Forest Sustainability in the Northern United States

Are populations of songbirds declining? Are we harvesting more timber than we grow? How healthy and productive are our forests? What will happen to our forests if current rates of development continue? How will forest fragmentation and loss impact water and air quality, recreation, and our country's forest related economy?

Forest sustainability demonstrates the strong ties among the ecological, economic, and social aspects of forests. Forests are complex ecosystems, sources of raw materials, and part of our social fabric. Forest ecosystems, individuals, and communities are intricately linked. In order to manage forests for long-term sustainability, good information is needed to guide management decisions.

Criteria and Indicators Monitoring Framework

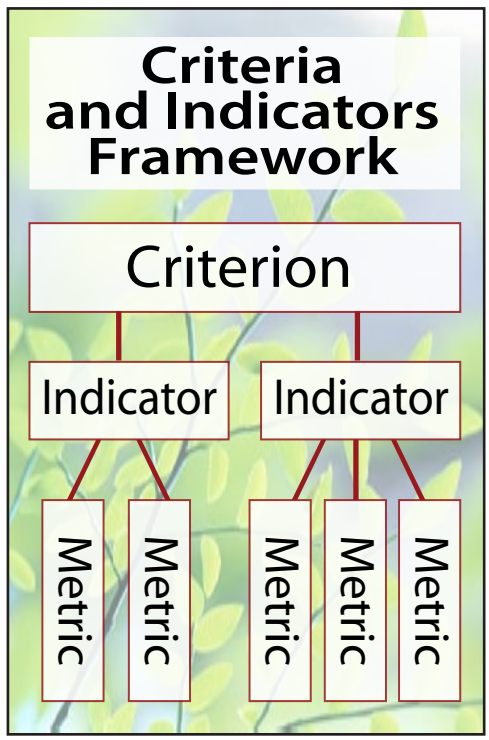
In the late 1990s, forest experts from the United States and 11 other countries developed a framework to monitor the sustainability of temperate and boreal forests. The resulting set of 7 criteria and 67 indicators were developed for use by individual countries. The framework captured the areas of agreement regarding the concept of sustainability and its components.

The **criteria** define broad categories, or goals, for sustainable forest management. Each criterion has a group of **indicators**, which provide specific measurements. In turn, indicators have **metrics**, which identify the data used to measure the indicators. For example, a criterion on socioeconomic benefits of forests may have an indicator measuring employment in forest-related sectors. This indicator would have metrics that define the categories of employment to be measured (e.g., wood product manufacturing, State forestry, and Federal agency) and what data are available.

While the criteria outline valued aspects of forest sustainability, the indicators and associated metrics provide value-neutral information. The public should be involved in determining implications of the conditions and trends revealed in the information. In public meetings, scientific facts and goals can be discussed and used to establish reference conditions. Managers can use these reference conditions to interpret the data and formulate management strategies and policy.

