.

The male great-tailed grackle (Figure 6) is 18 inches long, with a wing span of 23 inches, and weighs 6.7 ounces. Females are 15 inches long, with a 19-inch wing span, and weigh 3.7 ounces. The male is glossy black with uniform purple-blue iridescence. The female is blackish above with



Figure 6. A male great-tailed grackle (*Quiscalus mexicanus*). The great-tailed grackle is the largest of the three grackle species in North America.

pale to dark greyish-brown on the breast and throat. Eye color varies between populations from brown to white. The great-tailed grackle is the largest grackle, with longer wings and an extremely long, keeled tail. Mating displays by males are distinctive. It is located in various upland habitats from farmlands to city parks. The great-tailed grackle forms large winter roosts.

Range

The common grackle breeds throughout the United States and southern Canada east of the Rocky Mountains and south of Hudson's Bay. It winters from Nebraska to Texas, and east to Pennsylvania and Florida (Figure 7). A native to North America, its range may have expanded due to agriculture and climate.

The boat-tailed grackle is found on the coastal Atlantic, south of Massachusetts through all of Florida and the U.S. Gulf coast through Texas (Figure 8). It is native to North America.

The range of the great-tailed grackle extends from Louisiana and western Arkansas, west through Colorado, Utah, southern Nevada and southern California, and southward through northern Mexico (Figure 9). Native to North America, its range may have expanded due to agriculture and climate.

Voice and Sounds

The common grackle's song is not musical— it consists of a harsh, toneless hiss ("kh-sheee or kh-reezzh"). Its call is a harsh, dry "karrz" or "kerrr," and the male's call is a thin, wheezy, toneless "zweeesh" and a nasal, hoarse "krrrjk".

The song of the boat-tailed grackle is a varied series of high, ringing notes "kent, kent," or "teer, teer". The male call is a deep "chuk".

The great-tailed grackle's song is a series of loud, unpleasant noises and mechanical rattles of "kikikiki" or "ke ke ke ke ke teep". The male's call is a low, hard "chuk" or "kuk".

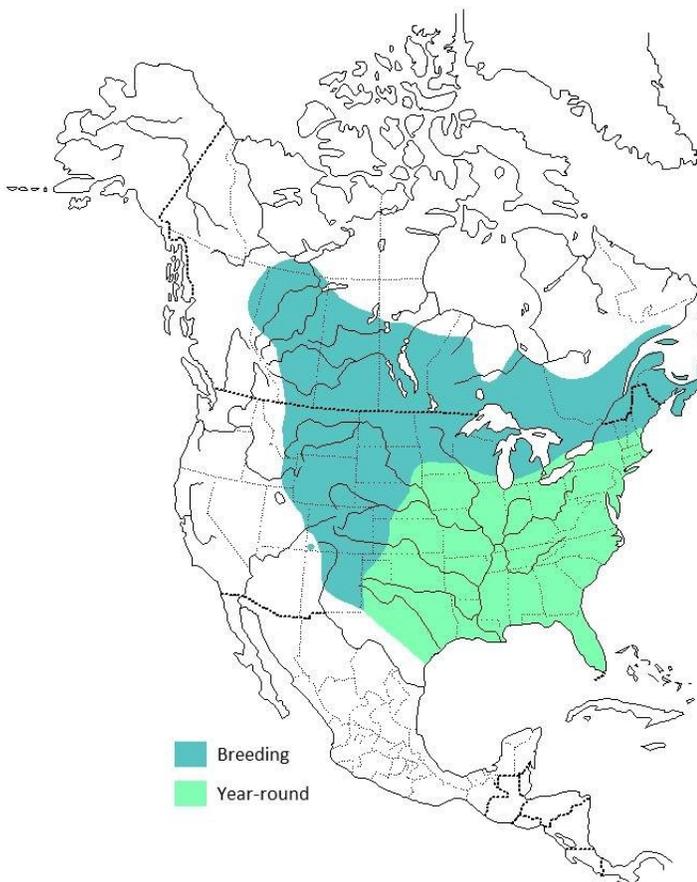


Figure 7. Distribution of common grackles.



