NORTHWEST OREGON ECOLOGY GROUP NEWSLETTER

Version 10.0
April 2011

The Northwest Oregon Ecology Group is an association of ecologists with a wide range of interests from the Mt. Hood, Siuslaw and Willamette National Forests, the Columbia River Gorge National Scenic Area, and the Eugene and Salem Bureau of Land Management Districts. The group works from local to regional scales to provide tools, assessments, and analyses for ecological issues for planning, managing and monitoring forest ecosystems in Northwest Oregon. Through their own efforts, and affiliation with ecologists with Oregon State University, University of Oregon, Oregon Department of Fish and Wildlife, University of Washington, and private consultants, they have developed products most resource managers use every day.

Climate Workshop Held on the Willamette

Katie Isaackson, Public Affairs, Willamette National Forest

In January 2011, the Willamette Climate Change Committee held a workshop, Integrating Science of Climate Change with Vegetation and Aquatic Resource Management. This was the first of several workshops designed to address the issue of climate change as it relates to the Forest. The two-day event drew over 70 people who were interested in hearing from resource scientists, as well as discussing how to incorporate climate change into their work plans.

The topic of this workshop focused on effects to aquatic and vegetation resources. In the first day, speakers from the PNW Lab, including Gordie Reeves - Research Fish Ecologist, Paul Anderson - Research Forester, and Dave Peterson - Wildland Fire Sciences, and local experts such as Cindy McCain - Ecologist and Dave Kretzing – Earth Scientist, presented the potential localized impacts to resources in the Willamette Valley and the Cascades area.

The following day, everyone divided into three groups to discuss the information from the previous day and determine what additional tools and knowledge they would need to adapt to a changing climate.

"*The desired outcome of the workshop was to provide our workforce an opportunity to explore and discuss the issue of climate change on the Willamette NF so that they are better able to apply current science to our resource management*," said Cheryl Friesen, Science Liaison for the Willamette NF, who facilitated the event. "*I feel we were successful and I look forward to more workshops this year.*"

The Willamette Climate Change Committee formed in 2008 after the Willamette Leadership Team identified climate change as an important issue. The Committee is made up of representatives from a variety of resources areas who work to develop awareness of climate change science as it relates to forest management.

Future workshops will focus on climate change influences on wildlife and cultural resources.

Consequences of conifer encroachment for mountain meadows: A long-term study of vegetation change in the Three SistersWilderness Area

Ryan D. Haugo, Charles B. Halpern, and Jonathan D. Bakker
School of Forest Resources, University of Washington

Mountain meadows are prized for their ecological, aesthetic, and recreational values. In the Pacific Northwest they contribute significantly to the local and regional diversity of a landscape dominated by forest. Ongoing encroachment of meadows by conifers may threaten the unique qualities and functions of these habitats. Understanding the causes and ecological consequences of previous tree invasions is critical to managing or adapting to future changes in these mountain landscapes. Long-term studies in the Three Sisters Wilderness Area offer an unprecedented view of recent changes in the composition and structure of meadows in response to 20th-century encroachment.

We have studied patterns of vegetation change across forest-meadow boundaries, or ecotones, at 20 locations in the Three Sisters Wilderness on the Willamette and Deschutes National Forests. Study sites were chosen to sample the diversity of physical environments (montane to subalpine, hydric to xeric) and tree invasion histories that characterize this landscape. At each location, a permanent transect—50 to 220 meters long with varying numbers of sample quadrats—was run from closed forest, across the ecotone, into open meadow. Measurements included the locations, sizes, and canopy cover of trees; cover of all herbaceous and woody species; and counts of tree seedlings. Measurements were first made in 1983, then repeated in 1993 and 2009—a period of 26 years spanning three decades. From these data we explored patterns and correlates of vegetation change, placing emphasis on the dynamics of forest and meadow species within the ecotone and their variation across the landscape.

