

## REIMAGINING JUST FUTURES WITH RACHEL CARSON'S *SILENT SPRING*

Catherine Price

University of Nottingham

[Catherine.Price@nottingham.ac.uk](mailto:Catherine.Price@nottingham.ac.uk)

2022 marks the sixtieth anniversary of the publication of Rachel Carson's highly controversial bestselling book, *Silent Spring*. The book is about the toxicological properties of nineteen pesticides and the harm these cause the environment and biodiversity. In the USA, *Silent Spring* prompted congressional hearings and led to the formation of the US Environmental Protection Agency in 1970, as well as triggering the wrath of the chemical industry and associated groups. Carson's publisher, Houghton Mifflin, and the *New Yorker*, which serialised *Silent Spring*, received threats of legal action from pesticide manufacturers. *Silent Spring*, although written for a 1960s American audience, is still highly relevant for audiences in 2022. It could be argued that the book is more relevant in 2022, given that we have entered the Sixth Extinction<sup>1</sup> with many species being lost. For example, the insect apocalypse will be devastating for humans and the more-than-human world.<sup>2</sup> Insects pollinate crops, control pests, maintain soil health, recycle leaves, corpses and dung, and are food sources for animals such as birds and fish. The world cannot function without insects in ecosystems.

Rachel Carson opens her Chapter 2 explaining that the 'history of life on earth has been a history of interaction between living things and their surroundings. To a large extent, the physical form and the habits of the earth's vegetation and its animal life have been moulded by the environment'.<sup>3</sup> Carson goes on to explain how this has altered, with human

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<sup>1</sup> Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History* (New York: Picador, 2014).

<sup>2</sup> Francisco Sánchez-Bayo and Kris A.G. Wyckhuys, 'Worldwide decline of the entomofauna: A review of its drivers', *Biological Conservation* **232** (2019): 8–27. <https://doi.org/10.1016/j.biocon.2019.01.020>

<sup>3</sup> Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962), p. 13

interventions playing a large role in modifying the environment. Agriculture, and the relationship between humans, the land and other species, has been in ongoing revolutions since 8,500 BC,<sup>4</sup> and industrialised agriculture is one of the largest contributors to modifying the environment.<sup>5</sup> Industrialised agriculture emerged from the Green Revolution. This term was coined in 1968 by William Gaud, an administrator of the United States Agency for International Development.<sup>6</sup> However, for Raj Patel, the Green Revolution began in the 1940s.<sup>7</sup> It brought forward new crop varieties that were faster growing and higher yielding, along with fertilisers, pesticides and improved irrigation.<sup>8</sup> Whilst outputs were maximised in the short-term, more fragile, less resilient food systems were created.<sup>9</sup> The Green Revolution maintained cheap food through cheap care, labour, energy and raw materials.<sup>10</sup> These issues around cheapness raise their own problems but, for the purposes of this article, the focus will be on increased pesticide use as it was for *Silent Spring*.

Natural resources including soil, water, biodiversity and land are all required for food production. However, food systems are damaging what they depend upon.<sup>11</sup> Carson was already alluding to this damage in *Silent Spring* by arguing that 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’.<sup>12</sup> The idea of the ‘control of nature’ underpins industrialised agriculture. Controlling nature enables more food to be

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<sup>4</sup> Tim Lang and Michael Heasman, *Food Wars: The Global Battle for Mouths, Minds and Markets*, 2nd edn (Abingdon: Routledge, 2015).

<sup>5</sup> UN Environment Programme, ‘10 things you should know about industrial farming’, (UN Environment Programme, 2020): <https://www.unep.org/news-and-stories/story/10-things-you-should-know-about-industrial-farming> (accessed 30 May 2022).

<sup>6</sup> Raj Patel and Jason W. Moore, *A History of the World in Seven Cheap Things: A Guide to Capitalism, Nature, and the Future of the Planet* (London: Verso, 2020).

<sup>7</sup> Raj Patel, ‘The long Green Revolution’, *The Journal of Peasant Studies* **40** (1) (2013): 1–63. <https://doi.org/10.1080/03066150.2012.719224>

<sup>8</sup> Amanda Little, *The Fate of Food: What We’ll Eat in a Bigger, Hotter Smarter World*. (London: Oneworld, 2019). Patel and Moore, *A History of the World*.

<sup>9</sup> Guy Standing, *Plunder of the Commons: A Manifesto for Sharing Public Wealth* (London: Penguin, 2019).

<sup>10</sup> Patel and Moore, *A History of the World*.

<sup>11</sup> Lang and Heasman, *Food Wars*.

<sup>12</sup> Carson, *Silent Spring*, p. 258.

produced. However, industrialised agriculture also impacts everyday relationships with other species,<sup>13</sup> especially through pesticide use.

