Articles

THE OTHER SIDE OF SILENCE: RACHEL CARSON'S VIEWS OF ANIMALS

by Marc Bekoff and Jan Nystrom

Abstract. The publication of Rachel Carson's *Silent Spring*, a compelling blend of stories, natural history, human values, and biological facts, in 1962 was instrumental in launching the modern environmental movement. We consider Carson's attitude toward animals in *Silent Spring* and in her other writings. Carson favored responsible stewardship and was more of an animal welfarist and environmentalist/conservation biologist who privileged ecosystems and species than an animal activist who privileged individuals, and she did not advocate an animal-rights agenda. There is clear tension in Carson's writings. Often she seems troubled by attempting to come across as a moderate and practical scientist, and some of her words, when considered out of context, could lead one to label her as an animal-rightist. While some of Carson's writing favors human-centered interests, she did not believe that only humans counted. Her warnings about silent springs must be taken seriously, perhaps even more seriously than when they were penned more than four decades ago. Carson was a passionate and extremely influential activist and if a world of persons like her were in charge of our global environmental policies, we and our fellow animals would be in much better shape than we currently are.

Keywords: *And No Birds Sing*; animal rights; animal welfare; Rachel Carson; conservation biology; DDD; DDT; environmentalism; *Lost Woods*; pesticides; *Silent Spring*.

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Rachel Carson and Animals: An Overview

The publication of Rachel Carson's *Silent Spring* in 1962 is widely regarded as one of the major events that launched the modern environmental movement. *Silent Spring* is a compelling blend of stories, natural history, human values, and biological facts. It is about more than just the cumulative and devastating biological effects of pesticides ("biocides" or "elixirs of death" [1962, 8, 15]) that result in environments devoid of melodious birdsong. It is about life itself, focusing on the many different webs of nature that go unnoticed, misunderstood, and unappreciated until we lose them. *Silent Spring* catalyzed grass-roots movements, sparked a presidential investigation, raised awareness among the general public about the effects of pesticides, and resulted in the banning of DDT in the United States and the development of tests for pesticides.

Carson was a courageous activist with a practical bent. She exhorted us to reconsider the choices we make concerning our fundamental relationship to nature, an alliance that should be teeming with appreciation, awe, humility, connection, harmony, and reverence rather than with dismissal, arrogance, control, distance, discord, and irreverence. Education is critical. Carson not only issued a wakeup call for us to do something about how we destroy and desecrate nature but also demanded that we wake up our senses and our sensitivity—that we keep our senses alive.

In this essay we consider Carson's attitude toward animals in *Silent Spring* and in other texts. Despite the facts that she was raised to love nature and animals, wrote beautiful, passionate, empathic, and sometimes anthropomorphic prose about animals, used anecdotes to celebrate the lives, beauty, and fates of individual animals, species, and ecosystems, spoke out about the use of such contraptions as live traps, and penned a strong and impassioned preface to a book about the appalling abuse and torture of animals in slaughterhouses in the United Kingdom, very little direct attention has been given to Carson's views about our moral responsibilities to, and the moral standing of, animals. Many of the animal issues with which Carson was troubled are in the forefront of present-day concerns. Carson used animals as indicators of environmental destruction and the well-being of ecosystems, and she deeply lamented their pains and suffering at the hands of humans. The absence or silence of animals is intolerable—and a warning that something is very wrong. Their silence indicates that an ecosystem has been poisoned. And what befalls the animals befalls us as well.

Some of the specific questions with which we are concerned either directly or indirectly are: What were Rachel Carson's attitudes toward animals? Was she an animal activist? Was Carson an animal welfarist or an animal rightist? Did she "hold back" her more radical views about animals for fear of alienating the general public and so undermine her goal of alerting us to the dangers of pesticides? Might she have been more open about

her feelings about animals if she did not have another agenda? Was she conflicted about the way animals were used by humans for human ends? Did she have occasional human-centered leanings in her overall ethic of making the world a better place for all beings? Can her views about people having a "right" to enjoy animals and nature be reconciled with how she viewed the "rights" of people who hunt and fish? What would socially responsible science look like to Carson? Did she consider a hands-off policy as an alternative strategy for some of the issues with which she was concerned? Is *Silent Spring*, clearly a call to action and a personal vision, also a book of hope? Needless to say, many of these questions cannot readily be answered yes or no.

We cannot deal in great detail with all of these or other questions that arise, but we think that it is appropriate and instructive to look closely at *Silent Spring* to try to understand Carson's views on animals and animal well-being. We begin by discussing different positions on animal protection (animal welfare and animal rights) that inform decisions about animal use and policy and then review some issues with which animal protectionists, environmentalists, and conservation biologists are concerned. Next we consider a number of ways in which humans intrude on the lives of animals at different levels of organization ranging from ecosystems to species to populations to individuals. Human beings are an invasive species. We intrude intentionally and unintentionally on ecosystems and animals wherever and whenever we choose. But we really are part of the story, part of nature's complicated and magnificent webs. Carson's primary concern was not with intentional human infringements but with how we live, how the chemicals we were using were degrading the environment and poisoning animals. Human infringements also include translocating—introducing and reintroducing—animals from one ecosystem to another (often referred to as "redecorating" nature [see Bekoff 2000a] or "faking" nature [see Elliot 1997]), trapping them, and using them for food and in education, in research, and for amusement and entertainment. Carson wrote about some of these types of intrusions.

We then attempt to determine Carson's position on animal protection by closely analyzing *Silent Spring* and some of her other writings. Her lyrical and passionate language celebrates the lives of individual animals, but she also often defers to the "rights" of people, from birdwatchers to hunters, to justify why we should protect ecosystems and thus the animals who live there, rather than deferring to the rights of the animals themselves. Her perspective ranges from reductionism to holism and from that of a moderate animal welfarist to that of a more extreme animal rightist, and she also freely commingles facts and values. She supported reverence for all life, an attitude similar to that espoused by Albert Schweitzer, a man she clearly admired, decried the slaughterhouses in the United Kingdom, and advocated for animals, yet often she described animals and ecosystems

not in terms of their intrinsic value but in terms of their value to humans. In some instances it is difficult to say just where Carson falls in the animal-protection arena. However, if we let her own words speak for themselves, we may determine if and how Carson attempted to resolve the conflicting views in her prose.