Despite 50-100 years of tree influence, meadow

species dominated most ecotones. Over 26 years of observation, we detected significant changes in the ecotone at most sites, but no detectable changes in adjacent forest or meadow habitats. Within the ecotone, species diversity declined over time, reflecting greater loss of meadow species than gain in forest species. Declines were steeper in montane and subalpine sites in which moisture was seasonally limiting. Dispersal of forest species into the ecotone was limited to lower elevation (montane) sites. Limited dispersal in the subalpine zone reflects the depauperate nature of the understory at higher elevations. Over the period of study, changes in ecotonal structure (i.e., tree cover, basal area, or density) did not predict changes in the ground vegetation. Rather, ground vegetation was more responsive to variation in initial (1983) structure. Sites in which invasions had progressed the furthest (greatest canopy cover or basal area) were those in which vegetation changes were greatest over the study period.

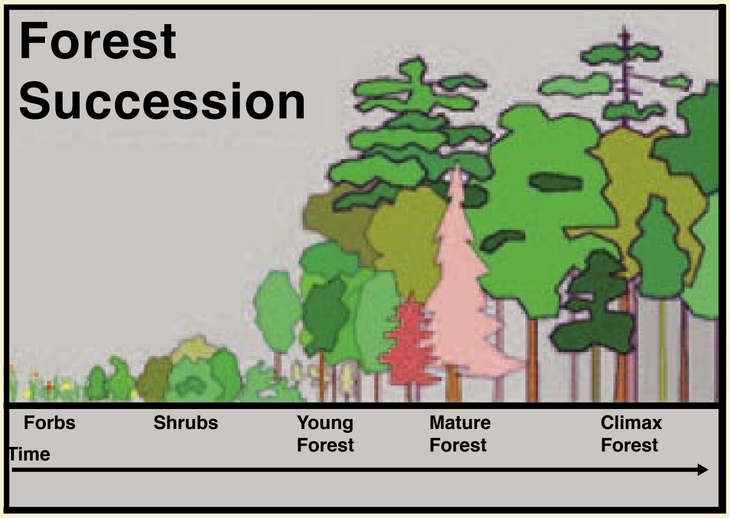
Future changes in climate are likely to alter these dynamics through effects on tree establishment and growth. Warmer and drier summers may slow rates of invasion and growth on dry montane slopes, but enhance them in hydric basins where waterlogged soils currently limit tree expansion and associated changes in meadow vegetation. Similar changes may occur in the subalpine zone in response to reduced snowpack and longer growing seasons. Climate change may also be accompanied by greater frequency or intensity of insect outbreaks or fire, enlarging existing meadows or creating new ones. To our knowledge, this study represents the first long-term, large-scale assessment of recent responses of mountain meadow communities to 20th-century forest expansion. Understanding how landscape context and tree influences shape the dynamics of these meadows represents a first critical step toward predicting future changes in these systems.

Numerous agencies, institutions, and individuals have contributed financially or logistically to this research. Initial funding was provided by the Man and the Biosphere Program. Subsequent remeasurements were supported by the PNW Research Station, Willamette National Forest, Region 6 Area Ecology Program, Mazamas, NPS Global Change Program, and the University of Washington Graduate School Fund.

Early Seral Forest: We know we need it, how do we get it?

Cheryl Friesen, Science Liaison, Willamette National Forest

This highly successful workshop was held in partnership with the NW Oregon Ecology Group in the spring of 2010. Powerpoint presentations and a video of the workshop can be found at the following link: http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/workshops/early-seral-forest/



Chris Dowling and Kurt Aluzas of the Olympic NF provided these key points:

- Early Seral openings created on private and state land by clearcutting are significantly different than natural early seral habitat. Natural early seral habitat is structurally and compositionally diverse and contains:
  - Large quantities of snags and down wood.
  - Clumps of live, damaged, and dying trees.
  - Slow conifer regeneration 30 to 50 years to reach canopy closure (as compared to approx 15 years in plantations).
  - Hardwoods and shrubs not suppressed by herbicide.
  - Shrubs developed to large sizes and producing berries and dense cover.
  - Many insects and wildlife species not present in traditional clearcuts.
  - High plant diversity.
  - <20% overstory canopy closure.
  - Soil disturbance that aids in increased plant species diversity.
- Structurally and compositionally diverse early seral habitat is one of the rarest habitats in western Washington and Oregon. They make up less than 2% in Western Oregon when including the Biscuit fire area.
- Structurally and compositionally diverse early seral openings are important to many old-growth associated species.
- Biological processes and habitat structure of early seral and old-growth are intertwined through components of biological legacy.
  - Snags and other structures left after disturbance to older forest are very important in driving the functionality of early seral, especially as primary cavity excavators create cavities used by subsequent residents.
  - Likewise, the shrub/broadleaf component and other aspects of veg composition and structure that develop at the early seral stage provide values that persist into latter stages of development.
- Early successional gaps are an important structural component of old-growth. Gaps should be large enough to not have sunlight limiting effects on the center of the gap by trees on the edge of the gap. Openings need to persist long enough for shrubs to reach flowering/fruiting age. Otherwise only interior forest vegetation is being provided habitat. Historic areal photos can be utilized to identify size and quantity of early successional gaps in previous old-growth forests.
- Gap diameter needs to be at least as large as the height of the surrounding canopy (Gap diameter-to-height ratio of 1.0 or greater) in order to function as early seral.
- Early Seral openings created in riparian

