

State of the Forests 2006 – Hal Salwasser, Dean and Director

Welcome back. Wow! The start of year 100 for forestry programs at OSU. And what a lot of change that 100 years has seen. Normally in this talk, I try to give you my sense of the state of the College of Forestry going into a new academic year. This year, I will close with some thoughts on that.

But first I want to take a stab at sharing my sense of the state of forests and forest resources; globally, nationally and regionally. Why? Because they are all still rapidly changing and our graduates, creation of new knowledge and technology, and outreach education must play in a forest arena that is not like what even a decade or two ago was like. We need to gain some common understanding of future forests, forest products and future human relationships with forests. Then we can better know how to focus and align our programs to serve the future.

Now, please don't assume that I claim to see the future clearly. I see only parts of it and some parts maybe incorrectly. So, let's have an ongoing conversation over the coming year about what the future has in store for forest resources and our programs as we refine our communications and governance within the College and in preparation for a revision of our strategic plan in AY 2007. That should keep our eyes on both the present and the future at the same time.

I think of this future look “connecting the dots.” Individually, we can each picture lots of dots that describe what's happening about or to forest resources and how they are changing. But how do we arrange these dots so

that when the lines are drawn between them, we get the big picture? I don't know how to do that yet, but I'm guessing if we work at it over the next year or two, we'll get a handle on at least the major form.

So, here are some of the dots I see, not in any particular order and certainly not all of the possibilities.

Global:

Forest area: FAO says we're now at 9.6 billion acres; losing net 18 million per year: - 32 million in tropics, + 14 million in temperate. That's only 0.2% per year but 100×0.2 is 20 and 20% of 9.6 is not trivial. If the rate remains, it could mean 1.9 billion acres less forest by 2100 when forests are bound to be even more important to quality of life than they are now.

Further an acre of natural tropical forest doesn't equal an acre of new temperate forest in function. And globally, we are now working with 50% of global forested area of 10,000 years ago; most of this transformation accompanied the spread of agriculture and industry and it started 8-10,000 years ago; possibly the first human-aided climate impacts occurred with early agriculture then metal working 3-5,000 years ago; certainly huge impacts in past 150-250 years of the industrial era. Its not over unless human communities can make some dramatic changes in their relationships with natural resources.

Industrial wood use: The global human population now uses 1.8 billion cubic meters of industrial wood, nearly that amount of fuel wood (I know I

am mixing metrics but its trends that are important); 40% growth from 1960-1990, flat since then but if China and India learn how to use wood like we do, consumption could easily rise another 33-50% by 2050. 30% of global industrial wood is now traded internationally; this is projected to continue growing. 1.8 billion cubic meters is a football field with a pile of wood on it over 200 miles high; if we need another .6 billion cubic meters by 2050 the pile grows to over 270 miles high.

Markets: New players in global wood markets are capitalizing on low labor and low fiber production costs. High wage, high fiber cost countries like the U.S. will face increasing competition from off shore. It looks to only get harder, not easier for U.S. forest products companies to maintain their market share in even domestic markets.

Plantations: Planted forests comprise about 5% of current global forest area according to FAO but they yield 35% of global industrial wood; a major transition is underway from sourcing wood from naturally grown forests up to the mid 1900s to 75% or more coming from plantations by mid 2000s. Agriculture figured out how to switch from hunter-gatherer procurement ~ 8-10,000 years before forestry did. Our sector has a lot of learning to do as we enter 3rd and 4th then 5th tree crop rotations; soils, nutrients, species comp, biological legacies, biodiversity, sustainable productivity.

Climate: Mean annual global surface temperature rose by ~1° F during 1900s; it is projected to rise by 2-10° F by 2100; Pacific Northwest 3-7° F. Largest temperature rises will occur in far northern and southern latitudes; melting polar ice caps, receding glaciers, more PPT as rain than snow,

warmer winters, longer growing seasons, earlier peak stream flows, lower summer flows, warmer water; big effects on insects, drought stress, fires, fish, native species. But some plants and animals are no longer as free to roam in search of new hospitable environs as they once were – human infrastructure is in the way. Will future managers have to plant provenances from warmer growing zones, hedge bets with diverse species composition, lower stocking levels to accommodate droughts, move species around to new living areas? What does historic range of natural variability mean in this kind of future?

Population: Oh, yes, I almost forgot people. We've gone from something on the order of 5-10 million people on earth prior to agriculture to 50-100 million after agriculture took hold in most parts of the arable world by 4-5,000 years ago, to around 500 million at the start of industrial era to 6.5 billion now, heading for 8-9 billion by 2050. Agriculture, industry, public health, and some degree of associated civilization all enabled 1,000 fold growth in the human population in about 10,000 years. And we may double it in next 100 years if something doesn't get in the way.

National:

Forest area: U.S. now has ~749 million acres; relatively stable since 1920s with losses to urban sprawl partially offset by gains in afforested farmlands. This is ~75% of what was here in 1650; losing ~1 million acres per year to urban development.

