



and Scope in the Application of Factors for Forest Sustainability

Lessons Learned
Draft 2010 Forest
Sustainability Rep

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Objectives of Today's Discussion

- ▶ Briefly describe the Montreal Process Criteria and Indicators for Forest Sustainability (MPC&I) and their use in the DRAFT ***National Report on Sustainable Forests—2010***
- ▶ Discuss the impact of scale on results and communication strategies used in The Report
- ▶ Introduce the concept of scope in relation to scale within the context of The Report



Key Points

- ▶ *Scale and scope are interrelated as broader spatial scales entail broader collaboration with more diverse perspectives and objectives.*
- ▶ *Much of the value of information in reporting efforts such as this extends outside meeting the specific objectives for which it was collected, especially given the broader scopes and spatial scales involved.*



The MPC&I

Background

- ▶ Sustainability Reporting Milestones in the 1990s
 - ✿ The Earth Summit UN Conference on Environment and Development (UNCED) June 1992.
 - ✿ The President's Council on Sustainable Development, formed by Executive Order 12852 (July 1993), identified frameworks for tracking sustainable development & experimental set of 40 indicators
 - ✿ The Santiago Declaration (1995)
- ▶ The Montreal Process
 - ✿ 7 Criteria and 64 indicators for forest sustainability (ecological, social, economic)
 - ✿ Focused on temperate and boreal forests
 - ◆ 12 countries, 90 percent of worlds temperate and boreal forests (60 percent of world's total forests)



The MPC&I

Structure

Criterion 1: Biological Diversity

9 indicators—biophysical characteristics of forests

Criterion 2: Productive Capacity

5 indicators—production and capacity of physical outputs

Criterion 3: Health and Vitality

2 indicators—forest disturbance processes

Criterion 4: Soil and Water Resources

5 indicators—forest soils and water characteristics and quality

Criterion 5: Forest Carbon

3 indicators—sequestered carbon and flux in forests

Criterion 6: Socioeconomic Benefits

20 indicators—broad array of socioeconomic conditions and outputs

Criterion 7: Institutional Framework

20 indicators—Capacity to support sustainable management



The MPC&I

Summary

- ▶ Aims to be comprehensive
 - Designed to cover all aspects important to understanding forest systems and their sustainability
- ▶ Is the product of an international consensus and negotiation process
 - Incorporates issues and concerns for all boreal and temperate regions (all continents represented)
- ▶ Explicitly aims for comparability across countries
- ▶ Not constrained by data availability

—Represents Maximum Scope and Scale



The 2010 Report

General description

- ▶ Close to thirty Forest Service scientists, technical staff, and outside collaborators contributed to the report
- ▶ The report is 222 pages. More than 150 pages are used to report information on each of the 7 criteria and 64 criteria and indicators
- ▶ Relies on extensive stakeholder input organized through the Roundtable on Sustainable Forests— often representing local scales and specific interests

The 2010 Report

Sample indicator brief

Indicator 1.01 - Area and percent of forest by forest ecosystem type, successional stage, age class, and forest ownership or tenure

What is the Indicator and why is it important?

This indicator uses age-class distribution by broad forest type as a coarse measure of the landscape-scale structure of the Nation's forests. Within forest types, this serves as a surrogate for stand development or successional stage. A diverse distribution of forest lands across forest types and age-classes is an indicator of tree-size diversity and is important for determining timber growth and yield, the occurrence of specific wildlife and plant communities, the presence of other non-timber forest products, and the forest's aesthetic and recreational values.

What does the indicator show?

Forest area in the United States stands at 751 million acres, or about one-third of the Nation's land area. Forest area was about one billion acres at the time of European settlement in 1630. Of the total forest land loss (divided into "North" and "South" regions in the accompanying charts) between 1850 and 1900, as broadleaf forests were cleared for agriculture. For the last 100 years, the total forest area has been relatively stable, while the U.S. population has nearly tripled.

