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

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Abstract: The Compound DRC-1339 Concentrate – Staging-Areas label is approved in North Dakota for use in non-crop staging areas near blackbird roosts. Potential blackbird damage affects sunflower planting patterns and reduces profits. One option to manage damage is to reduce the local blackbird population using DRC-1339 bait. The challenges are to limit nontarget bird hazards while attracting large numbers of blackbirds. During fall 2007, we assessed the nontarget bird risks of using rice baits on elevated bait trays attached to the top of decoy traps. During random visits to bait sites, we recorded 968 individual birds and 12 avian species. Blackbirds accounted for 95% of all tray visits. Sparrow species were the most prevalent of the non-blackbirds. Strategic placement of the bait trays near large roosts will be necessary for this technique to be successful. Ultimately, Wildlife Services might use DRC-1339-treated rice baits on bait trays for managing local blackbird damage.

Key Words: avicide, blackbirds, bait trays, decoy traps, DRC-1339, North Dakota, sunflower

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INTRODUCTION

Blackbird depredation of sunflower has been a continuous problem since the 1970s (Otis and Kilburn 1988, Blackwell et al. 2003, Peer et al. 2003). Sunflower growers consistently place blackbirds in the top tier of problems associated with growing sunflower in the northern Great Plains (Kleingartner 2003). Many non-lethal tactics have been employed in an attempt to protect ripening sunflower from foraging flocks of blackbirds (Linz and Hanzel 1997). Thinning cattail-choked wetlands to reduce roosting habitat, using pyrotechniques to frighten feeding birds, planting lure 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 (Hagy et al. 2007, Linz et al. 1996, Linz et al. 2007). The numbers of blackbirds migrating through the northern Great Plains can overwhelm non-lethal techniques, especially if an alternative food source is not available (Avery 2003).

One avicide, compound DRC-1339 (3-chloro-*p*-toluidine hydrochloride), is registered for use as an avicide in the U.S. and North Dakota (USDA 1993). 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 harvested or ripening crops (Linz and Bergman 1996). Resident and migratory birds are plentiful in ripening sunflower fields, however, causing a potential risk to nontarget species with the use of DRC-1339 (Hagy et al. 2007). One potential method of avoiding nontargets is to put live blackbirds (decoys) in cages in areas devoid of habitat to attract free-living blackbirds to bait trays. 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 (Figure 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 2.5×5-cm (1×2-in) woven wire with 1.6×1.6×2-m (4×4×6-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 0.6×1.2-m (2×4-ft) plywood roof to the top of the decoy trap. A 5×5-cm (2×2-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 1.6-m (4-ft) heights, and one as short as 0.5 m (1.5 ft) in height. We randomly selected half of the plywood roofs and placed 5×10-cm (2×4-in) woven wire guards over the trays to test their efficacy for excluding doves and pheasants.

These traps contained captive blackbirds that were initially captured with mist nets. An average of 5.8 red-winged blackbirds (See Table 1 for scientific names), common grackles, and yellow-headed blackbirds were maintained in the decoy traps. Fresh food and water were provided as needed by study participants.

We randomly selected 50% of the gravel roads located near our observation points and applied untreated

