SOME LIMITATIONS OF KILLING RED-WINGS AS A METHOD FOR CONTROLLING CORN DAMAGE

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Introduction

Red-winged blackbirds (Agelaius phoeniceus) are responsible for extensive damage to field and sweet corn. Farmers, understandably, exert pressure on state and federal agencies to undertake programs of killing Red-wings by such means as spraying roosts with wetting agents or aerial distribution of poisoned bait. It is assumed that killing the birds will eliminate or control the damage to their corn. However, this assumption needs careful scrutiny particularly with reference to the stability of the Red-wing population. By stability we mean whether the birds remain in one locality or move about from place to place. With the first alternative, killing the local birds might save the corn but with the second alternative the dead birds would be replaced by others from neighboring areas to continue the damage. We shall present four lines of evidence in support of this second alternative and show that Red-wings, especially in comparison with Grackles (Quiscalus quiscala), are unstable in the above sense or have a large population turnover (change of individuals from day to day).

This evidence was obtained in connection with banding programs at decoy traps. Five such traps have been operated, mainly in the summer months, near Vickery in northern Ohio since 1963. These traps are within a few miles of each other and data from the five are combined into a single sample, designated the "Vickery sample". A similar trap has been operated in all seasons of the year on the University Farm in Columbus, Ohio during the same period. More details regarding this evidence may be found in our earlier reports (Burtt and Giltz 1969a, b, 1970).

Recoveries

The first point to be considered regarding population stability involves recoveries of banded birds (Burtt and Giltz, 1969b).. These recoveries are presented in three categories in Table 1: local, i.e. within approximately 10 miles of the banding station; Ohio recoveries other than local; recoveries outside Ohio. The entries are in percents except for the last column which gives the number of recoveries in the sample indicated. The results for the two Red-wing samples appear in the first two rows. For example of the 111 Vickery Red-wings 27% were recovered locally, 44% elsewhere in Ohio and 29% outside the state.

Table 1. The percentage of birds banded at decoy trap stations which were recovered locally, within the state and out of the state.

	Percent Local	Percent Other Ohio	Percent Outside Ohio	Number Recovered
Vickery Red-wings	27	44	29	111
Columbus Red-wings	35	33	32	66
Grackles	80	14	6	118
Cowbirds	18	22	60	156
Starlings	34	34	32	629

Table 2. The ratio of the number of birds banded and repeating at Columbus and Vickery.

	Vickery* Red-wings	Columbus* Red-wings	Grackles	Cowbirds	Starlings
Number Banded	13,378	16,167	6364	14,273	18,992
Number of Repeats	447	2263	4960	4145	190
Ratio of Repeats to Number Banded	.03	.14	.78	.29	.01

* Columbus, 1 trap; Vickery, 5 traps.

The local percentages of the Red-wings suggest a modicum of population stability. Some birds remain in the area long enough to be recovered there or else return in a subsequent season. However, over two third of them move to other areas before recovery. It is interesting to compare the Red-wings with some other species in this respect. The three bottom rows of Table 1 give similar data for Grackles, Cowbirds (Molothrus ater) and Starlings (Sturnus vulgaris) (which do relatively small damage to field corn on the ear). The most striking item is the 80% local recoveries for Grackles. Evidently the Grackle population is quite stable and the comparative instability of the Red-wing population now becomes more apparent. The Starling stability does not differ appreciably from that of the Red-wings while the Cowbird figure is somewhat less.

Thus if Grackles were responsible for a crop damage (as they are in pulling sprouting corn) killing them in a given area might preserve the crop in that area. However, in the case of Red-wings and their damage to field and sweet corn it would be necessary to kill not only all the local birds but also all the potential replacements from other areas.

Repeats

A second line of evidence concerning population stability involves an analysis of repeats, i.e. re-entries of banded birds at the decoy traps (Burtt and Giltz, 1970). The total number of repeats in proportion to the number banded is an indication of the tendency for birds of the given species to remain in the vicinity. A bird that leaves the area is not available to repeat. The ratios of repeats to number banded appear in the bottom row of Table 2 for the samples indicated at the heads of the columns. The tendency for Red-wings to repeat is somewhat less than that of the Cowbirds and much less than that of the Grackles. This indicates again that the Red-wing population is much less stable than the Grackle population or that the Red-wings are more transient than the Grackles. In addition, the Vickery data was combined from five traps within four miles of each other while data from Columbus is from a single trap. One might expect more repeating in five traps than in one trap. It is obvious that the Red-wings actually repeated less than the Columbus Red-wings, indicating that the Vickery population of Red-wings is much more transient than the Columbus population.