areas with stream temperature of 10 to 15 degrees C can benefit from increases in stream primary production. Flying insect production in streams is also increased providing food sources for wildlife inside and outside of riparian areas. ACS encourages some elements that would be compatible with early seral objectives. However, short-term risk to listed fish species may preclude all but non-commercial thinning in riparian zones.

- Active management can enlarge existing early successional openings or create new ones.
- Early successional openings close in faster in wet forests therefore larger openings may be more effective.
- Hardwoods developing in early successional openings can make young-growth habitat conditions suitable for owl foraging habitat sooner because of small mammal associations with hardwoods.
- When making a commercial thinning for development of large trees there can be some early successional benefits when thinning to wide spacings. Rough rules of thumb used on the Siuslaw NF is that Douglas-fir trees attain closed canopy when reaching 20-25 inches in diameter at 60 trees per acre, 30-35 inches in diameter at 40 trees per acre, and 90 inches in diameter at 13 trees per acre.
- Tall shrubs are slow to recover from mechanical damage from thinning, yet require light to survive and are functionally valuable to maintain. May require some creative prescriptions/protections.
- Vegetation structure and composition drive functional importance to wildlife species:
  - Aerial insectivore guild is a diverse group that requires both cavities (snags) for nesting and open, early seral habitats with deciduous vegetation for foraging (e.g., Olive-sided flycatchers).
  - Percentage of hardwoods during post-fledgling songbird period on the breeding grounds is positively correlated with demographic effects.
  - Reptiles: Open areas for basking, woody debris for cover, and abundant insects for foraging.
  - Arthropods strongly associated with non-coniferous vegetation.
  - Overall, plant diversity of ES habitats in terms of foliage, nectar, fruits and seeds forms foundation of food web.
- As iconic early seral species, does meeting the needs of deer and elk cover the needs of other early seral species? Yes and No.
  - Deer: Due to differences in rumen size and related digestion efficiencies, deer require a higher quality and more digestible diet than the more generalist elk. Deer tend to focus more on browse (shrubs and forbs) and benefit from diversified stands.
  - Elk: Require quantity more than quality, compared to deer (and bulls more than cows).
  - Early seral habitat that provides quality habitat for black-tailed deer also likely provides for more early seral species than managing habitat solely for elk. Paying attention to and adding elements important to other species (snags, LWD, flowering plants, etc) will improve the range of early seral species provided for.

One thing to note is that there was little mention of invasive species potential all day - perhaps that would have been stating the obvious. Surely we need to consider threat of invasive plant species anytime we are considering early seral habitat enhancement.

"We are begining to understand the natural world and are gaining a reverence for life - all life."
Roger Tory Peterson

Evidence of climate related shifts in epiphytic lichen communities of the Pacific Northwest

Linda Geiser and Doug Glavich, US Forest Service,
Pacific Northwest Air Resource Management Program, Corvallis
and Sarah Jovan, US Forest Service, Forest Inventory & Analysis Program, Portland

Within the US Pacific Northwest, some of the many anticipated effects of climate change include shifts in species distributions and diversity, including extirpation. The US Forest Service Forest Health Monitoring lichen indicator is designed to track climate-related changes in epiphytic macrolichen communities, a type of forest vegetation that is diverse, ecologically integral, and particularly sensitive to climate.

