

Three Years of Cowbird Control: An Effort to Save the Kirtland's Warbler

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In 1971, the third decennial census of the Kirtland's Warbler (*Dendroica kirtlandii*) population was made by Michigan Audubon Society members, Michigan Department of Natural Resources and Forest Service personnel. The census revealed the presence of 201 singing males. In 1961, there were 501 pairs (Mayfield, 1972). The population had decreased by 60 percent by 1971. (The drastic decline from an already low population prompted a meeting in Ann Arbor, Michigan of interested persons and representatives of conservation agencies and organizations. The meeting resulted in the formation of the Kirtland's Warbler Advisory Committee on 30 October, 1971. Organizations involved were the Michigan Audubon Society, Michigan Department of Natural Resources, U. S. Fish and Wildlife Service, U. S. Forest Service, Pontiac Audubon Society, Detroit Audubon Society and The University of Michigan. The committee was formed to investigate reasons for the decline and whether the decline could be halted and reversed. Reasons postulated for the decline included a lack of suitable jack pine (*Pinus banksiana*) habitat and parasitism of warbler nests by Brown-headed Cowbirds (*Molothrus ater*). The female cowbird does not build a nest of her own but lays her eggs in nests of other bird species. The host bird hatches the cowbird eggs and rears the young. The Kirtland's Warbler is a susceptible host. Walkinshaw (1972) has shown that from 1931 to 1971, 59 percent (54 of 91) of Kirtland's Warbler nests examined were parasitized in contrast to 5 percent (6 of 111) of nests of other species in the study area. Mayfield reports that from 1903 to 1949, 48 percent of the Kirtland's Warbler nests studied were parasitized (Mayfield, 1960). Cuthbert and Radabaugh (unpublished) found that 86 percent of the warbler nests which they examined were parasitized. Walkinshaw (1972) found parasitism averaging 69 percent from 1957 to 1971. Parasitism also has been shown to inhibit fledging success of Kirtland's Warblers. Mayfield (1960) found that 78 percent of warbler eggs in parasitized nests failed to produce fledglings.

As early as 1966, Cuthbert and Radabaugh (unpublished) realized that parasitism posed a threat to the warbler population and undertook a study to determine if selective cowbird trapping and shooting could reduce parasitism of warbler nests. Results showed that parasitism was reduced from 65 to 21 percent. In view of these data, the Kirtland's Warbler Advisory Committee proposed the following recommendations for the recovery of the Kirtland's Warbler: 1) Encourage State and Federal agencies to manage more land for warbler nesting habitat through controlled burnings, selective cutting, and planting of jack pine. 2) Encourage governmental agencies to acquire more land suitable for warbler nesting. 3) Attempt to limit public use of warbler nesting areas during the nesting season.



Figure 1. Cowbird decoy trap located in Kirtland's Warbler nesting area.

4) Census the warbler population annually. 5) Conduct an intensive cowbird control program on major nesting areas.

TRAPPING METHODS

In early May, 1972, 15 cowbird decoy traps were erected on 7 of the major warbler nesting areas in Crawford, Ogemaw and Oscoda counties in north central Michigan. Members of the Michigan Audubon Society donated funds for the trap material and sunflower seed bait. The Michigan Department of Natural Resources prefabricated the traps and U. S. Fish and Wildlife Service and Forest Service personnel erected and serviced the traps. The traps were 16 feet square and 6 feet in height (Figure 1). The entrance hole, located in the top of the trap, was 4 feet square and was recessed approximately 2 feet in the center of the trap. A baffle in the trap was used to facilitate herding the cowbirds into a holding cage. The birds were then placed in a plastic bag and asphyxiated using automobile exhaust. This euthanasia technique results in death within seconds.

The traps were serviced once each day from 1 May to 15 July, the peak warbler nesting period. The traps operated on the decoy principle, that is, those cowbirds in the trap attracted others through their activity and song. When cowbird numbers built up to 30 or 40, most were removed and destroyed. Usually, 12 birds were left in the trap as decoys. Sunflower seeds and clean water were added daily. Species other than cowbirds captured in the traps were banded and released.