Animal Welfare and Animal Rights: A Brief Overview

In order to locate Carson's views on animals we first review the general differences between animal welfare and animal rights. Many animals suffer and feel pain (for general discussion see Bekoff 2000a, b; 2002), and because of this we should be careful not to cause them unnecessary pain and suffering. While some people believe that it is all right to cause animals pain and suffering if humans benefit, others believe that human benefits do not justify this. Some argue that it is all right to trade off individual animals for the good of their species, even if some individuals suffer and die. Most environmentalists and conservation biologists adopt this stance (Bekoff and Jamieson 1996; Bekoff 2001; see also Estes 1998).

Persons who believe that humans are allowed to cause animals pain but must be careful not to cause them excessive or unnecessary pain argue that, if we consider the animals' welfare or well-being, that is all we need to do. These persons are typically called *welfarists*. Welfarists are concerned with the quality of animals' lives. But welfarists do not believe that animals' lives are valuable in and of themselves, that it is just because animals are alive that their lives are important. Welfarists believe that if animals experience comfort, appear happy, experience some of life's pleasures, and are free from prolonged or intense pain, fear, hunger, and other unpleasant states, we are fulfilling our obligations to them. If individuals show normal growth and reproduction and are free from disease, injury, malnutrition, and other types of suffering, they are doing well. The welfarists' position also assumes that it is all right to use animals to meet human ends as long as certain safeguards are used. They believe that the use of animals in experiments and the slaughtering of animals for human consumption are permissible as long as these activities are conducted in a humane way. Welfarists do not want animals to suffer from any unnecessary pain, but they sometimes disagree among themselves about what pain is necessary and what humane care really amounts to. But welfarists agree that the pain and death animals experience is sometimes justified because of the benefits that humans derive.

Persons who believe that it is wrong to cause animals any pain and suffering and that animals should not be eaten, held captive in zoos, or used in painful research or in most or any research, are typically called *rightists*. They believe that animals have moral and legal rights that include the right not to be harmed and that animals' lives are valuable in and of them-

selves; their lives are not valuable because of what they can do for humans (their instrumental value) or because they look or behave like us. According to Gary Francione (2000), to say that an animal has a "right" to have an interest protected means that the animal has a claim, or entitlement, to have that interest protected even if it would benefit humans to do otherwise. Humans have an obligation to honor that claim for other voiceless animals just as they do for young children and the mentally disabled. So, if a grebe has a right to live in her native habitat, we have an obligation not to destroy or poison her home. (For general discussion of the differences between animal welfare and animal rights see Regan 1983; Singer 1990; Francione 2000, and for discussion of how different views are related to conservation biology see Estes 1998; Bekoff and Jamieson 1996; Bekoff 2000b; 2001; 2002.)

Environmentalists and conservationists usually are more concerned with populations, species, and ecosystems than with individuals. But some conservation biologists are troubled when making decisions about the relative value of individuals versus species, populations, and ecosystems. Clearly, so was Carson. Conservation biologist Jim Estes, discussing whether or not to rehabilitate oiled wildlife, specifically California sea otters, poignantly and succinctly gets to the heart of the matter:

> The differing views between those who value the welfare of individuals and those who value the welfare of populations should be a real concern to conservation biology because they are taking people with an ostensibly common goal in different directions. Can these views be reconciled for the common good of nature? I'm not sure, although I believe the populationists have it wrong in trying to convince the individualists to see the errors of their ways. The challenge is not so much for individualists to build a program that is compatible with conservation—to date they haven't had to—but for conservationists to somehow build a program that embraces the goals and values of individualists because the majority of our society has such a deep emotional attachment to the welfare of individual animals. . . . As much as many populationists may be offended by this argument, it is surely an issue that must be dealt with if we are to build an effective conservation program. (Estes 1998, 1157)

We can position Carson's views on animals (and the tension embodied in her text) by visiting the ongoing debate between animal rightists and environmentalists and conservation biologists. Rightists favor rights for or privileging individual animals, and environmentalists and conservation biologists typically favor rights for or privileging larger entities such as populations, species, or ecosystems. (It might be permissible for an individual to suffer or to die for the good of its species, though pain and suffering should be avoided whenever possible.) Carson is more of a practical welfarist, a stance usually adopted by environmentalists and conservation biologists, than an animal rightist. She chronicles much about webs of nature and webs of death and the importance of preserving nature's integrity, its goodness and wholeness, in all terrestrial and aquatic ecosystems.

Carson favored responsible stewardship. She privileged ecosystems and species over individuals and surely did not advocate an animal-rights agenda, although some of her words taken in isolation and out of context could lead one to the opposite conclusion. Although in her prose Carson often celebrates the lives of individual animals and describes them in very lyrical terms, her larger concern seems to be with healthy ecosystems and with how those ecosystems affect humans. Carson supported sport fishing and, in *Silent Spring*, noted that hunters' rights were being infringed upon when ecosystems were destroyed, but she also anguished over the sport killing of some sharks. She favored the introduction of nonnative shrews to Newfoundland as an alternative to the use of pesticides. Clearly, some of her text favors human-centered interests, but she did not believe that *only* humans counted.

Although we think that Carson should be considered more of an animal welfarist than a supporter of animal rights, we stress that this does not in any way lessen her significant impact on bettering the health of ecosystems and the well-being of numerous animals or her calling attention to the horrific effects of pesticides and "big science" contaminated by people—scientists on the take—with vested interests in the pesticide industry. If a world of Rachel Carsons were in charge of our global environmental policies, we and our fellow animals would surely be in much better shape than we currently are.

Redecorating and Silencing Nature: Human Intrusions into Animals' Lives

Before analyzing Carson's view of animals further, let us review briefly some of the issues with which animal protectionists are concerned and also some of the positions that they hold concerning the use of animals by humans. We offer representative examples to make general and specific points that relate to Carson's concerns about the effect of pesticides.