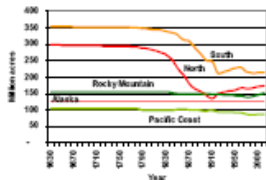


Figure 1-1. - Historic forest area in the U.S. by geographic region, 1630-2007

Today, regional forest cover ranges from a low of 19 percent of the land area in the Rocky Mountain region (Fig. 1-3) to 45 percent in the Pacific Coast region, 41 percent in the North, 40 percent in the South, and 34 percent in Alaska.

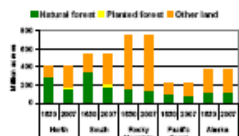


Figure 1-2. - Area of natural forest, planted forest and other land by geographic region, 1630 and 2007

Broadleaf forests. Broadleaf forests cover 290 million acres nationwide (Figure 1-3), predominantly in the North and South (239 million acres). At 139 million acres, oak-hickory is the largest single forest cover type. It constitutes more than 19 percent of all forest land in the Nation and nearly half of all broadleaf forests. Covering 54 million acres, maple-beech-birch forests, are also dominant in the Eastern United States. Combined, these two upland forest types constitute nearly two-thirds of all broadleaf forests and have increased 25 and 39 percent, respectively, since 1977. Broadleaf types have a fairly normal age distribution, showing a bulge in the 40- to 79-year age-class, as second- and third-growth forests in the East continue to mature (Figure 1-4).

Conifer forests. Conifer forests cover 409 million acres in the U.S. and are found predominantly in the West (314 million acres) and South (69 million acres). Pines are the single-most dominant group of conifer forests. Loblolly-shortleaf pine and longleaf-short pine types in the South and ponderosa and lodgepole pine types in the West combine to cover 121 million acres, or more than one-fourth of all conifer forest types.

The largest single conifer type, with 58 million acres in interior Alaska, is the spruce-birch type. Douglas-fir follows closely, with 39 million acres found predominantly in the Pacific Coast Region. Conifer forests are somewhat bimodal in age structure with more acreage in younger age-classes because of more intensive management for wood production in the South and a preponderance of older stands in the West where most of the nation's old-growth forests occur.

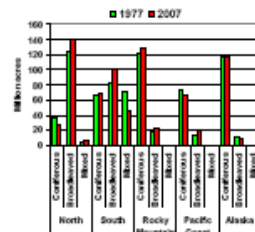


Figure 1-3. Area of forest land in the United States by major cover group, 1977 and 2007

Mixed forests. Virtually all of the nation's mixed forests are found in the South, where oak-pine (30 million acres) and oak-gum-cypress (20 million acres) are the major forest types. While oak-gum-cypress is found in the wet lowlands, oak-pine is usually found on the drier uplands of the South. The largest age class for these forests is 40-59 years old.

While trend data on forest age-class are sparse, historic data are available for average tree size in forest stands (Figure 1-5). Stands averaging 0 to 3 inches in diameter increase as older stands are harvested and regenerated. The recent trend in this diameter class is slightly downward. Intermediate stands in the 6 to 10 inch diameter range have been declining, while stands averaging more than 11 inches in diameter have been rising. This latter trend is indicative of shifts in management that have

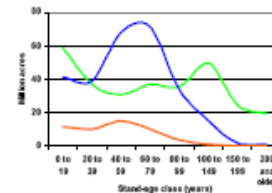


Figure 1-4. Forest area by stand-age class for conifer, broadleaf and mixed forests, 2007 (excludes Alaska)

harvesting on public forests in the West, thus increasing the acreage of larger diameter stands in that region, particularly in coniferous forest types.

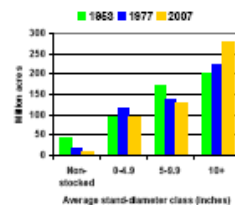


Figure 1-5. Trends in timberland area by average stand-diameter class, 1953-2007

Ownership patterns have a profound effect on forest management policies and activities. While forests of the North and South are predominantly in private ownership, the forests of the western regions are predominantly in public ownership (Fig. 1-6). Nearly 60 percent of all U.S. forests are in private ownership.