From 1993-1999 epiphytic lichen communities in coniferous forests were surveyed at 350 sites across five national forests in the Coast Range, Columbia River valley, and Cascade Ranges of western Oregon and Washington. Repeat surveys were made in 2003-2009. Gradient analysis was used to relate lichen community patterns relate to PRISM (Parameter-Elevation Regressions on Individual Slopes Model) climate estimates for the survey sites. A non-metric multidimensional scaling (NMS) ordination of sites in species-space resolved two perpendicular gradients (axes 1 and 2), together explaining 84% of the variability in lichen communities. Lichen community scores along axis 2 reflected community-level responses to climate and correlated well with mean minimum December temperatures (r2 = 0.72), elevation (r2 = 0.63), continentality (r2= 0.54), mean % relative humidity (RH; r2= 0.36) and mean temperature (r2=0.34), but not precipitation (r2= 0.012). Axis 1 was correlated with air quality, primarily N deposition. Changes in climate scores between Round 1 and Round 2 and twenty year simple linear regressions of PRISM climate variables indicated that lichen communities in the Coast Ranges are shifting towards cooler climate species, associated with greater moisture in the air from increased % RH, possibly a result of greater winter storm energy along the coast. No change was detected in communities of low elevation valleys. Shifts in species composition towards warmer-climate communities and higher biodiversity (species richness increases >25%) were widespread further inland along the Oregon Cascade Ranges, especially at mid to high elevations where the greatest winter temperature warming (2-4o C) occurred.

These data demonstrate that lichen communities are highly sensitive to and provide an excellent ecological response indicator of short term (10-20 year) trends in climate. They are also some of the first evidence of shifts in species distribution and diversity in the US Pacific Northwest that can be directly related to climate trends. Regarding the broader plant community, these results imply that managers can expect variable responses and response rates to climate change across the landscape with greatest potential changes at high elevation sites where the most rapid warming is occurring.

TIPS ON MEADOW RESTORATION: TO SEED OR NOT TO SEED

Cindy McCain, Willamette and Siuslaw NF Ecologist and Charlie Halpern, University of Washington

Biologists and botanists on the Willamette NF were struggling with some difficult questions about seed collecting and sowing for meadow restoration aimed at conifer removal, particularly in meadows treated with prescribed burns that include burn piles. Questions included: Is burning or repeat burning necessary? Is seeding necessary? If the meadow contains a mix of grasses and forbs, should we be collecting and seeding a representative mixture? Would this require collecting seeds over the growing season as different species set seed? Would seeding only particular species cause a significant shift in composition?

1 year after pile burn.

Charlie Halpern offered some thoughts:

- Burning or multiple burns may only be appropriate at some elevations and in some meadow types. Burning may not be necessary (or advisable) in other types.
- If burning has the potential to lead to adverse effects (e.g., exotic invasions), consider whether it is possible to remove slash rather than burn it.
- If burn pile scars are slow to heal, consider raking in litter and organic material from adjacent unburned vegetation to improve soil conditions and the potential for ßreestablishment of native species.
- If weeds (native or exotic) are not an issue in or around your site, consider whether you need to seed at all. Early results from the Bunchgrass Meadow restoration experiment suggest that the natural process of dispersal may be adequate.
- If weeds (particularly exotics) are an issue, consider spot treatment (manual removal or herbicide application) before burning.
- If you seed only small areas (burn piles or severely burned spots), then you are unlikely to affect the broader composition of the meadow.
- Ultimately, what you sow may not be what germinates given the abundance of seed in the seed rain, the activities of small mammals, and the vegetative spread of rhizomatous or stoloniferous species.
- The ability to reintroduce particular forb species from seed may require an understanding of the reproductive biology and germination requirements of the species. Transplanting plugs may be possible, but only on a small scale.

2 years after pile burn.

For more thoughts on what to expect with different meadow restoration techniques, check out the Bunchgrass Ridge website, which is undergoing updating and re-vamping.

http://depts.washington.edu/bgridge/

Special Habitats on the Willamette and Siuslaw National Forests

Doug A. Glavich, Lichenologist/Botanist, Siuslaw National Forest

The Willamette and Siuslaw National Forests are developing spatial datasets for Special Habitats, which include non-forested areas like meadows, rocky outcrops, ponds, wetlands, and sand dunes. To construct the dataset, non-forested polygons in the FSVEG GIS data, aerial photos, infra-red orthophotos, and field visits are being used to assign vegetation types and improve delineation. The Eugene BLM Special Habitats data, previously delineated with a different method by Northwest Habitats Institute, overlaps in a portion of the two Forests, offering an interesting opportunity to compare the two methodologies.