COWBIRD REMOVAL PROGRAM

The cowbird removal program showed positive results. During the 1972 control program, 2,200 cowbirds were removed by trapping and by a Michigan Audubon Society employee who shot cowbirds in the warbler nesting areas. To lure the cowbirds, he used a tape recorder which played the cowbird song.

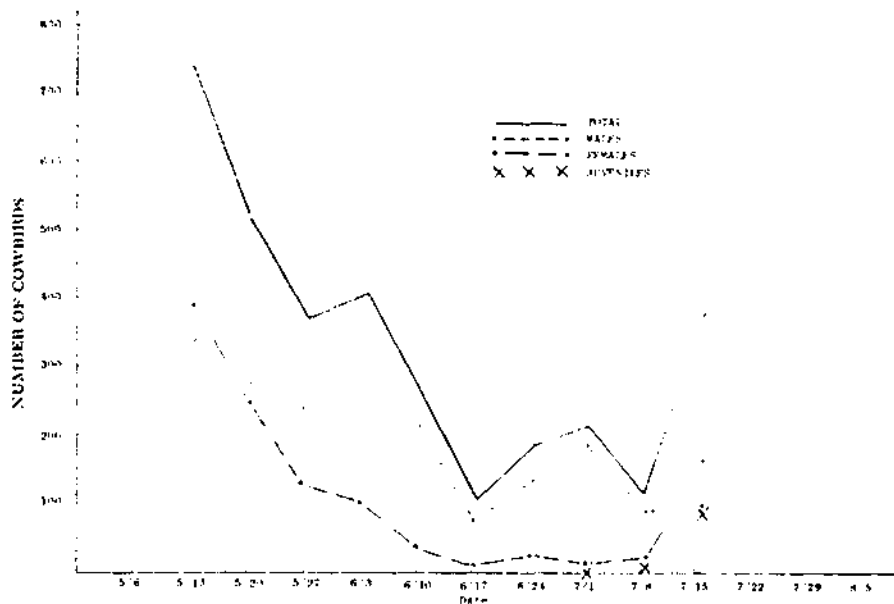


Figure 2. 1973 weekly numbers of cowbirds captured in decoy traps located on Kirtland's Warbler nesting areas.

Walkinshaw (pers. comm.) has shown in his 1972 Kirtland's Warbler nesting survey that only 6 percent (2 of 31) of nests under observation were parasitized. This was a significant reduction from the previous 69 percent parasitism average (Walkinshaw, 1972). It is also significant to note that from 1966 to 1972, the average clutch size increased from 2.34 to 4.22 eggs per nest (Walkinshaw and Faust, 1974). The number of fledglings increased from 0.81 to 2.84 young per nest.

In 1972, the Kirtland's Warbler census recorded 200 singing males, a reduction of one singing male from 1971 (Mayfield, 1973). It was hoped that 1972 control efforts would cause an increase in the Kirtland's Warbler population.

In 1973, 3 traps were added and 4 traps which had low capture rates were relocated. Cowbird banding traps were added adjacent to warbler nesting areas to determine if cowbirds from adjacent areas were moving into the void created by intensive trapping. At the end of the 1973 control program, 3,305 cowbirds had been removed. Walkinshaw's (pers. comm.) nest survey revealed that none of the 33 warbler nests he examined were parasitized. The average clutch size was 4.41 eggs per nest and the average fledging rate was 2.79 young per nest (Walkinshaw and Faust, 1974).

The first Kirtland's Warbler census following a year of cowbird control was in 1973. A total of 216 singing males were recorded, an increase of 9.2 percent from 1972 (Mayfield, 1973).

