

Rachel Carson and the legacy of Silent Spring

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Fifty years after the publication of the book that laid the foundations for the environmental movement, what have we learned from the biologist who saw the need for science to work with nature?

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Near a brook in south-east England, the bird-spotter JA Baker stumbled on a grim little scene in 1961. "A heron lay in frozen stubble. Its wings were stuck to the ground by frost. Its eyes were open and living, the rest of it was dead. As I approached, I could see its whole body craving into flight. But it could not fly. I gave it peace and saw the agonised sunlight of its eyes slowly heal with cloud."

The bird's plight was clearly unnatural. Nor was its fate unique. That year, large numbers of dead birds were found strewn across the countryside. On the royal estate in Sandringham, for example, the toll included thrushes, skylarks, moorhens, goldfinches, sparrowhawks, chaffinches, hooded crows, partridges, pheasants, and wood pigeons. Nationally, more than 6,000 dead birds were reported to the Royal Society for the Protection of [Birds](#), a massive leap on previous years. "We were inundated," says the RSPB's conservation director, Martin Harper.

The UK was not alone. For years, reports in the US indicated that numbers of birds, including America's national bird, the bald eagle, were dropping alarmingly. Ornithologists also noted eggs were often not being laid while many that were laid did not hatch. Something was happening to the birds of the western world.

Several causes were proposed – poisons, viruses or other disease agents – but no one had a definitive answer or seemed sure of the cause – with one exception: [the biologist Rachel Carson](#). For most of 1961, she had locked herself in her cottage in Colesville, Maryland, to complete her book, *Silent Spring*. It would provide an unequivocal identification of the bird killers. Powerful synthetic insecticides such as DDT were poisoning food chains, from insects upwards.

"Sprays, dusts and aerosols are now applied almost universally to farms, gardens, forests and homes – non-selective chemicals that have the power to kill every insect, the 'good' and the 'bad', to still the song of the birds and the leaping of fish in the streams, to coat the leaves with a deadly film and to linger on in the soil – all this though the intended target may be only a few weeds or insects," she wrote. One or two authors had previously suggested modern pesticides posed dangers. None wrote with the eloquence of Carson.

Serialised in the *New Yorker* during the summer of 1962, *Silent Spring* was published that September. It remains one of the most effective denunciations of industrial malpractice ever written and is widely credited with triggering popular ecological awareness in the US and Europe. Friends of the Earth and Greenpeace trace their origins directly to *Silent Spring*. "In the 60s, we were only just waking up to the power that we had to damage the natural world," says Jonathon Porritt, a former director of Friends of the Earth. "Rachel Carson was the first to give voice to that concern in way that came through loud and clear to society." Or as Doris Lessing put it: "Carson was the originator of ecological concerns."

We have much to thank Carson for: a powerful green movement, an awareness that we cannot punish our wildlife indiscriminately and an understanding of the fragility of nature's food chain. But is the environment in better shape today? Have we saved the planet? Or is it in greater peril than ever? Fifty years after *Silent Spring* was published, as the world warms, sea levels rise and coral reefs crumble, these questions have acquired a new and urgent relevance.

Rachel Carson possessed a rare combination of gifts. She was a brilliant marine biologist and a superb writer whose prose was exquisite in its precision and lyricism. In 1952, she won a US National Book award for *The Sea Around Us*. Yet her most famous work, *Silent Spring*, is surprisingly difficult to get through. "It is dense and technical and not a book for the beach," says ornithologist Conor Mark Jameson, author of [Silent Spring Revisited](#), a re-examination of Carson's legacy. "By current standards of science writing, it is awkward stuff."

Literary fashions have changed, of course, though other, intriguing factors give *Silent Spring* a strange resonance to modern ears. In particular, Carson's relentless style is striking and unexpected, filled as it is with tales of pesticide misuse that often show little variation in tone or detail. There is the slaughter at Clear Lake, California, of grebes and gulls, poisoned by a pesticide used merely to eradicate a harmless gnat. There are the cases of aerial spraying of DDT – to eliminate gypsy moths and fire ants – which wiped out blackbirds and meadowlarks. There are the links between pesticides and genetic damage in humans. And the list goes on. Were she not such a gifted writer, the effect could have been soporific.

