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REDUCING BLACKBIRD-HUMAN CONFLICTS IN AGRICULTURE AND FEEDLOTS: NEW METHODS FOR AN INTEGRATED MANAGEMENT APPROACH

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Abstract: In the United States, blackbirds are abundant and widely distributed, with their winter populations estimated to be between 500 million and 1 billion. Annual damage to grain, fruit, and berry crops from blackbirds exceeds $100 million in direct costs. Additional costs, not estimated, include those spent to prevent human health and safety hazards and those from damage abatement efforts. The U. S. Department of Agriculture's Wildlife Services (WS) is charged with reducing the magnitude of health, safety, nuisance, agricultural, and feedlot/dairy problems caused by these birds. WS' goal is to improve profitability to agricultural producers, enhance the human health and safety, and protect the environment through the development of new or improved management strategies. In this paper, we outline WS research and operational needs to resolve the health, safety, nuisance, and agricultural problems caused by blackbirds. We also discuss needs and actions to protect desirable migratory birds from the negative impacts of blackbirds.

Key words: avicides, birds, blackbirds, DRC-1339, habitat use, red-winged blackbirds, spring migration, sunflower.

HISTORICAL PERSPECTIVE

A few blackbirds[1] rise from the sunflower field as the grower drives down the county road. The grower is happy because she knows that this number of blackbirds is manageable and they are only eating weed seeds and insects. Oh yes, she had heard tales of growers losing entire fields to blackbirds but that was before an integrated blackbird management plan was developed and implemented. Gone are the days of firing thousands of rounds of shot shells, using rapid-fire high-caliber rifles, low-flying hazing aircraft, iffy repellents, and the scare device of the year. She also knows that her rice, fruit and watermelon farms are protected as well. In fact, the birds are so effective at controlling weeds and insects that her pesticide costs were reduced 50% over the previous year. Yes, life was good in the farm industry these days but her father says it was not always this way.

[1] The term 'blackbird' refers to red-winged blackbirds, *Agelaius phoeniceus*; common grackles, *Quiscalus quiscula*; brown-headed cowbirds, *Molothrus ater*, Brewer's blackbirds, *Euphagus cyanocephalus*; and yellow-headed blackbirds, *Xanthocephalus xanthocephalus*.

In the bad old days there was a myriad of ineffective and partially effective management tools, but the corn, sunflower, rice, fruit, and feedlots industries were still losing more than $100 million dollars to blackbirds each year. In the 1960s and 1970s, agency and university scientists focused on improving repellents, developing bird-resistant hybrids, conducting taste-aversion studies, recommending alternate-cropping practices, developing lure-cropping strategies, and testing scarecrows and distress calls (Linz and Hanzel 1997, Linz and Homan 1998). Additionally, some resources were spent on learning more about the basic ecology of blackbirds. Despite these efforts, the same tired advice was being given to growers such as, avoid planting fields near cattail-choked wetlands, synchronize sunflower plantings, provide access lanes in large fields, and plant alternate foods (Arnett 1984). Little wonder that industry representatives doubted that current methods were effective and that reducing the blackbird populations would be more appropriate.

In the 1980s, scientists gathered data on migration patterns and roosting habits using a paint-tagging

method and found that red-winged blackbirds funnel from staging areas in northwestern Missouri and eastern South Dakota to sunflower growing areas in the Dakotas, Minnesota, and Canada (Knittle et al. 1996). These data suggested that suppressing spring migratory blackbirds at these staging areas might help reduce the number of fall-migrating blackbirds and, in turn, reduce sunflower damage. However, the agency-in-charge did not intend to follow up with an operational program because of possible environmental safety issues and philosophical divisions within the agency. Concurrently, researchers began quantifying the relationship among blackbirds, cattail-choked wetlands, and sunflower damage (Otis and Kilburn 1988). Besser and Otis (1980) noted a significant decline in the number of red-winged blackbirds between the 1960s and 1980s and attributed the decline to drought and large machinery that could plow the drier portions of the wetlands that were used by nesting red-winged blackbirds.

In 1986, the blackbird issue, along with other wildlife damage management problems, was transferred to the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture (USDA). With the transfer came the possibility of developing an avicide to reduce blackbird numbers. The use of DRC-1339-treated rice baits was initiated to reduce blackbird numbers feeding on sprouting rice though managers warned that clearance for an aerially-applied avicide would be costly in time and money. Meanwhile, an aerial hazing program was started despite some misgivings regarding safety and efficacy.

On another front, resource managers advised that, while cattails are perfect for blackbird nesting and roosting, they are not conducive for propagating ducks. Growers were urged to manage cattail-choked wetlands to reduce blackbird roosting habitat and thus disperse the birds. This technique was considered cost-effective and environmentally friendly by mainstream resource biologists (McEnroe 1992). However the subject of developing an avicide did not abate despite USDA officials reminding growers the blackbird problem would never be eliminated if the crop and birds coexisted.