Wood use: U.S. uses 30% of global industrial wood consumed annually. We imported 38% of the softwood lumber we used in 2005 (imports have accounted for 38-40% of softwood lumber consumption every year since 2000). Imports are projected to go over 40% soon; most coming from Canada. But what happens when Canada finishes harvesting its bug kill in boreal zones? Engineered wood products and composites are gaining market share; they are the future for innovation and growth. How long can we maintain market advantage in these?

Ownership: The major transition from many vertically integrated industrial forest ownerships to new investment management organizations is nearing its completion. Ownerships will continue to change but unless tax policies change, the age of big industry owning lots of U.S. private forestland is about over. Meanwhile, family forest fragmentation accompanies intergenerational transfers, not good for forestry, forest products, water, or forest fish and wildlife

Federal forests: 2006 is the biggest fire year since 1961. Fire suppression is now consuming 40% of the total USFS annual budget and it will go up to near 50% in 3-4 years due to how the 10-year rolling average formula allocates budget to fire. Feds can't keep up with biomass accumulation let alone get ahead. Outsourcing technical work once done by in house professional staffs is draining agencies of expertise. All OR federal forests will revise their management plans in the next 5 years. Who will do it for them?

Climate: National climate will be similar to global general scenarios with big implications for drought, storms, insects, fire and whatever they leave as aftermath.

Regional:

Forest area: Oregon still has around 90% of its pre-Euro contact forests. WA and CA lost several hundred thousand acres to development in 1990s, not so in Oregon, so far. Measure 37 uncertainties?

Forest products sector: Oregon is a major exporter of wood products to CA and SW, Eastern markets, still largest state producer of softwood construction products. \$12.6 billion total annual industrial output, 85,000+ direct jobs, > 25% of traded sector economy in 22/36 OR counties.

Ownership: Weyerhaeuser is now the only large publicly traded, vertically integrated company left in OR. Rise of TIMOs REITs, privately held large family. What impact on how forests are managed, who hires our graduates, support for research?

What does it all mean for us?

New kinds of markets for our graduates, knowledge and technologies. More consulting small-medium sized businesses to meet outsourcing demand? Our new Forest Operations Management degree program? Are we preparing graduates to function in a rapidly changing climate? Are they ready to work for TIMOs and REITs?

How to manage federal forests to mitigate for CO₂ emissions, encourage resilience to droughts, insects, fires, how to finance any of this when fire suppression takes 50% of your budget and technical skills are gone from your workforce.

Fires: Will policy default to let burn and let nature take over or will it encourage innovation on pre and post burn strategies aimed to align future forests with likely future climate? Will we learn how to tie biomass energy and bio-based fuels to forest resilience treatments; how to achieve economies of scale and minimize use of fossil fuels in harvest and transport? That's why we have a new initiative in **Forest Ecosystem Health and Bio-based Energy**.

Insects and invasives: We're just about out of forest entomologists nationally. This is not good with the climate we're facing. Same goes for expertise in dealing with invasive species; plants and animals.

Water: Water will be an even bigger political stress point in the west than it has been so far; good thing we put the **Watersheds Research Cooperative**, IWW and new grad degree programs in place, they're going to be needed more than we might have even thought and we are well positioned. Society needs a solid scientific foundation for keeping water clean and approaching natural hydrologic process in working forest landscapes.

Climate: The nation and region need a 2-pronged strategy for forests and climate: (1) adapt forests for the future climates they are likely to encounter

and (2) actively use forests and forest resources to mitigate CO₂ emissions from fossil fuels. EPA estimates that U.S. forests annually sequester an amount of carbon equal to 25% of nation's total emissions from fossil fuels, without even trying to be a major sink. Can they do more? Will they continue to do 25% if fire consumes more forest biomass in future years and urban sprawl eats away at private forests? It's past time to move out in developing sensible and workable roles for forests in climate change. We can give policy makers and publics the scientific knowledge and technologies for such policies and practices. I'd like to see the next major CoF initiative be **Forests and Climate**; we've already got faculty talking about how to do this. We've got the multidisciplinary talent in Corvallis when you combine us, PNW, EPA, USGS and folks from across campus. We just haven't organized ourselves for high visibility and impact the way the water faculty did several years ago.

Planted forests: Obviously our region's planted forests will be competing with those of other nations, they already are. Thus our initiative in **Planted Forest Productivity and Value Enhancement Program**. Landowners who choose to stay competitive in wood production forests will need continually improved state-of-the-art science and technology on how to link actions from genetic selection through nurseries, site prep, stocking, vegetation management and silviculture with an eye to optimizing return on investment over the life of the rotation.

Log value recovery: Optimizing the latent value in a tree while it's being harvested, bucked and sorted for transport to the best mill for processing is the focus of an initiative that links what foresters have invested to create

value in the tree to what manufacturers do to maximize that value in products.

