INTEGRATED SCIENCE FOR ECOSYSTEM CHALLENGES

Land and water use changes, resource exploitation, invasive species, chemical pollution, nutrient enrichment, and climate variability are all stresses that, singly or in combination, produce adverse effects on the Nation's environmental resources. Science is increasingly called upon to determine whether and how these stresses have impaired ecosystem structure and function and to identify approaches to prevent further impact, preserve and improve productivity and resiliency, and enhance recovery of damaged ecosystems. To help guide decision makers in these efforts with an improved science base, the budget proposes a second year of funding increases for ecological research for the coordinated multiagency effort in **Integrated Science for Ecosystem Challenges (ISEC)**. This initiative will:

- improve our understanding of the causes and consequences of environmental stressors, such as hypoxia and harmful algal blooms, which are impacting some of our most valuable ecological systems;
- intensify activities to understand the importance and ecological role of biodiversity;
- increase the study of ecosystem processes to improve our ability to predict responses to stresses, detect loss of critical function, and evaluate options for restoration;
- make it possible to begin to apply 21st century information technology to ecological data to improve content and availability of data for the scientific community.

Motivation for ISEC

Resource managers need to know what effects various stresses are having on the environment, whether these effects warrant taking action to mitigate them, and if action is warranted, what the best options are. Research is a means to guide action and ensure that it has real results. Without the science that allows us to understand the causes of environmental change, regulators and managers may just be rolling the dice in trying to halt deterioration and repair the damage.

Overall, $747 million is requested for the ISEC initiative (a $90 million increase), to be shared among 6 agencies (USDA, USGS, NOAA, NSF, EPA, and the Smithsonian Institution). Each of these agencies has already made substantial investments to establish base programs on the aspects of these topics required by their missions. Integration across agency programs is designed to (1) provide opportunities to tackle basic science questions that underlie mission agency concerns but that are difficult for any one agency to deal with alone and (2) enhance sharing of capabilities, facilities, and resources. In addition to reducing overlaps, the effort facilitates identification of priorities to reduce knowledge gaps and deliver information useful for policy and management decisions. An implementation plan to ensure interagency coordination and realization of the added value of an integrated approach was developed for the FY2000 budget request. This plan will be updated to reflect FY2000 enacted and FY2001 request levels in the near future.

ISEC R&D Budget Summary

	FY 2000 ($M)	FY 2001 ($M)	Percent Increase
Department of Agriculture	$425	$452	6%
National Science Foundation	$109	$125	15%
Environmental Protection Agency	$56	$59	5%
Department of Interior	$27	$54	100%
Department of Commerce	$28	$45	61%
Smithsonian	$12	$12	0%
TOTAL	$657	$747	14%