Human influences, also called anthropogenic effects, are rampant. We are here, there, and everywhere. Our just being out in nature, not even handling animals, can influence their behavior (Bekoff and Jamieson 1996; Bekoff 2001; 2002; Goodall and Bekoff 2002). Humans make a difference—directly and indirectly, intentionally and unintentionally—in the lives of just about all terrestrial, aquatic, and arboreal animals. We are a powerful and dominating force and an integral part of innumerable webs of nature. Along with our ubiquitous presence come deep responsibilities to step lightly into the lives of other animals. In his novel *Prey*, Michael Crichton writes of "the obstinate egotism that is a hallmark of human interaction with the environment" (2002, xii).

Not only do we influence the lives of other animals in an immediate sense, we also can effect long-lasting changes in their behavior (Bekoff in

press). Global warming is influencing the distribution and behavior of animals and resources such as food, water, and resting spots. It has been predicted that between 15 percent and 37 percent of species could go extinct between now and 2050 as a result of global warming. Trophy hunting is reducing the average size of horns among male bighorn sheep as large rams with big horns are selectively picked off. Selective hunting influences mating behavior such that there is less head butting among males for access to females during mating, and there might even be an influence on population genetics among these mountain monarchs. The feeding habits of bears who live around dumpsters change rapidly; they become active during the night rather than during the day to avoid humans, and these bears become obese and lazy. Fast food makes them fat. They also enter dens later in the fall and remain in them for shorter periods of time than do bears who do not forage at dumps. Hormones from cattle feed lots can demasculinize males and defeminize wild fish. Fishing can induce sex changes in fish. Animals such as cougars, coyotes, foxes, and deer often become so habituated to humans that rather than flee from us they become bold and curious and intrude into our neighborhoods. Often researchers inadvertently harm the very animals they want to study. Knowledge of how we affect the behavior of animals can help us make more informed and intelligent choices about how we interfere in their lives. There also is ample evidence that pesticides and other forms of environmental pollution affect the behavior of many animals (DellOmo 2002; Burger in press).

Carson was very concerned about humans' attempts "to mold Nature to our satisfaction" (1962, 245), to "redecorate Nature" (Bekoff 2000a; 2003). Animals are nonconsenting participants in these encounters and may also be, as Carson sympathetically notes, "incidental victims" (1962, 85). Carson was raised to love nature, and as a youngster she wrote stories about her experiences exploring her surrounds. Her philosophy about animals and other nature was clearly informed by these early experiences. In her own words,

> From what I have told you, you will know that a large part of my life has been concerned with some of the beauties and mysteries of the earth about us, and with even greater mysteries of the life that inhabits it. No one can dwell long among such subjects without thinking rather deep thoughts, without asking himself searching and often unanswerable questions, and without achieving a certain philosophy. (Lear 1997, 159)

Later we will return to what Carson might have thought about the havoc, pain, suffering, and death that we cause for innumerable innocent animals every second of every day.

Humans silence animals when we intrude into their lives and tamper with who they are and their habitats. Often, melodious birdsong and a wide variety of soothing and raucous sounds are extinguished. In addition

to the loss of sounds, we suffer when we lose the force of other sensory experiences—symphonies of visual images and odors—which celebrate the presence of other animals. Silent springs served as a clear warning that something bad was happening to the habitats in which birds lived, and we should indeed fear that silent springs may be followed by silent summers, falls, and winters if we do not change our ways and change them rapidly—today, not tomorrow.

When humans interact with nature we frequently wind up redecorating it, selfishly. Intentionally or not, humans seem to have a powerful inborn urge to reshape or recreate nature, to expand our horizons with few if any boundaries. We move animals around as we move furniture, and we redecorate landscapes with little concern for maintaining biological integrity. It seems that we cannot stop ourselves, and little else does—even the often horrific results of our trying to dominate, manage, and control our surroundings. Even during strolls in pristine forests, swims in oceans, or forays in the sky, many humans are detached and alienated from the majesty of their surroundings.

Human intrusions occur on different spatial and temporal scales and on various levels. We influence individuals, populations, species, and ecosystems. In addition, there are interactions among the different levels. Removing one individual from a group of animals influences not only that group but also the behavior of other groups of animals. As Carson and many others have noted, there are intricate and interconnected webs of nature, and these webs are very fragile.

Webs of Nature. Much of *Silent Spring* and Carson's other writings are concerned with the ways in which human activities disrupt the close interconnections of members of the earth community (see also Lear 1997; Cafaro 2002). She presents case after case of humans intruding on, destroying, and silencing ecosystems and intimately interconnected webs of nature.

The opening parable of *Silent Spring* portrays a healthy ecosystem as one in which humans and all other animals live in harmony, yet while Carson laments the loss of animal lives, her inclusion of animals often is cast largely in the value they bring to humans—birdwatchers and those who enjoy fishing or hunting. It is instructive to consider Carson's attitude toward animals, because it highlights many of the complex issues and also focuses attention on current debates and points of conflict between animals protectionists, environmentalists, and conservation biologists. Carson was concerned with our attempts "to mold Nature to our satisfaction" (1962, 245). The words she chose may reflect one way in which Carson attempted to resolve tension in her views about humans' proper relationship to nature. Some of Carson's most moving and empathic prose refers to webs of nature and their disruption and devastation. She displays

deep empathy, writing of "chains of devastation" when she refers to the death of robins as a result of a program to spray elm trees with pesticides, "one of the multitudinous spray programs that cover our lands with poisons" (1962, 109). About ninety species of birds, predators, and ground, treetop, and bark feeders suffered heavy mortality in this program.

Carson emphasized that we are all interconnected. When she wrote about the effect of arsenic in water pollution and the widespread occurrence of cancer she noted, "Here again we are reminded that in Nature nothing exists alone" (1962, 51). When she wrote about soil she stressed that the soil community "consists of a web of interwoven lives, each in some way related to the others—the living creatures depending on the soil, but the soil in turn a vital element of the earth only so long as this community within it flourishes" (p. 56). She also wrote, "For each of us, as for the robin in Michigan or the salmon in the Miramichi, this is a problem of ecology, of interrelationships, of interdependence" (p. 189). When she wrote about inshore waters she noted, "The inshore waters—the bays, the sounds, the river estuaries, the tidal marshes—form an ecological unit of utmost importance. They are linked so intimately and indispensably with the lives of many fishes, mollusks, and crustaceans that were they no longer habitable these seafoods would disappear from our tables" (p. 149). This last quote stresses not only the interconnectedness of all things but also human interests and raises the question of whether Carson would have been concerned with the absence of these animals as more than culinary delights. We believe she would have.

