

# THE NATIONAL ACADEMIES

*Advisers to the Nation on Science, Engineering, and Medicine*

Board on Life Sciences

On September 17, 2003, the National Research Council released the report *NEON: Addressing the Nation's Environmental Challenges*. The report outlines environmental issues of national concern that can only be addressed on a regional or continental scale. It also examines the concept of the National Ecological Observatory Network (NEON) proposed by the National Science Foundation and assesses whether NEON could provide infrastructure and logistical support efficiently for effective large-scale research in ecology and environmental biology.

The committee that authored the report identified six major challenges in environmental biology—biodiversity, biogeochemical cycles, climate change, ecology and evolution of infectious diseases, invasive species and land and habitat use—that merit high priority for research. Addressing these challenges would require large-scale experimentation, long-term observation and scientific synthesis that could be carried out only using a network of nationwide infrastructure and research sites that are optimized for the purpose.

The committee strongly endorses the concept of NEON and sees its potential contribution to the scientific community. In evaluating how to implement NEON, the committee concluded that it would be difficult to identify the infrastructure needed without knowing the type of research to be conducted in the full suite of 17 regional observatories. Moreover, if the NEON network were to be built gradually via funding of one or two regional observatories at a time, the nationwide aspect of NEON would not be realized until the network is completed. Hence, the committee recommends that NSF structure NEON according to the environmental challenges to be addressed. Thus, NEON would consist of a total of six nationwide “observatories” (rather than 17 regional observatories), each focused on a major environmental challenge. Each observatory would consist of multiple sites chosen simultaneously and located strategically across the nation to ensure adequate regional and national coverage for addressing the challenge. Each theme-based observatory would identify federal agencies that have relevant databases or monitoring effort and form partnerships with them.

NEON would provide large-scale infrastructure that are beyond the budgets of single-institution and consortium of universities. In addition, it would enable multi-scale research, allow comparative ecosystem analysis and unite scientists across the nation who have common interests and facilitate interdisciplinary research. NEON programs would be ideal location for undergraduate and graduate interdisciplinary training and for K-12 students and teachers to study science on the basis of observation and experimental inquiry.

To view the report online, please visit <http://www.nap.edu/catalog/10807.html>. For more information, contact Evonne Tang of the National Academies' Committee on the National Ecological Observatory Network by phone at 202-334-3648 or by e-mail at ETang@nas.edu.

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