National Council for Science and the Environment

1707 H Street, N.W. • Suite 200 • Washington, DC 20006
202/530-5810 • Fax 202/628-4311 • schiffries@NCSEonline.org • www.NCSEonline.org

Testimony of the
NATIONAL COUNCIL FOR SCIENCE AND THE ENVIRONMENT
Craig M. Schiffries, Ph.D., Senior Scientist

Regarding the
NATIONAL SCIENCE FOUNDATION
FY 2006 Budget Request

To the
U.S. HOUSE OF REPRESENTATIVES
Committee on Appropriations
Subcommittee on Science, State, Justice, and Commerce, and Related Agencies
April 8, 2005

Summary

The National Council for Science and the Environment (NCSE) urges Congress to appropriate $6.29 billion for the **National Science Foundation** (NSF) in FY 2006, an increase of 15 percent over FY 2005. NCSE supports a 15 percent increase for NSF in order to put the agency on the doubling track that Congress and the Administration deemed necessary when they enacted the National Science Foundation Authorization Act of 2002 (Public Law 107-368). Under the FY 2006 budget request, funding for NSF would decline by approximately 0.5 percent in constant dollars, after accounting for a proposed transfer of existing funding from another agency.

The United States leads the world in scientific discovery and innovation, but other nations are on a fast track to pass the U.S. The long-term prosperity of the nation, our quality of life, as well as our national and homeland security require a strong and steady commitment of federal resources to science and technology. Environmental R&D is a critical component of the overall federal investment in research and development. Federal investments in environmental R&D must keep pace with the growing need to improve the scientific basis for environmental decisionmaking.

As a result of the recent reorganization of the House Appropriations Committee, the Subcommittee on Science, State, Justice, and Commerce, and Related Agencies now has broader jurisdiction over environmental research and education. NCSE commends the subcommittee for its past bipartisan leadership in support of science to improve environmental decisionmaking. The subcommittee has an historic opportunity to address pressing national challenges by appropriating strong and growing funding for environmental research and education at NSF, NOAA, and other science agencies under the subcommittee's expanded jurisdiction.

The National Council for Science and the Environment is dedicated to *improving the scientific basis for environmental decisionmaking*. We are supported by over 500 organizations, including universities, scientific societies, government associations, businesses and chambers of commerce, and environmental and other civic organizations. NCSE promotes science and its essential role in decisionmaking but does not take positions on environmental issues themselves.

National Science Foundation

Implementing the NSF Doubling Act. The National Council for Science and the Environment urges Congress to appropriate the funds necessary to implement the National Science Foundation Authorization Act of 2002, which was passed by Congress on November 15, 2002 and signed into law by the President on December 19, 2002 (Public Law 107-368). A central goal of the Act is to double the budget of the National Science Foundation in five years. It authorizes a budget increase of 105 percent for NSF, from $4.8 billion in FY 2002 to $9.8 billion in FY 2007. The NSF Authorization Act of 2002 is a major milestone for the NSF, the scientific community, and the nation. It recognizes the critical connection between science and the long-term economic strength of the nation. In order to achieve the outcomes envisioned by this bold legislation, Congress must appropriate the funding levels specified in the NSF Authorization Act.

The National Council for Science and the Environment urges Congress to appropriate $6.29 billion for the National Science Foundation in FY 2006, which would increase its budget by 15 percent over FY 2005. NCSE supports a 15 percent increase for NSF in order to place the agency on the doubling track that Congress deemed necessary. Although the authorized funding level is $8.52 billion for FY 2006, we understand that this may be beyond reach in the current fiscal environment.

The President's budget request would increase funding for NSF by 2.4 percent to $5.60 billion in FY 2006. Of the $132 million in new funding, $48 million represents a transfer in existing funds from the U.S. Coast Guard for operation and maintenance of three polar icebreakers. After accounting for this transfer and adjusting for the effects of inflation, the NSF budget would decline by approximately 0.5 percent.

Expanding NSF's Environmental Research and Education Portfolio. The National Science Foundation plays a crucial role in supporting environmental R&D. Environmental research often requires knowledge and discoveries that reach across disciplinary and institutional boundaries. NSF recognizes this and encourages multidisciplinary environmental activities across the entire agency, as well as with other federal agencies. NSF has established a "virtual directorate" for Environmental Research and Education (ERE). Through this virtual directorate, NSF coordinates the environmental research and education activities supported by all the directorates and programs.

Although the National Science Board said environmental research and education should be one of NSF's "highest priorities" (see below), the growth of the ERE budget has lagged behind the growth of the overall NSF budget in recent years (Table 1). Given that the National Science Board has identified environmental research and education as one of the agency's highest priorities, funding for the ERE portfolio should grow at least as rapidly as the total NSF budget. In order to achieve the $1.6 billion funding level recommended by the National Science Board, NCSE supports rapid growth in NSF's Environmental Research and Education portfolio over the next several years.

Biocomplexity in the Environment. NCSE is especially supportive of NSF's priority area on Biocomplexity in the Environment, which is the flagship of the ERE portfolio. This priority area provides a focal point for investigators from different disciplines to work together to understand complex environmental systems, including the roles of humans in shaping these systems. The

Biocomplexity in the Environment priority area includes research in microbial genome sequencing and ecology of infectious diseases, which improves our understanding of disease transmission and potential agents of bioterrorism.

