Evolution and Creationism: A Very Short Guide
second edition

by Warren D Allmon

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reviewed by Robert “Mac” West

When the Paleontological Research Institution opened its Museum of the Earth in 2003, its director Warren Allmon realized that the floor educators and volunteer docents needed accessible, accurate, and current information on evolution in order both to explain this essential process and to refute and correct the inevitable assaults by creationists. Thus he produced the predecessor to this little book. This volume updates the original, in terms of both new scientific advances and external legal and social events.

The book is direct and to the point, including a four-page glossary of essential terms, which appear in boldface where they occur first in the body of the text. At the outset, evolution is established as a legitimate science in a discussion of the scientific method and the process of science proceeding via testable hypotheses. This accurate use of terminology defuses the “only a theory” dismissal of evolution.

After a short history of evolutionary theory from Darwin to the present, the book presents the primary evidence for evolution, including observable small-scale changes, biogeography, comparative anatomy and vestigial structures, fossils, and genetics. It then addresses the causes of evolution, providing an effective and direct explanation of natural selection in the context of both genetic variation and the influence of external environments.

A chapter discusses the geologic time scale, clearly describing the importance of both physical positions (superposition and lateral correlation) and the roles of both radiometric and relative dating.

With the salient aspects of evolution well established, there is then a discussion of the history of creationism, highlighting the various legal challenges (including the significance of the results of the Dover trial of 2005), and the evolution of “intelligent design” creationism. This flows well into a commentary on the various public opinion polls that continually document that the majority of the U.S. population neither accepts nor knows much about evolution, despite the wording of the questions.

A commentary on the relationship of evolution to religious belief includes the diversity of “official” positions of several denominations and organizations.

The final chapters address the importance of evolution in education. Allmon discusses the multiple roles that evolution plays in understanding modern society and its development, noting that evolution underpins much of applied biology and is important in much of the
non-biological sciences, including fields such as astronomy, geology, and medicine, to say nothing of nonscientific fields. There is then a discussion of education issues, addressing the local control of education in the United States, leading to local and state school board issues such as those in Dover, Pennsylvania, Kansas, Texas, and so on; the phenomenon of frequently ill-prepared teachers; and the pressures that often are experienced by classroom teachers.

Chapter 12, “Some frequently asked questions,” provides direct responses to common objections: that evolution is “only a theory,” that evolution means that everything is “random,” that there is “micro-evolution” but no evidence for “macro-evolution,” and that religion and evolution are always in conflict. And the final commentary, “10 things everyone should know about evolution” (see below), is an excellent summary.

This is a direct, easy-to-read, and useful book, especially for those on the front lines of evolution education and public interpretation.

1. Evolution (descent with modification) is not the same as mechanisms or causes of evolution.
2. Scientists can study events and processes in the past, even when there was no human there to witness them, by the principle of extrapolation, which is also used in all scientific experiments and conclusions about phenomena that happen in the present.
3. There is a huge amount of evidence for evolution (descent with modification) from all areas of biology, and there has been no serious scientific debate about whether it is true since the 1880s. Evolution is as well supported as many other scientific conclusions we regularly call “facts,” such as that the Earth goes around the Sun.
4. Very active scientific debate continues today about the mechanisms by which evolution occurs, but this does not imply any controversy about whether evolution occurs.
5. Since the 1940s, natural selection, the mechanism first proposed by Charles Darwin in 1859, has been accepted by most scientists as the most important mechanism of evolution.
6. Natural selection is simply an outcome of the struggle of variable individual organisms to survive and reproduce. Those individuals with inherited variations that allow them to be more successful in this struggle will, on average, leave more offspring in the next generation.
7. Natural selection does not guarantee progress or improvement in any absolute sense, nor does it include or imply any overarching plan. It only leads to better fit of organisms to their local environments.
8. Evolution is the central organizing and explanatory idea in modern biology, including medicine and agriculture. If it is incorrect, then so is much of our understanding of the rest of biology.
9. Evolution is important because it helps us understand and address many practical problems, such as resistance of germs and pests to medicines and pesticides, the structure and function of the genetic mechanisms of inheritance and development, the nature of many human diseases, and the ecological causes and consequences of species extinction.
10. Evolution by natural selection is not necessarily opposed to religion, nor is it a basis for rejecting all systems of ethics. It does, however, imply that the natural world, including humans, is explicable solely by reference to natural processes and phenomena, that any supernatural influence on nature is unobservable by and inaccessible to science, and that human ethics and values are derived from humans themselves.

ABOUT THE AUTHOR

Robert "Mac" West, a member of NCSE’s board of directors, is a former director of the Carnegie Museum of Natural History in Pittsburgh and the Cranbrook Institute of Science in Bloomfield Hills, Michigan. He now operates Informal Learning Experiences, Inc.

AUTHOR’S ADDRESS

Robert "Mac" West
Informal Learning Experiences
1776 Krameria Street
Denver CO 80220

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