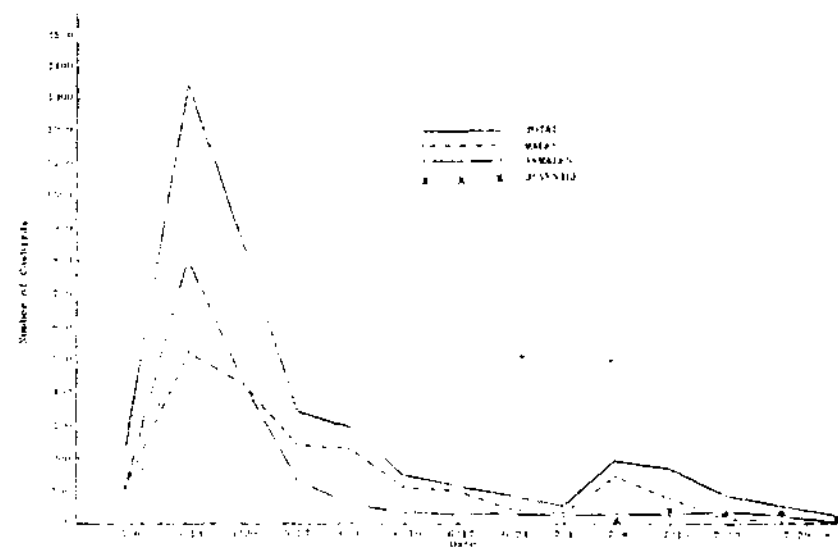


Figure 3. 1974 weekly numbers of cowbirds captured in decoy traps located on Kirtland's Warbler nesting areas.

In 1974, 22 traps were operated; 20 were cowbird removal traps located on 7 of the major nesting areas. One of these was placed on the Fletcher burn area in Kalkaska County, a potential Kirtland's nesting area. A total of 4,075 cowbirds were removed from the warbler nesting areas.

During the 1974 nesting season, Walkinshaw and Orr (pers. comm.) examined 63 Kirtland's Warbler nests and found only 6 (9.5 percent) parasitized by cowbirds. A total of 186 warblers fledged for an average of 2.95 per pair. The average clutch size was 4.09 eggs per nest.

The 1974 census figures revealed 167 singing male Kirtland's Warblers, a decline of 23 percent (Mayfield, unpublished). Considering the data showing excellent nesting success, the decline may be related to problems during migration or on wintering areas.

Numbers of cowbirds trapped per week in 1973 and 1974 peaked on 13 May (Figures 2 and 3). It appears that early in the trapping season, cowbirds are found in large flocks which are migrating to summer ranges. At this time a preponderance of females are taken. The population seems to stabilize around the third week in May. The ratio of male to female captures changes with males being more abundant. Probably at this time the female cowbirds, having selected home nesting ranges and spending considerable time searching for nests to parasitize, are less susceptible to trapping than are vagrant males. It is possible that all or most of the cowbirds originally utilizing the Kirtland's Warbler nesting areas have been captured by this time. Birds captured later in the season may be transients capitalizing on the void created by the removal of cowbirds.

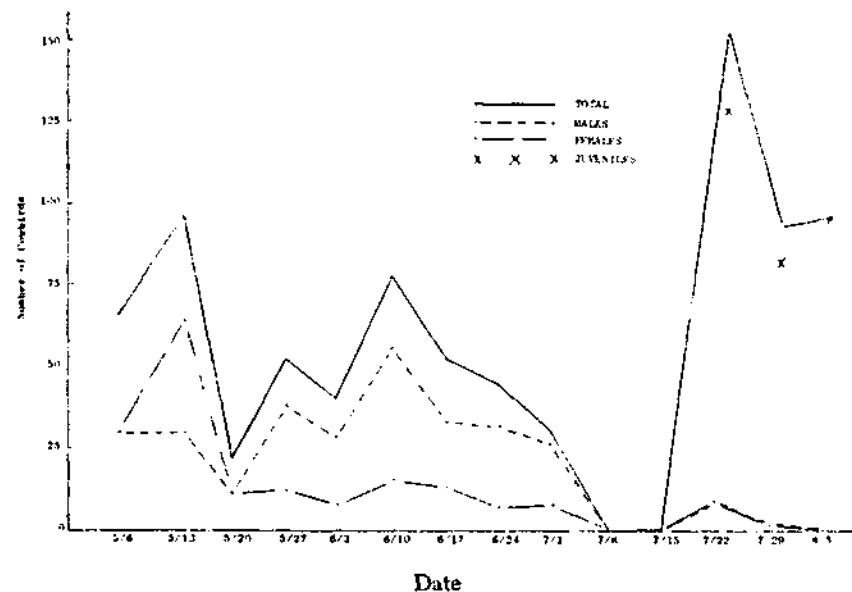


Figure 4. 1974 Weekly numbers of cowbirds banded in traps located in Kirtland's Warbler nesting areas*.

