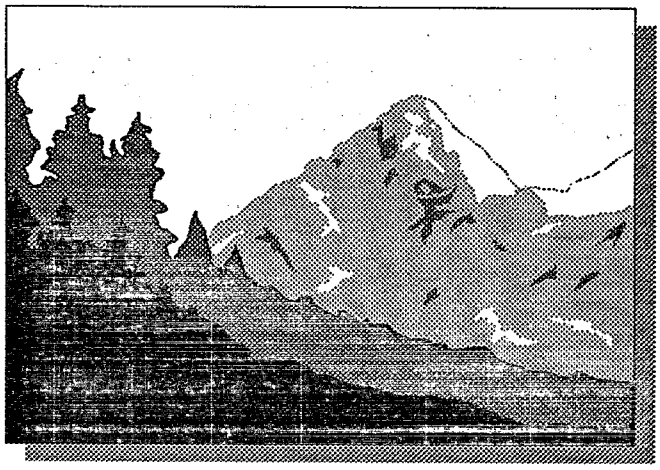
EPA

United States
Environmental Protection
Agency

Office of Research
and Development
Washington, D.C. 20460

EPA/620/N-93/001
July 1993

The Environmental Monitoring and Assessment Program



Introduction

The Environmental Monitoring and Assessment Program (EMAP) is an innovative research, monitoring, and assessment program designed to determine the condition of our Nation's ecological resources. The principal goal of the program is to provide decision makers with sound data on which to base environmental risk management decisions.

The EMAP Approach

- **Regional Scope**
- **Ecological/Biological Indicators**
- **Probability-based Sampling**
- **Long-term Monitoring**
- **Interagency Partnerships**

EMAP is managed by the Office of Research and Development within the U.S. Environmental Protection Agency. The program is designed to provide "America's Ecological Report Card." It has four strategic objectives:

(1) Estimate the current status, trends, and changes in selected indicators of the condition of the Nation's ecological resources on a regional basis with known confidence.

(2) Estimate the geographic coverage and extent of the Nation's ecological resources with known confidence.

(3) Seek associations between selected indicators of natural and anthropogenic stresses and indicators of the condition of ecological resources.

(4) Provide annual statistical summaries and periodic assessments of the Nation's ecological resources.

An ambitious task such as EMAP requires the participation of the Nation's best scientists. More than 12 Federal agencies, 20 States, and 40 universities are currently active in various program components.

EMAP has three functional components: resource monitoring and research, integration and assessment, and program coordination. Using a probabilistic sampling design and ecological indicators, EMAP is assessing the condition of seven ecological resources (defined within EMAP as: Agroecosystems, Arid Ecosystems, Estuaries, Forests, Great Lakes, Surface Waters, and Wetlands). In addition to these seven ecological resource groups, EMAP also has an integrated landscape ecology component.

EMAP Implementation

EMAP initiated its field monitoring in FY90 with demonstration projects in estuaries of the mid-Atlantic coast and in forests of New England. Field monitoring is expanding geographically and other ecological resources are being added as the program moves toward full implementation. EMAP's ecological resource groups are described below.

Agroecosystems

In FY92, EMAP-Agroecosystems conducted a pilot study in North Carolina in conjunction with the U.S. Department of Agriculture's Agricultural Research Service and National Agricultural Statistics Service. Data were collected on crop productivity, soil quality, agricultural chemical use, and water quality from 116 sampling sites in North Carolina. Additional pilot studies in Nebraska are being initiated.

Arid Ecosystems

In FY91, the Arid Ecosystems group conducted a joint pilot study with EMAP-Landscape Characterization in the San Pedro watershed of Arizona. This pilot study focused on using remote sensing techniques to determine arid ecosystem condition. In

★ U.S.G.P.O.:1993-752-973

FY92, a pilot study in the southeastern Utah portion of the Colorado Plateau examined the global environmental issue of sustainability (i.e., desertification and climate change). This pilot is continuing.

