

## Avian Use of Rice-Baited Trays Attached to Cages with Live Decoy Blackbirds in Central North Dakota

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### Introduction

For several decades, blackbird depredation of sunflower has been a continuous problem. Sunflower growers consistently place blackbirds in the top tier of problems associated with growing sunflower in the northern Great Plains. Many non-lethal tactics have been employed in an attempt to protect ripening sunflower from foraging flocks of blackbirds. Thinning cattail-choked wetlands to reduce roosting habitat, using pyrotechniques to frighten feeding birds, planting Wildlife Conservation Sunflower Plots to lure birds away from commercial plots, applying taste repellents, and adapting cultural methods such as block planting to synchronize ripening are just a few such tactics. Even so, the numbers of blackbirds migrating through the northern Great Plains can overwhelm non-lethal techniques. That is, in some circumstances there are too many blackbirds for non-lethal techniques to be effective.

One avicide, DRC-1339, is registered for use as a lethal bait in the U.S. and North Dakota. The avicide is usually mixed with brown rice at a ratio of 1:25 (treated rice kernel to untreated rice kernels). Normally, the rice mixture is broadcast on the ground in the ripening or sprouting crop. Non-blackbirds are plentiful in ripening sunflower fields, causing a potential risk to these species with the use of DRC-1339. These granivorous non-blackbirds might eat treated rice, causing an unintentional loss. A number of species of songbirds and sparrows could be at risk. Also, ring-necked pheasants (*Phasianus colchicus*) and mourning doves (*Zenaida macroura*) are species of high concern. One potential method of avoiding non-blackbirds is to put live decoys (blackbirds) in cages in areas devoid of habitat to attract free-living blackbirds to bait trays attached to the top of the decoy cages. The intent is to reduce large concentrations of blackbirds that cannot be otherwise dispersed by non-lethal means. The objective of this study is to identify and quantify the avian species visiting the bait trays. Our goal is to develop an effective and environmentally-safe method for managing locally abundant blackbird populations.

### Methods

We based our study site selection on historical knowledge of sunflower planting patterns, crop phenology and blackbird damage to sunflower in North Dakota. Decoy traps fitted with bait trays were placed on private lands near gravel roads and observed for bird activity. There were 51 total sites (Fig. 1) during the course of the study in the following counties: Barnes (5), Griggs (5), Nelson (9), Ramsey (8), Stutsman (17), and Walsh (7).

We used modified Australian crow traps (decoy trap), made of 2.5x5 cm (1x2 in) woven wire with 1.6x1.6x2 m (4x4x6 ft) sides, with a 0.5 m (1.5 ft) drop box with a single 5-cm (2-in) slit for birds to enter the traps. We attached a 0.6x1.2 m (2x4 ft) plywood roof to the top of the decoy trap. A 5x5 cm (2x2 in) wood rim was placed around the edges of the roof. A second rim was placed about 12 cm (4.5 in) from the

edges of the roof to reduce loss of rice due to wind dispersal. A small experimental group of traps were designed to have 1.6m (4 ft), and one as short as .5m (1.5 ft) heights.

These traps contained captive blackbirds that were initially captured with mist nets. An average of 5.8 red-winged blackbirds (*Agelaius phoeniceus*), common grackles (*Quiscalus quiscula*), and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) were maintained in the decoy traps. Fresh food and water were provided as needed by study participants.

To test the effects of using woven wire for excluding mourning doves and ring-necked pheasants, half of the plywood roofs were guarded with 5x10 cm (2x4 inches) woven wire guards, and half were unguarded. These 2 treatments were assigned randomly.

Half of the gravel roads used by blackbirds were randomly selected and had untreated brown rice applied along the edge of the road. These rice strips were about 1 m wide. Rice was spread at a rate of 900 g (5 cups)/50 m along the roadside in close proximity to the tray site. Additional rice was added every 5 days at the same rate.

