Ag Chemicals and Wildlife

Studies recommend no more control legislation. Attention to recommendations and protective measures can minimize damage to and even benefit wildlife

WITH INCREASING USE of chemicals to destroy crop pests have come many side-effect problems. The Miller Amendment is a major step in guarding against food contamination. But there are other toxicity problems. One of these is possible destruction of wildlife. While investigations in the U. S. and Britain have advocated no additional restrictive legislation, both have emphasized the need for active attention to the problem on the part of experts in the fields concerned.

In general, it appears to be recognized, by agricultural chemicals producers, conservationists, and state and national governments alike, that wildlife is subject to dangers inherent in the increasingly widespread use of toxic materials. The extent of potential danger varies with control chemicals used, how and to what extent they are applied, and the specific wildlife which might feed on or come in contact with areas treated. At the same time, the opinion often expressed by informed persons, who have carefully evaluated and considered the problem from all viewpoints, is that the wise application as recommended of thoroughly tested materials poses no major problems.

Accidents and gross misuse of agricultural chemicals produce numerous, and unfortunate incidents, which in many cases have been grossly exaggerated and overemphasized. These result in opinions based on apprehension and speculation rather than actual facts. Bodies investigating reports of damage to wildlife often find actual extent of damage considerably less than indicated by earlier rumors—a single carcass seen by 12 persons separately easily grows to 12 carcasses.

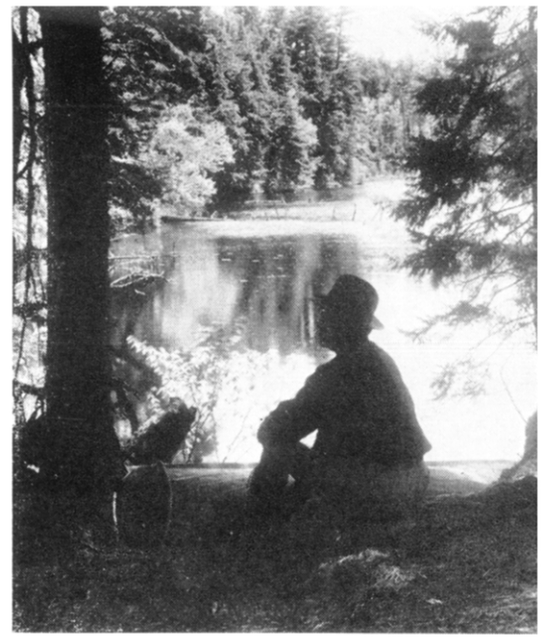
Those who say there is "little danger if applied under proper circumstances and in prescribed dosages" realize, nevertheless, that some wildlife is seriously affected by certain materials and some loss or damage is unavoidable. Whether very limited or serious enough not to be neglected, the danger to birds, animals, and fish is not easily compared with the economic benefits resulting from chemical use. It is difficult to measure the value of song birds or small animals, but wildlife is important economically, recreationally, and esthetically and bears consideration in serious discussions of chemical usage and effects, even though its value cannot be reduced to dollar marks.

Concern has spread far, and, damage to wildlife is receiving careful study and investigation in many areas. While the problem differs in different countries, there is striking similarity in some of the general conclusions reached. In Great Britain, where it is recommended that 10% of the country's 59 million acres be sprayed for needed agricultural expansion, and the people are sensitive to the beauty of the countryside, there have been many reports of game birds, bees, and other animals dying in fields treated with toxic chemicals and of unwanted changes in hedgerows and border shrubs following pesticide use.

In 1953, the appropriate Ministries in England and Scotland were asked "to investigate the possible risks to natural flora and fauna of the countryside from use in agriculture of toxic substances, including the possible harmful effects for agriculture and fisheries and to make recommendations." An extended study, including field experiments, followed.

The investigating body, in its report of last year, established that while dangers are difficult to define precisely and exact scientific answers difficult to formulate, potential dangers do exist, and measures should be taken to minimize them. However, and importantly, it concluded that the total casualties to wild birds and mammals caused by spraying during an average season is not high, and direct mortality from use of toxic sprays is very low compared with other causes of death. These conclusions, based on best evaluations possible under difficult conditions, nevertheless satisfactorily disprove less scientifically based rumors which suggest that near-extinction of wildlife results from agricultural spraying.

As observed by the U. K. committee, sprays most likely to be harmful to wild birds and mammals, in order of danger when applied under unrecommended conditions, are organophosphorus insecticides, arsenicals, dinitro weedkillers, and DDT insecticides. When applied as prescribed and proper precautions are taken, however, no serious danger would be expected from use of these chemicals.



