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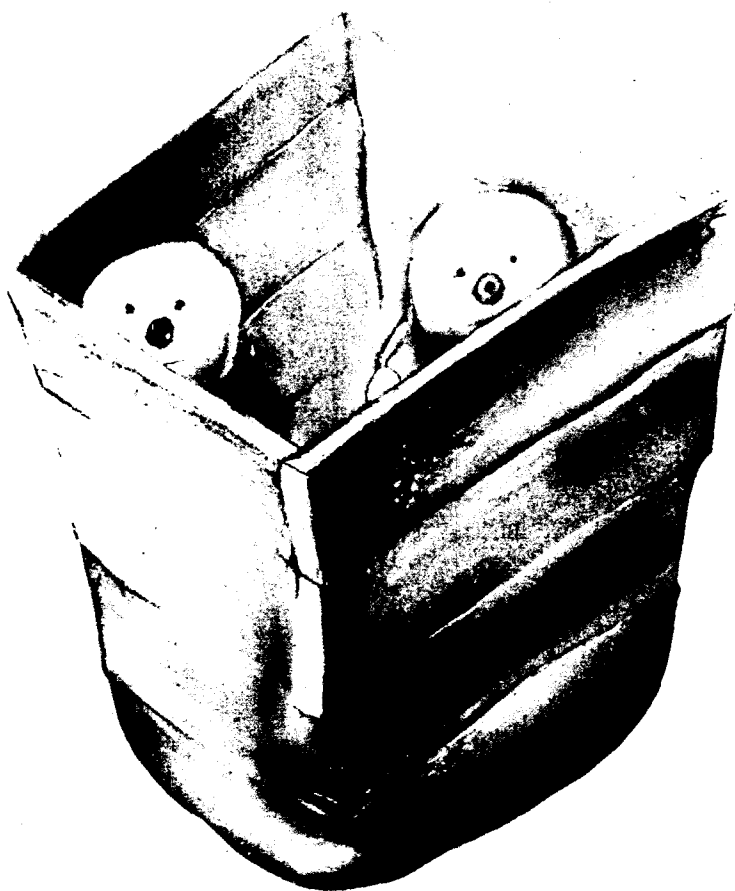


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David F. DeSante wanted to know why the birds had stopped singing in the summer of 1986.

His search for an answer would lead him to a startling conclusion—one with implications far beyond his own field of ornithology.

insects, which, in the vicinity of PRBO, primarily emerge from flowing water in small creeks that contain decomposing materials.

So whatever had affected the majority of the birds at the observatory appeared to involve the primary production food chain, or food web—such as caterpillars and other lar-

vae that eat new plant growth, and are, in turn, eaten by many bird species. DeSante's explanation as to how Chernobyl fallout could have spurred infant and juvenile bird mortality is based on the fact that radioactive contaminants become increasingly concentrated as they move up the food chain.

A potent example of this "transfer factor," which measures the amount of radiation transferred and concentrated in the food web, is that fish that feed on algae and ocean sediments have been found to concentrate radionuclides to levels far surpassing the amounts found in the water in which they live.

So it would follow that woodpeckers and swallows—which feed on insects that in turn feed on dead and decaying wood and vegetation, which absorbs no rainwater and hence no iodine-131, the primary radioactive isotope found in North American Chernobyl fallout—would be the least affected. In fact, those birds showed no decline at all. However, other insectivorous birds showed declines of 63 to 65 percent. Foods such as caterpillars and other insect larvae are important sources of forage for the Warbling Vireo and Black-headed Grosbeaks, which suffered a complete reproductive failure in the vicinity of PRBO in 1986. Seed-eaters showed a decline of about 50 percent. Circumstantial evidence was strong for DeSante's food-web hypothesis.

The effects of iodine-131 are well-documented in sheep, cattle, swine and humans, but no comparable studies have been conducted on birds. The isotope, which has a half-life of eight days and a full radioactive life of 160 days, tends to accumulate in the thyroid, where it proceeds to disrupt the production of vital body-regulating hormones. This can result in health problems ranging from reproductive problems, hypothyroidism and mental retardation to respiratory problems and lowered immune system response. DeSante believes that ingestion of the isotope may have similar effects on birds.

