

Was Darwin Wrong?

Charles Darwin's Theory of Evolution revolutionized scientific thinking in the middle of the 19th century and is now universally accepted by scientists around the world. While Darwin got the theory of evolution right, Niles Eldredge has proven that he got the details wrong. Evolution occurred, but rather than Darwin's slow and steady pace over millions of years, it occurred in short (by the standards of geological time) bursts. Eldredge's theory has again revolutionized how scientists understand the past.

Darwin proposed that evolution occurred through natural selection, which he described as an ongoing stable process of continual small changes occurring over millions of years in Earth's geological history. This "gradualism equilibrium" became the accepted theory of evolution. However, since Darwin, scientists have made many discoveries that have challenged the accepted hypotheses.

Niles Eldredge, easily the world's most recognized paleontologist, concurs with natural selection as a key element of the evolutionary process: species change and adapt to survive. But after a lifetime of research, Eldredge concluded that evolution occurs not in gradual changes occurring over a long and slow progression of time but in a different pattern, one of "punctuated equilibrium." Eldredge (working with paleontologist Stephen Jay Gould) found that species remain stable for millions of years until events — usually climatic change — prompt intense periods of change. In geological terms, these "spurts" occur rapidly — 50,000, 100,000, 500,000 years apart, more or less. Eldredge's "punctuated equilibrium" has now become the accepted theory of how natural processes generate evolution.

In *Extinction and Evolution*, Niles Eldredge chronicles how his research led him to the breakthrough of punctuated equilibrium. Following his specialty — the fossil record of trilobites, a group of marine arthropods living from 500 million years ago to about 250 million years ago — he found clear evidence of how this evolutionary process works.

Eldredge describes how he traced the history of life through the lenses of paleontology, geology, ecology, anthropology, biology, genetics, zoology, mammalogy, herpetology, entomology and botany. To demonstrate his findings he provides 160 beautiful color plates showing more than 200 fossil specimens that include some of the most significant discoveries of recent years. With a passion that comes from a lifetime of research, he describes how the fossils provide irrefutable evidence for his theory that forever changed our understanding of evolution.

Extinction and Evolution will find interested readers among paleontologists, archeologists, biologists and all related academics and professionals as well as students of the sciences, natural history readers and enthusiastic fossil hunters.

Extinction and Evolution

What Fossils Reveal About the History of Life

Niles Eldredge

Introduction by Carl Zimmer

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