Figure 8. Distribution of boat-tailed grackles.

Reproduction

Female grackles breed during their first year. Common grackle and great-tailed grackle males also breed during their first year, although the territorial breeding behavior of great-tailed grackles does not always allow for yearling males to establish breeding territories. Male boat-tailed grackles do not breed until their second year.

Average clutch size for all three species is 3 to 5 eggs with a range of 1 to 5 eggs for great-tailed and boat-tailed grackles and 1 to 7 eggs for common grackles. All three species typically raise 1 clutch, but may raise a maximum of 2 clutches per year.

Common grackle males assist in defending the nest and raising chicks, but great-tailed grackle and boat-tailed grackle males do not. Differential survival rates for male and female boat-tailed grackles yields a breeding season sex ratio of 2 females per male, with a corresponding increase in population fecundity.

Following a nest building period of 1 to 6 weeks, female grackles lay their eggs. Incubation for all grackle species is 11 to 15 days. Boat-tailed and common grackle chicks fledge in 10 to 17 days, while great-tailed grackle chicks fledge in 20 to 23 days.

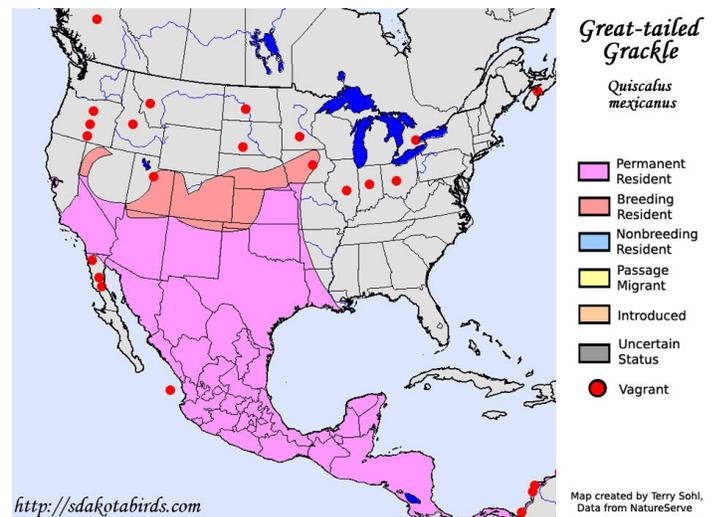


Figure 9. Distribution of great-tailed grackles.

Male great-tailed grackles do not participate in the raising of young, leaving nest building, incubation, and feeding of nestlings and fledglings to the females. Great-tailed grackles experience nest loss during the breeding season, with hatching success rate of 55 to 89 percent and a nestling fledging rate of 36 to 93 percent.

Nesting Cover

Female grackles build nests, preferably in the tree canopy and out of reach of predators. All species of grackles are “loose colonial breeders” (i.e., nesting and breeding in close proximity as a group), but single nests may also occur.

Common grackles prefer to nest colonially in shelterbelts near inhabited farms. In North Dakota, one study estimated a mean density of 0.2 common grackle colonies and 3.4 nests per square mile. Common grackles have a preference for blue spruce (*Picea pungens*), but also nest in Siberian elm (*Ulmus pumila*), box elder maple (*Acer negundo*), caragana (*Caragana arborescens*) and hawthorn (*Crataegus monogyna*).

Because boat-tailed grackles are found primarily along the coast, nests are often built in cattail or other marsh vegetation, above the reach of flood waters.

During the nesting season in south Texas, great-tailed grackles prefer to nest and roost in huesache (*Acacia farnesciana*), mesquite (*Prosopis glandulosa*) and ebony (*Pithecellobium flexicaule*) thickets.

Mortality

The rat snake (*Elaphe obsoletta*) has been identified as a common predator on grackle nestlings. Texas indigo snakes (*Drymarchon melanurus erebennus*) feed on great-tailed grackle nestlings, and purple gallinules (*Porphyryla martinica*) are known to eat boat-tailed grackle chicks.

