



Is DDT Here to Stay?

Thanks to Rachel Carson's crusade, DDT was banned and birds are rebounding. If only it were that simple.

By Peter Friederici Published: Audubon May-June 2012

Like the power of the atom, DDT was one of the technological geniuses unleashed by the convulsions of World War II. A Swiss chemist discovered the potent insecticidal properties of this synthetic organochlorine in the late 1930s. Soon Allied health officials were using it to save the lives of thousands of soldiers and civilians from such wartime scourges as typhus and malaria.

But like the pervasive idea that electricity generated by nuclear power would be "too cheap to meter," DDT was quickly oversold. "How magic is DDT?" asked a 1945 article in the *Saturday Evening Post* (maybe not magic, the author concluded, but "of great importance to all of us"). Farmers began applying it to fields to control such common pests as cotton bollworms; pilots doused woodlands infested with spruce budworms and suburbs for gypsy moths; public health departments sprayed entire towns to control Dutch elm disease. And then, in 1962, Rachel Carson stepped in to document the unintended consequences: the wholesale slaughter of songbirds and fish, widespread reproductive failures in bald eagles, the evolution of DDT-resistant strains of mosquitoes, troubling hints of pesticide accumulation in human tissues.

The result was a watershed event in Americans' understanding of their impact on the environment. Carson's detailed exposes on the perils of such dangerously toxic chemicals as aldrin, chlordane, dieldrin, and many others inspired conservationists and paved a way for the chemicals' banishment from the marketplace. More broadly, her warnings about overconfidence in the efficacy and safety of agricultural chemicals kick-started the modern environmental movement, culminating in the formation of the federal Environmental Protection Agency and its mandate to assess and control chemical pollution in air, water, and land.

Carson's warnings also eventually led to a federal ban on most domestic uses of DDT. It took effect in 1972, echoing similar decisions in some other countries. Today the international Stockholm Convention forbids the pesticide's use in agriculture. Bird species whose numbers declined so dramatically from

DDT-induced reproductive failures in the 1950s, '60s, and '70s--bald eagles, peregrine falcons, ospreys, brown pelicans--have recovered handily. (The chemical lasts long enough in soils, marine sediments, and food webs, though, that some California condors nesting near the Pacific Coast have recently faced dangerous thinning of their eggshells because they feed on the carcasses of sea lions that live offshore from what was once the nation's largest DDT factory.)

End of story, with a happy ending, right? Not quite. The DDT saga continues, because one of the principal maladies it is good at combating--malaria--remains a persistent health threat. Experts estimate that somewhere around three-quarters of a million people die of malaria each year, most of them young children in sub-Saharan Africa. Critics have hyperbolically pointed to Carson's legacy of pesticide regulation and control as a primary cause of this continuing toll. As the author Michael Crichton put it in his scientifically dubious but bestselling 2004 thriller *State of Fear*: "Banning DDT killed more people than Hitler."

Used precisely and in small quantities, DDT can, in fact, play an important role in controlling malaria. Mosquitoes that spread it often rest indoors on walls or ceilings. A single dose sprayed on those surfaces can repel or kill them for months. This is not the only insecticide that works in so-called indoor residual spraying, but it is long-lasting and can be cost-effective.

Excessive reliance on indoor use, though, carries with it some of the same risks as the widespread agricultural spraying of yesteryear. In some places mosquitoes have become resistant to DDT and other often-used anti-malarial insecticides. And though DDT is not nearly as toxic as many other pesticides, researchers have documented hints of human health problems. For example, exposure to the chemical has been linked to premature discontinuance of lactation in mothers, which in poor regions may result in increased child mortality.

Fortunately, the pesticide is far from the only tool in the public health arsenal. In a recent review appearing in *The Lancet*, Brian Greenwood of the London School of Hygiene and Tropical Medicine and colleagues noted that indoor spraying with DDT likely helped lower malaria rates in some parts of Africa. But Greenwood mentions that the disease's incidence has also declined in regions where DDT has not been in use, because of the wide distribution of mosquito nets treated with other insecticides and designed to fit over beds.

"DDT still has a little role to play," he says, "and people in the malaria-control community would be reluctant to have it taken away. But definitely nets are the most important tool. They are easier to distribute and use. Spraying is difficult to do--you have to take everything out of the house, and you need skilled people to do it."

Contrary to what some of her critics have claimed, Carson didn't call for the abolition of pesticides in *Silent Spring*. Rather, she called for a measured approach, one that acknowledges that technology doesn't provide us with magic but with complex options. As she approvingly quoted one entomologist as saying: "Practical advice should be 'Spray as little as you possibly can' rather than 'Spray to the limit of your capacity.'"