

# Section IV. Findings and Conclusions



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## Water and Aquatic Resources

*Water resources and aquatic ecosystems are among the state's resources that face the most serious risks.*

- ▶ **Water quality is typically poor or very poor across the state during low flow periods,** except in heavily forested and high elevation areas, and shows only slight improvement in the last few years.
- ▶ **Available water supply during low flow periods is fully or over-allocated across the state.** There are more instream needs than stream flows to meet them.
- ▶ **The hydrologic regimes (such as high and low flows) have been disrupted in most river systems in Oregon.** These actions helped achieve flood control, irrigation, navigation, hydropower, and water supply benefits, but at a cost to naturally functioning systems.
- ▶ **Riparian conditions are typically poor or very poor across the state, with the exception of some high mountain streams.** Revised management plans now in place should enable improvement in riparian areas on federal and state lands over time, but improvement on private lands remains uncertain.
- ▶ **Wetlands have been reduced by up to 60 to 75% in some ecoregions,** numerous native wetland communities are at risk, and threats continue due to population growth and economic and agricultural expansion.
- ▶ **Historical loss of tidal wetlands is high, but restoration is reversing some losses.** Principal threats to estuaries today are shoreline modifications for upland development, dredging for navigation projects, invasions of aquatic nuisance species, sedimentation and pollution, and pressures from population and tourism growth.
- ▶ **Almost half of Oregon's freshwater fish, including many salmon stocks, have declined or are at risk of extinction,** ranking Oregon fifth in the nation in terms of the greatest number of listed fish species.
- ▶ **Some stocks of groundfish are overfished,** and the industry dependent on this fishery has little hope of quick recovery. Offshore rocky reefs that may be important as fish habitat have no special protection.
- ▶ **Ocean beaches are threatened by increasing placement of beachfront riprap.** Cut off from a supply of sand, these beaches will gradually narrow and be lost to recreation use.



Forest Media Center

## Forests

*Overall timber harvest has declined by about 50% from the late 1980s due to concerns on federal lands over protection of species and ecosystems.*

- ▶ **Private forests now provide almost all of the timber harvest.** Recent development has only slightly impacted forest land reflecting the influence of Oregon's land use laws. More changes may be needed on private forests to assist salmon recovery.
- ▶ **Old growth forests are at relatively low levels,** due to timber harvest, but have the potential to increase significantly under implementation of new federal policies.
- ▶ **Oregon's westside forests remain productive** except on the north coast where a native disease (Swiss needle cast) has greatly reduced growth. Early successional stages are extensive throughout the westside. Increasing structural diversity, especially large legacy trees and snags, remains a challenge on all lands.
- ▶ **In the future, Oregon's westside forests may become bifurcated,** with older forests on federally owned uplands and younger forests on privately owned lowlands, and little mid-aged mature forests represented except on state lands.
- ▶ **Changes in the structure of eastside forests have contributed to increased insect outbreaks and more intense fires.** New federal policies aim to reverse these trends, but controversies over active management of federal forests, especially concerns over impacts on threatened fish stocks, make full implementation of the policies problematic.



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## Rangelands

*Oregon's upland rangelands have improved significantly since grazing reform in 1934, but problems persist.*

- ▶ **Fire suppression and past grazing practices have contributed to an expansion of sagebrush and juniper woodlands and a decrease in grasslands.** However, on many rangelands sufficient natural character remains so that proper management practices could accomplish improvements in ecological condition without drastic changes in current uses.
- ▶ **Improper grazing in riparian areas remains a significant problem.** Little monitoring is occurring to measure the success or failure of improved grazing programs and range rehabilitation projects. Full implementation of new federal plans and approaches should help reverse rangeland degradation, but controversies over the role of active management in ecosystem restoration may stymie these efforts.



