

6-9-1996

The Scientific Underpinnings of Biodiversity Protection

Jane Lubchenko

Follow this and additional works at: <http://scholar.law.colorado.edu/biodiversity-protection-implementation-and-reform-endangered-species-act>

 Part of the [Animal Law Commons](#), [Biodiversity Commons](#), [Environmental Law Commons](#), [Environmental Policy Commons](#), [Legislation Commons](#), [Natural Resources and Conservation Commons](#), [Natural Resources Law Commons](#), [Natural Resources Management and Policy Commons](#), and the [Terrestrial and Aquatic Ecology Commons](#)

Citation Information

Lubchenko, Jane, "The Scientific Underpinnings of Biodiversity Protection" (1996). *Biodiversity Protection: Implementation and Reform of the Endangered Species Act (Summer Conference, June 9-12)*.

<http://scholar.law.colorado.edu/biodiversity-protection-implementation-and-reform-endangered-species-act/2>



Jane Lubchenco, *The Scientific Underpinnings of Biodiversity Protection*, in *BIODIVERSITY PROTECTION: IMPLEMENTATION AND REFORM OF THE ENDANGERED SPECIES ACT* (Natural Res. Law Ctr., Univ. of Colo. Sch. of Law 1996).

Reproduced with permission of the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment (formerly the Natural Resources Law Center) at the University of Colorado Law School.

THE SCIENTIFIC UNDERPINNINGS OF
BIODIVERSITY PROTECTION

Jane Lubchenco
Valley Professor
of Marine Biology
Department of Zoology
Oregon State University

BIODIVERSITY PROTECTION:
IMPLEMENTATION AND REFORM OF THE
ENDANGERED SPECIES ACT

Natural Resources Law Center
University of Colorado
School of Law
Boulder, Colorado

June 9-12, 1996

TESTIMONY OF
JANE LUBCHENCO
13 JULY 1995
OVERSIGHT HEARINGS
ON REAUTHORIZATION OF THE ENDANGERED SPECIES ACT
SUBCOMMITTEE ON DRINKING WATER, FISHERIES AND WILDLIFE
US SENATE

I wish to emphasize three points in my remarks: (1) reauthorization of the ESA is one of the most important responsibilities this Congress will have, (2) vigorous protection of the Nation's biological resources will benefit all Americans, and (3) recent scientific advances provide good guidance for achieving the goals of the ESA more effectively and efficiently.

The Endangered Species Act of 1973 was a remarkable piece of legislation. Now, the time has come to reconsider its goals and the mechanisms for achieving them. This task is one of the most important challenges facing the 104th Congress. The responsibility of safeguarding the Nation's biological resources is profound. The challenge is also fundamentally different from many of the other important responsibilities of Congress. Most policies formulated at one point in time can be altered at a later date. However, because the loss of a species is irreversible, many of the consequences of a poorly conceived ESA cannot be reversed. Jurassic Park notwithstanding, species cannot be brought back to life, nor can most of their important functions be replaced. What are the consequences of losing species? Losing species mean losing genes, losing potentially important chemicals for medicine, losing life-supporting ecological services. The permanency of extinction and the folly of squandering the natural biological capital on which we all depend should prompt a profound sense of responsibility and a suitably careful approach. Few bad decisions will have such irreversible consequences.

The task of reauthorization should take full advantage of the substantial, recent advances in science. The scientific information relevant to the ESA has been recently reviewed and summarized by two independent expert panels. Professor Clegg has summarized the excellent report issued by the National Research Council. A separate, independent but parallel scientific assessment has just been released by the Ecological Society of America, and I respectfully request that this report be entered into the record. This report is remarkably similar in its conclusions to the Academy report and focuses specifically on ways in which scientific information can help achieve the goals of the ESA more effectively and efficiently.

Together, these reports provide unequivocal testimony to strong consensus within the scientific community: strong consensus about the importance of preserving the Nation's biological resources, strong consensus about the critical importance of these resources to people and strong consensus about the dual need to protect both species and habitats.

People depend upon biological resources in myriad and generally unappreciated ways. Even the much maligned “creepy, crawly critters” or even the simply plain organisms may be bountiful sources of useful products like medicines. For example, the interaction between caterpillars of the day-flying moth *Urania* and the *Omphalea* plants on which they feed results in the production by the plants of a chemical dihydroxymethyl-dihydroxypyrrolidine or DMDP. This compound has been shown to have remarkable properties: it blocks activity of the HIV virus, protects stores of beans against attack by beetles and demonstrates some activity against cancer and diabetes.

Species provide much more than “goods” such as medicines, food and genes, they also provide “services” to people. Intact ecosystems with their full component of species provide many essential services which we take for granted. Old growth forests and wetlands purify water and detoxify pollutants; kelp forests and salt marshes provide nursery ground for fishes and protect shores from erosion during storms. Other “ecosystem services” include the provision of fertile soil, pollination for crops and control of pests and pathogens. These ecosystem services are provided free of charge. They are not included in our economic valuation systems. They are not easily replaced. These services are of obvious importance to people and warrant strong protection.

