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BUILDING A SCIENTIFIC FOUNDATION FOR SOUND ENVIRONMENTAL DECISIONS

ECOLOGICAL
RESEARCH PROGRAM

NEW METHODS AND TOOLS FOR MONITORING COASTAL WATERS

Issue:

Our nation's Great Lakes and estuaries are highly productive ecosystems that serve both economic and recreational purposes but are under severe stress from increasing population. They provide ecosystem services that support forestry, agriculture, shipping, and sporting and leisure activities. New tools are necessary to evaluate the health of these coastal waters, predict future conditions, and identify solutions to threats to these services.

Science Objective:

The Science to Achieve Results (STAR) program, a part of the U.S. Environmental Protection Agency's Office of Research and Development, established five Estuarine and Great Lake (EaGLe) research projects with university consortia to develop the next generation of coastal ecological indicators. An ecological indicator is a measure that describes the condition of an ecosystem or one of its critical components. The EaGLe indicators can be used to assess coastal conditions, monitor trends, and diagnose causes of impairment.

Application and Impact:

EaGLe researchers have developed 65 new or improved coastal indicators for evaluating ecosystem conditions in environments ranging from small individual coastal habitats to entire regions. These tools and methods are being adopted or considered for adoption by states, regions, and others to provide a comprehensive coastal monitoring program. For example, these procedures provide environmental resource managers with the ability to identify wetlands that are vulnerable to loss or coastal areas in need of protection or restoration, as well as a mechanism to monitor change over time.

References:

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Danz, N.P., et al. Environmentally Stratified Sampling Design for the Development of Great Lakes Environmental Indicators. *Environmental Monitoring and Assessment* 2005, 102, pp. 41-65.

Wardrop, D.H., et al. Characterization and classification of watersheds by landscape and land use parameters in five mid-Atlantic physiographic provinces. *Journal of Environmental and Ecological Studies*, 2005, 12(2), pp. 209-223.

EaGLE Web site:
http://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/outlinks.centers/centerGroup/8

EaGLE consortiums Web site:
http://eagle.nrri.umn.edu/pubdefault.htm

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