Forestry Program for Oregon

A Strategy for Sustaining Oregon's
Public and Private Forests

2011 Edition

Oregon Board of Forestry

July 28, 2011

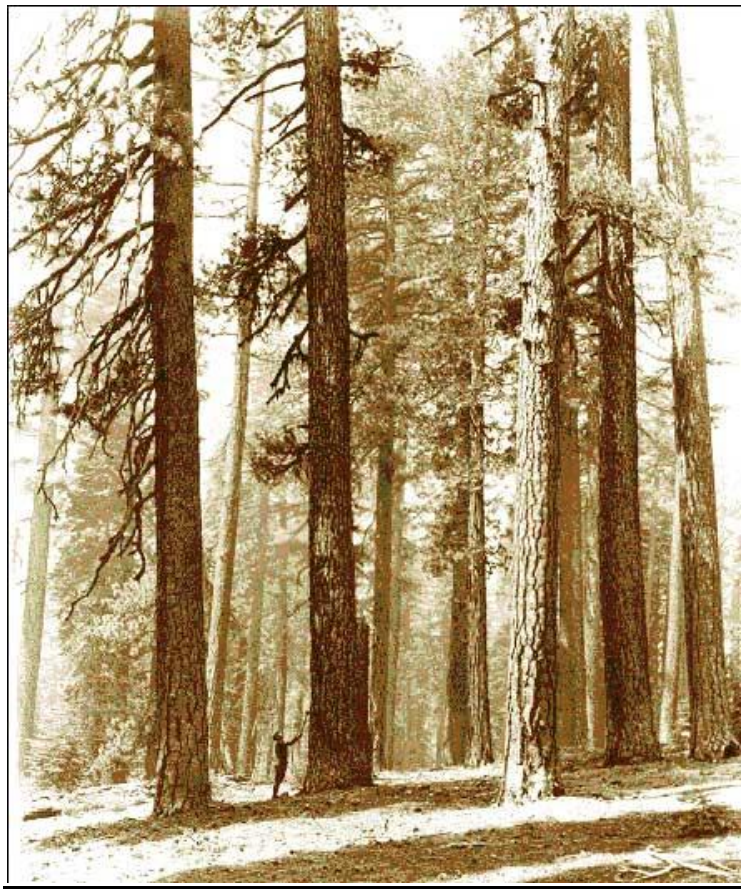
”Oregon’s forests still constitute, next to the land itself, her greatest natural resources. Though ravaged for centuries by destructive fires and insect pests, and though some four million acres, nearly one-sixth of the present forested area of the State, has been denuded through lack of protection, there still remains a wealth of timber far surpassing that of any other state in the Union.

“Viewed from any standpoint Oregon’s forests are worthy of every protection with which they can be surrounded, and in affording this protection the Government, State, and private owners must work harmoniously together.”

- Report of the Oregon Conservation Commission to the Governor, 1912.

“. . . [D]espite the harvesting of about 582 billion board feet of timber over almost 200 years, mostly by clearcutting, and the loss of countless more billions of board feet to fire insects, and disease, Oregon’s forests are thriving. They are vigorously producing not only raw material needed to supply the wood products industry and a broad range of wildlife habitat, but also scenery and recreational opportunities valued by tourists, as well as people and business looking to put down roots in Oregon.”

- John H. Beuter, Revised and Updated Legacy and Promise: Oregon’s Forests and Wood Products Industry, 1998.



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An invitation from the Chair of the Oregon Board of Forestry to help promote sustainable forests:

Welcome to the 2011 edition of the *Forestry Program for Oregon.*

I know I speak for my fellow Board members in saying it is our honor to serve the people of Oregon. Our mission as the Board of Forestry is to promote sustainable management of Oregon's public and private forests.

Forests help make Oregon special, and we all benefit from their sound management. Forests cover half of the state. They provide most of our drinking water – the cleanest water from any land use. Oregon is the nation's top lumber producer. Forests provide clean air, fish and wildlife habitat, jobs, a climate change buffer, beauty, recreation, renewable energy and more. Urban and suburban forests increase land value, and help keep communities healthy and livable.

Different forest landowners emphasize different values – wood production, conservation, residential, or mixed uses. These different management objectives produce diverse forests and a range of benefits. This combination of management emphases, in the right proportions and in the right locations, can provide sustainable forests.

Forestry in Oregon has evolved significantly as each generation decides what set of values it wishes to emphasize and what pathway it will follow. Over the past 150 years, this emphasis has shifted from unmanaged forest exploitation, to forest conservation, to managed forests as a source of wood for the post-World War II housing boom, to wilderness and environmental protection, to today's interest in sustainable forestry. In the same way, the *Forestry Program for Oregon* has changed over time to incorporate new scientific information and to reflect changing public concerns. Still, the *Forestry Program for Oregon* has always been centered on the theme of sustainability.

It is sometimes assumed that forests cannot equally achieve environmental, economic, and social goals—that what is gained in one sector is necessarily lost in another. The Board of Forestry believes, on the contrary, that sustainable forest management can and must succeed in all three sectors. Integrating the environmental, economic, and social sectors is critical to Oregon's future.

To be truly sustainable, forest management must be economically viable and environmentally robust. It must also be socially sustainable. To be socially sustainable, forest management decisions must use democratic processes and build accountability and trust between all parties, where human well-being and equity are goals of the process as well as outcomes of the forest management decisions. If environmental values are protected, forest health and productivity will be improved. If economic values are honored, society can afford to protect the environment and provide social benefits from forests. If social sustainability is accommodated, forest management decisions will

be longer-lasting and provide high levels of the other benefits. Celebrating this interdependence among values is key to supporting sustainability.

Oregon's forests face major challenges today. Forests are being fragmented, converted to other uses, and encroached upon by development. The rising expense of owning private forestland means more pressure to sell or develop. Invasive species, climate change, and larger more damaging fires threaten our forests. Although many Oregon forests are managed following principles of sustainable forestry, Oregonians' own indicators of sustainable forest management provide evidence Oregon's forests, in total, are not currently being managed sustainably.

However, there are solutions. In the 2011 *Forestry Program for Oregon*, the Board of Forestry has developed a vision, goals, objectives, and indicators to address the current challenges and make progress on the pathway to sustainably managing all of Oregon's public and private forests. Keeping forests healthy and in forest use will require an informed public supporting and investing in forestry and resource protection. It will require financial incentives to encourage landowners to keep and improve their forestlands. And we will need sound management plans and strategies that examine the challenges and opportunities affecting all of Oregon's forested ownerships and landscapes.

I strongly encourage all Oregonians to work with the Board of Forestry and with each other to achieve these outcomes.

_____

John Blackwell, Chair

Board of Forestry Members

Sybil Ackerman

Peter Hayes

Calvin Mukumoto

Jennifer Phillippi

Gary Springer

Steve Wilson

Executive Summary:

The Board of Forestry is a seven-member citizen board appointed by the Governor and confirmed by the state senate. It is empowered by the Oregon Legislature to oversee all forest policy within the jurisdiction of the State of Oregon. The Board of Forestry defines its mission as:

> *Leading Oregon in implementing policies and programs that promote sustainable management of Oregon's public and private forests.*

Strategic planning strengthens the Board's ability to be an effective policy-maker in partnership with all Oregonians. The *Forestry Program for Oregon* is a central element of the Board of Forestry's framework for strategic planning. It describes the Board's mission, values, vision, goals, objectives, and indicators of sustainable forest management. The ongoing challenge for the Board is to work both within and outside state government to implement the *Forestry Program for Oregon* goals and objectives to make its vision for the future a reality.

The Board of Forestry has established seven *Forestry Program for Oregon* goals for achieving the sustainable management of Oregon's public and private forests. The Board believes all the issues, challenges, and opportunities surrounding Oregon's forest resources can be organized and discussed within these seven goals. Under each goal, the Board has developed a list of objectives; short-term actions upon which it intends to focus its efforts. These objectives will be reviewed and updated, as needed, on a two-year cycle.

<u>The Seven Goals of the *Forestry Program for Oregon* and their Objective Topics</u>
(See the goal sections of this document for the complete objective statements and supporting information)

Goal A: Promote a fair legal system, effective and adequately funded government, leading-edge research and education, and publicly-supported environmental, economic, and social policies.

1. Stable funding
2. Effective regulatory and non-regulatory programs
3. Adaptive management
4. Active federal forest management
5. Forest cluster economic development
6. Board of Forestry lands
7. Human well-being and equity
8. Landslides and public safety

Goal B: Ensure that Oregon's forests make a significant contribution towards meeting the nation's wood product needs and provide diverse social and economic outputs and benefits valued by the public in a fair, balanced, and efficient manner.

1. Landowner challenges
2. New markets
3. Employment and revenue
4. Strategic industry investment
5. Coordination with Oregon tribes
6. Urban and community forests
7. Forest cluster and rural vitality
8. Forest recreation

Goal C: Protect and improve the productive capacity of Oregon's forests.

1. Land use planning
2. Active federal forest management
3. Residential emphasis forests
4. Forest land base retention
5. Diverse management objectives
6. Climate change adaptation and mitigation
7. Wood growth, harvest, and mortality

Goal D: Protect and improve the physical and biological quality of the soil and water resources of Oregon's forests.

1. Forest Practices Act administration
2. Water quality standard administration
3. Watershed research
4. Forest land base retention
5. Ecological processes and dynamics
6. Oregon Plan for Salmon and Watersheds
7. Drinking water
8. Soil productivity protection

Goal E: Conserve diverse native plant and animal populations and protect and improve their habitats in Oregon's forests.

1. Board of Forestry lands
2. At-risk plant and animal species
3. Invasive species
4. *Oregon Conservation Strategy* expectations
5. *Oregon Conservation Strategy* tools
6. Old growth definition and delineation
7. Fire-dependent/sensitive ecosystems

Goal F: Protect and improve the health and resiliency of Oregon's dynamic forest ecosystems, watersheds, and airsheds.

1. Active fuels and vegetation management
2. Wildfire suppression cost control
3. Wildfire risk reduction/ecosystem improvement
4. Wildfire, insects, and diseases protection
5. Wildfire suppression priorities
6. Climate change adaptation and mitigation
7. Forest landscape resilience
8. Smoke management

Goal G: improve carbon sequestration and storage and reduce carbon emissions in Oregon's forests and forest products.

1. Forest land base retention
2. Public and landowner education
3. Accessible carbon-offset markets
4. Advantages of Oregon forest products
5. Biomass as a renewable energy source
6. Biomass/bioenergy/bio-based products
7. Forest sector energy efficiency

The 19 Oregon indicators of sustainable forest management combined with the biennial Board issue scan process, Board Work Plans, and other information all inform the

Forestry Program for Oregon development and update processes. The indicators and the Oregon Roundtable on Sustainable Forests provide a forum for Oregonians to share common interests and information, to address high priority challenges to sustaining our forest resources, and to promote broad agreement about how to address forest issues.

This *Forestry Program for Oregon* is not an end-product. It is the foundation for discussion, planning, and action over the next eight years. The Board hopes to show a clear connection among Board goals and objectives, Board Work Plans and meeting agendas, Department of Forestry programs, and the policies of other natural resource agencies with responsibilities that affect forestlands.

Following Board adoption of the 2011 *Forestry Program for Oregon,* all Oregonians are encouraged to work with the Board through its business meetings, the Oregon Roundtable on Sustainable Forests, periodic issue scans, and other forums to:

- Update and implement Board Work Plans;
- Use, review and, if necessary, revise the Oregon indicators of sustainable forest management along with desired trends and targets for the indicators;
- and
- Update the *Forestry Program for Oregon* objectives on a two-year cycle.

Information about all of these processes will be accessible through the Board of Forestry website: www.oregonforestry.gov

"We need to pursue greater national recognition of, and commitment to, the notion that sustainable forests are essential to the very well-being of our society. This commitment could lead to a national strategy to promote sustainable forests and help us clarify, enhance, and better coordinate the roles of federal, state, and local governments; respect the critical roles that private forest landowners play; promote new and creative ways to provide education, research, and technical assistance; realize needed revisions to forest and tax policies; and identify global influences that affect the management of forests in the United States."

- Marvin Brown, Oregon State Forester and Secretary to the Board of Forestry, 2003 to 2010

What is the Oregon Board of Forestry?

The Board of Forestry is a seven-member citizen board appointed by the Governor and confirmed by the state senate. It is empowered by the Oregon Legislature to oversee all forest policy within the jurisdiction of the State of Oregon. The Board appoints the State Forester, adopts rules regulating forest practices and other forestry programs, and provides general supervision of the State Forester's management of the Department of Forestry.

The Board's leadership helps shape public debate and policy on state, private, and federal ownerships, addressing sustainable management of all of Oregon's public and private forests. Issues such as environmental incentives and regulations, management of state-owned forests, federal forest management, assistance to private forest landowners, and wildland fire management are common topics of discussion and action at the Board's public meetings.

The Board is charged by law to represent the public interest. No more than three members may receive any significant portion of their income from the forest products industry. At least one member must be appointed representing each of the three major forest regions of the state. The term of office is four years, and no member can serve more than two consecutive full terms.

What is the Oregon Board of Forestry's mission?

The current Board of Forestry defines its mission as:

> *Leading Oregon in implementing policies and programs that promote sustainable management of Oregon's public and private forests.*

What is sustainable forest management?

It is important that Oregonians agree about what sustainable forest management means and how to evaluate our forests' performance in meeting sustainability goals. In this context, the Board of Forestry defines "sustainable forest management" as meaning:

> *Forest resources across the landscape are used, developed, and protected at a rate and in a manner that enables people to meet their current environmental, economic, and social needs, and also provides that future generations can meet their own needs* [based on Oregon Revised Statute 184.421].

On a statewide basis, sustainable forest management will provide:

- Healthy and diverse forest ecosystems that produce abundant timber and other forest products;

- Habitat to support healthy populations of native plants and animals;
- Productive soil, clean water, clean air, open space, and recreational opportunities;
- Healthy communities that contribute to a healthy state economy; and
- Accountability and trust between all parties, where human well-being and equity are goals of the process as well as outcomes of the decisions.

What values form the basis for Oregon Board of Forestry decisions?

The following value statements identify the current Board of Forestry's guiding principles and philosophies.

The Board of Forestry values:

1. A global context. We believe Oregon's forests are important to the global environment, economy, and society, and that forest landowners, managers, government agencies, interest groups, and all other Oregonians should consider the impact of their decisions at local, state, national, and international levels.

2. The dynamic nature of Oregon's forests. We recognize that Oregon's forests are diverse, dynamic, and resilient ecosystems at a landscape scale. A broad range of forest conditions exists naturally, and various forest values, in proper proportion, are mutually compatible over time.

3. The intrinsic value of Oregon forest resources. We believe that while Oregon's native forest plants, animals, and ecosystems provide economic, scientific, cultural, recreational, and aesthetic values, their existence alone warrants their stewardship and enhancement.

4. Active management. We believe Oregon's forests should be actively managed to maintain forest health, to conserve native plant and animal species, and to produce the products and benefits people value. In this context, we define "active management" as the application of practices through planning and design, over time and across the landscape, to achieve site-specific forest resource goals. Active management uses an integrated, science-based approach that promotes the compatibility of most forest uses and resources over time and across the landscape.

5. Meeting current and future needs. We believe forest resources should be used, developed, and protected at a rate and in a manner that enables people to meet their current environmental, economic, and social needs, and also provides that future generations can meet their own needs.

6. Landowners and the public sharing responsibility for sustainable forests. We believe forest sustainability depends on the contributions of both landowners and the public. We support the private landowner's right to practice forest management in a manner that meets or exceeds Oregon's Forest Practices Act. The public must also play an active

role by supporting incentives and other non-regulatory methods that encourage continued investment in Oregon's forests to maintain and increase the public values provided by private forests.

