

# 3.8 Summary of Current Status and Health of Oregon's Rangelands

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## Report Card

- There has been a general improvement to upland ecological conditions compared to conditions during the early twentieth century.
- Lack of fire has increased the amount of sagebrush-dominated stands and encouraged juniper invasion, both beyond the historical range of variation.
- The major current risk to rangelands is the continuing invasion by exotic plant species, which have replaced native vegetation on about 2.8 million acres.
- Sufficient information exists to provide proper grazing use in most upland situations, yet improper grazing management in riparian areas is still a major problem.

### Indicators

Naturally functioning landscapes can be evaluated for ecological health by observing key aspects of the vegetation community that influence key ecological processes (water, nutrient and energy cycles):

1. Dominance of native vegetation appropriate to site and absence or suppression of exotic invaders. Individual species of native vegetation would, of course, vary with time since last disturbance, soils and precipitation pattern.
2. Increase in native plant cover, species composition, and decline in soil erosion.
3. No accelerated soil erosion.
4. Maintain a mosaic appearance where fire was a natural event and fire intervals that approximate the natural range of variation.  
  
Production of goods and services important to humans would first of all have to include the above. Additionally:
5. Sustainable levels of profitable timber and/or livestock production, concurrent with positive indicators of ecological health.
6. Ecologically appropriate recreational activities (not causing erosion or degradation of biodiversity) that are not compromised by commodity production.
7. Appropriate employment rates in natural resource dependent communities.

- There is very little monitoring to measure success or failure of grazing programs and range rehabilitation projects.
- Lack of consensus by disparate interest groups is impeding management.

### Introduction

Rangelands are commonly defined as those lands that are unsuitable for cultivation, characterized by native plant communities, may be associated with grazing animals (both wild and domestic), and are managed by ecological rather than agronomic methods. The term rangelands can also include forestlands that have grazing resources (both wild and domestic), or seeded lands that are managed like rangelands. Rangeland resources are not limited to grazeable forage, but may include many other benefits such as wildlife habitat, water, and recreation (Society for Range Management 1999). With this definition in mind, every ecoregion within Oregon contains rangelands. Non-forested rangelands make up about 40% of the land area of Oregon. Inclusion of areas within the forested region, and using the broad definition above, would mean that more than half of Oregon might be classified as rangeland. More than half of Oregon's land is federally owned. The Bureau of Land Management manages 15.7 million acres in Oregon, 13.5 million acres of which is rangeland. Additional rangelands are managed by the state and the USDA Forest Service.

Although lands west of the Cascades are seldom considered rangelands, some lands are managed as such. Many of the same principles of management are applied and many

of the same rangeland-associated problems exist, such as weed invasions. Even the Coast Range mountains contains natural and artificial openings (meadows, pastures, abandoned homesteads, etc) and logged areas that are grazed by both domestic and wild grazers (blacktail deer and elk). Despite the great variation in Oregon's landscape and the diversity of native plants among ecoregions there is a basic similarity in ecosystem function across ecoregions. Riparian zones and wetlands are important components of rangelands, but they are discussed more fully in other sections of the *State of the Environment Report*.

## Definitions of healthy rangelands

Rangelands as naturally functioning landscapes are characterized by plant communities that evolved under variations of climate, soil and disturbance regimes of each ecoregion. Rangelands that exist with forests are often termed *transitory ranges* as they exist for a time period after a disturbance event such as wildfire, and give way as recolonizing trees gain dominance. As each class of vegetation competes for soil, moisture and light resources over time, changes in the plant community occur. Short-term climatic cycles may influence the composition of a rangeland community, as well as natural disturbances such as fire that periodically return affected areas to an earlier phase. Natural landscapes, therefore, are usually mosaics of areas of different disturbances over time and therefore made up of mixes of diverse plant communities.

