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Science

FINDINGS

"Science affects the way we think together."

Lewis Thomas

KNOCK ON WOOD: IS WOOD PRODUCTION SUSTAINABLE IN THE PACIFIC NORTHWEST?



Private lands in the Pacific Northwest should be able to maintain or exceed recent historical harvest levels over the next 50 or more years given unchanged policies and levels of private management investment.

"Defining sustainability is like trying to define justice or democracy. There are many definitions and some consensus, but agreement over the specifics is elusive."

—Donald Floyd, author of *Forest Sustainability: The History, the Challenge, the Promise*

Few places on the planet are better at growing big trees fast than the Pacific Northwest. Lush conifer forests are the quintessential icon of the region. Oregon even boasts a fir tree on its license plate. We

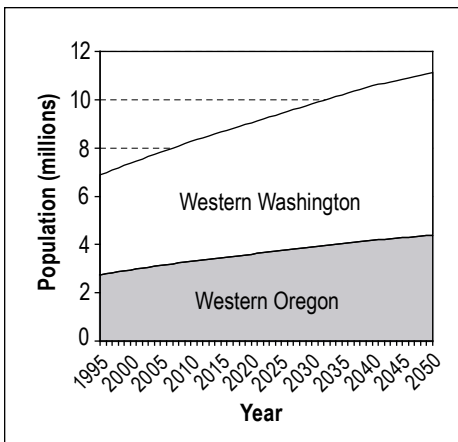
have the climate to thank—lots of rain in the winter and sun in the summer; never too hot or too cold.

Forests have always lured people to the region. Originally, it was the promise of abundant wood that attracted settlers. Indeed, the Pacific Northwest has long been one of the world's great timber producers. During the past couple of decades, perspectives on the forests have changed. Now it is the forests' beauty and potential for recreation that has enticed millions to carve out a piece to call home. In a sad irony, the recent wave of settlement is jeopardizing the amenities that attracted people in the first place. Population

IN SUMMARY

The Pacific Northwest is one of the world's major timber-producing regions, and its capacity to produce wood on a sustained-yield basis is widely recognized. Nonetheless, there has been increasing public interest in assuring that forests are being sustainably managed, as well as a desire by landowners to demonstrate their commitment to responsible stewardship.

Scientists from several universities and the PNW Research Station recently completed an initiative to synthesize existing research on wood production in the region. The initiative was guided by the needs of forest landowners and managers representing forest industry, small private forests, and state forest lands. They concluded that forest fragmentation and land use change, stagnating timber prices, and unfavorable public opinion regarding the scenic quality of intensive forest management were among the largest challenges to sustainable wood production in the region. New technologies and products in wood manufacturing, sustainable harvest levels, niche market opportunities, and underutilized tree species were identified as opportunities for landowners and managers interested in sustainable forestry.



Projected population for western Washington and Oregon, 1995 to 2050.

growth has caused extensive conversion of forest land to housing lots, removing the trees and fragmenting the landscape permanently.

Those who wish to keep today's forest lands as working forests into the future are struggling to stop the trend. They are trying to find ways to ensure that growing trees for wood products is always a source of pride for the Pacific Northwest. One such person is Bob Deal. For the past few years he has been investigating whether the region's forests have the capacity to produce wood, products, and services on a long-term basis in the context of human use and activities. Or, to phrase that another way: Is wood production sustainable in the Pacific Northwest?

Deal, a research forester at the PNW Research Station in Portland, Oregon, led the Sustainable Wood Production Initiative to analyze the opportunities and barriers to sustainable forestry in the region. "There

