

inhumanity of the wilderness nor the rampant deforestation that shook Thoreau. But, as Walls notes in discussing the writer and naturalist Susan Fenimore Cooper, “[t]he true passage to Cosmos is not found, but forged.” This forging was carried out by “Humboldt’s American children,” prominently among them the environmentalists John Muir and George Perkins Marsh. And Walls does her own forging, too.

By recovering the excitement of Humboldtian explorations and travel experiences, Walls wins back Humboldt for the 21st century. Through her account, he joins forces with present-day heroes such as Edward O. Wilson and his *Cosmos* of a sort, *Consilience* (4), all of them reorienting and transforming disciplines and divisions that threaten “to leach the poetry out of our technologically driven lives.” Walls reclaims for the present a man whose personality and work had a formative influence on the cultural landscape of

antebellum America and whose legacy may to good effect be used in addressing current affairs. I recommend *The Passage to Cosmos* as a fine piece of Humboldt scholarship, a heartfelt plea for environmental holism, and an enjoyable read.

References and Notes

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3. A. von Humboldt, *Kosmos: Entwurf einer physischen Weltbeschreibung* (Cotta, Stuttgart and Tübingen, 1845–1862).
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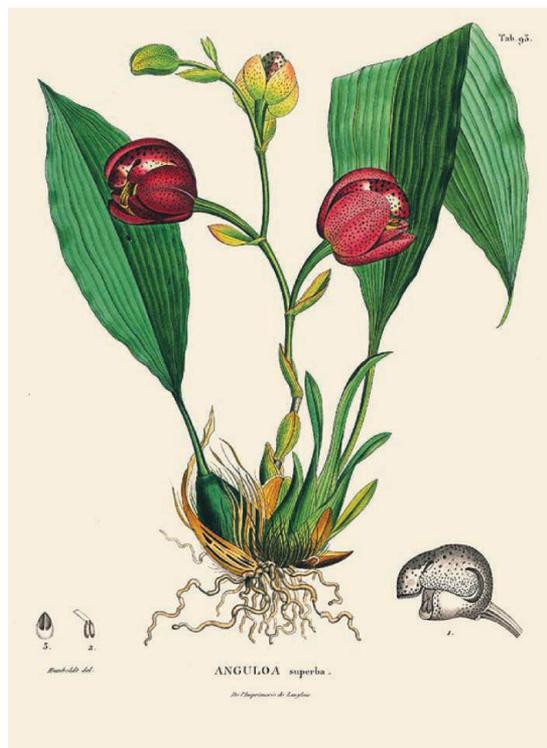
BROWSINGS

Alexander von Humboldt and the Botanical Exploration of the Americas.

H. Walter Lack. Prestel, Munich, 2009. 280 pp. \$185, £125. ISBN 9783791341422.

Although “botany was never the real focus of Humboldt’s interests,” his 1799–1804 travels with Aimé Bonpland made an enormous contribution to the recording of plant diversity. Humboldt and his collaborators described and named hundreds of plant species from the northern Andes, Mexico, and Cuba. (Although several 18th-century Spanish expeditions had also collected many of these, their findings long remained unpublished.) Lack offers a short account of this research, highlighting links

between the 19 volumes of “Partie 6: Botanique” of *Voyage aux régions équinoxiales du Nouveau Continent* and the underlying letters, field notes, herbarium specimens, drawings, and botanical prints. The author notes that Bonpland carried out most of the actual botanical work in the field but once back in Paris failed to complete the two major texts he started. Humboldt then recruited Carl Sigismund Kunth and a small team of researchers, artists, engravers, and printers who saw the work through to publication. Lack stresses Humboldt’s organizational talents and the modern aspects of his methodology: careful numbering of specimens, preservation of notebooks, production of illustrations, and deposition of specimens in prominent public institutions. The richly illustrated volume includes a selection of 82 full-color plates from “Partie 6” (such as *Acineta superba*, an epiphytic orchid Humboldt and Bonpland collected from cloudforest in Ecuador).



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HISTORY OF SCIENCE

Icons of Early Conservation Biology

Jared Farmer

The U.S. Fish and Wildlife Service’s May 2008 listing of the polar bear (*J*) in Alaska as a threatened species was a politically and emotionally charged moment. Environmentalists had worked hard to turn the already-iconic bear into a symbol of global warming. As part of the species recovery plan, the government will continue to census bear populations. As historian Mark Barrow shows, politically motivated inventories of wildlife long predate the Endangered Species Act and the discipline of conservation biology. *Nature’s Ghosts* is essentially a chronicle of proto-professional scientists making lists of threatened totemic species.

By using in the subtitle *from the Age of Jefferson* instead of “the Age of Cuvier” or “the Age of Geology,” Barrow (a professor at Virginia Tech) unapologetically announces his American bias. His nationalist perspective allows him to draw a simple narrative arc: At the time of the founding of the U.S. republic, American naturalists, including Thomas Jefferson, did not believe in the possibility of extinction, for it seemed to violate the economy of nature. Two centuries later, the United States passed the world’s gold-standard law for protecting species from extinction. What happened between? No single book could explain it all, and Barrow doesn’t try. *Nature’s Ghosts* skimps on cultural, economic, and political analysis. Instead, the book means to restore the stature of the U.S. naturalists who created the concept of endangered species.

Barrow’s narrative begins with a quick summary of the geologists, paleontologists, and comparative anatomists in Europe who established the reality of extinction. The original icon of prehistoric extinction was the American mastodon. Thinking forward in time, Cuvier and Lyell posited that human-caused extinction was possible,

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Nature’s Ghosts
Confronting Extinction
from the Age of Jefferson
to the Age of Ecology

by Mark V. Barrow Jr.