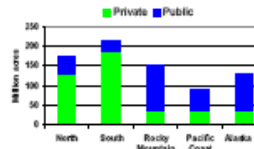


Figure 1-6. - Forest land ownership in the U.S. by geographic region, 2007

What has changed since 2003?

Forest land area has remained essentially stable since 2003. The data indicates an increase of 6 million acres (about 1 percent), but much of this increase came as a result of changes in the classification of land cover types as either forest or non-forest. From a regional standpoint, there has been a general loss of forest in the coastal regions of the East and West with offsetting gains in forest area in the interior region.



The 2010 Report

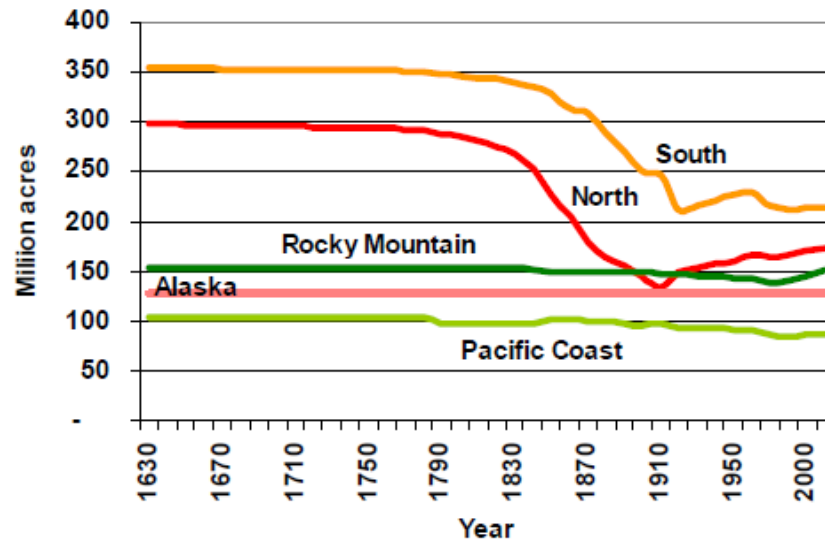
Summary results

- ▶ In spite of local or regional degradation and loss of forest land, the gross quantity of forests in the United States remains relatively stable
- ▶ Quality, however, is another question
 - ✿ And disturbance is a particular concern
- ▶ Our forests resources are continuing to grow and change according to the dynamics of growth and disturbance
- ▶ Likewise our relationship to the forest, the ways in which we impact it, our values and concerns regarding it, and the ways in which we measure and understand it are also evolving
- ▶ The devil is in the details (each indicator has a story to tell)

Scale

Example 1—forest area

- ▶ Forest area is increasing (general finding)



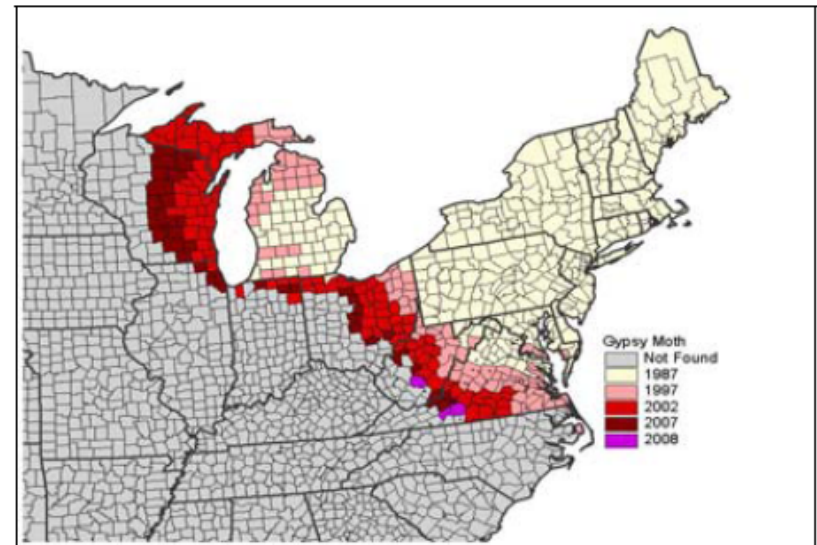
- ▶ But we know fragmentation and loss of forest cover is occurring (from indicators 3 and 16)
 - ✿ Changes “washed out” by increases elsewhere
 - ✿ Inventory sampling may not be fine enough to register these losses
- ▶ Also note temporal scale—recent vs. pre-industrial past

