

MICHIGAN DEPARTMENT OF CONSERVATION  
Game Division

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SUMMARY: EFFECTS ON WILDLIFE OF JAPANESE BEETLE CONTROL, 1959  
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Early in November, 1959, a Game Division biologist heard a Detroit radio program which spoke of an aldrin spray treatment for Japanese beetle control. A few days later, on November 9, a telephone message from a Detroit woman reported that shortly after the spray plane had gone over that morning she had found a sick bird, which died soon after. The bird was sent in and proved to be a starling.

Inquiry of the Department of Agriculture brought detailed information. In Berrien County, just south of Warren Dunes State Park, 4,800 acres had already been treated. In the Detroit area spraying was in progress, to cover 12,000 acres. In Monroe County, along the Ohio border, 14,000 acres was scheduled for the last half of November.

The treatment consisted of spraying pellets of inert material containing 10 per cent aldrin, at the rate of 2 pounds of aldrin per acre. The Department of Agriculture stated that with the first snow or rain the aldrin would be washed into the soil. We anticipated, therefore, that any effect on wildlife would be immediate, and that no long-term effects would occur, unless earthworms or other burrowing forms served to return significant amounts to the surface. However, from the Detroit area there were many complaints of bird and other wildlife losses. Few of these complaints were made to the Department of Conservation. The Detroit Audubon Society apparently dealt directly with their local health officers and the Department of Agriculture. Only the one specimen from the Detroit area reached the Department of Conservation.

The Game Division did not attempt to make studies in the Detroit area, but did plan and carry out some follow-up in the Monroe County area, where we had knowledge of the spraying a little in advance. Spraying began November 16 (second day of the deer season). A Game Division observer was present in the treated area from 11 a.m. of the 18th to 3 p.m. on the 19th, while applications were still being made, and walked 5½ miles without seeing anything that suggested a loss of wildlife.

On November 24 the Department received a letter from a resident of Lambertville who stated that he had already found dead four mice, three quail, three fox sparrows, and two dead juncos. None of these were preserved, but when on December 4 investigators from the Game Division visited the man they were convinced of the accuracy of his report. A 15-minute search yielded two dead mice and two tree sparrows on the same property. Further searching in the general vicinity yielded a tree sparrow, a kinglet, a blue jay, and a cardinal in about an hour and three quarters. These specimens, together with additional ones taken later, were sent to the Patuxent Research Center for analysis.

On December 15 and 16 another Game Division man visited the area and talked to landowners. Six of 15 reported having observed dead wildlife, and others had heard reports of mortalities. Reports included a sick rabbit that was caught, and a fox, said to be dazed, that was shot and killed. Neither was recovered by

our investigator. He obtained a screech owl that had been picked up by a farmer's son, and found a dead junco after a brief search of a pine planting. In two hours of field observations in the spray area he observed only 16 birds. On the same day, in an hour of observation outside the spray area he counted 83 birds.

In December and January the Game Division received some 15 letters, chiefly from Lambertville and Temperance (two from the Detroit area) reporting losses of wildlife. One of these, from a rabbit hunter, told of finding 16 pheasants, 46 quail, 11 rabbits, and a number of other birds, mice, and rats, all dead without a trace of injury. He stated that others also had found dead game birds, etc. The district game supervisor made contact with this man immediately. None of the specimens reported were recovered, but the contact led to the turning in of a rabbit found on February 9, 1960.

A protest meeting was held in Temperance on February 9, sparked by a group of organic gardeners. Dogmatic assertions were heard on both sides of the controversy. When a vote was taken, it was decided to "take no action" until fall. My impression was that the prevailing sentiment of the group was against the spraying, but that the agricultural bloc was well organized and able to dominate the voting.

Early in March we learned that the Monroe County treatment was not exclusively aldrin. The California Chemical Company, which did the spraying, had 20,000 pounds of heptachlor stored conveniently near at hand, and had asked permission to substitute it for the aldrin. The northernmost strips of the area received the heptachlor.