The Siuslaw National Forest is exploring additional methods to develop a draft geodatabase for a Forest-wide Special Habitats dataset. Three pilot areas are being studied: the Mercer Lake Frontal 5th field watershed, Mary's Peak planning area of the Central Coast Ranger District, and the Nestucca River 5th field watershed in the Hebo Ranger District. Within these boundaries, all accessible data are being assessed including the non-forested polygons from the Forest's vegetation data (PIVEG); polygons drawn by staff on the Pilot Districts; and the overlapping Eugene BLM Special Habitat data. Some of the coastal meadow sites have been visited to collect site-level vascular plant inventory data, which will also be incorporated into the Special Habitats geodatabase. The end goal is to have a functional spatial layer available that can be improved over time with field data. We're not quite at the point of being able to identify plants in a meadow from space, but we can keep on dreaming, and do the best we can with the tools and data at hand!

COMING SOON!

Contact Jane Kertis, Ecologist, Willamette and Siuslaw National Forest for more information.

High elevation mountain hemlock forest -- 10 year response to the Charlton Fire.

Twelve plots were established to monitor post-fire effects on coarse woody debris, tree, seedling and understory in this 10,000 acre fire in partnership with Oregon State University and the National Park Service. Analysis was undertaken to characterize coarse woody debris dynamics. A peer reviewed journal paper is expected in FY11.

Natural tree regeneration and coarse woody debris dynamics -- 14 years response to the Warner Fire.

Analysis and a draft paper of fire effects in the Warner fire were completed in FY10 in partnership with the National Park Service. A peer reviewed journal article is expected out in FY11.

Warner plot 1998 (7 years post-fire)

Warner plot 2005 (14 years post-fire)

Seasonal burning effects on meadow vegetation.

Portions Mutton Meadow, a seasonally dry, mid-elevation meadow on the south end of the Willamette NF were burned in spring and fall of 2010 to explore seasonal fire effects on both native and non-native grasses and forbs. Analysis was completed in FY10 and a white paper is expected in FY11.

Uncovering the Benefits and Tradeoffs in Oak Habitat Restoration

Nathan Ulrich and Bart Johnson, Department of Landscape Architecture, University of Oregon

Researchers in the departments of Landscape Architecture and Environmental Studies at the University of Oregon are working with a diverse group of stakeholders to facilitate the recovery of former oak habitats in the southern Willamette Valley.

Oak-dominated habitats and associated grasslands in the Willamette Valley are one of the most endangered ecosystems in North America. These plant communities developed during the early Holocene (circa 11,000-7250 years before present) when the climate was much warmer and drier than today. Over time they became the dominant vegetation types of the valley floor and foothills. As the climate cooled and became wetter during the following millennia, Native cultures and wildfires maintained their abundance and diversity (Walsh 2008).

A remnant savanna in Corvallis, OR

Over the course of the past 150+ years, however, nearly half the area that oak ecosystems once covered was converted to agriculture, grazing, forestry, and urban development. Those that were not converted tended to shift to later-successional communities dominated by conifers and shrubs due to wildfire suppression and the cessation of anthropogenic burning (Hulse et al. 2002). Today, the small patches of oak savanna, woodland and forest that remain are further degraded from their historic condition due to the establishment of highly competitive introduced plant species. Because of this combination of pressures, substantially less than 10% of historic oak savannas and woodlands remain in the Willamette Valley today.

Efforts to restore oak habitats have been complicated by the fact that 96% of all land in the Willamette Valley is privately owned, so conservation strategies that rely on public lands alone are unlikely to recover landscape-scale ecological function. Adapting restoration strategies to the needs of private landowners and respecting their use of oak habitats is essential to preserving long-term ecological viability.