Her remorseless approach was deliberate, however. Carson was trying to do more than end an iniquitous practice. She had decided to write "a book calling into question the paradigm of scientific progress that defined postwar American culture," says her biographer Mark Hamilton Lytle. She was amassing her evidence, in short.

It was a brave effort. Even legitimate criticism of government policy was a risky act in the US then. "Science and technology and those who worked in these fields were revered as the saviours of the free world and the trustees of prosperity," says another biographer, Linda Lear. "In *Silent Spring*, Rachel Carson exposes these experts to public scrutiny and makes it clear that at best they had not done their homework and at worst they had withheld the truth."

From this perspective, the book is not just an ecological alarm call. It is an assault on the paternalism of postwar science, though to be fair to its practitioners, many provided background material and checks of Carson's manuscripts in anticipation of the expected furious response of US industry.

And America's chemical giants did not disappoint. They tried to sue her, the *New Yorker* and her publisher, Houghton Mifflin. When this approach failed, they launched a \$250,000 publicity campaign to rubbish Carson and her science. She was derided for being hysterical and unscientific and for being an unmarried woman. "She was an alarmist, they claimed," Lear states. "She kept cats and loved birds. Even a former US secretary of agriculture was known to wonder in public 'why a spinster with no children was so interested in genetics'. Her unpardonable offence was that she had overstepped her place as a woman."

Carson was now suffering from breast cancer and the effects of her radiotherapy. Yet she fought back. At the Women's National Press Club, she denounced the links that had been established between science and industry. "When a scientific organisation speaks," she asked, "whose voice do we hear – that of science or of the sustaining industry?" The question remains as pertinent today as it did in 1962.

The furore had one beneficial effect for Carson. Sales of *Silent Spring* soared, reaching a million by her death in April 1964. Pressed for his views on it, President John F Kennedy admitted an interest and later

instructed his science advisory committee to investigate her claims. Its report vindicated Carson. Widespread use of pesticides was allowing poisons to build up in the food chain, posing a real risk to humans. Ten years and two presidents later, the production of DDT and its use in agriculture was banned in the US. Britain officially banned its use some years later.

Carson's opponents have long memories, however. Websites, many established by rightwing institutions backed by US industry, claim that she was a mass murderer who killed more people than the Nazis, for example. The DDT ban was responsible, these sites argue, for the deaths of countless Africans from malaria that would have been controlled had the west not stopped making the pesticide.

The claims are rejected by science historians Naomi Oreskes and Erik M Conway. DDT was banned not just because it was accumulating in the food chain but because mosquitoes were developing resistance to it, they state. Nevertheless, groups still blame Carson for the current blight of malaria.

US climate scientist Michael E Mann offers another explanation for this perverse belief. "Those who oppose the environment movement have developed a special strategy: 'Whenever you get the chance: attack the icon.' Then you can say the whole cause must be tainted because you have thrown so much mud at the figurehead," says Mann, himself a victim of internet vilification over his climate research. "Rachel Carson is certainly an icon. Hence her treatment. Her story has so many resonances."

In fact, Carson's warnings are still highly relevant, both in terms of the specific threat posed by DDT and its sister chemicals and to the general ecological dangers facing humanity. "The seas are now witnessing the land horrors she described in *Silent Spring*," says oceanographer Callum Roberts, of York University. "The seas are the ultimate sinks. Chemicals get washed out of the soil and into streams and rivers. They should settle on the sea bed and stay there. However, fishing has become so intense, with boats dredging up scallops and bottom-welling fish all the time, that we are constantly ploughing up these toxins, including DDT, and stirring them back into the water."

