Sustainable Forest Management
Community Handbook

for

The Great Lakes Region

Great
Lakes
Forest
Alliance

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Table of Contents

Welcome!

Welcome to sustainable forest management for your community! The purpose of this handbook is to help you and your community develop a sustainable forestry initiative by providing the tools you need as well as ideas on how to get started.

Why get involved in sustainable forest management (SFM)?

The place to make a difference is at the community level.

Gerald Thiede
Michigan State Forester

Communities from rural to urban face issues related to their forests. Some of these are listed below and may sound familiar to you and your community.

⚒ Residents in forested areas and visitors alike marvel at the beauty of the forest, hike the trails, hunt, fish and canoe in its lakes and rivers and hope that their children and grandchildren will be able to share those same experiences.

⚒ Young people who graduate from high school hope to return to their communities and hold professional careers.

⚒ Loggers hope they will have a continual supply of trees to harvest.

⚒ Timber industries want to maintain jobs in the Upper Great Lakes region and keep the costs of doing business competitive.

⚒ Suburban residents want to know that the forests of our region will always be there even if they don't visit them.

> **Sustainability:**
>
> living within limits, the interconnectedness among economy, society and environment, and the equitable distribution of opportunities and resources (Hart, 1988-9).
>
> to cause to continue to keep up, especially without interruption, diminution to prolong (Websters New International Dictionary).
>
> Sustainability encompasses the simple principle of taking from the earth only what it can provide indefinitely, thus leaving future generations no less than we have access to ourselves (Friends of the Earth Scotland).

⚒ Urban communities need to protect the health of the trees and forest along their streets and in their backyards.

⚒ Local community residents wonder if they can maintain the small town community atmosphere as more and more people move to the area to enjoy the natural amenities.

⚒ A family in Northern Wisconsin hopes they'll be able to continue hunting and fishing.

⚒ Communities across the world are trying to ensure their unique voices are represented in regional, national and international SFM decisions.

Taking charge

Communities can take charge of their own destinies and ensure that their forests are healthy and provide what they need now and in the future. There are two parts to the process: creating a shared vision of sustainable forestry for your community and measuring and monitoring progress towards achieving that vision.

Sustainable development

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (The World Commission on Environment and Development, 1987).

Sustainability is related to the quality of life in a community whether the economic, social and environmental systems that make up the community are providing a healthy, productive, meaningful life for all community residents, present and future (Hart, 1988-9).

The process of **defining sustainable forest management** for one's own community and then monitoring the actual progress towards realizing the goals requires much patience, time, energy and sweat. But it's worthwhile because it sets the direction of future forest management towards that which community members have themselves chosen. It reduces conflict by introducing cooperation and collaboration within the community planning process. Residents learn from each other and listen long enough to respect the diverse perspectives of their neighbors.

Citizens involved in this process will be far more inclined to support future conservation efforts of their communities, because they have a voice from the very beginning. Residents carry with them the knowledge that they themselves are the authors of their community's vision for the future.

Communities will be able to learn from and contribute to other sustainable forest management processes occurring in their states, the region and the global community. Citizens can enhance their involvement by becoming informed by the sustainable forest management work being accomplished in their province or state, by local business and industry, by planning councils or townships. By having a definition of their own social, economic and ecological needs, communities can provide input to forest planning, policy, practice and monitoring at the county, management unit, state/provincial and national levels.

Community members also acquire a broader perspective of their own community because they hear and contribute to all sides of the issues from the beginning. In traditional planning processes, citizen input too often occurs late in the game, after experts or developers have already generated plans. By that time, emotions have sometimes flared and public forums can become polarized and hostile.

The community-based process proposed in this handbook overrides the crisis stage, by pre-empting it. A community vision of sustainable forest management lays the foundation for future development objectives by developing a community philosophy on which to base all planning decisions—comparable to a corporation's mission statement. The vision helps

keep discussions focused on what's really important to the whole community when making decisions. Once a community has decided what sustainable forest management really means for their community—by examining the needs and desires of the local residents, as well as the minimum requirements for continuous ecological and economic health—what's next? How will you know if you are actually on the road that you want to be on? How do you know when you have sustainable forest management?

Measuring and evaluating progress made towards achieving the goals of SFM is vital. It facilitates decision-making by telling you whether you can keep doing what you are doing or whether you need to change course.

Defining, measuring and evaluating what sustainable forestry actually is in practice is not easy, but in the last decade there has been considerable effort to do that by numerous international, national, regional and state initiatives that use the concepts of criteria and indicators.

The birth of criteria and indicators (C&I)

The process of developing criteria and indicators for sustainable forest management is not new. The following is a quick trip through their birth and development.

The International Tropical Timber Organization (ITTO) was the actual pioneer in defining the use of criteria and indicators (C&I) for the first time, in March 1992, for the management of tropical forests.

The Earth Summit in Rio de Janeiro, or United Nations Conference on Environment and Development (UNCED) also in 1992 appealed to all nations to ensure sustainable development, including the management of all types of forests. The summit generated a Statement of Forest Principles, conventions on biodiversity, climate change and desertification, and Agenda 21, a plan of action for the 21st century—each concerning forest management in some measure (Montreal Process Working Group, 1998).

In 1993, Canada convened an **International Seminar of Experts on Sustainable Development of Boreal and Temperate Forests**, held in Montreal, and focused closely on the development of criteria and indicators and how they may assist in defining and measuring headway towards the goal of sustainable forestry management. The **Montreal C&I Process** was launched, composed of ten, then later twelve, non-European nations[1] comprising 90% of the temperate and boreal forests worldwide. The Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests first met in Geneva in 1994, charged with the task of development and promotion of internationally agreed criteria and indicators, and attainment of a consensus on what constitutes sustainable forest management (Nordin, 1996).

In 1995 in Chile, the group produced a comprehensive set of seven criteria and 67 indicators for use by the member countries and called it the **Santiago Declaration**. It was anticipated that individual countries would generate their own measurement schemes to collect data in the most appropriate way for their national conditions.

Thirty-two European countries decided to work separately, under the framework of the Ministerial Conference on the Protection of Forests in Europe, on what is called the **Helsinki Process**.

The **American Forest and Paper Association (AF&PA)** conducted an opinion poll of the American public and found a strong interest in the concept of sustainable forestry. Focus groups of consumers around the U.S. expressed concern about whether the products they were buying were contributing to the destruction of tropical rainforests, old growth forests, or endangered species' habitats. As a result of this poll, in 1994, the AF&PA developed new principles of sustainable forestry called the **AF&PA Sustainable Forestry Initiative**, which is now being implemented by member companies, and state forestry and contract loggers' associations (McMahon, 1995). The forest industry itself has also developed a certification system to monitor its own members. SFI includes a set of 12 criteria ranging from wildlife habitat to biodiversity and water quality to public involvement.

 The Food and Agriculture Organization (FAO) is developing indicators for the forests of Africa, the Caribbean and Central America, and the Near East.

The **Tarapoto Proposal,** made up of Amazonian countries, in collaboration with and supported by Canada, developed twelve criteria and 77 indicators for conservation and sustainability of the Amazon Rainforest.

The Forest Stewardship Council (FSC), led by the World Wildlife Fund for Nature and the World Resources Institute is trying is to convince wholesalers, retailers and consumers of forest products to buy paper products and building materials that are certified as produced from sustainable sources. The FSC accredits third-party auditors to assess specific forests for compliance with its standard. If the forest passes inspection, an eco-label can be affixed to products made from its raw materials. The label states that the product has been produced from sustainably managed wood.

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[1] Member nations are Argentina, Australia, Canada, Chile, China, Japan, Republic of Korea, Mexico, New Zealand, Russian Federation, United States of America and Uruguay.

The recently developed **International Standards Organization s (ISO) 14000 Environmental Management Systems (EMS)** process provides another means for international certification, using well-known international system to monitor the quality and environmental aspects of both forestry and manufacturing operations.

Criteria and Indicators for the Great Lakes Region

> *Midwesterners are very pragmatic, product-oriented people who don't want to spend a lot of time talking when they could be doing. We like to get out and try things, to learn as we go, and to change what we're doing in response to what we're learning.*
>
> *I think Midwesterners' pragmatism as well as our willingness to collaborate comes in part from the realities of our climate. In this part of the world, if your car breaks down and it's 30 degrees below zero, you don't sit there for half an hour discussing your options. You pick one option and start doing it immediately, and if that doesn't work, you try the next option. If someone offers help, you take it. We know that individually we don't have all the resources we need. I think that the closer you are to the land, the more pragmatic and open to collaboration you have to be.*
>
> Wendy Hinrichs Sanders, Executive Director
> Great Lakes Forest Alliance

How C&I Were Born in this Region

In **Ontario**, the *1994 Crown Forest Sustainability Act* (CFSA) provided for the regulation of forest planning, public involvement, information management, operations, licensing, trust funds for reforestation and processing facilities such as sawmills. The CFSA requires forest management plans be prepared for each designated management unit and the Minister shall establish Local Citizen's Committees, other advisory committees and forest management boards to advise him/her on preparation and implementation of forest management plans. The Act CFSA provides licenses for the harvesting and requires the licensee to carry out renewal and maintenance activities necessary to provide for the sustainability of Crown forests. The CFSA provides for establishment of a Forest Renewal Trust Fund and a Forestry Futures Trust Fund to reimburse silvicultural expenses incurred in Crown forests.

> **Ontario's Crown Forest Sustainability Act Principles**
>
> * Large, healthy, diverse and productive Crown forests and their associated ecological processes and biological diversity should be conserved.
> * Long term health and vigour of Crown forests should be provided for by using forest practices that within reason emulate natural disturbances and landscape patterns while minimizing adverse effects.

From 1997 to 1999, Ontario conducted an extensive land-use planning process called Lands for Life resulting in the publication of Ontario's Living Legacy Land Use Strategy. The *Strategy* outlines the intended strategic direction for the use and management of 39 million hectares of Crown lands and waters that represents 45 percent of the province and was substantially based on the work of three Round Tables composed of 12 to 14 citizens drawn

from diverse backgrounds from three geographic regions of the province and discussions were also held with representatives of various sectors to enhance the recommendations of the Round Tables, including representatives of the forest industry, the Partnership for Public Lands (a coalition of environmental groups) and Ontario Ministry of Natural Resources. The document serves as a guide for future land and resource management on Crown lands in activities proposed or preferred or permitted in certain areas.

In 1998, the **Minnesota** Department of Natural Resources and partners launched the Environmental Indicators Initiative (EII) to be a comprehensive framework to collect, monitor and communicate indicators of Minnesota's broad environmental health, including agriculture, air, forests, ground water, lakes, prairies, rivers and streams and wetlands. Over 120 science-based indicators help citizens and decision makers progress towards healthy ecosystem and communities. Minnesota conducted a review of the availability and accuracy of information about forests in 2000 through a partnership between the Minnesota Forest Resources Council (MFRC) and the EII. Indicators are identified for each baseline question and are the basis for a preliminary overview of the availability of forest information within Minnesota. The Minnesota DNR is developing natural resource indicators using a *results management* framework to determine outcome targets for its initiatives and to measure program results as presented in *Natural Resources Stewardship 2001: Key Indicators of Progress*. Recently the Minnesota Department of Natural Resources developed targets to forecast and measure progress in three key areas where DNR is developing new initiatives.

> **Key Minnesota Forest Stewardship Indicators**
>
> * Enlarged and protected forest land base: Acres of private forest lands with stewardship plans.
> * Healthy and resilient forest ecosystems: Protection of the highest quality old-growth forests on DNR-administered lands.
> * Numerous forest-based economic opportunities: Cords of timber from DNR lands offered for sale.

The 1999 **Wisconsin** State Forest statute explicitly articulates sustainable forestry as the guiding principle for management of Wisconsin's designated state forests. The Wisconsin Department of Natural Resources Division of Forestry, in cooperation with its partners, outlined a set of indicators that address the five criteria germane to the principles of sustainable forestry as applied to the state forests. A team of Department staff developed and refined a set of indicators that drew on several sources, including work by the USDA Forest Service, Canadian Standards Association, American Forest and Paper Association, Forest Stewardship Council, and Great Lakes Forest Alliance. The draft indicators were sent out for external review by a wide array of individuals and groups in 1997 and were revised based upon feedback and the indicators developed by the Great Lakes Forest Alliance. A second external review was conducted in 1999, following which the report was finalized. The criteria used for selecting indicators were: relevance to sustainability, applicability at a state forest or appropriate regional scale and responsiveness to change. Issues of measurability and practicality were also considered in

> **Wisconsin s Sustainable Forestry Criteria:**
>
> * Maintenance of biological resources
> * Maintenance of soil and water sources
> * Provision of multiple economic benefits
> * Maintenance of social and cultural values
> * Existing framework for practicing sustainable forestry

evaluating the potential indicators. However, they were not used as the sole basis for excluding an indicator. The indicators are designed to facilitate a critical review of proposed plan alternatives and, subsequently, plan implementation. The indicators do not foster a simplistic evaluation of sustainability. Rather, the indicators will facilitate the gathering and evaluation of data that collectively can be used to assess sustainability. The Department anticipates the need to reassess the indicators following their application in one or two forest planning process to better reflect key issues, data limitation, and resource constraints. The Department is committed to practicing sustainable forestry on the state forests and will, using best available information and working with the public, use the indicators to assist in the design and implementation of state forest management and use.

The primary **Michigan Department of Natural Resources** development and use of sustainable forestry criteria and indicators will be done at the ecoregional level in Michigan. There are four ecoregions within the state: the eastern upper peninsula, the western upper peninsula, the northern lower peninsula and the southern lower peninsula. Ecoregional management teams have been established in the northern lower peninsula and the eastern upper peninsula. These teams are charged with developing plans which will employ sustainability criteria and indicators. Through a series of workshops and public input, the eastern upper peninsula effort has already identified criteria and will be posting related information on the Michigan DNR website.

The Northeastern Forest Resource Planners Association (NFRPA), an organization of state forest planners in the twenty Northeast and Midwest states in cooperation with the U.S. Forest Service, Northeastern Area, has focused considerable attention on forest sustainability issues. A primary product of these efforts is the *Sourcebook on Criteria and Indicators of Forest Sustainability in the Northeastern Area* to be published by July 2002. The Sourcebook is intended as a source of information for agencies and other organizations considering the use of C&I to assess forest sustainability. It summarizes information on the development and use of criteria and indicators by other organizations and agencies, including lessons learned, and provides a list of recommended resources. The Sourcebook also presents a set of base indicators that states can use to assess sustainability of our northeastern forests. This set is recommended as a starting point for criteria and indicators to be used by the USDA Forest Service, Northeastern Area of State and Private Forestry and all 20 State Forestry agencies represented by the Northeastern Area Association of State Foresters (NAASF).

In 1998, **Great Lakes Forest Alliance** (GLFA) identified five criteria and 145 indicators to measure and monitor progress of sustainable forest management for the Great Lakes region. They then perceived the need for a dialogue among public and private forest managers, other professionals and citizens in the Great Lakes area to move sustainable forest management from theory to application.

In May, 2000, the Wingspread Conference, *Sustainable Forest Management: Policy, Planning & Practice* was held in Racine, Wisconsin. It was hosted and conducted by the Johnson Foundation, the Great Lakes Forest Alliance, the states of Michigan, Minnesota and Wisconsin, the province of Ontario, and the USDA Forest Service. The goal was to bring leaders together from diverse forest interests to build a sustainable forest economy, sustainable communities, and a sustainable forest ecosystem.

The purpose of the conference was twofold. The first was to identify the most important

indicators of the biological, economic and social systems to be maintained or enhanced while narrowing down the 145 indicators to something more manageable for communities to use. The second purpose was to examine how to stimulate implementation of sustainable forest management (SFM) practices by both public and private landowners.

The conference participants worked in three groups, one for each of the components of SFM: ecological, economic and social. Each group identified additional and emerging indicators to add to the original list of 145, while deleting other less useful ones. All indicators were ranked by forum participants and pared down to the 33 most important.
It was agreed that the essential next step to apply the concept of SFM at the local level would be the development and release of a community manual. Its goal would be to assist communities with a process they could use to select their own criteria and indicators out of the Wingspread list (or to create new ones if they so choose), as well as how to go about gathering the data. This handbook is the result of that consensus.

The Handbook

The Sustainable Forest Management Community Handbook is a planning tool generated through a collaborative process including forest resource professionals and community leaders, to help forest communities throughout the Great Lakes area take their futures into their own hands. A region-specific approach is applied because different parts of the country have diverse forest types as well as cultural differences.

This manual offers step-by-step guidelines for communities to use for planning and evaluating their progress towards their own visions of *SFM*, by developing a community-driven process for gathering data and building a local knowledge base. Citizen participation is a key principal in this process, because every community is unique and should explore a full range of possibilities for the management of its forest resources in order to meet specific economic, ecological and social needs.

The process of sustainable forest management in this setting applies to management practices at every scale from national forests to small woodlots on down to individual urban shade trees. It is inclusive of all local residents with an interest in trees and sustainable communities. In this way, we hope to encourage communities to be dynamic, proactive and cooperative in identifying and reaching their community goals—while maintaining a diverse and sustainable economic and ecological base in harmony with important indigenous culture and institutions. Working together, community members and forestry and planning professionals can create a vision of sustainable forest management and community development that meets the needs of the whole community.

PRINCIPLES OF COMMUNITY-BASED FORESTRY

Process. Communities have discovered we need a better process for natural resource decision-making. We want honest, open, inclusive and transparent decision-making. We want decisions which are equitable in terms of sharing risks and benefits. We have learned how to discover common ground and to work on those areas. Land management agencies should continue to develop inclusive resource planning and decision-making processes that actively engage diverse interests and promote collaboration between public and private organizations by restructuring relationships.

Stewardship. Community groups have been able to discover common ground around the concept of stewardship. Our discovery of stewardship came through a process of seeking a sustainable future. If we take care of the forest, the forest can take care of us. Earlier experience in natural resource dependent communities was often a boom/bust cycle. The community didn't really benefit from the boom and took a disproportionate part of the bust. We have come to believe that sustainable futures rely upon our ability to integrate, not balance, social and economic and ecologic goals.

Investment. Community groups recognize that for a system to sustain itself, it must continually reinvest in itself. Sometimes we can reinvest by setting an area aside from much human involvement for a while. Sometimes we can change the management practices. Sometimes there is a commodity interest which can be sustainably managed and provide reinvestment dollars. But sometimes you just have to raise the reinvestment capital from elsewhere.

Monitoring. Communities are building monitoring systems for their projects for several reasons. One is there appears to be no good system for accountability. Congress can measure for public lands, Did you spend the money in the right category but cannot measure Are the social, economic and ecologic trends on this landscape moving in the right direction over time?   Monitoring is vital to ensure that we learn from both successes and mistakes and take corrective actions. Monitoring activities should be funded and implemented to gather and share information in ways that build trust, promote learning, and ensure accountability, including taking immediate corrective measures to inform future actions.

Unpublished Testimony to the Senate Resources and Energy Subcommittee by Lynn Jungwirth on behalf of the Communities Committee of the 7th American Forest Congress

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Organizing a Sustainable Forestry Initiative in Your Community

Introduction

What is a community?

Communities are social systems comprised of interwoven institutions such as governments, schools, churches, and other formal and informal organizations. A community can be a city, town, neighborhood, or even a single block.

There are two main types: *communities of place* and *communities of interest*.

Communities of place are defined by their geographic boundaries, that is, by their locations. They are made up of people living near each other in the same locality, such Grand Rapids, Iron River, Toronto or Lac Courte Oreilles.

Communities of interest are groups of people sharing a common set of values, interests, beliefs, heritage or circumstances. They may or may not live near each other. Examples include the Buddhist community, the Finnish community, or the forestry community.

Most people are members of several communities including both communities of place and communities of interest. While communities of place and communities of interest can and do overlap, the term "community", as used in this handbook, refers to a community of *place.*

Partnerships and Participation

There are no rules with regard to who should initiate the process of organizing a community for sustainable forest management. Whatever individual, loose-knit group, or formal organization is inspired to lead the community on a path towards sustainability should begin the process.

The most successful sustainable forestry endeavors are comprised of partnerships of citizens representing many backgrounds, interests and organizations and professionals in forestry and other natural resource fields. By working in partnership, residents and forestry professionals "agree to share planning and decision-making responsibilities (Arnstein, 1977)." Sustainable forest management cultivates the strengths of the community and builds community capacity.

 It is important to find a balance between top-down approaches from governmental agencies or others outside a community and bottom-up, grassroots strategies, because both have their limitations. Often top-down projects are initiated with little or no input or approval from community residents. Many participation processes involve citizens in later stages of planning, after decisions have already been made. Public hearings are frequently used for this purpose and are often not accessible or appropriate for many members of multi-cultural communities. Information gathering, such as community surveys and discussions, can

"mine information" from citizens without providing complementary benefits to them. Finally, projects may use community labor to achieve professional goals without consideration of issues that most concern community members (McDonough et al., 1994, McDonough and Wheeler 1998).

Conversely, the view that initiatives must always start from community members, with professionals providing assistance *only* at the request of the residents, overlooks the likelihood that citizens may not know all the opportunities and options available to them, resulting in inaction and loss of benefits to the community. In addition, forest resource professionals have the technical expertise to insure successful and sustainable community projects. They may also be members of the community.

Genuine participation in sustainable forest management efforts share a number of qualities (McDonough et al., 1994: 30-31):

> 4 Projects are community-centered, focusing on the needs of people.

> 4 The process is community-driven. While professionals may provide training and technical help, the goal of a community SFM program is to meet the needs of the community, as identified by the community.

> 4 Decision-making is shared through an equal partnership between forestry and planning professionals and the community.

The development of sustainable forestry initiatives requires time. But the process of forming partnerships and involving all parts of a community in the definition of sustainable forestry for that community is time well spent. There are numerous groups in our society that are not typically represented in decision-making processes in their communities, and it is vital to reach out to them. The broader the participation base, the greater the support will be for the outcomes of the process. All participants need to be patient and willing to listen. The outcomes from a process that allows sufficient time to establish trust and come to consensus will be more sustainable in the long run.

What are the steps?

There are four steps involved in getting your community involved in sustainable forest management:

1. Develop community participation
2. Define sustainable forest management for your community
3. Determine how you will know if you are there
4. Gather information

Step 1: Developing Community Participation

There are typically three levels of community participation for a successful sustainable forestry initiative :

> 4 A core group or steering committee
> 4 A larger working group
> 4 The entire community

The steering committee is a small core group, perhaps five to ten members, that establishes the initiative. The committee meets fairly often, provides organization and leadership for the initiative and keeps everything going.

The steering committee also organizes a larger **working group.** This working group is made up of a diverse set of community members who are concerned about sustainable forestry issues in their community. The working group informs the steering committee of community members' concerns and needs and makes decisions related to the initiative on behalf of the community. As the name implies, the group works with the steering committee, becoming better informed about issues and making decisions together about sustainable forestry in the community. It meets less frequently than the steering committee and can greatly vary in size from community to community, with an average membership of thirty to fifty residents.

The working group and the steering committee both have the additional charge of keeping **the greater community** informed of the initiative's mission, specific goals and objectives, accomplishments, problems and needs along the way. For the community to provide support for the project, residents must be kept abreast of the initiative's progress and be given channels to respond with feedback. As citizens grow more knowledgeable about forest sustainability issues more of them may become inspired to join the working group, provide funding or services to support the initiative or support sustainable forestry practices in the community.

Organizing the Steering Committee

Talk with everyone you know. The process needs to start with someone. If you are reading this handbook, that someone is probably you. The first thing you need to do is talk about SFM with friends, colleagues, family, and neighbors. Bounce ideas off of anyone who will listen, and get feedback. Find out who might be interested in collaborating with you or supporting you in any way. Identify other efforts that may be going on in the community.

Expand your circle. Share your ideas with a wider audience. Enlist the backing of respected community leaders and other influential people. You will need their support because many community members will look to them for guidance. Their endorsements will jumpstart the process.

Approach community organizations, governmental agencies, tribes and local businesses, especially timber and tourism-related businesses. Many of them seek out community programs to support in various ways, either with materials, sweat or funds.

Include members of the media if possible. They will be instrumental in helping to inform community members about sustainable forestry issues and the proposed project.

Hold an informal meeting to discuss the initiative and people's willingness to serve on a steering committee.

> Ask for a volunteer to **take notes**, or minutes of the meeting. It is important to make sure that everyone present receives a copy of the minutes within a few days.

> **Introduce your ideas** about sustainable forestry to the group, even though you have probably already talked to each of them about it individually. Each exchange was unique and included different elements. This is an ideal setting to discuss ideas from earlier conversations with everyone present

> **Give everyone the opportunity to talk** about the forestry and community issues they're most concerned with. What are the participants' values and interests? What are their personal goals? What are their visions of a sustainable forest community, both now and in the future?

> **Ask who would like to** participate in organizing a community sustainable forest management program.

> **Form a steering committee** to take the first steps of organizing. Depending on how many people are present, the group may decide that everyone present will comprise the committee. Others may be more comfortable with participating in the working group instead. Some may be willing to start off on the steering committee to get things off the ground, then make a switch to the working group.

> **Ask members how they would each like to contribute** to the initial process. Employ the talents and proficiencies that people have already, but keep in mind that some people use those skills every day at work and would like a change of pace or a chance to learn new skills. Find a way for members with particular abilities to work

with those who want to learn, so everyone can increase his or her capacity to contribute.

Discuss loosely what **the mission** of the initiative might be. What goals might be worth pursuing? Leave this somewhat open at this stage, because the final vision, goals, objectives and process will be developed by the working group after it is formed.

Discuss ways for a broader group of citizens to come together and become involved with the initiative (e.g. the working group).

Discuss the next actions and develop a timetable. Clearly define what will happen next. Outline tasks and a timetable and identify responsible person/s.

Organizing the Working Group (Izaak Walton League of America, 1998)

At least four to six weeks in advance, **convene a steering committee meeting to plan a larger gathering for community members to come together** to discuss sustainability in their community.

Clarify the overall purpose of the meeting. Each community will approach this a little differently, but the purpose of the working group may include discussing the need for public participation and community partnership in the creation of a vision of sustainable forestry for the community and establishing a working group to oversee the process.

Establish specific goals and objectives for the meeting. Is the meeting to educate the community about sustainable forest management? Is it to alert citizens to specific local issues regarding forestry? To draw attention to the community initiative you are proposing? To recruit community members to join you in your endeavor? To listen to residents' ideas about forest and community sustainability, as well as particular concerns they may have? Perhaps the meeting will include all of these goals.

Decide on the agenda. This, of course, will be based on the goals and objectives. Stay focused on what you want to accomplish and make sure every component of the agenda contributes to that end. A suggested agenda:

- d   Welcome and introduction
- d   Presentation of proposed initiative
- d   Guest speakers
- d   Group discussions
- d   Call for participants
- d   Plan a tentative date and place for the next meeting

In 2000, when Michigan State University was holding workshops to talk with people who had not been previously engaged in forestry issues or activities, a soup, salad, sandwich and dessert buffet was provided at each meeting. When participants evaluated the meeting, they indicated that having food at the beginning of the meeting provided them a chance to

meet others in an informal atmosphere and they indicated that the food contributed to the success of the meetings.

