

NATURALIST AFIELD

by Karl H. Maslowski

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SEVERAL READERS living in widely scattered suburbs in Cincinnati have called recently to report sick and dead birds in their yards. Casualties included robins, cardinals, catbirds and grackles. All of the callers have asked the same question, "Do you think the birds were poisoned by some kind of spray used for killing insects or weeds?"

There is no way of answering that question without performing a very detailed examination of the birds and, frankly, I am not equipped to do that. Indeed, there are only a few laboratories in the country which could satisfactorily conduct such a post-mortem. However, there is a possibility that the birds might have died as a result of some spraying operation, for some of the newer insecticides have proved to be highly toxic to many kinds of vertebrates.

It seems ironic that so many of the more recent discoveries and inventions in the field of science have been like two-edged swords. Atomic power is an outstanding example, and the wonder drugs sulfa and penicillin have also demonstrated that even the best things can do harm, particularly if not skillfully applied. One of the most disturbing of these scientific "two-edged swords," insofar as naturalists are concerned, is the new insecticide, DDT (dichloro-diphenyl-trichloroethane).

No one can answer the effectiveness of DDT for household use in



—Photo by Karl H. Maslowski.

The new insecticide, DDT, has proved to be particularly toxic to amphibians such as this bullfrog. When carefully applied, however, indications are that it has a minimum effect on wildlife such as birds and mammals.

curbing flies, mosquitoes and bedbugs. It has also proved to be of great help in killing insects of veterinary importance and in military operations where lice had to be controlled to stop the spread of typhus. In these respects the wonder insecticide has been a blessing. But when the preparation is used indiscriminately as a cure-all for insect pests over vast areas of forests, rivers, fields or croplands, the danger to all forms of wildlife raises a question of DDT's real value. This insecticide, common with other organic and mineral poisons, is selective or specific; it does not strike all animal species with equal effectiveness. If it did, its advantages in controlling undesirable species naturally would be lost.

THE UNITED STATES FISH and Wildlife Service early recognized the potential dangers of the indiscriminate use of DDT and

the reports of their investigations of its effect on wildlife in general are the best available. This service and its cooperators conducted numerous experiments in about 12 states. Some of their findings are recorded below.

Among vertebrates, fishes and amphibians seem to be poisoned most easily by DDT. A 117-acre tract sprayed with a DDT-oil solution at the rate of two pounds an acre in June included about one mile of the Patuxent River in Maryland. Nine and a half hours later 95 dead fish were removed from a net stretched across this small stream at the lower end of the sprayed section. Dead fish continued to drift into the net for four days after the spraying, but most of the mortality occurred within 48 hours.

The loss of bluegills that were kept in experimental boxes in the sprayed area were particularly heavy. All of the golden shiners and pumpkin-seed sunfish in a small gravel pit 150 feet from the sprayed area were killed by drifting spray. In a shallow experimental pond sprayed with one pound of DDT to an acre, 80 per cent of the bluegill sunfish, 93 per cent of the red-bellied sunfish and 78 per cent of the yellow perch were killed. Another pond sprayed with one-tenth of a pound of DDT an acre resulted in a 43 per cent loss among all species.

Wood frog tadpoles died in short order when subjected to a five-pound an acre treatment. The same treatment resulted in the death of several frogs and a young water snake.

Certain crustaceans seem highly susceptible to DDT. Thus, nearly all the crayfish in a 4,000-acre plot in Carroll County, Illinois, were

readily killed by a solution of one-half a pound of DDT to the acre. Coastal areas treated with DDT spray have in some instances suffered severe losses in fiddler and edible crabs.

MORTALITY to adult mammals and birds was not apparent where DDT was applied in concentrations up to three pounds an acre, but a mortality of at least 25 per cent occurred in a group of nestlings fed in a laboratory with insects killed with a one-pound-an-acre concentration of DDT applied as a spray.

An area in Lackawanna County, Pa., was sprayed with a five-pound

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an-acre solution in 1945. Before spraying a census was made of the breeding bird population, and in 1946 another census was made in the same area. Results indicated a 15 per cent loss in the breeding bird population. In adjacent territory sprayed with a one-pound-an-acre solution there was no noticeable change in bird populations.

Elsewhere, in Georgia, South Carolina, West Virginia and Maryland, no marked change in breeding bird populations have been noted in areas sprayed with DDT

solutions ranging up to three pounds an acre. However, in some of these and other areas, a few adult birds killed by DDT were picked up by investigators. Perhaps some mechanical defect resulted in a particularly heavy concentration of spray at one or more spots in every experimental plot. Ten adult cottontail rabbits subjected to a five-to-seven-and-a-half-pound-an-acre spray on pasture land habitat died within nine days. A somewhat similar experiment conducted with meadow mice and

white-footed mice revealed that these small rodents can withstand a dose of DDT that would be lethal to cottontails. Raccoons that were fed on crayfish killed by DDT were not in turn so affected.

From experiments thus far conducted it seems that DDT is a valuable adjunct to man's weapons in his battle with injurious insects. If the poison is carefully applied at the right season in the right amount it has a minimum effect on wild life. But if this insecticide is used carelessly and in strong

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