

SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER

	APPLICATION OF OPERATING RESOURCES							
	FEDERAL APPROPRIATIONS		GENERAL TRUST		DONOR/SPONSOR DESIGNATED		GOV'T GRANTS & CONTRACTS	
	FTE	\$000	FTE	\$000	FTE	\$000	FTE	\$000
FY 2005 ACTUAL	34	3,210	5	640	7	1,021	54	5,433
FY 2006 ESTIMATE	35	3,113	6	587	11	851	56	5,500
FY 2007 ESTIMATE	34	3,119	6	587	11	851	58	5,650

STRATEGIC GOALS: INCREASED PUBLIC ENGAGEMENT; STRENGTHENED RESEARCH; AND ENHANCED MANAGEMENT EXCELLENCE

Federal Resource Summary by Performance Objective and Program Category

Performance Objective/ Program Category	FY 2006		FY 2007		Change	
	FTE	\$000	FTE	\$000	FTE	\$000
Increased Public Engagement						
<i>Public Programs</i>						
Engage and inspire diverse audiences	1	93	1	94	0	1
Strengthened Research						
<i>Research</i>						
Engage in research and discovery	27	2,472	26	2,475	-1	3
Enhanced Management Excellence						
<i>Management Operations</i>						
Strengthen an institutional culture that is customer centered and results oriented	4	380	4	381	0	1
Modernize the Institution's financial management and accounting operations	3	168	3	169	0	1
Total	35	3,113	34	3,119	-1	6

BACKGROUND AND CONTEXT

The Smithsonian Environmental Research Center (SERC) is a leader in the research on land and water ecosystems in the coastal zone. SERC's innovative research and unique setting advance basic environmental science in the zone where most of the world's population lives, and provides society with the knowledge to solve the environmental challenges of the 21st century.

To achieve the Institution's goal of Increased Public Engagement, SERC's public education and outreach program interprets and presents SERC's scientific research to diverse public audiences, which include schoolchildren and science teachers, students, and visiting scientists developing professional careers in the environmental sciences, and the general public. To achieve the goal of Strengthened Research, SERC uses its unique site on the shore of Chesapeake Bay and other sites, including the Smithsonian Marine Science Network, to investigate the ecological interconnections of aquatic, terrestrial, and atmospheric components of complex landscapes, with comparative studies on regional, continental, and global scales. To accomplish Enhanced Management Excellence, SERC will update management systems and functions, advance construction of its long-term Facilities Master Plan through completion of its Visitors' Housing complex, and ensure safety and protection of staff, fellows, volunteers, and visitors.

The FY 2007 budget estimate includes an increase of \$111,000 for necessary pay for existing staff funded under this line item and a redirection of 1 FTE and \$105,000 to the National Zoological Park to support the migratory bird program.

MEANS AND STRATEGY

To achieve the goal of Increased Public Engagement, SERC has redesigned its website to provide greater information to the public. On-site education will focus on serving approximately 10,000 students and increasing minority participation. SERC will expand its highly successful distance-learning programs (estimated at 20 million participants in FY 2005) and develop a series of videoconferences and a national electronic field trip focused on estuaries and species invasions biology. In addition, SERC will continue the Student Training in Aquatic Research (STAR) academy for high school students. SERC outreach also includes lecture series, workshops, and expert consultation for the public, teachers, natural resource managers, and public officials. To train the next generation of environmental scientists and managers, SERC conducts a nationally recognized professional training program for university interns, graduate students, postdoctoral fellows, and visiting scientists, with a particular emphasis on developing careers of under-represented minorities.

To achieve the goal of Strengthened Research, SERC will use its invaluable 2,900-acre site on the Chesapeake Bay, where its scientists investigate the interconnections of aquatic, terrestrial, and atmospheric components of complex landscapes. SERC develops innovative approaches and instrumentation to measure environmental change at four ecological levels (i.e., global change, landscape ecology, ecology of coastal ecosystems, and population and community ecology), and has developed unique, long-term and experimental data sets on environmental change. SERC also participates in developing the Smithsonian's unique Marine Science Network of sites along the western Atlantic Ocean for

comparative coastal studies, and in using Smithsonian long-term field stations to assess ecological patterns and processes. During its 40-year history, SERC has built a reputation for world-class research, producing many publications that are rich in data and multi-disciplinary and integrative in analysis.

Building on existing strengths and special programs, SERC seeks to enhance its highly successful ongoing research on the following topics: land-sea linkages of ecosystems; landscape ecology of coastal watersheds; estuarine ecology; invasive species (especially in coastal ecosystems); global change impacts on biotic and chemical interactions; biocomplexity of structure and processes in key ecosystems; and community and population ecology. During the next five years, SERC research on coastal marine ecology will focus on four key, interrelated areas: the structure and dynamics of marine food webs; the integrity and biodiversity of crucial marine ecosystems; linkages of ecosystems at the land-sea interface; and ecological regulation of marine biodiversity. SERC seeks to expand its expertise in the ecology of invasive species, which impacts coastal ecosystems. To implement these goals, SERC will link its research with national and international research networks and enhance the Marine Science Network. SERC is also developing scientific and technological capabilities in analytical chemistry, remote sensing, and instrumentation in coastal watersheds and connected ecosystems.