Consider guest speakers. Invite a few residents from various sectors of the community to give *short* talks about why they feel that this initiative is important and how it will benefit the community. Make an effort to produce a diverse set of speakers: community leaders, forest industry personnel, Native American/First Nation or other ethnic group members, seniors, students, seasonal residents, etc. Include one or two forestry or natural resource professionals. Speakers could each discuss a specific forestry issue important to them, or highlight what another community is doing. Perhaps a member of another community pursuing similar goals could come and share what that community has done and what they've learned. The forestry experts could provide educational background about community forestry and sustainability or detail what they as professionals have to offer the community initiative. The purpose of the speakers is to give credibility to the project by showing that there is already support and enthusiasm for it among a number of community members.

Choose a meeting location. The organizational meeting should be convened in a neutral location, one that doesn't promote or alienate the interests of any particular sector or group. Consider public spaces in convenient locations, accessible to public transportation and easy to find—such as a library, school, community college or community center. Try to avoid governmental offices, such as the U.S. Forest Service or the Department/Ministry of Natural Resources. Although perhaps quite convenient, setting up the first meeting in one of these places could give the impression to citizens that the government is in charge of the program, possibly alienating some otherwise-interested community members. Residents need to feel comfortable that they are on equal footing with any governmental or other professional forestry personnel participating in the initiative. Holding the first sustainability meeting in a government building could intimidate some sectors of the population from attending, particularly marginalized groups not accustomed to taking part in local decision-making.

Discuss funding resources to cover expenses that will be incurred. Even a volunteer-run meeting with rent-free meeting space can cost several hundred dollars for printing, office supplies, postage and food. Donations from local businesses, government agencies or non-profit organizations may be available. Services, such as photocopying, may also be provided through donations.

Make a list of specific groups, organizations and individuals to invite. It is vital to have the participation of a representative cross-section of the community, including such traditionally under-represented sectors as low-income residents, minority and ethnic groups, seniors, and youth. Make a special attempt to reach out to under-represented groups that do not normally participate in local decision-making. Allow sufficient time to do this. Think about a snowball rolling downhill. The further a snowball rolls, the more snowflakes it collects and the larger it becomes. As you talk to people, ask for additional names of people they think might be interested. Bring in community service organizations and other nonprofits, local business associations, environmental and other activists, students, journalists, loggers, foresters, natural resource agencies and any others you can think of. Be *in*clusive, not *ex*clusive.

Decide how to promote the meeting and motivate people to attend and get involved. Journalists present at the steering committee meeting could write something for a local newspaper, magazine or a television or radio public service announcement. Members of local service organizations could write short articles and/or put notices in their newsletters or on their websites. Ask if any forestry professionals present would also contribute one or more articles about sustainable forest management and how the community could benefit from pursuing it. Design flyers that everyone could post around town in store windows, campus and office bulletin boards, kiosks, etc. Create an internet website for the initiative.

Use additional methods to reach those community members or organizations on the list that was created of prospective participants to be invited. Determine how to approach each group or individual. You could start by sending invitees a letter. Steering committee members could ask to make appearances at local organization meetings or school assemblies to briefly introduce the initiative and announce the sustainability meeting. As the time of the meeting draws near, phone calls to those on the list personalize the invitations and give the organizers a better idea of who might show up. This strategy, while time consuming, has been demonstrated to be extremely effective in efforts to reach diverse participants.

When promoting the meeting, **give contact information** where community members can ask questions or find out how they can get involved. It is helpful to provide multiple means of communication. Give one or more names of steering committee members, with work and home phone numbers and e-mail addresses.

Hold the organizational meeting.

> **Provide a table** near the entrance with a sign-in sheet and nametags. Make sure everyone signs in so you have current contact information. Use this for sending copies of the meeting minutes. Be sure to ask for e-mail addresses, as this is the easiest, cheapest and fastest way to pass information. At the same time, be cognizant of the fact that there are still many people who may be great project participants that do not, and may never own or know how to use a computer. Even among experienced computer aficionados, there can sometimes be the feeling that e-mail is impersonal. Employ multiple methods of communication so that no one is isolated by the exclusive use of inaccessible or unacceptable technology. The community participation process is an inclusive one that strives to embrace a wide-ranging spectrum of the community. Flexibility and sensitivity are indispensable attributes to maintain. Decide on a communication process that works for all.

> **Have someone take notes of the meeting**, as is done for the steering committee meetings. Send the minutes out within a few days to each person present.

> **Present the proposed initiative** and lay out the tentative mission:

> > d   Creating a vision of a sustainable forest community
> > d   Defining *sustainable forest management* for the community
> > d   Monitoring and evaluating the community s progress towards the vision through the use of criteria and indicators

Have several guest speakers followed by group discussions for the following topics. Give residents plenty of chances to speak. This is your opportunity to learn what they think.

- d   What is sustainability?
- d   What is a sustainable community?
- d   What is sustainable forest management?
- d   What are specific forestry issues and concerns

Ask who might be interested in continued participation. Find out who would be interested in forming a working group for developing a community vision of sustainable forestry for the community. The group's charge would of course be unique for each community, but a basic suggested agenda follows. Generally, the working group would be responsible with creating and refining its own mission, recruiting other members, electing steering committee posts, defining *sustainable forest management* specific to the community, deciding whether to use criteria and indicators for monitoring and evaluating community success at reaching its goals, and if so, how. The group would also be responsible for collecting the information needed for analyzing progress and for continually sharing its activities and findings with the community, so everyone can at least witness the process, even if they don't have the desire or ability to participate directly.

Emphasize that a broad-based group is desirable, so that a vision representing the entire community is developed. Underscore the importance of each sector of the community and that representatives from every one are needed. Encourage residents that are interested but hesitant, due to shyness or lack of confidence, that their voice is important and that no experience is necessary. Emphasize that everyone will learn as they go along.

Set the tone for future meetings. Encourage people to listen and ask questions of each other until they have heard the values and principles behind everyone's beliefs and actions.

Plan a tentative date and place for the first working group meeting. Ask for suggestions and try to work around the group's schedules to find the time that most can conveniently attend.

Inform the broader community

In most cases, a large segment of the community will not be part of the working group or steering committee. But establishing a sustainable forestry initiative is a community-wide effort. The steering committee and working group must develop and implement an ongoing strategy to keep the broader community informed. The broader community should be informed from the beginning or they may feel left behind. Questions to be answered are:

- d   At what points in the process will community members be informed?
- d   What information channels will be used to reach all citizens?
- d   How will these efforts be paid for?
- d   Who will be responsible?

Step 2: Define *Sustainable Forestry* for Your Community

Up until this point, the emphasis has been on establishing the initiative, forming the steering committee, introducing the project to the community, and creating the working group. Now, it is time to move on to the second step: creating a vision of a sustainable forest community and defining it for the community. The working group has two immediate tasks. The first is to organize the working group and the second is to develop a definition of sustainable forest management.

Organize working group tasks

Introduce the project again, as there may be people in attendance who were not at previous meetings.

Discuss the working group s mission and define it as a group. This will probably take some time because it requires brainstorming, discussion and many questions and answers back and forth between members of the working group. It may not even be accomplished in one evening. That is fine. It is more important to get it right than to rush it. Think of the mission as a specific goal or set of goals to be met through particular actions.

> The mission of the Group would be first to agree upon a vision for sustainable forestry, looking forward in time, but based upon factual data from the present and past. Further, it would mediate and advocate for Gogebic County in forest issues, it would educate the Gogebic County public about the role of forestry, and would be a public relations body for informing the public about the need to sustain the value of forests for the future of Gogebic County (Gogebic County Steering Committee on Natural Resource Strategy, Feb. 2, 1999: 1).

If members feel the need for more information or education before they feel comfortable defining sustainable forestry, find a way to provide it. This could be very informal, such as having steering committee members and forestry experts in the group answer questions as needed, or a seminar or series of workshops could be arranged. Another approach would be to have one or two guest speakers talk on the topics that the group decides it needs to learn more about. Videos could be checked out of the library or provided by the Forest Service, DNR, Extension or the county forester. Field trips could be organized or a reading list could be compiled of articles, books, magazines and websites. Brainstorm the possibilities and choose one or two members to organize it.

A series of speakers can discuss sustainable forestry in general, regionally, and locally. Invite an expert or two to talk about each of the three components (ecological, economic and social) of SFM. Each presenter can explain what the component means in terms of forest management and how the community can use it then to define *sustainable forestry*, to set specific goals and objectives and to measure whether they are being met or not. Another guest speaker can talk about criteria and indicators: what they are, how they are used, how they are being developed and used at national, state, and regional levels and how the community can use the ones listed in this handbook or develop new ones.

Select additional steering committee members from the group. The original steering committee was only an interim one, organized to start the process rolling. Now is the time for the group to decide who the permanent steering committee members will be.

The group can decide how to do this, whether it be a committee made up of self-appointed volunteers or whether they are nominated and elected. Decide whether specific offices, such as president, vice president, secretary and treasurer will be filled, or if each committee member will share equal responsibility, as on a board of directors. The leadership structure is best chosen by the working group to fit the way they prefer to work together as a group.

Decide together as a group how decisions will be made. Will all decisions be made by the larger working group, or will the steering committee make some of them? Will there be a majority vote? Or will a consensus be required? There are no rules here, except what the group decides to implement.

Decide how often to meet, and where. It is up to the group whether a regular schedule is chosen or if a more spontaneous planning method will be employed. But there should be some level of regularity in order to hold the group together. Meetings bring people together to discuss ideas and give everyone a chance to provide input into the planning process. If too much time passes between meetings, the group can lose its momentum and fall apart. One way to alleviate this problem is to keep frequent communication among members through other means, such as letters, e-mail, a website, a newsletter, or telephone.

Define sustainable forest management for your community

Several definitions of sustainable forest management were presented in the introduction to this handbook. Generally, the definitions refer to forestry practices that sustain and safeguard, for the long term, ecological, economic, and social features that are important to the community. Each community must decide what those features are by asking themselves the questions: What features of our community do we want to sustain and if we had sustainable forest management, what would our community look like? Encourage people to focus on tangible situations which are within the scope of the community's ability to maintain or change.

> Sustainable forestry is [forest management] that contributes to the [economic health] of Gogebic County while maintaining the [ecological and social/cultural values] for the benefit of present and future generations in Gogebic (County Gogebic County Steering Committee on Natural Resource Strategy, Dec. 6, 1999: 1).

Any definition should contain the three main components of sustainable forest management: *ecological, social and economic*. The three components together make up the ingredients for sustainability of communities. These three components of SFM work together , and a project that compromises any of the three for the sake of another cannot be sustainable in the long run. No community can remain viable without ecological balance, economic options AND socio-cultural integrity.

Defining sustainable forest management is an important challenge for the working group as it defines the ideal future as the community sees it. This process will take time and more than one meeting as it involves developing a vision for forestry and the future of the community. Development of the definition is one part of the process in which to consider broader community participation and feedback, perhaps through focus groups or community meetings.

Step 3: How will you know you are there?

Now that you have outlined your mission and defined sustainable forestry, what next?   In order for the community to achieve sustainable forest management, you need to go beyond a general definition and develop specific, concrete goals and objectives. These objectives should be quantifiable so that community progress towards sustainable forestry can be monitored and assessed. An effective monitoring method whose use is rapidly increasing is the framework of **criteria and indicators**.

What are criteria and indicators and why use them?

Forest sustainability is a complex and abstract concept that can be difficult to pin down. Criteria and indicators (C&I) can help you identify key aspects of sustainable forestry, progress towards community goals, and examine the possible results of various actions and choices at many levels, from international down to the community level.

C&I breaks down critical and complex information in a way that people can easily understand. This is central to the philosophy of citizen participation. In order to be inclusive of diverse community participants, the monitoring framework must be easy to use and understand.

C&I can be used to describe the whole system, comprised of the social, ecological and economic components of sustainable forest management. **It is a dynamic framework** evolving as our understanding increases of these three components, their interactions and their measurement. C&I documents trends in the system allowing communities to either maintain or alter developments.

Criteria **are core** principles for sustainable forestry. They identify specific conditions to be achieved for meeting the community's broader goals. Defining these core principles helps a community identify ways to adapt forestry actions to more closely match their criteria.

Example:
> **Criterion**: Maintain ecological values

Indicators **are quantitative or qualitative variables that can be measured or described** in various ways to monitor the degree of success in meeting criteria over time. They can be used to signal to us the current state, as well as emerging trends of the intertwined systems of sustainable forestry and sustainable community.

Example:
> **Criterion**: Maintain ecological values
> **Indicator**: Changes in forest structure and composition in Gogebic County

Measures **are pieces of particular information** that describe the indicator in specific ways. They bring the abstract down to the nitty-gritty concrete level and show us, much like an oil gauge on a car, what is really happening. The oil gauge lets us know if the oil

level in our car is within acceptable levels. When it falls below a certain level, we know we have a problem to solve. The gauge helps us to plan our actions before the actual state of affairs sends us to the mechanic. Measures are gauges that let us know if indicators are within acceptable levels.

Example:

Criterion: Maintain ecological values

Indicator: Changes in forest structure and composition in Gogebic County

Measures:

1. Percent of land that is forested
2. Percent change relative to baseline size and condition of critical resource lands
3. Percentage of wetlands, agricultural land, and forest in 1990 still preserved
4. Mix of forest types: number and percent of acres in different forest types
5. Percent land area that is natural, old growth, working forest, modified, cultivated, planted, built, or degraded
6. Percent or acres of forest area by forest type
7. Percent or acres of forest area by size class
8. Percent or acres of forest area by age class
9. Percent of land with young-forest type trees under age 15

Selecting criteria and indicators

There are numerous existing sets of criteria and indicators for sustainable forestry at various levels of decision-making. The most well-known is the Montreal Process C&I. This set was developed at the international level by a group of twelve nations and can be found at http://www.mpci.org/. The International Tropical Timber Organization also developed a set. ITTO's website is at http://www.itto.or.jp/Index.html. Consideration of C&I processes at scales larger than the community may provide access to information that has already been collected, funding or additional technical expertise.

In this handbook we present the Great Lakes Forest Alliance criteria and indicators for your potential use. This set of five criteria and 33 indicators was designed to be applicable to Minnesota, Michigan, Wisconsin and Ontario. We suggest starting with this list and then deciding whether the community wants to use all of it, part of it, none of it, or a mix of parts intermingled with locally developed indicators for the individual community.

Step 4: Gathering Information

Now that you have a community definition of sustainable forestry as well as a set of criteria and indicators, what next? **Begin a monitoring and evaluation program** for forest sustainability by collecting the data designated by the measures. There are two parts to collecting the data you will need: baseline data collection and monitoring.

The first time that measurements are made by the community, the information collected becomes the *baseline data* on which to establish current community standards related to sustainable forest management. It shows where you are now.

Sustainable forest communities need to be able to detect changes in outcomes stemming from decisions, actions and policies. Over time, more data will be collected and compared to the baseline. This is the monitoring step in which the community tracks trends and progress. Any changes noted are analyzed for compatibility with sustainable forest management criteria. If they are not, decision-making can be adjusted to stay more in line with established community goals (UK 2001).

A few general thoughts on gathering information

Agree on the value and purpose of the information to collect. Collecting information can be hard work—tedious and frustrating at times. It is vital to have a group consensus on which data to gather, as well as how and why. If the group members don't believe in what they are doing, the data collected will be less than stellar quality, if it gets collected at all.

Determine a time period for the data and when you want to use it. The information will likely be gathered by volunteers, so it is necessary to be accommodating to their schedules and other needs. Come reporting time, it will be most productive if all the data can be analyzed and presented in one simple report at one time. This will take some coordination so that all the data is available at around the same time to use together.

Decide what information to collect. Will you collect data on all 33 indicators, or only the ones most important to your community? Will your community develop its own criteria and indicators? Each community is free to make its own choices, but a good starting point is the list of criteria and indicators in this manual. A lot of work was put into the development of the list during a series of workshops and conferences over a number of years in the Great Lakes region. It was a collaborative process of a wide range of forestry professionals and community leaders brainstorming and sharing ideas and knowledge, based on years of experience and with the aim of addressing all important dimensions of SFM. We suggest that you at least begin with this list and tweak it to meet your community's needs and unique conditions as the working group members see fit. If you find they don't meet your community's needs, develop alternate indicators that are meaningful to your community. Make sure you know exactly what you want to find out. This is an excellent way to avoid information overload, a trap to avoid!

Decide where to collect information. It is very important to verify that your information sources are reputable and that the data provided by these sources is science-based. Not all available data are correct. If you have questions about a data source, use a different source to verify or refute the information presented.

Decide who will collect the data needed. We have attempted to provide you, in the section on 'Data Sources,' some places on the internet to begin looking for secondary (existing) data. Some information will not be already in existence and will have to be collected, e.g. opinions of community members regarding their priorities and preferences about forest issues. We have provided some sample interview questions to ask citizens in the gathering of this data.

Identify possible sources of data. We have provided a list of data sources in the appendices, but it is not exhaustive. Be creative and adventurous in your search, and

please! contact us if you find other sources we can add to our list. This is a collaborative process, and we need your input!

> **Primary Sources (residents).** Some data may have to be collected first hand, particularly some social indicator data. At first, you may want to gather *qualitative* (non-numeric —textual or verbal) data which usually involves some sort of interviewing of selected community members to get their perspectives on the ecological, economic and especially the social components of sustainable forest management in their own community. You can also make use of meetings, interviews, and/or focus groups to find out how citizens feel about forestry in their community. After that you might consider a series of follow-up surveys, which produce *quantitative* (numerical) data.

> **Secondary Sources (published).** Other data are already 'out there' in public records, in written or electronic form, if you know where to look. Most of this will be *quantitative* data from published sources for the ecological and some economic and social indicators. Look for secondary sources of information from non-governmental (non-profit) organizations, government agencies (local, state and federal), academic institutions (universities, research centers, extension services) as well as books, magazines/journals, list servers, websites, and newsletters.

Set limits as to how much information you want to collect. Data collection can go on and on if the researchers are enthusiastic and eager to do a good job. This is especially pertinent in the case of a quest for the perfect data source, if it doesn't present itself right away.

Don't squash their enthusiasm, because the community will continue to need it for the long-haul, but do limit the final data product that is used. Information overload is a danger here that can be avoided by eliminating redundant sets of data "just in case it's needed." Carefully select data sets so information can be simply communicated. Graphs, maps and pie charts are effective ways to display information.

Collect the data. Most likely, there will be numerous volunteers out combing the libraries and internet. Keep an extensive web of communication flowing between them so they can benefit from the increasing knowledge base and experience of each researcher. Have them share tips on finding information, lessons learned the hard way, and data sources more useful to a different volunteer than the one who found it.

Identify gaps in your knowledge. Hopefully, the open communication between researchers will limit information gaps, but most likely there will still be a few. Discuss what they are and brainstorm ways to fill them in.

Redo the process to try to fill those gaps.   Brainstorm ways to track down elusive data. Switch volunteers so they can work on different measures. What one person couldn't find, may be easily acquired by another. If necessary, make some phone calls, send some emails to ask someone who may know. Take advantage of the training librarians have in information gathering. They can be an excellent wealth of knowledge and have been known to, at times, become rather enthused and animated when helping someone tackle a challenging search. Contact government agencies, university researchers and

nongovernmental organizations for help. They use data often and may some sources for you right at their fingertips.

If at all possible, compare data with that of other communities. This is another way to fill information gaps. See what other communities were able to come up with in their information gleaning. Ask for advice and lessons learned, and share your experiences with them.   It's possible that you could share some of the data collection work, by splitting up the task rather than duplicating efforts.

Keeping in touch with state/provincial, regional and national C&I processes

1. Recognize the need to continually improve SFM indicators and monitoring.

Keep abreast of and be involved in work that is occurring at the state and regional and national levels to both learn from and provide constructive input to those processes. Sustainable forest management processes that are occurring at the state or provincial level, at the industry level and at the community levels are all identifying gaps in information needs and understanding the impacts of forest practices. As universities, forest management agencies and private institutions continue to uncover new knowledge about forest resources, that information should be adapted by communities into their indicator and monitoring work. Sustainable forest management indicators are working tools that are continually adapting as we gain new knowledge.

2. Inform the sustainable forest management processes at county, regional, state or provincial and global levels.

Each state and province in the region is studying sustainable forest management. Each is working to a goal of monitoring. Each needs the input, valuable data and knowledge from communities to enhance the depth of their work. Communities have a right but especially a responsibility to share their knowledge with others so the goal of a sustainable global forest and community can be achieved.

Many communities in the region are adjacent to county forests, National Forests, Provincial Forests or industrial forests. The exchange of knowledge and information from communities to government and business will enhance the quality of each work in planning, policy and practice as well as in monitoring.

In 2003 the United States and Canada will present their first State of the Forest Reports to the World Conference on the Environment. Every five years after that, an updated report must be made. A significant gap has been identified to infuse the knowledge of community forest management monitoring in the national processes. Citizens must be involved in the process to add their knowledge and learning to global efforts.

State and provincial efforts and contacts

The U.S. Forest Service, Northeastern Area and NFRPA provide a clearinghouse of information relating to forest sustainability through the Web site: http://www.na.fs.fed.us/sustainability/. This Web site contains the sourcebook on criteria and indicators, information about a database that describes 60 sustainability/indicators efforts, other information about sustainability assessments and forest resource planning, and related links.

 For more information, contact your state DNR or:
    Connie Carpenter, Sustainable Forests Coordinator
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    271 Mast Rd.
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Michigan C&I

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http://www.dnr.state.mn.us/eii/written.html

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http://www.departmentresults.state.mn.us

Ontario

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  Web: www.dnr.state.wi.us/org/land/forestry

The Great Lakes Forest Alliance Criteria and Indicators of SFM

Ecological Pillar
Criterion 1: Maintenance of Biological Resources
1. Proportion of forest in each successional stage
2. Proportion of forest area in each cover and age-class type
3. Abundance of, and trends in, rare, threatened and endangered forest-based species
4. Abundance of selected forest-based species
5. Amount of habitat for selected forest species
6. Area of forest not satisfactorily regenerated
7. Trends in the area of forest land as a result of deforestation (by type of loss) and aforestation
8. Frequency of disturbance and distribution of disturbed area, by disturbance type and severity
9. Fragmentation and connectivity
Criterion 2: Maintenance of Soil, Water and Air Quality
10. Compliance with, and effectiveness of water quality BMPs (Best Management Practices)
11. Impact of forest activities on soil

Economic Pillar
Criterion 3: Provision of Multiple Economic Benefits
12. Area of forest land
13. Percent of primary industry expenditures accounted for by renewable raw materials (forest and agriculturally derived fiber)
14. Great Lakes share of North American and global forest products markets accounted for by forest-based businesses
15. Wood flow in the Great Lakes Region
16. Harvest vs. growth on Great Lakes timberland
17. Number and value of forest recreation days
18. Diversity of forest-based industry (sales volume by sector)
19. Forest-based employment picture by sector
20. Value added by forest resource-based industries
21. Capital expenditures by forest resource-based industries (including forest products, tourism, other)
22. Net carbon flux of Great Lakes forests

Social Pillar
Criterion 4: Maintenance of Community and Cultural Values
23. Importance of forests in people s daily lives
24. Important features and places
25. Range of uses of the forest and meanings for those uses
26. Access to both public and private forest lands
27. Community capacity and civic responsiveness
28. Social trends
Criterion 5: Society s Framework for Sustainable Forest Management
29. Availability of incentives
30. Existence of laws, policies and regulations
31. Awareness of support for sustainable forest management
32. Representativeness of all publics in public participation processes
33. Perceptions of fairness and justice

What Do You Need to Know?

The criteria and idicators

ecological economic social measures

scale s

sources

_____

Ecological Pillar

Criterion 1: Maintenance of Biological Resources

1. Proportion of forest in each successional stage

Ecological succession is the dynamic transition of plant and animal communities (or natural groupings) of a given area through a series of stages, from the simple to the complex. For example, after a forest fire leaving only bare ground and dead trees, ***pioneer species*** are the first to come in. Wildflowers and grasses start to shoot up and flourish. Following that, pioneer tree seedlings may begin to germinate and grow, creating shade, and thus allowing more shade-tolerant species to join the community. The succession finally culminates into a stable and long-lasting ***climax*** forest of multi-aged and -sized trees, with its accompanying wildlife habitats and species. Clear-cuts and fires simplify habitats, allow full sun to warm the ground again, and set the conditions for the cycle to begin once more.

Additionally, successional stages (also called **seral,** from the word *series*) must be distinguished by **site type**, such as a tendency towards **hydric**, **mesic**, or **xeric** (wet, medium or dry) soil conditions. A given forest type may be considered in an early stage on a mesic (medium moisture) site and a late stage on a xeric (dry) site. For example, white pine is a pioneer species, and a white pine forest represents an early successional stage on a medium moisture (mesic) site, because the moisture levels allow for hardwoods like oaks and sugar maple to eventually take over for the climax stage. A dry site (xeric), however, limits the species that can grow there, thus the white pine forest may likely be the final climax stage.

Different sections of large forested areas can be, and most likely are, in different stages of succession, due to either human or natural influences. Wildlife species each have their own needs and preferences for the types of habitat they occupy, and their choices depend largely on the successional stage and site type of the forest.

Maintaining adequate forest area is also important for preserving species. Animal species with larger ranges of movement, such as some species of neotropical warblers, need large, intact areas of forest. Where forestlands are fragmented by multiple clearings, unbroken woodland corridors need to be established and maintained for the movement of these species.

The successional stages, however, do not have obvious boundaries in either space or time. They are gradual and overlapping, and thus, are not entirely separate from each other, making them challenging to measure.

Measures (measurable traits)
No off-the-shelf list of successional stages exists, because the stages are represented by gradations of composition and age, not separate units. However, it is possible to set arbitrary age-class ranges to represent successional stages for measuring purposes. Forestry professionals may be able to assist in this.

Scales
a. State/provincial
b. Multi-county

2. Proportion of forest area in each cover and age-class type

Each **cover type** and **age class** also supports different mixes of species in varying proportions of quantity. *Age class* is the classification of trees in a **stand** (a relatively uniform collection of trees) into a series of ages. For example, from age 1 to 20 might be Age Class 1, the seedling/sapling stage. Age 20 to 40 might be Age Class 2, the pole stage, etc.

Cover type is the dominant species or species mix of trees in a stand designated for a specific objective. It is a human construct and is defined by management goals. Examples include *mixed oak* for wildlife habitat or *red oak* for veneer production. *Cover type* varies within each successional stage, so the two indicators do not overlap.

Again, *cover type* should be stratified by *site type* (hydric, mesic or xeric). For example, a

red oak cover type on a dry-mesic to mesic site type has the potential to produce veneer quality wood, but not on a dry site.