Persons who are interested in animals and conservation are keenly interested in webs of nature. Not surprisingly, the absence of close and reciprocal links among members of a community, however subtle, is the exception rather than the rule. Joel Berger and his colleagues (2003) note that while the notion of top-down regulation of communities by carnivores in terrestrial ecosystems has been controversial, their analyses lend support to top-down regulation in the Jackson Hole area of the Greater Yellowstone ecosystem. In Yellowstone Park there is evidence of an inverse relationship between wolf densities and elk abundance along with associated increases in the height of aspen suckers as elk densities decline (see also Smith 2003).

Disrupting the complex webs of nature can lead to silence, the loss of birdsong. Kevin Crooks and Michael Soulé (1999) discovered complex interrelationships among coyotes, other predators (called mesopredators) such as domestic cats, opossum, and raccoons, and scrub birds including California quail, wren tits, spotted towhees, Bewick's wrens, California thrashers, greater roadrunners, cactus wrens, and California gnatcatchers living near San Diego, California. Their research is an example of the importance of long-term projects that investigate complex webs of nature that are not obvious at first glance. Crooks and Soulé found that scrub bird diversity, the number of different species present, was higher in areas

where coyotes lived. Domestic cats, opossum, and raccoons avoid coyotes by shunning areas where coyotes are most active, and birds benefit. The disappearance of a dominant carnivore, the coyote, resulted in elevated numbers and activity of mesopredators who exert strong predation pressure on native prey species. Crooks and Soulé also discovered that the level of bird predation by mesopredators appeared to be unsustainable. Extinctions of scrub-breeding birds are frequent and rapid: at least 75 local extinctions may have occurred in their study areas over just the past century.

Redecorating and Managing Ecosystems. Moving animals from one place to another, or translocating them, is very often used to help endangered or imperiled species. Often animals are *re*introduced to ecosystems. About 65 percent of translocation projects involve reintroducing species to areas where they once lived (Tear et al. 1993) in which their numbers have dwindled or in which they have been exterminated—for example, reintroducing gray wolves to Yellowstone National Park (Smith 2003) and Canadian lynx to Southwestern Colorado (Bekoff 2001). Animals are also sometimes introduced to areas where they are not native. Carson does not write much at all about translocation projects, but she notes in her discussion of natural solutions to insect infestations that nonnative masked shrews were introduced in 1958 to Newfoundland to prey on problematic sawflies (Carson 1962, 296), and she favored this strategy. Although translocation was not a major concern of Carson's, she advocated the introduction of shrews as an alternative to chemical pesticide. Probably she had not thought through the ramifications of introducing a nonnative species: by 1962 shrews had spread over the island. Surely there are ethical issues that need to be addressed, for the introduction of nonnative species is a form of "control of Nature" (Carson 1962, 297) and can greatly influence webs of interactions and the integrity of an ecosystem.

Carson and Individual Animals

"I had to think myself into the role of an animal that lives in the sea. To bring this about I had to forget a lot of human conceptions. For example, time measured by the clock means nothing to a shorebird. His measure of time is not an hour, but the rise and fall of the tides—exposing his food supply or covering it again" (Carson 1998, 56). Carson was concerned with and celebrated individual lives as well as species and ecosystems. When she observed other animals, she tried to imagine what it was like to be them: "I was successively a sandpiper, a crab, a mackerel, an eel, and half a dozen other animals" (1998, 56). She decried factory farms in the United Kingdom, was incensed by cruel predator control programs and the federal government's wanton poisoning of wildlife, and became a member of the board of Defenders of Wildlife a short while before she died (Brooks 1972).

As an example of her sensitivity to an individual animal, consider a letter Carson wrote to her friends Dorothy and Stanley Freeman (Carson 1998, 169–70). On a midnight hike with her niece and grandnephew, she saw a firefly flying low over the water and at risk of getting caught by a wave. At first, Carson was puzzled by this strange behavior, but then she thought she realized what was going on: "he was flying so low over the water that his light cast a long surface reflection, like a little headlight. Then the truth dawned on me. He 'thought' the flashes in the water were other fireflies, signaling to him in the age-old manner of fireflies!" (p. 170) The firefly wound up mired in wet sand. Carson goes on: "You can guess the rest: I waded in and rescued him . . . and put him in Roger's bucket to dry his wing" (p. 170). This passage is significant because Carson refers to a firefly as an individual (a "he") rather than an object (an "it"). She attributes cognitive abilities to the firefly, noting that he "thought," although she qualifies this statement by putting the word in quotation marks. Finally, and perhaps most important, Carson considers it worthwhile to save the life of this firefly.

Carson describes play by herrings in this freely anthropomorphic and sensitive way: "Then the herring would begin flipping into the air. It seemed it was always out of the corner of your eye that you saw them, and you never quite knew where to look for the next little herring skipping recklessly into the air in a sort of back somersault. They did it as though it were great fun—this rash defying of a strange and hostile element, the air. I believe it was a sort of play indulged in by these young children of the herring" (1998, 37). She also writes of the parental care of swifts: "Swifts are devoted parents. The male and female take turns incubating the eggs during the nearly three weeks required for the young to hatch. Thereafter, both birds assume the chore of keeping the infant mouths filled with insects, a task that must be performed faithfully for about four weeks before the young swifts are able to take to the sky in their own behalf" (1998, 27). Carson also refers to old fish as "patriarchs of the river" (1962, 146).

Carson's observations of animals are reminiscent of the observational methods of such ethologists as Konrad Lorenz and Niko Tinbergen, and her identification with individual animals reminds us of the question that guides many students of behavior, What is it like to be this or that individual? When many ethologists observe other animals they try to become that individual—"I am coyote," or "I am raven"—in order to come to a fuller understanding of what it is like to be that creature (Bekoff 2002). This necessitates both an imaginative grasp of and an empathetic connection with the lives of other animals.