Estuaries

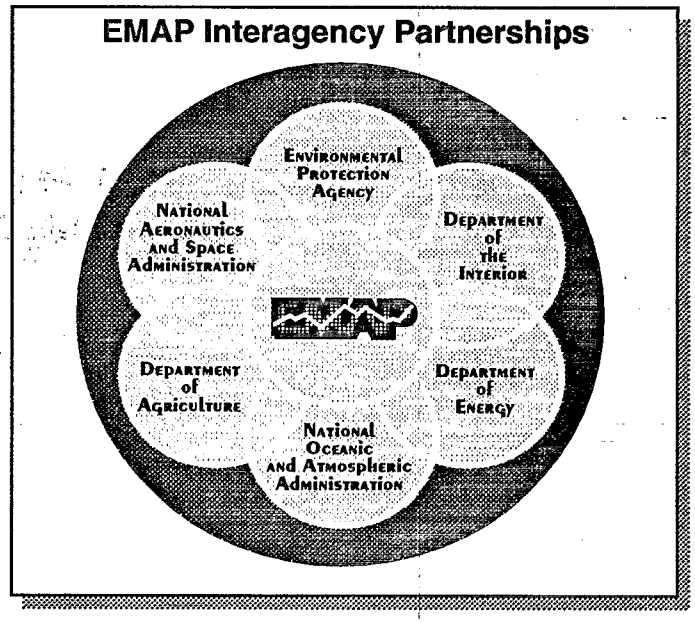
EMAP is working with the National Oceanic and Atmospheric Administration (NOAA) and several State and local programs to coordinate estuarine monitoring. Indicators of estuarine condition used by EMAP include fish pathology (tumors), toxic sediments, dissolved oxygen, marine debris, and condition of benthic (bottom-dwelling) organisms. In FY91-92, EMAP conducted demonstration projects in the mid-Atlantic (Virginian Province) and in the Gulf of Mexico (Louisianian Province). EMAP estuaries is adding a pilot study in the southeast (Carolinian Province).

Forests

EMAP-Forests is measuring visual symptoms of forest condition, indicators of exposure, and other indicators in conjunction with the U.S. Department of Agriculture's Forest Service and Soil Conservation Service and several State forestry agencies. In FY91 and 92, the New England Forest Health Monitoring effort continued and monitoring expanded to the mid-Atlantic and Southern States. Pilot projects were also conducted in several western states. Demonstration projects are continuing in New England, the Southeast, and Rocky Mountain areas.

Great Lakes

The EMAP-Great Lakes group conducted pilot studies during FY92 in Lake Michigan and Lake Superior in cooperation with the EPA Great Lakes National Program Office, the International Joint Commission, and Environment Canada. Water and sediment quality, and fish and invertebrate abundance and community composition were determined at 12 locations in Lake Michigan and 25 locations in Lake Superior. These projects are continuing.

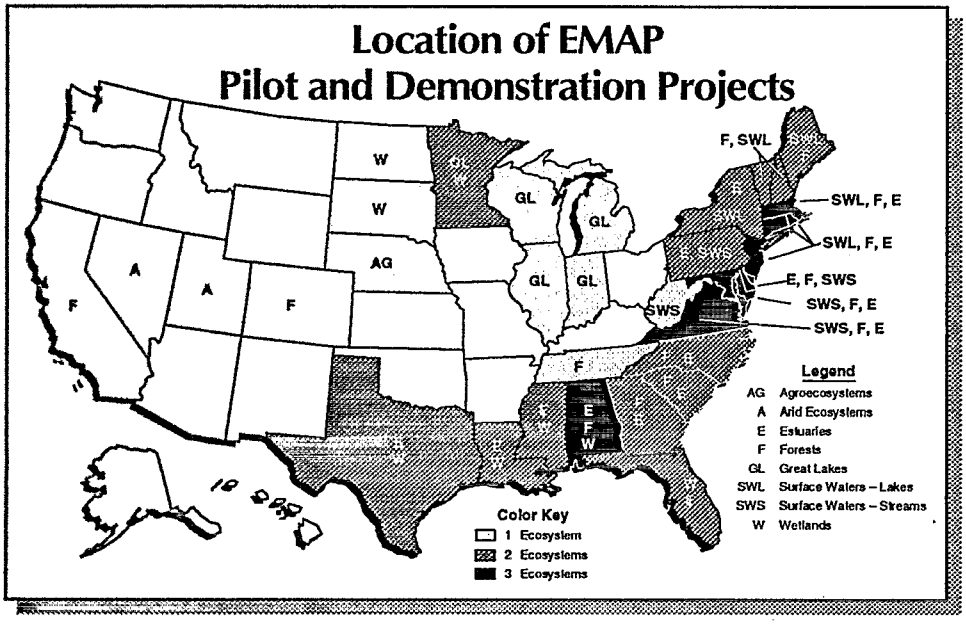


Surface Waters

In FY91–92 the Northeast Lakes pilot study (New York, New Jersey, and New England) was conducted. This study examined the trophic status of the lakes in this region and also partially fulfilled mandates of the Clean Air Act Amendments. A pilot project in the mid-Atlantic streams is being initiated.

Wetlands

Field activities for the EMAP-Wetlands program began in FY91 with a pilot project to evaluate indicators in the coastal salt marshes of Louisiana. This effort has continued along with a pilot study in the prairie pothole region of the Midwest.



For further information contact:

EMAP Director
U.S. Environmental Protection Agency
Office of Research and Development
RD-680
401 M Street, S.W.
Washington, DC 20460