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EFFICACY AND FARMER ACCEPTANCE OF NONLETHAL CONTROL
OF BLACKBIRD DEPREDATIONS TO SMALL GRAIN CROPS

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Introduction

In 1980, Congress responded to complaints of migratory bird damage to grain crops, principally rice, with added funding for enhanced Animal Damage Control (ADC) programs in Arkansas and Louisiana. This resulted in the establishment of an office in Stuttgart, Arkansas and a similar office in Crowley, Louisiana. Enabling legislation specifically directs the principal focus to be on rice/blackbird conflicts. This paper will present a review of the problems addressed in Arkansas, techniques utilized and the author's assessment of their efficacy and acceptability.

Methods

Complaints of bird damage in Arkansas typically involved blackbird damage to milk or dough stage rice or grain sorghum. A few problems were encountered with the pulling of rice, corn, and sorghum sprouts. These complaints were usually received from personnel of the Cooperative Extension Service, Arkansas Game and Fish Commission or directly from the farmer sustaining the blackbird damage. In accordance with existing policy at the time (USFWS), no complaints were solicited from the public. While some complaints were handled with only a telephone conversation and/or by mail, most initial complaints were handled by a personal visit either on-site or occasionally at our office. Recommendations for alleviating blackbird problems were given and usually included using a combination of bioacoustics (recorded bird distress and alarm calls played over a loudspeaker), mechanical alarm sounds, pyrotechnics, propane cannons, and habitat modification. A "successful" program was viewed as being one in which the landowner was able to reduce the number of blackbirds attacking/ roosting in his field to an acceptable level, or at least enough to justify his expenditures of money and manpower. A survey form was initiated in 1981 to attempt to quantify effectiveness. These results are not presented here due to the high probability of bias in both the way questions were asked and in the fact that those landowners who were successful were more likely to respond to the survey.

Results and Discussion

A total of 1465 contacts were made with farmers suffering problems with blackbirds from 1981 through 1985 (Table 1). The initial request from most farmers was "How do I kill blackbirds?" While lethal control is clearly acceptable under Title 50 of the Code of Federal Regulations (part 21.43), the tools most often used, shotguns and rifles, are expensive, labor intensive and only marginally effective. About the only benefit available from this strategy is the small satisfaction from eliminating depredations by the few birds that are actually killed. Other lethal methods including Avitrol, PA-14 and decoy traps have been tried in the past with little or no success. Thus, it is common to find a farmer suffering visible damage to his crops who is faced with choosing between doing nothing, continuing an ineffective lethal control program or attempting to scare the birds.

Table 1. Contacts with farmers experiencing blackbird crop **damage by year made by the Arkansas Animal Damage Control program in 1981 through 1985.**

Year	No. Farmers
1981	67
1982	105
1983	249
1984	641
1985	403
Total	1465

Approximately 75% of the farmers report some success with scaring programs. Since the effectiveness of scaring can be limited both by physiographic problems (such as size of field, availability of perimeter access roads, proximity to loafing or roosting access, etc.) and agricultural problems (such as type. and variety of crop, date of maturity, etc.), not all farmers who are unsuccessful in their first attempt at scaring birds are adverse to scaring programs. Often they realize that with a little "fine tuning" (such as starting earlier) their program would have probably been successful.

The most effective scaring program in Arkansas has proved to be a combination of propane cannons, bio-acoustics and pyrotechnics. Successful use of propane cannons has been reported by Conover (1984) and others for bird control. In Arkansas, the use of propane cannons alone has been as ineffective an approach as reported by Brown (1974) and Caslick and Decker (1978). Habituation problems can be reduced by at least daily movement of the cannons, or virtually eliminated by integration of other frightening techniques. The advantages of cannons are that they are economical, loud (Zajanc 1962) and labor-saving.

Bio-acoustics refer to amplified bird distress and alarm calls. The units used in Arkansas utilize 12 volt current to drive a tape player and a 4 speaker car-top array to provide 50 or 100 watts (rms) output. These units are also equipped with a synthetic sound generator which will produce a siren-like sound which is effective on most species of birds. These units can be conveniently mounted on a variety of vehicles to patrol the perimeter or, in some cases, the center of the grain field to get a diversity of sounds to the birds. This is an extremely effective method to scare birds, achieving results similar to those discussed by DeFusco and Nagy (1983). The birds that are not immediately repelled usually exhibit signs of excitement such as alert postures, rapid head movements, and cessation of feeding. Also, the use of bio-acoustic units seems to greatly enhance the effectiveness of other scaring devices.

Pyrotechnics are a wide variety of firecrackers, smoke bombs, rockets, shellcrackers, and other such fireworks that may be used to control birds. While a myriad of these devices, from pop-bottle rockets to dynamite, have been successfully employed in the past, the program in Arkansas limits its scope of pyrotechnics to those classified by the Department of Transportation as "Class C" explosives because of the ease of shipping and handling. We principally use 4 different pyrotechnic devices, all of which have advantages and disadvantages. The 12-gauge shotgun shells (marketed as shellcrackers and scare cartridges) fire an exploding device approximately 75 - 100 meters to produce a loud explosion in the air. This loud, omnidirectional, aerial burst and accompanying flash is an outstanding tool for

scaring birds, but is relatively expensive (approximately \$0.50 each if purchased in large quantities). The explosions work very well with bio-acoustics (Fitzwater 1970); The same aerial explosion can be made at a range of 10 meters by devices launched from a 6 mm (.22 cal.) blank pistol with a 15 or 17 mm adaptor barrel. These devices (marketed as bird bombs, bangers or gun launched fuse rope salutes) are less than half the price of shellcrackers and are excellent if range is not a factor. Another device launched from the same blank pistol with a 15 mm barrel is a rocket which makes a staccato or screaming sound. These excellent bird scaring devices (marketed as bird whistlers or racket bombs) go out approximately 100-150 meters and produce sound for about the same cost as bird bombs. The fourth pyrotechnic device we use is the rope firecrackers. It consists of firecrackers (marketed as fuse rope salutes) woven in 10096 cotton rope (marketed as caw-caw rope). The rope burns at a predictable rate and is cut to the desired length based on the required burn time. The firecracker fuses are spaced in the rope at whatever intervals are necessary. While these firecrackers are not as loud as the bird bombs, they are the cheapest device we use (approximately \$20 per gross) and are both effective and labor saving. These devices should be moved around much like propane cannons (Zajanc 1962). In some situations, .22 cal. rifle fire is also recommended as an economical way to scare birds from the center of large fields in conjunction with the pyrotechnics.

Habitat modification is recommended whenever appropriate. Many fields have brush, weeds, and undesirable trees in the ditches along their borders which provide loafing and hiding areas for blackbirds. Often, removal of this vegetation dramatically reduces the attractiveness of a field to blackbirds. Unfortunately, it is also disastrous for upland game populations and this negative aspect is discussed with the farmers.

Conclusion

The program to reduce blackbird depredations to grain crops in Arkansas is successful despite the lack of a tool to control summer populations of blackbirds. While the extent of potential success may be limited by physiographic and cultural factors, almost all farmers can experience some level of success by implementing a diverse and persistent bird scaring program.

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