Animals as Food. Carson was very concerned about the use of animals as food for humans. She was not a vegetarian (Lear 2003b). In her preface to Ruth Harrison's book *Animal Machines*, about factory farming in the United Kingdom, Carson wrote,

Gone are the pastoral scenes in which animals wandered through green fields or flocks of chickens scratching contentedly for their food. In their place are factorylike buildings in which animals live out their wretched existences without ever feeling the earth beneath their feet, without knowing sunlight, or experiencing the simple pleasures of grazing for natural food—indeed, so confined or so intolerably crowded that movement of any kind is scarcely possible. (1998, 194)

The strong language in this passage is reminiscent of that of animal rightists. She also wrote,

I am glad to see Mrs. Harrison raise the question of how far man has a moral right to go in his domination of other life. Has he the right, as in these examples, to reduce life to a bare existence that is scarcely life at all? Has he the further right to terminate these wretched lives by means that are wantonly cruel? My own answer is an unqualified no. . . . Man will never be at peace with his own kind until he has recognized the Schweitzerian ethic that embraces decent consideration for all living creatures—a true reverence for life. (1998, 196)

Would raising animals for human consumption be permissible under any conditions? we may ask. What about methods that are not wantonly cruel?

Carson was a pragmatist in her view of animals. Linda Lear notes that

Carson quietly aided the work of [Christine] Stevens and the Animal Welfare Institute, writing to members of Congress in support of legislation banning the use of certain leg traps and against the inhumane treatment of laboratory animals. But she had to be careful not to draw too much attention to her support for causes that might link her in the public mind with fringe groups and extremists, lest she jeopardize her all-important work concerning the misuse of pesticides. Had this not been a real political consideration, Carson undoubtedly would have been an outspoken advocate of the humane treatment of animals. (Carson 1998, 192–93)

Lear clarified this point later:

The point I was making on p. 193 has to do with the chronology of Carson's life. She, cleverly, in my view, agreed to write that hard hitting forward to *Animal Machines* for a British book which she was fairly confident would not be widely read or known in the U.S. press. So she felt free to speak out. She wrote this in 1962, late, for publication in 1963. But at home the furor over SS [*Silent Spring*] was raging and her enemies were looking for ways to discredit her science and that meant looking for ways to call her a "kook." Being a radical animal rightist, or radical organic foods advocate meant being a communist, and certainly being far worse than the "bird and bunny lover" they had dubbed her. Such causes were ones she deeply believed in but were "peripheral" in 1963 to being heard and having her scientific evidence against the misuse of pesticides and its possible links to cancer be heard. If you put this statement in context to the fact that she was attacking corporate America and the agricultural economic breadbasket, you can see her point. (Lear 2003a)

Carson recognized the power of the consumer in bringing about change, an argument put forth by animal protectionists. Public outcries about the way in which veal calves are raised resulted in a drastic decline in the consumption of veal. To this end, Carson wrote: "I hope it [*Animal Machines*]

will spark a consumers' revolt of such proportions that this vast new agricultural industry will be forced to mend its ways" (1998, 196).

But what about the possibility of closing the industry down? Why not accept that factory farming cannot be humane for the individuals involved? Individuals suffer not only when they are mistreated but also when they hear, smell, and see other individuals being harmed and killed.

Indeed, today factory farming remains a huge environmental and animal-rights issue. Worldwide, more than 25 billion animals are killed each year in the meat industry, about 3 million each hour. Chickens are debeaked, pigs have their tails chopped off and their teeth pulled with pliers, and bulls and pigs are castrated. In the United States alone, more than 8 billion animals are killed annually for food. In both 2000 and 2001 a record high of 46 billion pounds of red meat was produced (beef, veal, pork, lamb, and mutton). Huge amounts of grain, forage, and land are used in food production. Animals consume more protein than they produce. For every kilogram (2.2 pounds) of animal protein produced, animals consume about six kilograms (more than thirteen pounds). One kilogram of beef requires about 100,000 liters of water, whereas one kilogram of wheat requires about 900 liters of water. The meat industry in the U.S. causes more water pollution than all other industries combined. An average pig farm generates raw waste equal to that of a city of twelve thousand people.

There is a connection between meat consumption and the use of pesticides. Pesticide advocates note that pesticides increase crop yield and thus have an important role to play in addressing world hunger. However, many of the crops produced are fed to livestock, which is an inefficient use of resources. The number of persons whose food energy needs can be met by the food produced by 2.5 acres of land is one person if the land is producing beef and two persons if the land is producing chickens, but fifteen if it is producing wheat and nineteen if it is producing rice (Weil 2003). If Americans reduced beef consumption by 10 percent, we would save 12 million tons of grain, the amount needed annually to feed every person who dies of hunger or hunger-related illness. If we decreased meat consumption, we would not need to resort to pesticides to increase crop yield.

Animals in Education and Research. Millions upon millions of animals are used in all levels of education and research worldwide (Bekoff 2002). Carson wrote briefly about such use of animals. She even sent a message to a congressional committee urging federal standards for the protection of animals used in research (Brooks 1972, 317). But, as in some of her prose about the use of animals for food, Carson took a moderate stance. In her essay "To Understand Biology" Carson wrote,

> To the extent that it is ever necessary to put certain questions to Nature by placing unnatural restraints upon living creatures or by subjecting them to unnatural conditions or to changes in their bodily structure, this is a task for the mature scientist. It is essential that the beginning student should first become acquainted with the

true meaning of his subject through observing the lives of creatures in their true relation to each other and to their environment. . . . To begin by asking him to observe artificial conditions is to create in his mind distorted conceptions and to thwart the development of his natural emotional response to the mysteries of the life stream of which he is a part. Only as a child's awareness and reverence for the wholeness of life are developed can his humanity to his own kind reach its full development. (1998, 193–94)

A number of questions can be asked about Carson's stated position. For example, is it "ever necessary to put certain questions to Nature by placing unnatural restraints upon living creatures or by subjecting them to unnatural conditions or to changes in their bodily structure" even for the mature scientist? What would Carson think about biomedical research? Is it ever necessary? It appears that Carson's position would sanction some biomedical research if it helped humans.