In the UK, pesticide use has contributed to changes in land use and declining biodiversity.<sup>14</sup>

In *Silent Spring*, Rachel Carson wrote about the harm caused by dichloro-diphenyl-trichloro-ethane (DDT).<sup>15</sup> Whilst DDT has been phased out, neonicotinoids have been introduced. The Pesticides Action Network UK (PAN-UK) is the NGO that monitors pesticide use and impact in the UK. They point to the fact that neonicotinoids are 10,000 times more potent than DDT, with one gram of the pesticide having the ability to kill 125 million honeybees. They also point to two other aspects of change. Since 1990, the amount of land treated with pesticides has increased by 63 per cent, while the number of times farmland is treated with pesticides has almost doubled. For example, a UK potato crop is sprayed 32 times.<sup>16</sup> The warnings given by Carson unheeded, the use of pesticides has continued unabated. In *Silent Spring*, Carson alludes to the issue of pesticides being used without full understanding of the impacts on biodiversity, soil, water and human health.<sup>17</sup> The consequences of this lack of awareness are now showing. In the UK, there are now fifty per cent fewer insects than in 2005.<sup>18</sup> The use of neonicotinoids is linked to colony collapse disorder (CCD) with honeybees.<sup>19</sup> CCD occurs when adult honeybees abandon a hive even if the colony appears productive and healthy.<sup>20</sup> The nicotine-like chemicals used as ingredients in neonicotinoids also harm the

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<sup>13</sup> Maria Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More Than Humans Worlds* (Minneapolis: University of Minnesota Press, 2017).

<sup>14</sup> Tim Lang, *Feeding Britain: Our Food Problems and How to Fix Them* (London: Penguin, 2021).

<sup>15</sup> Carson, *Silent Spring*.

<sup>16</sup> Pesticides Action Network UK, 'The hidden rise of UK pesticide use: Fact checking an industry claim' (Pesticides Action Network UK, 2022): <https://www.pan-uk.org/pesticides-agriculture-uk/the-hidden-rise-of-uk-pesticide-use-v3/> (accessed 30 May 2022).

<sup>17</sup> Carson, *Silent Spring*.

<sup>18</sup> Dave Goulson, 'Reversing the decline of insects' (The Wildlife Trusts, 2020): <https://www.wildlifetrusts.org/news/new-report-calls-ambitious-pesticide-reduction-target> (accessed 30 May 2022).

<sup>19</sup> Little, *The Fate of Food*.

<sup>20</sup> Stephan Lorenz, 'The endangerment of bees and new developments in beekeeping: A social science perspective using the example of Germany', *International Journal of Environmental Studies* **73** (6) (2016): 988–1005. <https://doi.org/10.1080/00207233.2016.1220703>

honeybees' ability to reproduce.<sup>21</sup> The loss of honeybees is catastrophic not only for biodiversity but also for humans, as insects are required for crop pollination. A third of food crops consumed by humans worldwide are pollinated by insects, with an additional third of food products having relied upon insect pollination at some point in the production process.<sup>22</sup> Rachel Carson was well aware of the importance of honeybees and other pollinators for food crops. She wrote that many food crops were wholly dependent on pollinating insects, as well as acknowledging the importance of pollinating insects to other species. Carson explains that the 'chemical destruction of hedgerows and weeds are eliminating the last sanctuaries of these pollinating insects and breaking the threads that bind life to life'.<sup>23</sup> These warnings of the harms of pesticide use were not heeded: Jason Moore was continuing to write about this issue in 2015.<sup>24</sup>

Although Carson's warnings were ignored, I would argue that *Silent Spring* still has a valuable contribution to make to environmental debates years after its original publication date. Thinking with multispecies justice scholarship in relation to *Silent Spring* enables us to reimagine our futures and transitions to these futures, ensuring they are just, democratic, diverse and sustainable for both humans and the more-than-human world. Brandon Jones defines multispecies justice as 'a politics for composing a common world that considers the needs and livelihoods of a diversity of human and nonhuman life'.<sup>25</sup> Multispecies justice is not about attaining justice for humans and then turning attention to the more-than-human world. Instead, it is about considering the issues of justice, harm and reconciliation as entangled across humans and the more-than-human world. The idea is about creating a just

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<sup>21</sup> Little, *The Fate of Food*.

<sup>22</sup> Richie Nimmo, 'The bio-politics of bees: Industrial farming and colony collapse disorder', *Humanimalia* 6 (2) (2015): 1–20. <https://doi.org/10.52537/humanimalia.9909>

<sup>23</sup> Carson, *Silent Spring*, p. 69.

<sup>24</sup> Jason W. Moore, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital*. (London: Verso, 2015).

<sup>25</sup> Brandon Jones, 'Bloom/split/dissolve: Jellyfish, H.D., and multispecies justice in Anthropocene seas', *Configurations* 27 (4) (2019): 483–499, at 485. <https://doi.org/10.1353/con.2019.0032>

world for living and non-living entities. There are many ideas of multispecies justice present in *Silent Spring*. For example, Carson explains that

vegetation is part of a web of life in which there are intimate and essential relations between plants and the earth, between plants and other plants, between plants and animals. Sometimes we have no choice but to disturb these relationships, but we should do so thoughtfully, with full awareness that what we do may have consequences remote in time and place.<sup>26</sup>

Carson was fully aware of the interconnections and interrelations between different species and the non-living.