KEY FINDINGS

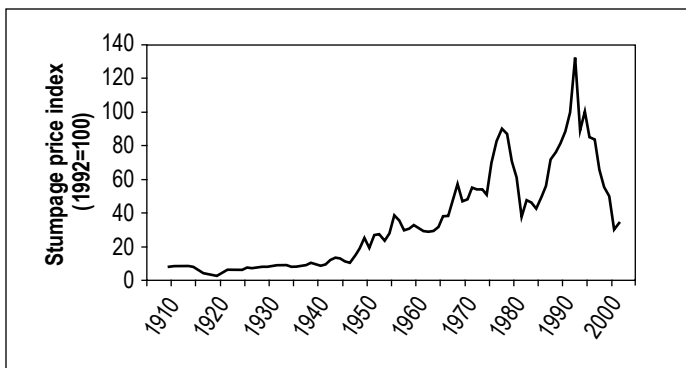
- In the future, the region's wood supply will primarily come from private land, and the barriers and opportunities related to sustainable wood production will have more to do with future markets, harvest potential, land use changes, and sustainable forestry options than with traditional sustained yield outputs.
- Private lands in the Pacific Northwest should be able to maintain recent historical harvest levels over the next 50 years given unchanged forest policies. Also, the price premium for Douglas-fir has largely disappeared, and evidence suggests there will be relatively stagnant timber prices in the region for the next five decades.
- The amount of forest land area in the Pacific Northwest is decreasing, and most of it is being developed versus being cleared for agriculture. This trend will likely continue, as the region is expected to experience above-average population growth. Low-elevation forests on the west side of the Cascades, which represent some of the most productive forests in the world, are the forest lands most often converted to other uses.
- The scenic quality of timber harvests is an important consideration when developing socially sustainable silvicultural prescriptions. Although foresters' preferences tend to differ from the public at large, preferences are generally ordered in a similar fashion for all groups that were surveyed. The public prefers harvests that have some element of "green," and a more natural appearance without large and recent clearings.

is a rich body of scientific information concerning wood production in the Pacific Northwest, but it doesn't easily translate into the information landowners need to answer the most important questions they struggle with," he says. "We've been successful at bringing the users and producers of information together to address some of these questions."

The initiative began with a series of client meetings that included forest landowners and managers representing the forest products industry, small private forest

landowners, state forest land managers, and others interested in growing and producing wood in the Pacific Northwest.

"We let our clients frame the key issues for us. We then set out to synthesize all the existing information that addressed those issues. This is a new way of doing business, and I think the topics that we focused on could have been totally different if we had defined the issues for ourselves," says Deal.



Timber prices in the Pacific Northwest have been through periods of stability as well as periods of growth and volatility.

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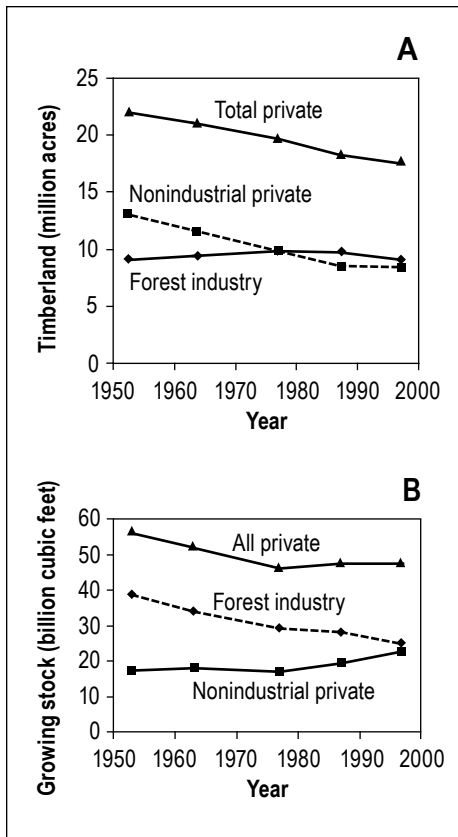
The site includes **Science Update**—scientific knowledge for pressing decisions about controversial natural resource and environmental issues.

DEFINING THE ISSUES

Land owners and managers need to know what stands in the way of success. In fact, according to Deal, “the most important issue mentioned by almost all our clients was the need to identify and understand barriers to sustainable forestry.” Immediately following this were questions about new opportunities and niches.

Overall, the clients felt that the Sustainable Wood Production Initiative could help them address five essential questions:

- What are the major economic, ecological, and social issues relating to sustainable forestry?
- What are the impacts of market incentives and environmental regulation on sustainable forest management?
- What are the dominant trends and market conditions, including the long-term economic viability of forestry in the region?
- What are the niche market opportunities for family forest owners?
- What are the emerging trends in wood products and wood technologies in the region?



Private timberland area (A) and growing stock inventory (B) in the Pacific Northwest.

Once these questions were posed, answering them became the directive for the initiative. But before moving forward, Deal added one more task to the list: “Develop a comprehensive communication strategy for reporting findings to a broad client base of land managers, researchers, and the general public.” After all, what’s the use of synthesizing all this information if there is no way to get the word out?

