Practical Science Profiles: Edward O. Wilson

As a noted ecologist, biologist, Pulitzer Prize winning author and humanist, no one since Charles Darwin has revolutionized our understanding of the sciences and humanity as Edward O. Wilson.

PRACTICAL SCIENCE WITH PHIL FREDA

- Biographical information compiled from the Academy of Achievement, the Edward O. Wilson Biodiversity Foundation and the University of Nebraska – Lincoln.

Youth and Education
Edward Osborne Wilson, or as some call him "The Lord of the Ants," was born on June 10, 1929 in Birmingham, AL, but was raised mostly in Washington, D.C. and Mobile, AL.

Wilson's father was a government accountant and moved the family frequently. This left little time for young Edward to make friends; instead, he turned to nature.

At an age of 7, Edward's world was changed forever.

First, his parents, Edward and Inez Wilson divorced.

Then, while fishing, the fin of a spiny fish scratched his right eye when he was reeling in his catch.

This permanently impaired his distance vision and depth perception.

The impairment would eventually display itself as both a blessing and a curse.

Since he had trouble observing animals and birds, Wilson started to concentrate on insects.

He enjoyed studying insects so much that he was determined to become an entomologist (one who studies insects) by the age of 11.

During World War II, a shortage of pins, and most other metal objects, greatly inhibited Wilson's ability to collect flies.

Instead of giving up, Wilson turned his attention to ants, which he stored in jars.

At this young age, Wilson set out to categorize every species of ant in the state of Alabama.

At age 13, Wilson discovered a colony of non-native fire ants in Mobile, AL.

After enrolling at the University Alabama, Wilson was requested to carry out a survey of the fire ant's progress.

This report served as Wilson's first published scientific work.

After receiving his Master's degree at the University of Alabama, Wilson studied briefly at the University of Tennessee before transferring to Harvard for doctoral studies.

While at Harvard, Wilson traveled across the globe categorizing many species of ant.

In 1955, he received his Ph.D. from Harvard, married Irene Kelley and a year later, became a faculty member at Harvard.

Wilson's contributions to biology and human society

Wilson's first contributions improved our understanding of species evolution.

By comparing caste systems of ants around world, Wilson was able to devise the theory of the "taxon cycle."

This theory explained how ants adapt to adverse environments by colonizing new habitats and then later diverge into new species.

By the end of the 1950's, Wilson was recognized as the world's foremost authority on ants.

However, during this time, James Watson and Francis Crick had discovered the structure of DNA.

This discovery revolutionized biological thinking by placing almost all focus in molecular study.

Wilson, however, never changed his path from studying natural history, or the "old school" method of studying biology.

Collaborating with mathematician William Bossert, Wilson investigated the incredibly complex chemical signaling processes among ants.

He discovered that ants, and many other creatures, excrete certain signaling molecules (scents) when experiencing different stimuli, whether it be food, danger, or the proximity of a mate.

In the 1960's, Wilson again collaborated with another mathematician named Robert MacArthur.

This time however, the goal was to better understand the world of island ecosystems.

By eliminating the existing insect population of an island, Wilson was able to study the repopulation of the island by new species.

In his book, *The Theory of Island Biogeography*, Wilson explained how all species on an island are in equilibrium compared to one another.

If one species is affected, the others will closely follow.

From his work on ecology, Wilson helped unfold the idea of **sociobiology**, or the study of the biological aspects of social behavior in both animals and humans.

An extensive work on insect sociobiology called *The Insect Societies*, explored the social worlds of ants, wasps, and termites.

This work was greatly received in the scientific world, but a later piece would stir much controversy.

In 1975, Wilson published his greatest, and most controversial, work: *Sociobiology: The New Synthesis*.

This book extended the analysis outlined in *The Insect Societies* to higher vertebrates including primates, and in the last chapter, humans.

Wilson speculated that social patterns and hierarchical systems in human beings may have their origin in evolutionary responses to certain environmental stimuli.

In other words, things like religion, government and war may have arisen as a direct result from our evolutionary history.

Many of Wilson's critics believed that this meant Wilson justified things like sexism, racism, war, polygamy, murder and many other immoral behaviors.

Wilson adamantly denied these claims.

Nevertheless, many protested at his lectures and meetings. In one instance, Wilson was doused with water by a protestor during a meeting of the American Association for the Advancement of Science (AAAS).

Despite this, Wilson published *On Human Nature* in 1978.

In this work, Wilson thoroughly examined and elaborated on the scientific arguments surrounding the role of biology in the evolution of human culture.

For this work, Wilson received the Pulitzer Prize of Non-Fiction in 1979.

After many years, the ideas laid out in both *Sociobiology: The New Synthesis* and *On Human Nature* are now considered, by the bulk of biologists, to be fundamental knowledge.

Wilson officially retired from teaching at Harvard in 1996 but continues to hold positions of Professor Emeritus and Honorary Curator in Entomology.

Conservation and Ecology
For many years, Wilson has been an advocate and participant in the international conservation movement, as a consultant to Columbia University's Earth Institute.

Wilson has also held administrative roles in the American Museum of Natural History, Conservation International, The Nature Conservancy and the World Wildlife Fund (WWF).

Why Edward O. Wilson?

Simply put, Edward O. Wilson is one of the main reasons I am studying biology.

It isn't his knowledge or intelligence that has sparked my interest, although he has enough of both.

It is his fervor.

He genuinely loves what he does. It's not for recognition or praise, it's just love-plain and simple.
If you listen to the man talk for a few minutes by checking out the video provided (courtesy of PBS and Youtube), you will know what I mean.

His attempt to bridge the gap between biology and humanity has given me hope that mankind will start to understand the importance of the living world.

It is something we have torn away from, but can never fully separate from.

In fact, Wilson describes that we humans have an inherit love for all living things and systems.
He called this biophilia.

Although Wilon's contributions to our understanding of biology are both extensive and important, I believe that the greatest gift from Edward O. Wilson is that he sparked a movement that introduces nature as an intrinsic part of the human experience.

We live in a world that is mostly devoid of nature in our everyday lives. Wilson, however, has re-discovered our link to the natural world and our responsibility to care for all living things as our brothers and sisters.

At 82 years old, Dr. Wilson still has a heart-warming smile and a dedication that makes me proud to study biology.

Other works by Edward O. Wilson:
Promethean Fire: Reflections On the Origin of Mind (1980)
Genes, Mind and Culture (1981)
The Diversity of Life (1992)
Naturalist (1994)
Consilience: The Unity of Knowledge (1998)
The Future of Life (2003)
Nature Revealed: Selected Writings, 1949-2006
The Creation: An Appeal to Save Life on Earth (2007)

About this column: An educational, science-minded column

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What do you think about "The Lord of the Ants"? Tell us in the comments.