Alternatives

"Under the philosophy that now seems to guide our destinies, nothing must get in the way of the man with the spray gun" (Carson 1962, 85). "We must make wider use of alternative methods that are now known, and we must devote our ingenuity and resources to developing others" (1962, 138). Carson was surely concerned about animal well-being, but she comes across as a moderate welfarist. She did not seriously consider taking a hands-off stance in most instances (she did posit some natural alternatives to the control of pests) and often came down on the side of humans despite prose that would suggest otherwise. To be fair, she argued that both nonhuman and human losses were important, and she lamented the loss of natural landscapes and ecosystems by the introduction of chemical pesticides and various sorts of control programs. About the devastating effects of pesticide spraying she wrote,

I know well a stretch of road where Nature's own landscaping has provided a border of alder, viburnum, sweet fern, and juniper with seasonally changing accents of bright flowers, or fruits hanging in jeweled clusters in the fall. But the sprayers took over and the miles along that road became something to be traversed quickly, a sight to be endured with one's mind closed to thoughts of the sterile and hideous world we are letting our technicians make. But here and there authority had somehow faltered and by an unaccountable oversight there were oases of beauty in the midst of austere and regimented control—oases that made the desecration of the greater part of the road the more unbearable. . . . In such places my spirit lifted to the sight of the drifts of white clover or the clouds of purple vetch with here and there the flaming cup of a wood lily. (1962, 71)

Carson proposed some natural alternatives to the use of pesticides. She urged people to pay more attention to the role of plant-eating insects (1962, 83), noted that imported parasitic insects had been used to establish natural control of pests (1962, 96), stressed the use of natural parasites in keeping budworms under control (1962, 138), and noted that around the year

1800 Erasmus Darwin suggested that insects may be controlled by using their enemies. As mentioned above, Carson also favored the introduction of nonnative shrews to Newfoundland to prey on sawflies.

Locating Rachel Carson: Textual Tensions and Responsible Stewardship

> I am saying, rather, that the control must be geared to realities, not to mythical situations, and that the methods employed must be such that they do not destroy us along with the insects. (Carson 1962, 9)

> Much of Carson's reputation rests on her ability to place the meanings of scientific ecology within an ideology of species preservation. In her beautiful descriptions of the daily round of animal communities, she stressed the importance of each species to the survival of the whole. Such knowledge demanded respect for all life and, Carson hoped, more restraint in dealing with animal populations. Her angry outburst against hunting sprang in part from her concern for the potential extinction of valuable species, but it also evoked the pain caused to a single animal. This interest in the rights of individual animals as well as endangered species formed a critical part of Carson's message. . . . [Carson] felt little contradiction between protection of species and human treatment of individual animals; these were complementary goals equally necessary to a holistic ethic of human-animal relations. Nor was there a hierarchy of concern for domestic over wild animals. (Norwood 1993, 161)

Carson was a prolific writer and openly and passionately shared her views with a wide audience. Lear notes that Carson believed that nature writers had a "moral obligation to bring the wonders of the natural world to the general public and urged them to accept that responsibility" (see Carson 1998, 93). In Carson's own words, "My own guiding purpose was to portray the subject of my sea profile with fidelity and understanding. All else was secondary. I did not stop to consider whether I was doing it scientifically or poetically; I was writing as the subject demanded" (1998, 91). Paul Brooks wrote of Carson's prose that "the merged imagination and insight of a creative writer with a scientist's passion for fact—goes far to explain the blend of beauty and authority that was to make her books unique" (2000, xv). Lear comments that "Rachel Carson's use of poetic language does not take away from the accuracy of her claim that her guiding purpose was to portray her subject with fidelity and understanding, without consideration of whether she was doing it scientifically or poetically. Accuracy and beauty were never antithetical qualities in her writing" (1997, 219).

As already mentioned, Rachel Carson's attitude toward animal protection is that adopted by most mainstream environmentalists and conservation biologists: by living in harmony with nature, human beings benefit not only themselves but all animals. Her writing reflects the ongoing debate between animal rightists, environmentalists, and conservation biologists, and she can be placed squarely in the environmentalist's and conservation biologist's camp. (For general discussion see Hargrove 1992;

Zimmerman et al. 1993; Jamieson 1998.) This is best exemplified in Carson's opening story, in which she pictures a man living in harmony with nature and his fellow creatures: his crops flourish, his life is graced by birdsong, and in the evenings the deer come out to play and the fox can be heard yipping in the distance. Within this scene, the man claims dominion. The world of this story is far from wilderness; it is a farm in which the man, as steward, has selected which crops to plant and has largely defined the landscape. Given his dominion, Carson argues that human beings should be responsible, compassionate stewards. (For further discussion of the notion of stewardship from theological and secular perspectives, see Wunderlich 2004.)

Carson's attitude, however, does not answer or consider some of the ethical considerations posed by animal rightists and welfarists. Although importing shrews and fostering colonies of ants are far preferable methods for dealing with noxious insects than spraying DDT, there are still ethical questions that need to be addressed. Is it acceptable for man to "play God" by introducing nonnative species, as in the case of the shrew? If so, why? Why is it acceptable for the "mature scientist" (Carson's words) to do some animal experiments, but not for the student? Do hunters and fishers have a right to pursue their games, and does their right provide justification for maintaining healthy ecosystems? Can we morally justify the value of healthy bird populations by invoking not the intrinsic value of bird life but the right of birders to enjoy bird watching? Does human dominion over nature through technological superiority necessitate that we attempt to control nature or "restore" ecosystems? When, if ever, should we leave nature alone? (Carson does argue for natural seashores [1991].) Does an individual animal's life have value, or is it only species that have value? Is it morally acceptable to eat animals as long as the animals are treated humanely and killed painlessly?

Although these questions are not explicitly articulated by Carson, such issues nonetheless inform *Silent Spring* and some of her other works. Carson's most lyrical, evocative prose celebrates the beauty of individual animals, yet the basic argument put forth in *Silent Spring* has human-centered leanings that wax and wane in many of her writings. The rights of human beings are being infringed upon when chemicals are sprayed on the environment; humans have the right to hunt, to enjoy nature's beauty, to go bird watching, and to live free of insecticides, which inevitably affect not only animals but humans. Within this paradigm, what are the rights of animals? Do they have any intrinsic value or intrinsic rights?