We expand the definition of ecosystem health to include goods and services important to humans. Livestock grazing and timber production have been common and important uses of rangelands. Most healthy rangelands are capable of supporting commodity production and at the same time retaining the components of naturally functioning landscapes. Additionally, recreational activities such as camping, birdwatching, fishing, hunting and hiking are among the goods and services available from a healthy rangeland ecosystem. Both commodity production and recreation provide for economically viable local communities. Currently, there is often disagreement among interested parties on proposed land management actions, that results in litigation. Perhaps an important indirect measure of future ecological health would be consensus by disparate interest groups on a vision for the structure and use of landscapes.

## Indicators

Naturally functioning landscapes can be evaluated for ecological health by observing key aspects of the vegetation community that influence key ecological processes (water, nutrient and energy cycles). Native vegetation should be present and exotic invaders absent or suppressed. Individual species of native vegetation would, of course, vary with time since last disturbance, soils and precipitation pattern. Trend in ecological status over time would be upward. There should be no accelerated soil erosion. The landscape should have a mosaic appearance where fire was a natural event.

Indicators of ecological health important to humans would first of all have to include the above. Additionally, concurrent profitable timber and/or livestock production should be possible. Healthy ecosystems should also provide for ecologically appropriate recreational activities that are not compromised by commodity production. An important indicator would be appropriate employment rates in natural resource dependent rural communities.

## Current conditions and trends

In most situations in Oregon, natural disturbance is a key factor in determining what kinds of plant communities are present at any given time. Localized disturbance such as floods, disease, insect infestation, or severe wind storms are disturbance factors that may affect given areas. In this discussion we will focus on landscape-level disturbances, in particular fire and large-scale grazing.

Wildfire, resulting both from lightning strikes and human causes, has been one of the greatest forces in modifying plant communities in all but the wettest and driest parts of Oregon (coastal rain forest and desert salt scrub, respectively). Timing of fire intervals varies greatly across ecoregions. The ponderosa pine forests of the Blue Mountains burned about every 8 to 15 years, while the forests of western Oregon probably burned about every 300 years. In prehistory, Native Americans used fire as a tool to encourage food plants and develop areas for hunting. Within each ecoregion some burning probably occurred each year. Travelers on the Oregon Trail a century and a half ago noted that the Blue Mountains had fires burning each summer and fall. Intensity of natural fires varied with plant community type as well as environmental conditions (fuel load, temperature, humidity or lack thereof). In many cases fires burned lightly and unevenly, creating mosaics of burned and unburned habitats. These mosaics interacted over time, allowing sources of colonization as well as new areas to colonate.

When evaluating Oregon's rangelands we must realize we are dealing with legacy issues, changes that were brought about during the settlement period when attitudes towards natural resources were much different than today. When Europeans settled Oregon, they changed historical disturbance regimes, and converted parts of the range to croplands and towns. The first lands to be converted were rangelands and prairies where soils were the deepest and most fertile. Conversion of Willamette Valley prairies (previously maintained by Native American fires) and basin big sagebrush communities, for example, meant loss of the native vegetation and habitat for many wildlife species. Deer and elk lost seasonally important foraging areas, a factor that causes conflicts today. In some parts of the state, large homesteads were cleared, but farming them failed. In western Oregon many of these cleared lands are now important foraging areas for deer and elk, and are artificially maintained. Others remain in degraded conditions.

Although fire was a natural part of most ecosystems in Oregon, it has been viewed as a negative factor since the time of settlement. In the 1800s, livestock grazing was so intensive that all the fine fuels necessary to carry natural fire were consumed. This allowed previously suppressed species to begin to take on a more prominent role in landscapes. Once grazing became managed and fuels remained, active fire suppression was practiced. Fire suppression continues today as a major human disturbance which has negative effects on ecosystems. Major consequences of fire suppression include the proliferation of plant communities beyond the natural range of variation. Fire suppression may also encourage an increase in woodland species like juniper which actually fireproofs an area due to the degeneration of understory vegetation (fine fuels). In the case of fuels build-up, extremely large and unnatural acreages are burned at high intensity. In the cases of fuels reduction, junipers dominate and the understory degenerates to the point of causing increased soil erosion..

