Society of Oregon Foresters
Medford, Oregon
April 29, 2009

Forestry and the Future: Risks, Perceptions, and Policy

Good afternoon! I am delighted to be here. I'd like to begin by offering a note of humility. Those gathered have deep knowledge of forests and forestry, wood and woods. You combine the experiential knowledge of place and practical action with scientific and technical knowledge, too.

By contrast, I come from the world of policy and politics and Washington, D.C. That world is not always a context saturated with thought and knowledge. But spending 8 years in Washington at Nation's largest land management agency provided me a perch to perceive how people think about the environment and economic actions. That perch provided me with an up close and personal experience of landscape complexities. It presented me with a daily fare of how perceptions intersect with public choices about public lands—and private lands, too.

Those perceptions and corresponding policy preferences are in transition. This transition has already deeply influenced the management of public lands and may soon come to influence more fully the management of private lands, as well. Consider that—on BLM and BIA lands—some 1.8 million board feet were harvested in 1990, generating $333 million in revenues. By 2002, that figure had dropped to 719 million board feet—a 64 percent reduction in volume of harvest over a 10-year period.

Public perceptions of forestry are increasingly dominated by two features. First is a preference for managing forests for multiple values—sustainability is the modern catch phrase, a phrase that is, itself, evolving in focus and meaning. Folks want aesthetics & recreation; the intrinsic qualities of naturalness and wildness; ecosystem services of water purification and nutrient cycling; biodiversity; and many still want commodities, too. Second is a deepening concern about risks—what are we doing to life on this planet?

Let us pause to consider the matter of risk—then return to the matter of forest management. Public perceptions of risk are shaping what's acceptable as this nation manages forests, both public and private.

Why do risk perceptions loom large? What are those perceptions? Why do they matter?

We must first get our concepts straight. Risk perceptions are *not* the same as general environmental beliefs; they are related—but they are not the same. Risk refers to prospects that some harm or loss will occur. Put another way risk can be expressed as a probability that an adverse outcome will occur to the environment and to human communities.

Risk perceptions are what people think are the sources of risk, the intensities of different risks, and the likelihood that bad outcomes will occur. Risk is not the same as uncertainty: uncertainty is not measured in probabilities. Rather, uncertainty is simply the absence of information and the inability to describe outcomes.

Why are risk perceptions looming large in forest management? Above all, there is a growing perception of crisis—that we have done a bad job in preventing bad outcomes. Consider the Millennium Ecosystem Assessment done in 2005, which provided a worldwide look at the state of our natural places and natural systems. That report concludes that over past few hundred years, the species extinction rate is up 1,000-fold above the background rate without human interventions. The report summarizes research that estimates this world has lost 1 in 8 bird species, 1 in 4 mammals, and 1 in 3 amphibians. Some 60 percent of the world's ecosystem services are degraded. These figures do not paint a pretty picture and fuel public perceptions that "all is not well" with planet earth.

Risk perceptions are partly shaped by worldviews. One pundit writes: "We see things not as they are, but as we are." Increasingly, with much of the public there is a growing traction of values and beliefs that conclude that:

- Humans are seriously damaging the environment
- Earth's resources are limited (a perspective with a long pedigree articulated poignantly by 18th century scholar John Malthus)
- If things continue as in the past, catastrophe looms
- Ecological crises are real, not exaggerated
- Nature, while resilient, cannot cope with the extent of modern impacts

For the world of forestry, these basic beliefs translate into concerns about loss of habitat; loss of biodiversity to the extent that ecosystems will unravel; and fears that changes are irreversible. In public policy, what matters is not whether these views are true, but whether folks think they are true.

One thing we need to recognize about risk perceptions. Research shows that basic environmental values and beliefs are better predictors of risk perceptions than is the level of actual knowledge about ecosystems, forests, and forest practices. That is, an individual may have significant knowledge of biology and ecology, coupled with a worldview that perceives mankind as having devastating impacts on the earth. The latter—the worldview—is more likely to shape perceptions of risk than is any particular knowledge of biology and ecology. Worldview is also a better predictor or risk perceptions than socio-economic background and demographics.