Private landowners can receive many benefits from oak habitat restoration including wildlife habitat, biodiversity, income, aesthetics, wildfire hazard reduction, and pride of land stewardship. At the same time, they may encounter challenges to restoration including a lack of knowledge about restoration methods and targets, insufficient financial resources, and concerns about future government regulation. In addition, many landowners are disinclined to restore because they perceive the existence of tradeoffs to simultaneously achieving multiple goals but are unable to discern how those trade-offs will impact their efforts. Together, these challenges complicate restoration decision-making by adding uncertainty to planning and implementation efforts.

To help landowners achieve the restoration outcomes they desire, researchers at the University of Oregon are working to identify paths to achieving desired restoration outcomes and illuminate where tradeoffs may occur. This has involved delineating five alternative oak habitat restoration targets (see Garmon 2006) and five current successional states for historic oak habitats, and then modeling the potential outcomes and trade-offs associated with implementing each target on each existing condition type (see Ulrich 2010).

The research team first worked with stakeholders that included agency and NGO managers, restoration practitioners, and private landowners to develop the alternative restoration targets. They then worked with the practitioners to develop means of assessing the outcomes for each potential restoration scenario in terms of six priorities: treatment costs, income potential, habitat value, wildfire hazard, time required to achieve restoration targets, and scenic beauty. Cost estimates were made based on the use of common, on-the-ground, restoration methods. Assessments of the next four priorities were developed using USFS Forest Vegetation Simulator (FVS) software. Evaluations of the final priority, scenic beauty, were developed from a survey of rural landowners in the southern Willamette Valley.

Study results provide landowners and restoration planners with quantitative estimates and qualitative

rankings for each of the six restoration priorities relative to each of the potential restoration scenarios. As an example, restoring oak savanna with a high percentage of native grasses and forbs on land that has succeeded to a mixed oak-conifer forest can significantly reduce the threat of a crown fire and cost less than if it was implemented on an oak forest. The reduction in cost stems from income earned after selling merchantable conifer logs. Total costs, after accounting for income from thinned trees, range from a low of $100 to a high of $4600 but average $1300 per acre (assuming late 2010 log prices). Such high-quality savanna restoration also increases habitat value and scenic beauty relative to other restoration targets that leave more trees or do not emphasize a high-quality native ground layer.

In addition to their site-specific implications for landowners and site managers, many of the project results also have broader implications for landscape-scale planning. Most significant are the potential to achieve high-quality biodiversity conservation at reduced cost by restoring oak habitats on sites that have succeeded to conifer forest, and the value of oak habitat restoration for wildfire hazard reduction. Results also highlight consistent tradeoffs between total cost and habitat quality, and illustrate benefits to oak savanna restoration over oak woodland restoration in terms of habitat quality, the time required to achieve restoration targets, and scenic beauty. Conversely, however, oak woodland restoration may achieve greater overall levels of fire hazard reduction for both surface and crown fires. In terms of the existing vegetation on a restoration site, results indicate that restoring from broadleaf forests provides the most substantial benefits for reducing wildfire hazard, increasing habitat value, and decreasing time to habitat maturity.

The approach of framing understanding about oak habitat restoration in terms of alternatives and tradeoffs has the advantage of respecting landowner's knowledge and priorities, and promoting what landscape planners Joan Nassauer and Paul Opdam (2008) refer to as "collaborative production of knowledge." It does not provide an answer to the question of what restoration goals landowners should seek, but rather clarifies plausible outcomes and trade-offs to restoration targets. Providing the tools to make better-informed decisions about oak habitat restoration can reduce the likelihood of unrealistic expectations and the pursuit of paths that are ill-suited to the desires and capabilities of individual landowners. Providing alternative restoration strategies with clear guidance about the ways in which each landowners can navigate the tradeoffs among different priorities may better support the goal of rebuilding oak habitat function at landscape scales in a region dominated by private landholdings.

Citations:

Garmon, J. R. 2006. Restoring oak savanna to Oregon's Willamette Valley: Using alternative futures to guide land management decisions. Thesis. University of Oregon, Eugene, Oregon.

Hulse, D., Gregory, S. and J. P. Baker. 2002. Willamette River Basin planning atlas: trajectories of environmental and ecological change. Corvallis: Oregon State University Press.