On May 25 and 26 a Game Division ornithologist made observations in and near the sprayed area. A crowing cock count in the sprayed area yielded an average of 9.5 calls per stop, which compared favorably with the average for Lenawee, Monroe, and Washtenaw counties. Counts of songbirds showed 28 per cent fewer on a route run through the sprayed area compared to a similar route run outside the area.

The most tangible information regarding the aldrin treatment and its effect on wildlife comes in a letter of August 22, 1960, from James B. DeWitt, Chief, Section of Chemical, Physiological, and Pesticide Wildlife Studies, Patuxent Research Center, Bureau of Sports Fisheries and Wildlife. In his letter, addressed to Dr. Fay, Game Division Pathologist, Dr. DeWitt gives the results of analyses of the specimens which we sent to Patuxent. Analyses are in terms of dieldrin, the metabolite of aldrin, expressed in parts per million in dried tissue. (All but one of the specimens were from the Monroe County sprayed area.)

<u>Specimen No.</u>	<u>Sample</u>	<u>Date Found</u>	<u>Location</u>	<u>Dieldrin ppm</u>
60-31	Starling	11/9/59	Detroit	Trace
60-22	Tree Sparrow	12/4/59	Sec. 16 or 21, T8S, R7E	13.2
60-23	Tree Sparrow	12/4/59	Sec. 16 or 21, T8S, R7E	8.5
60-24	Tree Sparrow	12/4/59	Sec. 16 or 21, T8S, R7E	17.8
60-25	Cardinal	12/4/59	Sec. 21, T8S, R7E	3.0
60-26	Blue Jay	12/4/59	Sec. 16, T8S, R7E	5.6
60-27	R.-cr. Kinglet	12/4/59	Sec. 16, T8S, R7E	12.7
60-28	Peromyscus (deer mouse)	12/4/59	Sec. 21, T8S, R7E	Trace

<u>Specimen No.</u>	<u>Sample</u>	<u>Date Found</u>	<u>Location</u>	<u>Dieldrin ppm</u>
60-29	Screech Owl	12/16/59	Sec. ?; T8S, R7E	
	Heart			Trace
	Liver			11.7
	Kidney			179.0
	Brain			19.8
60-30	Junco	12/16/59	Sec. 22, T8S, R7E	.0
6 -21	Rabbit	2/9/60	Sec. 16, T8S, R7E	
	Heart			4.3
	Liver			2.5
	Kidney			.0
	Brain			Trace

DeWitt made the following comments:

"Quantities of dieldrin stored by these species under lethal or sublethal exposure to aldrin have not been reported in the literature. However, the concentrations found in these specimens were in the same range as those found by Scott, et. al., in specimens from areas which had been treated with dieldrin."<sup>1</sup>

The starling specimen is of particular interest, since it was found dying with tremors soon after the spray plane had passed over. It seems likely that death occurred before more than a trace of aldrin had been absorbed by the tissues, possibly as a result of direct ingestion of pellets.

#### Conclusion

It seems most probable that in the Monroe County area treated with aldrin in November, 1959, the loss of wildlife including game species, was considerably heavier than the Game Division anticipated, on the basis of the statement made by the Department of Agriculture that the aldrin would quickly dissolve into the soil. Present information from the Department of Agriculture indicates that aldrin is not dissolved by water and remains near the surface of the soil for a long time.

No calculation of the overall losses of wildlife is possible from the data available. For further treatments with aldrin, however, it should be possible to make sample searches of treated areas and to estimate the magnitude of the losses within rough limits, provided men can be mustered to make the searches. There will continue to be a problem of getting specimens analyzed as to the amount of poison in their tissues.

<sup>1</sup>The paper referred to is by Thomas G. Scott, Yuell L. Willis, and Jack A. Ellis: Some effects of a field application of dieldrin on wildlife. Journ. Wildlife Mgt., 23, 4 October, 1959. Pp. 409-427. Dieldrin was used at 3 pounds per acre on 4,000 acres in Illinois, for control of Japanese beetle. Wildlife losses were significant.