But environmental values and worldviews are not the sole predictor of attitudes toward risk, according to scholars of environmental risk. Hence, risk perceptions need to be taken into account in forest management and policy alongside environmental values and beliefs. Specifically, strategies to manage risk and risk perceptions must accompany basic strategies to reduce environmental impacts.

Reflect for a moment on a couple other dimensions of risk perceptions. Often there is a big gap between what experts think and what non-experts think about risks. In forestry, experts are often more concerned about erosion and sedimentation of waterways, for example, while non-experts worry about chemicals and pollution and climate change.

Public risk perceptions are often biased to overstate the likelihood of rare, dramatic events and understate the prospect that harms from mundane, routine, everyday events will occur. Perceptions of risk are also greater for "involuntary" events—like harms from a pesticide sprayed aerially—than perceptions of risk from "voluntary" events like, say, driving a car.

Let me offer one final observation about risk perceptions. Several scholars have documented that people especially fear "dread risk"—events like catastrophes over which people have no control and for which consequences are fatal or irreversible. So, too, do people especially fear "unknown risks"—harms that are not immediately observable, or for which there is a delay between exposure and harm, or the action and the bad outcome.

Now—how might I tie all this to forests and their management? Consider a couple characteristics about forests, natural systems, and ecosystems that are especially relevant. Forest risk perceptions rank high both on the dimension of "dread risk" and "unknown risk". Specifically, biodiversity loss—rightly or wrongly—is perceived to be occurring at a "terrifying" rate that will have globally disastrous outcomes. People imagine these biodiversity losses to present a future world akin to what scholar Paul Erlich has described as a nuclear winter. What happens, for example, if we have no birds and bees to pollinate fruit trees or vegetables or all the plants of the planet? What happens if we lose predators that keep other animal populations in check?

Forest management risks also carry a quality of "unknown risk"—what one author describes as fear of Russian roulette in the forests. We may lose one species without serious consequences, just like one might pull one trigger in Russian roulette without consequences. But how can we know when a loss will turn out to be a serious loss—the fatal bullet?

And, looming over this general picture of risks is the big question mark of climate change and how it will affect forest and wildlife dynamics. Are we—as one commenter put it—"chipping away at the very structure of life?"

Out of these growing perceptions of risk is emerging a growing sympathy for what policy pundits call the "precautionary principle". If we don't *know* what the future holds; if we are uncertain about how our actions are affecting life on the planet; if we aren't sure about the likelihood or magnitude of potential harms, should we apply caution and undertake forest protections "just in case" risks are high, potentially significant, and maybe irreversible?

The precautionary principle basically pivots the decision making balance in favor of anticipating and preventing bad outcomes rather than awaiting more certainty or more knowledge about the likelihood of harms occurring—and the causes of those harms. As a guide for management of forests, the precautionary principle assumes we should not let incomplete knowledge of harms or cause-effect relationships deter or delay action to prevent the harm. Shades of the precautionary principle are evident in the Northwest Forest Plan. So, too, do we see this principle unfolding in the growing restrictions on forest disturbances on public lands.

These trends are part of a larger, worldwide political trend. Numerous international conventions now refer to precautionary principle, including language in the Rio Declaration of 1992; application of the Convention on Biological Diversity; the European Union Habitats Directive; and the United Nations Fish Stocks Agreement.

But let's take a closer look at these trends. Are the precautionary principle and risk perceptions really the fundamental drivers of caution and restrictions in forest management and timber harvesting? Or are other social and political forces behind these growing restrictions? And—in any event—does the precautionary principle offer a useful way of thinking about forest management?

Yes, perceptions of risk matter. But some forestry policy analysts suggest that trends in forest policy really are less a product of perceptions about uncertainty and risk and more the ongoing result of competing values and the inevitable trade offs that accompany different management choices. My experiences at the Interior Department validate this conclusion.

