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Paul P. Woronecki
Wildlife Research Station, Davis, CA

Joseph L. Guarino
Wildlife Research Center, Denver

John W. De Grazio
Wildlife Research Center, Denver

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BLACKBIRD DAMAGE CONTROL WITH CHEMICAL FRIGHTENING AGENTS

PAUL P. WORONECKI, Bureau of Sport Fisheries and Wildlife, Wildlife Research Station, Davis, California
JOSEPH L. GUARINO and JOHN W. DE GRAZIO, Bureau of Sport Fisheries and Wildlife, Wildlife Research Center, Denver, Colorado

Birds involved in damage or nuisance situations also have beneficial qualities, and most species are protected by State and Federal laws. Programs designed to alleviate bird problems, particularly those involving blackbirds, should first seek to discourage the birds from using problem areas and not to eliminate populations by direct reductional control. Habitat manipulation and mechanical frightening devices are useful techniques for discouraging bird activity, but certain chemical frightening agents have distinct advantages in some situations. We have found these agents particularly effective when used to control blackbird damage.

Chemical frightening agents can be divided into two groups, the lethal and non-lethal. The latter is obviously more desirable, since accidental deaths of upland game, waterfowl, and insectivorous songbirds are minimized. Whether lethal or non-lethal, the success of these agents is largely dependent upon eliciting the desired behavioral response from unaffected birds in the population. The extreme gregariousness of blackbirds makes them ideal subjects for demonstrating the utility of this type of chemical.

Personnel of the Denver Wildlife Research Center have been actively searching for and developing safe and effective chemical frightening agents since 1360. Eighty-two potential agents have been screened, but only a few have warranted field testing.

Certain substituted phenyl N-methyl carbamates have shown particularly wide safety margins between temporary immobilization and death (Schafer et al., 1967)- One of these, DRC-736, has been field tested extensively and shows special promise for protecting livestock feedlots from problem blackbirds.

A second compound, 4-aminopyridine (DRC-1327), described by Goodhue and Baumgartner (1965a, 1965b), has been tested at Sand Lake National Wildlife Refuge, South Dakota, since 1962 (De Grazio, 1964). This chemical frightening agent has been the most successful of the many control methods tested to alleviate blackbird damage to ripening corn.

DRC-736 IN FEEDLOTS

Laboratory and field testing of DRC-736 began in 1961. Since that time, major tests have been conducted at feedlots in the South Platte-St. Vrain River Valleys north of Denver, Colorado (Guarino, 1963; Guarino, 1964; Woronecki, 1965—unpublished reports). For many years this area has had a large wintering population of red-winged blackbirds (Agelaius phoeniceus). Although the redwings normally do little damage at feedlots because they generally feed on spillage, feedlot owners complain about the number of birds. Bird numbers peak during inclement weather, especially when snow covers waste grains and weed seeds, their normal natural food supply.

Three trials with DRC-736 have been made to discourage redwings from using feedlots. In December 1962, an application of cracked corn treated with 2% DRC-736 reduced the population of redwings at a cattle feeding area near Platteville, Colorado, to 2% of the original number 2 days after baiting. In February 1964, an application of 1.25% DRC-736 on cracked corn reduced redwing numbers at a feedlot near Brighton, Colorado, by 95% within 2 hours after the bait was' spread, and 901 fewer birds visited this lot for the next 3-week period. In the winter of 1964-65, an attempt was made to reduce redwing use of the Brighton lot for the entire damage period (from November to March) with 1% DRC-736-cracked corn bait. Four applications were necessary. After each application redwing populations fell sharply within a few days of baiting and then began a gradual increase toward the original number. The lot required rebaiting at about 1-month intervals.

Pretreatment redwing populations at the sites treated during the 3 years ranged from 6,000 to 17,000. Baits were broadcast in feeding areas at the rate of about 0.5 pound of treated bait per acre, and only 120 pounds of treated bait were used during the 3 years. Blackbird mortality was less than 20% of the number affected, with mortality being higher

among females than the much larger males.

