

The Love Song of E.O. Wilson

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Edward Osborne Wilson, Pellegrino University Professor Emeritus, Harvard University
 Born: June 10, 1929, Birmingham, Alabama.
 Died: December 26, 2021, Burlington, Massachusetts.

It started with some ants in Alabama. Then on for training and research in Massachusetts. Then wandering the world, the South Pacific, South America, searching for more ants. He was curious and one thing led to another. First, ant taxonomy, then the taxon cycle to explain the change in ant species over time, studying of chemical mechanisms of ant communication, then social behavior generally, and finally becoming a leader in the conservation of biodiversity.

With his soft voice, Ed Wilson wasn't a dramatic speaker but, boy, could he write. His papers and books were magnets for students of organismic biology and launching pads for the work of so many others. In his last decades he was widely recognized as a leader in the world of biology, and he licked the platter clean of major scientific awards.

He once said that biologists, unlike mathematicians and physicists who often make their major contributions as young people, become better and better with age. Biologists learn more about the world's biodiversity over time and can interpret its patterns in more depth. But it is not just time and age that nurture scientific achievement, it is the drive that comes from devotion to your work, year after year, as new connections in biology build structures of greater understanding. Ed Wilson had that devotion for nine decades of life. So much of it enriches the work and abilities of restoration ecologists.

In thinking about his contribution to our field, I am most impressed by his work across many levels of biological organization. Each of these levels is important for successful restoration projects and all have been advanced by his scientific findings. At the smaller scale, Wilson watched ants (*Lasius* and *Pheidole* were specialties) walking about, searching for small food particles on the ground or finding the appropriate soil type in which to dig a nest. The large spatial scale of the plot or the park or the preserve

means little to this level of natural history. The ant queen or worker searches at the scale of millimeters to satisfy the needs of life. The restoration ecologist must also pay close attention to the smaller scales. Is this soil appropriate for a hydro-seeded mixture to sprout? Is the soil moist enough, for long enough to allow a seedling to grow, not shrivel? As a young plant grows, with whom will it grapple for space, light, moisture, and nutrients? It is the closest competitors that often determine life or death rates for our restored species. Small animals also need microsites to satisfy their niche requirements. A lizard may need a small stone to thermoregulate in the morning. A vole needs a hidden cavity to avoid its enemies, a hawk or a feral cat. We have all had experiences working with landscape contractors who wish to level smooth our project sites of roughness and micro-topography, eliminating the irregularities needed to support a wide range of biodiversity.

Wilson also studied niche and morphological differences among species in his taxonomic studies. We too must guard against simple assumptions that closely related species are similar in their requirements for life or their place in the broader landscape. Within a genus of an insect or flowering plant, many critical niche differences exist. Our work must be sensitive to the ecological personalities which are contained within congeneric Latin binomials.

One of Wilson's earlier studies that brought him wide attention was the theory of island biogeography, first with Robert MacArthur and then experiments with Daniel Simberloff. The work started as an explication of species richness differences across oceanic islands, but this thesis quickly was extended as a framework for many conceptual islands: stones in the stream bed; a patch of milkweed in a diverse meadow; cool mountaintops surrounded by a hot dry desert; small pools of water captured in bromeliads ("phytotelmata") widely separated from other small water sources. The theory turned out to be deliciously complex, with extrapolation to all these alternative habitats not always appropriate. But the original theory opened us up to new ways of analyzing species diversity. These days, the size and placement of parks in urban centers are platforms for the theory's application, driving a better understanding of how new cities should be designed and old cities renovated. The practice of successful restoration ecology depends on size, shape, and placement of landscapes as well as the long species list we wish to install.

doi:10.3368/er.40.2.79

Ecological Restoration Vol. 40, No. 2, 2022

ISSN 1522-4740 E-ISSN 1543-4079

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Wilson's interest in conservation of biodiversity, even to the level of his *Half-Earth* manifesto, calls out to restoration ecologists to stand together with conservationists to repair the tattered fabric of life on earth. The arguments of his later books give power to the work of the restorationist struggling in a small patch of land. We know that even local efforts can play their role towards filling the bucket of land area needed to maintain species in a rapidly changing climate and with humankind still developing land for its own commercial needs.

Wilson's educational work moved from college classrooms to books which are translated and read throughout the world. His elegant writing influences public policy as well as students sitting in the Harvard Museum of Comparative Zoology. His work in outreach and education is a challenge to communicate our concerns to a wider society than our local nature club.

The field of restoration ecology starts with people fascinated and comforted by the beauties of nature. Wilson started this way also but saw that his interests as a naturalist could be joined to the concerns of social scientists, psychologists, and ethicists. His book *On Human Nature* was a powerful call to think about the biological basis of how our societies are organized. The book frightened many and could have been misused by simplistic and false connections between biology and racist conclusions, which he challenged. The book suggested that human societies are not solely based on rational debates in democratic processes. He reminded us that most of human history is prehistory, before writing was established, and our intellect is housed in a brain structure that evolved over millions of years. Our biological past cannot be ignored as we plan for a better future. Today, even the gentle lectures of a restoration ecologist to a local town board represents a link between ancient biophilia and current public policy. Wilson's work is an expression that our deepest biology can be transformed into an action that improves our future landscapes.

Together, the many publications of Ed Wilson are not just a "body of work," a stack of monographs, products of his scientific rigor and energy. The span and intensity of Wilson's achievements are products of his *passion* for biology and from this passion he has left us with his creative output. Driven by the natural world, Wilson's gift to us, its scope and depth of feeling and the poetic beauty of his writings, may be looked at not as a career, but as a love song.

Recommended Reading

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Seed of bloodroot with caruncle or crest, which serves as a handle for ants to hold onto. Ant ready to take the seed. Source: Joseph Y. Bergen, A.M. *Elements of Botany* (Boston, MA: Ginn & Company, 1896), The Florida Center for Instructional Technology, College of Education, University of South Florida, fcit.usf.edu.