7. Forests that contribute to quality of life. Oregon's forests and the state's rural and urban populations are interdependent. We believe Oregon's forests play a significant role in providing all Oregonian's a high quality of life, including products, jobs, water and other ecosystem services, recreation, tax revenues for community well-being, and a quality environment.

8. Healthy rural Oregon. We believe a healthy rural Oregon, which relies on working landscapes, is vital to the quality of life enjoyed by all Oregonians. Forests contribute to this healthy rural economy through generating traditional forest sector jobs and tax revenue and also through a healthy environment that supports associated trades such as salmon fisheries and forest recreation.

9. Different landowners playing different roles. We believe different land ownerships play different roles in achieving the full suite of environmental, economic, and social needs met by the forested landscape. Private forest landowners play unique and valuable roles in Oregon's forest landscape, and their continued vitality must be assured in the face of threats by development, inequitable regulation, reduced technical and financial assistance, and economic challenges.

10. Informed public participation. We value broad-based, informed public participation and consensus-based decision-making whenever possible.[1]

11. Continuous learning. We are committed to continuous learning. The results of forest management policies and programs should be evaluated and appropriately adjusted based upon ongoing monitoring, assessment, and research.

[1] The Board's decision-making processes are informed by the *Principles for Environmental Management in the West* adopted as a policy resolution by the Western Governors' Association in 1999, 2002, 2005 and 2008. See http://www.westgov.org/wga/policy/08/enlibra8-15.pdf.

What is the *Forestry Program for Oregon?*

The *Forestry Program for Oregon* is a central element of the Board of Forestry's framework for strategic planning. Strategic planning strengthens the Board's ability to be an effective policy-maker in partnership with all Oregonians. The primary purposes of Board strategic planning are to:

- Clearly define and communicate what the Board of Forestry is and what it does;
- Establish the board's fundamental guiding values and priorities;
- Direct the Department of Forestry in implementation of the Board of Forestry goals and objectives in the *Forestry Program for Oregon*;
- Focus resources and efforts on the most important issues and priorities that will promote and create the desired future;
- Measure and report performance (both successes and setbacks); and
- Provide an improvement cycle that allows both the board and the department to make informed changes when necessary.

The *Forestry Program for Oregon* describes the Board's mission, values, vision, goals, objectives, and indicators of sustainable forest management. The Board's mission statement establishes the overall purpose of the Board of Forestry. Values identify the Board's guiding philosophies related to forestry. The vision describes conditions the Board wants to establish, looking at a 20-year horizon. The goals identify what the Board of Forestry wants to achieve over the next eight years. Viewed together, the mission, values, vision, and goals describe the future the Board is striving to achieve. In this context, the Board's objectives are a set of short-term actions upon which it intends to focus its efforts (see Figure 1).

The Oregon indicators of sustainable forest management measure specific quantitative and qualitative attributes and help monitor trends in the sustainability of forest management over time. The indicators, combined with the biennial Board issue scan process and Board Work Plans, all inform the *Forestry Program for Oregon* development and revision processes. Other forest assessment and monitoring information is also used.

The ongoing challenge for the Board is to work both within and outside state government to implement the *Forestry Program for Oregon* goals and objectives to make its vision for the future a reality. The Board understands that economic conditions, agency budgets, and other short-term factors may limit its ability to fully implement the *Forestry Program for Oregon.* To address these potential constraints, the Board will review and, if necessary, revise its objectives every two years. The Board can then refocus its work on areas where it believes immediate emphasis is needed through policy development, agency actions, budgeting, legislation, and coordination with partners and stakeholders.

The Board of Forestry has developed the 2011 *Forestry Program for Oregon* based on its broad statutory authority. However, the *Forestry Program for Oregon* is not itself a

statute or administrative rule. Rather, it provides a coherent foundation for future board policy deliberation.

Background information about Oregon forest resource conditions and trends that support the *Forestry Program for Oregon* objectives can be found in the following companion references:

The 2003 *Forestry Program for Oregon*
http://egov.oregon.gov/ODF/BOARD/fpfo2003.shtml

The Oregon Indicators of Sustainable Forest Management
http://www.oregon.gov/ODF/indicators/index.shtml

Oregon's 2010 Forest Atlas
http://egov.oregon.gov/ODF/RESOURCE_PLANNING/forestatlas.shtml

The 2010 Oregon Statewide Forest Assessment and Resource Strategy
http://egov.oregon.gov/ODF/RESOURCE_PLANNING/2010fars.shtml

2010 Oregon Forest Values and Beliefs Survey and Focus Group Report
http://www.oregon.gov/ODF/BOARD/ofri2010study.shtml

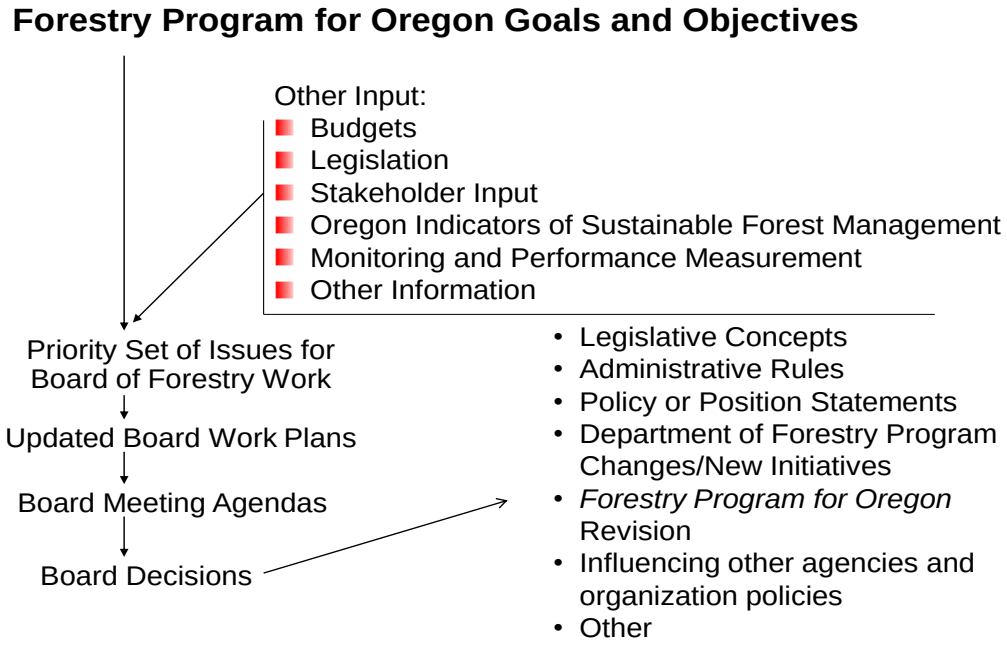

Figure 1. The *Forestry Program for Oregon* is an integral part of the Board of Forestry's strategic planning, implementation and monitoring processes.

What is the Oregon Board of Forestry's vision for the future?

If the *Forestry Program for Oregon* is implemented successfully, the Board of Forestry's vision is that Oregon will have:

1. Healthy forests providing an integrated, sustainable flow of environmental, economic, and social outputs and benefits.

2. Public and private landowners willingly making investments to create and maintain healthy forests.

3. Statewide forest resource policies that are coordinated among natural resource agencies.

4. The Board of Forestry recognized as an impartial deliberative body operating openly and in the public interest to achieve the Board's mission.

5. Citizens who understand, accept, and support sustainable forestry and who make informed decisions that contribute to achievement of the vision of the *Forestry Program for Oregon*.

6. Adequate funding for the Department of Forestry to efficiently and effectively accomplish the mission and strategies of the Board of Forestry, and department personnel policies that encourage and recognize employees, allowing them to meet their full potential in providing excellent public service.

"Angry as one may be at what heedless men have done and still do to a noble habitat, one cannot be pessimistic about the West. This is the native home of hope. When it fully learns that cooperation, not rugged individualism, is the quality that most characterizes and preserves it, then it will have achieved itself and outlived its origins. Then it has a chance to create a society to match its scenery"

- Wallace Stegner, The Sound of Mountain Water: The Changing American West, 1969

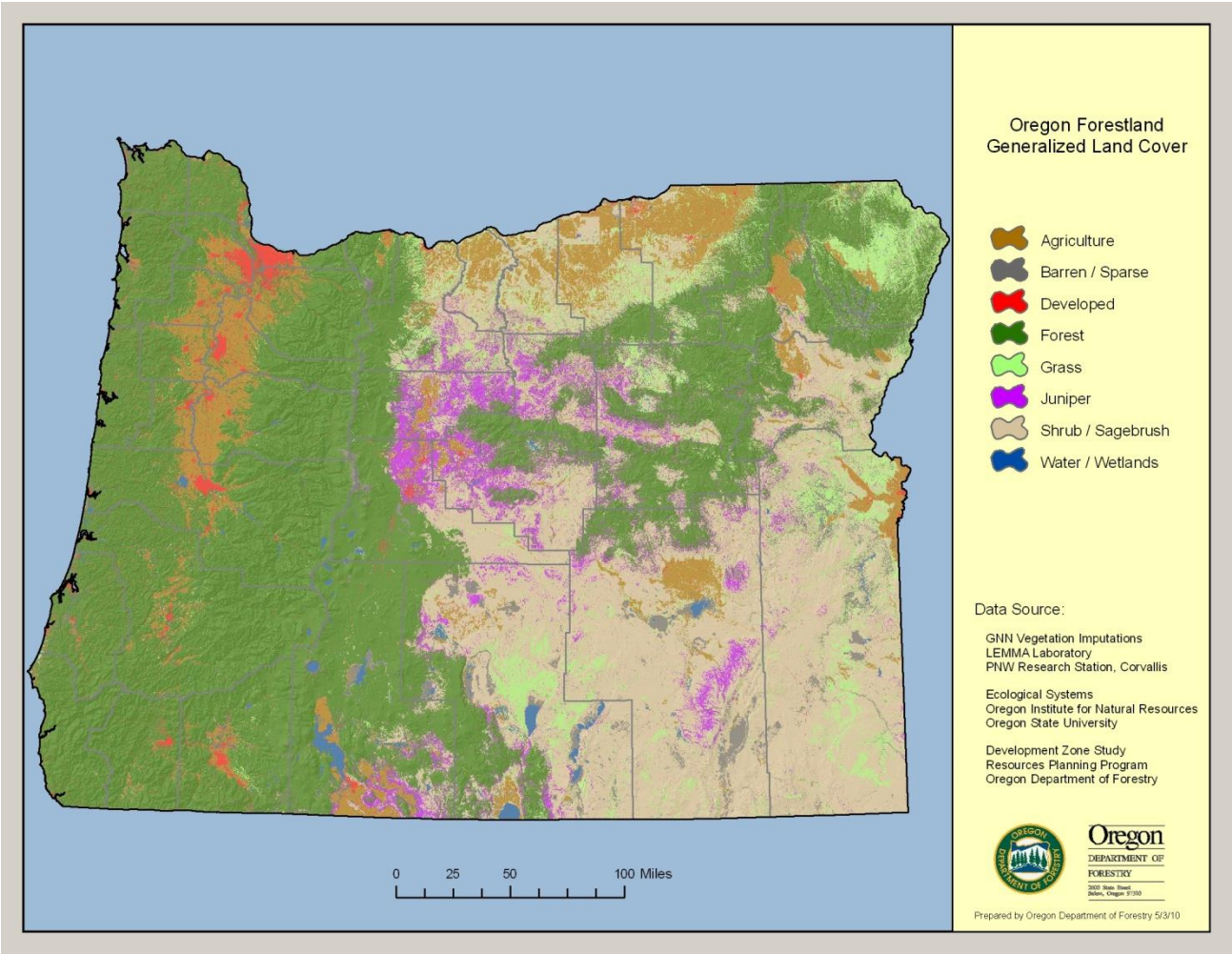

Figure 2. Oregon has experienced reductions in the extent of forest cover—largely influenced by development to non-forest uses—as well as increases in forest cover—through tree-planting and aggressive fire suppression.

A strategy for sustaining Oregon's public and private forests: Oregon Board of Forestry goals, objectives, and indicators

The goals of the 2011 *Forestry Program for Oregon*

The Board of Forestry has established seven *Forestry Program for Oregon* goals for achieving the sustainable management of Oregon's public and private forests. The Board believes all the issues, challenges, and opportunities surrounding Oregon's forest resources can be organized and discussed within these seven goals. The goals are:

Goal A: Promote a fair legal system, effective and adequately funded government, leading-edge research and education, and publicly-supported environmental, economic, and social policies.

Goal B: Ensure that Oregon's forests make a significant contribution towards meeting the nation's wood product needs and provide diverse social and economic outputs and benefits valued by the public in a fair, balanced, and efficient manner.

Goal C: Protect and improve the productive capacity of Oregon's forests.

Goal D: Protect and improve the physical and biological quality of the soil and water resources of Oregon's forests.

Goal E: Conserve diverse native plant and animal populations and protect and improve their habitats in Oregon's forests.

Goal F: Protect and improve the health and resiliency of Oregon's dynamic forest ecosystems, watersheds, and airsheds.

Goal G: Improve carbon sequestration and storage and reduce carbon emissions in Oregon's forests and forest products.

More details on the importance and relevance of these goals are provided in the following sections.

It is important that the seven goals of the *Forestry Program for Oregon* be viewed and understood as a whole (see Figure 3). There is a built-in integration and tension among these goals and the 2011 *Forestry Program for Oregon* is designed to recognize and address that integration and tension in a manner that best serves Oregonians.

Please note the order in which the seven goals of the 2011 *Forestry Program for Oregon* are listed is not intended to indicate priority, nor is it intended that all strategies should be applied equally on every forest ownership. Instead, the goals should be viewed from a statewide, landscape perspective, with different landowners making different contributions (see Figure 4).

Figure 3. Oregon's framework of sustainable forest management goals

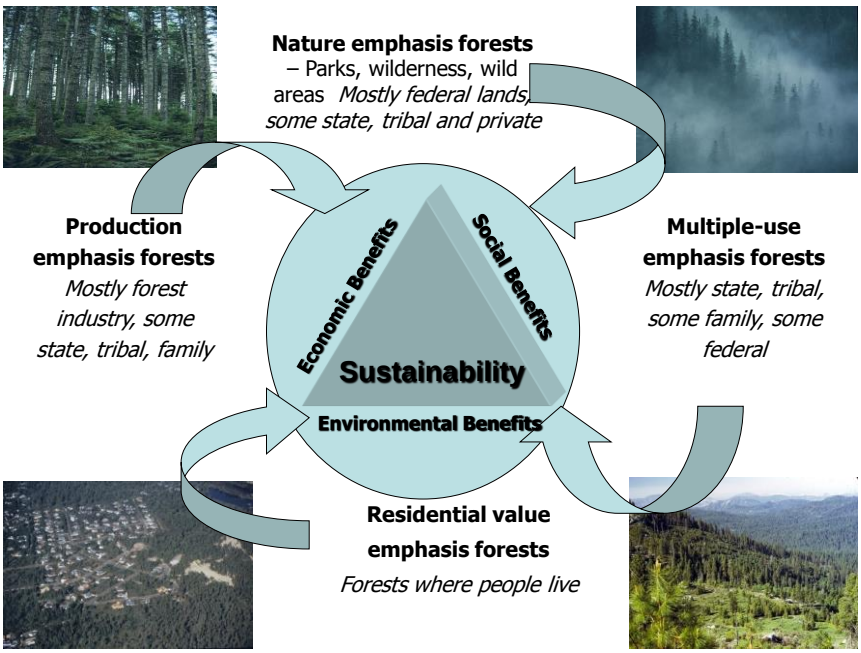

Figure 4. The diversity of Oregon's forest landowner objectives, in the appropriate proportions and locations, can contribute to the sustainable management of the state's forest resources.

What information is needed to determine if Oregon's forests are being managed sustainably?

