

## Biological and Ecological Sciences in the FY 2002 Budget

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### INTRODUCTION

Major biological and ecological science programs are found within several federal agencies, including the National Science Foundation (NSF), the Department of the Interior (primarily the U.S. Geological Survey (USGS)), the Environmental Protection Agency (EPA), and the U.S. Department of Agriculture (USDA). Much of both the intra- and extramural research in the biological and ecological sciences supported by these agencies provides the scientific information needed to help manage the nation's natural resources.

### HIGHLIGHTS

The proposed FY 2002 budget includes a proposed decline of 4.4 percent to the U.S. Global Change Research Program (USGCRP), which, through integrated research across numerous agencies, addresses the areas of climate, ecosystem science and the global water cycle.

- **NSF:** The Biological Science Activity (BIO) would decrease by \$2.3 million to \$483.1 million. Within BIO, Environmental Biology would receive \$111.7 million (up 1.7 percent; see Table II-7).
- **USDA:** USDA's competitive grants program for investigator-initiated research, the National Research Initiative (NRI), would again be supported at its FY 2001 level of \$106 million.
- **USGS:** The USGS R&D budget would decline by nearly 11 percent to \$491 million, primarily from the Water and Biological Resources Divisions (see Table II-16).

### **NATIONAL SCIENCE FOUNDATION (NSF)**

The President's budget request for NSF is \$4.5 billion for the coming fiscal year, 1.3 percent more than in FY 2001 (see Table II-7). NSF remains the principal federal supporter of academic, non-medical research in biology and ecology. NSF is supporting the integration of genomics across its biological research areas to learn more about such important questions as the role of species diversity and the effect of climate change on ecological systems. Biocomplexity in the Environment (BE) is again one of the key priorities and in FY 2002 would receive \$16.9 million and would support research that incorporates genomics to enhance understanding of complex biological systems, among other areas. (For more information on NSF, please see Chapter 7.)

The Biological Science Activity (BIO) would decrease by \$2.3 million in FY 2002 to \$483.1 million. Within BIO, Environmental Biology is slated to receive \$111.7 million, a slight increase of 1.7 percent. Research areas include modeling ecosystem dynamics in real time, conservation biology, and restoration ecology. Systems biology would emphasize interactions of human and natural systems within biological systems and focus on research related to changes in biological diversity. National activities supported through Environmental Biology include the National Center for Ecological Analysis and Synthesis, which promotes studies of complex ecological questions (\$2 million, same as FY 2001). Funding for the 21 Long Term Ecological Research Sites would remain level at \$13.8 million.

Programs within BIO designed to develop a diverse and competitive workforce would increase by 4.3 percent. A total of \$14.3 million would target undergraduate programs designed to encourage minority groups to participate in this field, among them Research Experiences for Undergraduates and Undergraduate Mentorships in Environmental Biology.

### **DEPARTMENT OF THE INTERIOR (DOI)**

DOI R&D in FY 2002 would be \$593 million out of a total proposed budget of \$12.8 billion, a 6.1 percent cut (see Table II-16). The U.S. Geological Survey (USGS) is the Department's sole science agency, providing natural science expertise needed to address challenges that

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range from freshwater availability to natural hazards. USGS R&D would decline by nearly 11 percent to \$491 million in the coming fiscal year.

Particularly hard hit would be R&D in the Water Resources Division, which would receive a 25.5 percent cut. Primarily affected would be the National Water Quality Assessment Program (NAWQA) which would decline by nearly one third. NAWQA is charged with monitoring the nation's water quality. The Administration proposes that other agencies, such as EPA, that rely on NAWQA data should help fund this work. Some of these agencies, EPA included, face their own budget cuts.

Also proposed for a 7 percent cut is the Biological Resources Division (BRD). Most of the decline would be from elimination of the National Biological Information Infrastructure (NBII) program, a private-public partnership to improve access to data on U.S. biological resources. The Gap Analysis Program in BRD would return to FY 2000 funding levels, bringing to a halt all aquatic work begun this fiscal year and significantly reducing work on terrestrial databases in the lower 48 states.

The USGS budget request would also restrict funding for the agency's biological diversity assessment program and groundwater program to their FY 2000 levels, citing extraordinary increases for these programs in the last fiscal year. Global Change Research (\$3 million) on sediment, arctic, and glacial research and monitoring would cease in FY 2002. (For more information on BRD, please see Chapter 19.)

#### **U.S. DEPARTMENT OF AGRICULTURE (USDA)**

Overall USDA R&D would decrease by approximately 8 percent to \$1.8 billion, returning it to FY 2000 levels (see Table II-13). Slated reductions are derived from congressional earmarks and facility construction. USDA plans to devote \$12 million to prevent and control pests which pose a threat to the nation's agricultural production. USDA proposes an additional \$7.5 million for biotechnology research, including research on avoiding buildup of pests that develop resistance to pesticides. (For more information on USDA, see Chapter 11).

The overall Forest Service budget request is \$4.6 billion, a cut of \$491 million, much of it due to one-time FY 2001 funding such as wildfire

management. Forest and Rangeland Research, which supports research to better manage the nation's forests, would receive \$235 million, the same amount as in the current fiscal year except for pay increases.