A central question in *all* modern natural resource management is how to give expression to multiple values and how to balance competing preferences. Some folks want access to lands for traditional commodity uses. More and more folks value public lands and natural spaces—both public and private—for aesthetics, recreation, wildness, and wildlife. Often, these values and uses are in tension.

There is a growing awareness, too, that intact natural systems provide benefits to human communities—storm buffers, pollution absorption, water purification, pollination, soil maintenance, the list goes on. From this awareness is emerging pressure to sustain and maintain these natural systems as essential to the well-being of human communities.

Perceptions of risks and uncertainty about the resilience of natural systems, their components, and their functions render this balancing act even more complicated. These questions of balance influence the impulse toward what is now often dubbed "sustainable forestry". This framework is, increasingly, focused on holistic ecosystem health than on sustained yield.

At least 30 initiatives on forest certification and forestry practices standards now exist. Many of these initiatives share key elements that include provisions for monitoring, and development of metrics or standards of performance. These performance measures encompass broad values such as measures to protect basic forest values—water cycle, biodiversity, flowing streams, and undisturbed areas. Often, these initiatives also put a premium on collaboration and stakeholder participation in shaping standards and criteria of sustainability.

What I have learned through my 8 years at Interior is that reducing conflict and achieving consensus on acceptable management of public lands hinges on a sense of process fairness. That perspective of process fairness is more important than the generation and dissemination of scientific and technical information about risks. Industry participants and public managers can compile mountains of information and share it with multiple publics in an attempt to reduce perceptions of risk. But such information will be perceived with skepticism—or altogether ignored—unless interested publics have an opportunity to participate in decision making, help shape the research agenda, and help define management goals. In short, generating information is, alone, not an antidote to perceptions of risk.

Perhaps sustainable forestry is emerging as a dominant management framework because the precautionary principle is hard to translate into practice—and may not, ironically, reduce risks of forest management. Consider the conundrum with the spotted owl. On one hand, spotted owl protection has resulted in the press for maintenance of old growth forests. On the other hand, overly dense forests increase risks of catastrophic fire. Some argue that the status quo—the "make no intervention" option—is not necessarily the option that best protects biodiversity and forest health in the long run.

So, how, then, can forest managers face the challenges of complexity and uncertainty that are, I believe rightly, acknowledged by purveyors of the precautionary principle? I see two strategies gaining momentum both in forestry and other natural resource contexts.

The first is adaptive management. Adaptive management requires that performance goals be set—goals that can include performance for multiple values that span resource use, recreation, conservation, preservation of wildness and wildlife, maintenance of ecosystem functionality, and so on. Under adaptive management, actions are then identified and undertaken to achieve specified goals. Outcomes of these actions are monitored, then actions are adjusted as needed to better achieve the hoped for goals. Adaptive management is a framework that recognizes what E.O. Wilson referred to as the "immensity of our ignorance". It is a framework that combines action and, at the same time, knowledge building to improve results over time.

The second strategy I see gaining momentum in natural resource management across the nation is cooperative conservation and collaboration. If land, water, and wildlife

management increasingly are subject to competing preferences and values, conflict is likely. Indeed, nowhere is this conflict more evident than in Oregon, where nearly every forest plan and every timber harvest proposal are met with lawsuits.

Is there a way to reduce these conflicts? Central to resolving conflicts is finding decision making processes and settings that have some prospect of engaging interested participants in finding common ground. Conflict resolution is, thus, fundamentally about governance. Land managers face questions of governance and goal setting. Several policy analysts describe these governance questions to include:

- How might we balance different interests?
- Whose priorities should prevail?
- Who should be involved in decision making?
- How can we evaluate trade offs when each course of action has some risk of some harms?
- What is the role of expert opinions versus personal judgments and values?
- Who should pay costs of actions that benefit the public but may reduce private benefits?

