

## 29-8 And No Birds Sing (1962)

### Rachel Carson

Like Aldo Leopold in *A Sand County Almanac* (1949), Rachel Carson's groundbreaking book *Silent Spring* effectively combined a scientist's training with a poet's sensibility. The result was a powerful work that quickly became one of the founding documents of the modern environmental movement. Carson challenged the nation's powerful chemical industry by questioning the use of pesticides and herbicides, particularly DDT; she challenged the world by questioning humans' impact on their natural environment.

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Over increasingly large areas of the United States, spring now comes unheralded by the return of the birds, and the early mornings are strangely silent where once they were filled with the beauty of bird song. This sudden silencing of the song of birds, this obliteration of the color and beauty and interest they lend to our world have come about swiftly, insidiously, and unnoticed by those whose communities are as yet unaffected.

From the town of Hinsdale, Illinois, a housewife wrote in despair to one of the world's leading ornithologists, Robert Cushman Murphy, Curator Emeritus of Birds at the American Museum of Natural History.

Here in our village the elm trees have been sprayed for several years [she wrote in 1958]. When we moved here six years ago, there was a wealth of bird life; I put up a feeder and had a steady stream of cardinals, chickadees, downies and nuthatches all winter, and the cardinals and chickadees brought their young ones in the summer.

After several years of DDT spray, the town is almost devoid of robins and starlings; chickadees have not been on my shelf for two years, and this year the cardinals are gone too; the nesting population in the neighborhood seems to consist of one dove pair and perhaps one cat-bird family.

It is hard to explain to the children that the birds have been killed off, when they have learned in school that a Federal law protects the birds from killing or capture. "Will they ever come back?" they ask, and I do not have the answer. The elms are still dying, and so are the birds. *Is anything being done? Can anything be done? Can I do anything?*

A year after the federal government had launched a massive spraying program against the fire ant, an Alabama woman wrote: "Our place has been a veritable bird sanctuary for over half a century. Last July we all remarked, 'There are more birds than ever.' Then, suddenly, in the second week of August, they all disappeared. I was accustomed to rising early to care for my favorite mare that had a young filly. There was

not a sound of the song of a bird. It was eerie, terrifying. What was man doing to our perfect and beautiful world? Finally, five months later a blue jay appeared and a wren."

The autumn months to which she referred brought other somber reports from the deep South, where in Mississippi, Louisiana and Alabama the *Field Notes* published quarterly by the National Audubon Society and the United States Fish and Wildlife Service noted the striking phenomenon of "blank spots weirdly empty of virtually all bird life." The *Field Notes* are a compilation of the reports of seasoned observers who have spent many years afield in their particular areas and have unparalleled knowledge of the normal bird life of the region. One such observer reported that in driving about southern Mississippi that fall she saw "no land birds at all for long distances." Another in Baton Rouge reported that the contents of her feeders had lain untouched "for weeks on end," while fruiting shrubs in her yard, that ordinarily would be stripped clean by that time, still were laden with berries. Still another reported that his picture window, "which often used to frame a scene splashed with the red of 40 or 50 cardinals and crowded with other species, seldom permitted a view of as many as a bird or two at a time." Professor Maurice Brooks of the University of West Virginia, an authority on the birds of the Appalachian region, reported that the West Virginia bird population had undergone "an incredible reduction."

One story might serve as the tragic symbol of the fate of the birds—a fate that has already overtaken some species, and that threatens all. It is the story of the robin, the bird known to everyone. To millions of Americans, the season's first robin means that the grip of winter is broken. Its coming is an event reported in newspapers and told eagerly at the breakfast table. And as the number of migrants grows and the first mists of green appear in the woodlands, thousands of people listen for the first dawn chorus of the robins throbbing in the early morning light. But now all is changed, and not even the return of the birds may be taken for granted.

The survival of the robin, and indeed of many other species as well, seems fatefully linked with the American elm, a tree that is part of the history of thousands of towns from the Atlantic to the Rockies, gracing their streets and their

village squares and college campuses with majestic archways of green. Now the elms are stricken with a disease that afflicts them throughout their range, a disease so serious that many experts believe all efforts to save the elms will in the end be futile. It would be tragic to lose the elms, but it would be doubly tragic if, in vain efforts to save them, we plunge vast segments of our bird populations into the night of extinction. Yet this is precisely what is threatened.

The so-called Dutch elm disease entered the United States from Europe about 1930 in elm burl logs imported for the veneer industry. It is a fungus disease; the organism invades the water-conducting vessels of the tree, spreads by spores carried in the flow of sap, and by its poisonous secretions as well as by mechanical clogging causes the branches to wilt and the tree to die. The disease is spread from diseased to healthy trees by elm bark beetles. The galleries which the insects have tunneled out under the bark of dead trees become contaminated with spores of the invading fungus, and the spores adhere to the insect body and are carried wherever the beetle flies. Efforts to control the fungus disease of the elms have been directed largely toward control of the carrier insect. In community after community, especially throughout the strongholds of the American elm, the Midwest and New England, intensive spraying has become a routine procedure.