The Biocomplexity in the Environment priority area was reviewed by a Committee of Visitors in 2004. The Committee reported:

> This program is highly responsive to a great need for integrative research to answer non-linear complex questions. The outcomes are helpful to establishing sound science evidence for use in policy decisions, in making science relevant to the community, in including the human dimension in consideration of environmental change, and in integrating these areas of science knowledge and discovery with the need for environmental literacy among our students in formal education an the education of the general public.

We urge Congress to support this critical initiative and to consider funding it at a level of $136 million, as proposed in FY 2000 budget request for NSF. After several years of rapid growth, the FY 2006 budget request would cut funding for Biocomplexity in the Environment by 15.5 percent from $99.2 million in FY 2005 to $83.8 million in FY 2006.

Table 1. National Science Foundation: Environmental Research and Education (ERE)
(budget authority in millions of dollars)

	Environmental R&D ($ Millions)							Change 2004 to 2005	
	FY 1999 Actual	FY 2000 Actual	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Plan	FY 2005 Request	Amount	Percent
Research and Related Activities (R&RA)									
Biological Sciences	*117.9*	*125.3*	*167.0*	*174.5*	*188.3*	*214.1*	*214.1*	*0.0*	*0.0%*
Comp. & Info. Sci. & Eng.	*4.0*	*7.0*	*15.1*	*15.1*	*22.1*	*23.9*	*23.9*	*0.0*	*0.0%*
Engineering	*38.0*	*50.0*	*62.7*	*63.7*	*76.0*	*76.0*	*74.0*	*-2.0*	*-2.6%*
Geosciences	*320.9*	*327.9*	*409.4*	*442.8*	*499.1*	*513.1*	*513.1*	*0.0*	*0.0%*
Math. and Physical Sci.	*44.3*	*48.3*	*56.4*	*56.4*	*46.5*	*32.2*	*32.2*	*0.0*	*0.0%*
Soc., Behav. & Econ. Sci.	*17.8*	*17.3*	*20.1*	*21.7*	*21.5*	*22.4*	*22.4*	*0.0*	*0.0%*
Office of Polar Programs	*45.3*	*45.3*	*47.5*	*49.8*	*50.9*	*50.9*	*50.9*	*0.0*	*0.0%*
Integrative Activities[1]	*7.0*	*50.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0%*
Subtotal, R&RA	595.2	671.2	778.1	824.0	904.4	932.6	930.7	-1.9	-0.2%
Edu. and Human Res.[2]					2.0	2.0	2.0	0.0	0.0%
TOTAL ERE Budget	**595.2**	**671.2**	**778.1**	**824.0**	**906.4**	**934.6**	**932.7**	**-1.9**	**-0.2%**
TOTAL NSF Budget	**3,690.3**	**3,923.4**	**4,459.9**	**4,774.1**	**5,369.3**	**5,577.8**	**5,745.0**	**167.2**	**3.0%**

Source: NSF. ERE funding levels for FY 2005 Plan and FY 2006 Request are unavailable as of April 8, 2005.

[1] In FY 1999 and FY 2000, funding for the Biocomplexity and the Environment (BE) Priority Area was included in the Integrative Activities account. Beginning in FY 2001, BE funds were distributed across the directorates.

[2] Figures for environmental funding in the Education and Human Resources account are not available prior to FY 2003. Although education is not generally scored as R&D, $2.0 million for Environmental Education was included in the Education and Human Resources Directorate in the ERE budget from FY 2003 to 2005 (request).

National Science Board Report on Environmental Science and Engineering

The National Council for Science and the Environment encourages Congress to support full and effective implementation of the 2000 National Science Board (NSB) report, *Environmental Science and Engineering for the 21st Century: The Role of the National Science Foundation,* within the context of a doubling of the budget for NSF.

The National Science Board report sets out an ambitious set of recommendations that could dramatically improve the scientific basis for environmental decisionmaking. The first keystone recommendation is as follows:

> Environmental research, education, and scientific assessment should be one of NSF's highest priorities. The current environmental portfolio represents an expenditure of approximately $600 million per year. In view of the overwhelming importance of, and exciting opportunities for, progress in the environmental arena, and because existing resources are fully and appropriately utilized, new funding will be required. We recommend that support for environmental research, education, and scientific assessment at NSF be increased by an additional $1 billion, phased in over the next 5 years, to reach an annual expenditure of approximately $1.6 billion.

The report says that the National Science Board expects NSF to develop budget requests that are consistent with this recommendation. At first, growth in the Environmental Research and Education budget reflected its priority status: from FY 1999 to 2001, the ERE account grew more rapidly than the overall NSF budget. However, the ERE growth rate has trailed the total NSF growth rate since that time (Table 1). From FY 2002 to FY 2005 (request), the ERE budget grew by only 13.1 percent while the total NSF budget grew by 20.3 percent. The lagging growth of the Environmental Research and Education budget relative to the total NSF budget in recent years raises serious concerns about its status as one of NSF's "highest priorities."

The National Science Board envisioned a 167 percent increase in funding for the ERE portfolio, from approximately $600 million to $1.6 billion, within the context of a doubling of the total NSF budget over five years. The doubling has not materialized. Nevertheless, if the Environmental Research and Education portfolio is one of NSF's highest priorities, then the growth rate of the ERE budget should not lag behind the growth rate of the total NSF budget.

The National Science Foundation has taken many steps to implement the recommendations of the NSB. Full implementation of the NSB report will require strong support from Congress and a significant increase in funding for NSF's portfolio of environmental science, engineering and education.