At dusk, as sky and sea became one shade, I sat re-reading one of my favorite books with my back against the Mystic Seaport lighthouse. For a visual, picture your stereotypical eco-conscious millennial: well-worn jeans and second-hand sweater, green sandals, reusable water bottle. I got stuck on the line: “We live in an age of rising seas.”

In 2016, this sentence is a matter-of-fact, albeit concerning, observation about a defining consequence of anthropogenic climate change. Coastal communities all around the country are taking action to respond to the reality of rising seas. Scientists, like those at Connecticut Sea Grant, are measuring and monitoring the impacts of encroaching sea water on ecosystems. Educators and communicators are working to translate the science and urgency of climate change for the public.

It might be surprising that the book in my hands was not a recent publication, but rather Rachel Carson’s *The Sea Around Us*. Published in 1951, the book came out several years before there was scientific consensus or public awareness about anthropogenic climate change. Reading it now, this line, which opens Carson’s “The Shape of Ancient Seas” chapter, seems ominously prophetic.

I am a 21-year-old environmentalist in the 21st century. In my lifetime, the scientific and environmentalist communities have largely taken anthropogenic climate change as a given. And thus, I cannot help but read Carson’s discussion of rising seas through a modern lens. With her sea trilogy, Carson took readers below the water’s surface and inspired a generation to care about the 70 percent of the world that is blue. Then with her monumental *Silent Spring* (1962), she articulated the dangers of indiscriminate applications of pesticides and helped to catalyze the modern environmental movement. In addition to all this, was Rachel Carson also prescient about anthropogenic climate change as the driver of sea level rise?
The short answer is no. What might be surprising and significant, however, is that Carson, in her final years, likely did have contact with early research about connections between fossil fuels, atmospheric CO₂, and global climate change. Carson was a contemporary of scientists Roger Revelle and Charles Keeling, who had begun to document concentrations of atmospheric CO₂ and explore its climate implications. Just as any discussion of environmentalism today cannot occur without mention of climate change, no history of the environmental movement could exist without the contributions of Rachel Carson. Ultimately, this article seeks to put Rachel Carson into context within the broader history of anthropogenic climate change science and awareness. But before that, let us begin with some context for the woman herself.

The Woman with a Sense of Wonder

Given her land-locked origins, Carson was an unlikely ocean hero. Born in 1907 on a farm in Springdale, Pennsylvania, she did not meet the sea formally until after she had graduated from Pennsylvania College for Women (now Chatham University) in 1929. We know from her letters that in late July, while traveling to a research position at Woods Hole, she boarded an evening passenger ship at New York Harbor, bound for New Bedford. At the time, nearly all of these passenger ships traveled up the East River and through Long Island Sound, so Carson’s first experience at sea was almost certainly in the Sound.

By this time in her life, she had already developed a deep curiosity and appreciation for the sea through her study of marine science and early exploration of maritime literature. After receiving a master’s degree in zoology from Johns Hopkins University for her thesis on catfish, Carson worked for 15 years at the U.S. Bureau of Fisheries. As a staff writer and eventual chief editor of publications, she wrote science communication articles of a similar nature to those produced in Wrack Lines.

Carson began her elegant sea trilogy with Under the Sea Wind (1941). In the late 1940s, she transitioned away from the Bureau of Fisheries into her own writing full time, and penned The Sea Around Us and The Edge of the Sea. This year marks the 75th anniversary of Carson’s first book, Under the Sea Wind, which follows the lives of different species: a sanderling, a mackerel, and an eel. Although Under the Sea Wind animates a diverse array of sea life, the ocean ultimately proves the principal character and the last voice. In the final sentence, Carson writes: “For once more the mountains would be worn away by the endless erosion and carried in silt to the sea, and once more all the towns would belong to the sea.” This powerful evocation serves as a reminder of the enduring power and patience of the ocean.

Her next book, The Sea Around Us (1951), translates the geological, biological, and chemical processes of the ocean for a popular audience. It catapulted to the bestseller list, where it remained for an unprecedented 86 weeks. In the wake of The Sea Around Us, Under the Sea Wind too experienced a prominence unknown after its initial publication. In December 1941, national attention had turned suddenly to the Second World War in the wake of the surprise Japanese attack on Pearl Harbor, leaving Under the Sea Wind to favorable critical reviews, but slim readership. Carson completed her sea trilogy in 1955 with The Edge of the Sea. Carson captivated her audience with her lyrical writing and crisp scientific explanations.