CURRENT STATUS

We recognize that as the human population grows, the number and severity of bird-human conflicts will continue to rise. This was indicated in USDA-APHIS-Wildlife Services program surveys that were conducted in 1990, 1996, and 2001. In the surveys, respondents across the nation placed a high priority on understanding and finding solutions to blackbird and starling damage to agriculture. We also are aware that even the most environmentally benign damage abatement methods can be subject to much public debate. Realizing this, we developed a plan to tackle the issue of blackbird and starling damage with the following premises:

1. Blackbirds will continue to be abundant and widely distributed.
2. The estimated annual damage to grain, fruit, and berry crops from blackbirds will continue to exceed $100 million in direct costs.
3. The use of avicides will continue to be controversial and lack general public acceptance.
4. A major constraint to the development of chemical repellents is the lack of profit incentives for private companies that see limited markets for new bird control products.
5. Every new wildlife damage management method will undergo public scrutiny through the National Environmental Policy Act.

This paper outlines research and operational needs to resolve the health, safety, nuisance, agriculture, and feedlot problems caused by blackbirds. The needs and actions to protect desirable migratory birds from negative impacts of blackbirds are also considered. Our goal is to improve profitability to agricultural producers, enhance the health and safety of urban dwellers, and protect the environment through development of new or improved management strategies, while implementing new or improved wildlife damage management methods and expanding partnerships among producers, commodity groups, research boards, universities, and state and federal agencies.

Development of Repellents.—New repellents are needed to augment currently available bird management tools and enhance the effectiveness of a management program based on integrated pest management concepts. The rice industries rely heavily on the use of an avicide and habitat management to protect sprouting rice and ripening sunflower, respectively. Even so, both the rice and sunflower industries suffer annual losses of $4 to $11 million (Besser 1985, Hothem et al. 1988). The berry, nut, and fruit industries also have limited bird management tools for protecting their crops from blackbirds, costing them millions of dollars (Besser 1985). Because food producers do not have a consistently efficacious repellent, they must rely on bird management techniques that are labor intensive, sporadically effective, sometimes environmentally hazardous, occasionally dangerous, and nearly always expensive.

The feedlot industry relies on the use of an avicide that some groups find unacceptable, especially when the avicide is used near urban centers. Feed losses, livestock health problems, and water trough maintenance can cost feedlots >$7,000,000 annually (Besser 1985). Economic losses caused by birds are a result of feed and contamination, accelerated corrosion of fencing, corrals, and other infrastructure materi-

als due to fecal matter, threats of diseases, and loss of business for custom feeder operations due to customer perceptions or beliefs about the effect on weight gain and disease problems caused by the presence of large numbers of birds (Clark and McLean, In Press). Thus, repellents placed in livestock feed or sprayed as an aerosol would be highly desirable.

Cities in the southeastern part of the United States harbor large concentrations of wintering blackbirds. These birds foul sidewalks, playgrounds, and other private and public areas and can harbor diseases. A repellent would be ideal for moving birds out of the city to more rural areas.

Development of Biological Agents for Cattail Control.—Agriculturists, state and federal resource agencies, and private groups currently rely on a relatively expensive aquatic herbicide. A new environmentally safe method is needed to manage invasive hybrid cattails that attract blackbirds and are detrimental to biodiversity (Kantrud 1986). We propose to cooperate with APHIS' Plant Protection and Quarantine unit and universities to pursue the development of cost-beneficial, environmentally safe biological agent(s) for managing invasive wetland vegetation. This research effort will require a commitment of significant resources because the processes of discovery, development, deployment and monitoring an environmentally safe and cost-effective biological agent is likely to be long-term. However, development of biological agents for controlling other species of invasive plants including leafy spurge and purple loosestrife have been successful, reducing the need for herbicides.

Development of Cost-Benefit Models.—We propose to expand cooperation with leading wildlife resource economists within land-grant universities to identify cost-beneficial methods of managing blackbird-human conflicts. Insufficient data are available on the costs and benefits of protecting individual crops from blackbirds. In particular, models integrating population, bioenergetic and economic data are needed to estimate economic impacts of blackbirds.

Development of Reproductive Inhibitors.—We propose to investigate the feasibility of species-specific reproductive inhibition techniques for managing blackbird populations. These techniques would supplement already established programs based on avicides, repellents, and habitat management.

CONCLUSION

Although Wildlife Services and its methods-development branch, the National Wildlife Research Center, have made progress in addressing these problems, the dynamic nature of human-bird conflicts is complex, and new environmentally safe, cost-effective damage abatement methods are needed. To date, 1 avicide, 2 repellents, several scare devices, and 1 habitat management technique are available as tools for managing troublesome blackbird and starling populations. All of these techniques have limited application because of problems related to efficacy, cost, and environmental safety. Additionally, the use of avicides is controversial and lacks general public acceptance. Rather than wring our hands in despair, we look forward to the challenge of finding new environmentally safe methods of reducing blackbird damage to grain crops and feedlots.

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