NATURALISTS, BIOLOGISTS, AND PEOPLE

ROBERT J. DICKE

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On this occasion, I would like to speak as a practical biologist, and discuss a problem with which you are all well acquainted. It is my intention, however, to pursue a line of thinking that is—quite purposely—different from that usually encountered.

Whenever chemicals are applied to non-crop areas on a broad scale in order to control weeds, or insects, or any form of wildlife, a considerable body of writing concerning it will shortly appear in the popular press and in semi-technical magazines and journals. This is especially true where forest lands, recreational sites, and residential areas are involved. Usually the writing is of a negative nature, and generally critical of the whole operation at least as the purposes and procedures were observed by the writer or as they were brought to his attention. Although the individual popularizer may be a perfectly sincere writer, very often his criticism of the economic biologist may be unfounded or extremely biased. He then succeeds in expanding an alarming body of public misunderstanding.

Now, before going into more detail on this problem, it would be well that I explain the title of my presentation—NATURALISTS, BIOLOGISTS, AND PEOPLE. Some explanation and definition of terms is required, lest I unintentionally imply that naturalists are those who write articles that unjustly criticize professional biologist, using the popular press as their podium. Naturalists are not necessarily such persons. All kinds of individuals may write popular articles. Some are professional writers who may, or may not, be wildlife enthusiasts. These professionals are keenly aware of the angles of a story that will have popular appeal. Other such writers are professional biologists who should know better than to draw preliminary conclusions from inadequate experimental data and then to publicize them. Still another type of writer is the hobbyist who may attempt to write against a background of information that has not been adequately explored and developed.

Let us now define—roughly—those groups of people that I have referred to as naturalists, biologists, and people.

1 Retiring Presidential Address, delivered at the 89th Annual Academy Meeting on May 2, 1959, at Platteville, Wisconsin.
Naturalists are students of natural history, whose interests are primarily observational, and for whom nature is an avocational pursuit or hobby. Make no mistake; I do not use this term lightly, because I feel that I am also a naturalist. I can use myself as a prime example of a naturalist, for I have an abiding love for forest and prairie in their every aspect. We own a cabin and 40 acres of woodland on the Chippewa river. Mrs. Dicke would probably tell you that I must be a very romantic naturalist to love that terribly underprivileged land. Certainly, it is not the fishing or the hunting that draws me there. Neither can it be the pine planting that averages only about an inch of growth per year.

Biologists are professional botanists and zoologists. As scientists, their interests in nature are experimental or technically descriptive. The economic biologist has the additional task of managing wildlife—nature, that is—to meet a multiplicity of public demands that range all the way from the protection and propagation of certain plant and animal species to the demand that efforts be made to drastically reduce or eradicate certain species. The drastic decimation of a species population must be by whatever means available, and this often necessarily includes the use of chemicals.

Since much of my professional life has been as an economic entomologist, I can fully appreciate the aims and problems of the economic biologist. Again, using myself as an example, I find that I may be a bit vague and a little romantic in my thinking about nature in connection with my cabin and woods. But in my thinking as a biologist, I must operate within clearly defined experimental boundaries. As an economic biologist, I must also be highly practical in my thinking, planning, and in my working standards.

People make up the last part of our triumvirate of naturalists, biologists, and people. People are all of the so many individuals who are neither naturalists nor biologists. These people not only pay taxes and vote, but they also have an interest and a vital stake in what is going on in the country and in how our natural resources are being used.

Now, these three groups are not sharply defined, by any means. They are, however, representative of the extremes in concepts and special interests that are given expression whenever a wildlife control problem comes to public attention.

Not for the purpose of argumentation, but in the interests of presenting all sides of the problem, let us now examine some rather controversial ideas concerning nature and its control.

Balance of Nature. This is a rather vague idea that is freely expressed by naturalists and people. Apparently it is based on the assumption that at one time all of the wildlife in this country was
in perfect biological harmony—some kind of biological utopia prevailed. Then man entered the picture and, of course, spoiled all this by his intrusion and intervention. He selfishly wanted nature to conform to his way of life. One of my most ardent nature-loving students once expressed it in this way. No doubt, I shocked him when I asked if this was really so bad. In effect, all other species have been trying to do the same thing; man has just been more successful. It is so very difficult to be practical about such an idea—this vague notion that if we could but balance nature again, all of our ills would be corrected. Some purely practical problems arise, such as:

How much hedge row, wood lot, and so on would be required on a farm to balance up 200 solid acres of wheat, or corn?

How many birds would we need to check a flight of pest mosquitoes or a flight of lake flies concentrating on the shoreline of Lake Winnebago? There is little doubt but that they were there in even greater numbers during the “good old balanced nature days.”

These and hundreds of other similar practical problems cast some doubt on the practicability of the “balanced nature” idea.

Specific Land Use. As our population increases, land and water must be efficiently managed for specific, not general, uses. It is wishful thinking to believe that all land can be made to serve all purposes without there being some very sharp conflicts. Industrial, agricultural, recreational, residential, natural history study areas, and natural preserves all differ in their requirements for land and wildlife management. We can hope for a harmonious co-existence of these land areas, but management for a specific use will, in all cases, be necessary. Even natural preserves and study areas will not remain in that state for very long without fire, disease, and insect control. This means that in the maintenance of such areas, there will continue to be a need for give-and-take, understanding, and practical thinking by naturalists, biologists, and all people.

It is sometimes necessary that wildlife populations be curtailed sharply. We may wax sentimental about the passing of the prairie, the buffalo, and the passenger pigeon, and we may decry their passing as the result of human greed. But it is not quite as simple as that. The prairie had to be made over into agricultural land to feed the people of the nation. The coexistence of dominant species, including man, is an exceeding difficult relationship to preserve and maintain.

