

Wetland Monitoring & Assessment

A Technical Framework

A Framework that Improves Decision Making

The Clean Water Act (CWA) requires that states and tribes monitor and report on the condition of all waters of the United States, including jurisdictional wetlands. Scientists and resource managers rely upon wetland monitoring data to assess wetland health and to guide decision-making. Understanding the causes and effects of wetland impairment can help improve management decisions in watersheds. Wetland monitoring is important to gauge the effectiveness of wetland restoration projects and to help measure the environmental health of watersheds.

Often, the most direct and effective way of evaluating the ecological condition of a wetland is (1) to directly measure the condition of the wetland's biological community and (2) to observe and measure the chemical and physical characteristics of a wetland and its surrounding landscape.



Maine Department of Environmental Protection

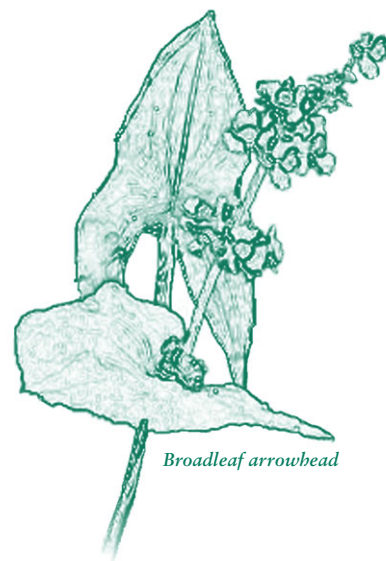


Scientists with the Maine Department of Environmental Protection sample macroinvertebrates to test wetland condition.

Specific Applications of Monitoring Information

- 1. Evaluate the performance of protection and restoration activities** - Wetland monitoring data can be used to evaluate the success of management activities by including follow-up monitoring and assessments as a component of management plans. By periodically conducting wetland assessments, managers can learn which activities work as planned and which do not work.
- 2. Support permitting decisions** - Wetland monitoring data can be used to help support permitting decisions made under CWA Sections 401 and 404 and other state, tribal and local wetland programs. Information from wetland monitoring can be used to ensure that a permitted activity is likely to comply with a state's water quality standards. Monitoring information can also be used to define performance standards for wetland mitigation sites.

Lynn Betts, USDA Natural Resources Conservation Service



Broadleaf arrowhead

Intensive wetland monitoring helps to test and refine the indicators used in rapid wetland assessment.

Levels of Effort and Products

A comprehensive wetland monitoring and assessment program is implemented through three levels of effort. Work may begin at any level, but each level builds upon the other.

1. Landscape Assessment

- Landscape assessments are used to characterize land uses and the distribution and abundance of wetland types across an area.
- This level of assessment is used to determine the geographical priorities where more intensive wetland monitoring is to occur, as well as identify environmental indicators that can be monitored to approximate wetland condition.
- The resulting data layers and landscape profiles provide valuable information to guide wetland protection and restoration decisions, including the location and design of compensatory mitigation projects.

2. Rapid Wetland Assessment

- Rapid wetland assessments evaluate the general condition of individual wetlands using relatively simple indicators. These assessments are based upon identifying stressors, such as road crossings, encroachment, tile drainage and pipe discharges.
- Rapid wetland assessment methods are used to monitor and report on the cumulative condition of wetlands in a watershed, as well as identify sites where more intensive monitoring is needed.
- Results are also used in CWA Section 401/404 permitting and other wetland decisions and can be used to evaluate the performance of compensatory wetland mitigation and other restoration projects.

3. Intensive Site Assessment

- Intensive wetland monitoring is necessary to test the indicators used in rapid wetland assessments and to validate landscape level assessments. Intensive Site Assessment requires the identification of wetland reference condition.
- This level of assessment is also used to determine the attainment of water quality standards at individual wetlands. Monitoring data is used to refine wetland restoration or other management practices where degradation is found.

Lynn Betts, USDA Natural Resources Conservation Service

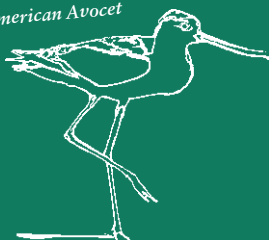


Landscape wetland assessment methods are used to evaluate cumulative impacts on wetlands in a watershed.

EPA 843-F-02-002(h)
Office of Water

The Wetland Fact Sheet Series

American Avocet



Wetlands Overview
Types of Wetlands
Functions & Values of Wetlands
Threats to Wetlands
Wetland Restoration

Funding Wetland Projects
Wetland Monitoring & Assessment
Sustainable Communities
Volunteering for Wetlands
Teaching about Wetlands

www.epa.gov/owow/wetlands

Wetland Resources

On the Internet

Biological Assessment of Wetlands www.epa.gov/owow/wetlands/bawwg
Bibliography: Hydrogeomorphic Method for Assessment of Wetlands itre.ncsu.edu/CTE/hgmbib.html

In Print

Bartoldus, Candy C. 1999. *A Comprehensive Review of Wetland Assessment Procedures: A Guide for Wetland Practitioners*. Environmental Concern, Inc. 196 pp. Available from Environmental Concern, Inc., call (410) 745-9620, or visit the web at www.wetland.org.

U.S. EPA. 2002 *Methods for Evaluating Wetland Condition Modules*, Office of Water, U.S. Environmental Protection Agency, Washington, DC. Available online at www.epa.gov/ost/standards.