Scale

Example 2—insect mortality

- ▶ 3-fold increase in insect-induced mortality since 2003
- ▶ But this is the sum of distinct infestations, each with its own provenance, underlying causes, dynamic progression and ultimate impact

E.G. Gypsy Moth:

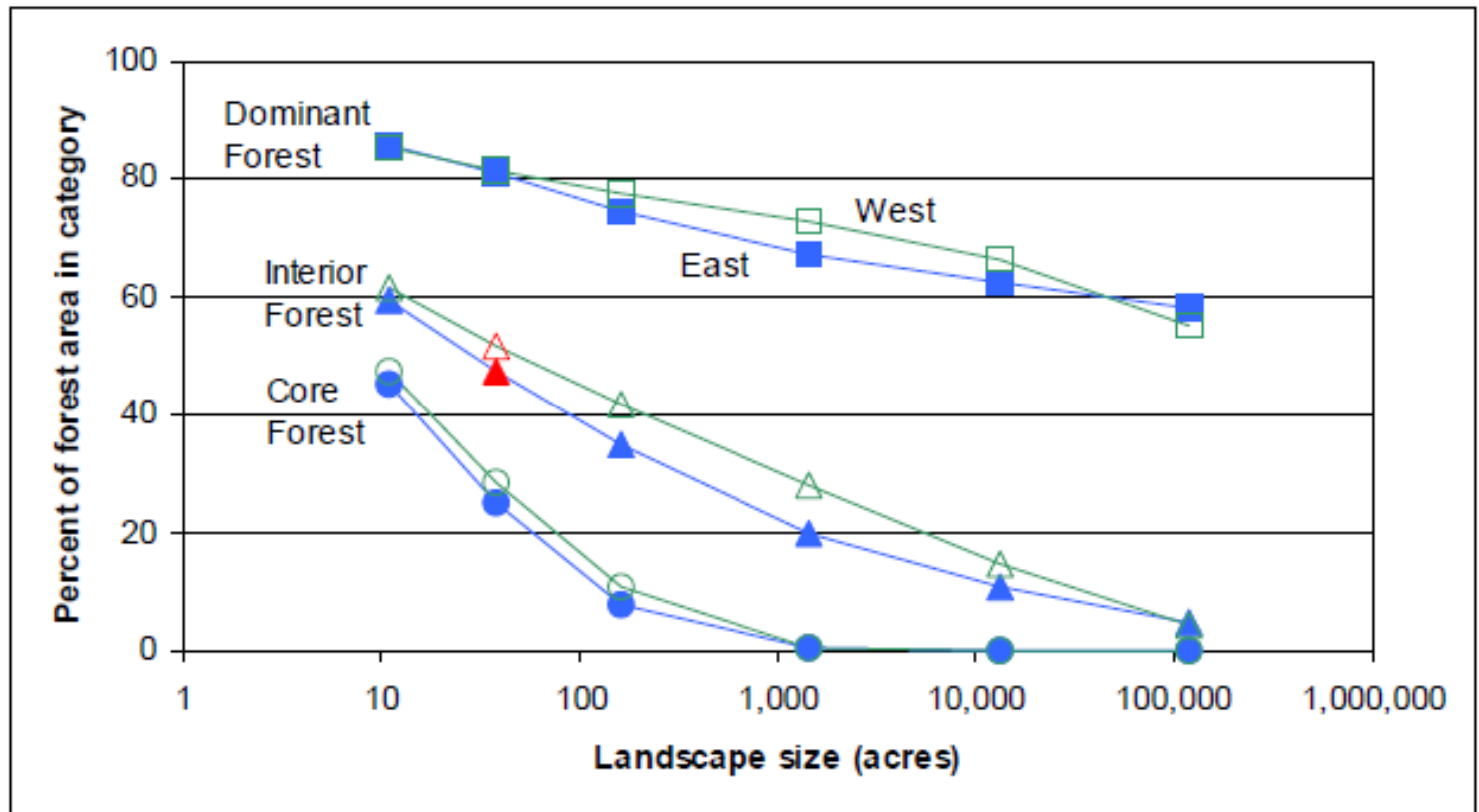


- ▶ What does the national number mean in this context?

Scale

Example 3—forest fragmentation

- ▶ Fragmentation measures characterize spatial configuration of forests
- ▶ Indicator is explicitly and integrally scale-dependent





Scale

Data availability and display

- ▶ **Wall-to-wall data sets with good spatial resolution are comparatively rare**
 - ✿ Forest Inventory & Analysis (FIA)
 - ✿ Census, Bureau of Labor Statistics, etc. (for socioecon)

- ▶ **Other data sets are good in some places, not in others**
 - ✿ State-level reporting on best management practices
 - ✿ Forest health (targeted sampling)

- ▶ **In other cases all we have are statistical anecdotes**

- ▶ **Space limits ability to display data at finer scales**
 - ✿ Conflict between local, regional and national reporting interests



Scope

Objectives of MPC&I

- ▶ **Sustainability is a broadly defined concept**
 - ✿ All things to all people
 - ✿ No clear, logical boundaries to limit scope (more like judgment calls regarding importance)

- ▶ **Collaborative processes tend towards a proliferation of indicators**
 - ✿ Particularly if data availability is not a constraint

- ▶ **Confluence of stakeholders**
 - ✿ International, national, regional & local
 - ✿ Ideally representing full diversity of interests

Not the narrowly defined objectives of a standard project or program evaluation process



Scope

Application of MPC&I

