

Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming

Author: Sherry, Thomas W.

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recommendations on dealing with converting exotic pastures to native grasses as well as avoiding their continued spread that often ruins native habitats. The appendices include a list of some 229 species of plants also found in quail crops but not included in the guide. The next appendix is an important one in my mind because it lists other species of wildlife that use the same habitat as bobwhites. This is important because more landowners and managers are managing for multiple species goals but also because good stewardship of grasslands helps a number of declining species.

The authors of Texas Bobwhites have decades of experience with bobwhite research and management in Texas. As normal for this group of authors, they have produced a high-quality product that will help hunters and biologists identify seeds that they find in quail crops but also help the quail enthusiast, manager, and hunter better understand the habitat needs of quail throughout the year. I highly recommend this book to anyone that wishes to improve their seed identification skills and feel confident that it would be a useful addition to any quail hunter or biologist's library in or outside of Texas.—WILLIAM E. PALMER, *Tall Timbers Research Station, 13093 Henry Beadel Drive, Tallahassee, Florida 32312 USA; e-mail: bill@ttrs.org.*

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Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming.—Naomi Oreskes and Erik M. Conway. 2010. Bloomsbury Press, New York, New York. 355 pp. ISBN 978-1-59691-610-4. Hard, \$27.00.—Arguably the most compelling environmental exposé since *Silent Spring*, *Merchants of Doubt* captivated me, almost like a thriller, as it revealed why scientists and environmentalists are often outgunned, and in some circles, reviled. It's a must-read for environmental teachers and writers as well as anyone who cares about the environment and the future of birds.

The book builds on voluminous documents revealed using freedom-of-access laws during litigation of U.S. tobacco companies. Appropriately, Chapter One details how company executives cozied up to scientists like S. Fred Seitz—a former president of the U.S. National Academy of Sciences who established his scientific credentials developing the atomic bomb in WW II—and exploited an ideological willingness to seed doubt about the science behind health effects of smoking. The ensuing “Tobacco Strategy” was brilliantly successful because the tobacco industry knew by 1953

that cigarette smoking caused cancer, but the U.S. Congress delayed authorizing the Federal Drug Administration to regulate tobacco as an addictive drug until 2009!

Seitz and other prominent physicists (Fred Singer, Robert Jastrow, and William Nierenberg) proceeded to apply the Tobacco Strategy to market doubt about the science that should have quickly resolved many controversies of our time: Reagan's Strategic Defense Initiative (“Star Wars”), acid rain, the ozone hole, second-hand smoking, climate change, and DDT (each case study the focus of a chapter).

How could prominent scientists—on the wrong side of the scientific consensus on all these controversies—become such pit bulls against inconvenient science? Oreskes and Conway make a strong case for the Cold War as the initial ideological incubator for these scientists' hatred of socialism, and by extension, government regulation generally. Coincidentally, industries like big tobacco were fighting government regulation. It is not hard to imagine how Seitz could be influenced by big tobacco's deep pockets. Increasingly, he rubbed shoulders with heads of corporate America, flew with his wife to Bermuda compliments of R. J. Reynolds Company (whose largesse he also showered on Rockefeller University while president), and awarded over \$43.4 million in research grants (by 1979) to other scientists sympathetic to big tobacco. Seitz helped produce *Bad Science: a Resource Book*—a field guide for “fact-fighters, providing example after example of successful strategies for undermining science, and a list of experts with scientific credentials available to comment on any issue about which a think tank or corporation needed a negative sound bite” (p. 6).

Three chapters in *Merchants of Doubt* will particularly interest ornithologists. The book's final chapter is devoted to Rachel Carson, *Silent Spring*, and the heuristically rich story of DDT's effects on bird populations, external costs of human economic activities, and how viciously the chemical industry attacked Carson. Despite the attacks, her work was validated scientifically by bipartisan federal government panels, leading to the U.S. Environmental Protection Agency's (EPA) 1972 ban on the use of DDT in the U.S. Given such validation, recent demonization of Carson as a mass-murderer (e.g., the Competitive Enterprise Institute, [CEI]: rachelwaswrong.org/) begs explanation. Oreskes and Conway systematically dismantle the purported case against Carson and argue convincingly that CEI—and the Heartland Institute, Dixie Lee Ray, Bjorn Lomborg, Steve Milloy, and many others—are trying to revise the history about Carson precisely because her work prevailed against a powerful industry: “Accepting that by-products of industrial civilization were irreparably damaging the global environment was to accept the reality of market failure. It was to acknowledge the limits of free market capitalism” (p. 238). All seven case studies in the book document failures of the marketplace to regulate itself, the need for government regulations to protect us and the environment, and the ideological backlash against such efforts.