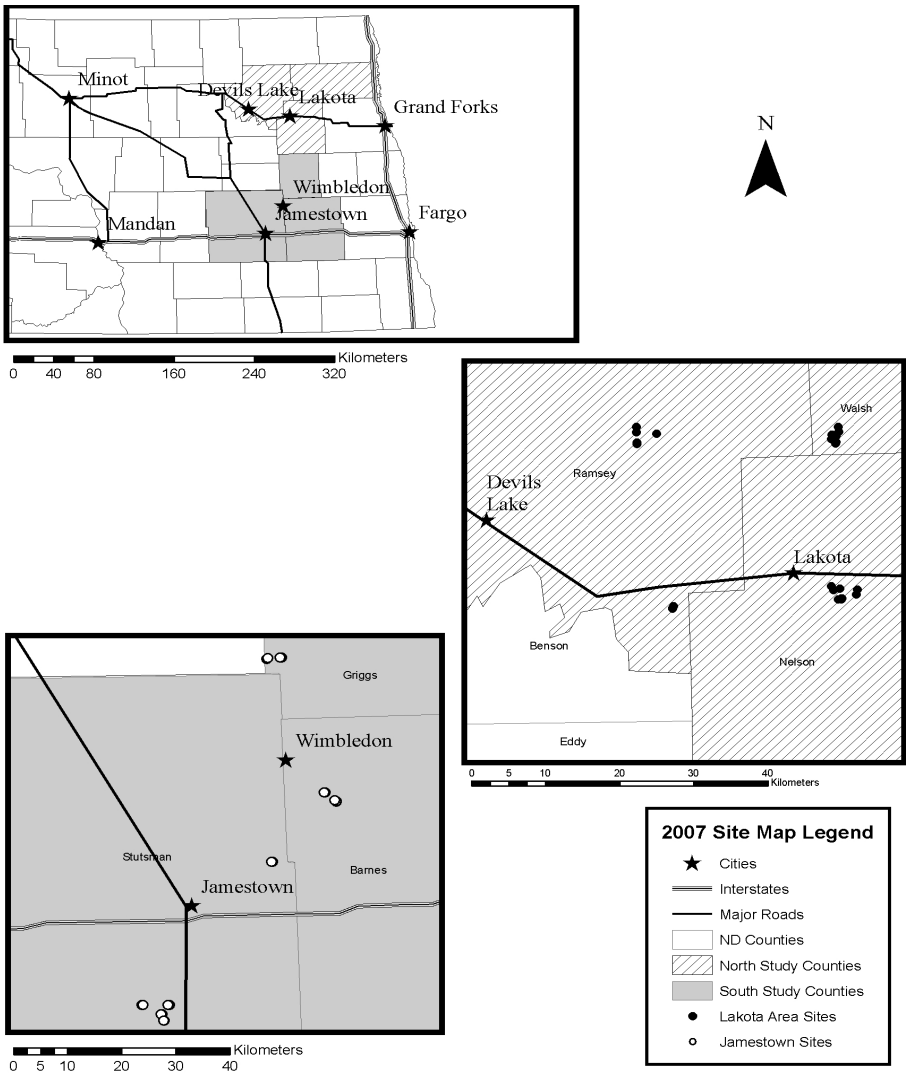

Figure 1. Locations of rice-baited trays in central North Dakota between 15 August and 12 October 2007.

brown rice along 1-m-wide strips. 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 behavior (perching, feeding), numbers, species (closest determined taxonomic group), and ages (when possible) of blackbirds and non-blackbirds on the gravel roads and bait trays. 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 min 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. 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 decoy birds. 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

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

Family	Common Name	Scientific Name	Number Observed
Accipitridae	Cooper's hawk	*Accipiter cooperii*	1
Emberizidae	Clay-colored sparrow	*Spizella pallida*	11
	Vesper sparrow	*Pooecetes gramineus*	1
	Savannah sparrow	*Passerculus sandwichensis*	11
	Song sparrow	*Melospiza melodia*	7
	Grasshopper sparrow	*Ammodramus savannarum*	1
	Sparrow spp.		14
Sturnidae	European starling	*Sturnus vulgaris*	10
Icteridae	Red-winged blackbird	*Agelaius phoeniceus*	851
	Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	12
	Common grackle	*Quiscalus quiscula*	17
	Brown-headed cowbird	*Molothrus ater*	30
Tyrannidae	Say's phoebe	*Sayornis saya*	1
Troglodytidae	Wren spp.		1

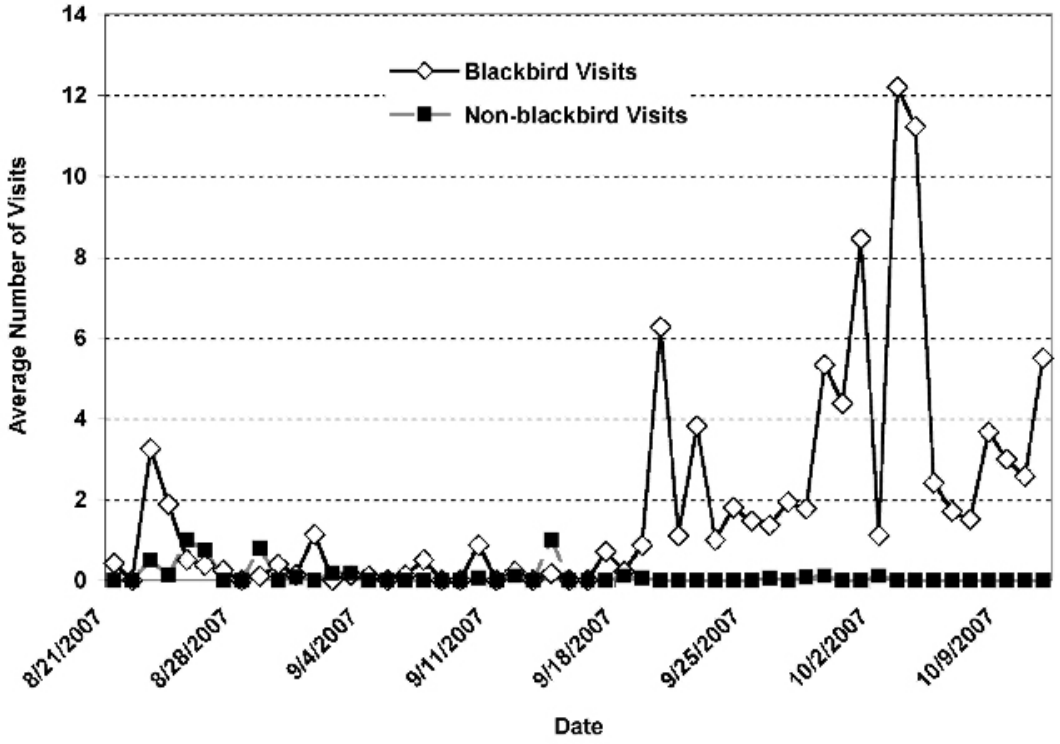

Figure 2. Comparison of peak blackbird and non-blackbird activity at rice-baited tray sites in central North Dakota between 15 August and 12 October 2007.