To pose these questions is not to criticize Carson. Surely a world like that of Carson's opening scene would benefit humans and our fellow creatures. Carson ultimately advocates a form of welfarism perhaps best characterized as "responsible stewardship." The ethical dilemmas regarding animals' role in the world of humans are among the same issues faced

today. All of these issues raise questions about what the proper role of humans is in relationship to nature—tyrant, responsible steward, or fellow creature? And, perhaps more important, what *should* our role be?

While Carson spoke out loudly and clearly for responsible stewardship by typically adopting a moderate, realistic, practical, and frequently human-centered and welfarist stance on the issues at hand, it is plausible that she might have suffered from some dissonance between the beautiful words she spoke and wrote and what she truly felt in her heart and wanted to happen. Lear agrees that Carson was a practical utilitarian and "was so bottled up but so powerful" (Lear 2003a). Carson's connections with Christine Stevens and the Animal Welfare Institute (she was presented with the Schweitzer Medal of the Animal Welfare Institute), her indebtedness to Albert Schweitzer and his philosophy of reverence for all life, her stand against the use of steel leghold traps, and her preface to *Animal Machines* all suggest that she held more radical beliefs than she publicly aired. Her use of fables about idealized and healthy ecosystems that define our proper relationship to nature and other animals reflects a deep commitment to making the world a better place for all beings. Craig Waddell argues (2000, 9) that "A Fable for Tomorrow," the opening chapter of *Silent Spring*, is an "apocalyptic vision." Lear claims that this fable was "a scary hoax, pure science fiction," and that many reviewers were "unable to understand its basis in allegory and used it to further demean her credibility as a scientist" (1997, 430). Lear also notes that Carson was passionate about animals but kept her views relatively private. She did not want to have critics use her advocacy for animals "to belittle her science" (1997, 371). In addition to her not being taken seriously because she was not a professional scientist, Carson also was accused of having communist sympathies (Waddell 2000, 157) and of being an overly sensitive and sentimental woman. Her critics were by and large members of a male-dominated technological society. She also relied on anecdotes, which, for most scientists, do not constitute hard evidence (although the plural of *anecdote* is *data* [Bekoff 2002]).

Carson was careful to put forth a moderate agenda about animal exploitation. In *Silent Spring* she wrote, "By acquiescing in an act that can cause such suffering to a living creature, who among us is not diminished as a human being?" (1962, 100). Hunting and fishing, two activities that Carson seemed to support (in *Silent Spring* and other texts, she referred to the "rights" of hunters) surely cause pain and suffering. Would she have argued that a humane death is permissible? She also accepted hunting, when kept in balance, as a valid use of government land, including on wildlife refuges, but she lamented the killing of individual sharks (Gartner 1983).

It is common for there to be a disconnect between what people say and feel and what they do. Some people who might rescue animals from shelters or pick up stray dogs and cats and who claim to love animals also wear leather and eat meat from slaughterhouses and factory farms.

There is tension in a number of areas of Carson's writing, including what we should do, what we should believe, who we should believe, what the rights of nature are, and what the rights of humans are to enjoy nature *and* to hunt and fish. Consider the following quotations from *Silent Spring* about our proper relationship to nature and to our fellow animals:

> But what of the opposite end of the food chain—the human being who, in probable ignorance of all this sequence of events, has rigged his fishing tackle, caught a string of fish from the waters of Clear Lake, and taken them home to fry for his supper? What could a heavy dose of DDD, or perhaps repeated doses, do to him? (1962, 49)

> Such poisoning of waters set aside for conservation purposes could have consequences felt by every western duck hunter and by everyone to whom the sight and sound of drifting ribbons of waterfowl across an evening sky are precious. (p. 45)

> To the bird watcher, the suburbanite who derives joy from birds in his garden, the hunter, the fisherman or the explorer of wild regions, anything that destroys the wildlife of an area for even a single year has deprived him of pleasure to which he has a legitimate right. (p. 86)

> This is a problem that concerns a great many people. Some 25 million Americans look to fishing as a major source of recreation and another 15 million are at least casual anglers. These people spend three billion dollars annually for licenses, tackle, boats, camping equipment, gasoline, and lodgings. Anything that deprives them of their sport will also reach out and affect a number of economic interests. (p. 139)

> The fisheries of fresh and salt water are a resource of great importance, involving the interests and the welfare of a very large number of people. That they are now seriously threatened by the chemicals entering our waters can no longer be doubted. (p. 152)

Carson refers to the interests of people in having healthy ecosystems in which to hunt and recreate as "rights." She does not address the "rights" of the animals who live in these areas.

Clearly Carson favors human-centered interests, but there seems to be some ambivalence about this attitude. For example, although she did not condemn sport fishing, Carson was very upset when she considered the killing of a shark for sport. She wrote, "Then one sees the slender shapes of sharks moving in to the kill. There was something very beautiful about those sharks to me—and when some of the men got out rifles and killed them for 'sport' it really hurt me" (1998, 154).

What Can We Do? Who Should We Believe?

Carson, as an activist, was extremely concerned with what people could do about the dire situation surrounding the use of pesticides and also about scientists and government officials with competing interests who were working for pesticide companies. Clearly there were conflicts of interest. Carson wrote harsh words about scientists "on the take":

This situation also explains the otherwise mystifying fact that certain outstanding entomologists are among the leading advocates of chemical control. Inquiry into the background of some of these men reveals their entire research program is supported by the chemical industry. (1962, 259)

The credibility of the witness is of first importance. The professional wildlife biologist on the scene is certainly best qualified to discover and interpret wildlife loss. The entomologist, whose specialty is insects, is not so qualified by training, and is not psychologically disposed to look for undesirable side effects of his control program. Yet it is the control men in state and federal governments—and of course the chemical manufacturers—who steadfastly deny the facts reported by the biologists and declare they see little evidence of harm to wildlife. (1962, 87)

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. (1962, 127)

Concerning the last quotation, we also can ask what about nonconsenting animals, individuals who do not have the ability or the right to decide their fate when the rights of animals and people are in conflict?

Carson also wanted to put forth a positive message to children. However, it was difficult at the time to be especially hopeful.