There is little threat to natural flora and fauna from ag chemicals if used wisely

The U. K. committee concluded that no further legislation is at present needed to deal with or reduce damage to wildlife. It recommended: increased attention to proper labelling and instructions, application, and safety precautions; additional fundamental research and exchange of information between all interested bodies; and that the permanent committee responsible include nature conservation interests.

U. S. Studies

In the United States, work has been done on state, federal, and local levels. The Department of Interior's Fish and Wildlife Service keeps a cautious and continual lookout for damage to wildlife and evaluates extent of harm caused by toxic chemicals. According to this service, most herbicides appear to offer little or no direct hazards to birds and land animals, but their use to control submerged vegetation or presence as water pollutants may be hazardous to fish. Use of these compounds for removal of woody growths along streams and reservoirs may promote growth of desirable food for waterfowl, while similar use in forests promotes growth of berries and other animal food. At the same time, indirect damage may result from excessive destruction of cover and food for some wildlife. Hazards to fish are much more serious, death being possible from above 0.1 p.p.m. of copper sulfate, 5 p.p.m. of trichlorobenzene, 10 p.p.m. of the butyl ester of 2,4-D, or 100 p.p.m. of dinitrobutylphenol.

Application of insecticidal sprays or dusts necessarily exposes birds, fish, and some animals to immediate contact with relatively high concentrations or to prolonged contact with

toxic residues. The Patuxent Research Refuge is one of the Interior Department's branches which exerts extended effort and cooperation to determine the extent of this damage and to develop materials and procedures which will combine effective pest control with minimum wildlife hazards.

The Pennsylvania Game Commission might be considered typical of state groups involved in use and study of agricultural chemicals. It has dealt chiefly with herbicides and has found them exceedingly useful in game management. The commission's tests indicate that 2,4-D and 2,4,5-T and similar chemicals are not toxic if properly used. Sodium arsenite, when used as a spray or occasionally as a debarking chemical, has been found to be destructive to deer and possibly other browsing animals.

In a several-year study of the effect of chemical brush control on game food and cover in power line rights-of-way through forests, it was found that improved game food conditions resulted from all treatments. Common game species continued to use all treated areas during the third year of spraying tests, indicating that these areas were making an important contribution toward maintaining game population. At the same time, considerable saving in cost of maintenance of right-of-way was realized, guaranteeing lower cost of electric power to the areas served.

Published reports of damage to wildlife from toxic chemicals in U. S. are numerous and observations varied. Extent of damage ranges with chemical used, condition under which applied, and kind of wildlife present during and after spraying. Adequate information on many of the more common insecticides is not available, though constructive research is resulting in a continuing increase. DDT has been more intensively studied than any other compound, and informal recommendations for minimizing harmful effects of insecticidal operations have resulted. These include:

- Limiting rate of application to not more than 1 pound per acre.
- Restricting of insecticidal operations to minimum levels during bird nesting periods.
- Avoiding, in so far as possible, any direct application to water containing wildlife, or under conditions where excessive run-off might lead to water pollution.

Considerable information has been accumulated on other toxicants and adoption of similar recommendations, based upon relative acute and chronic toxicities are forthcoming.

An example of the thoroughness of some research in this field is a study on the effects of agricultural chemicals on wildlife undertaken a few years ago by the department of zoology, University of California (Davis) with assistance from the California Department of Fish & Game and U. S. Fish and Wildlife Service. A final report is now being prepared. The aim of the project was to accumulate and summarize all known facts regarding the biotic effects, methods of application, degree of usage, and areas where employed of all agricultural chemicals used in California. Data were accumulated from published reports and contact with large numbers of agriculture commissioners, farmers, sportsmen, and interested organizations throughout the state.

This study advocates, as did that in the U. K., no additional legislative restrictions. It advocates that the most reasonable method of ensuring safe chemical use is through joint meetings of experts representing the various fields concerned. Specific recommendations should come from such a group regularly and are the best that can be expected.

One problem which hampers satisfactory solution to the whole problem of agricultural chemicals and wildlife results from the extremes in opinion on the part of some conservationists, on the one hand, and pest control officials on the other. These have often resulted in an element of sensationalism in reports and publications devoted to the problem.

The long term answer to the problem of maintaining adequate insect, rodent, and weed control while, at the same time, restricting or minimizing harm to wildlife, rests in research and education. Environmental conditions affect the toxicity of agricultural chemicals to animals and plants, and thus basic toxicity information alone cannot be used to determine chemical hazards to wildlife. Other problems peculiar to any study of wildlife make extensive, accurate data difficult to accumulate. Continued research is necessary on the part of many different groups with widely varying interests—U. S. Fish and Widlife Service, state conservation departments, universities. chemical manufacturers, and public health services.