Study participants randomly visited the study sites (decoy traps/bait trays) for 1 hr intervals throughout daylight hours to record numbers, species, and ages (when possible) of blackbirds and non-blackbirds on the gravel roads and bait trays. The behavior of the birds was recorded as perching or feeding. The observer parked the vehicle about 50 m from the decoy trap and immediately estimated the number of blackbirds in various habitats (e.g., sunflower, corn, gravel road, trees) within 0.4 km (0.25 mile). After a 10-min quiet period, 1-min counts were made alternating between the gravel road and bait trays, with 2 minutes between observations. At the end of the 1-hr observation period, the observer again estimated the number of blackbirds within 0.4 km.

Binoculars and spotting scopes were used for observations. If the species of bird could not be determined, then identification was made to the closest known taxonomic group such as genus or family. These data, along with date, time, and weather conditions, were recorded on data sheets printed on rain-resistant paper.

We discovered during the first few weeks of the study that predators (raccoons, foxes, weasels, and hawks) could easily access the cages and often ate all the decoy birds within a few days. Local landowners described the year to have some of the highest raccoon populations they had ever seen. One landowner informed us that he personally trapped over 60 raccoon at his farm in the last 2 years. We tried to reduce predation by retro-fitting the sides and bottoms of the cages with small mesh wire to deter entry. This proved to be somewhat successful but did not solve the problem. Ultimately, we used three strands of electrified smooth-wire fence around the base of each trap. The fencer was powered with either 6v deep cycle batteries and fencers, D-cell fencers, or solar charged 6v fencers. This measure of exclusion proved to be highly effective. The slit used to catch birds in the drop box, also allowed birds to exit, so these slits were closed. In a few instances where cages were set side by side, one cage was used as a capture site and the other as a holding cage, but for the most part, traps became holding cages for decoy birds captured using mist nets.

We netted birds at all hours of the day but caught the most birds after sunrise in the morning and during twilight in the evening. We maintained about ½ cup (90g) of rice on the trays. In a few instances when blackbird use was high, rice levels were increased to 1 cup (180 g) per tray. The rice quantity was checked at least every 3 days.

## Results

We observed the bait stations for 524 h between 15 August and 12 October, with 156 h of observation in Nelson, Ramsey, and Walsh counties and 368 h in Stutsman, Griggs, and Barnes counties. Of the original 51 sites, 22 had only blackbirds present. Of those same 51 sites, 4 had only non-blackbirds present. There were 7 sites that had both blackbirds and non-blackbirds present. Thus, 29 sites had blackbirds present, and 11 sites had non-blackbirds present. There were 18 sites that were not visited by blackbirds or non-blackbirds. The site with the most blackbirds without non-blackbirds was 14D with an average of 9.8 blackbird visits/observation. Site 8D was also high with 5.6 visits/observation. This number seems small but considering the observation protocol, only 20 minutes of each hour are actually an observation, and only 10 of those minutes are actually spent observing the tray. Therefore, those numbers could potentially be about 6 times higher at around 58.8 (14D) and 33.8 (8D) visits per hour. The average daily use of tray sites by blackbirds increased over the course of the study to 12.2 birds per hour of observation on 3 October 2007. This trend was not observed in non-blackbirds, with a peak average of 1 non-blackbird per hour of observation, occurring on 25 August 2007. The core non-blackbird use of trays occurred between 21 August and 29 August 2007 (Fig. 2).

There were 968 recorded individual visits to trays by 12 different species, and a few birds only identified to family (Table 1). Of these visits, 920 were individual blackbird visits to trays: 851 red-winged blackbirds, 12 yellow-headed blackbirds, 10 European starlings (*Sturnus vulgaris*), 30 brown-headed cowbirds (*Molothrus ater*), and 17 common grackles. Blackbirds accounted for 95% of all tray visits (Fig. 3). There were 48 recorded non-blackbird visits to trays. Sparrow species were the most prevalent of visitors, with clay-colored sparrows (*Spizella pallida*), grasshopper sparrows (*Ammodramus savannarum*), savannah sparrows (*Passerculus sandwichensis*), song sparrows (*Melospiza melodia*), vesper sparrows (*Pooecetes gramineus*), and unidentified sparrows accounting for 94% of the non-blackbirds. When blackbirds visited trays, 84.5% of them fed on the rice, whereas 54% of non-blackbirds ate rice (Fig. 4).