Measures
1. Area of forest land
2. Area of forest in each cover type
3. Area of forest in each age class

Scales

a. State/provincial
b. Multi-county

Data Sources

Ontario MNR
   State of the Forest Report:
      http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

1. Area of forest land

   U.S. Forest Service
   Home: http://www.fs.fed.us/
      http://www.na.fs.fed.us/
   Data:
      http://www.fs.fed.us/global/nafc/nafc_reports/reports/2000/us_forests.doc
      http://www.na.fs.fed.`us/spfo/fhm/results/1999/nc/northtable1.htm
      http://www.na.fs.fed.us/spfo/fhm/fhh/fhmusamap.htm

Sample data

North Central Region- 1999

1999 North Central - Components of Change
Summary of Area Data
Forest-to-Forest MT3 Plots
Whole Plot Counts by State and Measurement Interval

		Forest-to-Forest Plots
		Total
State	Measurement Interval	
Illinois	1997-1999	11
	1998-1999	2
Indiana	1996-1999	9
	1998-1999	1
Michigan	1994-1999	14
	1996-1999	10
	1998-1999	14
Minnesota	1996-1999	28
Wisconsin	1994-1999	14
	1996-1999	6
	1998-1999	5
Total	Measurement Interval	
	1994-1999	28
	1996-1999	53
	1997-1999	11
	1998-1999	22
	Total	114

[1]This table includes all MT3 forest-to-forest plots in the input files that survived the screening criteria.
[2]Plots are considered forest if any portion is forested.
[3]Measurement interval indicates numbers of plots by year of initial and terminal inventory.

2. Area of forest in each cover type

   U.S. Forest Service
      Home: http://www.fs.fed.us/
         http://www.na.fs.fed.us/
      Data:
        http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/northtable2.htm
        http://www.na.fs.fed.us/spfo/fhm/fhh/fhmusamap.htm
        http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/abag.htm

2. Area of forest in each age class

   U.S. Forest Service
      Home: http://www.fs.fed.us/
          http://www.na.fs.fed.us/
      Data: http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/fad.htm

Sample data

Source: U.S. Forest Service [http://www.na.fs.fed.us/spfo/fhm/fhh/fhh-01/mi/mi_01.htm]
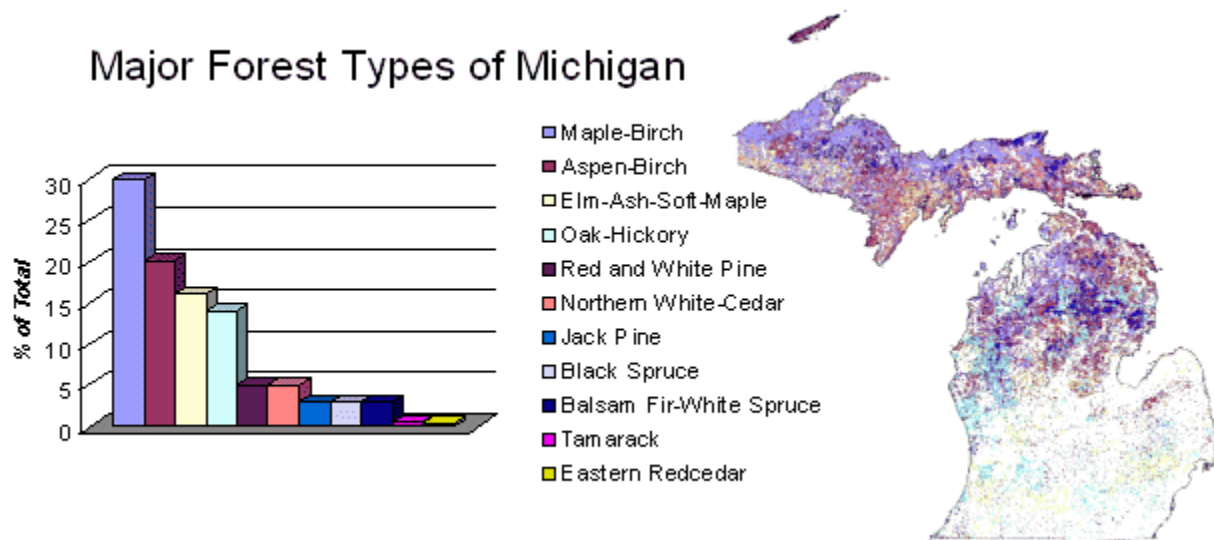
Major Forest Types of Michigan

Other Sources

USDA Forest Service Forest Inventory and Analysis (FIA)
   Home: http://fia.fs.fed.us
   Forest Inventory and Analysis Data Base Retrieval System:
     http://www.srsfia.usfs.msstate.edu/scripts/ew.htm
   Michigan Forest Profile: http://www.ncrs.fs.fed.us/hottopics/fpmi.htm
   Minnesota Forest Profile: http://www.ncrs.fs.fed.us/hottopics/fpmn.htm
   Wisconsin Forest Profile: http://www.ncrs.fs.fed.us/hottopics/fpwi.htm
   North Central Region with contacts: http://www.ncrs.fs.fed.us/4801/
     Data: http://fia.fs.fed.us/dbrs_setup.htm
     Data by State: http://www.srsfia.usfs.msstate.edu/ewdata/ewrec.htm

Environment Canada
   State of the Environment Report: http://www.ec.gc.ca/soer-ree

National Forest Health Monitoring Program
   Home: http://www.na.fs.fed.us/spfo/fhm/
   Contacts: http://www.na.fs.fed.us/spfo/staff/staffdir/spfostaff.htm
   Data: http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/nc.htm

MI/WI/MN Department of Natural Resources (DNR) and Ontario Ministry of Natural Resources (MNR)
   Michigan DNR
   Home: http://www.dnr.state.mi.us/ or http://www.midnr.com/
   General Contacts: http://www.midnr.com/contactus.asp
   Contacts in Lansing and other state offices:
      http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
   Data:
      http://www.dnr.state.mi.us/SubIndex.asp?LinkID=500&sec=main&imageid=4

Minnesota DNR
   Home/contacts: http://www.dnr.state.mn.us/
      Data: http://search.state.mn.us/dnr/
               Search examples:
               forest and age-class
               forest and cover type and Rochester plateau

Wisconsin DNR
   Home: http://www.dnr.state.wi.us/
   Contacts: http://www.dnr.state.wi.us/aboutdnr/
   Data: http://www.dnr.state.wi.us/org/land/forestry/Index.htm

Ontario MNR
   Home: http://www.mnr.gov.on.ca/
   Contacts: http://www.mnr.gov.on.ca/MNR/forests/organization/contact_us.htm
   Data: http://www.mnr.gov.on.ca/MNR/forests/fmb_info/index.html

A data/metadata clearinghouse for universal/global spatial data-sources, maintained by University of Maryland, © UMBC NSDI, 1999. Sponsored by the NASA Office of Earth Science:
   Home: http://baltimore.umbc.edu/mdnsdi/
   Data: http://baltimore.umbc.edu/mdnsdi/data.html

Industrial Landowners
   StoraEnso
      Home: http://www.storaenso.com
      North American contacts:
         http://www.storaenso.com/content/index.asp?contact=true&top=53&id=708629&ctct1=394&ctct2=401&ctmenu=false

Potlatch Corporation
Home: http://www.potlatchcorp.com
Contacts: http://www.potlatchcorp.com/company/contact.html

Champion International
Home: http://www.internationalpaper.com/champion.html

3. Abundance of, and trends in, rare, threatened and endangered forest-based species

This indicator requires a more indepth of analysis than a listing of numbers can provide. A distinction should be made between rare, threatened and endangered species as well as species that are decreasing due to human activity versus other causes.

Measures
1. Number of individuals existing of selected threatened and endangered species in your area

Scales
a. State/provincial
b. County/peninsula

Data Sources

1. Number of individuals existing of selected threatened and endangered species

U.S. Forest Service SPFO Natural Heritage Program
Home/Contacts:
http://www.na.fs.fed.us/spfo/pubs/wildlife/endangered/nat_prog.htm

MI/WI/MN DNR and Ontario MNR

Michigan DNR
Home: http://www.dnr.state.mi.us/ or http://www.midnr.com/
General Contacts: http://www.midnr.com/contactus.asp
Contacts in Lansing and other state offices:
http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4

Minnesota DNR
Home/Contacts: http://www.dnr.state.mn.us/
Natural Heritage and Nongame Research Program
Home/Contacts:
http://www.dnr.state.mn.us/ecological_services/nhnrp/index.html
Data:
http://www.dnr.state.mn.us/ecological_services/nhnrp/nhis.html

Wisconsin DNR
   Home: http://www.dnr.state.wi.us/
   Contacts: http://www.dnr.state.wi.us/aboutdnr/
   Natural Heritage Inventory (NHI) Program
      Home: http://www.dnr.state.wi.us/org/land/er/nhi/nhi.htm
      Data: http://www.dnr.state.wi.us/org/land/er/forms/inforeq.htm

Ontario MNR
   Home: http://www.mnr.gov.on.ca/
   Contacts:
      http://www.mnr.gov.on.ca/MNR/forests/organization/contact_us.htm
   Natural Heritage Information Centre
      Home/Data: http://www.mnr.gov.on.ca/MNR/nhic/nhic.html
      Contacts:
         http://www.mnr.gov.on.ca/MNR/nhic/communicate.html
   State of the Forest Report:
      http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

Partners In Flight--Species Management Synthesis:
   Home: http://www.partnersinflight.org/
   Contacts: http://www.partnersinflight.org/contactus.cfm
   Data: http://www.partnersinflight.org/birdacct.htm
      http://www.partnersinflight.org/pifneeds/searchform.cfm
      http://www.rmbo.org/pif/pifdb.html

U.S. Geological Survey – Patuxent Wildlife Research Center:
   Home: http://www.pwrc.usgs.gov/
   Contacts: http://www.pwrc.usgs.gov/staff/directory.cfm
   Data: (North American Breeding Bird Survey Trend Results)
      Michigan: http://www.mbr-pwrc.usgs.gov/cgi-bin/atlasr00.pl?MIC
      Minnesota: http://www.mbr-pwrc.usgs.gov/cgi-bin/atlasr00.pl?MIN
      Wisconsin: http://www.mbr-pwrc.usgs.gov/cgi-bin/atlasr00.pl?WIS
      Ontario: http://www.mbr-pwrc.usgs.gov/cgi-bin/atlasr00.pl?ONT

Breeding Bird Survey
   Home: http://www.mbr-pwrc.usgs.gov/bbs/bbs.html
   Contacts: http://www.pwrc.usgs.gov/robbins.htm

US Fish and Wildlife Service
   Home: http://www.fws.gov/

The Nature Conservancy
   Home: http://nature.org/
   Contacts: http://nature.org/contactus/
   Great Lakes Program contacts:
      http://nature.org/aboutus/projects/greatlakes/contact/

Nature Conservancy Canada
  Home:
    http://www.natureconservancy.ca/files/frame.asp?lang=e_&region=1&sec=welcome
  Contacts:
    http://www.natureconservancy.ca/files/frame.asp?lang=e_&region=1&sec=contact
  Data: http://www.mnr.gov.on.ca/MNR/nhic/nhic.html

Federation of Ontario Naturalists
  Home: http://www.ontarionature.org/
  Contacts: http://www.ontarionature.org/contact.html

Herpetological Society
  Home: http://www.chicagoherp.org/
  Research contacts:
    http://www.mpm.edu/collect/vertzo/herp/atlas/resframe.html
  Data: http://www.mpm.edu/collect/vertzo/herp/atlas/AtlasFr1.html

4. Abundance of selected forest-based species

Certain species are important to track for a variety of ecological, economic and social reasons. Some important species are not within historic norms because of early logging, such as white pine, hemlock and yellow birch. Some level of restoration of these species may be an appropriate goal for the region. Communities may choose additional species to monitor.

Measures

This depends on the species selected and will have to be developed.

Scales

Depends on species selected. Most likely at the state/provincial level, but multi-county or county level data may be available.

5. Amount of habitat for selected forest species

Habitat is the sum of environmental conditions in a specified place that is occupied by plant and animal communities. It is a major determinant of wildlife abundance and population levels. Amount of habitat is a potential indicator but can only be used if habitat requirements of selected species are well defined.

Species selected are based on the community's choices, i.e. what animals are important to residents and why. Hunters may want to track deer and grouse populations. Hikers may take pleasure in seeing bald eagles take off over the rocky shore of Lake Michigan.

Those concerned with endangered species may feel a sense of relief from hearing the distant, evening howl of a timber wolf. Perhaps an area with an overabundance of rodents may want to increase fox populations to control them.

Measures
1. Area of well-defined habitat of selected forest species

Scales
Archival data at the state/provincial level

Data Sources

1. Area of well-defined habitat of selected forest species

> Ontario MNR
> > State of the Forest Report:
> > > http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html
>
> Rocky Mountain Bird Observatory – Partners in Flight:
> > Home: http://rmb.wantjava.com/
> > Contacts: http://www.rmbo.org/aboutus/staff.html
> > Data:
> > > http://rmb.wantjava.com/PhysioB.html (Physiographic Regions)
> > > http://rmb.wantjava.com/PhysioW.html (Physiographic Regions)
> > > http://rmb.wantjava.com/bcrB.html (Bird Conservation Regions)
> > > http://rmb.wantjava.com/bcrW.html (Bird Conservation Regions)
> > > or
> > > http://www.rmbo.org/pubs/downloads/bcr.zip
> > > http://www.rmbo.org/pubs/downloads/physio.zip
> > > http://www.rmbo.org/pubs/downloads/pif.pdf
> > > http://www.rmbo.org/pubs/downloads/DbaseDict.doc

Other Sources

State Departments of Natural Resources (DNR) and Ontario
Ministry of Natural Resources (MNR)

> Michigan DNR
> > Home: http://www.dnr.state.mi.us/ or http://www.midnr.com/
> > General Contacts: http://www.midnr.com/contactus.asp
> > Contacts in Lansing and other state offices:
> > > http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
>
> Minnesota DNR
> > Home/Contacts: http://www.dnr.state.mn.us/
>
> Wisconsin DNR
> > Home: http://www.dnr.state.wi.us/

Contacts: http://www.dnr.state.wi.us/aboutdnr/

Ontario MNR
   Home: http://www.mnr.gov.on.ca/
   Contacts:
      http://www.mnr.gov.on.ca/MNR/forests/organization/contact_us.htm

Partners In Flight--Species Management Synthesis
   Home: http://www.partnersinflight.org/
   Contacts: http://www.partnersinflight.org/contactus.cfm

U.S. Geological Survey – Patuxent Wildlife Research Center
   Home: http://www.pwrc.usgs.gov/
   Contacts: http://www.pwrc.usgs.gov/staff/directory.cfm

Breeding Bird Survey
   Home: http://www.mbr-pwrc.usgs.gov/bbs/bbs.html
   Contacts: http://www.pwrc.usgs.gov/robbins.htm

US Fish and Wildlife Service
   Home: http://www.fws.gov/

The Nature Conservancy
   Home: http://nature.org/
   Contacts: http://nature.org/contactus/
   Great Lakes Program contacts:
      http://nature.org/aboutus/projects/greatlakes/contact/

Nature Conservancy Canada
   Home:
      http://www.natureconservancy.ca/files/frame.asp?lang=e_&region=1&sec=welcome
   Contacts:
      http://www.natureconservancy.ca/files/frame.asp?lang=e_&region=1&sec=contact

Federation of Ontario Naturalists
   Home: http://www.ontarionature.org/
   Contacts: http://www.ontarionature.org/contact.html

Herpetological Society
   Home: http://www.chicagoherp.org/
   Research contacts:
      http://www.mpm.edu/collect/vertzo/herp/atlas/resframe.html

Environment Canada
   State of the Environment Report: http://www.ec.gc.ca/soer-ree

World Conservation Union (IUCN)

6. Area of forest not satisfactorily regenerated

This indicator measures the extent to which humans and nature are willing and able to replace forest lost to various natural and human-caused **disturbances**. A disturbance is a force that causes significant change in the structure and/or composition of an area. It can be caused by natural processes like floods or earthquakes, mortality (death) due to insect or disease outbreaks, or human-caused events, such as timber harvesting. In the Great Lakes region, forests regenerate naturally over time if not converted to another use.

However, without specifying management objectives, regeneration satisfaction cannot be measured. If management goals and a time horizon are specified, then regeneration success can be monitored.

Measures
This depends on the management objectives. It has to be developed.

Scales
 a. State/provincial scale
 b. Multi-county or even county-level possible, especially with GIS and remote sensing
     technologies.

7. Trends in the area of forest land as a result of deforestation (by type of loss) and afforestation

The area of forest that is **deforested** (long-term removal of trees) by conversion to other long-term uses, such as agriculture or housing, is one indicator of human pressure on forests.

Reports on areas **afforested** (establishment of forest on land not previously forested) typically represent human sowing or planting, but much afforestation occurs naturally, especially regarding abandoned pastures and agricultural fields. Natural reforestation is often missed when calculating trends.

Measures
 1. Area of forest land converted to other uses
 2. Area of forest established on land not previously forested

Scales
 a. State/provincial
 b. Multi-county
 c. County

Data Sources

Ontario MNR
    State of the Forest Report:
        http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

1.   Area of forest land converted to other uses

    U.S. Forest Service - Forest Inventory and Analysis Data Base Retrieval System
        Home: http://www.srsfia.usfs.msstate.edu/
        Contacts: http://www.ncrs.fs.fed.us/4801/
        Data: http://www.srsfia.usfs.msstate.edu/scripts/ew.htm

    Michigan Department of Natural Resources - Ownership Data - GAP Land
    Stewardship
        Home: http://www.dnr.state.mi.us/
        Contacts in Lansing and other state offices:
            http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
        Data:
            http://www.dnr.state.mi.us/SubIndex.asp?SubLinkID=605&sec=main&parent=500&imageid=4

2.   Area of forest established on land not previously forested

    Minnesota: Eastwide Forest Inventory Data Base: USDA Forest Service
        Home: http://lucy.lmic.state.mn.us/, and
        http://www.iic.state.mn.us/finfo/land/fia2.html
        General Contacts: http://www.mnplan.state.mn.us./contact.html
        Data: http://lucy.lmic.state.mn.us/metadata/ewdb.html (By request only)

    Michigan Department of Natural Resources - Public Land Survey Data - MIRIS
        Home: http://www.dnr.state.mi.us/
        General Contacts: http://www.midnr.com/contactus.asp
        Contacts in Lansing and other state offices:
            http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
        Data:
            http://www.dnr.state.mi.us/SubIndex.asp?SubLinkID=552&sec=main&parent=500&imageid=4

    Wisconsin Land Information Clearinghouse (WISCLINK):
        Home: http://wisclinc.state.wi.us/
        Contacts: http://wisclinc.state.wi.us/landinfo/lidir.html
        Data: http://wisclinc.state.wi.us/datadisc/WISearch.html

Other Sources

Natural Resources Canada, Canadian Forest Service

Home: http://www.nrcan-rncan.gc.ca/cfs-scf
State of Canada's Forests Report:
http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/latest_e.html
Data:
http://www.nrcan.gc.ca/cfs-scf/national/what-uoi/sof/sof01/statistics_e.html

Natural Resources Conservation Service
Home: http://www.nrcs.usda.gov
National Resources Inventory: http://www.nhq.nrcs.usda.gov/NRI/1997/

Industrial land owners
StoraEnso
Home: http://www.storaenso.com
North American contacts:
http://www.storaenso.com/content/index.asp?contact=true&top=53&id=7086
29&ctct1=394&ctct2=401&ctmenu=false

Potlatch Corporation
Home: http://www.potlatchcorp.com
Contacts: http://www.potlatchcorp.com/company/contact.html

Champion International
Home: http://www.internationalpaper.com/champion.html

Public land records
Michigan Land Use Institute:
Home: http://www.mlui.org/index.asp
Contacts: http://www.mlui.org/html/action/keycontacts13.html

8. Frequency of disturbance and distribution of disturbed area, by disturbance type and severity

This indicator describes the extent of each main type of both natural and human disturbance. Natural disturbances include fire, severe storms, disease outbreaks, etc. Some examples of man-made disturbances are logging activities, introduction of exotic species, controlled burning, construction and pollution. For some types of disturbance, such as an insect infestation, a further breakdown by severity is required to depict the amount of stress faced by the forest. This indicator provides an overview of the way in which different disturbances affect the forest.

Disturbance effects are complex. They can be negative or positive, depending on the perspective or management objectives. For example, insect infestations may not be a "stress" on the ecosystem, if we are thinking in terms of long-term sustainability. This is because mortality (death) in one part of the forest usually stimulates the development of another part. The rotting of tree branches, trunks and leaves retains nutrients on the site and into the soil, thus stimulating growth of other desirable *flora* and *fauna* (plants and animals). Tracking insect and disease infestations does not monitor "stress" but only provides information for planning.

Measures

1. Area and locations of forest land disturbed by insect or disease infestations, fire, bad weather, etc.

Scales

a. State/provincial
b. Multi-county
c. County

Data Sources

1. Area and locations of forest land disturbed by insect or disease infestations, fire, bad weather, etc.

   U.S. Forest Service National Forest Health Monitoring Program
       Home: http://www.na.fs.fed.us/spfo/fhm/
           Wisconsin:
               http://www.na.fs.fed.us/spfo/fhm/fhh/fhh-00/wi/wi_00.htm
           Michigan:
               http://www.na.fs.fed.us/spfo/fhm/fhh/fhh-00/mi/mi_00.htm
           Minnesota:
               http://www.na.fs.fed.us/spfo/fhm/fhh/fhh-00/mn/mn_00.htm

       Ontario MNR
           State of the Forest Report:
               http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

Other Sources

State Departments of Natural Resources (DNR) and Ontario Ministry of Natural Resources (MNR)
   Michigan DNR
       Home: http://www.dnr.state.mi.us/ or http://www.midnr.com/
       General Contacts: http://www.midnr.com/contactus.asp
       Contacts in Lansing and other state offices:
           http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
       Data:
           http://www.midnr.com/SubIndex.asp?SubLinkID=463&sec=main&parent=436&imageid=4

   Minnesota DNR
       Home/Contacts: http://www.dnr.state.mn.us/

   Wisconsin DNR
       DNR Home: http://www.dnr.state.wi.us/
       Contacts: http://www.dnr.state.wi.us/aboutdnr/

   Ontario MNR

Home: http://www.mnr.gov.on.ca/
Contacts: http://www.mnr.gov.on.ca/MNR/forests/organization/contact_us.htm

Great Lakes Assessment
  Home: http://www.ncrs.fs.fed.us/gla/glahome.htm
  Contacts: http://www.ncrs.fs.fed.us/gla/contacts.htm
  Data: http://www.ncrs.fs.fed.us/gla/data.htm
  GIS maps: http://www.ncrs.fs.fed.us/gla/maps.htm

Minnesota Forest Resource Council
  Home with contacts: http://www.frc.state.mn.us/
  Data: http://www.frc.state.mn.us/monitor/resource.htm

Interagency Information Exchange
  Home: http://www.iic.state.mn.us/

National Forest Health Monitoring Program
  Home: http://www.na.fs.fed.us/spfo/fhm/
  Contacts: http://www.na.fs.fed.us/spfo/staff/staffdir/spfostaff.htm
  Data: http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/nc.htm

Sample Data
Source: U.S. Forest Service [http://www.na.fs.fed.us/spfo/fhm/fhh/fhh-01/wi/wi_01.htm]

Disease incidence
○ 0 - 4.9
● 5 - 9.9
● 10 - 19.9
● >=20
Habitat type group
  Very dry/dry
  Dry
  Dry/dry mesic
  Dry mesic
  Dry mesic/mesic
  Mesic
  Mesic/wet mesic
  Lowland
  Superior clay plain

A total of 224 stands and 16,572 white pine trees were surveyed.
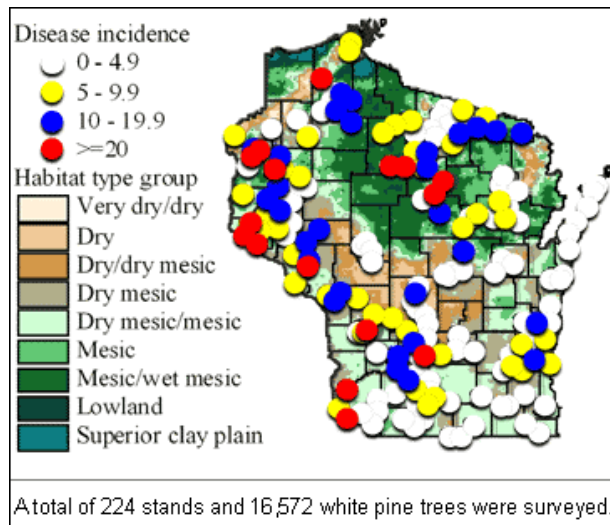
9. Fragmentation and connectivity

Fragmentation occurs when the landscape is changed from extensive and continuous forest cover to a mosaic of smaller patches, separated by open areas or very young stands of trees. *Fragmentation* may be assessed from average patch size, road density, or other indices.   *Connectivity* is a metric that reports how well these forest patches

43

are linked together with corridors, providing habitats for wildlife movement through the greater forest landscape. Various indices are available.

To be monitored, *fragmentation* must first be precisely defined. There are significant differences in ecological implications of fragments of forest embedded in a non-forest environment (e.g. agricultural or urban), and patches simply representing different cover types or stages of succession. The manner in which the forest is sliced up also matters—is it dissected by a network of trails, dirt roads or paved highways?

Fragments and connectors must be well-defined before indices can be developed and applied.

Measures
1. Change in extent of area of deforested lands
2. Area of parcelized lands
3. Miles of roads
4. Miles of trails

Scales
a. State/provincial
b. Multi-county
c. County

Data Sources

1. Change in extent of area of deforested lands

    Geography Network - ESRI
      Home: http://www.geographynetwork.com/
      Community: http://www.geographynetwork.com/community/index.html
      Data: http://www.geographynetwork.com/data/index.html
      Maps: http://www.geographynetwork.com/maps/index.html

2. Area of parcelized lands

    Ontario MNR
      State of the Forest Report:
          http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

    Northeastern Area State and Private Forestry
      Home: http://www.na.fs.fed.us/
      Data: http://www.na.fs.fed.us/stateadvice/FactSheets/factsheets.htm

    USDA Forest Service - Forest Inventory Mapmaker Program
      Home: http://fia.fs.fed.us/dbrs_setup.htm
      Contacts: http://www.ncrs.fs.fed.us/4801/FIADB/index.htm
      Data: http://www.ncrs.fs.fed.us/4801/FIADB/fim_tab/wc_fim_tab.asp
        (Note: you can specify the desired data by selecting the State and/or specific counties from the "State and County Selection Table" and follow the on-

screen directions for creating a map. Alternatively, you can use the Forest Inventory Database Retrieval System (FIADB) Data by State and Inventory Year: http://www.ncrs.fs.fed.us/4801/FIADB/fiadb_dump/fiadb_dump.htm. Example: For Minnesota data, download the file "MN_05_1990_PLOT". The file contains Microsoft Excel data layered in an ArcView format for further analysis).