Chapter 7 is also valuable to ornithologists by treating efforts to regulate acid rain, which is scientifically linked to forest declines, lake effects relevant to fishing birds (Nierzwicki-Bauer et al. 2010), and to a variety of problems for songbirds (e.g., Grave-land 1998, Kowalik et al. 2007, Hames et al. 2002). The book does not even mention mercury contamination of remote aquatic ecosystems, a health and environmental cost of coal combustion.

Acid rain was first documented in the U.S. by Gene Likens and colleagues at Hubbard Brook, New Hampshire. Having worked there in the 1970s, I was aware of his prominent efforts to regulate acid rain at the source (power plants and other industrial activities in the Midwest), and so was fascinated to learn here how William Nierenberg and Fred Singer sabotaged Likens' efforts. Just as in the case of big tobacco, these contrarian scientists provided ideologically pro-industry political leaders the "scientific expertise" they needed, contributing to blocking over 50 efforts to reduce sulfur emissions prior to 1988 (Malakoff 2010).

Chapter 6 is also important to ornithologists by dealing with climate change, and its threats to global biological diversity, including high-elevation and high-latitude birds. Readers should look elsewhere for the biological arguments (e.g., Cox 2010, Kitcher 2010). Chapter 6 focuses on how all four scientists who attacked ideologically inconvenient science in other contexts have also been undermining the growing scientific consensus that humans cause global warming (see Oreskes 2004), and have helped torpedo multiple U.S. government efforts to deal with the problem going back to President Lyndon Johnson (in 1965)! It is understandable how the U.S. public misunderstands climate change, and this book makes the case for ornithologists that no credible scientific case exists against the climate science. We still have much to learn, of course, about how humans are changing climate and the oceans, and the biological consequences, but these are issues for science, not ideology, to resolve.

Oreskes and Conway recognize the complicity of much mainstream press in exacerbating the public's confusion about climate change and other scientific issues. The press has often capitulated to pressure, often arising from some of the same industries and their scientist minions, to present both "sides" of a debate, which usually implies a balance between one disgruntled scientist versus a ton of hard evidence and the overwhelming consensus of the entire community of qualified scientists! This book also recognizes the problem of the public's lack of understanding of the peer review process and the provisional nature of science, and would provide a great resource for classes that address the uses, misuses, and nature of Science.

Science is inconvenient to many industries. Ironically, the same scientists who abetted these industries by way of trying to save us all from the frying pan of socialism have in effect thrown us into the fire of unregulated industries that today threaten the entire planet's health. It does not help that we humans empower industry through our consumptive habits, and that our global population is growing steadily along with our urge to increase our standard of living in ways that are unsustainable.

Merchants of Doubt leaves much to be done in terms of linking its case studies and the underlying anti-government, anti-regulation ideology to contemporary politics—admittedly a vast topic. Astute readers will see many connections: In an editorial,

Oreskes (2010) noted the vast network of people, institutes, think tanks, and political allies fighting science applications to policy. For example, Christopher Booker (2009) dedicates his attack on global warming science to Richard Lindzen and Fred Singer, and himself defends Intelligent Design while denying health effects of second-hand smoke. The anti-science, anti-environmentalist themes traced in *Merchants of Doubt* are amplified relentlessly by commentators like Cal Thomas and Glenn Beck, and by the Internet—faster than scientists can rebut.

Although seemingly peripheral to birds, the tug-of-war between science and industry that *Merchants of Doubt* reveals will continue to influence whether or not birds have a fighting chance in what survives of the planet's native habitats. Hopefully, this book will empower environmentalists by exposing the ploys and power of prime adversaries!—THOMAS W. SHERRY, *Department of Ecology and Evolutionary Biology, Tulane University, New Orleans, Louisiana 70118, USA; e-mail: tsherry@tulane.edu.*

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