## Discussion

Removal of vegetation around the tray sites is important and appears to be effective in reducing or eliminating non-blackbird use of the trays. Small songbird and sparrow species like to feed in the grass and on the ground looking for seeds. We speculate that small birds avoid predators by staying in dense vegetation. We observed Merlin (*Falco columbarius*), American kestrel (*Falco sparverius*) and Cooper's hawks (*Accipiter cooperii*) around the tray sites. Clearing vegetation out to a distance of 20-m from the bait tray may be sufficient, but that distance will be adjusted as we obtain more data.

Proximity to roosts or perch trees seems to be useful. Sites that allow perching provide blackbirds an opportunity to observe the trays, be enticed by decoys, and visit the site. It appears that trap locations near cattail roosts should be given priority over those near sunflower fields alone. Large roost sites are likely more feasible than scattered small sites for use of bait trays with DRC-1339. Sites near sunflower fields alone were not as active as the sites near cattail roosts, probably because the birds preferred ripening

sunflower over brown rice. Additionally, blackbirds returned to the roost mid morning and loafed around, giving them time to find and experiment with the bait stations.

Low tray heights seem to promote birds landing on the ground around the tray with less use of the actual bait tray. Tray heights of 1.6 m (4 ft) and even 2 m (6 ft) seem to be the best. We suggest that large mesh size increases the visibility of decoys and multiple cages of blackbirds might ultimately attract more birds. This grouping of trays in close proximity creates a feeling of a large flock feeding. With scattered rice on the ground around the site, flock feeding behavior becomes evident. We caution, however, that this observation came from a single site (No. 8), which was the only site set up in this manner.

### **Conclusion**

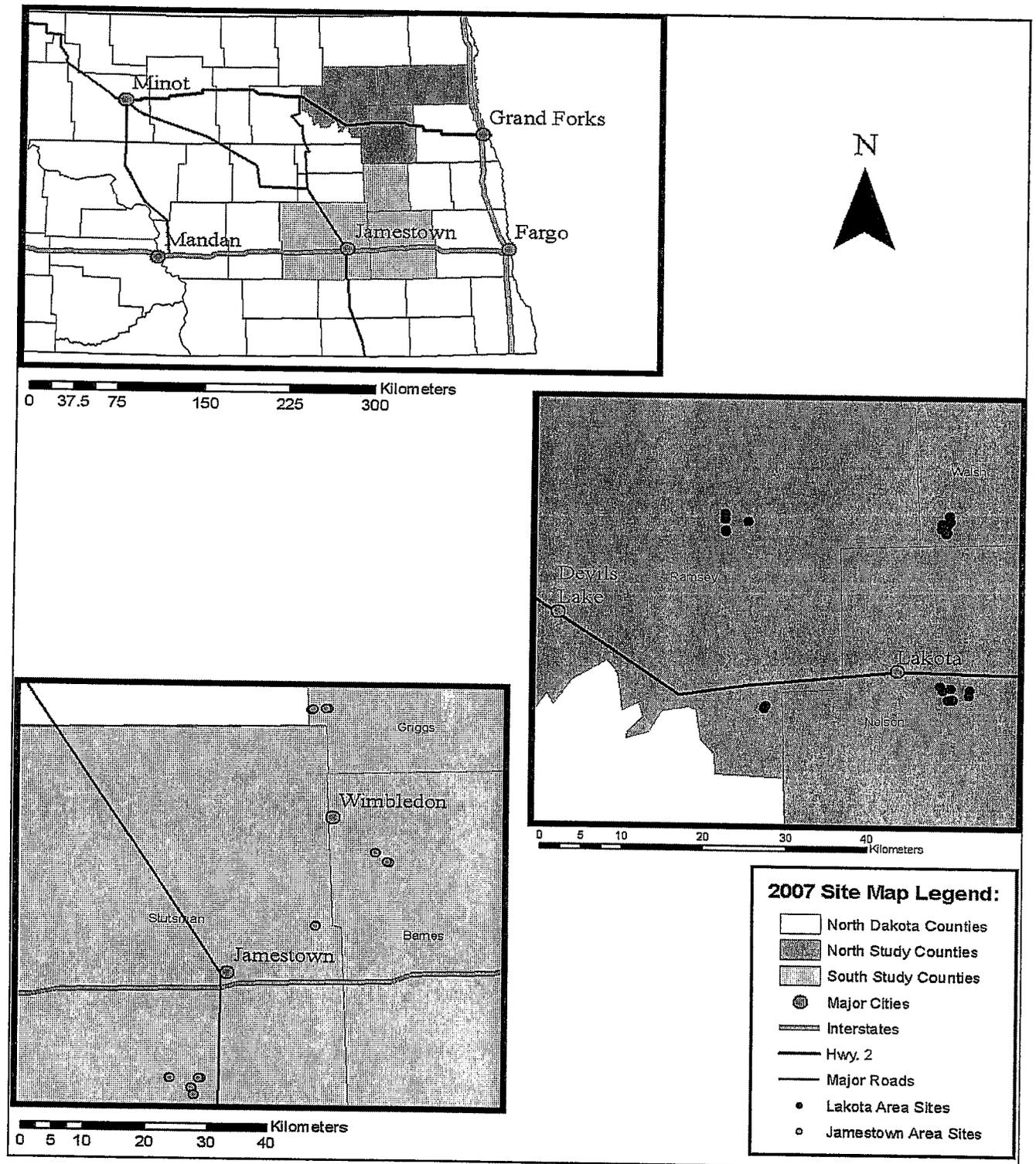
After over-coming challenges at the beginning of the project, the remainder of the study went well. Observation protocol seemed to work very well and provided for accurate observations. Electric fencing was a key component to success of the project. It will be important for next season to seek out good roost sites and set up tray sites with electric fence near these locations. Large numbers of decoys also will be a key to success, with 10 live blackbirds per trap. The use of a capture trap and a holding cage in side by side arrangements will be useful in capturing new decoy blackbirds, and replacement decoys, without losing the existing decoys. Clearing vegetation around trap sites will be beneficial in the reduction of non-blackbird visits.