3. Miles of roads
   Ontario MNR
     State of the Forest Report:
       http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

   Great Lakes Assessment Project: USDA Forest Service Great Lakes Assessment USGS Upper Midwest Environmental Sciences Center:
     Home: http://www.ncfes.umn.edu/gla/index.html
       http://www.umesc.usgs.gov/
     Contacts:
       http://www.umesc.usgs.gov/umesc_spatial/projects/gr_lakes_assessment/usfs_page.html
     Data:
       http://www.umesc.usgs.gov/umesc_spatial/projects/gr_lakes_assessment/usfs_page.html
       (Note: To access the data, go to "Transportation – Roads", and click on the "GZip" button for the desired area/state. For information about the use of data, click the "info" button in the upper right corner of the webpage).

4. Miles of trails
   American Trails
     Home: http://www.americantrails.org/default.htm
     Data: http://www.americantrails.org/resources/statetrails/index.html

   Thebackpacker.com
     Home: http://www.thebackpacker.com/
     Data: http://www.thebackpacker.com/trails/

   Ontario Rail Trails
     Data: http://webhome.idirect.com/~brown/

   Wisconsin
     Forward Wisconsin
       Home: http://www.forwardwi.com
       Data: http://www.forwardwi.com/wisc/recre.html

   Maps.com (data for sale)
     Data:
       http://www.maps.com/cgi-bin/magellan/Map_Store___Software_ProductsAO_006015_101

Other Sources

Remote sensing data bases
    Canadian Centre for Remote Sensing
        Home: http://www.ccrs.nrcan.gc.ca/ccrs/homepg.pl?e
        Data: http://www.ccrs.nrcan.gc.ca/ccrs/imgserv/imgserve.html
    Geography Network:
        Home: http://www.geographynetwork.com/

US Forest Service Forest Inventory and Analysis (FIA)—(projected to be spatial by 2003)
    Home: http://fia.fs.fed.us

Criterion II: Maintenance of Soil, Water and Air Quality

10. Compliance with, and effectiveness of water quality BMPs (Best Management Practices)

Monitoring compliance with established **BMPs** may be the most practical indirect measure of effects of forest practices on water quality. *BMPs*, or Best Management Practices, are standardized methods designed to prevent or reduce water pollution.

Michigan, Wisconsin and Minnesota have all developed water quality best management practices that are of interest and of valid use to local advocacy groups. These groups should know about them and support their use. BMPs can be required as part of permission to log (Sanders, 2002).

Measures
1. Percentage of loggers complying with BMPs

Scales
a. State/provincial
b. County/Forest Management Unit (an area of forestland managed as a unit for fiber production or other renewable resource)
c. Woodlot

Data Sources

1. Percentage of loggers complying with BMPs

    Explanation of BMPs:
        http://www.dnr.cornell.edu/ext/forestrypage/publications%20&%20articles/assorted_publications/forestry_BMPs_handout.htm

    Michigan: Contact Richard Hausler of the DNR at: HAUSLERR@michigan.gov

    Minnesota
        Minnesota Forest Industries

Home: http://www.minntrees.org
BMPs: http://www.minntrees.org/asp/default.asp?PageID=67

Wisconsin
Wisconsin Paper Council
Home: http://www.wipapercouncil.org
BMPs: http://www.wipapercouncil.org/best.htm
DNR BMP Monitoring:
http://www.dnr.state.wi.us/org/land/forestry/usesof/bmp/bmp.htm#monitoring

Ontario
BMP Program: http://res2.agr.ca/london/gp/bmp/bmpmenu.html
Ontario MNR
State of the Forest Report:
http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

11. Impact of forest activities on soil

Soil properties vary a great deal across the Great Lakes region, and no single indicator is likely to apply everywhere. Some soils are much more sensitive to management activities than others. Methods of monitoring the impact of forest activities on soil can be developed locally.

Measures
None on a large scale. Very site specific.

Scales
a. State/provincial
b. County/Forest Management Unit (an area of forestland managed as a unit for fiber production or other renewable resource)
c. Woodlot

Economic Pillar

Criterion III: Provision of Multiple Economic Benefits

12. Area of forestland

The ability of forests to provide goods and services is dependent upon how much forest exists, and to what extent lands are available for commercial activity. Is the area of forestland increasing or decreasing, and why?

Measures
1. Area of total forestland
2. Area of timberland (total land available for periodic harvest)

3. Area of parks and protected areas
4. Average size of non-industrial private ownership

Scales
a. State/provincial
b. County/forest management unit
c. Woodlot

Data Sources

1. Area of total forestland

   US Forest Service
      Forest Inventory and Analysis
         Home: http://fia.fs.fed.us

   North Central Research Station
    Home: http://www.ncrs.fs.fed.us/default.htm
      Michigan Forest Profile:
      http://www.ncrs.fs.fed.us/hottopics/fpmi.htm
      Minnesota Forest Profile:
      http://www.ncrs.fs.fed.us/hottopics/fpmn.htm
      Wisconsin Forest Profile:
       http://www.ncrs.fs.fed.us/hottopics/fpwi.htm

    Ontario MNR
      State of the Forest Report:
       http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

2. Area of timberland (total land available for periodic harvest)

   US Forest Service
      Forest Inventory and Analysis
         Home: http://fia.fs.fed.us

      North Central Research Station
        Home: http://www.ncrs.fs.fed.us/default.htm
        Michigan Forest Profile:
         http://www.ncrs.fs.fed.us/hottopics/fpmi.htm
        Minnesota Forest Profile:
         http://www.ncrs.fs.fed.us/hottopics/fpmn.htm
        Wisconsin Forest Profile:
         http://www.ncrs.fs.fed.us/hottopics/fpwi.htm

    Ontario MNR
      State of the Forest Report:
       http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

3. Area of parks and protected areas

   Ontario MNR
      State of the Forest Report:
         http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

   UNEP-WCMC Protected Areas Programme
      Home/Contacts: http://www.unep-wcmc.org/protected_areas/
      Data: http://www.unep-wcmc.org/protected_areas/data/nat2.htm

4. Average size of non-industrial private ownership

   U. S. Forest Service North Central Research Station
      Home: http://www.ncrs.fs.fed.us/default.htm
      Michigan Forest Profile: http://www.ncrs.fs.fed.us/hottopics/fpmi.htm
      Minnesota Forest Profile:
         http://www.ncrs.fs.fed.us/hottopics/fpmn.htm
      Wisconsin Forest Profile: http://www.ncrs.fs.fed.us/hottopics/fpwi.htm

   Canadian MNR – National Forestry Database Program
      Home: http://nfdp.ccfm.org/
      Contact: http://nfdp.ccfm.org/cp95/text_e/descripe.htm#Contact_Us
      Data: http://nfdp.ccfm.org/cp95/data_e/tab12e_1.htm

   The Lake Superior Decision Support System:
      Data: http://www.nrri.umn.edu/lsgis/metadata/own.htm (by request only)

Other Sources

USDA Forest Service, North Central Forest Experiment Station, Forest Survey Unit
   Home: http://www.ncrs.fs.fed.us/
   Michigan data: http://www.ncrs.fs.fed.us/hottopics/fpmi.htm
   Minnesota data: http://www.ncrs.fs.fed.us/hottopics/fpmn.htm
   Wisconsin data: http://www.ncrs.fs.fed.us/hottopics/fpwi.htm

State Departments of Natural Resources (DNR) and Ontario Ministry of
Natural Resources (MNR)

   Michigan DNR
      Home: http://www.dnr.state.mi.us/ or http://www.midnr.com/
      General Contacts: http://www.midnr.com/contactus.asp
      Contacts in Lansing and other state offices:
         http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
      Data:
         http://www.midnr.com/SubIndex.asp?SubLinkID=463&sec=main&parent=436
         &imageid=4

   Minnesota DNR

Home/Contacts: http://www.dnr.state.mn.us/

Wisconsin DNR
  DNR Home: http://www.dnr.state.wi.us/
  Contacts: http://www.dnr.state.wi.us/aboutdnr/

Ontario MNR
  Home: http://www.mnr.gov.on.ca/
  Contacts: http://www.mnr.gov.on.ca/MNR/forests/organization/contact_us.htm

Environment Canada
  Home: http://www.ec.gc.ca/envhome.html
  Contacts: http://www.ec.gc.ca/comments_e.html
  Data: http://www.ns.ec.gc.ca/issues.html
    http://www.ec.gc.ca/industry_e.html#forestry

Minnesota Forestry Association
  Home (with contact information): http://www.mnforest.com/

Michigan Forest Association
  Home with contacts: http://www.i-star.com/users/mfa/

Wisconsin Woodland Owners Association
  Home/contacts: http://www.wisconsinwoodlands.org/

Minnesota Forest Industries
  Home/contacts: http://www.minntrees.org/

Michigan Association of Timbermen
  Home: http://www.timbermen.org/
  Contacts: http://www.timbermen.org/contact.htm

Canadian Forestry Association
  Home: http://www.canadianforestry.com/
  Contacts: http://www.canadianforestry.com/eng/contact/

Ontario Forest Industries
  Home: http://www.ofia.com/
  Contacts: http://www.ofia.com/want_to_know_frameset.html

Northeast-Midwest Institute
  Home: http://www.nemw.org/
  Forests and data: http://www.nemw.org/forests.htm

13. Percent of primary industry expenditures accounted for by renewable raw materials (forest and agriculturally derived fiber)

Both the Bruntland Commission report and IUCN/WWF/UNEP report *Caring for the*

Earth call for maximum use of **renewable**, rather than **non-renewable**, resources. *Renewable resources,* such as wood or cotton, are those that are capable of indefinite regeneration on a human time scale. In contrast, *non-renewable resources,* like petroleum or iron ore are those that are finite in quantity, and each use diminishes the total stock remaining. The Great Lakes region should be moving towards greater use of renewable raw materials in the manufacturing sector.

Measures
1. Tracking raw materials expenditures

Scales
State/provincial

Data Sources

1. Tracking raw materials expenditures

    Minnesota Forest Industries
       Home/Contacts: http://www.minntrees.org/
       Data: http://www.minntrees.org/asp/default.asp?PageID=91

Other Sources

Michigan Association of Timbermen
   Home: http://www.timbermen.org/
   Contacts: http://www.timbermen.org/contact.htm

Ontario Forest Industries
   Home: http://www.ofia.com/
   Contacts: http://www.ofia.com/want_to_know_frameset.html
   Data: http://www.ofia.com/about_ofia_frameset.html

14. Great Lakes share of North American and global forest products markets accounted for by forest-based businesses

This is a measure of the extent to which the forest products industry of the Great Lakes region is keeping pace with growing demands for wood and other forest products in North America and globally.

The Great Lakes area is a globally important forested landscape, yet it imports wood countries. C*onsumption* and *demand* for wood products, which are rising in the Great Lakes region, are critical issues to be addressed as we wrestle with external pressures to reduce timber harvesting.

Measures
Consumption and production compared regionally and globally in:
1. Wood products

> a. pulp and paper
> b. lumber and other solid wood products
> c. composite products
> d. secondary industry
2. Forest-based tourism
3. Non-timber forest products

Scales
a. State/provincial
b. County/Forest Management Unit

Data Sources

Consumption and production compared regionally and globally in:

1. Wood products
    a. pulp and paper
    b. lumber and other solid wood products
    c. composite products
    d. secondary industry

    U.S. Forest Products Laboratory
        Home: http://www.fpl.fs.fed.us/
        Contacts: http://www.fpl.fs.fed.us/contact.htm
        Data: http://www.fpl.fs.fed.us/documnts/pdf1997/skog97a.pdf

    Forintek Canada Corporation
        Home: http://www.forintek.ca
        Contacts: http://www.forintek.ca/eng/contact.html
        Data: Must be member to access online data

    Food and Agriculture Organization (FAO)
        Home: www.fao.org
        Contacts: http://apps.fao.org/contact-e.htm
        Data: http://apps.fao.org/

    Random Lengths
        Home/Contacts: http://www.randomlengths.com/
        Data: Must subscribe to newsletter

    USDA FIA: Timber Product Output Database Retrieval System
        Home: http://www.srsfia.usfs.msstate.edu/
        Contacts: http://www.srsfia.usfs.msstate.edu/rpa/tpo/CONTACTS.HTM
        Data: http://www.srsfia.usfs.msstate.edu/rpa/tpo/rpatpo.htm
            (Note: In order to retrieve the desired data follow the on-screen
            instructions by selecting the geographic area, type of product, and other
            specified information, and click on the "Submit Query" button in the
            lower part of the webpage).

2. Forest-based tourism

    Michigan State University Extension Tourism Area of Expertise Team
        Home/Contacts: http://tourism.ttr.msu.edu/
        Data:
            http://tourism.ttr.msu.edu/t-aoe/html-aoe/co-profile-aoe/2-profiles-recent.htm

    University of Minnesota Extension Service
        Home/Contacts: http://www.tourism.umn.edu/
        Data: http://www.tourism.umn.edu/zresearch.htm

    Community Economics Newsletter
        Home: http://www.aae.wisc.edu/www/pub/cenews/
        Issue 271: http://www.aae.wisc.edu/www/pub/cenews/ce271.txt

    Ontario MNR
        State of the Forest Report:
            http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

3. Non-timber forest products

    Institute for Culture and Ecology
        Home: http://www.ifcae.org
        Data: http://www.ifcae.org/ntfp/ (Contact for economic data)

    Ontario – Non-Timber Forest Products Overview
        Home/Contacts:
            http://www.eco-web.com/cgi-local/sfc?a=index/index.html&b=register/05934.html
        Data:
            http://www.mnr.gov.on.ca/MNR/forests/t&t_research/publications/145.pdf

Other Sources

Forest Trends - (trends in global production of industrial roundwood):
    Home: http://www.forest-trends.org/index.htm
    Contacts: http://www.forest-trends.org/contactus/index.htm
    Data: http://www.forest-trends.org/keytrends/trends_production.htm

FAOSTAT, Forest Data – FAO Database Collection
    Home (FAOSTAT): http://apps.fao.org/
    Contacts: http://apps.fao.org/contact-e.htm
    Data: http://apps.fao.org/page/collections?subset=forestry

U.N./E.C.E. Timber Database:
    Home: http://www.unece.org/trade/

Contacts: http://www.unece.org/trade/trdcontact.doc
Data: http://www.unece.org/trade/timber/tim-fact/usa.htm

Forest Inventory and Analysis (FIA) Timber Product Output
http://srsfia.usfs.msstate.edu/rpa/tpo/

Sample Data

Source: Forest Trends [http://www.forest-trends.org/keytrends/trends_production.htm]

Global industrial roundwood production

Source: FACSTAT.
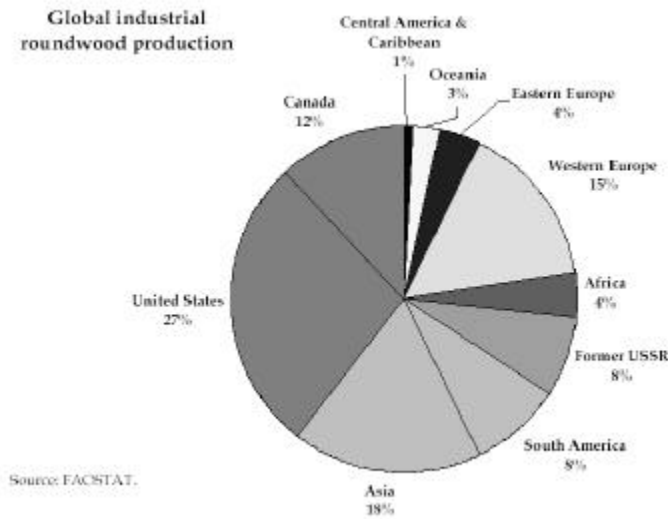
Source: U.N./ECE Timber Database [http://www.unece.org/trade/timber/tim-fact/usa.htm]

Land area / Terres
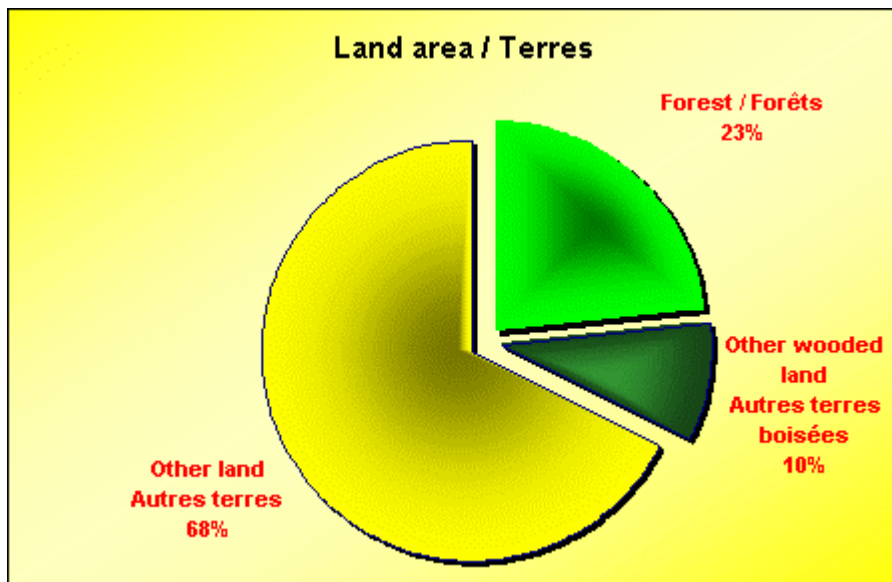
15. Wood flow in the Great Lakes region

Currently, Michigan, Minnesota and Wisconsin are net importers of wood and wood products. These states are buying more timber products than selling, even though extensive forests exist in the region.

This indicator measures the extent to which the Great Lakes region is accepting responsibility for meeting local consumer demands. It also considers the possible environmental impacts external to the region that may result from local processing and consumption of imported raw materials and products.

Measures
1. Volume and value of wood harvested
2. Source and net volume and value of Great Lakes imports (or exports)
3. Percent of imported wood that originates in sustainable forest management

Scales
a. State/provincial
b. County/forest management unit
c. Woodlot

Data Sources

1. Volume and value of wood harvested

   Ontario Woodlot Association
      Home: http://www.ont-woodlot-assoc.org/
      Contacts/data: http://www.ont-woodlot-assoc.org/s&wlibraryTOC.html

   USDA FIA: Timber Product Output Database Retrieval System
      Home: http://srsfia.usfs.msstate.edu/
      Contacts: http://www.srsfia.usfs.msstate.edu/rpa/tpo/CONTACTS.HTM
      Data: http://srsfia.usfs.msstate.edu/rpa/tpo/
         (Note: In order to retrieve the desired data follow the on-screen instructions by selecting the geographic area, all products, and other specified information, and click on the "Submit Query" button in the lower part of the webpage. You can also generate a map by clicking on the "map library" link, in the end of the webpage).

2. Source and net volume and value of Great Lakes imports (or exports)

   Natural Resources Canada – Forest Statistics
      Home: http://www.nrcan.gc.ca/
      Data:
         http://www.nrcan.gc.ca/cfs-scf/national/what-uoi/sof/sof01/statistics_e.html

Sample Data

Exports of forest products (Billion $)
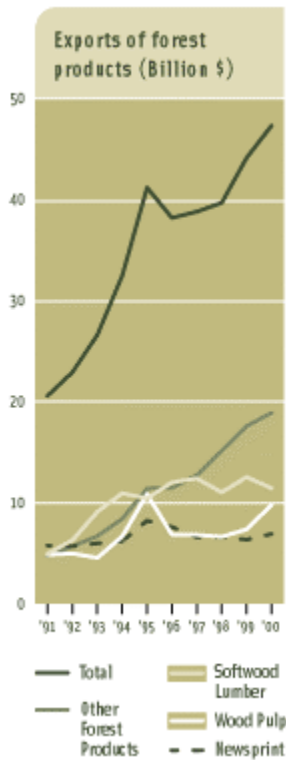
Ontario

Value of exports (2000)	$9.7 billion
Other paper and paperboard	38%
Newsprint	17%
Wood pulp	14%
Softwood lumber	9%
Waferboard	6%
Major export markets (2000)	
United States	97%
Other countries	3%
Balance of trade (2000)	$3.9 billion
Value of shipments (1997)	$15.5 billion

56

Ontario Forest Industries Association
    Home: http://www.ofia.com
    Data: http://www.ofia.com/about_ofia_frameset.html

3. Percent of imported wood that originates in sustainable forest management

Other sources

Forest Inventory and Analysis (FIA) Timber Product Output (TPO)
    http://srsfia.usfs.msstate.edu/rpa/tpo/

16. Harvest vs. growth on Great Lakes timberland

This indicator compares the supply of timber available against the current rates of harvest. This provides an indication of the extent to which the Great Lakes region has the capacity to meet its own consumer demands and/or its capacity to help meet the consumption needs of others.

Measures
1. Beginning growing stock
2. Gross growth
3. Mortality
4. Harvest

Scales
a. State/provincial
b. County/forest management unit
c. Woodlot

Data Sources

Ontario MNR
    State of the Forest Report:
        http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

1. Beginning growing stock

    U.S. Forest Service Northeastern Area State and Private Forestry
        Home: http://www.na.fs.fed.us/
        Contacts: http://www.na.fs.fed.us/spfo/staff/staffdir/who.htm
        Data: http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/northtable2.htm

2. Gross growth

    U.S. Forest Service Northeastern Area State and Private Forestry
        Home: http://www.na.fs.fed.us/
        Contacts: http://www.na.fs.fed.us/spfo/staff/staffdir/who.htm

Data: http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/northtable2.htm
http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/aiba.htm
http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/asg.htm

3. Mortality

U.S. Forest Service Northeastern Area State and Private Forestry
Home: http://www.na.fs.fed.us/
Contacts: http://www.na.fs.fed.us/spfo/staff/staffdir/who.htm
Data: http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/northtable2.htm
http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/tam.htm
http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/amsg.htm
http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/tamc.htm

4. Harvest

U.S. Forest Service Northeastern Area State and Private Forestry
Home: http://www.na.fs.fed.us/
Contacts: http://www.na.fs.fed.us/spfo/staff/staffdir/who.htm
Data:http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/northtable2.htm
http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/mars.htm

Other Sources

National Forest Health Monitoring Program
Home: http://www.na.fs.fed.us/spfo/fhm/
Contacts: http://www.na.fs.fed.us/spfo/staff/staffdir/spfostaff.htm
Data: http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/nc.htm

17. Number and value of forest recreation days

Forest-based recreation and its associated income are important to many people and are contributors to community and regional stability, economic diversity and quality of life.

Measures
1. Forest-based tourism revenues in forested counties
2. Number of recreation days

Scales
a. State/provincial
b. County/forest management unit
c. Woodlot

Data Sources

1. Forest-based tourism revenues in forested counties

Wildlands League (Ontario)

Home: http://www.wildlandsleague.org/
Contacts: http://www.wildlandsleague.org/contact.html
Data: http://www.wildlandsleague.org/fact8.pdf

University of Minnesota Extension Service
Home: http://www.extension.umn.edu/
Contacts: http://www.extension.umn.edu/offices/
Data:
http://www.extension.umn.edu/distribution/resourcesandtourism/DB6184.html

Delta-Schoolcraft Intermediate School District - (Michigan Forests for ever teacher's guide)
Home: http://www.dsisd.k12.mi.us/
Contacts/ Data: http://www.dsisd.k12.mi.us/mff/Recreation/Ownership.htm

2. Number of recreation days

Criteria & Indicators for SFM in Canada (Canadian Council of Foreign Ministers)
Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/indica_e.html
Contacts: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/reader_e.pdf
Data: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_5_e.pdf
http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr54_e.pdf

"Recreation, Forestry and Environmental Management: The Haliburton Forest and Wildlife Reserve: Ontario, Canada"
Article:
http://www.cabi-publishing.org/Bookshop/Readingroom/0851994148/4148ch12.pdf

Delta-Schoolcraft Intermediate School District - (Michigan Forests for ever teacher's guide)
Home: http://www.dsisd.k12.mi.us/
Contacts/ Data: http://www.dsisd.k12.mi.us/mff/Recreation/Ownership.htm

University of Wisconsin – Extension
Home: http://www.aae.wisc.edu/www/index.html
Contacts/Data: http://www.aae.wisc.edu/www/cced/964ft.pdf

Wisconsin DNR
Report:
http://www.dnr.state.wi.us/org/land/parks/reports/forestrec/forestrec.pdf

18. Diversity of forest-based industry (sales volume by sector)

A single strong industry can sustain prosperous and healthy communities and regions, but because of the seasonal and cyclical nature of forest industries, a diverse forest-

based economy is helpful, to provide a cushion against economic cycles in individual industries.

Measures
1. Sales volume, by sector, in wood products
   a. pulp and paper,
   b. lumber and other solid wood products
   c. composite products
   d. secondary industry
2. Sales volume by forest-based tourism
3. Sales volume by non-timber forest products

Scales
a. State/provincial
b. County/forest management unit

Data Sources

1. Sales volume, by sector, in wood products

   U.S. Forest Service, FIA - Forest Inventory and Analysis
   Home: http://fia.fs.fed.us
   Contacts: http://www.ncrs.fs.fed.us/4801/
   Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

   Public Sector Consultants, Inc.
   Home: http://www.pscinc.com/
   Contacts: http://www.publicsectorconsultants.com/staff.html
   Data: http://www.pscinc.com/lbilu/forestry.pdf (Economic indicators of projected land use patterns for the forest industry in Michigan)

   Ontario MNR
   State of the Forest Report:
   http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

   a. Pulp and paper

      U.S. Forest Service, FIA - Forest Inventory and Analysis
      Home: http://fia.fs.fed.us
      Contacts: http://www.ncrs.fs.fed.us/4801/
      Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm
      http://www.qc.edu/CBNS/cbns_ch5.pdf
      http://www.eia.doe.gov/cneaf/solar.renewables/at_a_glance/wood/woodenfa-03.htm

   b. Lumber and other solid wood products

      U.S. Forest Service, FIA - Forest Inventory and Analysis
      Home: http://fia.fs.fed.us

Contacts: http://www.ncrs.fs.fed.us/4801/
Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

State of Michigan – Economic and Social Data
Home: http://www.state.mi.us/dmb/ofm/ (office of financial
management)
Contacts:
Data: http://www.state.mi.us/dmb/ofm/reports/cfr_00/pdf/cfr_3b01.pdf

c. Composite products

U.S. Forest Service, FIA - Forest Inventory and Analysis
Home: http://fia.fs.fed.us
Contacts: http://www.ncrs.fs.fed.us/4801/
Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

Statistics Canada
Home: http://www.statcan.ca/
Contacts: http://www.statcan.ca/cgi-bin/statcomment.pl
Data: http://www.statcan.ca/english/sdds/1505.htm

d. Secondary industry

U.S. Forest Service, FIA - Forest Inventory and Analysis
Home: http://fia.fs.fed.us
Contacts: http://www.ncrs.fs.fed.us/4801/
Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

World Resources Institute – Global Forest watch
Home: http://www.wri.org/
Contacts: http://www.wri.org/gfw/
Data: http://www.wri.org/gfw/pdf/canada_industry.pdf

2. Sales volume by forest-based tourism

U.S. Forest Service, FIA - Forest Inventory and Analysis
Home: http://fia.fs.fed.us
Contacts: http://www.ncrs.fs.fed.us/4801/
Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

Minnesota Department of Natural Resources – Environmental indicators
Initiative
Home: http://www.dnr.state.mn.us/eii/
Contacts: http://www.dnr.state.mn.us/eii/contact.html
Data: http://www.dnr.state.mn.us/eii/pdf/imc_report.pdf

Ontario MNR
State of the Forest Report:

http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

3. Sales volume by non-timber forest products

   U.S. Forest Service, FIA - Forest Inventory and Analysis
       Home: http://fia.fs.fed.us
       Contacts: http://www.ncrs.fs.fed.us/4801/
       Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

   Criteria & Indicators for SFM in Canada (Canadian Council of Foreign
   Ministers)
       Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/indica_e.html
       Contacts: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/reader_e.pdf
       Data: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_5_e.pdf
           http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr54_e.pdf

Other Sources

Natural Resources Canada, Canadian Forest Service
    Home: http://www.nrcan-rncan.gc.ca/cfs-scf
    State of Canada's Forests Report:
        http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/latest_e.html
    Data: http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/sof01/statistics_e.html

19. Forest-based employment picture by sector

Employment and career opportunities for local people, including young people, are
critical to maintaining a healthy economy and community or region.