Deal collaborated with forestry experts from government agencies and universities throughout the region. The combined expertise of economists, social scientists, marketing analysts, and old-fashioned foresters was harnessed to tackle the list of questions raised by the client groups.

Two forest economists from Oregon State University, Darius Adams and Greg Latta, agreed to help with questions regarding the long-term viability of forestry. Adams reported to client groups in March 2005 that “if forest policy and investment levels are left unchanged, private lands as a whole should be able to maintain recent levels of harvest.” That’s reassuring. Over the entire region, landowners are not cutting more than is growing back and, therefore, harvest levels can be sustained into the future. Barriers and opportunities to sustainable forestry, therefore, are less an issue of growth and yield than they are social and economic issues.

Vikram Yadama, a research professor and extension specialist at Washington State University, offered his expertise on emerging wood technologies. He is particularly excited about wood-plastic composites, which can be made entirely out of recycled products. “It is an ideal material for playgrounds and roofing because it is nontoxic, and resistant to decay, insects, moisture, and heat,” says Yadama.

As for barriers to sustainable forestry, Ralph Alig, a research forester at the PNW Research Station in Corvallis, Oregon, raised a flag about forest fragmentation and land use change. “The population is growing faster in the Pacific Northwest than most other parts of the country,” says Alig. Couple this with the fact that people are living in larger homes with fewer people in them and you can see the makings of a problem.

Of particular concern are the low-elevation forests on the west side of the Cascade Range, some of the most productive forests in the world. In this region, nonindustrial

private (also known as family forest) lands near streams are the forest lands most often converted to other uses. Alig’s work helps identify areas that are most susceptible to land use change, which then allows local jurisdictions and states to target the most valuable forest lands for protection into the future.

“Forest fragmentation and parcelization is a problem for forest managers in that it reduces efficiency and economies of scale. It also reduces wildlife habitat and is a widely recognized problem for biodiversity conservation. Overall, this is one of the biggest challenges to the economic, ecological, and social aspects of sustainable forestry,” says Deal.



Even though sawmill numbers have substantially decreased, their potential for processing is still high because milling capacity has been consolidated into fewer, larger mills.



Forest conversion and fragmentation was identified as one of the major barriers to sustainable wood production in the Pacific Northwest.

FAMILY FOREST OWNERS

According to Deal, one of the great successes of the Sustainable Wood Production Initiative has been the engagement of family forest owners with the PNW Research Station. “Because they are so diverse in their needs, I don’t think we have traditionally served them as well as the larger, more consolidated land managers, such as public agencies or the forest industry,” he explains.

“Family forest owners cover the full spectrum of management styles. On one hand, there are those engaged in intensive timber management, trying to optimize their wood production. On the other, there are landowners who emphasize passive management of their forests with aesthetics, wildlife viewing, or mushroom production as their main goals. And, of course, there is everything in between. The only thing they seem to have in common is a passion for their forests,” says Deal.

How do you help a constituency whose needs are so diverse? Deal found that one of the best ways to make information flow is by linking landowners to each other. For example, through a collaborative project with Oregon State University Extension, the Oregon Small Woodlands Association (OSWA), and the Oregon Forest Resource

Institute (OFRI), a Web site was developed, <http://www.orforestdirectory.com>, that brings together forest owners, log buyers, and manufacturers interested in their products. It is a community-based tool that is successfully connecting landowners to new market niches.

Another potential niche for family forest owners is forest certification. And again, Deal is helping supply information to landowners on this topic. “Getting forest lands certified can be expensive, but it does demonstrate a commitment to responsible stewardship for forest landowners” he says. And according to two economists at Oregon State University, Claire Montgomery and Gwen

Busby, who are studying forest certification, economies of scale are important. If certification rules are applied at a plot level where each owner complies individually, costs are higher. If the spatial scale of certification is increased, distributing standards across ownerships, responsibilities could be parsed out and costs reduced.

“Although we are anticipating a premium for certified logs in the future, that has still not happened. For now, we are trying to find ways to keep certification viable for family forest owners by linking groups together under a single certification scheme, like American Tree Farms, so they can share the costs,” says Montgomery.



LAND MANAGEMENT IMPLICATIONS



- Market factors could create challenges for the implementation of sustainable forest management practices on private lands. The projected stagnation of prices for Douglas-fir may cause some landowners to respond to market signals in ways that are not supportive of sustainable forest management.
- To change public sentiment regarding intensive forest management practices, the forest industry will likely need to improve the visual quality of their treatments. Visual impacts may be mitigated by retaining more trees, reducing slash, and facilitating rapid green-up.