To answer this question, the Board of Forestry endorsed 19 Oregon indicators of sustainable forest management recommended by a diverse advisory committee of Oregonians in 2007 (see Figure 5). These indicators represent a way to share common interests, and to promote agreement about forest issues. The indicators are scheduled for review and possible revision following adoption of the 2011 *Forestry Program for Oregon* to ensure they remain valuable tools for measuring progress toward achieving the seven goals in the strategic plan.

These indicators are intended to address all Oregon public and private forestlands. They belong not just to the Board but to all Oregonians, regardless of their values and perspectives. Oregon indicators may also provide valuable linkages to other sustainability conversations and forest resource assessments at community, regional, national and international scales.

Well-designed sustainable forest management indicators can:

- Convey critical and complex information more simply to build public confidence and facilitate better communication and cooperation among all parties interested in forest resources;
- Inform social understanding of forests and the forces that influence them;
- Provide a framework around which natural resource inventory, assessment, planning, and management can be better coordinated;
- Provide citizens interested in forests with a tool to encourage society to better address and communicate what it needs from forests; and
- Help to repair a fragmented administrative landscape by providing a common language for measurement and discussion.

The 19 indicators are organized and listed under the seven *Forestry Program for Oregon* goals. Indicator reports can be accessed at: http://www.oregon.gov/ODF/indicators/list.shtml

By linking together the desired trend statements for each of the 19 Oregon indicators, a clearer picture emerges about what sustainable forestry looks like to Oregonians:

<u>Oregon will be making progress in sustainably managing its forests if:</u>

- There is no net loss in the area of Oregon non-federal wildland forest in 2020 compared to 2009 levels. (Oregon Benchmark 82 and Indicator C.a.)
- Oregon timber harvest levels are 90 to 110 percent of planned and projected levels (Oregon Benchmark 83) and the potential to grow timber is stable or increasing. (Indicator C.b.)
- Forest-related revenues are a significant and predictable funding source for state and local public services dependent on those revenues. (Indicator B.a.)

- Forest-related employment and compensation are stable or increasing. (Indicator B.b.)
- Forest ecosystem services produced are stable or increasing and are sustainable. (Indicator B.c.)
- Production and commercial value of Oregon wood and paper products and forest industry equipment are stable or increasing. (Indicator B.d.)
- Water quality index values in forested watersheds are stable or improving. (Indicator D.a.)
- The aquatic biological integrity of forested watersheds is stable or improving. (Indicator D.b.)
- An increasing proportion of sampled forest roads are determined to pose a low risk to soil and water resources. (Indicator D.c.)
- The composition, diversity, and structure of forest vegetation are within, or growing towards, desired future condition ranges established through the *Oregon Conservation Strategy.* (Indicator E.a.)
- Allocations of forest cover types to protected area categories are consistent with desired future conditions established through the *Oregon Conservation Strategy*. (Indicator E.b.)
- A decreasing number of native forest plant and animal species at risk (extinction, extirpation, endangered, threatened, or potentially endangered or threatened). (Indicator E.c.)
- There are stable or decreasing long-term levels of dead and dying forest trees. (Indicator F.a.)
- No invasive species on Oregon's 100 most dangerous list are uncontained in the state's forests, and a stable or decreasing forest acreage is affected by invasive species. (Indicator F.b.)
- There are increasing rates of effective forest fuel treatments to improve resiliency to wildfire and an increasing area of Oregon forestland resilient to wildfire. (Indicator F.c.)
- Rates of carbon sequestration and storage in Oregon forests and forest products are stable or increasing. (Indicator G.a.)
- Oregon student and family forest landowner participation in forest education programs is increasing and forest research funding, higher education forest instruction, natural resource professional society membership, and forestry extension staffing are maintained or increasing. (Indicator A.b.)
- There are high levels of compliance with management plan standards and guidelines on Oregon federal forestlands. Voluntary compliance with Oregon Forest Practices Act requirements for reforestation and other activities on private lands is high. Public policy expectations for private forest landowners' contributions to the protection and maintenance of public forest resource values are clear. (Indicator A.c.)
- Data for all Oregon indicators of sustainable forest management are increasingly current, complete, and reliable. (Indicator A.a.)

See Appendiies 3 and 4 for information on how indicator data are evaluated to draw conclusions about conditions, trends, and information quality.

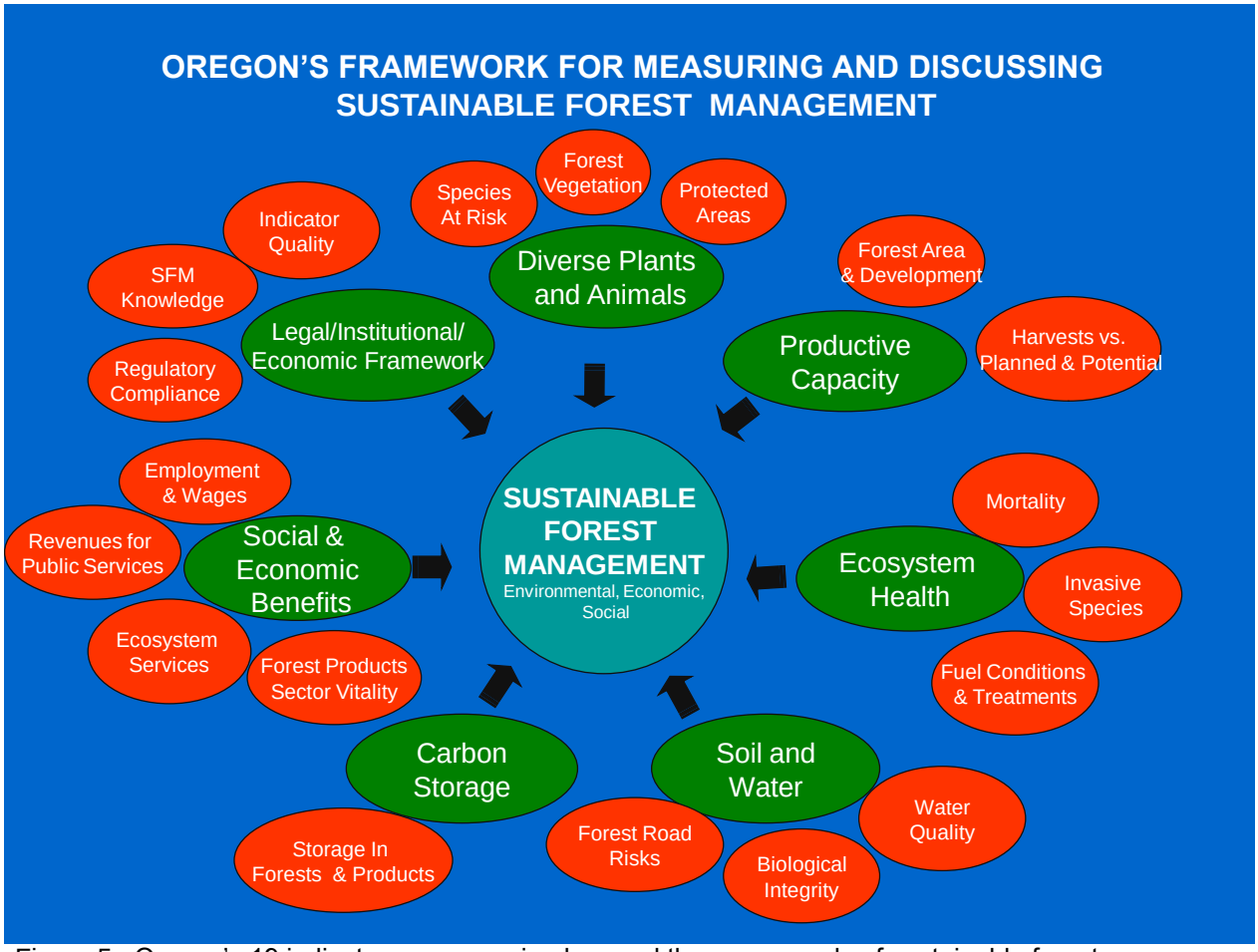

Figure 5. Oregon's 19 indicators are organized around the seven goals of sustainable forest management

We get into trouble only if we see the tree in the garden as wholly artificial and the tree in wilderness as wholly natural. Both trees in some ultimate sense are wild; both in a practical sense now require our care. We need to reconcile them, to see a natural landscape that is also cultural, in which city, suburb, countryside and wilderness each has its own place. We need to discover a middle ground in which all these things, from city to wilderness, can somehow be encompassed in the word "home." Home, after all, is the place we try to sustain so we can pass on what is best in it (and in ourselves) to our children.

- William Cronon, The Trouble With Wilderness, 1995.

The following section provides more information on the seven *Forestry Program for Oregon* goals and proposes objectives to guide Board Work Plans and to become the focus of the Board's strategic decision-making. This list of objectives will be reviewed and revised, as needed, on a two-year cycle.

Goal A: Promote a fair legal system, effective and adequately funded government, leading-edge research and education, and publicly-supported environmental, economic, and social policies.

Why is this goal important?

The institutional framework in place outside the forest greatly affects what happens within it. The soundness and effectiveness of our laws, government processes, research institutions, policies, and programs will determine our success or failure to define and achieve sustainability. If we provide an adequate and appropriate institutional framework for the management of our forests, we will significantly increase our ability to achieve any of the other goals proposed in this *Forestry Program for Oregon.*

The Board of Forestry will work to achieve the following *Forestry Program for Oregon* Objectives for Goal A:

1. Explore alternative, more stable funding mechanisms for the department budget directed at maintaining and increasing public and private investments in forests and in keeping forests in forest use.

2. Support an effective, science-based, and adaptive Oregon Forest Practices Act and a strong, but flexible, Land Use Planning Program as the cornerstones of forest resource protection on private lands in Oregon. The Board will use non-regulatory methods as much as feasible to achieve public-policy goals on private forestlands, and consider the use of additional regulatory methods only when non-regulatory methods are either not feasible or are not likely to achieve the desired outcome.

3. Integrate adequately funded indicators of sustainable forest management, adaptive forest management, monitoring, assessments, systematic evidence reviews, and research -- particularly research regarding the scientific principles of ecosystem dynamics -- into learning, planning and decision-making processes.

4. Active federal forestland management is very important to sustainable forestry in Oregon. The Board will consider national, state, and local opportunities to promote federal forest policies and management that are consistent with advancing the recommendations in its January 2009 report, *Achieving Oregon's Vision for Federal Forestlands*. These opportunities may include influencing federal national forest policies and budgets, interagency cooperative efforts, and local collaborative groups.

5. Support a comprehensive State of Oregon forest cluster economic development strategy and work to build and maintain state government resources needed to successfully implement the strategy.

6. Forestlands managed by the Board of Forestry consistent with its statutory authority will be promoted as an example of multiple resource management, and a practical demonstration of one forest ownership's contributions to the Board's statewide goals for environmental, economic, and social forest sustainability.

7. Foster a governing environment where public forest management and policy decisions use democratic processes and build accountability and trust between all parties, where human well-being and equity are goals of the process as well as outcomes of the forest management decisions.

8. Promote fulfillment of the shared responsibilities of homeowners, road users, forestland owners, forest operators, and state and local governments for any additional actions to reduce public safety risks with respect to landslides.

Key challenges and opportunities

While Oregon has well-developed legal, institutional, and economic systems, some elements of our current framework with regard to forest policy and practice are inadequate and coordination among levels of government is sometimes less than ideal. These shortcomings make it difficult to address larger landscape-scale forestry issues or issues that cross jurisdictional boundaries. Our laws, policies, social structures, and economic traditions have not always kept pace with scientific advancements, and many progressive efforts are under-funded. Because it has evolved to meet changing objectives over time, our institutional forestry framework contains internal contradictions. Perhaps most important, many components of this framework have been based largely on an unrealistic ideal of maintaining static conditions in forest ecosystems that are actually highly dynamic.

Government -- Federal

The major federal statutes governing forestlands (i.e. Endangered Species Act (ESA), National Environmental Policy Act, Clean Water Act, National Forest Management Act, Federal Land Policy and Management Act, etc.) have remained relatively unchanged for decades.

The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. While private landowners are not responsible for the recovery of threatened or endangered species, the ESA makes it unlawful for a person to 'take' a federally listed plant or animal species without a permit. The definition of take includes a broad range of activities, such as harassment and harm to actually killing the animal. The broad definition of take and potential for regulation creates uncertainty for landowners concerned about how their property may be affected by or play a role in

species protection and recovery. This uncertainty can change landowner management strategy, and in some cases lead to preemptive harvesting or not engaging in restoration activities to avoid habitat conditions that could benefit (attract) a listed species.

Inter-agency collaboration and landowner incentive programs have a role in alleviating this uncertainty. For example, the Department of Forestry has recently entered into a Programmatic Safe Harbor Agreement for the Northern Spotted Owl with the Natural Resources Conservation Service and the U.S. Fish and Wildlife Service. The regulatory assurances provided under the Agreement may encourage landowners to engage in activities that would potentially encourage owls to inhabit their properties. As an additional incentive, cost-share and conservation easement monies may be available to qualified landowners through Natural Resources Conservation Service's Healthy Forest Reserve Program.

Federal forest health and sound stewardship of federal lands are critical to Oregon's current and future well-being and Oregonians are working together to exercise greater and more direct influence on how these forests are managed and used. Federal agencies manage 60 percent of the total forestland in the state, and Oregon cannot chart a sustainable, productive future for its forests without considering federal forestlands. In 2005, the Oregon Legislature and Governor Kulongoski, with strong bipartisan support, directed the Board of Forestry to create a forum for interagency cooperation and collaborative public involvement regarding federal forest management issues. With the assistance of its Federal Forestlands Advisory Committee, the Board of Forestry adopted a report, *Achieving Oregon's Vision for Federal Forestlands*, in January 2009 that establishes a unified vision of how federal lands should contribute to sustainability. Work is continuing to implement these recommendations.

The 2005 Oregon Legislature also provided authority for the state to enter into a stewardship contract agreement with federal agencies to carry out forest management activities on federal lands.

A national discussion is needed to resolve the tension between national interests and local interests in the management of federal forestlands. People living near federal forests need to be empowered to take part in decisions affecting the forest's future, so intimately tied up with their own. Good faith efforts are already taking place to improve local and national discussions about forest management on federal lands, and more cross-cutting work among many interest groups is encouraged to find common ground on federal forest policies.

Government – State

The Oregon Legislature has delegated significant policy-making authority to various boards and commissions. The Legislative and Executive branches of both state and federal levels of government are subject to swings in political power that can create problems for a long-term activity like forest and other natural resources management.

The board-and-commission system provides some policy stability by mitigating these political shifts.

A key challenge and opportunity for the Board of Forestry is developing and funding a new vision for the state programs that interact with private forest landowners. These programs must be as effective as possible in keeping forestlands in forest use, and in meeting specific needs in the full range of landscapes: industrial and investment forests, family forestlands, and forests in cities, suburbs and the urban interface. Funding and cost-efficiency in the administration of the Oregon Forest Practices Act is currently a dominant issue. The Forest Practices Act is the predominant regulatory mechanism that supports landowners meeting their management objectives while protecting non-timber values on private and state forestlands.

The Forest Practices Act includes a set of best management practices to meet state water quality standards. Land uses on private lands not under the jurisdiction of the Forest Practices Act are not subject to the same extensive requirements. This may create issues of equity and a disincentive to retain private forestland for forest uses.

Oregon's land use planning laws have been the primary tool limiting development and keeping land in forest production. Recent voter-approved ballot measures have resulted in changes to the administration of these laws that may result in more conversion of forestlands. Conversely, land conservation tools such as easements, transferable development rights, and rural reserves provide new opportunities to encourage the retention of private forestlands.