Measures
1. Numbers employed (FTE)
2. Average wages

Scales
a. State/provincial
b. County/forest management unit

Data Sources

1. Numbers employed (FTE)

   Ontario
       Statistics Canada: http://www.statcan.ca/start.html
       Primary Industries:
           http://www.statcan.ca/english/Pgdb/Economy/primar.htm
       Data: http://www.statcan.ca/english/Pgdb/Economy/Primary/prim01.htm

   United States

Gateway to Census 2000
Home: http://www.census.gov/main/www/cen2000.html
State and County Quick Facts: http://quickfacts.census.gov/qfd/
Instructions: Click on state. Select a county. Click "Go". Click "Browse more data sets for _____ County". Scroll down to "County Business Patterns Economic Profile" and click on the preferred year.

2. Average wages

Ontario
Statistics Canada: http://www.statcan.ca/start.html
Primary Industries:
http://www.statcan.ca/english/Pgdb/Economy/primar.htm
Data: http://www.statcan.ca/english/Pgdb/Economy/Primary/prim02.htm
Ontario MNR
State of the Forest Report:
http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

United States
Gateway to Census 2000
Home: http://www.census.gov/main/www/cen2000.html
State and County Quick Facts: http://quickfacts.census.gov/qfd/
Instructions: Click on state. Select a county. Click "Go". Click "Browse more data sets for _____ County". Scroll down to "County Business Patterns Economic Profile" and click on the preferred year.
Divide Annual Payroll by Number of Employees

20. Value added by forest resource-based industries

Producing finished products from the raw materials harvested in the region adds value and is important to community and regional prosperity. Primary and secondary processing, as well as efficient manufacturing processes, contribute to the realization of economic value from industry activity.

Measures
1. Value added, by sector, in wood products
   a. Pulp and paper,
   b. Lumber and other solid wood products
   c. Composite products
   d. Secondary industry
2. Value added by forest-based tourism
3. Value added by non-timber forest products

Scales
a. State/provincial
b. County/forest management unit

Data Sources

1. Value added, by sector, in wood products

   U.S. Forest Service, FIA - Forest Inventory and Analysis
      Home: http://fia.fs.fed.us
      Contacts: http://www.ncrs.fs.fed.us/4801/
      Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

   Public Sector Consultants, Inc.
      Home: http://www.pscinc.com/
      Contacts: http://www.publicsectorconsultants.com/staff.html
      Data: http://www.pscinc.com/lbilu/forestry.pdf (Economic indicators of
         projected land use patterns for the forest industry in Michigan)

   Ontario MNR
      State of the Forest Report:
         http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

   a. Pulp and paper

      U.S. Forest Service, FIA - Forest Inventory and Analysis
         Home: http://fia.fs.fed.us
         Contacts: http://www.ncrs.fs.fed.us/4801/
         Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm
            http://www.qc.edu/CBNS/cbns_ch5.pdf
            http://www.eia.doe.gov/cneaf/solar.renewables/at_a_glance/wood/wooden
            fa-03.htm

      Criteria & Indicators for SFM in Canada (Canadian Council of Foreign
      Ministers)
         Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/indica_e.html
         Contacts: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/reader_e.pdf
         Data: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_5_e.pdf
               (See Table 5.2b)
         http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr54_e.pdf

   b. Lumber and other solid wood products

      Criteria & Indicators for SFM in Canada (Canadian Council of Foreign
      Ministers)
         Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/indica_e.html
         Contacts: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/reader_e.pdf
         Data: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_5_e.pdf
            http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr54_e.pdf

      U.S. Forest Service, FIA - Forest Inventory and Analysis
         Home: http://fia.fs.fed.us
         Contacts: http://www.ncrs.fs.fed.us/4801/
         Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

State of Michigan – Economic and Social Data
    Home: http://www.state.mi.us/dmb/ofm/ (office of financial
      management)
    Contacts:
    Data: http://www.state.mi.us/dmb/ofm/reports/cfr_00/pdf/cfr_3b01.pdf

c. Composite products

U.S. Forest Service, FIA - Forest Inventory and Analysis
    Home: http://fia.fs.fed.us
    Contacts: http://www.ncrs.fs.fed.us/4801/
    Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

Statistics Canada
    Home: http://www.statcan.ca/
    Contacts: http://www.statcan.ca/cgi-bin/statcomment.pl
    Data: http://www.statcan.ca/english/sdds/1505.htm

d. Secondary industry

Criteria & Indicators for SFM in Canada (Canadian Council of Foreign
Ministers)
    Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/indica_e.html
    Contacts: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/reader_e.pdf
    Data: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_5_e.pdf
      http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr54_e.pdf

U.S. Forest Service, FIA - Forest Inventory and Analysis
    Home: http://fia.fs.fed.us
    Contacts: http://www.ncrs.fs.fed.us/4801/
    Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

World Resources Institute – Global Forest watch
    Home: http://www.wri.org/
    Contacts: http://www.wri.org/gfw/
    Data: http://www.wri.org/gfw/pdf/canada_industry.pdf

2. Value added by forest-based tourism

U.S. Forest Service, FIA - Forest Inventory and Analysis
    Home: http://fia.fs.fed.us
    Contacts: http://www.ncrs.fs.fed.us/4801/
    Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

Minnesota Department of Natural Resources – Environmental indicators
Initiative
    Home: http://www.dnr.state.mn.us/eii/
    Contacts: http://www.dnr.state.mn.us/eii/contact.html

Data: http://www.dnr.state.mn.us/eii/pdf/imc_report.pdf

Ontario MNR
State of the Forest Report:
http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

3. Value added by non-timber forest products

Ontario MNR
State of the Forest Report:
http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

U.S. Forest Service, FIA - Forest Inventory and Analysis
Home: http://fia.fs.fed.us
Contacts: http://www.ncrs.fs.fed.us/4801/
Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

Other Sources

Natural Resources Canada, Canadian Forest Service
Home: http://www.nrcan-rncan.gc.ca/cfs-scf
State of Canada's Forests Report:
http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/latest_e.html
Data:
http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/sof01/statistics_e.html

21. Capital expenditures by forest resource-based industries (including forest products, tourism, other)

Ongoing investment is key to maintaining competitive capability and is a measure of confidence in the sustainability of local and regional enterprises.

Measures
1. Capital expenditures, by sector, in wood products
    a. Pulp and paper
    b. Lumber and other solid wood products
    c. Composite products
    d. Secondary industry
2. Capital expenditures by forest-based tourism
3. Capital expenditures by non-timber forest products

Scales
a. State/provincial
b. County/forest management unit

Data Sources

1. Capital expenditures, by sector, in wood products

   Ontario
       Canadian Forest Service
           Home: http://www.nrcan.gc.ca/cfs-scf/index_e.html
           Data:
               http://www.nrcan.gc.ca/cfs-scf/national/what-
               uoi/sof/sof01/statistics_e.html

           MNR State of the Forest Report:
               http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

       U.S. Forest Service, FIA - Forest Inventory and Analysis
           Home: http://fia.fs.fed.us
           Contacts: http://www.ncrs.fs.fed.us/4801/
           Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

       Public Sector Consultants, Inc.
           Home: http://www.pscinc.com/
           Contacts: http://www.publicsectorconsultants.com/staff.html
           Data: http://www.pscinc.com/lbilu/forestry.pdf (Economic indicators of
              projected land use patterns for the forest industry in Michigan)

   a. Pulp and paper

       U.S. Forest Service, FIA - Forest Inventory and Analysis
           Home: http://fia.fs.fed.us
           Contacts: http://www.ncrs.fs.fed.us/4801/
           Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm
             http://www.qc.edu/CBNS/cbns_ch5.pdf
             http://www.eia.doe.gov/cneaf/solar.renewables/at_a_glance/wood/wooden
             fa-03.htm

   b. Lumber and other solid wood products

       Criteria & Indicators for SFM in Canada (Canadian Council of Foreign
       Ministers)
           Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/indica_e.html
           Contacts: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/reader_e.pdf
           Data: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_5_e.pdf
             http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr54_e.pdf

       U.S. Forest Service, FIA - Forest Inventory and Analysis
           Home: http://fia.fs.fed.us
           Contacts: http://www.ncrs.fs.fed.us/4801/
           Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

State of Michigan – Economic and Social Data
Home: http://www.state.mi.us/dmb/ofm/ (office of financial
management)
Contacts:
Data: http://www.state.mi.us/dmb/ofm/reports/cfr_00/pdf/cfr_3b01.pdf

c. Composite products

U.S. Forest Service, FIA - Forest Inventory and Analysis
Home: http://fia.fs.fed.us
Contacts: http://www.ncrs.fs.fed.us/4801/
Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

Statistics Canada
Home: http://www.statcan.ca/
Contacts: http://www.statcan.ca/cgi-bin/statcomment.pl
Data: http://www.statcan.ca/english/sdds/1505.htm

d. Secondary industry

Criteria & Indicators for SFM in Canada (Canadian Council of Foreign
Ministers)
Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/indica_e.html
Contacts: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/reader_e.pdf
Data: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_5_e.pdf
http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr54_e.pdf

U.S. Forest Service, FIA - Forest Inventory and Analysis
Home: http://fia.fs.fed.us
Contacts: http://www.ncrs.fs.fed.us/4801/
Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

World Resources Institute – Global Forest watch
Home: http://www.wri.org/
Contacts: http://www.wri.org/gfw/
Data: http://www.wri.org/gfw/pdf/canada_industry.pdf

2. Capital expenditures by forest-based tourism

Criteria & Indicators for SFM in Canada (Canadian Council of Foreign
Ministers)
Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/indica_e.html
Contacts: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/reader_e.pdf
Data: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_5_e.pdf
http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr54_e.pdf

U.S. Forest Service, FIA - Forest Inventory and Analysis
Home: http://fia.fs.fed.us
Contacts: http://www.ncrs.fs.fed.us/4801/

Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

Minnesota Department of Natural Resources – Environmental indicators
Initiative
   Home: http://www.dnr.state.mn.us/eii/
   Contacts: http://www.dnr.state.mn.us/eii/contact.html
   Data: http://www.dnr.state.mn.us/eii/pdf/imc_report.pdf

3. Capital expenditures of non-timber forest products

U.S. Forest Service, FIA - Forest Inventory and Analysis
   Home: http://fia.fs.fed.us
   Contacts: http://www.ncrs.fs.fed.us/4801/
   Data: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm

Other Sources

Natural Resources Canada
   Canadian Forest Service
      Home: http://www.nrcan-rncan.gc.ca/cfs-scf
      State of Canada's Forests Report:
         http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/latest_e.html
      Data:
         http://www.nrcan.gc.ca/cfs-scf/national/what-quoi/sof/sof01/statistics_e.html

22. Net carbon flux of Great Lakes forests

Carbon sequestration (the incorporation of carbon dioxide into permanent plant tissues) and *liberation* (the release of carbon dioxide back into the atmosphere after death and decomposition) by forests are important components of the global warming equation. Given concerns about the potential for warming, knowledge of the role of Great Lakes forests in the global carbon cycle is appropriate.

Measures
1. Rate of carbon sequestration in Great Lakes forests
2. Soil carbon pools
3. Soil carbon decay rates
4. Carbon pools in forest products
5. Decay rates of forest products in use
6. Extent to which productive capacity of forests is realized, thus avoiding use of high energy substitutes for wood

Scales
State/provincial

Data Sources

Canadian Council of Forest Ministers C&I
 Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/
 Contributions to the Global Carbon Budget:
  http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr41_e.pdf
 Forest Ecosystem Contributions to Global Ecological Cycles:
  http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_4_e.pdf

1. Rate of carbon sequestration in Great Lakes forests

 National Institute for Global Environmental Change (NIGEC)
  Home: http://nigec.ucdavis.edu/
  Information: http://nigec.ucdavis.edu/publications/annual99/midwestern/
  Data :
   http://nigec.ucdavis.edu/publications/annual99/midwestern/MWBolstad01.
   html

 USDA Forest Service - Northern Global Change Research Program
  Home: http://www.fs.fed.us/ne/global/
  Contacts: http://www.fs.fed.us/ne/durham/4104/people.html
  Data : http://www.fs.fed.us/ne/global/research/carbon/qanda.html

 Wisconsin Experimental Study
  Home: http://resac.gis.umn.edu/index.html
  Information & Contact: http://emily.soils.wisc.edu/RESAC/forest/carbon.html
  Data : http://emily.soils.wisc.edu/RESAC/forest/coulee_study.html

 Oak Ridge National Laboratory – Environmental Sciences Division
  Home: http://www.esd.ornl.gov/
  Contact: http://www.esd.ornl.gov/~wmp/
  Global Data : http://www.esd.ornl.gov/~wmp/post_kwon.pdf

 Ontario Ministry of Environment & Energy
  Home: http://www.ene.gov.on.ca/
  Contacts: http://www.ene.gov.on.ca/pic.htm
  Data : http://www.ene.gov.on.ca/envision/climatechange/Quantifying.pdf
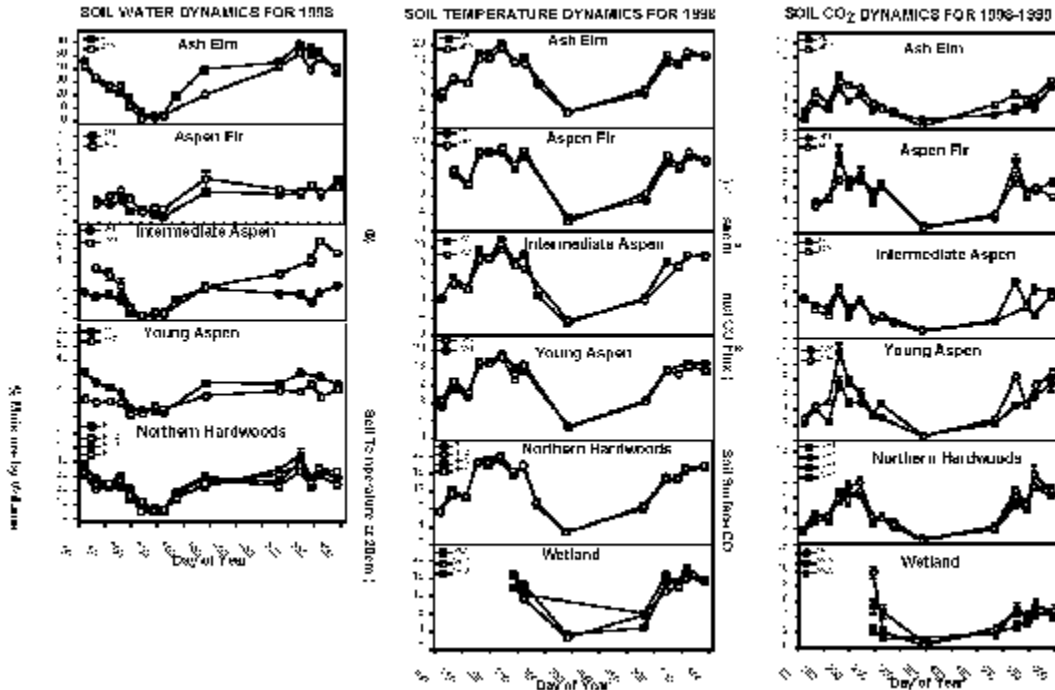
Source: Measuring and Modeling Component and Whole-system CO2 Flux at Local to Regional Scales
Paul Bolstad, Kenneth J. Davis and Peter Reich - University of Minnesota
[http://nigec.ucdavis.edu/publications/annual99/midwestern/MWBolstad01.html]

2. Soil carbon pools

   USDA Forest Service - Northern Global Change Research Program
      Home: http://www.fs.fed.us/ne/global/
      Contacts: http://www.fs.fed.us/ne/durham/4104/people.html
      Data : http://www.fs.fed.us/ne/global/research/carbon/qanda.html

   Wisconsin Experimental Study
      Home: http://resac.gis.umn.edu/index.html
      Information & Contact: http://emily.soils.wisc.edu/RESAC/forest/carbon.html
      Data : http://emily.soils.wisc.edu/RESAC/forest/coulee_study.html

   Ontario Ministry of Environment & Energy
      Home: http://www.ene.gov.on.ca/
      Contacts: http://www.ene.gov.on.ca/pic.htm
      Data : http://www.ene.gov.on.ca/envision/climatechange/Quantifying.pdf

3. Soil carbon decay rates

   USDA Forest Service - Northern Global Change Research Program

Home: http://www.fs.fed.us/ne/global/
Contacts: http://www.fs.fed.us/ne/durham/4104/people.html
Data : http://www.fs.fed.us/ne/global/research/carbon/qanda.html

Ontario Ministry of Environment & Energy
Home: http://www.ene.gov.on.ca/
Contacts: http://www.ene.gov.on.ca/pic.htm
Data : http://www.ene.gov.on.ca/envision/climatechange/Quantifying.pdf

4. Carbon pools in forest products

USDA Forest Service
Home: http://www.fs.fed.us/
Contacts: http://www.fs.fed.us/intro/directory/
Data : http://www.fpl.fs.fed.us/documnts/pdf2000/skog00b.pdf
       and http://www.fpl.fs.fed.us/documnts/pdf1998/skog98a.pdf

Ontario Power Generation (OPG)
Home: http://www.opg.com/default3.asp
Contacts: http://www.opg.com/about/contact.asp
Data : http://www.opg.com/envComm/C_forest_carbon.asp

5. Decay rates of forest products in use

USDA Forest Service
Home: http://www.fs.fed.us/
Contacts: http://www.fs.fed.us/intro/directory/
Data : http://www.fpl.fs.fed.us/documnts/pdf2000/skog00b.pdf
       and http://www.fpl.fs.fed.us/documnts/pdf1998/skog98a.pdf

Criteria & Indicators for SFM in Canada (Canadian Council of Foreign
Ministers)
Home: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/indica_e.html
Contacts: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/reader_e.pdf
Data: http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/2000pdf/ci_5_e.pdf
   http://www.nrcan.gc.ca/cfs/proj/ppiab/ci/pdf/cr54_e.pdf

6. Extent to which productive capacity of forests is realized, thus avoiding use of high energy substitutes for wood

USDA Forest Service
Home: http://www.fs.fed.us/
Contacts: http://www.fs.fed.us/intro/directory/
Data : http://www.ncrs.fs.fed.us/pubs/gtr/other/gtr-nc205/pdffiles/p09.PDF

USDA Forest Service - Northern Global Change Research Program
Home: http://www.fs.fed.us/ne/global/
Contacts: http://www.fs.fed.us/ne/durham/4104/people.html

Data : http://www.fs.fed.us/ne/global/research/carbon/qanda.html

Ontario Ministry of Environment & Energy
   Home: http://www.ene.gov.on.ca/
   Contacts: http://www.ene.gov.on.ca/pic.htm
   Data : http://www.ene.gov.on.ca/envision/climatechange/Quantifying.pdf

Ontario MNR
   State of the Forest Report:
       http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

Social pillar

Much of the social data for the following measurable traits must be directly gathered from community residents in the form of interviews or focus groups. Interviews and focus groups typically generate *qualitative data* (non-numeric and textual/conversational), while surveys generate *quantitative data* (numeric and countable).

Quantitative data is the easiest and most straightforward to analyze, but qualitative information is helpful in the early stages of the project to guide the working group in deciding what quantitative data to collect.   For example, in the early interviews, one question posed might be "What things do you find unique about the forest in your local area?" Answers may include such responses as *waterfalls, Native American burial grounds, endangered wildlife habitats*, etc. When designing a survey for the next step of data collection, these responses could be listed as multiple-choice answers, with perhaps additional choices of *other_____,* and *all*   or *none of the above.* The number of times each response is given can then be counted across respondents.

Some of the following measurable traits for the social component of SFM require asking the citizens themselves (*primary data*), and others entail digging through existing archival records (*secondary data*). When primary data is needed, sample questions are given.

Criterion IV: Maintenance of community and cultural values

23. Importance of forests in people s daily lives

Every human community derives benefits from forests in some way, whether it be through income from forest products and tourism, or purely through personal recreation and spiritual enrichment. Urban trees improve the physical and social environments of city dwellers and contribute to residents' abilities and willingness to work together to reach community goals.

The extent to which forest management practices maintain the values of the people in the community is an indicator of sustainability.

<u>**Measures**</u>
1. The importance of forest resources
2. Perceptions of resource change over time
3. Residents' satisfaction with the changes

<u>**Scales**</u>
a. State/provincial
b. County/forest management unit
c. Woodlot

<u>**Data Sources**</u>

1. The importance of forest resources

   Sample question:
   We are interested in the role of forests in people's lives. How important are forests to you? In what ways are they important?

2. Perceptions of resource change over time

   Sample question:
   How have the forests in and around your community changed over time?

3. Residents' satisfaction with the changes

   Sample questions:
   a. You have listed several changes in the forests in and around your community. For each of these changes (list) how satisfied are you with the changes?

   Very satisfied   Neutral   Very dissatisfied

   b. For each change, please tell us why you feel this way.

24. Important features and places

There is extensive literature on "place" and the importance of places in people's lives. Our attachment to places contributes to our definition of ourselves as part of a culture or community. Identification with special places gives us a sense of community pride and history, while identification with ordinary places holds groups of people together, because of the shared experiences there.

Places are more than the sum of their biophysical parts and are not necessarily substitutable for each other. Sustainable forest management insures that the places that have meaning to people are maintained.

<u>Measures</u>
1. Native American/First Nation sacred sites
2. Historical sites
3. Traditional use sites
4. Special recreation sites (e.g. community fishing holes)

<u>Scales</u>
a. State/provincial
b. County/forest management unit
c. Woodlot

<u>Data Sources</u>

1. Native American/First Nation sacred sites

    Secondary data sources:
    The nature of this information is sensitive and therefore only limited to published sources. The following listings are primarily given for contact information rather than actual data. Please contact tribes or historical societies for this information.

    Union of Ontario Indians
        Home/Contacts: http://www.anishinabek.ca/uoi/

    First Nation Information Project
        Home: http://www.johnco.com/firstnat/
        First Nation Organization Directory:
            http://www.johnco.com/firstnat/dirfnorg.html

    Saving Graves
        Home: http://www.savinggraves.com/usa/native.htm
        Contacts: http://www.savinggraves.com/about/contact.htm

    Great Lakes Indian Fish and Wildlife Commission
        Home/Contacts: http://www.glifwc.org/

    Minnesota
        Minnesota Historical Society
            Home: http://www.mnhs.org/
            State Historic Sites: http://www.mnhs.org/places/sites/index.html

    Wisconsin
        Wisconsin Historical Society
            Home: http://www.shsw.wisc.edu/index.html
            Contact the staff directly:
                http://www.shsw.wisc.edu/about/contact.html
            Robert Birmingham, State Archaeologist:
                rabirmingham@whs.wisc.edu

Sample question:
    a. Are you a tribal member? If so, which tribe?
    b. Does your tribe have any sacred sites on public land in the county (or other geographical unit)?
    c. If yes, what types of sites are they?
    d. Are you willing to indicate their approximate location?

2. Historical sites

Secondary data sources:
The nature of this information is sensitive and therefore only limited in published sources. The following listings are primarily given for contact information rather than actual data. Please contact tribes, historical societies or others for this information.

Union of Ontario Indians
    Home/Contacts: http://www.anishinabek.ca/uoi/

First Nation Information Project
    Home: http://www.johnco.com/firstnat/
    First Nation Organization Directory:
       http://www.johnco.com/firstnat/dirfnorg.html

Saving Graves
    Home: http://www.savinggraves.com/usa/native.htm
    Contacts: http://www.savinggraves.com/about/contact.htm

Great Lakes Indian Fish and Wildlife Commission
    Home/Contacts: http://www.glifwc.org/

Ontario First Nation Forestry Program:
    Home: http://www.fnfp.gc.ca/fnfp_e.html
    Contacts: http://www.fnfp.gc.ca/sectione/5section/mancomm.html#ont
       http://www.fnfp.gc.ca/sectione/3section/ontproj.html

North American Archeological Sites
    Home: http://www.umma.lsa.umich.edu/NorAm/NorAm.html
    Data: http://www.umma.lsa.umich.edu/NorAm/NAGPRA-NA.html

Minnesota Historical Society
    Home: http://www.mnhs.org/
    State Historic Sites: http://www.mnhs.org/places/sites/index.html

Wisconsin Historical Society
    Home: http://www.shsw.wisc.edu/index.html
    Contact the staff directly:
       http://www.shsw.wisc.edu/about/contact.html
    Robert Birmingham, State Archaeologist:
       rabirmingham@whs.wisc.edu

Sample question:
  a. The following is a list of historical sites in this county (or other unit). Please rate the importance of each one to you as a resident of this county.

  Very important   Neutral   Not at all important

  b. Are there other important sites that are not on this list? If yes, please list them

3. Traditional use sites / special recreation sites

  Sample question:
    a. What sites in the area have been commonly used for traditional uses such as family or community gatherings?

    b. In particular, what sites in the area have been commonly used for recreational uses that are special to you (e.g. community fishing holes)?

25. Range of uses of the forest and meanings for those uses

People use forests in many ways, including consumptive activities (collecting forest products) like timber harvesting, hunting and gathering, as well as a wide range of nonconsumptive recreation activities (hiking, camping). These activities often have meanings for people above and beyond participation in the activity itself. For example, gathering and exchange of forest products such as berries or mushrooms can be very important to people, not only for the economic and recreational reasons, but also because the activity maintains community values (e.g. self-sufficiency and independence), as well as social ties in the community. The identification of the complete range of uses is not always easy or obvious. Sustainable forest management maintains the range of uses that are important locally as well as regionally.