## Biological Diversity

*Although Oregon still retains much of its native biodiversity, many key elements are imperiled.*

- ▶ **Grasslands, prairies and bottomland hardwood forests have experienced losses of more than 50% in all parts of the state (and as high as 98% in some) as a result of conversion to agriculture, urbanization, and invasions by exotic plants.** Almost all of the native vegetation in the Willamette Valley, and over half in the Columbia Plateau, have been converted to agriculture or urban uses; many native habitats have been almost entirely eliminated from these areas and others lie in the path of urban and suburban development.
- ▶ **Reintroduction of natural processes is important to sustaining biodiversity.** Preservation will not maintain the ecological function of many areas that need historical disturbance processes to thrive. Without revitalization of remaining rangelands and prairies, for example, we will lose species even if lands are not converted to other uses.
- ▶ **The shift in federal land management has the potential to help significantly in recovering many upland-dwelling species, but will not be sufficient to recover depressed salmon stocks.** Federal lands will take the lion's share of the responsibility for recovery of many old-growth dwelling species such as the northern spotted owl and other upland species such as the sage grouse. The life history of salmon combined with the ownership pattern in Oregon suggest that federal and state policy, while important, will need the assistance of private landowners to recover salmon and restore aquatic habitats.



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## Agriculture

*Productivity on agricultural lands remains good, but environmental challenges remain.*

- ▶ **Conversion of agricultural lands to other uses declined significantly after enactment of Oregon's land use regulations in 1973,** however conversion continues to pose a threat to the viability of agriculture particularly in the Willamette Valley.
- ▶ **Agricultural yields are being sustained at present,** but detailed analysis of trends among commodities is needed to determine whether or not soil health and productivity is being impaired by erosion and loss of organic carbon.
- ▶ **The quality of soils has decreased in parts of Oregon under intensive row cropping** where more than 40% of soil organic matter has been lost in the last 100 years, yet technological inputs have resulted in increasing crop production levels.
- ▶ **Soil is eroding from parts of the Columbia Plateau three times faster than it can be replenished,** creating a very serious threat to long-term productivity and sustainability.
- ▶ **The effects of pesticides and fertilizers (especially nitrates) on water supplies and aquatic habitat remains a concern.** Water use and streamside practices remain a potential threat to salmon recovery.
- ▶ **Oregon has become a leader in the use of sustainable practices** such as conservation tillage, integrated pest management, cover cropping and nutrient management.

## Toxic Emissions

*Oregon's emissions and discharges are growing at about the rate of population and economic growth.*

- ▶ **Almost all categories of hazardous waste emissions, air and water pollution, toxic releases, and waste generation are growing.** These pressures create environmental risks and potential human health risks within Oregon's urban and residential areas and to associated ecoregions and watersheds.
- ▶ **Air quality has improved in compliance areas but is still at risk from vehicles.**
- ▶ **Recycling is increasing, along with the rate of waste being generated.**
- ▶ **Oregon's efforts to improve the environment could be significantly affected by climate change.** There is increasing awareness that climate change may have significant impacts on winter snow accumulation, seasonal runoffs, fire hazard in the summer, and the range of plant and animal species. The problem of climate change cannot be solved by Oregonians alone, yet it can destabilize our attempts to improve environmental conditions within the state.

## Data Collection and Management

*Measuring the status of Oregon's environment will require the state to update its existing data management in order to monitor conditions and trends in the environment.*

- ▶ **Most existing data sources are based on regulatory requirements and may not be useful for measuring sustainability.** State agencies have a long and commendable tradition of tracking environmental conditions in Oregon, among their many responsibilities. Much of the data used in this report comes from those efforts. Yet, most existing data sources are based on regulatory requirements and few seek to measure environmental or economic sustainability necessary to provide a comprehensive picture of the status of Oregon's environment.
- ▶ **The State needs to develop and institutionalize a statewide environmental assessment framework and apply it at recurring intervals as part of an overall statewide sustainability strategy.** Statewide land use/land cover information can be developed as a source of data useful in tracking overall landscape change as well as a way to organize other data useful for monitoring a wide range of trends. This approach would complement the aquatic monitoring now being developed for the Oregon Plan for Salmon and Watersheds.