There has been a political shift towards taking aggressive action to reduce carbon emissions and mitigate climate change. The 2007 Legislature mandated a reduction in Oregon's greenhouse gas emissions to 10 percent below 1990 levels by 2020 and to 75 percent below 1990 levels by 2050. Future changes to federal or state laws may create cap-and-trade systems to meet carbon emissions goals and may provide increased opportunities for biomass power and fuel production or a system of carbon credits for growing timber.

Work continues to revise and improve management of state-owned forests to produce optimal levels of environmental, economic and social benefits. These forests comprise only three percent of the Oregon forest land base, but continue to be the focus of public debate regarding their purpose and future management. Oregon's state forests have the potential to serve as a demonstration for a "third path" of forest management that differs from both the industrial model on many large private forest ownerships and the reserves-based model employed on federal forestlands.

Government – Tribal

Nine federally recognized Indian tribal governments are located in Oregon. Many Oregon tribes manage their own forest resources. Oregon has formalized its relationship with tribal governments in law to provide a process to resolve potential

conflicts, optimize intergovernmental relations, and improve the exchange of ideas and resources. State agencies are required to consult with tribal governments in developing state policies that may affect tribes.

Government -- Local

The Oregon Legislature has established clear limits on the ability of local governments to regulate forest practices. Local government may regulate forest practices only within Urban Growth Boundaries. Some counties own and manage forestland of their own, but management of these forests is also regulated under the Forest Practices Act.

Local governments play an important role in implementing the state's land use planning program. Local governments also manage urban and community forests, the mosaic forest of the planted landscape and the remnants of native forest retained as our cities developed. These are forests where people are not just visitors, but where most Oregonians live. Urban and community forests make very important contributions to the environmental, economic, and social health of the state. They help conserve energy and maintain water quality. These forests increase property values and generally improve the quality of community life. Among other benefits, forests in and near cities absorb carbon dioxide and air pollution while releasing oxygen.

Research

State government maintains forest research and extension programs through its land-grant university, Oregon State University. Forest research has generated key information for policy-making as well as for land management. Oregon State University forestry extension education provides a means of transferring knowledge to forest landowners and others concerned with the field application of research. The federal Pacific Northwest Research Station and the private landowner community have also been important forestry research partners with the state. Research and extension at the state level are coordinated with the companion federal effort.

Besides leading in research, Oregon State University, along with other Pacific Northwest universities, has the capacity to educate natural resource specialists such as biologists, geologists, hydrologists, soil scientists, forest managers, and engineers to meet the growing demands of managing our forests.

Oregon’s Watersheds Research Cooperative is currently conducting a series of long-term paired watershed studies throughout Oregon to evaluate the environmental effects on water and fish of contemporary forest management practices now in use on younger intensively managed forests.

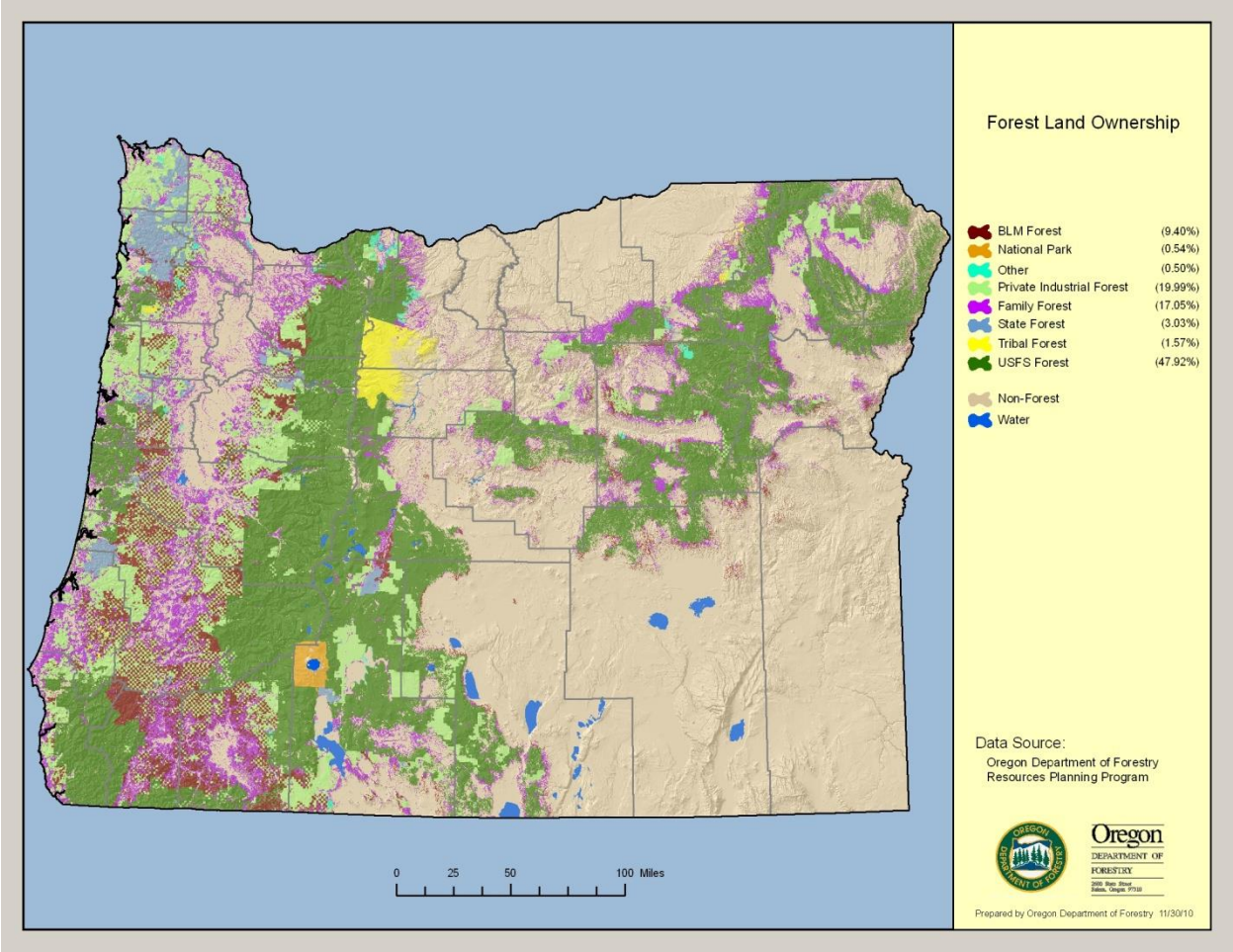

Figure 6. Oregon's forests are held by a variety of owners - federal, tribal, state, and local governments, as well as private industrial owners and family forest or small woodland landowners. Note that federal agencies are the majority owners of forestland in Oregon, particularly in eastern Oregon.

Private Sector

Private forest landowners, both industrial and nonindustrial, have a long-standing and important role in the evolution of Oregon's forest policies. In recent years, many vertically-integrated Oregon private forest products companies have divested themselves of their forestlands as a result of changes in federal tax law. These lands are now predominantly managed by either timber management investment organizations or real estate investment trusts. Nonindustrial owners are a diverse group of individuals, families, and organizations that own forestland for a diversity of purposes. Both industrial and nonindustrial owners have associations to represent their political interests.

Nonprofit institutions, with their range of views, objectives, and methods, are also important in developing forest policy. Most nonprofit groups work at the public policy level or through judicial actions to achieve their goals. Others are more directly involved in land management, acquiring lands or easements to fulfill their organizational mission.

Various forest certification systems represent a new type of nongovernmental institution. Certification is evolving as a market-based incentive, encouraging products that are guaranteed to have met certain environmental, economic, and social standards in their production.

Finally, some parties feel disenfranchised by existing institutions and collaborative processes and pursue their objectives through litigation or ballot initiatives. In rare instances, civil disobedience or illegal means have been used by individuals and groups seeking change instead of using existing governmental frameworks. The Board of Forestry and other policy-making bodies should seize the opportunity to build greater accountability and trust between all parties, where human well-being and equity are goals of the process as well as outcomes of the decisions.

Public Safety

Continued policy discussions are needed regarding forest landslides and public safety. Effective protection of the public requires shared responsibilities among homeowners, road users, forestland owners, and state and local governments to reduce the number of persons living in or driving through locations prone to shallow, rapidly moving landslides during periods when they are likely to occur.

Other Environmental, Economic, and Social Policy Frameworks

As Oregon becomes increasingly urbanized, there is a perception that urban populations may view traditional forest economic values as a low priority. It is true there has been a decline in political support for active forest management on federal lands, and declining public investment in state programs that contribute to sustaining economic values on private forestlands. However, recent surveys of both urban and rural Oregonians' values and beliefs about forestry issues indicate a potential for considerable agreement on a range of important topics.
Under current land management policies and projections of population growth, Oregonians within the next several decades could consume more wood products than are harvested from the Oregon's forests. This could potentially shift timber harvesting from Oregon's forests to areas with less environmental protection and lower productivity. Oregon's forest resource policies should be looked at in a global context and should not result in unintended adverse effects to the global environment or place Oregon forest landowners and businesses at a disadvantage in the global marketplace. Policies should instead encourage local forest land managers to harvest timber in ways that increase social, economic and environmental benefits to Oregonians and which provide incentives to keep forestland in forest uses.

". . . [P]eople who live and work, raise their families and build their communities, on a particular landscape cannot be and will never be persuaded by any amount of purely legal reasoning that people who have no such dependence on or knowledge of those landscapes should have an equal say in their governance. In the end, sovereignty cannot be a matter of raw legal jurisdiction. Unless the way people actually live in a given place--their living relationship with land and landscape--is made a part of the pattern of sovereignty, that pattern cannot be sustained over time."

- Daniel Kemmis, This Sovereign Land, 2001

How are we doing?

The following Oregon Indicators of Sustainable Forest Management address Goal A.

Indicator A.a. Ability to measure and report on all other Oregon sustainable forest management indicators

Desired trend: Data for all Oregon indicators are increasingly current, complete, and reliable.

Condition	**Trend**	**Information**
Mixed	**Uncertain**	**Partial**

Indicator A.b. Development and maintenance of sustainable forest management knowledge

Desired trend: Oregon student and family forest landowner participation in forest education programs is increasing and forest resource research funding, higher education forest resource instruction, natural resource professional society membership, and forestry extension staffing are maintained or increasing.

Condition	**Trend**	**Information**
Unknown	**Uncertain**	**Partial**

Indicator A.c. Compliance with forestry regulations

Desired trend: High levels of compliance with management plan standards and guidelines on Oregon federal forestlands. High levels of voluntary compliance with Oregon Forest Practices Act requirements for reforestation and other activities on private lands. Clear public policy expectations for private forest landowners' contributions to the protection and maintenance of public forest resource values.

Condition	**Trend**	**Information**
Good	**No change, but . . .**	**Inadequate**

Reports for these indicators are available at:
http://www.oregon.gov/ODF/indicators/indicatorsA.shtml

Goal B: Ensure that Oregon's forests make a significant contribution towards meeting the nation's wood product needs and provide diverse social and economic outputs and benefits valued by the public in a fair, balanced, and efficient manner.

Why is this goal important?

Forests are important to people because they offer a range of environmental, economic, and social values. Some of the values that come from forests are obvious. Forests provide direct social and economic benefits that include wood products, recreation, jobs, incomes, clean water, non-timber forest products, and timber sale and tax revenues to governments and school districts. Other values are less measurable, such as solitude, scenic beauty, habitat for plants and animals, and spiritual renewal. Oregon's forests also provide environmental benefits such as purifying the state's air and water resources. These forest ecosystem service values may not be measurable in dollars and cents, but they have an economic impact. They contribute to Oregon's high quality of life and help the state attract desirable industries, tourism, and skilled workers. This contribution in turn generates additional jobs, incomes, and tax revenues.

If forests continue to provide the social and economic values and environmental services that people want and need, it is likely they will be sustained. If forests cease to provide these benefits, they may be perceived as increasingly unimportant and risk being converted to other uses.

The Board of Forestry will work to achieve the following *Forestry Program for Oregon* Objectives for Goal B:

1. Continue to assess the unique challenges and opportunities facing federal, state, local government, tribal, industrial, investment, and family forest landowners and promote policies that result in economic conditions sufficient to encourage continued retention of, and investment in, forestlands in each of these ownership groups.

2. Promote the development of new forest resource markets, such as forest biomass, carbon sequestration, and other ecosystem services that reward landowners for maintaining their lands as forests.

3. Promote employment, economic activity, and revenue from management of forestlands to support the forest sector's contributions to state and local government social services, such as health care and education.

4. Promote long-term strategic investments that support Oregon's forest industry, maintain Oregon's competitive advantage in a diversity of forest products and markets, and maintain the state's dominance as a net exporter of value-added wood products. The Board will also encourage work to strengthen relationships between Oregon's forest cluster and green building cluster.

5. Develop and implement forest policies potentially affecting federally-recognized Oregon tribes in consultation with those affected tribes in a government-to-government relationship, consistent with state statutes.

6. Support programs that enhance urban and community forest values and that increase Oregonians' understanding of the important role urban and community forests play in providing environmental, economic, and social benefits. The Board will also promote greater understanding of the dynamics of forest ecosystems and their interaction with urban areas.

7. Widely communicate Oregon forest health and forest cluster and rural community economic vitality as priorities of the State of Oregon. Work with other organizations to revitalize the economy and social fabric of rural communities and to promote the values they provide to all Oregonians are maintained and compensated. The Board will consider the social effects on rural communities from forest management policies and practices.

8. Promote forest-based opportunities to serve the outdoor recreation needs of an increasingly diverse population.

Key challenges and opportunities

Economic Trends

Recent national and international economic downturns are examples of external factors beyond the control of Oregonians that will continue to impact our forest resources and forest-based economy. However, Oregon remains well-positioned to benefit economically from its forest resources. Our native forests are a resource regenerated and maintained essentially free by the sun, soils, and rain. The shelter and fiber our forests provide meet basic human needs. Unlike other areas of the world, Oregon enjoys stable land tenure. Our well-developed and highly efficient primary and secondary wood products manufacturing sectors provide high-wage jobs, and high employment multipliers. Oregon is located ideally to supply expanding markets in the western United States and throughout the Pacific Rim.[2]

A key to sustaining the values Oregonians want from our forests is creating a social and economic environment where public and private landowners are willing to invest in their forestlands and retain them in forest uses. Unfortunately, Oregon faces deteriorating forest health, disinvestment in forestland ownership, and eroding manufacturing capacity, particularly east of the Cascade Range. While people may debate the pros and cons of historic and current timber harvest levels, comparison of those harvest levels and effects of changes on manufacturing infrastructure are

[2] Based remarks by Bettina Von Hagen of Ecotrust at an April 6, 2010 Starker Lecture at Oregon State University. http://www.cof.orst.edu/starkerlectures/

informative. Total eastern Oregon harvests in 2009 were 17 percent of those in 1986. Federal timber harvests were seven percent of 1986 harvest levels while private harvests declined to 41 percent of 1986 harvests. Declining timber harvesting in eastern Oregon has affected rural community stability. The reduction in harvesting forced a decrease in the number of operating forest products mills in eastern Oregon– from 68 in 1980 to just 14 in 2010. This number could drop further by 2015. This has resulted in the erosion of well-paying mill jobs and jobs in local communities supplying these mills and their employees.

Recovery from these losses will be very difficult. While improving demand for logs, lumber and other wood products could result in some increase in timber harvest levels, lack of commercially mature timber on private lands, legal constraints on federal forestland, and lack of mills to cost-effectively process logs could keep timber harvests in eastern Oregon at relatively low levels for decades.

Family forestland owners are particularly affected. As nearby mills close, log transportation costs increase, stumpage prices decline, and the value of their timber goes down. Alternative investments become more attractive. The incentive to actively invest and manage their lands as working forests begins to evaporate and the probability of conversion to other uses increases.