The avian ecology program at SERC and the National Zoo's Migratory Bird Center have increasingly collaborated on a broad range of ornithology science problems, including the impacts of urbanization on birds, the effects of global climate change on migratory birds, and infectious diseases such as West Nile virus and avian malaria. Such collaboration capitalizes on scientific expertise and maximizes research output. To further enhance research conducted in this field, 1 FTE and \$105,000 associated with avian ecology research at SERC will be realigned to the National Zoo. The consolidated resources will provide the base for a world-class center for avian ecology and conservation.

To address the goal of Enhanced Management Excellence, SERC has updated its strategic plan and linked it to the Smithsonian Science Strategic Plan. SERC is improving its management of research by developing improved management tools for its overhead activities and ensuring tighter oversight of its newly revised website. SERC will ensure the safety and protection of volunteers, staff, and visitors by sustaining its excellent program of supervised inspections and staff involvement.

STRATEGIC GOALS AND FY 2007 ANNUAL PERFORMANCE GOALS

Increased Public Engagement

Engage and inspire diverse audiences (1 FTE and \$94,000)

- Evaluate and enhance, if appropriate, the quality of on-site environmental education programs offered to schoolchildren, teachers, natural resource managers, and the general public, to more effectively

communicate current research findings and field methods used by Smithsonian scientists

- Develop and implement training workshops for parents and professional educators, which support state and national science learning objectives in the environmental sciences
- Conduct approximately 100 video conferences and at least one electronic field trip to interpret SERC's environmental research for students, teachers, and the general public

Strengthened Research

Engage in research and discovery focused on understanding the origin and evolution of the universe, Earth and planets, biological diversity, and human culture (26 FTEs and \$2,475,000)

Theme: Discovering and Understanding Life's Diversity

- Increase knowledge of human impacts in coastal ecosystems and ecological change in land-sea interactions by developing SERC's unique long-term and experimental studies, field sampling, laboratory analyses, and data records in nine areas: species composition and population dynamics; estuarine water quality; ecosystem alteration and restoration; flow of nutrients; effects of toxic trace elements; invasive species; atmospheric increase in CO₂; ultraviolet radiation; and the biocomplexity of mangrove forest ecosystems
- Enhance highly successful environmental research by sustaining awards of competitive external grants and contracts from a diverse array of at least 12 agencies and other sources at an approximate level of \$6 million per year on land-sea linkages, landscape ecology, invasive species, global change, biocomplexity, community and population ecology, transport of toxic trace elements and nutrients, and coastal marine and estuarine ecology
- Disseminate results of research on human impacts in coastal ecosystems and ecological change by publishing 60 articles in peer-reviewed journals and books based on SERC's original environmental research
- Continue to link and coordinate SERC research, through active participation in the Smithsonian Marine Science Network, with national and international research networks (such as the National Association of Marine Laboratories, National Ecological Observation Network, and Association of Ecosystem Research Centers), and with Government agencies such as the U.S. Coast Guard, U.S. Fish and Wildlife Service, and the National Oceanic and Atmospheric Administration
- Provide advice and counsel to state and national legislatures on environmental issues within SERC's areas of expertise
- Train the next generation of ecologists, environmental scientists, and natural resource managers by sustaining SERC's high-quality professional training program, and awarding 25 undergraduate internships, supporting 10 graduate students, and five postdoctoral

scientists, with an emphasis on achieving a target goal of 25 percent participation from under-represented minorities

- Manage long-term and spatial data sets on the environment to evaluate the extent of ecological change

Enhanced Management Excellence

Strengthen an institutional culture that is customer centered and results oriented (4 FTEs and \$381,000)

- Implement SERC's strategic plan, which is formally linked to the Institution-wide Science Strategic Plan
- Develop improved tracking systems for external grants and contracts to improve their efficiency and effectiveness
- Develop standards and strategies to implement SERC's goal of improved compliance with the SI Performance Management System

Modernize the Institution's financial management and accounting operations (3 FTEs and \$169,000)

- Ensure appropriate staff training on future modules of the Institution's Enterprise Resource Planning System
- Evaluate laboratory safety procedures to ensure a safe work environment
- Improve coordination with Office of Facilities Engineering and Operations support units such as facilities management, security, and safety offices to meet SERC's programmatic goals
- Strengthen conformity with SI procedures guiding contracting and procurement

NONAPPROPRIATED RESOURCES—General trust funds provide core administrative support for SERC as well as support for fundraising and intern/fellowship programs. Donor/sponsor-designated funds provide critical operating support related to specific programs and projects in research, public education, and professional training. The bulk of SERC's scientific research program of more than \$5 million is supported by government grants and contracts.