Bob Rost, OSU EESC

## Conclusions

As the 21st century begins, the people of Oregon face new challenges in the management of natural resources. Past attempts to control the environment have had unanticipated costs. Natural occurrences such as fire, floods, and genetic diversity that seemed so unruly a half-century ago are now recognized as important aspects to maintaining the health of forests, rivers, and wildlife. Without these natural functions, we have found that forests may become diseased, wetlands disappear, and stocks of native fish decline.

The citizens of Oregon want assurances that the choices they make will keep their environment healthy enough to continue to produce a full range of environmental goods and services into the future. Such assurances are difficult to make. The products provided from a healthy environment include a sustainable supply of timber and forage, productive agricultural land, and cities with clean air and water. These, too, may come with unanticipated costs. Urban growth areas designed to limit sprawl may at the same time compromise the water quality of streams running through them. Increased wheat production that supports a vital regional economy and feeds the world may mean the steady loss of topsoil and the depletion of water.

This evaluation of the state of Oregon's environment reveals a system that is complex and interwoven. Because of this interconnectivity, managing natural resources may require trade-offs when deciding among competing demands. Intensive agriculture and forestry as well as industrialization and urbanization are highly valued economically, but they can result in significant threats to the environment. Some environmental threats make headlines, such as toxic materials washed from an industrial site. Other threats stem from small, everyday incidents, such as applying pesticides carelessly or clearing trees and brush along a river. And yet, even these small actions add up across the landscape to create significant cumulative threats.

Managing Oregon's environment involves decisions that range from the actions of large industry to the weekend maintenance of one's own backyard. It involves activities high in a watershed and their consequences to river conditions farther downstream. It involves finding common ground among those who wish to preserve natural systems and those who wish to maximize economic productivity. For decisions, large or small, that Oregonians face every day, it is essential to understand the status and trends of the environment.



Bob Rost, OSU EESC

► **The state has made great strides in resolving critical environmental problems of the past, and now faces new challenges.**

In response to environmental problems during the 1960s and 70s, Oregon became a leader in the nation in land-use planning, reduction of waste, and land protection. The quality of life made possible by a healthy environment continues to attract new people and industry to Oregon. On average since 1990, Oregon has added more than 50,000 new residents per year. This brings new pressures to the state's environment.



Bob Rost, OSU EESC

▶ **Many of Oregon’s key environmental problems are concentrated in the lowlands where most Oregonians live and work.**

Many of the current problems identified in this report (poor water quality, degraded riparian areas, etc) are most critical in the lowlands of the major river basins—historically the wetlands, woodlands, and grasslands—that Oregonians have intensively developed for homes, cities, farms, and ranches. These lands are mostly privately owned, and the actions involved come from people and industries going about the ordinary business of life.

▶ **The greatest opportunity for improving Oregon’s environment in this generation occurs on lands that Oregonians control: on state, county, and private lands.**

Much of what potentially can be achieved on federal lands is already reflected in new policies and plans for managing federal forest and range lands. Private lands have become an increasingly important element to solving many of Oregon’s environmental problems for this generation. We are all part of the problem and will all have to assist with the solutions.

▶ **The current challenge on federal lands is to take action based on plans that are now in place or near completion.**

Federal lands have gone through great change in management in recent years. Implementation of these changes rests with federal managers as well as their citizen partners and neighbors in every Oregon community.

▶ **Oregon’s current environmental problems reflect the cumulative effects of many small, diffuse, individual decisions and actions.**

Aquatic ecosystems, which integrate many diverse activities, are most impacted and most at risk. Developing policies and programs to address these cumulative effects is one of the greatest challenges for Oregonians.

▶ **The State’s existing environmental data collection and management system must be improved to effectively measure ecological conditions, trends or risks.**

These problems are fundamentally different from the problems Oregon’s environmental programs were initially established to address. Resolving them will require new approaches as described in this report, which are aimed at sustaining the health of naturally functioning landscapes and the productive capacity of the environment.