Other species of birds affected during these tests included house sparrows (Passer domesticus), starlings (Sturnus vulgaris), common grackles (Quiscalus quiscula), ye 11ow-headed blackbirds (Xanthocephalus xanthocephalus), black-billed magpies (Pica pica hudsonia), white-crowned sparrows (Zonotrichia leucophrys), and common pigeons (Columba livia). Only small numbers of these species were affected, and most individuals survived.

4-AMINOPYRIDINE (DRC-1327) IN CORNFIELDS

The utility of DRC-1327 for reducing blackbird damage to ripening corn was first investigated in August and September of 1962 and 1963. These preliminary studies suggested conditions for using DRC-1327 effectively. Two major trials were then conducted in 1964 and 1965 to evaluate the protection afforded a large block of cornfields by treating them with DRC-1327 by two different techniques, spraying ears and broadcasting baits.

Spraying Ears

In 1964, the effectiveness of spraying ears was evaluated on an 8-section block of cornfields with a history of severe damage. These fields were located from a few hundred feet to 2 miles from a marsh used for roosting by tens of thousands of blackbirds. Solutions containing 4% DRC-1327 were sprayed on partially husked ears of corn. At the first indication of damage, fields were immediately treated at the rate of one plot (5 consecutive ears) per 2 acres. The first treatment was on August 7 and the last on September 11.

Corn damage was assessed at the end of the damage season by the method developed by De Grazio et al. (unpublished manuscript). The appraisal showed that damage had been reduced by 78% and that 10 dollars' worth of corn had been saved for each dollar spent in treatment. An average of four treatments per field was required. Fields receiving light bird use needed only one or two treatments during the entire damage season, but heavily used fields adjacent to the roost required as many as seven.

Blackbird populations feeding in the treated area fell sharply 5 days after treatment began and remained at a low level for the rest of the damage period. Less than 1% of the blackbirds using a field needed to be affected to clear it within a few days.

Although pheasants (Phasianus colchicus) and mourning doves (Zenaidura macroura) were abundant in the fields, there was no evidence that any were affected. Mortality among songbirds and other species was negligible.

Broadcasting Bait

In 1965, a technique of broadcasting cracked corn baits treated with 3% DRC-1327 was evaluated in the same 8-section block. One part of treated bait was diluted with 30 parts of untreated cracked corn, and broadcast at the rate of 1 pound of treated corn per 30 acres; thus only 1/1,000 of a pound of chemical was used per acre. Bait was broadcast thinly by hand over an area covering approximately 25% of each field in swaths 8 to 10 rows wide and about 30 to 35 rows apart. As in 1964, when damage was first noted the field was immediately baited. Treatment covered a 34-day period and averaged four baitings per field, varying from one to six depending upon bird use; a total of 150 pounds of treated corn was used. Damage was assessed on all fields after the damage season. The reduction was 85%, and about 12 dollars' worth of corn was saved for each dollar spent in treatment.

Blackbird flights and responses to affected birds were similar to those observed the previous year when ears were treated. One meadowlark (Sturnella neglecta), a Savannah sparrow (Passerculus sandwichensis), and two mourning doves were the only known nontarget species killed. Mourning doves were very numerous in the area before, during, and after the study. Pheasants were scarcer in 1965 than in previous years and none were found dead.

SUMMARY

Chemical frightening agents have been used very successfully in combatting blackbird problems. Cattle feedlots and ripening cornfields have been protected, with light blackbird mortality and negligible loss of game birds and insectivorous songbirds.

DRC-736-treated cracked corn scattered in alleys and pens was very effective in reduc-

ing the number of redwings at feedlots. Sharp reductions in bird numbers occurred immediately after each baiting, and populations at the lots remained at a very low level for several weeks after treatment. One feedlot was protected for an entire winter with only four baitings.

Ripening cornfields were successfully protected from blackbird damage by applying 4-aminopyridine (DRC-1327) to partially husked ears and by broadcasting cracked corn in the fields. A 78% reduction in damage was obtained by spraying ears, and an 85% reduction by broadcasting baits. Few blackbirds were killed with either technique, and only a few affected birds in a field were needed to frighten away others in the flock. Numbers of blackbirds that fed in or flew over the treated block were sharply reduced soon after treatment began.

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