There are many examples of how it is necessary to change the natural state in the interest of specific land uses. A farm fencerow, for instance, or a roadside hedgerow is ideal for the protection and propagation of small game. Of course, this interests the wildlife enthusiasts and the hunters. However, the birds and mammals that
find a haven there may be quite destructive to farmers’ crops. Robins and rabbits cannot be condoned in modern fruit culture. And even where such animals can be tolerated, hedgerows are well suited for the propagation of destructive insects, such as grasshoppers and army worms.

Certainly there is going to be an ever increasing need for recreational areas, but within land designated for this use, certain animals and plants will inevitably be eliminated. Someone is certain to pick that last lady slipper. Its only chance of survival will be in a strictly supervised study area or preserve. Nuisance insects (mosquito and fly) and plants (poison ivy) must be eliminated—and with them, perhaps other species as well.

In residential areas, even less refuge for wild species is to be expected. One of the current controversies concerns the apparent conflict between Dutch elm disease control and the protection of robin populations. Perhaps some better control than DDT sprays will be developed. But for the present, we seem to be confronted by two choices: (1) Do not protect elm trees that would require more than 50 years to replace, should they die of Dutch elm disease; or (2) risk a partial decimation of robin populations existing within the disease control area. Personally, I would not care to be the economic biologist in my community who gambled in the robin’s favor and lost the trees.

*Wildlife Enthusiasts.* I am always amazed by the great numbers of people who have little or no interest in wildlife. Most people enjoy having birds around, but they are not very specific about them. Rabbits and squirrels are interesting little creatures to have about the neighborhood, but only as long as the rabbits do not take a fancy to one’s flower sets, and as long as the squirrels do not take up residence in an attic or a chimney. And a great many people understandably like dogs, and cats, and children, but all of these little creatures are dynamically opposed to urban wildlife in any form. Most people are interested in lakes and woodlots. They enjoy picnics and family play outdoors in the sun. They want a pleasant vacation outdoors. But, they are not rugged woodsmen, and these interests preclude large populations of mosquitoes, snakes, poison ivy, etc. It would be but small consolation to them that these animals and plants represent the “complete nature”. There is very little hope that they may be convinced that these things need to be saved.

*Popular Writing.* Much has appeared in the popular press concerning the effects of chemicals on wildlife—and on human health, for that matter. I would judge that most of these writers are sincere and honest within the limits of their knowledge of the subject. It is, however, at this point that we must be the most careful and discriminating. The articles we read are no more valid than was
the author’s knowledge of his subject, or his intent in writing the article. We caution our biology students to read everything they can on a particular subject—but not to believe everything they read. There are many excellent scientific publications concerned with the effects of pesticide chemicals on wildlife. Of course, they are not written in a popular or spectacular vein.

Meaningful biological research is necessarily complex and time-consuming. This fact, however, never justifies any shortcut to conclusions drawn on accelerated inference or coincidence. What is an accelerated inference? It is best illustrated by examples. If X number of a hardy, common bird—such as the robin—is killed by a spray application, what an alarming toll must have been taken among less hardy and less conspicuous bird species! Or, if X robins were destroyed by a single spray application, it will not be long before they become extinct, like the passenger pigeon. In these cases, a spectacular and alarming point is made, even though the biology of the different bird species is hardly comparable.

How does coincidence figure in this picture? “A bird was picked up two weeks after spraying, and it showed typical symptoms of DDT poisoning.” The possibility of simple brain concussion is not taken into consideration. “We found dozens of dead birds.” Last spring, my daughter brought me quite a number of excellent specimens of dead cedar waxwings and finches. But there had been no spraying in the area. Bird mortality is naturally high, especially in the spring. For a two-brooded bird, such as the robin, a natural high mortality is a necessity—otherwise they, too, might become a problem to the economic biologist.

Specialists. Sometimes it must seem to the economic biologist that everyone considers himself a specialist. I believe that most economic biologists have a competent command of their specialty, and a good understanding of the problems they face. It is never their intention to poison the land or endanger the nation’s wildlife. Most of them would be pleased to discuss control and preservation problems with interested citizen’s groups.

I am greatly impressed—as the general public should also be—with the regulatory checks and precautions that operate in favor of the wildlife enthusiasts. The U. S. Food and Drug Administration are vigilant in their protection of foodstuffs from unwanted contamination by deleterious and doubtful chemicals. The U. S. Department of Agriculture requires label approval of all pesticide chemicals. They guard against dangerous or fraudulent use of control chemicals. The Wisconsin Economic Poisons Law is a state safeguard, under which I, or any other economic biologist, must register my intentions for experiments in mosquito control or any control work. The Wisconsin Committee on Water Pollution must
sanction all lake and stream treatments before they may be undertaken. To these several regulatory agencies, we must add the public consulting organizations, such as the U. S. Public Health Service, State Conservation Departments, and agricultural experiment stations in land-grant colleges.

Pesticides are no longer simply compounded and sold. In these days an industrial firm must spend $1,200,000 on the average, in the development of an acceptable chemical for public use. Most of this sum is spent to establish the products proper and safe usage. Even so, it may have to be recalled immediately because of some unforeseen hazard.

In this discussion, I have attempted to present the problem of species control from a different slant than is usually taken. I have attempted to establish for amateur and professional biologist alike (1) the necessity of species control; (2) an appreciation of the complexity of the problems faced by the economic biologist; (3) that popular criticism should be examined somewhat more dispassionately and carefully; and (4) that there are far more safeguards for human health and wildlife protection than an alarmed public has been led to believe.