Forest products: To remain globally competitive, forest products enterprises must continually innovate based on high value, new products with market advantages – composites, glues, nanoproducts, structurally superior wood shear walls, long-lived products -- management processes, and customer service. Market products based on life cycle analysis comparisons with alternatives along with immediate costs, price, and performance. **Oregon Wood Innovation Center.**

College priorities:

The above are just some of the high value efforts underway in the College to address some of the “dots.” None of them is funded adequately for maximal impact, maybe even for viability. We still have the budget challenge I described to you last December. On current revenue, expenditure and reserve trajectories, in 3 years we will have exhausted our reserves and face a near \$4 million gap between incoming and outgoing dollars. But we can’t stay on those trajectories. We will close the gap before 3 years is up.

I will ask legislature for a substantial increase in the biennial FRL appropriation to fill part of the gap. OUS is asking for an increase in the Education and General line item. These increases, if they occur, will go to faculty and staff base salaries. I will ask timber producers to raise their harvest tax to directly support the initiatives I just mentioned and to support faculty who choose to work on them. These initiatives all have high

potential to positively impact Oregon's economic diversity and vitality, an OUS, Governor's and legislative priority. But the forest sector has been missing so far in the development of proposals to the Governor and legislature from the Oregon Innovation Council and that may work to our disadvantage in Salem. We'll get on board soon though with Oregon INC.

We will ask faculty to place more of their base salary on grants and we will work with federal agencies to increase Facilities and Administration rates on lower returning grants and contracts. I don't know how much these 4 strategies will close our budget gap or how soon but it is unlikely they will close it all. So, we will work with the OSU Capital Campaign to build more endowed faculty lines, more support for program investments and perhaps even a new wing on Richardson. That's where the rest of the gap would come from if we are fully successful on all fronts. But the Campaign entails raising around \$30-50 million in private gifts; the wing would be the difference between our current campaign goal of \$30 million and what we should strive for. Where closing the gap will not come from, is College Forest revenues. We are actually going to reduce net forest revenues flowing to the College budget to allow other forest teaching, research and outreach values to move to the fore, as we promised in the revised plan. Major storms or fires could change our short-term plans for College Forests though and we must revise the Blodgett Plan to align with new wood markets and how the forest is actually being managed. Eventually, our 5-year College budget strategy needs to wean the College from dependency on College Forest revenues.

If we make substantial progress we will close the future budget gap through increased revenues, restoring the College to its high level of capacity to deliver the best graduates, new knowledge and outreach in the country if not the world. If we are not successful in closing the gap through revenues, we will close it through reduced expenditures, which we started several years ago and would continue with each yearly budget until the gap is closed. If the gap is closed entirely through reducing expenditures, we will operate with less than 2/3rds the capacity of 2000 by the start of the next decade. If that's what the people of Oregon want, then we'll emphasize our education programs, a modest FRL research program, a modest Extension program and research that comes from competitive grants and research cooperatives. We'll still need base funding to support faculty working on grants.

But modest programs are not what I want and I seriously doubt it is what you want. So I am asking for your help, faculty, FRAs, students, staff, alums and friends. Help us figure out how to squeeze all the possibilities out of a gap-closing strategy that works on increasing revenues rather than reducing expenditures.

I am hopeful that our new governance process and communications mechanisms will help you feel more engaged in the College's future. I already feel like you are more engaged and I am more empowered to succeed on your behalf as a result. Barbara Lachenbruch (nee Gartner) and Claire Montgomery are new at-large members of the Forestry Executive committee. We are forming the new College of Forestry Advisory Council in the next few weeks as people return to campus. The FRL Advisory Committee is being diversified with disciplines, gender and ethnicity but I

can't tell you the people yet until they confirm their willingness to serve. We have a new Graduate Student Council. We are holding quarterly listening sessions with groups that comprise the college and my door is usually open. For those who don't feel comfortable just popping in, there are posted office hours. I've been wandering the halls a lot more too, just getting to know folks and hearing what they are up to.

This college has a legacy of excellence that we will work hard to uphold. Our graduates, faculty and the staff that support them have had enormous positive impact on the well being of forests and people who use forests and forest products. We have had a great impact on scientific understanding of forest resources and forest ecosystems. We are poised to have even greater future impacts by capitalizing on the many possibilities that either lie in front of us or that we create. It's a great time to be in this College and to be able to serve the people of our state and nation as only such an outstanding College can do. We are deservedly recognized as one of the world's premier forest resources academic institutions and its all due to the long legacy of faculty, students and staff who have made this college such a remarkable place.

Please plan to join us at the Centennial Open House on November 3rd from noon to 4 PM. And please plan to participate in the many other exciting events of our Centennial Celebration. Also, next Friday, join me as we welcome 99 new undergrads and 22 new graduate students to our community.

So, that's what I have to say as we kick off the 100th year of forestry at OSU.

