DISPERSING BLACKBIRDS AND STARLINGS FROM OBJECTIONABLE ROOST SITES

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ABSTRACT: Frightening devices and other methods of dispersing roosting blackbirds and starlings are described along with the techniques for their proper application. In a study in the southeastern United States, exploding shotgun shells and noise bombs were used to disperse roosts of up to 1 million birds. Five roosts containing up to 1 million blackbirds and starlings were 96 to 100% dispersed by two to five people during three to eight evenings of harassment. Dispersal cost between $80 and $535 per roost.

INTRODUCTION

Blackbirds and starlings (Sturnus vulgaris) often establish large roosts in areas where their presence may be objectionable because of economic, health, and nuisance problems. Roosts containing more than 1 million birds are not uncommon. Meanley (1975) reported that the national blackbird and starling winter population is estimated at around 500 million birds and that three-fourths of the population are located in the eastern United States. Roosting populations are primarily composed of red-winged blackbird (Agelaius phoeniceus), common grackle (Quiscalus quiscula), brown-headed cowbird (Molothrus ater), and starling.

Several techniques for reducing these large roosting populations have been developed. For example, starling populations have been reduced by baiting at preroost feeding areas with a toxicant (West 1968). A wetting agent has been effective under certain environmental conditions in reducing roosting populations of blackbirds and starlings (Lefebvre and Seubert 1970). In addition to lethal control, which is not always practical or acceptable, various methods have been employed to disperse objectionable birds from their roosting sites to areas where they are less of a problem.

In this paper I discuss the various methods used to disperse objectionable birds from roost sites and results of dispersal studies conducted during the winter in Kentucky and Tennessee.

METHODS OF ROOST DISPERSAL

Frightening Devices

The use of frightening devices is no doubt the most popular method for dispersing blackbirds and starlings. A description of the most commonly used devices follows:

1. Recorded distress calls. Prerecorded distress and alarm calls of starlings and blackbirds have been used singly and in conjunction with other scare devices to successfully disperse birds. Distress calls were first used by Frings and Jumbar (1954) to repel starlings from tree roosts. They tape-recorded the "distress call" of harassed starlings and broadcast it intermittently to starlings in a roost for one-half hour before and after sunset from mobile sound trucks. Pearson et al. (1967) used starling distress calls recorded on phonograph records to successfully disperse starlings and grackles from urban tree roosts. They distributed the records to residents in the roost area who played them as the birds entered the roost in the evening.

2. Gas-operated exploders. These devices, which operate on acetylene or propane gas, are designed to produce loud explosions at controllable intervals. They have been used during roost dispersal to discourage any birds from returning (Tucker 1962). They should be elevated above any vegetation, if possible, in high bird-use areas of the roost. Since birds easily habituate to exploders, they should be repositioned during the scaring operation and used in combination with other scare devices.

3. Exploding shotgun shells. Shellcrackers, also called scare cartridges, are 12-gauge shotgun shells which project a firecracker about 100 m before exploding. The shell should be fired into the air so that it will explode in front of or underneath flocks of birds attempting to enter the roost. Each shooter should be given an ample supply of shells (50 or more rounds) and cautioned to initially conserve ammunition, since the last few minutes that birds are moving before dark is a critical period when most firepower is needed.

4. Noise bombs. Noise bombs (also called bird bombs or clow bombs) are firecrackers that are projected about 25 m into the air by use of a 15-mm flare pistol. They should be used similarly to the exploding shotgun shells. Because of their more limited range, noise bomb shooters have to move within the roost to protect the same total area that could be protected by the longer ranged exploding shotgun shell.

5. Pyrotechnics. A variety of devices including firecrackers, rockets, and Roman candles may be used for dispersing birds. Neff and Mitchell (1955) described a technique of using firecrackers inserted into slow-burning fuse ropes to control the timing of the explosion.

6. Visual stimuli. Flashing lights, owl decoys, and helium-filled balloons have also been recommended as scare devices (Kalmbach 1945, Anonymous 1970). As with other scare devices, their effectiveness is enhanced when they are used in conjunction with auditory scare devices such as recorded distress calls or exploding devices.

Chemical Agents

The roost-dispersing qualities of bird frightening or aversion-producing chemicals have been examined. Woronecki et al. (1970) found that red-winged blackbirds could be dispersed by baiting their feeding areas with cracked corn treated with an aversion-producing immobilizing chemical (methiocarb). Redwings and starlings were also dispersed from a roost after their adjacent feedlot feeding areas was baited with cracked corn and poultry pellets treated with a chemical frightening agent (4-aminopyridine, Joseph L. Guarino, pers. comm.). Similarly, Cummings (1979) dispersed blackbirds by exposing 4-aminopyridine-treated cracked corn on feeding platforms within the roost.

Habitat Manipulation

Kalmbach (1945), Bevan (1962), and Good and Johnson (1976) encouraged thinning roost vegetation as a means to discourage birds. Making roost vegetation less attractive to birds often produces longer term results than do scaring devices. Also when feasible, it is recommended that the roost vegetation be altered following a dispersal program to discourage rehabituation. Vegetation thinning, however, is not a permanent solution. In a few years the vegetation may again become dense and provide attractive roosting habitat.