Many conventional, vertically integrated forest products companies – those that own mills as well as lands to supply them – have disappeared from the landscape. The largest private forest tracts in Oregon now are held primarily as land investments (timberland investment management organizations and real estate investment trusts). A key driver of this trend has been a set of federal tax law changes that have made it less advantageous for single companies to hold land and mills together. The owners of large tracts may seek various economic opportunities – timber supply contracts with mills, investment gain through appreciation and resale, and selling the most profitable parcels, often those with exceptional scenic value or near populated areas, for residential use.

The landscape is also changing among smaller private forest ownership parcels. Family woodlands that have historically been managed as forests may move into residential or real estate use as they pass to a new generation. People seeking to move from more developed settings into forested landscapes may fuel the demand for relatively small forested parcels.

Five years ago, Oregon's state government lacked a coordinated policy supporting wood-products industries in the overall economy. Now there is better coordination among state agencies focusing on improving the health of Oregon's forest cluster. The Oregon Department of Forestry, Oregon Business Development Department, Oregon Forest Resources Institute, the Wood Innovation Center at Oregon State University, and the Oregon Department of Energy, along with private-sector partners have worked together as an Oregon Forest Cluster Economic Development Strategy Project Team. The team is developing a consistent statewide approach to improving the vitality of

Oregon's forest cluster. This approach has included outreach to federal partners and to private companies and associations representing them.[3]

The loss of funds to local governments through termination of the federal Secure Rural Schools and Community Self-Determination Act of 2000 will cause major budgetary problems for many Oregon local governments. Resolution of these funding issues may require a reexamination and renegotiation of the social contract between the federal government and state and local governments where federal forestlands are located.

Urban and Community Forests

Oregon's urban and community forests are major contributors to the health and well-being of its citizens. They contribute strongly to one of Oregon's major economic advantages, the perception of unsurpassed livability. This quality-of-life advantage helps attract desirable businesses and highly qualified workers. Urban and community forests also provide numerous health and environmental benefits: they help purify our air and water, control stormwater runoff, provide shade, reduce soil erosion, create wildlife habitat, and improve the health of riparian areas. In recent decades, as Oregon has become more populated and more urban, resources to manage the urban forests have lagged.

Tribal Forests

Nine federally recognized Indian tribal governments are located in Oregon. Each of these tribes has a unique legal status and each plays an important role in Oregon's society and culture. Several tribes manage there own forest resources. The tribes and the State of Oregon work together in an atmosphere of mutual respect for the sovereign interests of both parties. The government-to-government relationship that exists between Oregon's Indian tribes and the State of Oregon has been formalized in state law, providing a process that can help resolve conflicts, maximize intergovernmental relations, and facilitate an exchange of ideas and resources.

Recreation

Oregon's forests are a world famous playground both residents and visitors and our economy benefits greatly from natural resource-related recreation activities. The Oregon Department of Fish and Wildlife estimates that activities associated with fishing, hunting, and wildlife viewing in Oregon alone generated $2.5 billion in expenditures in 2008. Public and private forests provide the setting for a wide range of recreation activities, with forestlands closest to major metropolitan areas often receiving the most recreation use. For example, mountain biking in forested settings has become very popular in recent years. Forest landowners are typically not compensated for the value of these recreation experiences and therefore often do not make public recreation a primary management objective.

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[3] For more information on Oregon forest cluster economic development visit http://www.oregon.gov/ODF/RESOURCE_PLANNING/forestclusterstrategy.shtml

Important demographic and social changes in the state are affecting outdoor recreation demand. Oregon's population is rapidly aging, fewer Oregon youth are learning outdoor skills, the state's population is increasingly diverse, and -- as with the rest of the nation -- rates of physical inactivity and obesity in Oregon have reached epidemic proportions. The state's forest-based recreation providers will be challenged to adapt to these trends.

Ecosystem Services

Ecosystem services provide very important social and economic benefits such as: clean air and water, fish and wildlife habitat, spiritual spaces, and scenery. These benefits are not traded in markets but remain critical to meeting Oregonians' environmental, social and economic needs. Frameworks for comprehensively and credibly defining, measuring, and valuing ecosystem services and products and for understanding tradeoffs do not exist but such efforts are underway at the regional, national and international levels. Often, they are indirectly addressed by regulation, purchase of easements and other mechanisms outside of markets. While ecosystem services currently may not be monetized as a social and/or economic asset, they would cost significant amounts of money to replace or restore. By recognizing non-market forest resource outputs and benefits as assets with high social and potential economic value, policy-makers and forest managers could begin to better integrate them in their decision-making.

"The threats facing private working forests are traceable to a complex set of drivers, none of which act independently. These drivers interact in ways that put stress on private working forests and the benefits they provide to owners and the public. For example, in addition to affecting forest ecosystems directly, climate change is affecting the policy environment, spurring mitigation and adaptation responses that, in turn, affect markets and economic regulations. Similarly, a lack of social license to practice forestry (on both private and public lands) has direct impacts on the health and resilience of private working forests and is contributing to the decline of the forest products industry in the Western U.S. A clear understanding of these cause-and-effect relationships can lead to the development of solutions that do more than simply treat symptoms."

- Western Forestry Leadership Coalition in its 2010 report: *Threats to Western Private Forests*

How are we doing?

The following Oregon Indicators of Sustainable Forest Management address Goal B.

Indicator B.a. Forest-related revenues supporting state and local government public services

Desired trend: Forest-related revenues are a significant and predictable funding source for Oregon state and local government public services dependent on those revenues.

Condition	Trend	Information
Mixed	**Deteriorating**	**Adequate**

Indicator B.b. Forest-related employment and wages

Desired trend: Forest-related Oregon employment and compensation are stable or increasing.

Condition	Trend	Information
Poor	**Deteriorating**	**Adequate**

Indicator B.c. Forest ecosystem services contributions to society

Desired trend: Oregon forest ecosystem services produced are stable or increasing and are sustainable.

Condition	Trend	Information
Mixed	**Uncertain**	**Inadequate**

Indicator B.d. Forest products sector vitality

Desired trend: Production and values of Oregon wood and paper products and forest industry equipment are stable or increasing.

Condition	Trend	Information
Poor	**Uncertain**	**Partial**

Reports for these indicators are available at:
http://www.oregon.gov/ODF/indicators/indicatorsB.shtml

Goal C: Protect and improve the productive capacity of Oregon's forests.

Why is this goal important?

Maintaining the productive capacity of Oregon's forests means maintaining the amount of forestland and making sure harvest rates for timber and non-timber forest products do not exceed growth rates. Sustained timber harvest can help Oregon's forest products industry remain globally competitive and an important part of the state's traded sector. Sustaining non-timber forest values and products helps maintain, diversify, and strengthen other sectors of Oregon's economy and communities that use and appreciate Oregon's environment, such as the state's high-technology, recreation, and tourism industries.

A strong economy also encourages forest landowners to invest in management practices that ensure a sustainable stream of forest products and other forest values from their lands. Such investments can help them both to become competitive in global markets and to maintain their land in forest uses.

The high economic productivity of Oregon's forests contributes to a diversified statewide economy that can better weather downturns in the national economy. It also provides incentives to maintain the forestland base, which in turn provides a host of values other than economic ones. Most of the economic activity generated by Oregon's forests occurs in rural areas, where it is most needed. This economic activity is vital to rural communities, which are an essential component in the richness of Oregon's character.

The Board of Forestry will work to achieve the following *Forestry Program for Oregon* Objectives for Goal C:

1. Support land use planning and policies that promote a stable forestland base, encourage long-term investments in forestland, and keep working forests working.

2. Encourage the federal government land management agencies to achieve their statutory objectives and promote human well-being and equity by actively managing federal forestlands, including the use of commercial timber harvests and stewardship contracts where appropriate.

3. Develop policies that better address forest operations within urban and other residential emphasis forests.

4. Promote and use a variety of tools for retaining Oregon's forest land base, including public acquisition of forests.

5. Promote policy frameworks and land management assistance programs that recognize and encourage the diverse management objectives of Oregon's public

and private forest land owners. Diverse forest management objectives provide a suite of benefits which collectively, in appropriate proportions and locations, will meet Oregon's environmental, economic, and social needs.

6. Promote consideration of alternate climate change adaptation and mitigation scenarios when planning reforestation and vegetation management, particularly when managing plant species of specific climate and fire regimes.

7. Encourage forest landowners to manage their forests in a manner that is consistent with a goal of long-term wood volume growth in Oregon equaling or exceeding rates of timber harvest and mortality across all ownerships.

Key challenges and opportunities

Maintaining the Forest Land Base

New forces are reshaping Oregon's forests in ways more significant than any wildfire, windstorm, or disease outbreak. Fueled by factors including development pressures, population growth, depleted merchantable timber inventories, changing private ownerships, changing private landowners' financial objectives, and changes in the forest products and real estate markets, forestland is being threatened by conversion to non-forest uses.

This is not just an urban or rural problem. It affects Oregon's largest cities and smallest communities, and some of our most prized forested landscapes.

Oregon is following a national trend away from industrial forest ownerships that manage their land to provide a continuous flow of wood to their own mills. A shift has occurred towards timberlands that are either being managed as a separate profit center, or sold to timber investment and management organizations and real estate investment trusts. These organizational structures may be more responsive to market demand for land development. This trend may increase parcelization and to shifting land from industrial to non-industrial owners.

Many family forestlands are now going through a shift of ownership to the next generation of family members. These landowners have a broad array of values and objectives for ownership, but they often lack the knowledge to implement their objectives and are generally less able to make long-term investments in wood production. Studies indicate that the new generation of family forest landowners often view the land differently than the previous generation and are much more likely to consider selling rather than managing the land for forest-related income or other values. Good forest management plans and estate planning can help keep family forest ownerships in the family and in forest use.

Unaddressed, these forces stand to change Oregon's environmental, social and economic quality of life. Consider the following consequences:

1. The presence of development in forested areas changes makes wildfire management more difficult—placing homes at risk, making firefighting more complicated, and increasing firefighting costs.
2. Fragmentation and parcelization of forests, combined with the development of roads and residences, can degrade the "green infrastructure" of a forested watershed, including clean water, diversity of fish and wildlife species, and the quality of forests habitats.
3. Conversion from forest use dramatically changes the way the surrounding landscape is managed, limiting the range of traditional forestry practices. In many areas, the notion of producing a timber value from the lands—even in the context of sustainable forestry practices—is no longer acceptable to new nearby residents or landowners.
4. When formerly productive timberlands are converted to non-forest uses, surrounding economies and supporting industries are often affected because forest products-related businesses are no longer viable.
5. Harvest taxes are no longer available to support local government services and education.

Taken together, trends in forestland ownership and development, combined with projected population increases, could have major effects on Oregon's forests, their health, and the benefits they provide. However, a variety of solutions are emerging. Many conservation groups recognize the value of working forests. Some purchase land at risk of fragmentation and hold it or facilitate its transfer to other entities that then manage it for an array of values. Additionally, interest is growing in a number of tools, including conservation easements, transfer of development rights, and markets in carbon sequestration and storage and other environmental services, that can help landowners derive sufficient economic benefit to keep their land in forest use. Development of these methods could benefit from public policy support.

Forest Tree Growth, Harvest, and Mortality

Oregon timber harvests have declined over the last two decades. Timber harvest on all Oregon forestlands fell from 8.7 billion board feet in 1986 to 4.5 billion board feet in 2004 and to 2.7 billion board feet in 2009, the lowest level since 1934.

Private harvest levels have been between 62 percent and 107 percent of sustainable levels based on current management objectives over the last five years, averaging 89 percent of sustainable levels. Harvests from corporate landowners have remained relatively stable while timber harvesting on family-owned forestland has declined dramatically over the last several years. Family forestland owners are very price-responsive and their timber harvests have been declining following declines in stumpage prices related to a weak housing market. Demand for housing is projected to recover slowly followed by a rebound in stumpage prices. However, log prices recently rebounded thanks to a strengthening export demand.

Public harvests are well below levels considered to be sustainable under approved management plans even though public sustainable target levels have been reduced several times to account for changing plans and policies. Difficulties in planning, offering, and harvesting timber sales on federal lands have resulted from budget constraints and the continued threat of litigation. Public lands are now harvesting approximately 11 percent of their potential for growing timber while providing other benefits desired by the public. Over the last decade, public forests harvested between 73 and 96 percent of the harvest levels targeted in management plans, averaging 86 percent.

Harvests from Oregon's federal forests have recovered from their record 2001 lows, but still remain well below planned levels. Without Congressional action, little change in timber harvest volumes is expected from Oregon's federal forests. Both the USDA Forest Service and the USDI Bureau of Land Management are underfunded and both agencies' administrative processes for land management plan revisions have stalled.

Oregon's timber harvests will likely increase over the next decade. Oregon's forest products industry remains highly competitive and could increase its contribution to national, state, and local economies. Export demand for logs and lumber is strengthening. Oregon's strengths include its highly productive forests, an effective timber tax system, strong industry infrastructure in western Oregon, proximity to rapidly growing markets, excellent forestry research and teaching institutions (notably the US Forest Service Pacific Northwest Research Station and the Oregon State University College of Forestry), a stable forestland base, and effective laws regulating land use and forest practices.

"As the state's population continues to escalate, pressures on forestry profitability encourage landowners to sell, fragment, and potentially convert forest land to alternate uses—heightening calls to reform Oregon's land use system. . . . The public values provided by forests are increasingly understood—indeed, many prominent conservation organizations now actively manage forests to support environmental, social, and economic objectives—and conservationists across the country are working with forest businesses and policymakers to protect working forests."

- Matthew W. Donegan, Forest Capital Partners, LLC, 2007

How are we doing?

The following Oregon Indicators of Sustainable Forest Management address Goal C.

Indicator C.a. Area of non-federal forestland and development trends

Target: No net loss in 2020 in the area of Oregon non-federal wildland forest compared to 2009 levels. (Also recommended new target for identical Oregon Progress Board Benchmark 82)

Condition	Trend	Information
Good	**Improving, but . . .**	**Adequate**

Indicator C.b. Timber harvest trends compared to planned and projected harvest levels and the potential to grow timber

Target and desired trend: Oregon timber harvest levels are 90 to 110 percent of planned and projected levels (Oregon Progress Board target for Oregon Benchmark 83) and the potential to grow timber is stable or increasing.

Condition	Trend	Information
Poor	**Uncertain**	**Adequate**

Reports for these indicators are available at:
http://www.oregon.gov/ODF/indicators/indicatorsC.shtml

Goal D: Protect and improve the physical and biological quality of the soil and water resources of Oregon's forests.

Why is this goal important?

Soil and water are basic elements of forest productivity. Forest soils are also important for the regulation of surface and groundwater flow. The interaction of soil and water plays an important role in the health of the streams and rivers flowing through Oregon's forests. Clean water is critical to our quality of life. More than half of Oregon's population depends on drinking water supplies that originate on or are protected in part by forestlands. Oregonians also depend on high-quality water for fisheries, industry, recreation, and agriculture. State and federal water quality regulations require water resources to meet water quality standards.

The Board of Forestry will work to achieve the following *Forestry Program for Oregon* Objectives for Goal D:

1. Use education, engineering, incentives, and enforcement of the Forest Practices Act to protect soil productivity and water quality on non-federal forestlands.

2. Promote understanding, acceptance, and support across all land uses for relevant evaluations of water quality conditions based on beneficial uses, and the use of these evaluations to develop stream protection policies across land uses that result in consistent application of state water quality standards.

3. Promote continued long-term watershed research to study the effectiveness of the most current forestry best management practices in providing protection for soil and water resources and promote the sharing and application of new knowledge.

4. Promote the maintenance of forestland in forest uses and promote the establishment of new forests as key elements in promoting high quality water and protection of soil productivity.

5. Promote forest management that perpetuates the ecological processes—including disturbance dynamics—that contribute to desired aquatic habitat and water quality using a landscape level approach.

