

Once Upon a Time

BOOK REVIEW

Paradise Found: Nature in America at the Time of Discovery, by Steve Nicholls.
2009. University of Chicago Press, Chicago and London. 524pp.
[ISBN 9780226583419 (paper); ISBN 9780226583402 (cloth); ISBN 9780226583426 (E-book)]

Reviewed by:
PAUL M. MCKENZIE¹

This captivating book should be read by anyone interested in conservation as well as anyone desiring to learn more about our country's pre-Eurosettlement flora and fauna, how management by Native Americans historically shaped the landscape, and how quickly European and Scandinavian explorers brought once-abundant species to extinction, as well as decimating indigenous peoples.

Entomologist and Emmy-winning wildlife documentary filmmaker Nicholls spent over 20 years traveling across North America researching this book and the quality of the product is reflective of the time the author spent gathering information from an exhaustive literature review as well as interviewing many who provided historical accounts. The book is organized chronologically as well as longitudinally where he covers the North American environment from the Atlantic to the Pacific. The author covers the decimation of native species in gory and nauseating details, including Atlantic and Pacific salmon, cod, seals, whales, Carolina Parakeet, Great Auk, Heath Hen, Passenger Pigeon, freshwater mussels, Gray Wolf, prairie dogs, Eastern Cougar, bison, Blue Pike, beavers, Sea Otter, Stellar Sea Lion, Bighorn Sheep, Pronghorn Antelope, Grizzly Bear, coral reefs, and even the Rocky Mountain Locust.

In addition to the annihilation of North America's species by Europeans, Nicholls covers in well-documented detail the introduction of numerous non-native species, including zebra mussels, quagga mussels, sea lampreys, feral hogs, horses, and a host of diseases that in some cases decimated native wildlife as well as Native Americans who occupied this land long before Scandinavian and European explorations. Throughout the book, the author contrasts greed, wanton waste, and economic incentives with initial conservation efforts that were often initiated only after extinction of many species had occurred or numbers had been reduced to such low levels that recovery was futile.

¹ PAUL M. MCKENZIE – U.S. Fish and Wildlife Service, 101 Park DeVille Dr., Suite A, Columbia, MO 65203. email: paul_mckenzie@fws.gov

On one hand this book will make you sick to your stomach and make you wonder why the title is not “Paradise Lost” rather than “Paradise Found”. On the other hand, it will reaffirm that a commitment to conservation is a noble cause and that by learning from the horrid lessons of our past, we may work together to secure and maintain what’s left in North America to sustain and benefit future generations.

Looming Evolutionary Apocalypse

BOOK REVIEW

Half-Earth: Our Planet's Fight for Life, by Edward O. Wilson. 2016.
W.W. Norton & Co. (Liveright Publishing): New York. 272 pp.
[ISBN 9781631492525 (paper); ISBN 9781631490828 (cloth)]

Reviewed by:
JOHN C. RICHTER¹

I volunteered to review E. O. Wilson's latest book. What did I know of E. O. Wilson? Well he studies ants and I knew he also has been a prolific writer, including co-authoring the classic *Theory of Island Biogeography* (1967). I also discovered that he attracted controversy for his book *On Human Nature* (1978). As a humanist, Wilson shares company with other brilliant and influential authors, including Isaac Asimov, Kurt Vonnegut, Jr., and Carl Sagan. The book begins and ends with a fly page, which does not seem congruent with Wilson's view of how we should allocate resources. That aside, there are 21 chapters presented in three parts. These parts are titled "The Problem", "The Real Living World", and "The Solution".

The brevity of the chapters makes the book easy to read, and black and white illustrations preceding each chapter provide interesting fodder for thought. The book begins with a series of chapters introducing the subject of species diversity and how the loss of species represents the termination of a phylogenetic branch which can never be duplicated. This is the section of the book where the Anthropocene worldview is presented as antagonist. There is a glossary that includes definitions for terms such as "Anthropocene worldview".