Measures
  1. Change in uses over time
  2. Acceptability of those changes

Scales
  a. State/provincial
  b. County/forest management unit
  c. Community
  d. Woodlot

Data Sources

1. Change in uses over time

  Sample question:
    a. In what ways do you use the forest?
    b. Have those uses changed over time? If yes, which ones have changed? How have they changed?

2. Acceptability of those changes

Sample question:
You have listed several ways that your uses of the forest have changed over time (list).
For each change, please indicate the acceptability to you of that change.

Acceptable   Neutral   Not acceptable

26. Access to both public and private forest lands

Studies indicate that there is a concern about decreasing access to both public and private lands in the region. Given the importance of forests to quality of life and community well-being, maintenance of access to forestlands is an indicator of sustainable forest management.

Measures
1. Amount of public forestland
2. Miles of road open to public
3. Acres of private land open to public
4. Industrial lands enrolled in CFM
5. Managed Forest Law
6. Amount of posted land
7. Awareness of open lands

Scales
a. State/provincial
b. County/forest management unit
c. Community
d. Woodlot

Data Sources

1. Amount of public forestland

   Michigan Department of Natural Resources:
   Home: http://www.dnr.state.mi.us/
   General Contacts: http://www.midnr.com/contactus.asp
   Contacts in Lansing and other state offices:
   http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
   Data:
   http://www.dnr.state.mi.us/SubIndex.asp?LinkID=500&sec=main&imagei d=4#Public%20Land%20Survey%20Features (Spatial Data Library – SDL)

   Minnesota Land Management Information Center
   Home: http://www.lmic.state.mn.us/
   Contacts: http://www.mnplan.state.mn.us/contact.html
   Data: http://mapserver.lmic.state.mn.us/landuse/

Wisconsin DNR – Statewide Forest Plan
  Home: http://www.dnr.state.wi.us/org/land/forestry/
  Contacts:
    http://www.dnr.state.wi.us/org/land/forestry/Look/
    assessment/PublicEvents.htm
  Data:
    http://www.dnr.state.wi.us/org/land/forestry/Look/
    assessment/8-13.pdf

Wildlands League – Canada Chapter
  Home: http://www.wildlandsleague.org/
  Contacts:
    http://www.wildlandsleague.org/contact.html
  Data: http://www.wildlandsleague.org/tenure.pdf

2. Miles of road open to public

  Ontario MNR
    State of the Forest Report:
      http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

  Michigan Department of Natural Resources:
    Home: http://www.dnr.state.mi.us/
    General Contacts:
      http://www.midnr.com/contactus.asp
    Contacts in Lansing and other state offices:
      http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
    Data:
      http://www.dnr.state.mi.us/SubIndex.asp?LinkID=500&sec=main&imagei
      d=4#Transportation
      http://www.dnr.state.mi.us/SubIndex.asp?LinkID=500&sec=main&imagei
      d=4#Land%20Use/Land%20Cover

  Wisconsin County Maps (Wisconsin Department of Transportation):
    Home: http://www.dot.state.wi.us/opa/welcome.html
    Contacts and Data: http://www.dot.state.wi.us/dtid/bhd/county_maps.html

  Minnesota IIC
    Home: http://www.iic.state.mn.us/index.html
    Contacts: http://www.iic.state.mn.us/about/members.html
    Data: http://www.iic.state.mn.us/finfo/roads/forest_rds_meta.htm (metadata -
        by request only).

3. Acres of private land open to public

  Michigan Department of Natural Resources:
    Home: http://www.dnr.state.mi.us/
    General Contacts:

http://www.midnr.com/contactus.asp
Contacts in Lansing and other state offices:
http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
Data:
http://www.dnr.state.mi.us/SubIndex.asp?LinkID=500&sec=main&imagd=4#Public%20Land%20Survey%20Features

Minnesota Land Management Information Center
Home: http://www.lmic.state.mn.us/
Contacts: http://www.mnplan.state.mn.us/contact.html
Data: http://mapserver.lmic.state.mn.us/landuse/

Ontario – National Forestry Database Program:
Home: http://nfdp.ccfm.org/
Contacts: http://nfdp.ccfm.org/cp95/text_e/descripe.htm#Contact_Us
Data: http://nfdp.ccfm.org/cp95/image_e/fig2cde.htm

4. Industrial lands enrolled in CFM

U.S. Forest Service
1998 Report of the Forest Service:
http://www.fs.fed.us/pl/pdb/98report/table_32.html
1997 Report of the Forest Service:
http://www.fs.fed.us/pl/pdb/97report/tables/1997_39_spf.pdf
1996 Report of the Forest Service:
http://www.fs.fed.us/pl/pdb/96report/table45.html

5. Managed Forest Law

Michigan Department of Natural Resources:
Home: http://www.dnr.state.mi.us/
Contacts / Data:
http://www.dnr.state.mi.us/SubIndex.asp?LinkID=500&sec=main&imageid=4#Political%20Features

Wisconsin DNR:
Home: http://www.dnr.state.wi.us/
Contact: http://www.dnr.state.wi.us/WWWFeedback.html
Data: http://www.dnr.state.wi.us/master_planning/

Minnesota DNR:
Home: http://www.dnr.state.mn.us/
Contact: http://www.dnr.state.mn.us/omb/financial_assistance/contacts.html
Data: http://www.dnr.state.mn.us/omb/financial_assistance/matrix.html

Ontario MNR:
Home: http://www.mnr.gov.on.ca/mnr/forests/index.html
Contact: http://www.mnr.gov.on.ca/mnr/forests/organization/contact_us.htm

Data: http://www.mnr.gov.on.ca/mnr/forests/t&t_leg/legis.htm

6. Amount of posted land

   Michigan Department of Natural Resources:
   Home: http://www.dnr.state.mi.us/
   General Contacts:
      http://www.midnr.com/contactus.asp
   Contacts in Lansing and other state offices:
      http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
   Data:
      http://www.dnr.state.mi.us/SubIndex.asp?LinkID=500&sec=main&imageid=4

7. Awareness of open lands

   Sample questions:
   a. How do you feel accessibility to public lands and water has changed over time?

      Increased   Stayed the same   Decreased   Don't know

   b. How do you feel accessibility to private lands and water has changed over time?

      Increased   Stayed the same   Decreased   Don't know

   c. Are there specific activities or uses for which accessibility has decreased? If yes, please list.

27. Community capacity and civic responsiveness

Community capacity is the ability of a community to meet local needs and goals and to respond to stress and change. Forests play an important role in community capacity as they contribute to both the ***physical capital*** (schools, roads, climate, aesthetics) and ***social capital*** (community networks of social relationships creating mutual benefits to members) of the community.

Community members often identify trees and forests as critical features of their community that contribute to capacity and satisfaction. Sustainable forest management supports healthy communities through contributions to community capacity and well-being.

However, the reverse is also true. In order to have sustainable forestry, citizens also need to contribute directly to capacity. Citizens must participate in local affairs, and that means there must be sufficient ***human capital*** (developed skills and education of community members) and civic responsiveness in the community.

<u>Measures</u>
1. Existence of community institutions and organizations
2. Involvement of citizens in local affairs (including natural resource issues)
3. Skills and education of residents

<u>Scales</u>
Community

<u>Data Sources</u>

1. Existence of community institutions and organizations

    Secondary sources:

    Check your city/county/township websites, including the local Chamber of Commerce. If you don't know the URLs, call the Chamber or local government offices and ask, or conduct searches on the names.

    Natural Resources Research and Information Pages (NRRIPS)
    Institutions and Organizations: http://www4.ncsu.edu/~leung/iousa.html

    Michigan Electronic Library:
    Home: http://mel.lib.mi.us/michigan/MI-statistics.html
    Contacts: http://mel.lib.mi.us/michigan/michcoll.html
    Data: http://mel.lib.mi.us/michigan/MI-statistics.html#regional
       http://mel.lib.mi.us/michigan/MI-statistics.html#county
       http://mel.lib.mi.us/michigan/MI-statistics.html#cities

    Ontario:
    Ontario Professional Foresters Association
       http://www.opfa.on.ca/
    Ontario Forestry Association
       http://65.108.197.59/
    Ontario Stewardship
       http://www.ontariostewardship.org/

    Sample question:
    a. Please evaluate the number of services offered to your community by local institutions and organizations?

        Sufficient   Neutral   Insufficient

    b. Are there any that stand out in your mind, or are unique to the area?
    c. Are there any that you think are missing or that could be expanded or improved?

2. Involvement of citizens in local affairs (including natural resource issues)

   Sample question:
   a. Are you a member of any community organizations?
   b. What is your perception of the willingness of local residents to work together to reach community goals?

   Very willing   Somewhat willing   Not at all willing   Don't know

3. Skills and education of residents

   Secondary data:
   Ontario
      Statistics Canada
        Home: http://www.statcan.ca/start.html
        Education data:
          http://www.statcan.ca/english/Pgdb/People/educat.htm#gra

     United States
      Gateway to Census 2000
        Home: http://www.census.gov/main/www/cen2000.html
        State and County Quick Facts: http://quickfacts.census.gov/qfd/
          Instructions: Click on state. Select a county. Click "Go". Click "Browse more data sets for _____ County". Scroll down and click on "Social characteristics." Click on the browser "Back" button, scroll down again and click on "Labor force and employment characteristics."

   Sample questions:
   a. What kinds of skills, education and experience do you think local residents need to be successful?
   b. What opportunities exist in your area to expand or improve work related skills for residents?

28. Social trends

Changes in many important community characteristics can be indicators of sustainable forestry. Which specific traits are important depends on the community and the scale of analysis. This indicator focuses on demographic and other **secondary data** (already existing in archival records).

Measures
1. Age of landowners
2. Size of parcels
3. School enrollment
4. Income
5. Number below poverty line
6. Crime rates
7. Divorce and alcoholism rates

Scales
a. State/provincial
b. County/forest management unit
c. Community
d. Woodlot

Data Sources

Statistics Canada
    Home: http://www.statcan.ca/start.html

Ontario's Forests
    Home/Contacts: http://www.mnr.gov.on.ca/MNR/forests/index.html

Gateway to U.S. Census 2000
    Home: http://www.census.gov/main/www/cen2000.html
    State and County Quick Facts: http://quickfacts.census.gov/qfd/
        Instructions: Click on state. Select a county (optional). Click "Go". Click
        "Browse more data sets for _____."

Michigan Electronic Library:
    Home: http://mel.lib.mi.us/michigan/MI-statistics.html
     Contacts: http://mel.lib.mi.us/michigan/michcoll.html
    Data: http://mel.lib.mi.us/michigan/MI-statistics.html

Minnesota State Demographic Center
    Home: http://www.mnplan.state.mn.us/demography/
     Contacts: http://www.mnplan.state.mn.us/contact.html
    Data: http://www.mnplan.state.mn.us/demography/demog_05.html

1. Age of landowners

    Minnesota DNR Forest Stewardship Program
        Home/Contacts/Data:
            http://www.dnr.state.mn.us/forestry/aitkin/98press13.html (Contact
            local office for information)

    Michigan DNR
        Data: http://www.dnr.state.mi.us/pdfs/forestry/whereto.htm (Contact info
        by county for data)

Wisconsin Woodlands Association
    Home: http://www.wisconsinwoodlands.org/
    Data: Click on "Chapters" and contact local chapter for information

Ontario Stewardship (a program of the MNR)
    Home: http://www.ontariostewardship.org/
    Contacts/Data: http://www.ontariostewardship.org/map.htm (Profiles give
    list of landowners. Contact for age info.)

2. Size of parcels

Ontario MNR
    State of the Forest Report:
        http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

Northeastern Area State and Private Forestry
    Home: http://www.na.fs.fed.us/
    Data: http://www.na.fs.fed.us/stateadvice/FactSheets/factsheets.htm

Michigan Department of Natural Resources
    Home: http://www.dnr.state.mi.us/
    General Contacts: http://www.midnr.com/contactus.asp
    Contacts in Lansing and other state offices:
        http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
    Data:
        http://www.dnr.state.mi.us/SubIndex.asp?LinkID=500&sec=main&imag4#
        Land%20Use/Land%20Cover
        http://forestry.msu.edu/msaf/main%20page/MSAFguide/Chars.htm

3. School enrollment

Ontario Public Schools
    Home/Contacts: http://www.ontariosd.k12.or.us/
    Data: http://www.ontario.k12.or.us/District/fingertip.html#Enrollment

Gateway to U.S. Census 2000
    Home: http://www.census.gov/main/www/cen2000.html
    State and County Quick Facts: http://quickfacts.census.gov/qfd/
        Instructions: Click on state. Select a county (optional). Click "Go". Click
        "Browse more data sets for _____."

Education Week (Wisconsin)
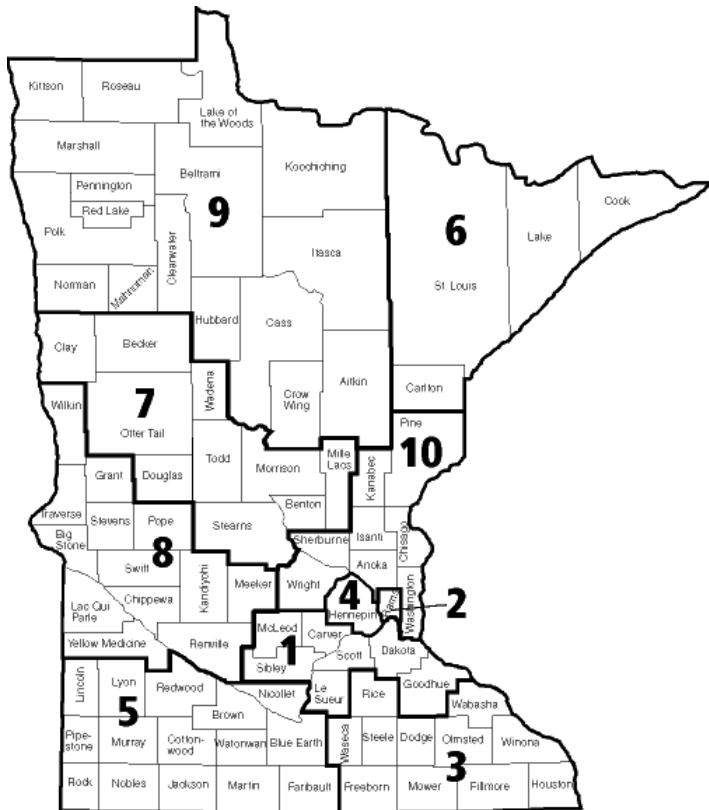   Home: http://www.edweek.org/
    Data: http://www.edweek.org/context/states/stateinfo.cfm?stateabbrv=wi

Michigan Electronic Library:
    Home: http://mel.lib.mi.us/michigan/MI-statistics.html
    Contacts: http://mel.lib.mi.us/michigan/michcoll.html

Source: Minnesota Planning [http://www.mnplan.state.mn.us]

4. School enrollment

   Ontario Public Schools
      Home/Contacts: http://www.ontariosd.k12.or.us/
      Data: http://www.ontario.k12.or.us/District/fingertip.html#Enrollment

   Gateway to U.S. Census 2000
      Home: http://www.census.gov/main/www/cen2000.html
      State and County Quick Facts: http://quickfacts.census.gov/qfd/
         Instructions: Click on state. Select a county (optional). Click "Go". Click
         "Browse more data sets for _____."

   Education Week (Wisconsin)
      Home: http://www.edweek.org/
      Data: http://www.edweek.org/context/states/stateinfo.cfm?stateabbrv=wi

   Michigan Electronic Library:
      Home: http://mel.lib.mi.us/michigan/MI-statistics.html

Contacts: http://mel.lib.mi.us/michigan/michcoll.html
Data: http://mel.lib.mi.us/michigan/MI-statistics.html#education
http://www.ses.standardandpoors.com/ Instructions: At "Start here",
select Michigan. Select "User role". Select "School District" for type of
information to be viewed. Click on a school district. Click on
"Demographics".

Minnesota Planning
Home: http://www.mnplan.state.mn.us./
Contacts: http://www.mnplan.state.mn.us/contact.html
Data: http://www.mnplan.state.mn.us/datanetweb/chi.html

5. Income

Statistics Canada
Home: http://www.statcan.ca/
Statistical Profile of Canadian Communities:
http://ceps.statcan.ca/english/profil/PlaceSearchForm1.cfm (only available
for some communities)

Michigan Electronic Library:
Home: http://mel.lib.mi.us/michigan/MI-statistics.html
Contacts: http://mel.lib.mi.us/michigan/michcoll.html
Data:http://mel.lib.mi.us/michigan/MI-statistics.html#population
http://www.state.mi.us/webapp/dmb/mic/census/stf1a3a_1990.asp

Minnesota Planning
Home: http://www.mnplan.state.mn.us./
Contacts: http://www.mnplan.state.mn.us/contact.html
Data:http://www.mnplan.state.mn.us/demography/demoginc.html

Gateway to U.S. Census 2000
Home: http://www.census.gov/main/www/cen2000.html
State and County Quick Facts: http://quickfacts.census.gov/qfd/
Instructions: Click on state. Select a county (optional). Click "Go". Click
"Browse more data sets for _____."

6. Number below poverty line

Gateway to U.S. Census 2000
Home: http://www.census.gov/main/www/cen2000.html
State and County Quick Facts: http://quickfacts.census.gov/qfd/
Instructions: Click on state. Select a county (optional). Click "Go". Click
"Browse more data sets for _____."

Michigan Electronic Library:
Home: http://mel.lib.mi.us/michigan/MI-statistics.html
Contacts: http://mel.lib.mi.us/michigan/michcoll.html

Data:http://mel.lib.mi.us/michigan/MI-statistics.html#economic
http://mel.lib.mi.us/michigan/MI-statistics.html#population
http://www.state.mi.us/webapp/dmb/mic/census/stf1a3a_1990.asp

Minnesota Planning
Home: http://www.mnplan.state.mn.us./
Contacts: http://www.mnplan.state.mn.us/contact.html
Data:http://www.mnplan.state.mn.us/demography/demoginc.html

7. Crime rates

Map Stats
Home: http://www.fedstats.gov/qf/   Instructions: Click on a state. Select a
county and click on 'Go'. Click on 'Select more data sets for ____'
(highlighted in yellow). Click on 'Crimes reported to police'.

Statistics Canada
http://www.statcan.ca/english/Pgdb/State/justic.htm#cri

Michigan Electronic Library:
Home: http://mel.lib.mi.us/michigan/MI-statistics.html
Contacts: http://mel.lib.mi.us/michigan/michcoll.html
Data: http://mel.lib.mi.us/michigan/MI-statistics.html#crime
http://www.state.mi.us/msp/cjic/CrimeStat.htm

Minnesota Planning
Home: http://www.mnplan.state.mn.us./
Contacts: http://www.mnplan.state.mn.us/contact.html
Data:http://www.mnplan.state.mn.us/cj/arrest.html
http://www.mnplan.state.mn.us/cj/cjc-data.html#fire

8. Divorce and alcoholism rates

Michigan Electronic Library:
Home: http://mel.lib.mi.us/michigan/MI-statistics.html
Contacts: http://mel.lib.mi.us/michigan/michcoll.html
Data:
http://www.michigan.gov/mdch/1,1607,7-132-2944_5327-17501--,00.html

Minnesota Planning
Home: http://www.mnplan.state.mn.us./
Contacts: http://www.mnplan.state.mn.us/contact.html
Data: http://www.mnplan.state.mn.us/cj/arrest.html

Wisconsin Department of Health and Family Services:
Home: http://www.dhfs.state.wi.us/index.htm
Contacts: http://www.dhfs.state.wi.us/stats/contact.htm
Data: http://www.dhfs.state.wi.us/stats/marriages.htm

SIMFOR (Canada's Model Forest Program)
   Home: http://www.simfor.com

Criterion V: Society s Framework for Sustainable Forest Management

29. Availability of incentives

In order to have sustainable forestry, there need to be incentives.   The availability of such incentives is therefore an indicator of whether sustainable forest management is possible. Incentives can be public or private.

Measures
1. Number and diversity of available incentives
2. Profitability incentives
3. Tax incentives
4. Conservation easements
5. Technical assistance
6. Landowner education opportunities

Scales
a. State/provincial
b. County/forest management unit
c. Community
d. Woodlot

Data Sources

1. Number and diversity of available incentives

   USDA NRCS – 2000 Forestry Incentives Program—Michigan Summary:
      http://www.nhq.nrcs.usda.gov/PROGRAMS/COD/cit/mi-fip.pdf

   Minnesota DNR – Forestry Incentives Program (FIP):
      http://www.dnr.state.mn.us/omb/financial_assistance/forest_incentives.html

   U of Wisconsin, Dept of Plant pathology – Grant programs available in
   Wisconsin for private landowners
      http://www.plantpath.wisc.edu/poplar/grantprograms.htm

   Ontario – BC Ministry of Forests (Ontario and Wisconsin)
      Home: http://www.for.gov.bc.ca/HFE/
      Contacts:
         http://www.dir.gov.bc.ca/gtds.cgi?show=Branch&organizationCode=FOR&organizationalUnitCode=HFE

Data: http://www.for.gov.bc.ca/HFE/Jursidictional%20Review%20final.pdf

2. Profitability incentives

USDA – Forestry Incentives Program (FIP)
Home: http://www.nrcs.usda.gov/programs/fip/
Contacts: http://www.nrcs.usda.gov/programs/fip/
Data: http://www.nrcs.usda.gov/programs/fip/2000summaries/
(Note: Select the desired state summary by clicking on the appropriate pdf link. Also, a mapped illustration is provided in the following URL: http://www.nrcs.usda.gov/technical/land/meta/m4631.html)

Ontario – BC Ministry of Forests (Ontario and Wisconsin)
Home: http://www.for.gov.bc.ca/HFE/
Contacts: http://www.dir.gov.bc.ca/gtds.cgi?show=Branch&organizationCode=FOR&organizationalUnitCode=HFE
Data: http://www.for.gov.bc.ca/HFE/Jursidictional%20Review%20final.pdf

3. Tax incentives

Ontario Ministry of Natural Resources:
Home: http://www.mnr.gov.on.ca/MNR/forests/
Contact: http://www.mnr.gov.on.ca/MNR/forests/organization/contact_us.htm
Data: http://www.mnr.gov.on.ca/MNR/forests/mftip/home.htm
http://www.mnr.gov.on.ca/MNR/forests/mftip/pdf/landowner%20eng.pdf
State of the Forest Report:
http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

USDA Forest Service – Forest Tax Guide
Home: http://www.fs.fed.us/spf/coop/
Contacts & Links: http://www.fs.fed.us/spf/coop/links.htm
Data: http://www.fs.fed.us/spf/coop/Forest%20_Tax_%20Guide31201.pdf
and http://www.fs.fed.us/spf/coop/tax.htm

Wisconsin DNR – Forest Tax Law
Home: http://www.dnr.state.wi.us/org/land/forestry/
Contacts: http://www.dnr.state.wi.us/org/land/forestry/contacts.htm
Data: http://www.dnr.state.wi.us/org/land/forestry/ftax/INDEX.HTM

4. Conservation easements

Land Trust Alliance
Home: http://www.lta.org/index.shtml
Contacts: http://www.lta.org/contact.htm
Data: http://www.lta.org/newsroom/census_summary_data.htm

U.S. Forest Service Forest Legacy Program
http://www.fs.fed.us/spf/coop/flp.htm

Ontario Heritage Foundation
 Annual Report:
  http://www.heritagefdn.on.ca/Eng/pdf/AnnualReportWEBeng.pdf

5. Technical assistance

U.S. Technical Assistance for Non-Industrial Private Forest Landowners
 Home: http://www.msue.msu.edu/forestrylink/
 Contacts: http://web2.canr.msu.edu/nrrc/
 Data: http://www.msue.msu.edu/forestrylink/assistance.htm

Ontario MNR:
 A Guide to Forest Management Planning
  http://www.mnr.gov.on.ca/MNR/forests/fmp_guide/fmp.pdf
 Extension Notes:
  http://www.mnr.gov.on.ca/MNR/forests/extension_notes/index.html
 Ontario Forest Management Guidelines:
  http://www.mnr.gov.on.ca/MNR/forests/forestdoc/guidelines/index.html#provinicial
 Online Publications:
  http://www.mnr.gov.on.ca/MNR/forests/corridor/publications.html
 Canadian Forest Association:
  http://www.canadianforestry.com/eng/
 Canadian Wildlife Federation
  http://www.cwf-fcf.org/
 Forest Products Association of Canada
  http://www.open.doors.cppa.ca/
 Ontario Forestry Association
  http://65.108.197.59/
 Ontario Professional Foresters Association
  http://www.opfa.on.ca/
 Ontario Woodlot Association
  http://www.ont-woodlot-assoc.org/MFTIP.html
 Ontario Stewardship
  http://www.ontariostewardship.org/

6. Landowner education opportunities

Ontario MNR:
 A Guide to Forest Management Planning
  http://www.mnr.gov.on.ca/MNR/forests/fmp_guide/fmp.pdf
 Extension Notes:
  http://www.mnr.gov.on.ca/MNR/forests/extension_notes/index.html
 Ontario Forest Management Guidelines:
  http://www.mnr.gov.on.ca/MNR/forests/forestdoc/guidelines/index.html#provinicial
 Online Publications:
  http://www.mnr.gov.on.ca/MNR/forests/corridor/publications.html
 Canadian Forest Association

http://www.canadianforestry.com/eng/
Canadian Wildlife Federation
http://www.cwf-fcf.org/
Forest Products Association of Canada
http://www.open.doors.cppa.ca/
Ontario Forestry Association
http://65.108.197.59/
Ontario Professional Foresters Association
http://www.opfa.on.ca/
Ontario Woodlot Association
http://www.ont-woodlot-assoc.org/MFTIP.html
Ontario Stewardship
http://www.ontariostewardship.org/

30. Existence of laws, policies and regulations

It is helpful for sustainable forest management to have laws in place that support rather than constrain these activities. Therefore, the existence of such laws, policies and regulations is an indicator of whether sustainable forest management is possible. This indicator also includes policies and regulations that facilitate planning for forestlands.