During a 7-year study in South Carolina, approximately 61 percent of common grackle nests fledged at least 1 young. Depredation was the leading cause of common grackle egg and nestling mortality (32.3 percent), while 27.2 percent of nestlings died of starvation. Nestling losses due to starvation are probably greater for the great-tailed grackle.

Population Status

The population status of all three grackle species is considered common to overabundant.

Common grackle populations peak in August and September when sunflowers reach their maturity. In the prairie pothole region of North Dakota, South Dakota, Minnesota, and Canada, the size of the fall population of common grackles is estimated to be 19 million birds.

Typically, boat-tailed grackles do not associate with other species of birds and usually are found in small colonies during the breeding season. Both great-tailed grackles and common grackles may join other species in winter concentrations, roosting in mixed flocks numbering in the tens of thousands. Urban roosts may spread over several city blocks.

Overall, great-tailed grackles have a sex ratio of 1.3 females:1 male. The ratio varies throughout the year based on life history needs.

Habitat

Wetlands dominated by cattails can harbor more than 70,000 blackbirds, including common grackles. Wetlands containing over 20,000 birds are common in the prairie pothole region of the United States. The peak roosting and staging period at Sand Lake, South Dakota, is from late August through September. The roosting habitat is dominated by cattails (*Typha latifolia*) with areas of phragmites (*Phragmites* spp.).

Common grackles are known to roost in forested areas along Lake Texoma in southeastern Oklahoma in November. Their home ranges average 125 square miles. The minimum area used by the Lake Texoma roosting population is estimated at 768 square miles.

Boat-tailed grackles are associated with salt and fresh water marshes. They are rarely found more than 30 miles from the coast.

The use of chaparral, citrus, and residential areas by great-tailed grackles is low during the winter, but increases sharply with the start of the nesting season in April. The species sometimes uses agricultural fields and pastures. Their use of feedlots is low during the summer, but high from October to April, with peak use in October and March when the birds are migrating.

Behavior

Grackles are diurnal birds that forage from nest sites or roost areas. Great-tailed grackles and common grackles form large winter roosts, often mixing with other species of blackbirds.

Common grackles may exhibit communal nesting with little to no territoriality except immediately surrounding the individual nests. All species of grackles form loose pair bonds with 1 male breeding with 1 or more females, and 1 female mating with 1 or more males. Males play a minor role in building and repairing nests or feeding young. Molting occurs during late summer.

Common grackles are habitat generalists that nest in a variety of habitats, including open woodlands, swamps, and areas around human habitation.

The primary winter roosting period in the southern rice belt states of Arkansas, Louisiana, and Texas is from December 15 to January 31. During the winter, more than 80 percent of blackbirds in the southern rice states are from northern breeding areas. Approximately 50 percent of the red-winged blackbirds, cowbirds, and grackles that breed in eastern North America winter in rice producing states. Migrant blackbirds leave southern roosts in mid-February to early March.

Food Habits

Grackles are primarily granivores and eat agricultural seed crops, as well as hard and soft mast. They feed in agricultural areas, forests, open spaces and human-dominated landscapes.

Grackles forage on the ground. In the summer, animal matter, such as worms, grasshoppers, spiders, moths, salamanders, small fish, mice and the eggs of other birds, make up 25 percent to 50 percent of their diet. From July to mid-August, grackles eat primarily small grains (42 percent) and insects (34 percent), whereas, between mid-August and late October small grains (36 percent) and sunflower seeds (48 percent) are important food items. In the winter, human-provided food sources, such as garbage and birdseed (Figure 10), make up a significant part of their diet.

Overall, crop and habitat availability influence the diet of common grackles. In North Dakota, insects comprise 79 percent of the diet for common grackles during May and June. During the summer, the amount of sunflower seeds in a grackle's diet can increase dramatically.

Boat-tailed grackles (Figure 11) often feed in shallow water, wading and plunging their heads into the water to capture prey.

Legal Status

All grackles are federally protected by the Migratory Bird Treaty Act, but actions to control damage, including lethal take, is allowed under a "Standing Depredation Order" (50 CFR 21.43) which allows take of grackles "...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." The federal standing depredation order overrides state regulations or the need for a state permit.