Miscellaneous Methods

Other devices that have been suggested to disperse roosts include the use of smoke (from bonfires or in oil drums) to cover the roost (Bickerton and Chapple 1961; Tucker 1962). Kalmbach (1945) described an arrangement of ropes tied to branches in the treetops for shaking them once the birds have landed.

APPLICATION OF FRIGHTENING DEVICES

Although the use of devices and methods varies, most investigators agree that certain procedures should be followed:

1. Before dispersal begins, local residents near the roost should be informed of the planned operation to avoid any apprehension. Local authorities should be contacted for necessary permits, possible assistance in the dispersal program, and to provide public safety and traffic control.

2. Begin scaring as soon as possible after a roost develops. The longer a roost is established, the more difficult it usually is to disperse the birds.

3. Begin scaring as soon as birds start arriving at the roost in the evening. Attempt to keep birds from landing in the roost vegetation because once birds are in the cover of the roosting vegetation, especially after dark, they are extremely difficult to evict. Thurman W. Booth, Jr. (pers. comm.) believed that early morning (one-half hour before normal roost departure) as well as evening disturbance was a valuable aid in roost dispersal.

4. Be persistent. Population reduction is often not noticeable during the first few nights of a scaring operation. Scaring sometimes needs to be continued for four or more nights before complete abandonment is achieved.

5. If possible, use a combination of scaring devices. Together they often complement each other and the birds are more easily dispersed.

6. Deployment of personnel and equipment in a roost site is dependent on the size and type of vegetation and may change each night in response to bird movement within the roost. All accessible roosting habitat should be covered in the dispersal effort. Normally one person shooting shellcrackers or using other scare devices can adequately patrol about 0.8 hectare (2 acres) of roosting habitat.

7. Some birds may relocate in nearby areas where they may continue to be a problem. If so, an effort should be made to also disperse them from these areas. Once birds have been moved from one site they usually become more responsive to harassment and are easier to move from subsequent roosting sites.

Safety Precautions

Special care should be taken to avoid bodily harm when using any of the pyrotechnic devices and firearms. Ear and eye protectors should be worn when using any of these devices. When firing the

exploding shotgun shells the shooter should inspect the gun barrel for obstructions after each shot because wadding sometimes becomes lodged in the barrel. A ramrod (wood dowel) should be carried to remove the wadding if this occurs. It is safer to use single-shot, break-open guns to facilitate inspection and cleaning of accumulated powder residue. When using noise bombs, the projectile-firing pistol should be held at arm's length to avoid any close-to-face explosions. To prevent accidental firing, the pistol should be held with the thumb in front of the hammer until it is ready to be fired.

Persons using pyrotechnic devices and exploding shells should be aware of the devices' potential fire danger, and they should exercise extreme care when they are used near buildings or when vegetation is dry. Fire-fighting equipment should be available at the scene if conditions warrant.

Live ammunition should not be used during roost dispersal efforts because of the potential hazards to people and the possibility of killing protected bird species that are sometimes found roosting with blackbirds and starlings.

Personnel working in or near bird roosts, especially in the central and eastern United States, should take precautions because of the danger of exposure to the respiratory disease, histoplasmosis. A face mask or self-contained breathing apparatus and protective clothing, including coveralls, gloves, cap, and rubber boots should be worn. Soiled clothing should be placed in plastic bags immediately on leaving the roost and washed as soon as possible. Rubber boots should be cleaned before entering vehicles to prevent heater fan circulation of histoplasmosis spores.

ROOST DISPERSAL IN THE SOUTHEAST UNITED STATES

Methods

During 1977 and 1978, studies were conducted in Kentucky and Tennessee to evaluate the effectiveness of scare cartridges and noise bombs for dispersing large flocks of blackbirds and starlings from five winter roosts that were located mostly in cedars (Juniperus virginiana) and pines (Pinus spp.). During January 1977, the study roost was located on the northwest edge of Shelbyville, Tennessee. In February 1977, two roosts (Hollywood Drive and Hollywood Cemetery) in a residential area of Jackson, Tennessee, were studied. During December 1977, the study roost was located on the edge of Munfordville, Kentucky. In January 1978, the study roost was located on the edge of a residential area in Bartlett, Tennessee. The size of these roosts ranged from 4.1 to 28.3 ha (Table 1).

We used scare cartridges and noise bombs to disperse birds at the roosts at Shelbyville, Jackson, and Munfordville. At Bartlett, we used only the shorter-ranged noise bombs to avoid accidentally hitting nearby homes. Dispersal periods lasted from three to eight evenings at each roost (Table 1). We began shooting about one-half hour before sunset when the first birds appeared and continued for about an hour until just after dark when bird movement within the roost had ceased. At Shelbyville, we also harassed the birds for one-half hour on three consecutive mornings before the normal bird exodus. We distributed all shooters evenly within or on the edge of each roost except at Bartlett and Munfordville where some of the roost area was inaccessible because of dense vegetation. From two to five people were used during each dispersal session. These shooters fired a maximum of from 87 to 167 scare cartridges and 139 to 546 noise bombs per hour of dispersal effort (Table 1). Shooters were instructed to patrol an assigned area and to fire in the direction of flocks of birds attempting to enter the roost and at those already in the roost.