University of Chicago Press,
Chicago, 2009. 509 pp. \$35,
£24. ISBN 9780226038148.

even inevitable, and potentially regrettable, but not unnatural. Finally, in the 1830s and 1840s, investigations into the histories of three kinds of flightless birds—the dodo, the moa family, and the great auk—proved that humans could in fact eliminate whole species. Of these, the auk is most important to Barrow's story because it was the first species to die in front of naturalists' eyes—or their gunsights. Various collectors and museums vied for the final specimens.

It was, however, the dramatic, continental declines of the American bison and the passenger pigeon in the late 19th century that turned U.S. naturalists into conservationists. For example, the American Bison Society began a captive breeding program at the Bronx Zoo to save the shaggy national symbol. Propagation of passenger pigeons proved much harder, and the final two birds—a childless pair named George and Martha Washington—died in the Cincinnati Zoo.

In the first half of the 20th century, U.S. naturalists enlarged their scope of concern. They looked beyond the nation's borders—first to the big-game country of Africa, then to the Galápagos Islands. Naturalists promoted the passage of the Western Hemisphere Convention in 1940 and the creation of the International Union for the Protection of Nature in 1948. In the same era, they added predators and scavengers to the list of mammals and birds worthy of attention and preservation. Under the influence of the new discipline of ecology, naturalists began to inventory endangered habitats instead of just hunting and mounting, capturing and breeding.

In the pre–World War II era, naturalists and ecologists could not apply for government grants to conduct their baseline studies. Institutional support then largely came from privately endowed natural history museums and conservation groups. The Audubon Society, for example, sponsored graduate fellowships, including one that produced the first documentation of the last days of a doomed population (the heath hen). On a larger scale, the American Committee for International Wildlife Protection bankrolled three seminal inventories of the world's endangered and extinct animals.

Barrow heroizes the work of these politically engaged inventory makers. He gives numerous capsule biographies of naturalists such as Carl Koford, who conducted the first life history of the California condor, and James T. Tanner, who did the same for the ivory-billed woodpecker. He celebrates an era when biologists—almost all of them men—camped in the field. These scientists performed no lab work, no applied mathe-



matics, no computer modeling. In Barrow's telling, their greatest tool was their "powerful emotional response" to wildlife, their "deep sense of connection" to nature. After World War II, naturalists found a home in new nongovernmental organizations like the World Wildlife Fund and enlarged agencies like the U.S. Fish and Wildlife Service. Not until Michael Soulé's generation did "indoor biologists" within academia try to recover the American naturalist tradition—a move applauded by Barrow, who locates the roots of conservation biology in natural history.

The author's admiration for his biographical subjects creates problems. In passing, he provides evidence that many of his players were racists, but he fails to discuss the deep connections between Progressive-era wildlife conservation and nativism and eugenics (2). This is a significant omission because eugenicists worked against another kind of "extinction"—the threatened status of the "Nordic race" in America.

Barrow misses other opportunities to contextualize the concept of extinction. He says nothing about the enthusiasm for dinosaurs that has marked America culture since the 1890s—a phenomenon that has changed the way people think about mass extinction events. He grants just one throwaway paragraph to Paul Martin's hugely influential Pleistocene overkill hypothesis (3). Lastly, the author's decision to exclude plants from his book means that the reader doesn't learn about the sustained efforts to save the giant

Icon of extinction. When Martha, the last known passenger pigeon, died on 1 September 1914, her body was rushed to the Smithsonian Institution, where it was long displayed as a warning that even a species whose population numbered in the billions could fall victim to humans.

sequoia—an American symbol linked to the mastodon in 19th-century popular culture, a species long thought to be an evolutionary relict doomed to natural extinction and in danger of human-caused extinction.

Nonetheless, Barrow has produced something noteworthy—the definitive prehistory of conservation biology in America. The book is especially strong in its treatment of the underappreciated cohort of field biologists between William T. Hornaday and Aldo Leopold.

Overall, *Nature's Ghosts* is rousing and depressing. Despite great changes in U.S. attitudes about nature, Americans still care more about charismatic megafauna than lowly, ugly creatures.

Although the original wording of the Endangered Species Act was surprisingly sweeping, in application it has been something else. As famously shown by the snail darter court case, not all threatened beings are created equal. Ironically, the narrative of *Nature's Ghosts* replicates the popular disregard for certain classes of life. Pigeons were not, after all, the only species that darkened the American sky with awesome flocks. There was also the Rocky Mountain locust—a once-prodigious species that went extinct about the same time without any fuss or expression of human regret (4). How many people feel a deep sense of connection to grasshoppers? Barrow's naturalists made no comment about this extinction event, and neither does he.

References and Notes

1. Scientific names of taxa mentioned in the text: polar bear, *Ursus maritimus*; American mastodon, *Mammut americanum*; dodo, *Raphus cucullatus*; moa family, Dinornithidae; great auk, *Pinguinus impennis*; American bison, *Bison bison*; passenger pigeon, *Ectopistes migratorius*; heath hen, *Tympanuchus cupido cupido*; California condor, *Gymnogyps californianus*; ivory-billed woodpecker, *Campephilus principalis*; giant sequoia, *Sequoiadendron giganteum*; snail darter, *Percina tanasi*; Rocky Mountain locust, *Melanoplus spretus*.
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