Figure 10. Common grackle at bird feeder.



Figure 11. Boat-tailed grackle illustration.

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Figure 1. Photo by Thomas Barnes, U.S. Fish and Wildlife Service
Figure 2. Photo by Texas A&M Extension Service
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Figure 5. Graphic by Thomas Hall, USDA-APHIS-Wildlife Services
Figure 6. Photo by John and Karen Hollingsworth, U.S. Fish and Wildlife Service
Figures 7-8. Maps from The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology.
Figure 9. Map from Terry Sohl, <https://www.sdakotabirds.com>
Figure 10. Photo by Kevin Keirn
Figure 11. Graphic by Louis Agassiz Fuyertes, U.S. Fish and Wildlife Service

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Glossary

Diurnal: Active during the daytime.

Ectoparasite: A parasite that lives on the outside of its host.

Granivore: An animal that feeds on the seeds of plants as a main or exclusive food source, in many cases leaving the seeds damaged and not viable.

Monoterpene: A component of fragment oils found in leaves, flowers, and fruits.

Pyrotechnics: Flares or cartridges fired from a gun or launcher that produce a loud blast or scream accompanied by smoke and a flash of light.

Relocation: The act of moving an animal from one spot to another. For example, moving an animal from your attic to the backyard.

Staging Period: During migration, a time when birds rest and feed to improve body condition and increase body fat.

Translocation: The act of moving an animal outside of its original home range, usually a considerable distance away.

Key Words

Grackle, *Quiscalus major*, *Quiscalus mexicanus*, *Quiscalus quiscula*

Disclaimer

Wildlife can threaten the health and safety of you and others in the area. Use of damage prevention and control methods also may pose risks to humans, pets, livestock, other non-target animals, and the environment. Be aware of the risks and take steps to reduce or eliminate those risks.

Some methods mentioned in this document may not be legal, permitted, or appropriate in your area. Read and follow all pesticide label recommendations and local requirements. Check with personnel from your state wildlife agency and local officials to determine if methods are acceptable and allowed.

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Appendix

Damage Management Methods for Grackles

Type of Control	Available Management Options
Exclusion	Netting to protect ripening fruit
Frightening Devices	<ul style="list-style-type: none"> • Lasers, pyrotechnics, and propane cannons at roost and feeding sites; May provide short-term relief in airport environments • Mylar tape or helium-filled “eye-spot” balloons to protect limited areas, such as gardens, for a short period of time
Habitat Modification	<ul style="list-style-type: none"> • Trim roost trees to open the canopy and reduce noise and droppings • Remove nests to reduce attacks on people or pets or mitigate hazards near aircraft • Remove roosting habitat (cattails and trees) in the prairie pothole region to reduce damage to nearby crops • Desiccants to advance the harvest date of crops • Modify planting and harvesting times of crops
Repellents	<ul style="list-style-type: none"> • Avitrol (Avitrol Corporation) to frighten and disperse flocking birds (4-aminopyradine) • Avipel® Shield (Arkion Life Sciences) seed treatments for newly planted corn seeds (9,10-anthraquinone) • AV-1011® (Arkion Life Sciences) seed treatments for newly planted rice seeds in AR, LA, MS, MO and TX (9,10-anthraquinone) • Methyl anthranilate sprayed or used as fog on lawns or other surfaces to repel congregating birds • Lemon grass oil, garlic oil, clove oil, peppermint oil, rosemary oil, thyme oil and white pepper are registered as bird repellents or are exempt from EPA registration
Shooting	Remove individual birds or reinforce the effectiveness of propane cannons and other pyrotechnics
Toxicants	DRC-1339 (3-chloro-4-methylbenzenamine)
Trapping	Decoy traps, funnel traps or drop nets
Other	<ul style="list-style-type: none"> • Decoy (lure) crops • Bird-resistant seeds and crops • Sodium lauryl sulfate (SLS) for controlling roosts • Relocation of roosts using a variety of management methods