After one field season, it appears this technique will be most successful at large roosts. We are encouraged that sites were found where blackbirds could be baited without jeopardizing non-blackbirds; a requirement of the DRC-1339 staging area label. With the knowledge gained from this past field season, we expect to develop more bait sites without non-blackbirds. We hasten to add that baiting blackbirds with an avicide will not solve the sunflower depredation problem. Baiting, however, might be a useful management tool for reducing local damage.

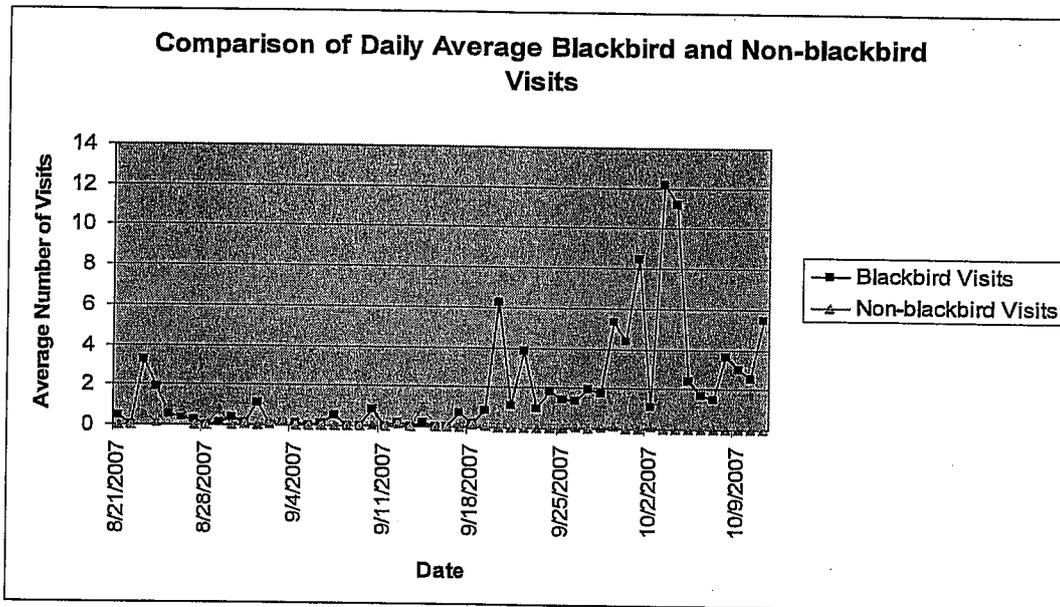
**Table 1.** Numbers of avian species present on rice-baited trays placed near wetland blackbird roosts in central North Dakota from 15 August to 12 October 2007.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Quantity</u>
Brown-headed cowbird	<i>(Molothrus ater)</i>	30
Clay-colored sparrow	<i>(Spizella pallida)</i>	11
Common grackle	<i>(Quiscalus quiscula)</i>	17
Cooper's hawk	<i>(Accipiter cooperii)</i>	1
European starling	<i>(Sturnus vulgaris)</i>	10
Grasshopper sparrow	<i>(Ammodramus savannarum)</i>	1
Red-winged blackbird	<i>(Agelaius phoeniceus)</i>	851
Savannah sparrow	<i>(Passerculus sandwichensis)</i>	11
Say's phoebe	<i>(Sayornis saya)</i>	1
Song sparrow	<i>(Melospiza melodia)</i>	7
Sparrow family	<i>(Emberizidae)</i>	14
Vesper sparrow	<i>(Pooecetes gramineus)</i>	1
Wren Family	<i>(Troglodytidae)</i>	1
Yellow-headed blackbird	<i>(Xanthocephalus xanthocephalus)</i>	12