6. Support and contribute to continuing statewide efforts under the Oregon Plan for Salmon and Watersheds to enhance, restore and protect Oregon’s native salmonid populations, watersheds, water quality, and fish and wildlife habitat, while sustaining a healthy economy.

7. Recognize that private forest landowners’ contribution to providing Oregonians with high quality drinking water is achieved through compliance with state water quality standards.

8. Promote management practices that protect forest soil productivity from losses due to human-induced landslides, soil erosion, and soil compaction.

Key challenges and opportunities

Forestlands generally produce the highest quality surface water in the state. The loss of forestland to other land uses directly reduces the amount of forested watersheds and potentially increases the intensity of management on remaining forests.

Some of the most productive tree-growing soils in the world are located in parts of western Oregon. Undisturbed forest soils in western Oregon have a high capacity to absorb rain--up to three feet per hour. Surface erosion is usually not a major source of sediment in these forests. Heavily disturbed or compacted soils, however, have reduced infiltration capacity, and disturbance along stream banks can be a significant sediment source, as can poorly designed or maintained forest roads. Therefore, protection of forest soils is important for productivity and water quality. Forest soils can also store significant amounts of carbon.

Dynamic Forest Ecosystems

Efforts to protect and manage water and soil resources from fire must also take into account the dynamic nature of forests. Fire causes significant changes in sediment deposition and streamflow, altering the condition of forest soils and water at the watershed or even the landscape scale. These periodic, long-term natural disturbances and their structural legacies are critical in maintaining the forest's aquatic habitat features over time. To reduce long-term risks to soil and water quality from unnaturally intense fires, fire suppression can be coupled with prescribed fire use and active vegetation management.

Severe storm effects observed between 2006 and 2008 have highlighted the impact of stream crossings on the movement of woody debris and the negative impacts of crossing failures (blow-outs) on fish and aquatic life. Climate change effects on streamflows in the Pacific Northwest may invalidate past assumptions hydrologists and others have used to determine sufficient stream passage measures.

There is significant landslide risk on very steep slopes regardless of forest age, especially in certain geological formations in which major storms and landslide processes are the dominant means by which the landscape and aquatic habitats are shaped. Timber harvesting can affect the occurrence of shallow, rapidly moving landslides on steep slopes with a high inherent risk of landslides.

Managing for the outcomes we expect from Oregon’s streams and rivers, including clean water and salmon habitat, requires acceptance of considerable variation in the structure, function and composition of the riparian environment in response to

natural disturbances. Dramatic changes in streams—including what we might consider short-term degradation—are necessary and desirable over time and across the landscape in appropriate distributions, proportions, return intervals, and intensities. Managers need to perpetuate the ecological processes—including disturbance dynamics and riparian heterogeneity —that contribute to desired habitat and water quality. A landscape level approach is needed. An appropriate vision statement for stream management is to manage for a range of stream conditions that provide for self-sustaining populations of native species and contribute to a healthy and productive landscape.

Forest Practices Act Requirements

A variety of activities occurring on forestlands, including forest management (timber harvesting, pesticide applications, and road construction and use), fire suppression, recreation, livestock grazing, and natural disturbances (wildfire, floods, landslides, etc.) can affect soil and water resources.

Oregon's forest practice rules require operators to reduce soil disturbance during and after logging operations. Using cable yarding on steeper slopes, for example, can significantly reduce the impact of timber harvest. Reforestation with ecologically suitable forest tree species is also required after timber harvest to ensure that trees promptly reoccupy the land and help protect the soil. Increases in stream temperatures from forest management were a larger concern in the days when logging was allowed down to the edges of streams. For four decades, however, forest operators have been required to leave buffer strips of trees and other vegetation along all fish-bearing streams and all but the smallest non-fish bearing streams. Pesticide applications on forestlands are subject to forest practice requirements that are in addition to the product label requirements and pesticide control laws all land uses must comply with.

Comprehensive Monitoring and Riparian Management Policies

Long-term watershed-scale monitoring of the physical and biological characteristics of forests is beginning to provide a stronger foundation for understanding both human and natural-caused changes in forest soils and water. The Oregon Watershed Cooperative[4] and the Oregon Department of Forestry's "RipStream" monitoring project both provide information on the effects of timber harvest on water quality and fish habitat. Research is finding that best management practices can be effective in reducing potential impacts of forest management and road systems on forest soils and water quality.

Analysis of data collected over time and space on forests managed by the State of Oregon has verified that current road construction practices have resulted in reduced miles of road with ditches draining directly runoff into streams and improved fish passage on working forest roads. More monitoring is needed to draw conclusions about conditions on federal and private forestlands. For example, forest road repairs under

[4] http://watershedsresearch.org/

the Oregon Plan for Salmon and Watersheds have been carried out at many locations, but Oregon currently lacks information on the benefits achieved by the repairs.

The various state programs that influence the management and use of riparian areas were created to achieve a variety of objectives, and their efforts today are not always well coordinated across land uses. In order to achieve water quality and aquatic habitat objectives across Oregon, the establishment, restoration, and maintenance of ecologically-sound riparian forests is needed across all land uses. Oregon also needs to promote ongoing comprehensive state-wide aquatic monitoring information across all land uses.

"Americans often assume that our health and well-being are separate from the health of the natural world. But, I return again to the simple act that we Americans take for granted everyday: turning on our water faucets. The clean water that emerges is made possible in large part by stewardship of our rural lands, and of our forests in particular. My hope is that together we can foster a greater appreciation for our forests and that all Americans, regardless of where they live, see the quality of their lives and the quality of our forests as inseparable."

- Secretary of Agriculture Tom Vilsack, 2009

How are we doing?

The following Oregon Indicators of Sustainable Forest Management address Goal D.

<u>Indicator D.a.</u> Water quality of forest streams

Desired trend: Water quality index values in forested Oregon watersheds are stable or improving.

Condition	**Trend**	**Information**
Good	**Uncertain**	**Partial**

Indicator D.b. Biological integrity of forest streams

Desired trend: Index of biotic integrity values in forested Oregon watersheds are stable or improving.

Condition	Trend	Information
Mixed or Fair	**Not available**	**Partial**

Indicator D.c. Forest road risks to soil and water

Desired trend: Increasing proportion of sampled Oregon forest roads are determined to pose a low risk to soil and water resources.

Partial data for this indicator are expected beginning in 2012.

Reports for these indicators are available at:
http://www.oregon.gov/ODF/indicators/indicatorsD.shtml

Goal E: Conserve diverse native plant and animal populations and protect and improve their habitats in Oregon's forests.

Why is this goal important?

Oregonians value native forest plants and animals for the economic, scientific, educational, cultural, recreational, and aesthetic values that they provide. Maintaining healthy forest habitat and healthy native plant and animal communities is essential to economic vitality and environmental quality of life.

Human activities can reduce, maintain, or increase biological diversity. Forest management activities can have a negative effect on certain native forest-dependent plants and animals and a positive effect on others. Both natural disturbances and human actions need to be considered collectively to assess whether native plant and animal populations and their habitats are being adequately protected and improved in Oregon's forests.

The Board of Forestry will work to achieve the following *Forestry Program for Oregon* Objectives for Goal E:

1. Manage Board of Forestry forestlands in a manner that supports and facilitates statewide efforts to conserve native plant and animal populations and their habitats.

2. Clarify Board authorities and responsibilities with respect to forest biological diversity and promote policies that will lead to a reduction in the number of at-risk Oregon native forest plant and animal species.

3. Promote coordinated state government policies to prevent and control introductions of damaging, invasive, nonnative species and pathogens on forestlands that threaten the conservation of native plant and animal populations and their habitats.

4. Promote the development of specific, measurable habitat conservation expectations for all land uses through the *Oregon Conservation Strategy*. The *Conservation Strategy* should clearly state public expectations for base-line resources site protection, as well as broader contributions of private land owners to achieve state conservation goals. The Strategy should also clarify that private forestlands will be held to the same standards for native species and habitat conservation as other private land uses.

5. Promote a variety of non-regulatory tools, such as landowner recognition, incentives, easements, exchanges, and technical assistance, to help implement the forest-related elements of the *Oregon Conservation Strategy*.

6. Advocate that local collaborative groups participate in defining and delineating the amount and characteristics of older forests that should be conserved and re-

established on federal lands to maintain ecological sustainability and resiliency as part of their landscape assessment.

7. Identify fire-dependent or fire-sensitive ecosystems of high biological diversity significance and evaluate the interactions between changing vegetation and fire to encourage their long-term conservation.

Key challenges and opportunities

Through administration of the Forest Practices Act and management of State Forests, the Board of Forestry has a direct role in the conservation of diverse native plant and animal populations and their habitats in Oregon's forests. Diverse and productive forest ecosystems provide a range of ecosystem functions and habitat for a wide array of rare species. Current management strategies, primarily on federal forests, could lead to a significant increase in the extent of older, diverse forests in Oregon. However, past forest management has in some cases reduced forest diversity. For example, in areas of western Oregon, there is no shortage of young stands of trees, but there has been a reduction in the amount of young-forest types (successional stages) containing shrub communities, remnant snags, and down wood, which are important for some wildlife species.

Large areas of Oregon forestland are at risk of losing key ecosystem components from uncharacteristic wildfire. Large-scale issues, like planning for fire risk reduction and maintaining desired future forest conditions, require planning across multiple ownership boundaries.

Determining the appropriate spatial and temporal scales at which forest biological resources should be “protected,” “maintained,” and/or “restored” are complex questions that are often at the heart of native plant and animal conservation policy discussions. “Protecting” species and habitat will be more successful if areas reserved for this purpose are actively managed when necessary to provide for the ecological processes and disturbances that perpetuate desired habitat and associated species.

Although government policies affect plant and animal conservation in many ways, Oregon does not have an integrated set of policies to address this topic equitably across all land uses. Government regulations can sometimes make the retention of desired species a liability for private landowners.

Agency resources can be focused on educational programs and collaborative conservation partnerships with landowners. Conservation of forest habitat and associated species can be improved through regional-scale planning that restores complex, heterogeneous landscape patterns.

The Oregon Department of Fish and Wildlife and Travel Oregon completed a comprehensive review of Oregon’s fish and wildlife and their habitats in 2005. The goals and scope of the *Oregon Conservation Strategy* include: maintaining healthy fish

and wildlife populations by maintaining and restoring functioning habitats, preventing declines of at-risk species, and reversing any declines where possible. It outlines how and where the state and its conservation partners, including landowners and land managers, can best focus this work. The *Oregon Conservation Strategy* is not regulatory. It works within the existing legal structure through voluntary efforts. The *Oregon Conservation Strategy* can form the basis for developing statewide native plant and animal conservation policy addressing all land uses and ownership classes**.**

The growing interest in ecosystem services markets has the potential to help forest managers achieve established native plant and animal conservation objectives.

Looking into the future, climate change and invasive non-native plants will likely change the composition of Oregon forestlands and may irreversibly alter native plant and animal populations. Ecosystem resilience may be disrupted by climate-driven changes in species behavior, such as changes in the population and distribution of birds and insects, which exert a strong control on forest composition and productivity.
To monitor these effects, Oregon needs better information regarding native plant and wildlife population trends and changes in the geographic ranges of native forest species.

Biodiversity underpins the functioning of the ecosystems on which we depend for food and fresh water, health and recreation, and protection from natural disasters. Its loss also affects us culturally and spiritually. This may be more difficult to quantify, but is nonetheless integral to our well-being.

Current [global] trends are bringing us closer to a number of potential tipping points that would catastrophically reduce the capacity of ecosystems to provide these essential services.

- Ban Ki-moon, Secretary-general, United Nations

One of the greatest obstacles to the conservation of biodiversity is the lack of easily accessible information about the overall distribution and condition of the plants, animals, and ecosystems that sustain them. The problem is twofold: huge data gaps and poorly organized, inconsistent, and often unintelligible information that isn't useful to policy makers or the public.

- Defenders of Wildlife, Northwest Office

How are we doing?

The following Oregon Indicators of Sustainable Forest Management address Goal E:

Indicator E.a. Composition, diversity, and structure of forest vegetation

> *Desired trend: The composition, diversity, and structure of Oregon forest vegetation are within, or growing towards, desired future condition ranges established through the Oregon Conservation Strategy.*

Data evaluation for this indicator is expected in 2011.

Indicator E.b. Extent of area by forest cover type in protected area

> *Desired trend: Allocations of Oregon forest cover types to protected area categories are consistent with desired future conditions established through the Oregon Conservation Strategy.*

Condition	Trend	Information
Mixed	**Mixed**	**Adequate**

Indicator E.c. Forest plant and animal species at risk

> *Desired trend: Decreasing number of Oregon native forest plant and animal species at risk (extinction, extirpation, endangered, threatened, or potentially endangered or threatened).*

Condition	Trend	Information
Poor	**Mixed**	**Adequate**

Reports for these indicators are available at:
http://www.oregon.gov/ODF/indicators/indicatorsE.shtml

Goal F: Protect and improve the health and resiliency of Oregon's dynamic forest ecosystems, watersheds, and airsheds.

Why is this goal important?

Forest health is a social value based on both public perception and scientific information. The Board defines a healthy, vital forest landscape as one that maintains its functions, diversity, and resiliency within the context of natural and human disturbances and is capable of providing people with the array of values, uses, and products desired now and in the future. Forests are "unhealthy" when potential disturbances, such as fire or pest outbreaks, are unusually frequent, severe, or widespread and when desired outputs such as wood fiber, special forest products, water quality, habitat diversity, and recreational opportunities cannot be provided or sustained. Healthy forests are preferable to unhealthy ones because they are resilient and because they are capable of providing the goods, values, services and habitat upon which humans and plant and animal species depend.

Perceptions about forest health have evolved from a focus on preventing tree death from insects, disease, or wildfire to a concept of "forest ecosystem health" that ties together physical, terrestrial, aquatic, and human aspects of the landscape. The ecosystem concept also recognizes that forests are dynamic and that disturbance is an important element in maintaining desired forest conditions. (Note: In this document, policies for protecting, maintaining, and enhancing the health of forest aquatic and riparian systems are more thoroughly discussed under Goal D.)

The Board of Forestry will work to achieve the following *Forestry Program for Oregon* Objectives for Goal F:

1. Promote active fuels and vegetation management, along with aggressive wildfire suppression on public and private forestlands as key tools to protect forestland investment and, where needed, to promote forest landscape conditions that are more resilient to natural disturbances.

2. Promote policy and technology changes to control the cost of wildfire suppression efforts and promote shared public and landowner funding to maintain the most efficient level of fire protection and other forest health activities on non-federal forestland.

3. Promote wildfire risk reduction and forest ecosystem improvement through policies, technology, and liability relief for increased prescribed fire use and mechanical treatments where appropriate at the landscape scale in fire-dependent ecosystems. Direct State of Oregon participation in the use of thinning and prescribed fire on fire-prone dry federal forests will also be encouraged.

4. Promote programs to prepare and protect private property within the forestland urban interface from wildfire, insect, and disease risks and promote strong local accountability for community fire planning and prevention.

5. Implement a policy to encourage wildfire suppression actions in all of Oregon's forests reflecting the following protection priorities: (1) human lives, (2) forest resources and investments, (3) dwellings and other developments.

6. Promote integration of climate change assessment, mitigation and adaptation strategies into planning, decision-making, management, restoration, and public information efforts.

7. Promote resilient forest landscape conditions and management practices that will lead to reductions in the adverse impacts from forest insects and diseases.

8. Promote smoke management programs that maintain and improve air quality while allowing sufficient opportunities for prescribed burning, fuel reduction, and forest health improvements if alternatives prove insufficient to alleviate need for burning.

Key challenges and opportunities

Oregon's forests are shaped by natural and human disturbance in the form of fire, storms, climate change, wildlife, volcanic activity, insect outbreaks, diseases, timber harvesting, invasive non-native species, and forest conversion to other uses. Prior to the 20th Century, natural and human disturbances created a range of forest types, age classes, and structures across the landscape. Changes in these conditions over time have affected forest health and resiliency.