Roberts points to the bottlenose dolphins of Sarasota Bay, Florida, as typical victims. "When a mother dolphin has her first offspring, she transfers a huge part of her body's burden of chemicals, including toxins, to her first-born. As a result, 70% of first-born calves die within a year."

Nor have matters improved on land. Neonicotinoids, insecticides used in seed dressing, [have been linked to colony collapse disorder in honeybees](#), a condition that saw 800,000 hives wiped out in the US in 2007 alone, while vultures in Asia have been wiped out by the chemical [diclofenac](#) used on farms. As Carson wrote: "Chemical war is never won and all life is caught in its violent crossfire."

It is a lesson that seems to have been lost over the decades, however. "Carson believed we had to have a balance between ourselves and nature but the urge to have a macho-domination of the planet seems just as strong as it was in 1962," says Porritt. "We have made much less progress than we hoped for then."

Jameson agrees. "Was she right? Emphatically so. Was she heeded? Well, over DDT, she was. But her broad message, that we need to act in moderation and achieve a balance with nature, has still not been fully grasped."

Martin Harper of the RSPB is also cautious. "It took 10 years to get DDT banned after its effects had been demonstrated. And similarly today, when warned about a chemical's danger, governments wait until research results are unequivocal. Then they suggest industry takes voluntary action. Only when that fails does it issue a ban, years too late."

Rachel Carson's legacy is therefore difficult to assess. More than any other individual, she helped raise awareness about humanity's potential to wreak havoc on nature and we should be grateful. But it is equally clear that the planet is in a far worse state today than it was in 1962. The population has risen from 3.1 billion to 6.9 billion, seas are being drained of fish, wild places destroyed and wildlife devastated.

"I think she would have been horrified about the state of the planet today," Porritt admits. "*Silent Spring* outlined a clear and important message: that everything in nature is related to everything else. Yet we have not taken that idea on board or fully appreciated its significance. In that sense, we have let her down."

A force of nature: Rachel Carson in print

Rachel Louise Carson was born in 1907 in the river town of Springdale, Pennsylvania, the youngest of three children. She inherited her deep love of nature from her intelligent and forceful mother, Maria, and studied at the Woods Hole Marine Biological Laboratory and later Johns Hopkins University, in Baltimore. She proved to be a gifted writer as well as a first-rate scientist. She began writing for the *Baltimore Sun* and in 1936 was made editor-in-chief for publications for the US Fish and [Wildlife Service](#).

In 1951, she wrote [The Sea Around Us](#), which became an award-winning bestseller. That year she resigned from the Fish and Wildlife Service to devote herself to her writing.

By this time, Carson was becoming increasingly worried about the indiscriminate use of synthetic chemical pesticides. The end result was [Silent Spring](#), last week voted the [book of ideas that has made most impact over the past 50 years](#) by a poll organised by the Bristol Festival of Ideas. Carson had difficulty picking a title, however. Among those she considered was "Man Against Nature". However, her agent disliked it and suggested she take the heading of one chapter on birds, Silent Spring, for the overall title of her book. It proved to be an inspired suggestion. "The idea of a silenced spring is both a 'doomsday' scenario and the contemplation of descent to a kind of purgatory," says Conor Mark Jameson, in [Silent Spring Revisited](#) (published this month by Bloomsbury). "Carson has taken on the status of a prophet, creator of a new testament for our ecological times."

Carson lived long enough to see *Silent Spring* become a major publishing success and to know it was destined for greatness. As her biographer Linda Lear states in [Rachel Carson: Witness for Nature](#): "Her courage in sounding the alarm and her ecological vision of the oneness of all life indelibly shaped the contemporary environmental movement and anticipated the global crisis we face in the 21st century."

One organisation that can trace its existence to Carson's work is the US Environmental Protection Agency, "the extended shadow of *Silent Spring*", as one writer described it. In 1980, Carson was posthumously awarded the Presidential Medal of Freedom, the highest civilian honour in the US, by Jimmy Carter.