What this spraying could mean to bird life, and especially to the robin, was first made clear by the work of two ornithologists at Michigan State University, Professor George Wallace and one of his graduate students, John Mehner. When Mr. Mehner began work for the doctorate in 1954, he chose a research project that had to do with robin populations. This was quite by chance, for at that time no one suspected that the robins were in danger. But even as he undertook the work, events occurred that were to change its character and indeed to deprive him of his material.

Spraying for Dutch elm disease began in a small way on the university campus in 1954. The following year the city of East Lansing (where the university is located) joined in, spraying on the campus was expanded, and, with local programs for gypsy moth and mosquito control also under way, the rain of chemicals increased to a downpour.

During 1954, the year of the first light spraying, all seemed well. The following spring the migrating robins began to return to the campus as usual. Like the bluebells in Tomlinson's haunting essay "The Lost Wood," they were "expecting no evil" as they reoccupied their familiar territories. But soon it became evident that something was wrong. Dead and dying robins began to appear on the campus. Few birds were seen in their normal foraging activities or assembling in their usual roosts. Few nests were built; few young appeared. The pattern was repeated with monotonous regularity in succeeding springs. The sprayed area had become a lethal trap in which each wave of migrating robins would be eliminated in about a week. Then new arrivals would come in, only to add to the numbers of doomed birds seen on the campus in the agonized tremors that precede death.

"The campus is serving as a graveyard for most of the robins that attempt to take up residence in the spring," said Dr. Wallace. But why? At first he suspected some disease of the nervous system, but soon it became evident that "in spite of the assurances of the insecticide people that their sprays were 'harmless to birds' the robins were really dying of insecticidal poisoning; they exhibited the well-known symptoms of loss of balance, followed by tremors, convulsions, and death."

Several facts suggested that the robins were being poisoned, not so much by direct contact with the insecticides as indirectly, by eating earthworms. Campus earthworms had been fed inadvertently to crayfish in a research project and all the crayfish had promptly died. A snake kept in a laboratory cage had gone into violent tremors after being fed such worms. And earthworms are the principal food of robins in the spring.

A key piece in the jigsaw puzzle of the doomed robins was soon to be supplied by Dr. Roy Barker of the Illinois Natural History Survey at Urbana. Dr. Barker's work, published in 1958, traced the intricate cycle of events by which the robins' fate is linked to the elm trees by way of the earthworms. The trees are sprayed in the spring (usually at the rate of 2 to 5 pounds of DDT per 50-foot tree, which may be the equivalent of as much as 23 pounds per acre where elms are numerous) and often again in July, at about half this concentration. Powerful sprayers direct a stream of poison to all parts of the tallest trees, killing directly not only the target organism, the bark beetle, but other insects, including pollinating species and predatory spiders and beetles. The poison forms a tenacious film over the leaves and bark. Rains do not wash it away. In the autumn the leaves fall to the ground, accumulate in sodden layers, and begin the slow process of becoming one with the soil. In this they are aided by the toil of the earthworms, who feed in the leaf litter, for elm leaves are among their favorite foods. In feeding on the leaves the worms also swallow the insecticide, accumulating and concentrating it in their bodies. Dr. Barker found deposits of DDT throughout the digestive tracts of the worms, their blood vessels, nerves, and body wall. Undoubtedly some of the earthworms themselves succumb, but others survive to become "biological magnifiers" of the poison. In the spring the robins return to provide another link in the cycle. As few as 11 large earthworms can transfer a lethal dose of DDT to a robin. And 11 worms form a small part of a day's rations to a bird that eats 10 to 12 earthworms in as many minutes.

Not all robins receive a lethal dose, but another consequence may lead to the extinction of their kind as surely as fatal poisoning. The shadow of sterility lies over all the bird studies and indeed lengthens to include all living things within its potential range. There are now only two or three dozen robins to be found each spring on the entire 185-acre campus of Michigan State University, compared with a conservatively estimated 370 adults in this area before spraying. In 1954 every robin nest under observation

by Mehner produced young. Toward the end of June, 1957, when at least 370 young birds (the normal replacement of the adult population) would have been foraging over the campus in the years before spraying began, Mehner could find *only one young robin*. A year later Dr. Wallace was to report: "At no time during the spring or summer [of 1958] did I see a fledgling robin anywhere on the main campus, and so far I have failed to find anyone else who has seen one there."