In some cases, protection of individual species through the ESA has had the added benefit of protection of the ecosystem in which the species lives and therefore of the ecosystem services provided by that ecosystem. For example, protection of the northern spotted owl has resulted not only in protection of hundreds of other species living in old-growth forests but also in protection of watersheds that provide clean drinking water for cities and spawning grounds for salmon.

The increase in scientific understanding of species and ecosystems over the past two decades strongly reinforces the original goals of the ESA. Thus in addition to ethical and moral reasons to protect species and habitats, it is in our own best interests to do so. Protection of species benefits us all. New information also provides guidance about how to achieve this protection in more efficient and effective ways.

In closing, let me share with you my pleasure that my younger son Duncan is here with us today. Throughout human history, parents have looked to the younger generation as the hope for the future, the hope for continuing the good things we have begun and for correcting our errors. Now, however, the next generation may not be able to undo our most egregious and short-sighted mistakes. As E.O. Wilson has said, loss of biodiversity is the folly least likely to be forgiven us by future generations.

Jane Lubchenco is Distinguished Professor of Zoology at Oregon State University, President-Elect of the American Association for the Advancement of Science, a MacArthur Fellow, Pew Scholar and a past president of the Ecological Society of America. She received her Ph.D. from Harvard University; her specialty is marine ecology.

Jane Lubchenco
Biographical Sketch

Wayne and Gladys Valley Professor of Marine Biology and Oregon State University Distinguished Professor, a Pew Scholar in Conservation and the Environment, and a MacArthur Fellow, Dr. Jane Lubchenco is President of the American Association for the Advancement of Science, a member of the National Academy of Sciences, and a past President of the Ecological Society of America. She holds earned degrees from Colorado College (B.A.), the University of Washington (M.S.), and Harvard University (Ph.D.), and honorary doctoral degrees from Drexel University and Colorado College. She was named Oregon Scientist of the Year in 1994 by the Oregon Academy of Sciences and is a member of the American Academy of Arts and Sciences.

A marine ecologist by training, Dr. Lubchenco is currently engaged in a wide variety of scientific, environmental, administrative and teaching activities. These activities are intended to help address numerous serious environmental problems by improving the scientific understanding of issues, making the best possible scientific information and expertise more accessible to policy and decision makers and by improving the public's understanding of ecological topics.

Dr. Lubchenco's current research interests include conservation biology, biodiversity, ecological causes and consequences of global changes, and sustainable ecological systems. Her research focuses on rocky intertidal shores and nearshore coastal ecosystems in Oregon and around the world with special emphasis on the ecology of seaweeds, plant-herbivore interactions and community dynamics. Two of her papers have been named Science Citation Classics.

Dr. Lubchenco has been active in promoting the importance and relevance of ecological research. She led the innovative efforts of the Ecological Society of America to set national priorities for ecological research. This endeavor resulted in the Sustainable Biosphere Initiative, which advances ecological research and provides policy-relevant ecological expertise to national policy- and decision-makers. Dr. Lubchenco co-chairs the international SCOPE Sustainable Biosphere Project, an interdisciplinary, international scientific program of SCOPE which is designed to propose environmentally sound policy and management options for seven regions of the world. Dr. Lubchenco co-coordinated the sections of the United Nations Environment Programme's newly released Global Biodiversity Assessment, which deal with the biological diversity and ecosystem functioning. She serves on the scientific steering committee for Revelation and the Environment, a partnership between scientists and religious leaders to promote environmental stewardship.

Dr. Lubchenco is active in teaching and communicating science. She teaches courses in ecology, environmental sciences, and marine biology, and was named Outstanding Teacher of the Year at Oregon State University in 1986. She has collaborated several times with James and Elaine Larison to produce educational

scientific films. Their most recent efforts included *Oregon's Ocean*, a PBS film, and *Diversity of Life*, a National Geographic Society film, which won a CINE Golden Eagle Award. Dr. Lubchenco lectures widely about marine conservation, biodiversity, ecological consequences of population growth, and other global environmental issues.

Dr. Lubchenco served as Chair of the Department of Zoology at OSU for three years. She is a member of the Boards of Directors of World Resources Institute, the Environmental Defense Fund, Northwest Environment Watch, and the Monterey Bay Aquarium. She serves on several advisory committees for the National Research Council, the National Science Foundation, the U.S. House of Representatives, the National Park Service, and the United Nations Environment Programme.

Dr. Lubchenco and her husband Dr. Bruce Menge, Wayne and Gladys Valley Professor of Marine Biology at OSU, have been pioneers in pursuing novel solutions to combine family and academic careers: they split a faculty position at OSU. Each relinquished a full-time Assistant Professorship (Jane at Harvard and Bruce at the University of Massachusetts at Boston) to accept a half-time tenure-track Assistant Professorship at OSU in 1977. This arrangement allowed each to teach and conduct research as tenure-track, and later as tenured faculty, but also to spend significant amounts of time with their young children. After ten years on half-time appointments and two years on three-quarters appointments, each resumed a full-time position. In view of the success of this arrangement, Drs. Lubchenco and Menge are strong advocates for part-time but tenure-track faculty appointments.

Contact information:

Department of Zoology
Oregon State University
3029 Cordley Hall
Corvallis, OR 97331-2914

Phone: (541) 737-5337
Fax: (541) 737-3360
Email: lubchenj@bcc.orst.edu

9 May 1996