Measures
1. Tax deferral programs
2. Private forest legislation
3. Land use planning legislation and policy
4. Existence of plans for forest lands
5. Integration of plans (e.g. across region using FIA process)
6. Quality of data
7. Monitoring and auditing activities

Scales
a. State/provincial
b. County/forest management unit
c. Community
d. Woodlot

Data Sources

1. Tax deferral programs

Forest Stewardship Program – Michigan DNR:
http://www.dnr.state.mi.us/SubIndex.asp?SubLinkID=450&parent=168&sec=main

Tree Growth Tax Law (TGTL) Program – Minnesota DNR:
http://www.dnr.state.mn.us/omb/financial_assistance/tgtl.html

Wisconsin's Forest Tax Laws – Wisconsin DNR:
http://www.dnr.state.wi.us/org/land/forestry/ftax/

Managed Forest Tax Incentive Program (MFTIP) – Ontario Ministry of Nat.
Resources:
http://www.mnr.gov.on.ca/mnr/forests/mftip/home.htm

2. Private forest legislation

Taxpayers for common sense
Home: http://www.taxpayer.net/forest/index.htm
Michigan Association of Timbermen
Home: http://www.timbermen.org/
Data: http://www.timbermen.org/legislate.shtml

Minnesota Office of the Advisor of the Statutes
Home: http://www.revisor.leg.state.mn.us/
Chapter 90 (& 89A): Timberland
http://www.revisor.leg.state.mn.us/stats/90/
http://www.revisor.leg.state.mn.us/stats/89A/

Wisconsin Legislature: Infobases
Home: http://folio.legis.state.wi.us/
Wisconsin State Legislature:
http://folio.legis.state.wi.us/cgi-
bin/om_isapi.dll?clientID=117259&infobase=stats.nfo&jump=ch.%2026

Ministry of Natural Resources Forest Management Legislation
Home: http://www.mnr.gov.on.ca/MNR/index.html
Contacts: http://www.mnr.gov.on.ca/MNR/csb/message/mnroffices.html
Data: http://www.mnr.gov.on.ca/MNR/forests/t&t_leg/legis.htm

The Managed Forest Plan Incentive Plan
Home: http://www.mnr.gov.on.ca/MNR/forests/mftip/home.htm

3. Land use planning legislation and policy

Michigan Land Use Institute
Home: http://www.mlui.org
Michigan State Government Websites:
http://www.mlui.org/html/action/govsites.asp

Minnesota Legislative Reference Library
Home: http://www.leg.state.mn.us/lrl/lrl.htm
Land use: http://www.leg.state.mn.us/lrl/links/landuse.htm

State of Wisconsin, Dept of Administration
Home: http://www.doa.state.wi.us
Office of Land Information Services:

http://www.doa.state.wi.us/olis/wlip/index.asp

Ontario MAH – The Land Use Planning System in Ontario:
http://www.mah.gov.on.ca/business/plansys/contents-e.asp

Ontario Ministry of Natural Resources
Home: http://www.mnr.gov.on.ca/MNR/index.html
Contacts: http://www.mnr.gov.on.ca/MNR/csb/message/mnroffices.html
Data: http://www.mnr.gov.on.ca/MNR/forests/t&t_leg/legis.htm

4. Existence of plans for forest lands

Michigan Society of American Foresters
Home: http://forestry.msu.edu/msaf/
Forest Management Guidelines for Michigan:
http://forestry.msu.edu/msaf/main%20page/MSAFguide/Plan.htm

Minnesota IIC – Planning that impacts Forest Management in Minnesota
http://www.iic.state.mn.us/finfo/plans/plans.html
Department Results
Home: http://www.departmentresults.state.mn.us/
Data: http://www.departmentresults.state.mn.us/dnr/index.html#6

Wisconsin DNR – Forestry Master Planning:
http://www.dnr.state.wi.us/master_planning/

Ontario Ministry of Natural Resources
Home: http://www.mnr.gov.on.ca/MNR/index.html
Contacts: http://www.mnr.gov.on.ca/MNR/csb/message/mnroffices.html
Annual Report on Forest Management:
http://www.mnr.gov.on.ca/MNR/forests/forestdoc/annual_report/homepage
.htm
Forest Management Legislation:
http://www.mnr.gov.on.ca/MNR/forests/t&t_leg/legis.htm
The Managed Forest Plan Incentive Plan
Home: http://www.mnr.gov.on.ca/MNR/forests/mftip/home.htm

5. Integration of plans (e.g. across region using FIA process)

US NRCS – Great Lakes Ecological Assessment: Historic vegetation
http://www.ncrs.fs.fed.us/gla/histveg/details.htm

U of Michigan – Forest health in the North Central States
http://www.na.fs.fed.us/spfo/fhm/pubs/fhncs/fhncs.htm

Interagency Information Cooperative
Home: http://www.iic.state.mn.us
Minnesota IIC – Forest Inventory from Permanently Established

Sampling Plots
   http://www.iic.state.mn.us/finfo/land/fia2.html

The Managed Forest Tax Incentive Plan
   http://www.mnr.gov.on.ca/MNR/forests/mftip/home.htm

6. Quality of data

7. Monitoring and auditing activities

   Regional Earth Science Application Center (RESAC)
      Home: http://resac.gis.umn.edu/index.html
      Contacts: http://resac.gis.umn.edu/organization.html
      Data: http://resac.gis.umn.edu/forestry.html#Inventory

   Canadian Forest Service Great Lakes Forestry Centre
      Home: http://www.glfc.cfs.nrcan.gc.ca/
      Forest Conditions Monitoring and Reporting:
         http://www.glfc.cfs.nrcan.gc.ca/index-en/research-e/Forestcond-
         e/forestcond-e.html
   Ontario MNR
   State of the Forest Report:
         http://www.mnr.gov.on.ca/MNR/forests/forestdoc/sofr/index.html

Other Sources

Michigan Department of Natural Resources
   Home: http://www.dnr.state.mi.us/
   General Contacts:
      http://www.midnr.com/contactus.asp
   Contacts in Lansing and other state offices:
      http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4
   Data: http://www.dnr.state.mi.us/SubIndex.asp?LinkID=289&sec=enfo
      (compiled laws)
         Search example: *forest*

Michigan Compiled Laws

PA 451 OF 1994   **Natural Resources and**
Environmental Protection Act

PA 306 OF 1969	The Administrative Procedures Act of 1969
PA 466 OF 1988	Animal Industry Act of 1987
PA 289 OF 1925	Bureau of Criminal Identification and Records
PA 81 OF 1954	Careless, Reckless, or Negligent Use of Bow and Arrow
PA 45 OF 1952	Careless, Reckless, or Negligent Use of Firearms
PA 175 OF 1927	The Code of Criminal Procedure (Excerpts)
PA 109 OF 1986	Conservation Officers
PA 10 OF 1952	Death or Injuries From Firearms
PA 339 OF 1919	Dog Laws of 1919
PA 358 OF 1994	Ferrets
PA 372 OF 1927	Firearms
PA 92 OF 2000	Food Law of 2000 (Excerpts)
PA 442 OF 1976	Freedom of Information Act
PA 8 OF 1939	Isle Royale National Park
PA 274 OF 2000	Large Carnivore Act
PA 199 OF 1996	Michigan Aquaculture

31. Awareness and support for sustainable forest management

If sustainable forest management is being implemented, and there is widespread participation, then the level of awareness and support for SFM will increase.

This indicator does *not* focus on public education about SFM. The issue of education is very complex, and it is difficult to measure its effectiveness. In addition, as public education is a set of activities, it is easy to fall into the trap of using the amount of activity rather than effectiveness as an indicator of sustainable forestry.

Measures
1. Number of landowners aware of SFM
2. Number of landowners supporting SFM
3. Percent of community awareness of SFM
4. Number of local decision-makers supporting SFM

<u>**Scales**</u>
a. State/provincial
b. County/forest management unit
c. Community
d. Woodlot

<u>**Data Sources**</u>

1. Number of landowners aware of SFM

   Sample questions for forest landowners:
   a. How much forest land do you own?_____ acres
   b. Have you ever heard of sustainable forest management?

      Yes   No

   c. If yes, how would you rate your familiarity with the concept of sustainable forest management?

      Very familiar   Somewhat familiar   Not very familiar

2. Number of landowners supporting SFM

   Sample question for forest landowners:

      Present GLFA or locally developed definition of SFM.
   a. Please take a look at this definition of sustainable forest management. How would you rate your support for SFM on public lands based on this definition?

         Very supportive   Somewhat supportive   Not supportive   Don't know

   b. How would you rate your support for SFM on private lands based on this definition?

         Very supportive   Somewhat supportive   Not supportive   Don't know

3. Amount of community awareness of SFM

   Sample questions for community members who are not forest landowners:
   a. Have you ever heard of sustainable forest management?

      Yes   No

   b. If yes, how would you rate your familiarity with the concept of sustainable forest management?

      Very familiar   Somewhat familiar   Not very familiar

Present GLFA or locally developed definition of SFM.
Then ask:

c. Please take a look at this definition of sustainable forest management. How would you rate your support for SFM on public lands based on this definition?

Very supportive   Somewhat supportive   Not supportive   Don't know

d. How would you rate your support for SFM on private lands based on this definition?

Very supportive   Somewhat supportive   Not supportive   Don't know

4. Number of local decision-makers supporting SFM

Sample questions for local decision makers:

a. What is your decision making role in your community?
b. Have you ever heard of sustainable forest management?

Yes   No

c. If yes, how would you rate your familiarity with the concept of sustainable forest management?

Very familiar   Somewhat familiar   Not very familiar

Present GLFA or locally developed definition of SFM:
e. Please take a look at this definition of sustainable forest management. How would you rate your support for SFM on public lands based on this definition?

Very supportive   Somewhat supportive   Not supportive   Don't know

f. How would you rate your support for SFM on private lands based on this definition?

Very supportive   Somewhat supportive   Not supportive   Don't know

32. Representativeness of all publics in public participation processes

There is widespread agreement in the literature that citizen support for sustainable forestry will only occur if citizens have meaningful opportunities to participate in decision-making about forest resources. In addition, all citizens are dependent on forest resources in multiple ways. Therefore, an indicator of sustainable forest management is whether opportunities for participation are inclusive of all members of the community.

It is important to reach out to sectors of the population that do not typically participate or are not generally asked opinions on issues. Examples would be minorities, lower income groups, various racial and ethnic groups, seniors and teens, etc.

Measures
1. Numbers of people participating (community, state, region)
2. Types of people participating (community, state, region)

Scales
a. State/provincial
b. County/forest management unit
c. Community
d. Woodlot

Data Sources

1. Numbers of people participating (community, state, region)

   Secondary data: Population numbers
   Ontario
   Statistics Canada
   Home: http://www.statcan.ca/start.html
   Population data:
   http://www.statcan.ca/english/Pgdb/People/popula.htm

   United States
   Gateway to Census 2000
   Home: http://www.census.gov/main/www/cen2000.html
   State and County Quick Facts: http://quickfacts.census.gov/qfd/
   Instructions: Click on state. Select a county (optional). Click "Go".
   Click "Browse more data sets for _____."

   Sample questions:
   a. In the past 3 years, have you participated in any decision-making processes regarding local forest resources?

   b. If yes, please check all the ways you have participated:

   Written comments
   Talked one on one
   Attended a public meeting
   Served on an advisory committee
   Participated in a focus group
   Completed a survey (besides this one)
   Other (Please list)

2. Types of people participating (community, state, region)

Secondary data: Population Characteristics

Ontario
  Statistics Canada
    Home: http://www.statcan.ca/start.html
    Population data:
      http://www.statcan.ca/english/Pgdb/People/popula.htm

United States
  Gateway to Census 2000
    Home: http://www.census.gov/main/www/cen2000.html
    State and County Quick Facts: http://quickfacts.census.gov/qfd/
      Instructions: Click on state. Select a county (optional). Click "Go".
      Click "Browse more data sets for _____ ."

Sample questions:
  a. Please tell us about yourself:

      What is your age? (Please check a category)

      q 10-19 **q** 20-29 **q** 30-39 **q** 40-49 **q** 50-59
      q 60-69 **q** 70-79 **q** 80-89 **q** 90-99

  b. Are you:

      q Male **q** Female

  c. What is your racial/ethnic background? (Please check one category)

      q Asian American   **q** Native American   **q** Other_____
      q African American   **q** Latino/Hispanic
      q Caucasian   **q** Mixed ethnicity_____

  d. What is the highest level of formal education you have completed? (Please check one)

      q Less than high school   **q** Four-year college degree
      q High school graduate (or equivalency)   **q** Graduate or professional degree
      q Associate or other 2 year degree

33. Perceptions of fairness and justice

Sustainable forest management will not occur if people do not participate, and people will not participate if they perceive that the processes are not fair and just. Therefore, an indicator of SFM is whether public participation processes in SFM are perceived as

fair, just and equitable. Do the citizens have a real voice? Is there broad representation, lack of bias, respect, real listening, trust, and accurate information? Does the public share control over processes and outcomes?

Measures
1. Ratings of fairness principles by people who have participated
2. Ratings of perceived fairness by people who have not participated

Scales
a. State/provincial
b. County/forest management unit
c. Community
d. Woodlot

Data Sources

1. Ratings of fairness principles by people who have participated

Sample questions: **Decision Making Process. Please describe and evaluate the process used to make decisions related to your most recent participation experience.** *Please check a box for each statement.*

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Don't know
The procedures used to make decisions were fair.	q	q	q	q	q	q
Citizens were treated fairly.	q	q	q	q	q	q
Citizens were given sufficient advance notification of the opportunity to participate.	q	q	q	q	q	q
It was convenient to participate.	q	q	q	q	q	q
Everyone affected by the decisions had an opportunity to participate.	q	q	q	q	q	q
Local people were adequately involved.	q	q	q	q	q	q
Citizens were able to have an influence on the decision outcomes.	q	q	q	q	q	q
Citizens were able to participate directly in making decisions.	q	q	q	q	q	q
Citizens had an influence on the choice of decision making process.	q	q	q	q	q	q
Citizens' comments were seriously considered.	q	q	q	q	q	q
Citizens' questions were answered.	q	q	q	q	q	q
It appears that information used to reach the decisions was accurate.	q	q	q	q	q	q

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Don't know
The decisions were well reasoned and logical.	q	q	q	q	q	q
There was a lack of bias toward a particular interest, group, or person.	q	q	q	q	q	q
Agency employees were honest.	q	q	q	q	q	q
Citizens were treated politely.	q	q	q	q	q	q

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Don't know
I do not understand the process that was used to reach decisions.	q	q	q	q	q	

b. Decision Outcomes. **Please describe and evaluate the outcomes of decisions related to your most recent participation experience.**

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Don't know
The decision reached required equal sacrifices from all citizens.	q	q	q	q	q	q
The decisions reached were equally favorable to all citizens.	q	q	q	q	q	q
The decisions made were good for the natural resource.	q	q	q	q	q	q
The needs of future generations were addressed.	q	q	q	q	q	q
The decisions were good for the citizens of Michigan.	q	q	q	q	q	q
The outcomes of decisions were fair.	q	q	q	q	q	q
The decisions reached were consistent with my personal values.	q	q	q	q	q	q
The decisions reached were what I wanted.	q	q	q	q	q	q
I do not know what decisions were ultimately reached.	q	q	q	q	q	

2. Ratings of perceived fairness by people who have not participated

   Sample question:
   What are the barriers to your participation?

Case Studies

Introduction

The community process given in this handbook is a general one that can be applied in various ways, in keeping with the diversity of community visions across the Great Lakes region. To illustrate this diversity, a group of eleven case studies has been compiled and presented here. Each serves as an example of a community (and in one case, a state) that has followed all or part of the process in the handbook.

The first line of each title (in all capital letters) refers to the part of the process that is illustrated. The first example, Gogebic County, Michigan, follows the entire process and is therefore showcased as the first case study. Others use the parts most relevant to their community's needs, and these are presented roughly in the order of the steps of the process itself—beginning with philosophy, citizen alliances, community organization, and moving to communication, partnerships and the development of criteria and indicators. When more than one part of the process is used, the title indicates the part most aligned with the activities of the community.

THE COMPREHENSIVE PROCESS
Gogebic County, Michigan

Key Participants: Gogebic County Economic Development Commission, Michigan State University Extension, Gogebic County Forestry Commission, Great Lakes Forest Alliance, community residents

   In 1998, the Economic Development Commission released and circulated the *Gogebic County Jobs 2000: 1998 Community Action Plan.* The plan provided strategies for bringing economic development and benefits to current and future county residents. The mission of Strategy 4, Natural Resource Coordination of Uses and Users, called for a community-based definition of s*ustainable* f*orestry* in Gogebic County.

  In 1999, under the leadership of the Gogebic County Economic Development Commission, Michigan State University Extension, the Gogebic County Forestry Commission, and the Great Lakes Forest Alliance, a steering committee was formed and charged with guiding the development of a vision of sustainable forestry for Gogebic County. The steering committee put then together a larger working group, the Forest Advocacy Coordinating Team (FACT), a coalition of residents from all over the county, representing a wide range of professional backgrounds and interests and charged with defining *sustainable forestry* for Gogebic County.

  The steering committee targeted three components of sustainable forest management on which to collect information to use as the basis of decision-making: *ecological, economic,* and *social.* At the first FACT meeting in June 1999, talks were given by experts in each field, introducing the basics of each. Members agreed that there was a need to collect data on all three components to support a definition specific to Gogebic County.

  The team decided that the expert for each component would be responsible for collecting the baseline data for that component. All data sources were readily available in written form, except for a portion of the social component. Pre-baseline social data had to be

collected first-hand from local residents through personal interviews. The team outlined the desired variables from which the interview questions were developed and selected a diverse cross-section of citizens to interview.

In the summer of 1999, informal, taped interviews were conducted with 31 residents of different locales across Gogebic County. An attempt was made to include as much diversity as possible by factors of location, gender, age (14-70+), profession and ethnicity. The tapes were then transcribed and analyzed.

The team decided that to be able to replicate this type of study in the future, it would be necessary to create a baseline data report, based on the pre-baseline interviews that could be compared with future responses to similar questions. The steering committee chose four of the most important social variables for the pre-baseline analysis on which to establish the baseline data collection. These variables are *lifestyle, civic responsiveness, forest accessibility,* and *forest use.* The final report was produced in March 2000.

A surprise result from the interviews was the mixed and frequently negative reaction to the prospect of increased tourism. This demonstrates a need for the tourism industry to involve local citizens in their planning efforts, particularly as those plans include forest-based community resources.

In late 2001, FACT began with the selection of specific attributes to measure and analyze for its monitoring and evaluation program. A series of two workshops in November and a steering committee meeting in January 2002 were held to select specific indicators. In March 2002, FACT will meet to finalize the indicators.

For more information, contact Dick Bolen, County Forestry and Parks Director, at dbolen@gogebic.org or 906.663.4687 ext. 257. Fax: 906.667.1102. Website: http://www.gogebic.org/forestry

PARTICIPATION PHILOSOPHY AND TECHNICAL ASSISTANCE
Urban Resources Initiative
Detroit, Michigan

Key participants: Michigan State University Department of Forestry, Detroit neighborhood residents

Between 1965 and 1990, the population of Detroit declined by 600,000 people, resulting in a large number of vacant homes and other buildings. As they aged, these abandoned structures became increasingly dangerous, and hence, were demolished by the City. The result was approximately 65,000 vacant lots, gradually filling up with trash and becoming crime magnets—and considered one of Detroit's foremost problems by many neighborhood groups (CSRI, 1995).

This problem also presented unique opportunities for Detroit's communities. Through Michigan State University's Urban Resources Initiative (URI), a program of the Department of Forestry, neighborhood groups employed a grassroots approach to reclaim abandoned land and devise innovative community forestry projects. URI was a pilot project, developed as a feasibility study of community-driven forestry ventures.

Projects designed by the Urban Resources Initiative and participating communities were based on the self-determined economic and social needs of the neighborhoods and the available resources within them—a key element to building community ownership and empowerment. Active community participation and decision-making were fundamental to the initiative. Goals, concerns, limitations and resources were established via an in-depth

needs assessment process in and by each community.

Each community chose the focus of its own project and then requested technical assistance from URI. Without an invitation, URI would not become involved. The extent of involvement was determined by the amount of technical assistance each community felt it needed.

The projects were mainly located in very low-income areas and often served as a source of seed money for future projects. Some options that were tried included community orchards, tree nurseries, agroforestry gardens, vegetable stands, Christmas tree and timber lots.

At the time of closure, URI created and released a number of manuals for communities and organizations elsewhere wanting to start similar initiatives. *The Community Resources Manual* provides technical guidelines on tree care as well as a list of approximately 75 contacts linking communities with other sources of technical expertise. *Building Communities   Forestry Partnerships* is another publication, offering guidelines for organizations desiring to develop comparable programs in their own localities.

Eighteen vacant lots in seven neighborhoods were developed during the duration of the Urban Resources Initiative. Evaluations were positive. Local residents indicated that the program benefited a number of participating organizations and neighborhoods, leading to improved lot appearance and reduction in littering. The MSU Department of Forestry has continued to provide technical assistance, particularly on project maintenance, through neighborhood visits, community meetings, and generation of the maintenance guides.

For more information, contact Dr. Maureen McDonough at mcdono10@msu.edu or 517-432-2293 or Dr. Kerry Vachta at kev3@psu.edu or 717-948-6035.

PRIVATE WOODLAND OWNERS COOPERATIVES
Wisconsin Family Forests
Wisconsin

Key participants: Wisconsin Family Forests, Deerfield Alliance, Washington Island Alliance, Rudolph Alliance

Wisconsin Family Forests (WFF) is a non-profit organization with nearly 300 members and growing. WFF promotes community-based alliances of landowners working together to sustainably manage their forests. The mission of WFF is to assist and support landowner groups interested in forming alliances in their own communities throughout Wisconsin.

> Our reason for being is to facilitate the local alliances in achieving what they want to achieve, whether it's cooperative timber sales, equipment sharing, or sponsoring an educational program.
>
> Alan Haney, President
> WFF Board of Directors

The Wisconsin Family Forest approach to sustainable forestry education began in 1999 with the creation of the first alliance in Deerfield Township, Waushara County. That particular group of landowners organized to share management experiences, to learn about sustainable forest management by bringing in various speakers, and to work together on projects such as trail building and cooperative timber harvesting. Most of the landowners in Deerfield Township are individuals with relatively small non-industrial holdings who believe that sustainability is more achievable if private owners actively manage their woodlands.

Wisconsin Family Forests is unique due to the "community-building nature of the group." Because alliances are usually organized at the township level, the stage is set for neighbors to get to know each other and to begin to collaborate on forest management projects and issues. Through participation in WFF, community connections are strengthened.

> So often neighbors don't even know neighbors. As this organization got started in Deerfield, they began getting together for cross-country skiing, and they have a pig roast in the summer. There are a lot of social activities.
>
> Alan Haney

In addition to the Deerfield Alliance, the Washington Island Alliance (Door County) was officially launched in May 2001, with the Rudolph Alliance (Wood County) following suit in December 2001. Each alliance is an independent entity and sets its own priorities for projects, yet all alliance activities focus on sustainable land management on private lands. Landowners concerned about being responsible stewards are drawn to the Wisconsin Family Forest model and membership and interest in forming new alliances continues to grow.

For more information about Wisconsin Family Forests, contact Amy Shuck by phone at 715.213.1618 or by e-mail at amyshuck@hotmail.com. The website, currently under construction, will soon be available at http://www.wisconsinfamilyforests.org.

A DIFFERENT WAY OF ORGANIZING THE COMMUNITY
Westwind Forest Stewardship
Muskoka-Parry Sound, Central Ontario, Canada

Key participants: **Westwind Forest Stewardship, Ontario Ministry of Natural Resources**

Westwind Forest Stewardship, Inc. is a community based, not-for-profit forest management company in that in May '98 became the first such organization to receive a Sustainable Forest License (SFL) from the Ontario government. The SFL puts Westwind in charge of forest management planning for 540,000 hectares of public (public) forests in central Ontario, as well as orchestrating timber harvest, tree-planting, and many other jobs. As the forest planners, Westwind along with its other partners, especially the Ministry of Natural Resources, must mediate and accommodate all of the different uses of this large forest area.

The movement to form Westwind as a non-profit corporation started in early 1996 with the encouragement of the Ministry of Natural Resources and local citizen's. At the time, the government was getting out of the business of active forest management on public Land (public forest). The wide variety of users in the central Ontario forests provided the impetus to make Westwind a community-based company; an innovative approach in Ontario.

In this community-based model, logging contractors and forest companies still provide most of the funding for forest management, but decision-making is by a board of directors comprised of three representatives of the local forest industry and four community members with no ties to the forest industry. The community directors are selected through a public advertisement and interviewed by a nomination review committee. A good knowledge of the forest, good business acumen, dedication and respect for users of the

forest; all tempered with a desire to maintain an active forest economy carried out in a sustainable fashion, are attributes for a prospective Westwind board member to possess.

On February 14, 2002, the French Severn Forest was certified by the Forest Stewardship Council. It is the first large public forest to be FSC certified in Canada. The certification initiative has been solidly endorsed by the forest operators under the jurisdiction of Westwind. Other activities include producing a well-attended series of conferences called "Your Forest-Your Choice"; and sessions with forest operators talking about every aspect of sustainability from biodiversity to business management.   Financial assistance from the Ivey Foundation has helped to realize these objectives.

Westwind has been called an accident of history and geography. High-grade logging in the area was rampant from the mid 1800's, first for White Pine, then for other species in succession. In the 1970's the decline was halted with the implementation of careful multi-objective tree marking system. Forest management is still restoring much of the forest to its original condition. The location of the forest near Toronto makes it a summer Mecca for all kinds of recreational users, as well as the rich and famous. This potential conflict can also be its strength. The opportunity to set up a new way of doing forest management does not happen often or easily; fortunately the government and the local citizens of central Ontario seized it.

As Westwind Forest Stewardship Inc. enters the 5th year of its existence, it continues to build trust and confidence with all of the forest users of the French-Severn Forest.

For more information contact Tom Clark at 705.645.2580 or tc@muskoka.com.

MULTIPLE SOURCES OF SUPPORT FOR NEIGHBORHOODS
Neighborhood Wilds Program
Twin Cities, Minnesota

Key participants: Minnesota DNR, local conservation groups, neighborhoods, Legislative Commission on Minnesota Resources

The Neighborhood Wilds Program (NWP) was developed to help metro area citizens understand, safeguard and restore the natural resources in their neighborhoods, and to reduce the ecological impacts of development within the seven-county metropolitan area. By conducting workshops and funding demonstration projects, NWP aims to connect and buffer existing areas by coordinating landscaping and land management among neighbors. NWP helps bring neighbors together to work on collective goals, which could involve improving water quality by installing a wetland buffer, increasing backyard biodiversity with prairie plantings or restoring a degraded native woodland. By enhancing the natural resources in their neighborhood, participants contribute to the ecological health of the larger community. As an added benefit, they can often reduce yard work, save energy and add value to their property. Further, the series of workshops and meetings NWP initiates can help build stronger ties among neighbors, and between neighborhoods and local agencies (Neighborhood Wilds Program 2001-03).

The Program is a collaborative effort of the Minnesota Department of Natural Resources (DNR), local conservation groups and neighborhoods. The 2001-03 Program is funded by the Legislative Commission on Minnesota Resources (LCMR) and the Metropolitan Council (NWP, Minnesota DNR, 2001).

Although not focusing on forest issues per se, urban forestry is a vital component of the Neighborhood Wilds Program. Recent workshops have focused on restoring and managing

a remnant oak forest, controlling buckthorn and stabilizing a stream via bioengineering.