As the Department's principal in-house research agency focused on natural and biological sciences, Agricultural Research Service (ARS) performs research in areas including soil and water, plant science, and research to improve management of natural resources. FY 2002 would see ARS research funded at \$852 million to support ongoing research and to focus on priorities such as invasive weeds and insects (\$12 million). USDA's competitive grants program for investigator-initiated research, the National Research Initiative (NRI), would again be supported at its FY 2001 level of \$106 million. NRI is administered through the Cooperative State Research, Education, and Extension Service (CSREES). CSREES partners with the nation's land grant and non-land grant higher education institutions to facilitate extramural research, higher education, and extension activities.

#### **ENVIRONMENTAL PROTECTION AGENCY (EPA)**

This year EPA has requested \$7.3 billion, \$494 million less than in FY 2001 (see Table II-17). EPA's role as federal regulator depends upon an underpinning of sound science. R&D within the EPA budget, however, is slated for a 6.5 percent decrease.

EPA divides its budget into several goal-related areas. As part of the agency's goal of ensuring clean water, the EPA has requested \$17 million for the National Estuaries Program and coastal watersheds research, a cut of 6.1 percent from FY 2001. Research within this funding category addresses the development of environmental indicators for the assessment of the nation's estuaries and also measures success in estuary restoration efforts. Research on harmful algal blooms and other issues associated with eutrophication will focus on helping states and tribes develop site-specific assessments for nutrients in waterways. \$5 million is proposed for these efforts, a slight increase. Funding for water quality monitoring and assessment is slated for \$11 million (up 1 percent). Watershed research will focus on pollution from rural and urban nonpoint sources, and would receive \$6 million (down 34 percent).

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The agency also aims to reduce global and cross-border environmental risks as another part of its stated goals by assessing the possible effects of global change, including changes in climate, land use, UV radiation, ecosystem health and human health. Climate change research would receive \$22 million, a decrease of 0.2 percent from FY 2001.

Another EPA goal focuses upon sound science and an improved understanding of environmental risks. Under that goal, the Environmental Monitoring and Assessment Program (EMAP) would receive \$33 million, an increase of 10 percent. As a part of this research, streams and coastal estuaries will continue to be sampled in 2002, and researchers will work to develop the agency's capability for measuring trends in the health of freshwater and marine ecosystems. There is a special emphasis on EMAP studies being conducted in Western states. Endocrine disruptor research would decrease by \$1.5 million to \$11 million.

#### **NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)**

The NOAA budget request for FY 2002 totals \$3.1 billion. NOAA R&D would be \$772 million (up 6.4 percent; see Table II-14). The Office of Oceanic and Atmospheric Research (OAR) is often referred to as NOAA Research, because OAR funds the bulk of NOAA scientific research, environmental studies and technological developments. The request for Climate and Air Quality Research totals \$158.5 million, representing an increase of \$14.4 million over FY 2001. Within this total, many kinds of ecological research would receive funding. Climate Observations and Services are scheduled for a \$24 million slice, an increase of \$13.0 million, which would be used to develop a better understanding of the operational aspects of climate. An additional \$1.9 million would go to Regional Assessments, Education and Outreach. Climate Change Assessments would receive \$0.1 million. Carbon Cycle research would receive \$2.3 million in order to establish more densely spaced sampling sites in North America and to analyze variability in carbon sinks and the relationships between the carbon cycle and the physical climate system. Ocean Carbon research would receive \$0.9 million and Arctic Ocean Fluxes research would receive \$0.5 million.

The Oceans and Great Lakes Programs in OAR would receive \$119.8 million, a \$2.5 million decrease. Under this sub-activity, Marine

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Environmental Research would increase by \$0.5 million and Coral Reef Watch would increase by \$0.5 million for a combined total of \$11.6 million. (Coral Reef Monitoring would also receive an additional \$0.8 million under the National Environmental Satellite, Data and Information Service budget in NOAA.) Ocean Exploration would receive an increase of \$10.0 million, bringing the federal investment in exploration of the last major frontier on Earth to \$14.0 million. Included in this amount would be \$0.9 million for the Census of Marine Life, which would support studies during the next 5-10 years examining the diversity, distribution, and abundance of marine organisms.

The National Ocean Service (NOS) is the primary federal agency working on the nation's coastal areas. Within NOS, the National Estuarine Research Reserves (NERRS) work to improve the health of the nation's estuaries and coastal habitats through long-term research on water quality, habitat loss and degradation, and the loss of biodiversity. The NERRS would receive \$16.4 million, a \$1.7 million increase. Most of the money would be used to enhance water quality monitoring programs and for the support of two new NERRS in California and New York. The System Wide Monitoring Program (SWMP) would also benefit from the increase; NERRS money would be used to increase coverage at SMWP water quality stations and also to monitor biological indicators.

The National Marine Fisheries Service (NMFS) is responsible for the management of living resources within the US's Exclusive Economic Zone and helps to advise those responsible for coastal areas under state jurisdiction. Several research programs are scheduled for increases under NMFS. Fisheries oceanography is slated for \$1.5 million, representing a 100 percent increase. This program provides an ecosystem context for measuring the health of marine species. South Florida is also scheduled to receive \$1.9 million, which would be used to expand research and monitoring activities in the area. Southeast Cooperative research is set to receive \$3.0 million, a \$0.5 million increase. Cooperative research in the Northeast is also scheduled for \$5.0 million; the money would be transferred from FY 2001 funds in the USDA budget. The funds would be used to design and conduct research programs designed with the cooperation of anglers and others in the fisheries industry. (For more on NOAA, please see Chapter 16.)