This opinion is not shared by I. Lehr Brisbin, senior staff scientist at the Savannah River Ecology Laboratory (SREL). The lab is located on land where nuclear reactors at the Savannah River Plant have been secretly releasing radiation for three decades. For example, in 1956, 1,576 curies of iodine-131 were released from the plant without public notice. By way of comparison, Three Mile Island's nuclear power plant released about 14 curies of iodine-131 in 1979.

The "weather thing": "I would be orienting toward a weather thing," Brisbin told *In These Times*. "There is no question in my mind that something happened," yet he said he remained skeptical of the Chernobyl hypothesis.

But even a cursory examination of weather records and bird productivity data for the past decade at PRBO and other bird observatories that noted a decline in landbirds reveals that a "weather thing" in 1986 was not the cause. However, the reproductive failures did coincide geographically with the rain associated with the passage of the May 6, 1986, Chernobyl cloud over coastal Washington, Oregon and northern California. No past heavy spring rains, the most severe drought of the century in 1976-77 or other unusual weather conditions, such as the 1982-83 El Niño winter of excessive rainfall, produced such severe effects on PRBO landbird productivity as seen in the summer of 1986. These events resulted in only a 19 percent to 32 percent decline, compared to a 62.5 percent reduction in 1986 at PRBO, according to DeSante.

Brisbin said that SREL twice analyzed 34 dead birds—representing 16 species that DeSante recovered during the 1986 banding operation—and found that they were "completely clean" of any radioactive isotopes, although he refused to release the test results to *In These Times*.

It is not surprising that Brisbin's tests did

not detect the short-lived iodine-131, because his tests were conducted more than a year after the birds died. But Brisbin said that no cesium-137, which has a half-life of 30 years and a full radioactive life of 600 years, was detected either. He said this proves that iodine-131 could not be implicated in the bird deaths since "it is absolutely physically impossible for the iodine-131 to fall from the sky without the cesium." Thus he believes that iodine-131 could not have caused any problems.

"The bottom line," Brisbin stressed, "is that whether it is xenon, plutonium or iodine, or any isotope, it is impossible for the fallout to get into the food web and into the bird without some cesium showing up. Cesium is the most ubiquitous, the easiest detected, and would be selectively taken up and stored in the skeletal muscles. Now we're talking about 35 years worth of study on this very same process—how radioactive contaminants cycle through the environment and food chains—here at the Savannah River Plant."

But Brisbin's explanation leaves much unexplained. Although a score of short- and long-lived radionuclides were detected over Paris on April 29, 1986, three days after the accident began, the composition of the Chernobyl fallout varied as the reactor core continued to burn for 10 more days. Japanese scientists noted in the June 1986 issue of the British journal *Nature* that "the highest concentrations of radioactivity, to which iodine-131 was the chief contributor, were found in the samples collected between May 5 and 10, and persisted for several days."

No one knows for sure how much iodine-131 fell on northern California during the Chernobyl fallout because the Environmental Protection Agency (EPA) did not monitor there. However, in cities such as Portland, Ore., and Olympia and Spokane, Wash., similar in climate to northern California, samples showed high levels of iodine-131 in the rain from May 5-22, 1986. The highest level of

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British bird data shows similar trend

British ornithologists may have unwittingly witnessed the aftereffects of Chernobyl on many varieties of birds as late as the summer of 1987. Without attributing the cause to Chernobyl, the British Trust for Ornithology reported in the March/April 1988 issue of the *British Trust News* that the number of adult birds caught in 1987 at 63 sites in Great Britain and Ireland was much lower than in 1986, and that the number of captured young birds in 1987 was much greater than that of the previous year.

Ornithologist David F. DeSante, formerly of the Point Reyes Bird Observatory, said that these findings were "perfectly analogous" to the 1987 landbird data he and his co-researchers collected. "Their results were not as severe as ours, but it shows exactly the same trend," he said. "We also captured relatively few adults birds in 1987. This was to be expected, of course, because so few young were produced in 1986."

Although the number of birds netted last summer by DeSante and his co-workers was higher than that of 1986 and 1987, the ornithologist said he doesn't expect the adult birds to achieve their pre-1986 population levels until 1990 or 1991.

—K.M.