Part of this failure to produce young is due, of course, to the fact that one or more of a pair of robins dies before the nesting cycle is completed. But Wallace has significant records which point to something more sinister—the actual destruction of the birds' capacity to reproduce. He has, for example, "records of robins and other birds building nests but laying no eggs, and others laying eggs and incubating them but not hatching them. We have one record of a robin that sat on its eggs faithfully for 21 days and they did not hatch. The normal incubation period is 13 days. . . . Our analyses are showing high concentrations of DDT in the testes and ovaries of breeding birds," he told a congressional committee in 1960. "Ten males had amounts ranging from 30 to 109 parts per million in the testes, and two females had 151 and 211 parts per million respectively in the egg follicles in their ovaries."

Soon studies in other areas began to develop findings equally dismal. Professor Joseph Hickey and his students at the University of Wisconsin, after careful comparative studies of sprayed and unsprayed areas, reported the robin mortality to be at least 86 to 88 per cent. The Cranbrook Institute of Science at Bloomfield Hills, Michigan, in an effort to assess the extent of bird loss caused by the spraying of the elms, asked in 1956 that all birds thought to be victims of DDT poisoning be turned in to the institute for examination. The request had a response beyond all expectations. Within a few weeks the deep-freeze facilities of the institute were taxed to capacity, so that other specimens had to be refused. By 1959 a thousand poisoned birds from this single community had been turned in or reported. Although the robin was the chief victim (one woman calling the institute reported 12 robins lying dead on her lawn as she spoke), 63 different species were included among the specimens examined at the institute.

The robins, then, are only one part of the chain of devastation linked to the spraying of the elms, even as the elm program is only one of the multitudinous spray programs that cover our land with poisons. Heavy mortality has occurred among about 90 species of birds, including those most familiar to suburbanites and amateur naturalists. The populations of nesting birds in general have declined as much as 90 per cent in some of the sprayed towns. As we shall see, all the various types of birds are affected—ground feeders, treetop feeders, bark feeders, predators. . . .

As the habit of killing grows—the resort to "eradicating" any creature that may annoy or inconvenience us—birds are more and more finding themselves a direct target

of poisons rather than an incidental one. There is a growing trend toward aerial applications of such deadly poisons as parathion to "control" concentrations of birds distasteful to farmers. The Fish and Wildlife Service has found it necessary to express serious concern over this trend, pointing out that "parathion treated areas constitute a potential hazard to humans, domestic animals, and wildlife." In southern Indiana, for example, a group of farmers went together in the summer of 1959 to engage a spray plane to treat an area of river bottomland with parathion. The area was a favored roosting site for thousands of blackbirds that were feeding in nearby cornfields. The problem could have been solved easily by a slight change in agricultural practice—a shift to a variety of corn with deep-set ears not accessible to the birds—but the farmers had been persuaded of the merits of killing by poison, and so they sent in the planes on their mission of death.

The results probably gratified the farmers, for the casualty list included some 65,000 red-winged blackbirds and starlings. What other wildlife deaths may have gone unnoticed and unrecorded is not known. Parathion is not a specific for blackbirds: it is a universal killer. But such rabbits or raccoons or opossums as may have roamed those bottomlands and perhaps never visited the farmers' cornfields were doomed by a judge and jury who neither knew of their existence nor cared.

And what of human beings? In California orchards sprayed with this same parathion, workers handling foliage that had been treated *a month* earlier collapsed and went into shock, and escaped death only through skilled medical attention. Does Indiana still raise any boys who roam through woods or fields and might even explore the margins of a river? If so, who guarded the poisoned area to keep out any who might wander in, in misguided search for unspoiled nature? Who kept vigilant watch to tell the innocent stroller that the fields he was about to enter were deadly—all their vegetation coated with a lethal film? Yet at so fearful a risk the farmers, with none to hinder them, waged their needless war on blackbirds.

In each of these situations, one turns away to ponder the question: Who has made the decision that sets in motion these chains of poisonings, this ever-widening wave of death that spreads out, like ripples when a pebble is dropped into a still pond? Who has placed in one pan of the scales the leaves that might have been eaten by the beetles and in the other the pitiful heaps of many-hued feathers, the lifeless remains of the birds that fell before the unselective bludgeon of insecticidal poisons? Who has decided—who has the *right* to decide—for the countless legions of people who were not consulted that the supreme value is a world without insects, even though it be also a sterile world ungraced by the curving wing of a bird in flight? The decision is that of the authoritarian temporarily entrusted with power; he has made it during a moment of inattention by millions to whom beauty and the ordered world of nature still have a meaning that is deep and imperative.

**Questions**

1. What evidence did Carson present to support her argument?
2. Focusing on the last paragraph of the excerpt, explain how Carson's book might have mobilized environmental activists.
3. Compare and contrast Carson's attitude toward nature with John Muir's in Document 16-12.