As I read Part I, I found myself disagreeing with the need to establish an antagonist literary component, so I figure the author has either had success with this approach in previous novels, or bears a personal grievance against this component of society. Wilson was 86 years old when the book was published, and although not a curmudgeon, he has my approval to say it like it is without a sugar coating. One passage I remember from Part I is Wilson stating that if he were to travel back in time to the late Pleistocene, he is confident he could recognize most of the insects, but would be wholly taken aback by the diversity of large mammals that are now extinct due to hunting by Paleoindians. Part 1 effectively introduces the problem, which is an accelerated global extinction rate resulting from the Anthropocene worldview. For Wilson, this extends beyond a moral regression on the part of *Homo sapiens*, to a crime against evolution

¹ JOHN C. RICHTER – 2520 NW 6th St., Blue Springs, MO 64104. email: RichterJC@bv.com

itself. Surely, no single species should have the power to cauterize the tips of phylogenetic branches that are tens of millions of years in the making.

Part II was mesmerizing, and the chapters easily flowed. The antagonist was mostly absent from Part II, and here Wilson's hyper-graphic talents come alive. He describes nature, species, strange habitats, survival mechanisms, and effectively pulls the reader into the bizarre qualities of life that has evolved on land and sea. Chapters 13 and 14 found I could not put the book down, as Wilson provides fascinating examples of life that occurs deep under the sea floor, and deep under the earth. Not afraid of any backlash, he also takes a small jab at The Nature Conservancy, pointing out that the organization falls shy of complete conservation by assimilating humans and their domestic cattle and crops into the ecological web of life on the lands they strive to protect. Part II also offers intellectual thought for botanists, such as noting that the Galapagos Islands has produced, through transmutation, trees derived from a phylogenetic base of herbs in the sunflower family. [For you botanists out there, here is some ambrosia (taxonomically correct pun intended): Perry, Roger. 1974. *Sunflower Trees of the Galapagos*².]

Part III is intended to introduce a solution, but these chapters become obtuse and conceptually unraveled. For example, several pages are devoted to artificial intelligence, which can be explained by Wilson's fascination with technology; here I come to complete odds with the solution and moral attributes Mr. Wilson suggests. I found an abundance of inconsistencies, such as the assertion that we need nature to promote a healthy mind, although preservation of the earth may only allow us to view it via a drone flown through the Amazon. Similarly, how we are always going to be tied to the biodiversity of nature and the processes that shaped us, while conceding life may be improved by genetic engineering, or even creating new cells or species in the laboratory? These inconsistencies are perplexing.

The book contains some fascinating information, although in terms of providing a solution to curtailing extinction rates I mainly found Wilson to leave it up to technology in general, which is the largest inconsistency of the book. He stresses the need for thoroughly understanding each of the millions of species occurring in the web of life to the minutest detail, yet has no moral reproach about creating a species in the laboratory and releasing it to the earth for domestic use.

Edward Wilson has a unique perspective on life and generously shares his deep knowledge of the earth, and that comes out in his literature. This is admirable, and here is my interpretation of how Part III, the Solution, could be more relevant: Consider Mr. Wilson himself, at 25 years old, doing fieldwork on ants in a remote jungle forest. The forests so alive

² Available online at:

http://www.darwinfoundation.org/datazone/media/pdf/22/NG_22_1974_Perry_Sunflower_trees.pdf

with species that the young naturalist is forever changed, by nature, by the beauty of biodiversity, on a level of respect for what the earth can produce. This was followed by the maturation of that awe into a lifelong philosophy over earth's mechanisms of perpetuating life. I think a lot more people need to take such a journey.

Arborescent Anthropomorphisms

BOOK REVIEW

The Hidden Life of Trees, by Peter Wohlleben. 2015.
Greystone Books, Vancouver and Berkeley. xv + 271 pp.
[ISBN 9781771642484 (cloth); ISBN 9781771642491 (E-book)]

Reviewed by:
DOUGLAS LADD¹

Written by a German forester based on his experiences in managing forests there, this book is a reverential homage to “trees as social beings”, and the underappreciated complexities of their interactions and ecological relationships. The subtitle of this small, enjoyable read — “What they feel, how they communicate” — sets the stage for what is to come. The author, a keen observer of the natural world, has obviously spent considerable time studying the forests in his region, with an astute ability to link individual phenomena to their system context.