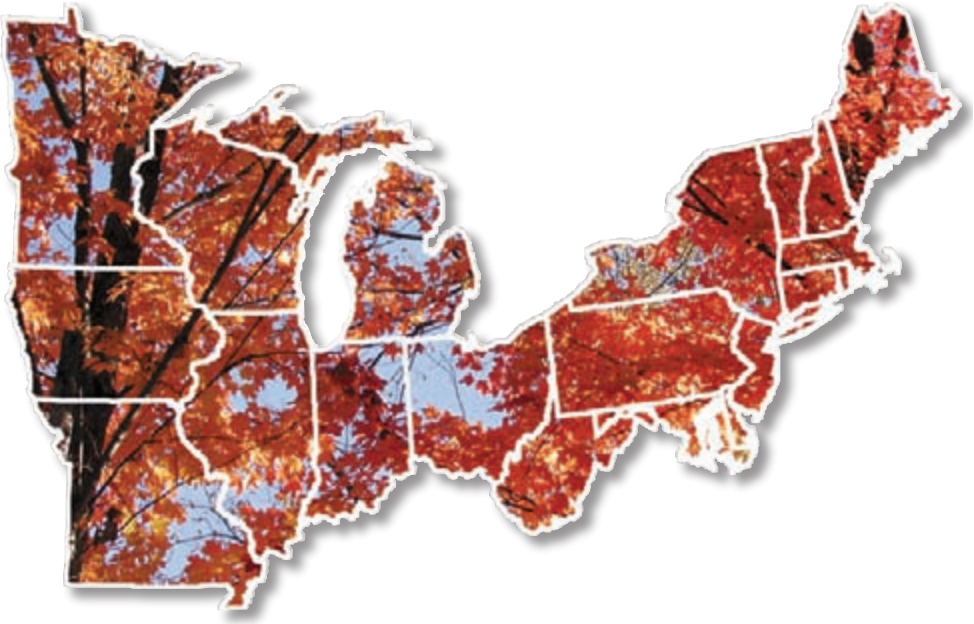
National Report

The USDA Forest Service is using the criteria and indicators (C&I) framework nationwide to build partnerships and track progress in forest sustainability. A major aspect of this work is the production of periodic national reports. The first report of this type, developed with the cooperation of the National Roundtable on Sustainable Forests, is the National Report on Sustainable Forests—2003. The report and supporting technical information are available on the Internet at www.fs.fed.us/sustained. In addition to this report, the USDA Forest Service is encouraging efforts that test the value of the C&I framework for planning, assessment, and decisionmaking at regional, State, local, tribal, community, watershed, and forest management unit scales. Initial results indicate the C&I framework is useful at multiple scales.



Adopting the Criteria and Indicators Model in the Northern United States

The Northeastern Area State and Private Forestry (Northeastern Area), a unit of the USDA Forest Service, is working with the Northeastern Area Association of State Foresters (NAASF) to use the C&I framework to monitor forest sustainability across the 20 Northeastern and Midwestern States and the District of Columbia. This effort has involved, first, developing an understanding of the appropriate uses of the C&I framework in monitoring, assessment, planning, and decisionmaking; and, second, promoting C&I as means to help link national, regional, State, and local sustainability projects. An information clearinghouse has been established to entice forest stakeholders to incorporate the full range of social, economic, and ecological values into their planning and decisionmaking. The Northeastern Area and the NAASF assessed conditions in the Northern United States using the national indicator list and published a summary called Sustainability Assessment Highlights of the Northern United States. They developed a list of 18 base indicators to track continuously and use in periodic regional sustainability reports. Finally, they created an associated on-line information system to make the base indicator information easy to find and convenient to use.



The Northern United States—20 Northeastern and Midwestern States and the District of Columbia—are using criteria and indicators to monitor forest sustainability at State and regional levels.

Base Indicators for State and Regional Monitoring

The Northeastern Area and NAASF had two objectives in applying the C&I framework: (1) to identify common measures that would reveal regional and State conditions and trends in forest sustainability; and (2) to compile this information in a format that would encourage its use in a broad range of forest resource decisionmaking. Toward this end, they adopted the seven criteria from the C&I framework outright but limited the number of indicators to 18 base indicators that they can monitor continuously within budget constraints.

The term "base indicators" conveys the message that they provide a solid base of information for a sustainability assessment but do not address every possible sustainability issue. Each base indicator has a clear linkage to the national C&I framework and is appropriate for

use at State and regional levels. The base indicator information may complement or supplement information generated at the national scale. The information may also provide context for assessments and plans conducted at the same or finer scales. The base indicator list is open to change, if science, technology, or new issues reveal the need for change.

Members of the Northeastern Forest Resource Planners Association—a group of State forestry agency planners dedicated to improving resource planning and analysis—worked with the Northeastern Area and NAASF to select the 18 base indicators. The working group then identified appropriate metrics and data sources. The data are generally readily available from regional, national, or State sources.