In the sagebrush steppe two results commonly occur from a lack of fire. The first is juniper invasion. In most cases where native juniper has invaded steppe vegetation during the last 80 years, it has dominated the site. Over 90% of the 3.2 million acres of juniper woodlands in Oregon have developed in the last 100 years (USDI BLM 1990). Juniper is very competitive for soil moisture and nutrients. Associated species generally disappear (even sagebrush) and with the loss of understory, increased erosion is occurring. This loss of understory vegetation results in a loss of cover and forage for a wide variety of biota from butterflies to mule deer. However, some of the best diversity in the sagebrush steppe occurs at mid-successional levels where juniper exists along with a diverse understory. These transitory phases will degrade to a near monoculture of juniper with a lack of fire.

The other result of fire suppression occurs in sagebrush steppe which lacks a juniper component. Without fire, sagebrush increases and maintains dominance through competition which causes the depletion of understory vegetation. Again the lack of understory to provide structure for cover and forage for various animals results in a decline in diversity.

One caution should be noted with the reintroduction of fire for rangeland management. Where weeds have invaded or have the potential of invading, fire may actually enhance their opportunity to gain dominance. As is the case with cheatgrass, fire cycles may be shortened so that native plants cannot regenerate; frequent fire helps to perpetuate the weeds.

In all ecoregions, early rangeland users tried to improve upon the native species. Consequently, in some situations natives have been replaced by introduced forage species such as crested wheatgrass in the sagebrush steppe and orchardgrass in the forests. Some of these have become a permanent part of the vegetation component, while others are transitory in nature.

These species have, in many cases, helped preserve the soil resources on otherwise depleted areas, so that the potential for native communities still exists.

The Interior Columbia Basin Study (Quigley and Arbelbide 1997) provides a summary of changes within various Ecological Reporting Units which are roughly analogous to our ecoregions. This study shows that the Owyhee Uplands and Columbia Plateau Ecological Reporting Units have had the greatest conversion from rangeland to agriculture, particularly the intensive agricultural areas around Ontario and the dryland wheat and irrigated agricultural lands along the Columbia River. All Ecological Reporting Units were found to have been affected by the invasion of these noxious weeds. Upland Woodlands, representing juniper woodlands, were shown to be spreading significantly beyond the natural range of variability. This spread has caused a concomitant decrease in the Upland Shrubland category, made up of sagebrush and/or bitterbrush/grass communities. Data from this study are displayed in the SOER Appendices, accessible at the Oregon Progress Board website: [www.econ.state.or.us/opb](http://www.econ.state.or.us/opb).

## Threats

Livestock grazing from the 1860s until the passage of the Taylor Grazing Act in 1934 was unregulated and had drastic ecological consequences that persist today on rangelands. With near complete removal of vegetation, many rangelands were essentially fire-proofed and soil was lost due to erosion. Unfortunately, some improper grazing still occurs today. Sufficient information exists to provide proper grazing use in most upland situations. However, improper grazing management in riparian areas is a major problem.

There is a growing awareness that in order to be successful, restoration and management must be addressed within a landscape-scale framework. This is characterized by the formation of active watershed councils throughout the region. Under the framework of the Oregon Plan for Salmon and Watersheds, funds are available to these local groups through the Oregon Watershed Enhancement Board. A related activity, administered by the Oregon Department of Agriculture, is the development of Senate Bill 1010 basin plans with area farmers and ranchers, for the purpose of addressing water quality issues. The Natural Resources Conservation Service is providing both technical and financial assistance to landowners through Farm Bill programs. Another ongoing effort is the West Program of the Oregon Cattlemen's Association, using the watershed concept to address ecological, economic, and social factors relative to sustainability. An interagency strategy to Accelerate Cooperative Riparian Restoration and Management has been implemented by the BLM, Forest Service, and NRCS. This approach is designed to incorporate the elements proven successful in demonstration areas throughout the west, such as the Trout Creek Mountains in southeast Oregon.