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* there anything being done? *Can* anything be done? Can *I* do anything? (1962, 103)

SILENT SPRING, HOPE, AND HUMILITY

"Have we fallen into a mesmerized state that makes us accept as inevitable that which is inferior or detrimental, as though having lost the will or the vision to demand that which is good?" (Carson 1962, 12)

Rachel Carson was an extraordinary, passionate woman, and *Silent Spring* is an extraordinary, passionate book. But is it a book of hope? Yes and no. Carson surely is a hero, but heroes are not always hopeful. Nonetheless, we tend to want to make heroes positive. *Silent Spring* is dedicated to Albert Schweitzer and includes the following three quotations, none of which is especially hopeful:

Man has lost the capacity to foresee and to forestall. He will end by destroying the earth. —Albert Schweitzer

The sedge is wither'd from the lake, And no birds sing. —John Keats

I am pessimistic about the race because it is too ingenious for its own good. Our approach to Nature is to beat it into submission. We would stand a better chance

of survival if we accommodated ourselves to this planet and viewed it appreciatively instead of skeptically and dictatorially. —E. B. White

Clearly, Carson was and remains an incredibly influential woman. Why is this so? Carson was an activist with a heart who opposed many practices in which humans interact with other animals, encounters that animals usually lose. She warned us not to take for granted or squander nature's melodies. After all, it was her and others' concerns about the loss of animals' voices that prompted her to write *Silent Spring* as a call to action for what was being done to the environment by the indiscriminate and irresponsible use of pesticides. But wasn't her concern about pesticides finally a concern about us? If we poison the natural world, animals may die first, but we will follow. Carson herself was dying of cancer.

Carson also mandated that we must abandon our attitude of controlling nature. She concluded *Silent Spring* as follows:

> The "control of Nature" is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that Nature exists for the convenience of man. The concepts and practices of applied entomology for the most part date from that Stone Age of science. It is our alarming misfortune that so primitive a science has armed itself with the most modern and terrible weapons, and that in turning them against the insects it has also turned them against the earth. (1962, 297)

Note that she does not go on to write anything like "but there *is* hope if we do something about it." She did attempt to do much about the harm we were causing to Earth, devoting much of her short life to making the world a better place for all beings. The very act of writing books, of tirelessly and selflessly reaching out so as to raise consciousness and to call people to action, are acts of hope. Why write a book or travel about and expose oneself to personal insult and criticism if all is lost?

The issues with which Carson was concerned are difficult, challenging, frustrating, complicated, and strongly personal. Many remain with us today: scientists on the take (Cornwell 2003; Krimsky 2003a, b), pesticide companies taking their time to clean up their messes (Pearce 2003), the protection of pesticide manufacturers (Eisler 2003), increased use of pesticides worldwide (Huff 1998; Wood 1997), behavioral changes in animals due to pesticides (DellOmo 2002; Lee 2003; Burger in press), and the negative effects of pesticides on reproduction in humans (Izakson 2004) and animals (Lee 2003). There also is evidence that immigrant workers suffer greatly from exposure to pesticides and that their only options are "shutting up or getting out" (Clarren 2003, 7).

Carson's final essay in *Lost Woods* (1998) eloquently captures her views, which are laden with humility. In a letter to her friend Dorothy Freeman, Carson reflected on the life cycle of the monarch butterfly. Her reflections on death as part of the natural cycle of life bring together many themes: humans' relationship to something larger, the beauty of nature, the beauty

of animals, and the need for humility and connection. So, it is important to stress that although there are human-centered leanings in Carson's work—she does trump animal interests with human interests in areas where stronger and more zealous animal advocates would not—who among us does not occasionally share and implement these sentiments? It is indisputable that Carson deeply loved nature and animals. Perhaps the tensions she experienced reflect those shared by many of us as we try to live ethically and step lightly with grace, care, compassion, humility, beneficence, and love in a very complicated, challenging, and daunting world.

The Other Side of Silence: Where Have All the Animals Gone?

> One means of sanity is to retain a hold on the natural world, to remain, insofar as we can, good animals. (Stegner 1960)

> The image of the world around us that science provides is highly deficient. It supplies a lot of factual information, and puts all our experience in magnificently coherent order, but it keeps terribly silent about everything close to our hearts, everything that really counts. (Max Schrödinger, as quoted in Revel and Ricard 1998, 214)

These words of Wallace Stegner and Max Schrödinger nicely capture much of what Carson stood for. We need to be "good" animals and respect other animal beings and a very fragile Earth; we need to step lightly and with care because we are so omnipresent and destructive. Carson's warnings about silent springs—silent seasons—must be taken seriously, perhaps even more seriously than when they were penned more than four decades ago. Surely, on the other side of silence await magic, awe, and nature's cacophony of sounds, along with a panoply of other deep, radiant, and vibrant sensory experiences that help us to feel at one with all of nature. We must be careful never to allow nature to be silenced.

Every individual is part of a communion of subjects (Berry 1999), a vital member of innumerable webs of nature. Along these lines, recall Carson's words about how interdependent and interconnected we all are: "Here again we are reminded that in nature nothing exists alone" (1962, 51). And: "The inshore waters—the bays, the sounds, the river estuaries, the tidal marshes—form an ecological unit of utmost importance. They are linked so intimately and indispensably with the lives of many fishes, mollusks, and crustaceans that were they no longer habitable these seafoods would disappear from our tables" (p. 149). Carson also stressed that "The predator and the preyed upon exist not alone, but as part of a vast web of life, all of which needs to be taken into account" (p. 257).

We are all in this journey together. Each of us is an integral part of the ongoing story of life and of the panoply of nature's magnificent and wondrous webs. What befalls animals befalls us. Carson's request that we

reconsider our fundamental relationship with nature, that we undergo an internal revolution, is consistent with the message of ecopsychologists who note that we ourselves feel better when we treat nature with kindness, respect, and compassion. A close relationship with nature is critical to our own well-being and spiritual growth.

Silent springs, along with silent summers, falls, and winters, brought about by silencing animals, are not good for us or for other animals. We owe animals our utmost unwavering respect and concern for their well-being, independent of our own. We all need to be careful lest individuals in a future generation one day wake up and ask, "Where have all the animals gone?"

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