*Science’s role is to help us understand  
the health of Oregon’s environment —  
democracy’s role is to determine  
Oregon’s future.*

# A Word from the Science Panel Chair...

To the people of Oregon,

A glance at the findings of the *State of the Environment Report* will remind us that there are limits to the natural function of Oregon's environment, limits to the productive capacity of our soil and water, and limits to the extent that we can correct problems through environmental laws and regulations.

Issues are complex. Problems are intertwined, and they cannot always be traced to a single pipeline or chimney stack. Problems with diminished water quality, for example, may be a symptom of larger problems, such as the loss of natural structure in the environment that serves as a filter to cleanse water. Such natural structure might also serve to hold soil in place, slow seasonal floods, and provide habitat for a variety of beneficial organisms. Regulating the specific pipeline source of pollution will certainly help improve water quality, but restoring the natural structure of that landscape will buffer against nonspecific sources of pollution from fields, roads, and septic tanks, as well as offering a host of other benefits.

As the state's population continues to increase, the limits of a healthy environment will continue to be challenged. Existing laws cannot protect the natural function and productive capacity of the landscape. It is imperative to understand the consequences of individual actions on the environment.

I invite you to learn about the status of Oregon's environment, and to consider its future. Work continues with the Oregon Progress Board to develop environmental benchmarks for the state. Work is about to begin to develop sustainability targets for the state, and to link environmental, social, and economic goals. Although the Science Panel has completed its task, many of its members will be pleased to contribute to the ongoing activities.

After reading this Report, if you have questions or comments, feel free to contact me at my office at Oregon State University, Office of the President, 600 Kerr Administration Building, Corvallis, Oregon, 97331, or call 541-737-2565.

The purpose of the *State of the Environment Report* has been to describe the health of Oregon's natural systems. That has been the work of the Science Panel. The next step is to establish goals, to envision the state of the environment we want to have in 25 years, and to compare that vision to trends outlined in this Report. That is the work of the citizens.

I hope to hear from you.

Sincerely,



Paul G. Risser  
President, Oregon State University

# Science Panel and Contributors

*The State of the Environment Report was developed and written by a group of dedicated scientists and technicians, all of whom worked as volunteers.*

## Science Panel

*The Science Panel was selected in 1998 and charged with the responsibility of producing the State of the Environment Report.*

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*The Science Panel worked in collaboration with a broad-based group of public officials, stakeholders, and interested citizens. These groups, with the Science Panel, make up the full State of Oregon Environmental Report Full Committee.*

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Oregon Tourism Commission

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Upper Klamath Lake

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Individual copies of the *Oregon State of the Environment Report 2000–Statewide Summary* are available to Oregonians free of charge. Copies of the full-length *State of the Environment Report* and bulk orders of the *Statewide Summary* are available at cost.

For more information, contact Zoë Johnson at 503-986-0039 (phone), 503-581-5115 (fax), 503-986-0123 (voice/TDD). The *Oregon State of the Environment Report* is also available on-line at [www.econ.state.or.us/opb](http://www.econ.state.or.us/opb).

## **Oregon Progress Board**

The Oregon Progress Board is an independent state strategic planning agency. Created by the Oregon Legislature in 1989 to keep Oregonians focused on the future, the Board is responsible for maintaining the state's 20 year strategic plan, *Oregon Shines*. The ten-member board, chaired by the governor, consists of citizen leaders and reflects the state's social, ethnic and political diversity.

The Progress Board is best known for its Oregon Benchmarks, ninety indicators of economic, social and environmental health. Recommendations from the *Oregon State of the Environment Report* will be used by the Board to strengthen the benchmarks relating to environmental issues.

The members of the Progress Board are: Governor John Kitzhaber, Chair; Brett Wilcox, Vice-Chair; Lindsay Berryman, Ron Daniels, Bobbie Dore Foster; Dave Frohnmayer; Beverly Stein; and Ed Whitelaw.

For more information about the Oregon Progress Board, the Oregon Benchmarks, or the *Oregon State of the Environment Report*, please write to :

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