Rachel Carson's awareness of the relationships between the living and the non-living means *Silent Spring* is a book rooted in care. Care is an important aspect of multispecies justice.<sup>27</sup>

To care means being attentive to oppression<sup>28</sup> and also recognising that care will be necessary for life to continue in more-than-human entanglements.<sup>29</sup> Caring means attending to the interconnections, interrelations and interdependencies that affect the life and wellbeing of the primary object or subject through care networks.<sup>30</sup> Care flows and circulates through the living and the non-living, across complex life-sustaining entanglements and assemblages.

Care is evident in *Silent Spring* in Chapter 5, 'Realms of the Soil'.<sup>31</sup> Carson explains 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'.<sup>32</sup> Soil biota consists of plant matter,

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<sup>26</sup> Carson, *Silent Spring*, p. 61.

<sup>27</sup> Mathias Thaler, 'What if: Multispecies justice as the expression of Utopian desire', *Environmental Politics* **31** (2) (2022): 258–76. <https://doi.org/10.1080/09644016.2021.1899683>

<sup>28</sup> Maria Puig de la Bellacasa, 'Matters of care in technoscience: Assembling neglected things', *Social Studies of Science* **41** (1) (2011): 85–106. <https://doi.org/10.1177/0306312710380301>

<sup>29</sup> Puig de la Bellacasa, *Matters of Care*.

<sup>30</sup> Anna Krzywoszynska, 'Caring for soil life in the Anthropocene: The role of attentiveness in more-than-human ethics', *Transactions of the Institute of British Geographers* **44** (2019): 661–75. <https://doi.org/10.1111/tran.12293>

<sup>31</sup> Carson, *Silent Spring*.

<sup>32</sup> *Ibid.*, p. 55.

micro-organisms (fungi, bacteria, algae and archaea) and soil animals (earthworms, insects, protozoa, nematodes, mites, spiders and springtails).<sup>33</sup> Soil organic matter, which is important to improving soil quality, can only be created and shaped by soil biota.<sup>34</sup> Soil biota are also one part of the food web concept of soil life. Food webs focus not only on how species feed on each other, but also how the waste from one species is the food for another.<sup>35</sup> Carson also asks the question: What happens to these incredibly numerous and vitally necessary inhabitants of the soil when poisonous chemicals are carried down into their world, either introduced directly as soil ‘sterilants’ or borne on the rain that has picked up a lethal contamination as it filters through the leaf canopy of forest and orchard and cropland?<sup>36</sup> The answer to this question is that increased pesticide use has led to the toxification of soils.<sup>37</sup> Perhaps if care had been taken before the unfettered use of pesticides was enacted, we might not be facing a biodiversity crisis caused through pesticide use.

Care can also be seen as a form of dissent. Conflicts can transform situations, but viewing ‘dissenting-within as instances of thinking with care stresses the difficulties of taking care of relations involved in knowledge creation’.<sup>38</sup> This is evident with Carson’s scientific knowledge which underpins *Silent Spring*. Although critical of the science behind the development of pesticides, Rachel Carson was not and should not be seen as anti-science. Carson’s scientific achievements were wide-ranging and include studying biology at Pennsylvania College for Women (Chatham College) from 1925–1929 and receiving a scholarship to study for an M.Sc. in Zoology at John Hopkins University from 1929–1932. Carson taught at John Hopkins University and University of Maryland until 1936, before

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<sup>33</sup> Ann-Marie Fortuna, ‘The soil biota’ (The Nature Education Knowledge Project, 2012): <https://www.nature.com/scitable/knowledge/library/the-soil-biota-84078125/> (accessed 27 May 2022).

<sup>34</sup> Krzywoszynska, ‘Caring for soil life’.

<sup>35</sup> Maria Puig de la Bellacasa, ‘Making time for soil: Technoscientific futurity and the pace of care’, *Social Studies of Science* 45 (5) (2015): 691–716. <https://doi.org/10.1177/0306312715599851>.

<sup>36</sup> Carson, *Silent Spring*, p. 56.

<sup>37</sup> Moore, *Capitalism in the Web of Life*; Vandana Shiva, *Soil, Not Oil: Climate Change, Peak Oil and Food Insecurity*. (London: Zed Books, 2016).

<sup>38</sup> Puig de la Bellacasa, *Matters of Care*, p. 83.

joining the USA Fish and Wildlife Service in Washington DC as an aquatic biologist in 1936.

With *Silent Spring*, Carson was drawing attention to the ethical responsibilities associated with scientific developments.

In concluding, it is worth revisiting the first chapter of *Silent Spring*. Carson describes a fictional town where streams are lifeless, apples trees are blooming but there are no bees to pollinate the flowers, and there are no birds so the dawn chorus no longer reverberates around the town. She writes that, while no town has suffered from all of losses she describes, many communities have suffered at least one of them.<sup>39</sup> However, if the current situation continues with falling numbers of insects, plants, birds, fish and mammals, this fictional town of Carson's is likely to become a reality. It is time to stop ignoring Carson's evidence, and to start acting with care.

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<sup>39</sup> Carson, *Silent Spring*.