Although continued improper grazing poses threats to rangeland health, particularly in riparian and wetland areas, the major current threat to upland rangelands is the continuing invasion by exotic plant species. Lack of fire increases risk to native plant communities, as junipers encroach into some areas, and old unburned sagebrush communities lose structural and biological diversity. Yet reintroduction of fire carries with it the risk of increased weed invasion.

Historically, many weeds were introduced as ornamentals or as contaminants in seed. Today, with travel of people, equipment and livestock across the state, weeds can occur anywhere. Movement of weeds along road right-of-ways is common. Exotic weeds of one species or another have invaded every ecoregion of the state. Weeds can totally replace native plants species and even whole communities, alter fire cycles, increase erosion, reduce biodiversity, and decrease livestock production. As we try to reintroduce natural disturbance to ecosystems, the threat of weed invasion increases if seed sources are present. However, some weeds are so aggressive they can invade undisturbed sites. Even though land agencies recognize weeds as a threat, limited funding limits suppression efforts. Often a specific weed problem is not recognized until it has invaded areas large enough to make control impossible.

Rangelands across Oregon are managed for a variety of outputs. Management of private lands usually focus on livestock and/or timber production with growing consideration given to weed control and water quality. Public lands are mandated by law for multiple use: commodity production with consideration for fish, wildlife, watershed and recreation values. How rangelands should be managed is currently a topic of debate. Livestock grazing is, of course, a major issue, but other management approaches such as juniper control, prescribed fire, logging, and herbicide application for weed control are also controversial. Polarization of disparate groups is now impeding remedial management in many instances. There is a serious need to bring these groups together and form a common vision for the management of rangelands. The longer these interests remain polarized, the longer no action on management is taken and in some cases, the longer the resource continues to degrade. The Trout Creek Mountains Project for the rehabilitation of riparian conditions and Lahontan cutthroat trout habitat provides one of the best examples. However, there is little evidence that this process has been repeated.

As the human population of Oregon increases, the impacts of recreation may become a threat to Oregon's rangelands. A variety of threats exist, from damage to fragile plant communities due to unrestricted off-road vehicle use to disturbance of spawning salmonids. It is common in eastern Oregon for elk to seek the security of private lands due to harassment by people on easily accessible public lands, which creates new problems on private lands. Wood cutting, camping, fishing,

off-road vehicle use, and hunting that often lasts from August through November are all disruptive factors that have the potential to degrade rangeland health.

## **What data are available and how complete are they?**

There is a definite need to develop better data bases to understand current ecological conditions of rangelands on a landscape basis and to then develop programs for management of rangelands. Existing data bases are usually drawn from site-specific studies, are short-term, or if attempted at a landscape level (the Interior Columbia Basin Ecosystem Management Project, for example), the scale is such that interpretation is often difficult. Government funding (federal, state and local) for rangeland management has always been limited. One Range Conservationist for the BLM may be in charge of several hundred thousand acres and administer 50 grazing permits. Ecology programs within the federal agencies are poorly funded. There is very little monitoring to measure success or failure of grazing programs and range rehabilitation projects. Additionally, funds for active management programs are extremely limited. BLM and USFS personnel actively search out support funds from foundations for assistance in management. As an example, the Rocky Mountain Elk Foundation provides nearly \$200,000 per year in Oregon to support such activities as re-seeding, prescribed fire, and aspen rehabilitation. Rangelands in Oregon today are in desperate need of more attention. That attention could be in the form of consensus on a vision for rangelands, adequate information gathering on a landscape level, management programs to restore natural functioning condition, monitoring to judge the success of those programs, and proper funding to accomplish the aforementioned.

## **Conclusions**

Rangelands in Oregon across all ecoregions have suffered drastic ecological disruption with European settlement. Despite this past trauma and some that continues today (weed invasion), rangelands continue to provide functioning landscapes and goods and services to humans. Recent advances in our approaches to land management, like reintroducing fire, and more broadly practicing adaptive management, should provide for improving ecological integrity. An urgent need is for the diverse interest groups concerned over rangelands to formulate a common vision for the management of these lands.

## **References**

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