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. 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.

We maintained about ½ cup (90 g) of rice on the trays. 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; 4 had only non-blackbirds present; and 18 sites were not visited by any birds. Two sites with the most abundant blackbirds without non-blackbirds present averaged 9.8 and 5.6 birds per visits/observation. The average daily use of tray sites by blackbirds increased until early October. 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 (Figure 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, 30 brown-headed cowbirds, and 17 common grackles. Blackbirds and granivorous nonblackbirds accounted for 95% and 4% of tray visits, respectively. Sparrow species were the most prevalent of visitors, accounting for 94% of the non-blackbirds. When blackbirds visited trays, 84% of them fed on the rice, whereas 54% of non-blackbirds ate rice (Figure 3).

DISCUSSION

Our first field season yielded invaluable experience that will be used to improve the efficacy and environmental safety of the bait tray-caged decoy bird concept. First, we plan to place bait sites only around large wetland roosts; preferably near trees. Blackbirds loafing around the wetlands appear more likely to visit the bait stations, whereas perch sites provide an opportunity for the birds to observe the trays and decoys. We speculate that sites near sunflower fields were not as active as the sites near cattail roosts because the birds prefer to feed in sunflower over visiting the bait trays. Second, we will use electric fence to deter ground predators at all sites. This will reduce the labor required to replenish the cages with decoys. Third, we plan to clear vegetation in about a 20-m radius around the bait site. We reason that small granivorous birds like to feed on the ground in the dense vegetation to avoid predators. Fourth, we plan to reduce the tray heights from 2 m to 1.6 m so that the free-living blackbirds are not as exposed to avian predators and high winds. Our limited observations suggest that lower tray heights will result in bird landing on the ground around the tray with little use of the actual bait tray. Fifth, we plan to group cages to create the atmosphere of a large feeding flock.

Additional data are needed before the usefulness of

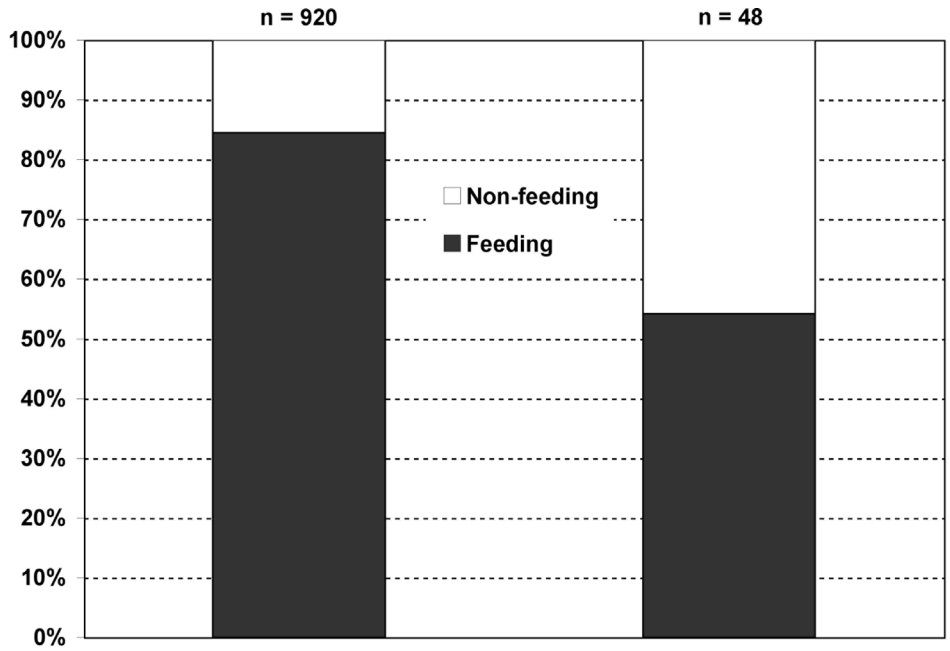

Figure 3. Percentage of blackbirds and non-blackbirds feeding on rice-baited trays in central North Dakota between 15 August and 12 October 2007.

this bait concept can be assessed with reasonable confidence. We caution that the use of an avicide likely will not solve the sunflower depredation problem. Rather, growers must be encouraged to develop an integrated pest management plan that should include roost management, bird harassment, and early harvest.

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