IMAGE PROBLEMS

Forestry has an image problem. And, like it or not, foresters need to worry about their image. If the public perceives foresters, landowners, and managers as poor stewards of the land they will revoke their proverbial social license to operate.

Public perception of forestry is based in large part on the visual quality of forest landscapes, especially after harvest. This begs the question: What should forests look like?

Gordon Bradley and his colleagues in the Forest Resources Department at the University of Washington spend a lot of

time thinking about that question. They have asked thousands of people to rate the visual quality of different silvicultural treatments. “Our findings suggest that for most timber harvest practices, preferences are generally ordered in a similar fashion for all groups of people. People prefer scenes that are ‘green’ and that have a natural appearance without large and recent clearings,” says Bradley.

Not surprisingly, when it comes to judging the appearance of a harvest and understanding how well the treatment will be perceived by the general public, it is probably best not to ask the forester who prescribed the treatment. “There is a significant difference

between the preferences of foresters and all other groups when it comes to the most intensive timber harvest practices, especially clearcutting. One immediate management implication is that forest practices resulting in greater tree retention, smaller openings, and rapid green-up will serve to reduce the visual impact of timber harvest practices,” says Bradley. Improving forestry’s image will likely require the industry to improve the visual quality of their harvests, especially in visually sensitive landscapes such as travel corridors.

THE FUTURE IS BRIGHT

The Sustainable Wood Production Initiative is now coming to an end, and Deal is pleased with what they accomplished. “We’ve taken a hard look at the opportunities and challenges for sustainable forestry in the region, and we’ve found plenty of both,” he says.

On the challenges side, Deal cites the work by Richard Haynes, a researcher and program manager with the PNW Research Station, whose research documented the loss of the premium price that Douglas-fir, the Pacific Northwest’s primary timber species, once demanded in the market-

place. Today Douglas-fir must compete directly with other softwoods such as radiata pine from New Zealand and loblolly and shortleaf pine from the Southeastern United States. Exacerbating the challenge is the expectation of relatively stagnant timber prices in the Douglas-fir region for the next



Respondents to a questionnaire regarding the scenic quality of logging treatments had a strong preference for thinnings (upper left), a low preference for clearcuts (upper right), a medium-low preference for patch cuts (lower left), and a medium preference for two-age stands (lower right).

several decades. This makes intensive forest management and other practices that support sustainable forest management more expensive to implement.

On the bright side, Deal sees the Pacific Northwest as well positioned to continue as a world leader in wood production owing to its proximity to California and the Pacific Rim along with the existing infrastructure of mills and transportation systems. Additionally, there is tremendous room for growth owing to the diversity of landowner objectives and the increased value in underutilized species, such as red alder.

In looking back at his experience, Deal says, “The sustainable wood production initiative was a very successful collaboration

of university and PNW Research Station researchers who were given the task of integrating and synthesizing information to address the needs of private and state forest landowners and managers. What we learned was that sustainable wood production in the Pacific Northwest has more to do with future markets, harvest potential, land use change, and sustainable forestry options than with traditional sustained yield outputs.”

“To me, the future of sustainable wood production seems bright,” he adds.

“Sustainable development is a compelling moral and humanitarian issue”

—Colin Powell, former U.S. Secretary of State

FOR FURTHER READING

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SCIENTIST PROFILE



BOB DEAL is a research silviculturist and team leader for the Sustainable Wood Production Initiative (SWPI), Pacific Northwest Research Station and a member of the Focused Science Delivery Program. As team leader of the SWPI, he manages a team

of station scientists and university cooperators who conduct research on the economic, ecological, and social issues related to sustainable wood production in the Pacific Northwest.

He received a B.S. in biology from the Evergreen State College, an M.S. in silviculture from the University of Washington, and a Ph.D. in forest resources from Oregon State University. He has 25 years of professional forester and research experience working throughout the Pacific

Northwest and Alaska. Deal's research interests include stand development, regeneration, silvicultural systems including alternatives to clearcutting, and practices to enhance compatible forest management.

His current research focuses on emerging issues for sustainable forest management and synthesizing information on the barriers and opportunities for sustainable wood production in the Pacific Northwest. He is a certified forester, a member of the Society of American Foresters (SAF) and a member of the SAF National Science Committee.

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