Climate Change and Carson

While her writing is still as informative and transcendent as ever, we return to her work here specifically because her commentary on the rising sea and warming climate is particularly relevant for twenty-first-century readers. Connecticut Sea Grant extension educator Juliana

A steamboat similar to the one Rachel Carson would have taken for her first trip at sea, traveling through Long Island Sound to Woods Hole.
Barrett emphasizes that contemporary “changes due to climate impacts reinforce how connected our ecosystems are,” demonstrating that the ecological interconnectedness that Carson so championed remains essential. Although Carson did not have the same data or insights we do today about anthropogenic climate change, she reports clearly and precisely about rising sea levels and warming trends. In *The Sea Around Us*, Rachel Carson explains: “Along all the coasts of the United States a continuing rise of sea level has been perceptible.” In a 1953 paper entitled “The Edge of the Sea” that she presented at the American Association for the Advancement of Science Symposium, Carson announced a warming climate: “Now our climate is changing and we are moving into a warming cycle of unknown duration.” Carson certainly did understand and write about natural cycles of change over the preceding millennia, but her observations of real-time changes are now understood to be unique. Only in recent decades have the warming temperatures of the past century and rising seas been unequivocally attributed to the burning of fossil fuels. But scientists now believe the rising seas and warming climate Carson described were likely part of undiagnosed anthropogenic climate change.

While in agreement that climate change is a tangible problem now, many scientists and scholars are understandably reticent to assign an exact date to the start of anthropogenic climate change or the moment of consensus in the scientific community. While it may not be necessary to pinpoint such a date, it is important to understand that climate scientists had been making observations and testing predictions about atmospheric carbon well before the twenty-first century. Even nineteenth-century scientists were exploring the influence of carbon on the atmosphere and its relationship to global temperatures. In 1896, Swedish scientist Svante Arrhenius made predictions of warming as a result of increasing CO₂. In 1958, Charles Keeling began monitoring levels of atmospheric CO₂ from Mauna Loa Observatory in Hawaii. Over the next decades, he plotted the results on the now famous “Keeling curve,” which shows an accelerating increase in atmospheric CO₂ concentration and is often cited as one of the first confirmations of a changing atmosphere. Keeling’s colleague, Roger Revelle, director of the Scripps Institution of Oceanography, was part of a team that released the seminal Conservation Foundation report in March 1963 that posited a connection between the accelerating levels of carbon dioxide and the amplified greenhouse effect. The report made grave (and ultimately accurate) predictions that such warming would result in melting glaciers, rising seas and flooding of low-lying areas.

According to the president of the Rachel Carson Council, Robert K. Musil, Carson worked with and was aware of reports from the Conservation Foundation and the work of Revelle and Keeling. Carson lost a battle against breast cancer in 1964, before she could join the early discussions about the significance of rising CO₂ concentrations and the role of fossil fuels.

**Reading Carson in Today’s Climate**

In her high school senior thesis, titled “Intellectual Dissipation,” Carson writes what can only be described as a love letter to books: “None of us can be wholly indifferent to the power of books. All that is great and worthwhile in the noblest minds of the ages is stored up in their covers. Thru them we can make the acquaintance of wise men and philosophers, of kings and emperors. Is there something you wish to know[...]? Then turn to your bookshelf.”

Carson has, of course, established herself as one of those noble minds, proving that we should make acquaintance with wise men and women. When we turn to our bookshelves and turn the pages of her books, we find observations of a changing climate and rising seas from the mid-twentieth century perspective. As a student of history, I hesitate to superimpose contemporary knowledge onto thinkers of the past. Certainly, it would not be precise or productive to assume that Rachel Carson possessed a prescient insight into anthropogenic causes behind the climate change she observed. Her comments on the rising seas and warming atmosphere do at least highlight that anthropogenic climate changes were perceptible even before it was connected to the burning of fossil fuels.

Although the challenges plaguing the earth and ocean continue to change, Carson’s voice and work remains constant, like a well-tended lighthouse, offering both warning and hope.

**ABOUT THE AUTHOR:**

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