Data for the base indicators are compiled from a variety of Federal agencies, including the USDA Forest Service, the U.S. Census Bureau, the USDA Natural Resources Conservation Service, and the National Oceanic and Atmospheric Administration, as well as State forestry agencies and other organizations, such as NatureServe. The Forest Inventory and Analysis database maintained by the USDA Forest Service (www.fia.fs.fed.us) is a significant source of data.

Assessing forest sustainability using the base indicators for the Northern United States can ...

- Provide credible forest-related information that is consistent across State and regional levels.
- Identify emerging issues and opportunities.
- Let the public know that natural resource professionals are monitoring the region's forest resources.
- Demonstrate the importance of forests to the ecological, social, and economic health of the region.
- Identify information and research needs.
- Show private landowners how their property contributes to the region's ecological, social, and economic health.

Forest Sustainability Indicators Information System

The Forest Sustainability Indicators Information System is an on-line clearinghouse providing information on the 18 base indicators for forest sustainability monitoring and assessment in the Northern United States.

There is a wealth of information at your fingertips, allowing you to ...

- Retrieve on-line data reports and additional resources for each indicator.
- Dynamically graph data at regional, State, multi-State, and other scales.
- View, print, and save graphs, maps, and data tables.
- Track trends over time.

www.fs.fed.us/sustainability/indicators

Base Indicators of Forest Sustainability for the Northern United States, Listed by the National Sustainability Criteria[1]

Criterion 1: Conservation of Biological Diversity
1. Area of total land, forest land, and reserved forest land
2. Forest type, size class, age class, and successional stage
3. Extent of forest land conversion, fragmentation, and parcelization
4. Status of forest/woodland communities and associated species of concern
Criterion 2: Maintenance of Productive Capacity of Forest Ecosystems
5. Area of timberland
6. Annual removal of merchantable wood volume compared to net growth
Criterion 3: Maintenance of Forest Ecosystem Health and Vitality
7. Area of forest land affected by potentially damaging agents
Criterion 4: Conservation and Maintenance of Soil and Water Resources
8. Soil quality on forested land
9. Area of forest land adjacent to surface water and forested land by watershed
10. Water quality in forested areas
Criterion 5: Maintenance of Forest Contribution to Global Carbon Cycles
11. Forest ecosystem biomass and forest carbon pools
Criterion 6: Maintenance and Enhancement of Long-Term Multiple Socioeconomic Benefits to Meet the Needs of Societies
12. Wood and wood products production, consumption, and trade
13. Outdoor recreational participation and facilities
14. Investments in forest health, management, research, and wood processing
15. Forest ownership, land use, and specially designated areas
16. Employment and wages in forest-related sectors
Criterion 7: Legal, Institutional, and Economic Framework for Forest Conservation and Sustainable Management
17. Forest management standards/guidelines
18. Forest-related planning, assessment, policy, and law

[1] No priority or order is implied in the numeric listing of the criteria and indicators.

To learn more about forest sustainability in the Northern United States...

1. Visit www.na.fs.fed.us/sustainability for the following reports and additional information about use of criteria and indicators in the Northern United States:

   - Sustainability Assessment Highlights of the Northern United States, which characterizes the region's forest resources using the full suite of 7 criteria and 67 indicators.

   - Sourcebook on Criteria and Indicators of Forest Sustainability in the Northeastern Area, which introduces criteria and indicators as measures of forest sustainability and describes how the base indicators for the Northern United States were developed.

2. Contact Sherri Wormstead, sustainability specialist, USDA Forest Service, Northeastern Area State and Private Forestry, by e-mail (swormstead@fs.fed.us), phone (603-868-7737 [TTY-7603]), or mail (271 Mast Road, Durham, NH 03824).

3. Contact your State forestry agency.

United States Department of Agriculture
Forest Service
Northeastern Area State and Private Forestry
11 Campus Boulevard, Suite 200
Newtown Square, PA 19073

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