



## DEPARTMENT OF THE INTERIOR

## INFORMATION SERVICE

## FISH AND WILDLIFE SERVICE

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DDT is already an important weapon in the continuous fight against insect pests, but unless it is used with caution it is capable of considerable damage to wildlife, beneficial insects, and indirectly to crops, the Fish and Wildlife Service reported today to Secretary of the Interior Harold L. Ickes.

Praising DDT as an outstanding scientific achievement and a very valuable tool, Dr. Clarence Cottam, Director of Wildlife Research of the Fish and Wildlife Service, said that "caution in its use is essential because of our incomplete knowledge of its action on many living things, both harmful and beneficial.

"Its use by the armed forces in Europe and the Pacific in killing disease-carrying insects was so effective and the need so urgent that its effects on other organisms had to be overlooked. Present information is based largely on single applications of DDT spray. The effects of repeated applications are little known."

There is evidence, the report stated, that a single concentrated application is destructive to birds and even dilute applications are dangerous to fishes and other aquatic wildlife. Experiments with the insecticide are still under way.

Natural enemies are considered the cheapest, safest and one of the best means for controlling insect pests. Birds, small mammals, amphibians and predacious and parasitic insects do much of this work; but in agricultural and some forest areas or where the safety and comfort of man is involved, additional control by poisons is necessary. DDT appears to be one of the most effective insecticides known but, unfortunately, it kills useful as well as harmful organisms. Its unrestricted use could conceivably do more damage than good in its destruction of natural controls, the report said.

A. L. Nelson, in charge of the Patuxent Research Refuge, reported on experimental sprayings on tracts near Scranton, Pennsylvania, and at the Patuxent Refuge. Applications were made by airplane in late May and early June, 1945, at the rates of one pound, two pounds and five pounds per acre on different units, each area receiving a single dosage. In these tests no immediate detrimental effects on bird life were noted with the lighter treatments of one and two pounds per acre, but definite effects on birds were found at the five pound rate. Within two days after the heavy dosage treatment dead and dying birds were found. For a month thereafter a very low population indicated that most of the adult birds had either been killed or had left the area. Furthermore, even at the two pound rate considerable mortality occurred among fish. The results of repeated sprayings are still being investigated and until more facts are known the Fish and Wildlife Service recommends that in forest areas DDT spray be applied in concentrations of

one pound per acre or less to avoid damage to wildlife. This conforms to recommendations of the U. S. Bureau of Entomology and Plant Quarantine.

Fishes and other aquatic life are highly susceptible to DDT poisoning. The use of DDT in fly and mosquito control along beaches involves special dangers. Dr. Cottam cited the recent spraying of a central New Jersey beach area where DDT was applied at the rate of one-half pound per acre. Irregular wind conditions caused much of the insecticide to fall on the adjoining bay. Soon afterward, more than 75,000 young fish, mostly menhaden, mullet, killies and other shore fishes were washed up dead along the five-mile beach, presumably killed by the DDT. Fishermen later reported dead and sluggish crabs along the beach. Those captured soon died and were unfit for sale.

Freshwater life is as readily affected by DDT. The research of Dr. M. M. Ellis, of the Fish and Wildlife Service, and others shows that fishes, tadpoles, crayfishes, frogs, salamanders, and many water insects are easily killed. DDT is almost insoluble in water. Concentrated in a film of spray oil on the surface of the water, it kills aquatic life that comes to the surface to breathe. Later some DDT sinks to the bottom where it affects bottom organisms to a much smaller degree. The results of experimental spraying of a number of ponds and a river at the Patuxent Refuge are now being compiled, but Mr. Nelson points out that the spraying of the Patuxent River bottomlands with two pounds of DDT per acre killed bluegills and other fishes planted in the stream for experimental study. A pond 150 yards from the sprayed area was reached by enough DDT drift to kill all the sunfish present in it.

Studies by state and federal entomologists indicate that mosquito control can be achieved by the use of DDT in concentrations of only one-tenth or one-fifth pound per acre. The use of larger amounts may easily be destructive to fish. Individuals may be held legally responsible when the spray drifts over neighboring property and causes damage, it was pointed out.

Wide-scale use, or use of DDT in concentrated form, are dangerous. Caution is urged by both our knowledge and our ignorance of such important matters as its effects on soil organisms, and on plant life and the effect of its repeated use. The U. S. Bureau of Entomology and Plant Quarantine has already made detailed studies of DDT as an insecticide. This research indicates that some insects are resistant to DDT while others are extremely susceptible. No single rule for the application of DDT can be laid down. Data for treatment of specific pests are available, but DDT cannot be used wisely unless all its direct and indirect effects are considered.

Entomologists believe that the use of DDT is not dangerous if it is applied in restricted areas and in low concentrations. They stress the need of further studies and warn that DDT is not effective against all insects under all conditions. It kills but does not repel insects. It does not kill rats and mice except when used in dangerously large amounts.

Since the information on the reactions of wildlife to DDT is still incomplete, officials of the Service requested reports by observers of any unusual reactions of fishes, birds, or other wildlife in DDT sprayed areas. Such reports should be addressed to the U. S. Fish and Wildlife Service, Washington 25, D. C.

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