We made population estimates of birds at each site before, during (when feasible), and after each dispersal period by using the techniques described by Meanley (1965) and Arbib (1972). Observers estimated bird numbers on flightlines that were either departing the roost at dawn or returning to it in the evening. Before dispersal began, the species composition of each roost was also visually estimated by identifying individual birds as they entered or departed the roost.

Results

Roosting populations of up to 1 million birds in the five study roosts were 96 to 100% reduced during three to eight evenings of harassment (Table 2). The response of the birds to the frightening devices was very apparent. Except at Jackson, birds were reluctant to leave the roost area the first two or three nights. About one-half hour before sunset the birds gathered in large flocks near the roost, milled about until sunset, then quickly entered the roost and sought shelter in trees. Continued harassment after dark appeared to be ineffective.

In all areas, most dispersed birds reestablished in nearby roosting habitat within 0.4 and 1.6 kilometers of their former roost. If not disturbed, they remained at these new roosts. However, they attempted to return to their original roost when harassed.

The density of the roost vegetation appeared to be more important in dispersing birds than size of the bird population or roost area. Fewer scare cartridges and noise bombs were used at Shelbyville and Jackson where all parts of the roost could be patrolled whereas more scare devices were needed to obtain the same degree of success at Munfordville and Bartlett where roosting vegetation was denser and access within the roost was restricted.

No attempt was made to evaluate the relative effectiveness of scare cartridges versus noise bombs. However, because of the increased range of the scare cartridges (100 m) over noise bombs (25 m), more roost area could be covered with fewer people.

Table 1. Time, personnel, scare devices, and expense used to disperse birds in Kentucky and Tennessee.

Location	Roost size (hectares)	Dispersal period	Total time (hour)	Personnel[1]	Devices used[2]				
					Total SC	SC per hour	Total NB	NB per hour	Total cost ($)
Shelbyville, TN	28.3	Jan. 20-25, 1977	7.4	5 (4)	1,241	167	1,198	161	500.00
Jackson, TN									
Hollywood Drive	4.1	Feb. 14-16, 1977	3.0	5 (2)	265	87	421	139	150.00
Hollywood Cemetery	16.2	Feb. 17-20, 1977	2.6	3 (2)	0	0	434	165	80.00
Munfordville, KY	4.5	Dec. 6-13, 1977	6.8	5 (2)	743	109	2,141	313	465.00
Bartlett, TN	8.1	Jan. 23-29, 1978	7.8	5 (4)	0	0	4,278	546	535.00

[1]Maximum and (minimum) number per dispersal session.

[2]Scare cartridges (SC) and noise bombs (NB).

Table 2. Blackbird and starling roost population estimates before and after dispersal efforts.

Location	Estimated numbers		Percent reduction
	Pre-dispersal	Post-dispersal	
Shelbyville, TN	1,030,000 (50% CG, 25% ST, 25% BB)[1]	56,800	96
Jackson, TN			
Hollywood Drive	123,000 (55% CG, 5% ST, 40% BB)	0	100
Hollywood Cemetery	131,000 (45% CG, 10% ST, 45% BB)	0	100
Munfordville, KY	740,000 (63% CG, 25% ST, 12% BB)	0	100
Bartlett, TN	650,000 (54% CG, 22% ST, 24% BB)	10,900	98

[1]Common grackle (CG), starling (ST), and blackbirds (BB) composed of red-winged and rusty blackbirds and brown-headed cowbirds.

The costs of dispersing the roosts at Munfordville, Bartlett, and Shelbyville were similar based on a labor cost of $2.30 per hour, $110 per 500 rounds of scare cartridges, and $50 per 500 rounds of noise bombs. Dispersal cost about $400 for devices and $65 for labor at Munfordville, $450 for devices and $85 for labor at Bartlett, and $420 for devices and $80 labor at Shelbyville. Fewer of the more expensive scare cartridges were used at Munfordville than at Shelbyville and only noise bombs were used at Bartlett. At Jackson, the cost of dispersal was $123 for devices and $27 for labor at the Hollywood Drive roost and $64 for devices and $16 for labor at the Hollywood Cemetery roost (Table 1).

The real measure of success of a roost dispersal program depends on where the birds relocate since new roosts may be just as troublesome. At Munfordville, some of the dispersed birds relocated near homes and were in as unsuitable a location as formerly. However, at Bartlett most of the dispersed birds relocated in a nearby area where they were of little or no concern to residents 0.5 kilometer away. The availability of suitable alternate roosting habitat appears to dictate the distance at which new roosts will be established. Before undertaking a roost dispersal program, other potential roost sites surrounding the roost should be surveyed to help judge the potential benefit or harm of the dispersal effort.

Our intent in conducting these dispersal studies was to determine the most efficient means of dispersal based on labor and equipment required. These roosts probably could have been dispersed in less time by using additional manpower and scare devices, including recorded distress calls and other pyrotechnic devices.

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