Through a series of 36 short chapters with titles such as “The Language of Trees” and “Trees Aging Gracefully”, the author examines all aspects of trees and their relationships with each other, the physical environment, and other biota. There is a wealth of fascinating information here, including intriguing new information based on recent studies questioning previously accepted tenants such as mechanisms for water transport. The author does a good job of resetting our temporal focus to the perspective of organisms with individual life spans ranging from centuries to millennia. There is useful information about fungal interrelationships, phytochemical communications, reproductive strategies, nutrient cycles, cold adaptations, and other aspects of both tree life history and forest ecosystems. Interspersed through the text are fascinating asides, such as the powerfully lethal properties of conifer needle extracts on microscopic animals.

The style and approach are popular and non-technical. Perhaps to make the topic relevant to the reader, the text attempts to relate functions and traits to their human analogs. This can become a bit contrived, for instance when the development of bark fissures in aging trees is linked with the development of wrinkles in the skin of older humans, or when light overexposure in trees is compared to sleep deprivation in humans.

¹ DOUGLAS LADD – Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63110. email: dladd@wustl.edu

A persistent theme throughout the book is the anthropomorphization of virtually every trait and pattern exhibited by trees. Thus, we learn that beeches “harass” oaks, trees do not intrude their crown branches into those of their “friends”, but develop stout branches competing with “non-friend” trees. Other examples include statements that trees make soil “even more precious”, grasses are “relieved” that young trees are eliminated by browsers, and trees become “exhausted” after a growth spurt. The interpretation of evolutionary adaptations and system response as “tree etiquette” is a bit saccharine and imparts a false sense of near-universal, deliberate collaboration among the biota.

Similarly, in an evolutionary context, it is hard to interpret overarching, undocumented statements such as “an organism that is too greedy or takes too much without giving anything in return destroys what it needs for life and dies out”, and that therefore “most species have developed innate behaviors that protect the forest from overexploitation”. Imbued with a deep respect for living things, balance, and collaborative interrelationships, the author views everything through a lens of Utopian harmony towards a common goal of an enduring healthy forest.

There are also several questionable ‘facts’ or erroneous assumptions in the book, including the debatable point that “the root network is in charge of all chemical activity in the tree”, or that the lack of coal development in the contemporary era is because “forests are constantly being cleared” (ignoring hypotheses about the post-Carboniferous appearance of lignin decomposers, or major changes in climate). Some assertions in the book are fascinating, although lack of documentation prevents further analysis, such as that silver firs (*Abies alba*) have an evolutionary adaptation to retard competition via their long, pendulous branches acting as wind-driven whips to damage encroaching foliage.

An additional criticism is the implication of universal forest and tree facts based on a near-total focus on northern European forests and a relatively few tree species: most of the examples in the book are based on European beech, fir, pine, spruce, oak, and bird cherry. Additionally, the most valuable ecological condition is always deemed to be old growth, closed canopy forest, as manifested by the above-ground presence of big trees. All human interventions are deemed a deleterious disturbance. Fire is hardly mentioned (and when mentioned, its ecological role is misinterpreted), and the depauperate ground layer of old, closed forests is considered a good thing, as opposed to the manifestation of a degraded system, as is now recognized in much of North America. The possibility of the existing European forests being a product of millennia of anthropogenic interactions is blithely ignored.

Overall, this book is a mixed bag: I enjoyed reading it and appreciated the author’s eye for detail, passion for nature, deep love of trees, and concerns for ongoing degradation and threats. For non-specialists, there is a wealth of basic information about tree function and ecology, if sometimes in stiltedly Utopian and anthropomorphic terms. The work often dances on the edge of accepted science, as evidenced by the plethora of web sites, newspaper articles, and

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non-refereed citations in the 76 footnotes; no other references or bibliography are included. Entertaining, informative, and to be read with a healthy skepticism and wish that the author had the ecological perspective to see the full context of healthy woodland systems through the trees.