Fire

Today, a hundred years of fire suppression in Oregon, coupled with reduced vegetation management on federal lands in recent years, has produced forests that are, across the landscape, more susceptible to catastrophic fire and insect and disease problems than those that existed before European invasion. Fire prevention and suppression without site-specific, science-based vegetation management to remove fuels will result in more uncharacteristic stand-replacing wildfires, particularly in eastern and southwestern Oregon. These wildfires will be more difficult and expensive to control.

There are many forest vegetation types in Oregon where fuel reduction treatments will increase forest resilience while addressing fire risk. Wildfire in these vegetation types that undermines long-term forest resiliency is just one consequence of failing to proactively treat fuels. Other impacts include loss of certain ecologically important vegetation communities, exacerbation of drought-induced mortality, and insect outbreaks. In other forest vegetation types, there may be no ecological rationale for fuel

treatments, but fire risk may still be a pressing policy issue because of risk to communities, infrastructure, investments, and private property.

Where there is an overwhelming and urgent need for aggressive fuel reduction treatments in fire-prone areas, current treatment levels do not come close to meeting this need. There will be serious ecological and social consequences if managers, especially federal managers, fail to act to meet this need. Strategic, landscape-level treatments are needed to correct past errors and adapt to future expected conditions.

Prescribed fire can be used to achieve desired future forest conditions. However, very large acreages need to be burned annually. The costs associated with controlled burning are high, and considerable controversy surrounds prescribed fire because of the risk that fires will escape and burn onto other ownerships and because of air-quality problems associated with smoke. Well-designed silvicultural treatment is another pathway to achieving forest health goals. Combinations of tree thinning, woody biomass utilization, and prescribed fire can be designed to reduce fuels and wildfire risk on a site-specific basis. These combined treatments may often be the best choice if both short- and long-term risks to forest resources are evaluated and managed. Changing public values, a lack of clear and widely accepted policy goals, repeated court challenges, reduced federal agency budgets, and the inability to implement decisions on the ground continue to limit proactive federal forestland management and restoration.

Bold action will be required to implement management that responds to our emerging understanding of fire and fuel dynamics. The failure to act to appropriately manage fuels in Oregon's forests is not just a policy failure. It is also a political failure that requires political leadership to resolve.

The federal Endangered Species Act is a valuable tool for protecting imperiled forest species. However, long-term habitat degradation and associated negative direct impacts to these species from landscape-scale changes in forest conditions— such as wholesale changes in historic wildfire regimes in fire-dependent forests—are often discounted in the analysis of forest management projects.

Under current federal fire-suppression policy, homes in the wildland-urban interface receive fire-suppression priority, even though most homes are insured and homeowners can take action on their own lands to mitigate the fire hazards and risk to their homes. Insurance is not available for investments in private forestlands managed for timber and other values. However, these managed forests are often at high risk from wildfire spreading from adjacent federal lands. Thus wildfire originating on, or spreading through, federal lands presents underappreciated yet significant risks to private forest management investments. Future wildfire policies should better balance the risks to private forestlands with risks to homes and other structures in the interface.

Insects and Tree Diseases

Outbreaks of native forest insects such as the Douglas-fir tussock moth or western

spruce budworm generate relatively more public interest than forest diseases, though diseases kill or damage more trees and thus have a more significant effect on timber management. Aggressive fire-suppression policy without accompanying ecologically sound vegetation management has sometimes created conditions that favor increased insect and disease outbreaks. Overstocked stands grow less vigorously and become increasingly susceptible to pest infestations. Changes in species composition from fire suppression also make stands more susceptible to root diseases and stem decays. Increased tree death from insect and disease infestations and other agents over the last two decades has increased the potential for catastrophic, stand-replacing fires.

Stands with a mix of species that approximates the composition of native forests are usually more resilient to insects and diseases than single-species stands. Stands with species that are not genetically well adapted to the site or to the local climate are also more susceptible to insect and disease outbreaks. In western Oregon, coastal clearcuts often have been replanted with Douglas-fir on sites previously stocked with western hemlock and Sitka spruce. This has resulted in a severe problem with Swiss needle cast disease. Native root diseases also spread in areas planted with tree species poorly adapted to the growing site. Planting root disease-resistant or -tolerant species and using local seed sources can reduce insect and disease damage and also contribute to native plant and animal habitat.

Invasive Species

In the last century, the introduction of non-native pathogens, plants, and insects has impaired forest health in Oregon. White pine blister rust, for example, has virtually eliminated western white pine from areas in the Coast Range and Cascades. Insect and disease introductions during the last century that have had significant impacts on the forest ecosystem also include Port-Orford-cedar root disease and balsam woolly adelgid. Eradicating an established population of European gypsy moth during the 1980s required an effort costing millions of dollars.

The detection of sudden oak death disease in southwestern Oregon exposes a new threat to several important tree and shrub species. The introduction and spread of invasive plants like Scotch broom, gorse, English ivy, Japanese knotweed, and Himalayan blackberry to forestland poses an indirect threat. These non-native plants typically reduce native-plant diversity on a site and prevent or delay the regeneration of trees.

Increased commerce, a mild climate, and a continuous influx of people make western Oregon particularly vulnerable to the introduction and establishment of exotic insects, pathogens, and plants. Increasing levels of international and interstate trade in logs and wood products, in particular, make it likely that new pests will be introduced in the future. The introduction of exotic insects and diseases is increasingly becoming a serious threat to the health and vitality of forest ecosystems.

Preventing and controlling the spread of invasive species that already affect a large percentage of Oregon's forestland will require the integration of efforts across ownerships, natural resource agencies, and organizations.

Air Pollution

Air-pollution damage to vegetation is an important indicator of forest ecosystem health, but one that has so far had little impact here. Oregon has only recently documented air-pollution impacts to sensitive lichen species downwind of major urban areas. Because of a relatively small urban industrial sector in the region and dominant marine air currents passing over Oregon from the west, our forests have had little exposure to airborne pollutants, compared to other areas of the country and the world. However, air-pollution effects on forest vegetation will probably increase with Oregon's population and may also result from increasing industrial emissions originating in other parts of the world.

Climate Change Adaptation

Creating and maintaining diverse forests with heterogeneous forest structure, composition and function is believed to be the most important silvicultural adaptation to climate change. This approach also improves the resiliency of forest ecosystems to natural disturbance from wildfire, insects, disease, drought, flooding and wind/ice.

Current federal forest management policies are currently ineffective in improving the resiliency of federal forests to unwanted disturbance. Accelerated forest restoration work is needed.

While the retention of adequate dead and down wood in forests is needed to provide for ecological processes, wildlife habitat, carbon storage, and healthy and productive soils, many Oregon forest sites have experienced unnaturally high build-ups of woody material that can increase the potential for uncharacteristically intense wildfires. Restoration can result in significant volumes of forest biomass byproducts. In this context, forest biomass must be viewed holistically as all the wood fiber in a harvested tree rather than simply otherwise non-merchantable "hog fuel" for energy production. Under conventional timber harvesting, trees decades to centuries old are felled, a few segments are cut out of the tree trunk to take to the market, and then nearly the same amount of fiber in the form of treetops, limbs, and cut small diameter trees is left on site or piled and burned.

Development of more efficient forest biomass utilization where more of the fiber in that tree is merchandised and marketed for its highest value to the maximum extent possible -- including energy production -- will benefit Oregonians on several levels. The value of harvested trees will increase, which could help fuel reduction and forest health restoration projects become profitable. With expanding science-based restoration work come healthier ecosystems that are more resilient to natural and human-caused disturbances. Converting forest biomass to wood products or to energy under

controlled conditions lessens the release of greenhouse gasses and other pollutants. Finally, an expanded biomass industry could help in maintaining a local and diverse forest products manufacturing infrastructure.

Forestland managers need to revisit reforestation strategies in anticipation that contemporary forests and forest seed sources may be maladapted to future site conditions. Plans for assisted migration of species should be considered. Modifying seed zones and genetics of seedling propagation for reforestation and forest restoration activity will be important challenges as Oregon's forests are adapted to a changing climate.

"Forest health depends on the dynamic diversity of plants and animals, including humans, to perpetually maintain resilience. Sustainable forest health is a collaborative interdependent effort between our ecosystems and society."

- Western Governors' Association Policy Resolution 10-08: Assessment and Management of Western Forests

"We as land managers must pursue a 'no regrets' approach and base fire management decisions on scenarios that assume greater variability in climate and the potential for abrupt change. . . . [I]f fire and forest managers restore forests as a means to increase ecosystem resiliency to climate change, they will also be improving biodiversity and protecting important forest resources."

- The San Diego Declaration on Climate Change and Fire Management by the Association for Fire Ecology and the Third International Fire Ecology Management Congress, 2006

How are we doing?

The following Oregon Indicators of Sustainable Forest Management address Goal F:

Indicator F.a. Tree mortality from insects, diseases, and other damaging agents

Desired trend: Stable or decreasing long-term levels of Oregon forest tree mortality.

Condition	Trend	Information
Mixed	**Mixed**	**Adequate**

Indicator F.b. Invasive species trends on forestlands

Desired trend: No invasive species on Oregon's 100 most dangerous list are uncontained in the state's forests, and a stable or decreasing forest acreage is affected by invasive species.

Condition	Trend	Information
Fair	**Uncertain**	**Inadequate**

Indicator F.c. Forest fuel conditions and trends related to wildfire risks

Desired trend: Increasing rates of effective forest fuel treatments to improve resiliency to wildfire and an increasing area of Oregon forestland resilient to wildfire.

Data evaluation for this indicator is expected in 2012.

Reports for these indicators are available at:
http://www.oregon.gov/ODF/indicators/indicatorsF.shtml

Goal G: Improve carbon sequestration and storage and reduce carbon emissions in Oregon's forests and forest products.

Why is this goal important?

There is increasing international concern about greenhouse gas emissions and global climate change. Forests have been recognized as very important components of the global carbon cycle and maintaining productive forests is often cited as one of the key solutions to the climate change problem. Climate change also affects forests; therefore, we need to understand how to best manage today's forests for tomorrow's climate.

There is opportunity to increase carbon sequestration and storage in Oregon's forests. Planting trees along city streets and neighborhoods; converting agricultural, pasture, range, and neglected brush land suitable for forest cover back into forests; extending forest rotations; and increasing the size and complexity of forest structures, will contribute to increased carbon sequestration and storage. Reducing the number of trees and treating or removing the resulting slash and other woody material can help to reduce wildfire severity and extent in fire prone forests. These actions not only provide material for biomass utilization but will also help these forests mitigate and adapt to climate change.

The utilization of harvested timber for wood products transfers stored carbon from the forest to homes, buildings, and furniture and continues the carbon storage benefits beyond the timber harvest rotation.

The Board of Forestry will work to achieve the following *Forestry Program for Oregon* Objectives for Goal G:

1. Encourage maintaining and increasing Oregon's forestland base and promote the maintenance and expansion of urban forests.

2. Promote increased public and forest landowner understanding of the potential contributions of trees, forests, and forest products in sequestering and storing carbon.

3. Ensure that carbon-offset markets as well as emerging markets for other ecosystem services provide easily accessible sources of revenues and do not discriminate against forest landowner participation based on regulatory requirements exceeding those for other land uses.

4. Encourage greater consumer awareness of the environmental advantages of using Oregon forest products and their use as substitutes for more energy intensive building materials.

5. Advocate for public and private forestland biomass to be considered on an equal basis with other renewable energy sources and as key component of Oregon's strategy for meeting state greenhouse gas reduction and renewable energy portfolio standard policy goals.

6. Continue to support research and develop policies and incentives that will drive the growth of the biomass/ bioenergy/ bio-based products industry in the state.

7. Promote research and innovation towards increasing energy efficiency and reducing the use of fossil fuels in the Oregon forest sector.

Key challenges and opportunities

Oregon forests will continue to sequester and store a significant amount of atmospheric carbon dioxide that would otherwise remain in the atmosphere. Keeping forests in forest use provides the foundation. The challenge lies in monitoring forests on a statewide scale with respect to both above- and below-ground as well as live and dead forest carbon, including harvested wood products, to learn where and under what conditions forests are acting as net carbon sinks (i.e., increasing carbon stores), or as net carbon source (i.e., losing carbon back to the atmosphere) or are neither a source or sink.

Regardless of the type of management, we can expect a forest at one time or another to be serving as a sink, source or neither; so the question is what is the net balance statewide or regionally in any given year. Underlying this dynamic is further understanding about how any forest management emphasis, such as wood production, multiple-use, or reserves can be improved to increase overall carbon sequestration and storage from forests, all while also providing the full array of other environmental, economic, and social goods and services these forests provide to Oregon.

The challenge for policy makers is to encourage diverse, resilient forest systems and maintaining the competitiveness of Oregon's forestry industry and the economic viability of private forest ownership. This will be aided by ecosystem services transactions that compensate landowners for practices that achieve desired ecological outcomes, including carbon storage, while maintaining the timber industry's economic vitality. Family forest landowners will play an important role due to the diversity of their ownerships and the susceptibility of losing family forest lands to non-forest uses.

The non-profit Oregon Small Woodlands Association has two subsidiaries that market carbon credits. Woodland Carbon was established in 2008 in partnership with the American Forest Foundation. Woodland Carbon aggregates and trades sequestered carbon credits from certified family forest landowners that can be traded in short-term voluntary markets. L&C Carbon was established in 2010 with support from CE2 Carbon Capitol, one of the leading investors in carbon offset generating projects in the US. L&C Carbon helps facilitate the sale of long-term carbon credits from certified woodland properties.

Oregon's forest sector, along with all other sectors of the state's economy, has opportunities to examine how wood products are harvested, transported, and manufactured to increase energy efficiency and reduce the use of fossil fuels.

"If we want to make a difference in terms of carbon we have to add forest."

- Mark Harmon, Professor and Richardson Chair in Forest Science, Oregon State University

"In [the Inland Northwest], where the forest land base is dominated by federal ownership and the forests are managed for a multitude of benefits, [life cycle analysis] suggests that the optimal solution for maximizing carbon gain under both current and future climate conditions is to manage forests to maximize longlived wood products and to minimize the risk of severe wildfires."

- Elaine E. Oneil and Bruce Lippke, University of Washington

"Foresters are chief players in a drama which may determine the fate of the earth"

- Leon Minckler, USDA Forest Service, retired

How are we doing?

The following Oregon Indicators of Sustainable Forest Management address Goal G:

<u>G.a. Carbon stocks on forestlands and in forest products</u>

> *Desired trend: Rates of sequestration and storage of carbon in Oregon forests and Oregon forest products are stable or increasing.*

Data evaluation for this indicator is expected in 2012.

A preliminary report for this indicator is available at:
http://www.oregon.gov/ODF/indicators/indicatorsG.shtml

What's next?

This *Forestry Program for Oregon* is not an end product. It is the foundation for discussion and planning over the next eight years. The Board hopes to show a clear connection between its goals and objectives, Board Work Plans and meeting agendas, Department of Forestry programs, and the policies of other natural resource agencies with responsibilities that affect forestlands.

Following Board adoption of the 2011 *Forestry Program for Oregon,* all Oregonians are encouraged to work with the Board of Forestry through its business meetings, the Oregon Roundtable on Sustainable Forests (See Appendix 1), and other forums to:

- Engage in collaborative dialogue on forest management challenges and opportunities and the goals and objectives of the *Forestry Program for Oregon*
- Update and implement Board Work Plans to achieve these objectives
- Review and, if necessary, revise the Oregon Indicators of Sustainable Forest Management along with desired trends and targets for the indicators
- Participate in future Board issue scans

The Board understands that economic conditions, agency budgets, and other short-term factors may limit its ability to fully implement all elements of the *Forestry Program for Oregon.* Also, new issues may emerge during the eight-year life of the 2011 edition of this strategic plan that require immediate Board attention. To address these potential dynamics, the Board intends to review and, if needed, update the *Forestry Program for Oregon* objectives on a two-year cycle.