- ▶ **No direct calculus relating indicators to sustainability**
 - ✿ Rather a process of synthesis and debate

- ▶ **If packaged appropriately, data can be used in multiple contexts to multiple ends**
 - ✿ Uptake = success, and data producers cannot/should not control outcomes

- ▶ **Making data available (and relevant) at multiple scales will enhance uptake and utility**
 - ✿ Downscaling national data sets
 - ✿ Upscaling or aggregating local data streams

Conclusion

The MPC&I and the 2010 Report...

- ▶ Entail an extremely broad scope applied at a national scale
 - ✿ Each indicator, however, is story unto itself with a unique set of characteristics and dynamics relevant at variable scales

- ▶ Provide a framework for ongoing information reporting (as opposed to a focused evaluation process)
 - ✿ Can be applied at different spatial scales hopefully driving consolidation and comparability of data
 - ✿ This will involve discipline and compromise
 - ✿ The need to tailor reporting to local conditions and information needs, however, will foster an ongoing tension between interests operating at different scales and breadths of scope

- ▶ Ideally, information produced at a given scale under a given scope can be used elsewhere and for different purposes
 - ✿ This requires a sensitivity on the part of information producers to the potential utility of their work in other settings

Thank you...

(and where to get copies of the report)



United States Department of Agriculture



DRAFT
National Report on
Sustainable Forests – 2010



December 8, 2008

- ▶ The DRAFT report is on the web at <http://www.fs.fed.us/research/sustain/2010SustainabilityReport>
- ▶ The Montreal Process Website is at <http://www.rinya.maff.go.jp/mpci/>