*Data represent 841 of 846 banded cowbirds.

BANDING PROGRAM

In 1973, 119 males and 81 female cowbirds were banded. Of these birds, 13 (6.5 percent) were recovered up to distances of 15 miles from the banding site. All birds recaptured were males. Of those cowbirds banded in 1973, 54 (47 males, 7 females) or 27 percent were recovered in 1974. Of the 119 males and 81 female cowbirds banded in 1973, 39.5 and 8.6 percent, respectively, were recovered in 1974. Birds banded in 1973 and recaptured in 1974 were all within 3 miles of the banding location.

During the 1974 season, 846 (242 males, 261 females, 342 juveniles) cowbirds were banded. Locations of two banding traps were changed twice during this season in an effort to increase our trapping success.

A total of 74 of the 846 cowbirds banded that season were recaptured. Movement of birds from the banding traps to other traps varied from 1.5 miles to 28 miles.

During the period 14 July to 6 August, 1974, traps on 3 of the nesting areas were converted to banding traps for juvenile cowbirds. Juveniles were banded to determine if these birds would return to the Kirtland's Warbler nesting areas the following season. If a large percentage of these birds are recaptured in 1975, it may be advantageous to remove juveniles from the nesting area throughout the summer.

Numbers of cowbirds banded per week in 1974 peaked on 13 May (Figure 4). Two additional peaks occurred but were due to banding trap relocations. On 21 May, the ratio of males to females changed to males being more abundant. These data correspond with the cowbird removal trap data (Figures 2 and 3).

Concomitant with the 1974 trapping season, 14 cowbirds were radiotagged. The purpose was to gain additional information on cowbird movements and behavior. Radios weighed 4 to 5 grams and signals were received up to two miles from the transmitter. Recorded cowbird movements ranged up to a minimum of 63 miles from the tagging location during a 13-day period. Radio monitoring revealed an area of high cowbird activity where a banding trap was subsequently relocated.

Little may be said about cowbird movements at this point. Some birds may cover considerable distances during the nesting season. More data are needed to speculate on directional tendencies of cowbird movements. The banding trap locations will be expanded around Kirtland's Warbler nesting areas and cowbird telemetry will be continued to expand our knowledge of cowbird movements during the nesting season.

Twelve other species totaling 111 birds were banded in 1973, while 999 birds of 25 other species were banded in 1974. Those species include the Blue Jay, Red-winged Blackbird, Rose-breasted Grosbeak, Eastern Kingbird, Common Grackle, Eastern Bluebird, Evening Grosbeak, Purple Finch, Starling, Great Crested Flycatcher, American Robin, Mockingbird, Common Flicker, Rufous-sided Towhee, Brown Thrasher, Eastern Phoebe, Northern Oriole, Cardinal, Dark-eyed Junco, Hermit Thrush, White-throated Sparrow, Lincoln's Sparrow, Vesper Sparrow, Mourning Dove and American Kestrel.

Blue Jays present a predation threat to Kirtland's Warbler nest success (Mayfield, 1960). Blue Jays also became a serious nuisance in the 1972 season by continually returning to the traps after they were banded and released. In 1973 and 1974, 513 Blue Jays were banded and released in the Cheboygan, Michigan area. None of these birds was subsequently recaptured on the nesting area.

In conclusion, the cowbird reduction program on the Kirtland's Warbler nesting area has been successful. Reduced parasitism allows the Kirtland's to produce record numbers of young. Banding of cowbirds in areas adjacent to the Kirtland's Warbler nesting area has given an insight into cowbird movements, and if expanded, should provide more meaningful information on cowbird habits and behavior.

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