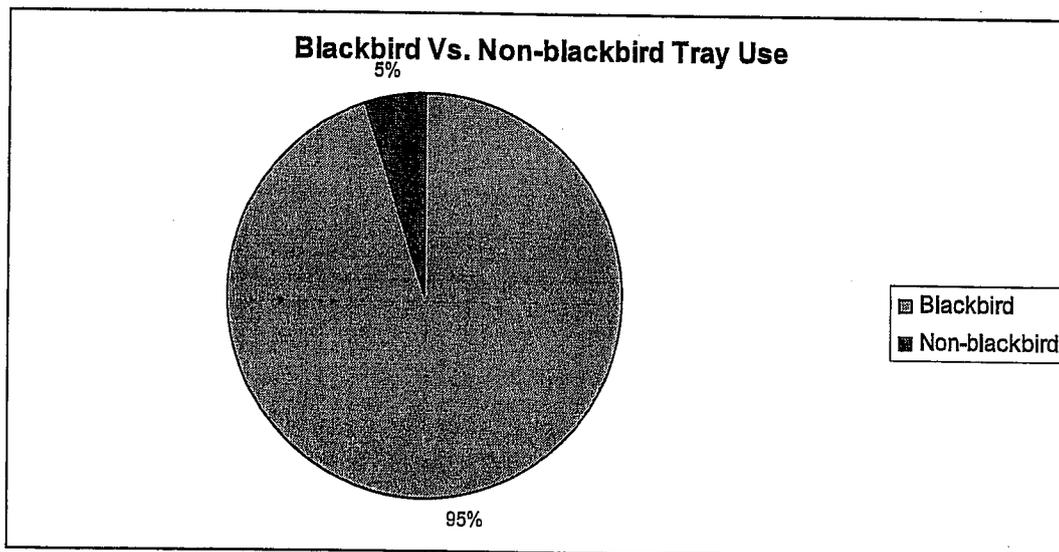
**Figure 1.** Locations of rice-baited trays in central North Dakota between 15 August and 12 October 2007. Devils Lake, Lakota, Jamestown and Wimbledon areas.



**Figure 2.** Comparison of peak blackbird and non-blackbird activity at rice-baited tray sites in central North Dakota between 15 August and 12 October 2007



**Figure 3.** Comparison of blackbird visits and non-blackbird visits to rice-baited trays in central North Dakota between 15 August and 12 October 2007.



**Figure 4.** Comparison of blackbird and non-blackbird activities at rice-baited tray sites in central North Dakota between 15 August and 12 October 2007.