Stability Index

Our third type of evidence regarding population stability involves direct computation of a Stability Index (Burtt and Giltz, 1969a).

This index is based on the number of birds present on a given day that have been in the area for at least 10 days. A bird that repeats after 10 days or less is presumed to have been in the area during the intervening days. The index is computed for each individual day and then these indices may be averaged for any desired sequence of days. A larger index means that more birds have been in the vicinity for 10 days, while a smaller index reflects the fact that more birds have left the area. Table 3 gives the average index for each species based on all the days on which there was substantial banding activity at the Columbus trap in 1965. The number of each species banded in that year is given in the first column. The comparative standing of Red-wings and Grackles remains the same as in the two analyses just presented. This is further evidence that the Red-wings, Cowbirds and Starlings are "on the move" while the Grackles tend to remain in one locality.

Kill at Blackbird Roost

Our final bit of evidence is derived from bands recovered when the birds in a large blackbird roost were destroyed by aerial spraying with a wetting agent in March 1969. Fifty-four bands were recovered during a 40-man-hour search and 46 of these bands had been applied at our Columbus trap 5 miles west of the roost. The distribution of these bands by species appears in the first column of Table 4. Of these 46 birds 67% are Grackles while only 11% are Red-wings. These recovery figures should be interpreted with reference to the respective species populations in the area. The best available indicator of such populations is the number of birds banded at our traps at that time of year. Combining data for the 6 years 1964-1969 the second column of Table 4 shows that 8% of the birds banded in March are Red-wings, 2% are Grackles and the majority are Cowbirds or Starlings. The important point is that while the banded populations of Red-wings and Grackles are comparatively small the kill at the roost involves many Grackles and few Red-wings. Evidently the banded Grackles tended to remain or returned again to the vicinity of the banding and spraying while the banded Red-wings do not accumulate in this vicinity but merely pass through at the time of spraying.

Conclusions

Returning to the question raised at the outset, the four types of evidence just presented agree in warranting the following conclusion. If Grackles were responsible for the destruction of field and sweet corn then a program of killing them might be moderately successful in saving the corn because the dead birds would not be quickly replaced by others from outside. A similar program for Red-wings (that actually do the damage) would be much less successful because of their transient nature or population instability and the

consequent numerous replacements of the dead birds. Thus a program for eliminating corn damage by Red-wings should not be limited to killing the birds. Supplementary procedures such as scaring devices (exploders, distress calls) in the cornfields, breeding varieties of bird-resistant corn husks and sterilization are beyond the scope of the present discussion.

Summary

A program for the control of corn damage by killing Red-wings will be ineffective if the population is unstable in the sense that the birds are transient and the dead birds in a given area will be replaced by others from adjoining areas. Several lines of evidence based on birds banded at decoy traps in northern Ohio and in Columbus indicate that the Red-wing population is comparatively unstable in the above sense. (1) Recoveries of banded birds in the local area occur much less frequently with Red-wings than with Grackles. (2) Red-wings do much less repeating at the traps than do the Grackles partly because they tend to move away from the trap area. (3) A Stability Index computed from data on trap re-entries shows the comparatively greater instability of the Red-wings. (4) When birds were killed by spraying a roost in March most of the locally banded birds recovered were Grackles rather than Red-wings although comparatively small numbers of either species are normally banded in March. The conclusion appears warranted that a program for the control of corn damage by Red-wings should not be limited to killing the birds.

References

Burtt, H. E. and Giltz, M.L. 1969a. A Stability Index for Bird Populations. Inland Bird Banding News 41: 43-45.

Burtt, H. E. and Giltz, M. L. 1969b. Analysis of 958 Blackbird Recoveries. Wheaton Club Bulletin 14: 1-12.

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Table 3. Stability Index. - Calculated by assuming that a bird repeating within 10 days has been in the area during the 10 days.

	Number Banded	Average Stability Index
Red-wing	6606	2.26
Grackle	1221	6.88
Cowbird	3594	1.84
Starling	3486	1.01

Table 4. Banded birds killed in roost treatment approximately 5 miles from banding station.

	Percent of Kill	Average Percent of Birds Banded in March, 1964-1969
Red-wing	11	8
Grackle	67	2
Cowbird	0	39
Starling	22	51