During my years at Interior, I saw increasing attention paid to these questions. And agencies increasingly have sought to transcend conflict through collaboration. Transplanting endless litigation and conflict is the emergence of what I call cooperative conservation—on both public and private lands. Cooperative conservation refers to efforts to engage multiple "publics" in defining goals, shaping scientific inquiry, and evaluating results.

Here in southern Oregon, the Applegate Partnership offers a nationally celebrated example of collaboration or cooperative conservation. Or consider the privately owned Pingree Forest in Maine with its sustainable forestry practices and collaboration with environmental organizations and local communities.

The basic premise of these endeavors is that successful land management increasingly depends on the active participation and cooperation of people affected by decisions and with strong interests in the outcome of those decisions. As national forests are managed, increasingly, for multiple values, collaboration will, I believe, loom large as a way of finding a balance of values that is sustainable—both in the physical sense *and* in a socio-political sense. Collaboration is, I believe, the governing wave of future for public lands.

Cooperative conservation is no panacea. In particular, collaboration has limits in settings that have national symbolic or "iconic" importance and in "headliner" settings such as that of the Northwest Forest Plan. Each of us can point to its limitations and places in which conflict persisted or consensus results eluded participants. Yet stalemates with Northwest Forest Plan, or the failure of the Quincy Library experience to translate into on-the-ground action obscure so many other instances of successful collaboration that *is* resulting in access to resources *and* conservation.

But these efforts all face challenges, challenges that include coping with circumstances of incomplete knowledge and inherent complexities; challenges of inadequate policy tools to enhance private stewardship; challenges of incentives—for example, the current political and economic framework results in revenues for commodities but not for other services forests provide the public, thereby limiting some conservation opportunities. These efforts all face challenges presented by trade offs between short-term harms and long-term benefits.

Nonetheless, amid all this uncertainty, one thing is certain. Borrowing from the wisdom of one of my favorite philosophers, Yogi Berra: "The future ain't what it ***used to be."*** For foresters, the old Chinese proverb is relevant: From challenges spring opportunities.

There is emergent interest in ecosystem services—the idea that natural systems provide benefits to human communities. Oregon, among States, is actually leading the way to explore how these services might generate economic opportunity to landowners and land managers. The 2007 Farm Bill acknowledges such services and the US Department of Agriculture has established an Office of Ecosystem Services with a goal of exploring whether economic opportunities reside in the conservation of ecosystems.

Is this fantasy? Consider the Tualatin Basin in Oregon where local wastewater treatment authorities combined 4 wastewater permits and one stormwater permit into a combined single bundle under the Clean Water Act. They then achieved water temperature standards by paying $6 million to landowners to maintain and plant trees along waters in the watershed rather than investing $60 million for installing refrigeration systems.

I don't want to overstate this potential, nor suggest that income from landowner provision of ecosystem services can or will or should replace commodity income. But as this Nation struggles to balance resource use and resource protection, economic opportunities tied to ecosystem services may become an important part of the balancing equation.

Let me end with a final thought about risks and risk perceptions. There is some irony in pressures to apply the precautionary principle on public lands in its strictest interpretation of "no action is the best practice." If that approach further restricts forestry on U.S. lands, it could further shift logging to developing nations where practices are often unconstrained and thoroughly unsustainable. Even in the United States, further restrictions on timber harvesting on public lands could shift focus to monoculture plantations. Both contexts are likely to present risks to biodiversity and healthy ecosystems—the very risks a precautionary principle is intended to reduce.

My comments are not those of a pessimist or a critic but are the comments of a realist. The Nation is shifting from notions of sustainability as sustained commodity yields to

the concept of sustainability as implying management to assure healthy ecosystems. This perspective will shape forest management and timber practices of the future. The pages of land management will not, I believe, turn back to an era of emphasizing commodity production and achievement of specific levels of product. The central question is just how this balancing act of resource use and resource conservation will unfold.

Thank you!