Information about all of these processes will be accessible through the Board of Forestry website: www.oregonforestry.gov

Learning to honor the wild, learning to acknowledge the autonomy of the other, means striving for critical self-consciousness in all our actions. It means that reflection and respect must accompany each act of use, and means we must always consider the possibility of nonuse. It means looking at the part of nature we intend to turn towards our own ends and asking whether we can use it again and again and again, sustainably, without diminishing it in the process. Most of all, it means practicing remembrance and gratitude for the nature, culture, and history that have come together to make the world as we know it.

- William Cronon, The Trouble With Wilderness, 1995.

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Appendices

Appendix 1. Getting involved: Building a network of cooperators through the Oregon Roundtable on Sustainable Forests

The Board of Forestry has endorsed a charter for an Oregon Roundtable on Sustainable Forests. The Roundtable's purpose is to use collaborative efforts to advance sustainable forests across all forest ownerships in Oregon. The Roundtable is advancing understanding, assessment and reporting of forest sustainability, and encouraging forest management that integrates environmental, economic and social considerations within the framework provided by the *Forestry Program for Oregon*, and in consideration of the values and policies of the Roundtable's contributors.

The Oregon Roundtable is part of a dynamic social process whereby Oregonians shape an evolving vision of what constitutes science-based sustainable forest management and what it means in Oregon. The Oregon Roundtable is producing high quality public dialogue resulting in greater understanding of sustainable forest management among Oregon individuals, communities, academia, businesses, and government. Shared learning about Oregonians' economic, environmental, and social values and the potential outcomes of sustainable forest management can then inform subsequent discussions on how forestry can be encouraged and implemented to meet the expressed needs of Oregonians.

Near-term objectives for the Roundtable are to:

- Receive briefings on the empirical data used to evaluate Oregon Indicators of Sustainable Forest Management conditions and trends and make collective findings on the reasonableness of those evaluations available to the Board of Forestry and interested parties.
- Advance greater use of the *Forestry Program for Oregon*.
- Expand the public dialogue around sustainable forests.
- Provide a forum where organizations and individuals addressing sustainable forests can work together.
- Provide a forum where technical and scientific knowledge can be shared.
- Link with and learn from the efforts of business, governmental and non-profit sustainability initiatives.
- Seek a better understanding of the contributions that each of Oregon's forest estates makes to sustainability of Oregon's forests.
- Promote state and federal government coordination in discussing, implementing, and measuring sustainable forest management.

More information about the Oregon Roundtable on Sustainable Forests can be found at: http://www.oregon.gov/ODF/indicators/roundtable.shtml

More information on the work of the Oregon Board of Forestry can be accessed at www.oregonforestry.gov

"The dialogue around Oregon's forests should be a robust engagement among diverse points of view and experiences for all forests - public and private. The people involved should reflect and honor the diversity of our society and communities. Wider agreement among citizens and agencies within the state on the meaning of sustainable forest management could result in more public support, promotion of substantial economic, environmental, and social benefits to Oregonians and to the nation, greater coherence of forest administration, and the perpetuation and enhancement of Oregon's forest land base."

- Concepts and Principles for Developing an Oregon Roundtable on Sustainable Forests, 2010

"*Collaboration – An unnatural act between unconsenting adults."*

- James Honey, Sustainable Northwest

Appendix 2. Glossary

For the purpose of the *2011 Forestry Program for Oregon*, the Board of Forestry uses the following key definitions.

Active management. The application of practices through planning and design, over time and across the landscape, to achieve site-specific forest resource goals. Active management uses an integrated, science-based approach that promotes the compatibility of most forest uses and resources over time and across the landscape. "Active management" should not be equated with "intensive timber management." Instead, it refers to taking proactive steps to achieve whatever management objectives have been established for a forest site. [Based on OAR 629-035-000 (1).]

Adaptive management. The process of implementing plans in a scientifically based, systematically structured approach that tests and monitors assumptions and predictions in management plans and uses the resulting information to improve the plans or management practices used to implement them. [Based on OAR 629-035-000 (2).]

Aggressive fire suppression. The proactive and immediate application of activities necessary to extinguish undesired forest fires, beginning with fire detection and continuing until fires are completely controlled and extinguished.

Best management practices. A combination of practices that are determined to be the most effective and practical means (considering current technology, economics, and institutional frameworks) of preventing forest resource damage or degradation consistent with environmental policy goals.

Biological diversity. The genetic variation and the abundance and variety of microbial, plant, and animal life, the range of ecological functions, and the physical processes at any local or landscape scale. [Based on OAR 629-035-000 (3).]

Conservation. Management of a renewable natural resource with the objective of sustaining its productivity in perpetuity while providing for sustainable human uses.

Ecosystem. A spatially defined, relatively homogenous area that includes all interacting organisms and components of the abiotic environment within its boundaries.

Enhance. means to make greater in value.

Forest. An ecosystem characterized by a more or less dense and extensive tree cover, often consisting of stands varying in characteristics such as species composition, structure, age class, and associated processes, and commonly including meadows, streams, fish, and wildlife. Forests include special kinds such as industrial forests, nonindustrial private forests, plantations, public forests, protection forests, and urban forests, as well as parks and wilderness.

Forest biomass. Material from trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, farm, rangeland, or wildland-urban interface environment that is the byproduct of forest management, ecosystem restoration, or hazardous fuel reduction treatment. [Based on ORS 526.277 (7)(b)]

Forest cluster. Firms and organizations that support production of and benefits from primary and secondary wood products and a broad spectrum of forest ecosystem services and includes geographically concentrated and interconnected economic activities and linkages to customers and suppliers. Organizations engaged in forest resource management, education, and research are also considered part of the forest cluster.

Forest health. A healthy, vital forest landscape that maintains its functions, diversity, and resiliency within the context of natural and human disturbances and that is capable of providing people with the array of values, uses, and products desired now and in the future. Forests are "unhealthy" when potential disturbances, such as fire or pest outbreaks, are unusually frequent, severe, or widespread and when desired outputs such as wood fiber, special forest products, water quality, habitat diversity, and recreational opportunities cannot be provided or sustained.

Green building cluster. Firms and organizations supporting building designs, building materials, and construction practices to minimize negative effects on the natural environment and to integrate more environmentally-friendly products and services into the built environment. The cluster includes geographically concentrated and interconnected economic activities and linkages to customers and suppliers. Organizations engaged in education, research, standards agreements, and trade associations are also considered part of the green building cluster.

Harvesting. The felling, skidding, on-site processing, and loading of trees or logs onto trucks.

Maintain. To keep in an existing state.

Multiple resource management. Managing two or more available tangible or intangible natural resources for two or more products or values on a specific area, over a specific period of time, and using a system for maintaining or improving those resources.

Non-timber forest products. All forest products except timber, including resins, oils, leaves, bark, plants other than trees, fungi, and animals or animal products.

Protection. The management of short-term and long-term risks to a forest resource in a manner that enables people to meet their current environmental, economic, and social needs for that resource, and also provides that future generations can meet their own needs.

Residential emphasis forests. Forestlands where the residential values dominate all other forest values. They generally include lands that are within cities, urban growth boundaries, or “rural residential” zones. They may or may not be taxed as forestlands. They may or may not be within a structural fire protection district. The owners may or may not have forest management expertise or interest. There is a continuum of residential uses of these forests reflecting urban, suburban, exurban and rural lifestyles.

Sustainable forest management. Forest resources are used, developed, and protected at a rate and in a manner that enables people to meet their current environmental, economic, and social needs, and also provides that future generations can meet their own needs. [Based on ORS 184.421 (4).]

Systematic evidence review. A rigorous, transparent literature review technique that focuses narrowly on a single question and uses an explicit protocol for finding, screening, grading and integrating all primary research relevant to that question.

Working forest. Private or public forestlands that are actively managed for goods or services having monetary value in the market place such as timber and recreation.

Appendix 3. Oregon Indicators of Sustainable Forest Management Ratings Explanations

Indicator Condition:

Good

Desired trend or target is being achieved

Mixed or Fair

Conflicting factors are affecting the status in both positive and negative ways

Poor

Desired trend or target is not being achieved

Indicator Trend:

Improving

Current status is an improvement compared to previous data

Mixed, Uncertain, or No Change

There are either conflicting (mixed) trends, trend direction is uncertain, or there is no significant change compared to previous data

Deteriorating

Current status is a deterioration compared to previous data

Quality of Indicator Information:

Adequate

Data coverage, frequency, currency, sources, and reliability are sufficient to draw conclusions with high confidence

Partial

Data coverage, frequency, currency, sources, and reliability are of mixed quality which affects the ability to draw conclusions

Inadequate

Data coverage, frequency, currency, sources, and reliability are of insufficient quality to draw conclusions

Appendix 4. The Board of Forestry's intent for use of the Oregon Indicators of Sustainable Forest Management

- The use of indicators can lead to clear, unambiguous, consensual public policy decisions.
- The indicators are a tool for society to learn to make informed decisions and to take sound actions as it steers toward environmental, economic and social sustainability.
- The indicators should be used to focus and prioritize forest-related monitoring, assessments and research, so that limited resources can be allocated most effectively and efficiently.
- Desired indicator trends and targets are intended to support public dialogue and promote greater consensus among Oregonians about the meaning of sustainable forest management. While the indicators and their metrics may remain fairly constant, trends and targets for the indicators may be updated as more information becomes available, as interplay between indicators is better understood, and as societal values evolve.
- Neither the indicators nor the desired trends and targets should be viewed as policy objectives. Instead, they should be used to evaluate current policies already established, and to help interpret the effects of those policies.
- Implementation of the 19 indicators will require integrating a wide variety of data from a number of sources. Most indicators build on current data and historic policy concerns. For some indicators, new data collection methods will need to be developed, existing funding will require reallocation, or new funding will be needed.
- For the indicators to remain credible, policy-makers and the public will need to see clear links between indicator reports and more detailed technical and scientific information supporting them.
- All users of data associated with the indicators must understand that the indicators function as an integrated set of measures of environmental, economic and social performance. All indicators should be used together to provide a sustainable forest management picture for the State of Oregon. Absent this broader, integrated context, discussion of the performance of individual indicators is less productive and less desired. The indicators provide the basis for a sustainability view at a statewide scale. To be meaningful, some indicators may need to report trends at smaller scales, such as counties, timbersheds, watersheds, forest cover types or ecoregions. This state-level effort will complement smaller-scale assessments such as county, national forest or community levels, as well as regional and national assessments.
- Indicators are intended to complement - not replace or diminish - other important performance measures such as the Oregon Progress Board Benchmarks and Department of Forestry performance measures. Within this broader hierarchy of performance measurement, the indicators should be viewed as the "vital signs" Oregon uses to track the environmental, economic and social benefits and

values of Oregon's forests, as well as our progress on the journey towards sustainability.

- Future users of data produced by the indicators should understand that factors outside the direct control of Oregonians might significantly affect indicator trends. External factors may include: global economic cycles and forest products market forces; climate change; population growth, and invasive species.
- The dynamic, disturbance- driven nature of Oregon forest ecosystems will also affect indicator trends potentially in both positive and negative ways. Therefore, indicators should be viewed within the context of dynamic forest ecosystems, rather than from a static ecosystem perspective.

Appendix 5. A comparison of the 2011 *Forestry Program for Oregon* goals with nationally and internationally recognized criteria for the conservation and sustainable management of temperate and boreal forests.

In 1992, at the United Nations Conference on the Environment and Development held in Rio de Janeiro, the United States committed itself to forest sustainability. In 1994, the United States participated in the Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (known as the Montreal Process group). The working group was charged with developing internationally recognized criteria and indicators for the conservation and sustainable management of temperate and boreal forests at the national level. The United States was a signatory, along with 11 other nations, to the *Montreal Process Santiago Declaration* in 1995. This group of countries represents 83 percent of the world's temperate and boreal forests, 49 percent of all the world's forests, 40 percent of the world's trade in wood and wood products, and 33 percent of the world's population.[5]

A "criterion" is defined as a category or process by which sustainable management may be assessed. An "indicator" is defined as a measure (or measurement) of an aspect of a criterion.

The seven criteria are:

1. Conservation of biological diversity
2. Maintenance of productive capacity of forest ecosystems
3. Maintenance of forest ecosystem health and vitality
4. Conservation and maintenance of soil and water resources
5. Maintenance of forest's contribution to global carbon cycles
6. Maintenance and enhancement of long-term multiple social and economic benefits to meet the needs of societies
7. Legal, institutional, and economic framework for forest conservation and sustainable management

The criteria and indicators are not legally binding on any of the participating countries and are intended to serve only as guidelines. The list of indicators has evolved over time. There are currently 64 indicators arrayed beneath the seven criteria. The twelve Montreal Process countries have produced national reports on sustainable forestry using the criteria and indicators in 2003 and 2010.[6]

Within the United States, a national Roundtable of Sustainable Forests has been in place for more than ten years. The national Roundtable is an open and inclusive process committed to the goal of sustainable forest management on public and private lands in the United States.[7] Roundtable participants include public and private

[5] http://www.rinya.maff.go.jp/mpci/
[6] The 2010 United State National Report on Sustainable Forests can be accessed at: http://www.fs.fed.us/research/sustain/
[7] http://www.sustainableforests.net/

organizations and individuals committed to better decision-making through shared learning and increased understanding. The National Association of State Foresters has produced an online publication titled *Principles and Guidelines for a Well-managed Forest.* These principles and guidelines are also built on the Montreal Process criteria.[8] Twenty states in the northeastern United States are cooperating in collecting and reporting forest resource data using 18 sustainable forestry indicators.[9]

In 2000, Oregon became the first state in the nation to publish a "first approximation report" to assess the status and trends of the state's forest resources as measured against the Montreal Process criteria and indicators. The states of Oregon, Wisconsin, and Maryland are regularly cited as leaders in bringing the international sustainable forest management framework down to state-level technical and policy applications.

The seven goals listed in the 2011 *Forestry Program for Oregon* are directly related to the Montreal Process criteria (see below).

2011 *Forestry Program for Oregon Goals*	Comparable Montreal Process Criteria
GOAL A – Promote a fair legal system, effective and adequately funded government, leading-edge research and education, and publicly-supported environmental, economic, and social policies.	Criterion 7-- Legal and institutional framework for forest conservation and sustainable management.
GOAL B – Ensure that Oregon's forests make a significant contribution towards meeting the nation's wood product needs and provide diverse social and economic outputs and benefits valued by the public in a fair, balanced, and efficient manner.	Criterion 6-- Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies.
GOAL C – Protect and improve the productive capacity of Oregon's forests.	Criterion 2-- Maintenance of productive capacity of forest ecosystems.
GOAL D – Protect and improve the physical and biological quality of the soil and water resources of Oregon's forests.	Criterion 4-- Conservation and maintenance of soil and water resources.
GOAL E –Conserve diverse native plant and animal populations and protect and improve their habitats in Oregon's forests.	Criterion 1-- Conservation of biological diversity.
GOAL F – Protect and improve the health and resiliency of Oregon's dynamic forest ecosystems, watersheds, and airsheds.	Criterion 3-- Maintenance of forest ecosystem health and vitality.
GOAL G – Improve carbon sequestration and storage and reduce carbon emissions in Oregon's forests and forest products.	Criterion 5-- Maintenance of forest's contribution to global carbon cycles.

For more information on the Oregon Board of Forestry and its strategic planning, visit

www.oregonforestry.gov

[8] http://www.stateforesters.org/files/2003Principlesand%20Guides.pdf
[9] http://na.fs.fed.us/sustainability/base/base.shtm

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