To participate, neighborhoods must team up with a sponsoring agency that will assist citizens to complete an application for a workshop. If the neighborhood is selected, the sponsor helps to organize the workshop in collaboration with Neighborhood Wilds staff.

As many as 21 neighborhoods will be participating in workshops during winter 2001-02 and fall/winter 2002-03. Neighborhood Wilds staff and partners will present a slide show/talk on the specific ecology of the neighborhood and potential projects. Neighborhood members are encouraged to share their knowledge and concerns and ask questions. Each person in attendance receives a binder of relevant information on landscape design, invasive species, etc., and an Activity Plan, with natural history information and recommendations for on-the-ground design and/or management.

If the neighborhood is amply enthused and organized, it can apply for funding and technical assistance for a demonstration project that emerges from the Activity Plan. During 2002-03, as many as eight neighborhoods will be awarded up to $15,000 each. For wide-ranging projects, partnerships with additional funding agencies are suggested.

For application forms or further information, contact Diane Hellekson at dhellekson@barr.com or 952.832.2963.

GETTING BROAD COMMUNITY INVOLVEMENT
Long Lake Township Community Forestry Plan
Grand Traverse County, Michigan

Key participants: Long Lake Township Planning Commission, Michigan Department of Natural Resources

Long Lake Township is located in the northwestern corner of Grand Traverse County, in the northwestern region of Michigan's lower peninsula. The Township is committed to developing tools for making wise land use planning decisions, allowing for economic growth while minimizing impacts to the natural resource base. Local citizens are proactive and have developed long-term strategies for protecting and managing their resources.

In May 1995 the Planning Commission conducted a community-wide opinion survey that focused on land use matters. The results were considered to be development goals and incorporated into the 1997 Land Use Master Plan. In addition, input from concerned citizens, the Planning Commission and Township Board at several workshops further guided the goal-setting process (Long Lake Township Planning Commission, 2000).

The Township applied for and received a grant from the Michigan DNR Urban and Community Forestry Program, for the development of a Community Forestry Plan. Goals and objectives were based on Township Planning Commission comments and citizen participation in planning workshop meetings and implementing plans.

The inspiration for the Forestry Plan initially came from a Cluster Development Zoning Ordinance the township developed to preserve natural features. The idea of cluster development was born of the master planning process, and the goal of the Forestry Plan was to build on this and other elements of the Master Plan.

Input from a community resource workshop, a citizen-led field survey, as well as the Planning Commission itself, provided guidance on defining resource areas and developing planning approaches. Goals, objectives and policies from the Master Plan were reviewed and used as a springboard for developing more specific goals.

The Planning Commission reached out to its residents in various ways. First, it

invited representatives of many community and governmental groups concerned with conservation and land use planning to get involved. Out of curiosity, many did attend the first meeting. After that, the Commission invited others from different sectors of the community representing other organizations. The Commission also placed in the newspaper an invitation to all members of the community to participate in developing the Forest Plan. The Commission members made phone calls to key landowners and the most involved citizens. Once people attended, they became very interested in the plan's goals and wanted to keep involved (Tina Allen, personal communication).

A resource workshop was held in June 1999 to establish planning criteria and prioritize woodland areas. The participants came up with criteria in five categories: forest management, water quality buffers, protection of unique areas, ecological corridors, and unique wildlife areas. A field survey was conducted by two community members, and a map was created from this information, showing significant ecological corridors, unique sites and views, wetlands and water quality buffers.

Based on community input and the resulting community goals, recommendations and approaches to managing forest resources were developed including local regulations, technical assistance, landowner education, and community partnerships and participation. In January 2000, the Planning Commission formally adopted the Long Lake Community Forestry Plan.

The Plan may be viewed at http://www.longlaketownship.com/forestry/longlaketwn.html.

COMMUNICATING WITH YOUR COMMUNITY
Les Cheneaux Islands
Cedarville and Hessel, Michigan

Key participants: Les Cheneaux Economic Forum, The Nature Conservancy, University of Michigan, Corporation for Enterprise Development, United States Forest Service, Fermata, Inc., Sustainable Measures

The Nature Conservancy called Les Cheneaux Islands one of its Last Great Places, a unique world-class ecosystem. In 1996, the Chamber of Commerce formed the Les Cheneaux Economic Forum, a coalition of community volunteers charged with the protection and improvement of the quality of life in Les Cheneaux. It was held that protection of the ecosystem and natural resources, with citizen participation and support, would be the key to long-term economic prosperity and community well-being.

Scientists from the University of Michigan and the Nature Conservancy led a workshop with about forty residents on sources of ecosystem stress. The Forum then sought the aid of the non-profit Corporation for Enterprise Development (CFED), to facilitate a community-based planning process, to identify strategies for economic development compatible with the natural and cultural resources of the region.

A meeting was held in August 1997 to introduce the project and solicit feedback from residents. Over 120 people came, and CFED led a discussion leading to the creation of a community vision. Participants chose six project areas, formed a task force for each one, and many signed up to volunteer. The task forces began meeting to prepare proposals. Forum steering committee members performed secondary roles as task force members. Newsletters were sent to every household, and websites were set up for providing updates.

In Spring 1998, project proposals were presented and evaluated based on sustainability,

feasibility and comprehensiveness. In June, another public meeting was held with eighty residents present. The chairs of each task force gave updates on their progress, and CFED led a discussion of the proposals. The objective was to achieve a balance of economic opportunity, the natural beauty of the area, and the quiet, rural way of life. The work was grouped by Entrepreneurship, Natural Resource Management and Community Development.

Forestry concerns were addressed through the Secondary Wood Products Task Force. Its goal was to "capitalize on the Eastern Upper Peninsula's forest and wood-processing assets to develop new year-round, value added, export-based, secondary wood products firms (Les Cheneaux Economic Forum, 1998: 10)." The task force sought to develop a hardwood dimension plant for value-add wood processing. A partnership was formed by a local sawmill owner to purchase a dimension plant and dry kiln in a nearby county. This allowed him to expand his processing capacity and his company's competitive advantage. A notable forestry issue was access by the public, not only to forestlands, but to waters as well. The community forged an on-going alliance with the U.S. Forest Service to help tackle this problem (Les Cheneaux Economic Forum, 1998).

Fermata, a Texas-based consulting firm, produced a report in early 2001, recommending a number of experiential tourism strategies. However, Forum members recognize the potential for tourism development to be incompatible with community values regarding community character and ecosystem values (Fermata, Inc, 2001).

With the aid of Sustainable Measures (a consulting group) and the Nature Conservancy, the Forum began developing indicators for evaluating the compatibility of tourism approaches, but with the goal of staying applicable to a broad range of development strategies. The next steps are to pare down the number of indicators, increase community participation, refine, adopt, and test the indicators.

For more information, contact Linda Hudson, Chair of the Les Cheneaux Community Forum at 906.484.3031 or forum@lescheneaux.net. The website is http://www.lescheneaux.org/chamber/ef_frames.html.

DEVELOPING STATE LEVEL CRITERIA AND INDICATORS
Minnesota Results Indicators and Related Strategic Initiatives

Key participants: Minnesota Department of Natural Resources

The Minnesota DNR is developing natural resource indicators using a *results management* framework to determine outcome targets for its initiatives and to measure program results. The DNR believes that indicators and performance targets constitute a powerful management tool for communication and accountability with citizens and legislators. They also bring understanding to broad goals and program purposes for improved management within the agency. The DNR publication, "Natural Resources Stewardship 2001: Key Indicators of Progress," contains over 120 indicators of agency progress toward strategic goals. The report is available at http://www.dnr.state.mn.us.

The merits of such a system are obvious. However, building a results management system is difficult and expensive. Challenges include long response times for management decisions (e.g. trees take decades to mature and provide benefits); external, uncontrollable factors such as weather and the global economy; and the need to form broad partnerships to accomplish many natural resource goals. The DNR will continue to develop this approach with existing resources, but investments are needed in two critical areas: the support of

new indicators which are based on results, rather than activities; and the building of systems to effectively integrate targets and indicators with budgets and to improve decision-making with respect to natural resource priorities and allocations.

Recently the DNR developed targets for ten indicators that are shown at http://www.departmentresults.state.mn.us. These ten indicators serve to forecast and measure progress in three key areas where DNR is developing new initiatives. The three areas are:

1. **Sustainable forests for multiple benefits:** three indicators to evaluate progress in the protection of forests while ensuring sustained economic and recreational opportunities.
   Initiative: The Bear River Demonstration Forest is a working model for evaluating the diversification of harvest practice to enhance timber productivity, biological diversity, and visual quality. A collaborative partnership was formed to guide implementation. The next step is to establish outcome targets and new indicators to assess results and adapt management strategies to better achieve goals.
2. **Natural resource-based recreation opportunities:** three indicators to measure protection of aquatic ecosystems and the recreational and economic benefits they provide.
   Initiative: Restoring Minnesota's Wetland and Waterfowl Hunting Heritage, begun in 2001, is a program to address decreases in waterfowl hunting success. In the past, government agencies focused only on the *quantity* of wetland habitat. Now, the DNR and its partners are addressing wetland and shallow lake *quality,* to reverse the decline in duck harvesting, and hence, leading to better satisfaction of Minnesota's hunter population. To date, non-regulatory approaches to waterfowl protection have been developed, and sites for shallow lake restoration have been identified.
3. **Conservation-based development and land protection:** four indicators for assessing guidance of land-use decisions and protection of high quality natural environments.
   Initiative: The Metro Greenways collaborative program, begun in 1998, is developing a network of natural areas and greenways in the Twin Cities metropolitan area. The DNR planning grants program provides matching funds to local government agencies for greenway inventory, mapping and planning. The DNR/Met Council Natural Resource Inventory and Assessment project will enhance land protection efforts by focusing on mobilizing residents to address trends in shoreland alteration that are damaging to water and habitat quality.

For more information, contact Jon Nelson at 651.297.2256 or jon.nelson@dnr.state.mn.us.

BROAD-BASED PARTNERSHIPS & LOCAL LEVEL INDICATORS
Canada s Model Forest Program

Key participants: Canadian Forest Service, community residents
Canada holds 10% of the earth's forests and is the largest exporter of wood and paper products worldwide. The Canadian Forest Service of Natural Resources Canada had determined that the best approach to "balance the competing objectives of economic growth, social stability and environmental integrity" (Natural Resources Canada, 1999: 2) would be a living "laboratory where people with a direct interest in the forest, supported by the most up-to-date science and technology, would participate in decisions about how the forest could

be sustainably managed…(Ibid, 1999: 3)." In 1992, the federal government announced the creation of ten model forests that would represent the range of "diverse forest regions, land tenure arrangements, and socioeconomic conditions (Ibid, 1999: 4)." These sites were established as partnerships between local landowners, industries, First Nations, interested citizens, and all levels of government.

Model forests were designed to be neutral forums within which participants were respectful of individual interests while, at the same time, being united in the difficult task of balancing the ecological, economic and social dimensions of sustainability. Land owners and land managers sat around the table with local residents, sawmill operators and private woodlot owners, scientists, Aboriginal communities, various levels of government, and activists to explore new approaches to sustainable forest management. The entire process has resulted in a huge amount of institutional experience and knowledge capable of tackling complex social issues that individual organizations or less experienced groups would have difficulty dealing with.

Three years into the program, the federal government commissioned an independent committee of forest experts to conduct an evaluation. They found that the program had been successful in forging partnerships among citizens and organizations that had previously been in conflict with one another. The committee recommended that the model forests expend more energy towards communication with greater numbers of people and that Aboriginal involvement in each model forest be increased.

The government response to the evaluation was to implement Phase II of the program, by emphasizing the sharing of the model forest experiment with those not participating and by creating an 11th model forest, where Aboriginal people took the lead in its management. Phase II was designed to facilitate the model forests functioning together as a network. Two new initiatives were introduced: Local Level Indicators of Sustainable Forest Management, and Enhanced Aboriginal Involvement.

Local Level Indicators provide a framework for monitoring changes in forest practice and its influence on the many components of SFM. Each model forest has developed a suite of local level indicators, appropriate to its own social, economic and biological conditions. Canada's Model Forest Program is currently seeking links outside its network to promote the sharing of its local level indicator experiences with others concerned with sustainable forest management.

The Enhanced Aboriginal Involvement initiative developed out of a need to better incorporate Aboriginal knowledge, both traditional and contemporary, into the activities of the model forests. Many Aboriginal people depend on the forest for both spiritual and economic well-being. Model forests are helping them to benefit economically from the forest, by supporting initiatives such as ecotourism, non-timber product development, and Aboriginal-owned logging and sawmill operations.

Since the model forests were created in 1992, many partnerships have been formed, with new organizations continuing to join and almost none leaving. This is because the Model Forest Program offers an opportunity for learning what others are planning and doing with regard to the forest. It is a forum where all participants are free to speak and be heard with respect, for the unified goal of "developing approaches to sustainable forest management that do not sacrifice one interest for another (Ibid, 1999: 4)."

For more information, contact the Canadian Forest Service at 613.992.5390 or visit the Canadian Model Forest Network website at http://www.modelforest.net.

COLLABORATIVE CRISIS RESPONSE AND INDICATOR DEVELOPMENT
The Eastern Ontario Model Forest
Ontario, Canada

Key participants: Eastern Ontario Model Forest, Lanark District Maple Syrup Producers Association, community residents

The Eastern Ontario Model Forest (EOMF) extends more than 1.5 million hectares north of the St. Lawrence River and east to the Quebec border. About 34% of the total area of this mixed forest is in production, with approximately one million residents living within the forest border. About 88% of the area is privately owned, and the rest is public land (Natural Resources Canada, 1999).

A wide array of partners works together, representing government, First Nations, academia, industry, domestic and international organizations and agencies, as well as agricultural enterprises. Many projects focus on the private landowner. A number of demonstration areas within the forest highlight progressive activities such as cultivation of native, medicinal plants; effective sugar maple management; more efficient red pine thinning, and sawlogs production. A landowner workshop series is also being developed to supplement the *Code of Forestry Practice,* produced by the Eastern Ontario Model Forest.

Following the ice storm of 1998, the EOMF was the first to use the model forest partnership organization to respond to a crisis. They determined the extent of the ice damage with local appraisals, coupled with a survey by the OMNR and the Canadian Forest Service. A work plan was quickly generated, and each part of it was delegated to whoever could do it best. A coordinator was hired to synchronize efforts. The synchronized strategy used by the model forest allowed everyone equal access to financial and scientific resources and helped the partners respond to the crisis in a timely and responsible way.

> People were quite concerned, as the sole income of many of the producers is maple syrup. We didnt have many financial resources, and we were not in any way prepared to deal with an emergency. Without the model forest, it would have been a very disjointed approach.
>
> Don Dodds, President
> Lanark District Maple Syrup Producers Association

In 1997, the EOMF began developing local level indicators (LLI) to provide a framework for measuring, analyzing, reporting, communicating with the public, and evaluating the effectiveness of projects. A working group was created, but due to the overlap with membership in the Forest Science Committee (FSC), responsibility for LLI was transferred to the FSC. A consultant was hired to translate C&I terminology into plain language.

In 1998, two consultants were hired to assist the FSC to develop and refine a set of about 100 indicators, borrowing from eight existing sets of indicators, including the ones in this handbook. The FSC decided to begin with a smaller 'starter set' of indicators in order to get some quick results and to help move the EOMF beyond the conceptual phase of LLI. A lead agency was identified for each indicator to actually gather the data, but the work of the first data collection was contracted to a consultant who completed the first State of the Forest Report in March 1999. The EOMF commissioned an independent review of the report, with recommendations for improvements.

The Forest has embarked on a project to assist woodlot owners in the area to have their land certified by the Forest Stewardship Council. It is expected the LLI work done to date will help meet those requirements.

For more information, call 613.258.8241 or visit the EOMF website at http://www.eomf.on.ca.

COLLABORATION AND INDICATOR DEVELOPMENT
Lake Abitibi Model Forest
Ontario, Canada

<u>Key participants</u>: **The Lake Abitibi Model Forest, Abitibi-Consolidated, Inc., community residents**

The Lake Abitibi Model Forest (LAMF) is a 1.2 million-hectare area in the northeast corner of Ontario, located on the Great Northern Claybelt giving the landscape a unique and picturesque character. Currently, 19 partners are working on various innovative projects related to sustainable forest management.

The forest company Abitibi-Consolidated Corporation of Canada joined other model forest partners to develop a harvesting method that was more environmentally friendly and economically feasible, called the Harvesting with Regeneration Protection (HARP) system. HARP minimizes soil compaction by using a well planned harvesting process to cut trees only above a specified diameter. This system minimizes damage to young seedlings and maintains soil quality for future trees. It was inspired by horse logging in the early part of the 20th century, which resulted in the maintenance and protection of the advance regeneration present on the site, which in-turn results in a shorter return harvesting time than with conventional harvesting techniques. The Model Forest partners and Abitibi-Consolidated joined forces with various researchers from the Canadian Forest Service and Laurentian University to find a way to mimic horse logging and natural forest processes.

> We were heading toward changing our harvesting practices, but the model forest   by pulling diverse groups together to collaborate on research   really made it possible to improve our practices
>
>   Jennifer Tallman, Registered Forester
>   Abitibi-Consolidated Company of Canada

Partners of LAMF have developed an elementary school curriculum to help cultivate an appreciation of the forest among children. Teachers explain the importance of conserving forest resources and balancing economic, social and ecological aspects of SFM. The Cultural Heritage Project has drawn together information about numerous historic sites, used by early Native communities and European settlers.

In 1997, LAMF began development of identifying and monitoring local level indicators (LLI) to demonstrate their goal of being a leader in the sustainable management of claybelt forests. The General Manager was charged with generating the indicators, and a committee was established to act in an advisory role. LAMF staff then identified local forest values held by concerned stakeholders. To raise public awareness of criteria and indicators, the Model Forest prepared a series of short articles that were published in local newspapers.

Initially, the Forest adopted the Canadian Council of Forest Ministers' criteria and critical indicators and later adapted them to local conditions. A set of indicators was also

developed at 3 workshops of government and industry representatives. A consulting team filtered them for relevance, measurability, responsiveness to management, and predictability. The team refined them through field assessments at LAMF and another study site and combined them with a set developed through the Socio-Economic Program Committee. A LLI Specialist was hired in April 2000 to lead in the development of a refined suite of indicators and a monitoring plan for LAMF, as well as data collection, compilation and reporting. The indicators were further refined by a committee, resulting in a final suite of 37 indicators. A status report for the Model Forest was released in 2001. Measurement and reporting will take place every five years, as that should give enough time for trends to show up. This time frame also coincides with the Census of Canada and the forest management planning cycle.

Abitibi-Consolidated has been undergoing ISO 14001 registration for sustainable forestry certification. It is anticipated that the LLI will facilitate this by showing that an environmental management system is in place.

For more information, call 705.272.7810, or visit the Lake Abitibi Model Forest website at http://lamf.net.

Data Sources

Name	Home Page	Contact Information	(not for specific indicators)
American Forest and Paper Association	http://www.afandpa.org/	http://www.afandpa.org/about/about.html	
	_____		_____
Boise-Cascade	http://www.bc.com/	http://www.bc.com/	
Borealforest.org	http://www.borealforest.org/	http://www.borealforest.org/contacts.htm	
Breeding Bird Survey	http://www.mp2-pwrc.usgs.gov/bbs/	http://www.mp2-pwrc.usgs.gov/bbs/Contact_Us/contact_us.htm	http://www.mp2-pwrc.usgs.gov/bbs/BBS_Data/bbs_data.htm
	_____	http://www.ccrs.nrcan.gc.ca/ccrs/org/staff/staffe.html	http://www.ccrs.nrcan.gc.ca/ccrs/imgserv/imgserve.html
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	_____		
Canadian Forest Products Laboratory			
	http://www.nrcan.gc.ca/cfs-scf/index_e.html	http://www.nrcan.gc.ca/cfs-scf/national/co_e.html	http://www.nrcan-rncan.gc.ca/cfs-scf/science/resrch/index_e.html
	_____		_____

Canadian Forestry Association	http://www.canadianforestry.com/	http://www.canadianforestry.com/eng/contact/	
Central Wisconsin Tourism Association	http://www.centralwisconsin.org/	http://www.centralwisconsin.org/contact.html	
Chicago Herpetological Society	http://www.chicagoherp.org/	http://www.mpm.edu/collect/vertzo/herp/atlas/resframe.html	http://www.mpm.edu/collect/vertzo/herp/atlas/AtlasFr1.html
Environment Canada	http://www.ec.gc.ca/envhome.html	http://www.ec.gc.ca/comments_e.html	http://www.ns.ec.gc.ca/issues.html http://www.ec.gc.ca/industry_e.html#forestry
Federation of Ontario Naturalists	http://www.ontarionature.org/	http://www.ontarionature.org/contact.html	

	[link]	[link]	[link]
	[link]	[link]	
Food and Agriculture Organization (FAO)	http://www.fao.org/		
Forest Landowner's Guide to the Internet	http://www.na.fs.fed.us/pubs/misc/ir/index.htm		
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Forintek Canada Corporation	http://www.forintek.ca	http://www.forintek.ca/eng/contact.html	
	[link]		[link] [link]
Great Lakes Assessment	http://www.ncrs.fs.fed.us/gla/glahome.htm	http://www.ncrs.fs.fed.us/gla/contacts.htm	http://www.ncrs.fs.fed.us/gla/data.htm GIS maps: http://www.ncrs.fs.fed.us/gla/maps.htm
	[link]	http://www.lsfa.org/	State and Province level: http://www.lsfa.org/Page.htm
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Interagency Information Exchange	http://www.iic.state.mn.us/		
	[link]		

International Paper	http://www.internationalpaper.com/champion.html	http://www.internationalpaper.com/about_us/contact_frame.html	
Michigan Association of Timbermen	http://www.timbermen.org/	http://www.timbermen.org/contact.htm	
Michigan Christmas Tree Grower's Association	http://www.mcta.org/	http://www.mcta.org/mctaprofile.html	http://www.mcta.org/inventory.html
Michigan Department of Natural Resources (DNR)	http://www.dnr.state.mi.us/	http://www.midnr.com/Insert.asp?LinkID=82&insert=1&id=4	http://www.dnr.state.mi.us/SubIndex.asp?LinkID=500&sec=main&imageid=4
Michigan Forest Association	http://www.i-star.com/users/mfa/		

Minnesota Department of Natural Resources (DNR)	http://www.dnr.state.mn.us/	http://www.dnr.state.mn.us/	http://search.state.mn.us/dnr/ (search for data by topic)
Minnesota Department of Trade and Economic Development	http://www.dted.state.mn.us/	http://www.dted.state.mn.us/00x05f.asp	http://www.dted.state.mn.us/05x03f.asp
Minnesota Forest Industries	http://www.minntrees.org/	http://www.minntrees.org/	
Minnesota Forest Resource Council	http://www.frc.state.mn.us/	http://www.frc.state.mn.us/	http://www.frc.state.mn.us/monitor/resource.htm
Minnesota Forestry Association	http://www.mnforest.com/		

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Minnesota State Government Department Results	http://www.departmentresults.state.mn.us/		http://www.departmentresults.state.mn.us/
Minnesota Tourism Association			
National Forest Health Monitoring Program	http://www.na.fs.fed.us/spfo/fhm/index.htm	http://www.na.fs.fed.us/spfo/staff/staffdir/spfostaff.htm	http://www.na.fs.fed.us/spfo/fhm/results/1999/nc/nc.htm
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Nature Conservancy	http://nature.org/	http://nature.org/contactus/contact/ Great Lakes Program: http://nature.org/aboutus/projects/greatlakes/contact/	
Nature Conservancy Canada	http://www.natureconservancy.ca	http://www.natureconservancy.ca/files/frame.asp?lang=e_&region=1&sec=contact	http://www.mnr.gov.on.ca/MNR/nhic/nhic.html
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Northeast-Midwest Institute	http://www.nemw.org/	http://www.nemw.org/forests.htm	
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Random Lengths	http://www.randomlengths.com/	http://www.randomlengths.com/	http://www.randomlengths.com/base.asp?s1=Daily%5FWoodWire

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StoraEnso	http://www.storaenso.com	http://www.storaenso.com/content/index.asp?contact=true&top=53&id=708629&ctct1=394&ctct2=401&ctmenu=false	
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Travel, Tourism & Recreation Resource Center	http://www.tourismcenter.msu.edu/	http://www.tourismcenter.msu.edu/	http://www.tourismcenter.msu.edu/ttrrc/html-ttrrc/frames-ttrrc/Indicators.htm
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U.S. Geological Survey – Patuxent Wildlife Research Center	_____	_____	
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United States Fish and Wildlife Service	http://www.fws.gov/		
United States Forest Products Laboratory	http://www.fpl.fs.fed.us/	http://www.fpl.fs.fed.us/contact.htm	

USDA Forest Service Forest Inventory and Analysis (FIA)	http://fia.fs.fed.us	North Central Office w/ contacts: http://www.ncrs.fs.fed.us/4801/	http://fia.fs.fed.us/dbrs_setup.htm Data by State: http://www.srsfia.usfs.msstate.edu/ewdata/ewrec.htm
USDA Forest Service, North Central Forest	http://www.ncrs.fs.fed.us/4801/		Michigan: http://www.ncrs.fs.fed.us/hottopics/fpmi.

Experiment Station. Forest Survey Unit			htm Minnesota: http://www.ncrs.fs.fed.us/hottopics/fpmn.htm Wisconsin: http://www.ncrs.fs.fed.us/hottopics/fpwi.htm
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West Michigan Tourist Association	http://www.wmta.org/	http://www.wmta.org/index.shtml	http://www.wmta.org/index.shtml (use left side menu)
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	_____		http://www.doa.state.wi.us/olis/wlip/index.asp
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Wisconsin Department of Natural Resources (DNR)	http://www.dnr.state.wi.us/	http://www.dnr.state.wi.us/aboutdnr	http://www.dnr.state.wi.us/org/land/forestry/Index.htm
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Wisconsin Paper Council	_____		_____
Wisconsin Woodland Owners Association	http://www.wisconsinwoodlands.org/	http://www.wisconsinwoodlands.org/	
	_____	http://www.iucn.org/themes/fcp/contact.html	
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READER FEEDBACK

The development of **The Sustainable Forest Management Community Handbook** has been a collaborative process with input from numerous organizations and individuals. It is our hope that this collaboration continues, so that the handbook is always improving to better meet the needs of communities in the Great Lakes region. We need your help to make this happen. Your feedback on the usefulness of this handbook would be greatly appreciated. Please fill out this evaluation form and send it to the address at the bottom of the page. Feel free to write on the back and/or add more sheets.

1. What is your overall impression of *The Sustainable Forest Management Community Handbook?*
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2. How easy do you find the handbook to use? _____
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3. How useful do you find the community process that is presented? _____
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4. Are there any parts of the handbook or process that you find particularly valuable?
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5. Are there any parts of the handbook or process that you do not find useful, or which you think should be deleted or improved? _____
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6. Would you recommend any additions to the handbook? _____
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7. Please write any additional thoughts that you have. _____
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Thank you!

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