Nassauer, J. and P. Opdam. 2008. Design in science: extending the landscape ecology paradigm. Landscape Ecology 23(6): 633-644.

Ulrich, N. D. 2010. Restoring oak habitats in the southern Willamette Valley, Oregon: a multi-objective tradeoffs analysis for landowners and managers. Thesis. University of Oregon, Eugene, Oregon.

Walsh, M. K. 2008. Natural and anthropogenic influences on the Holocene fire and vegetation history of the Willamette Valley, northwest Oregon and southwest Washington. Thesis. University of Oregon, Eugene, Oregon.

Infilled oak forest prior to savanna density thinning

The same site immediately after restoration thinning

River Estuary Restoration

Doug A. Glavich, Lichenologist/Botanist, Siuslaw National Forest

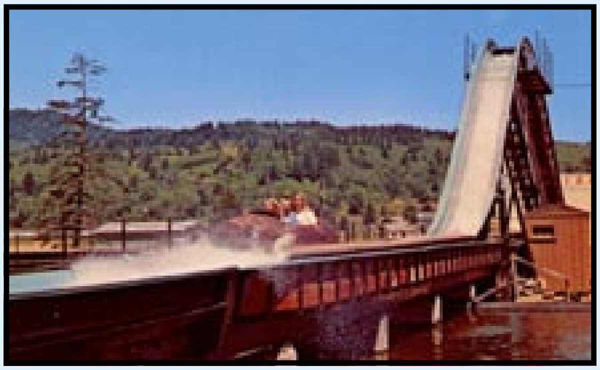
The Siuslaw NF has been working with the Salmon Drift Creek Watershed Council (SDCWC) to restore two previously developed parcels that Siuslaw acquired on the Salmon River estuary just north of Lincoln City. The first, Tamara Quays, is a 40 acre parcel that was once a mobile home park built on the tidal marsh encompassing Rowdy Creek. The second is a 50 acre parcel that was home to the short-lived amusement park, Pixieland, which was built on the tidal marsh just to the east of highway 101. Asphalt and structure removal began for both sites in 2007, and by 2008, noxious weed treatments and tree planting began. The next step was to restore the altered landform of dikes, ditches, and fill back to the historical marsh condition.

In the summer of 2009 at Tamara Quays, fill material was graded down to the historical marsh elevation, and the dike and tide gate were removed. During Winter/Spring 2009-2010, the newly graded surface was planted with tufted hair grass (*Deschampsia cespitosa*), willow (*Salix* sp.), various shrubs, and Sitka spruce (*Picea sitchensis*) as well as other conifers. The newly planted vegetation is doing well. Rushes (*Juncus* sp.) have self-recruited in the tidal area, and alder is sprouting on the upper slope. Aside from the restored marsh surface area, there is ongoing weed maintenance to the upland openings between Rowdy Creek and Salmon River that were once covered in dense black berry.

At Pixieland in the summer of 2010, the fill material was graded down to the historical marsh elevation, ditches and artificial ponds were filled, and the dike along the Salmon River was taken down to the natural riverbank height. More ground surface restoration work is scheduled for the summer of 2011, and currently, the site is undergoing re-vegetation. The SDCWC has been working hard to manage work crews for intensive noxious weed removal and native vegetation planting. In the spring of 2011, we hope to have a portion of the willow, shrubs, and conifers planted in the ground, and reed canary grass treatments and marsh seeding of tufted hair grass will follow. We are hopeful that the vegetation work for this first phase should be complete by late spring. A great video documentation of work at the Pixieland site is available on the Oregon Field Guide website http://www.opb.org/programs/ofg/segments/view/1773

Tamara Quays, Summer 2009

Tamara Quays, Fall 2010



Pixieland

Pixieland 2010

WORKSHOPS, WORKSHOPS, WORKSHOPS!!

May 9, 2011

"Fire Ecology and Fire Management: Integrating Two Complex Processes."

Objective: This workshop will build awareness of fire ecology on the Willamette National Forest (west central Cascades of Oregon), and it will provide an opportunity for discussion on how we will be managing future wildfires.

WNF Supervisor's Office, Springfield

Cost: FREE

Contact: Cfriesen@fs.fed.us for an agenda and to RSVP.

May 16, 2011

"State of the Knowledge: What do we know about climate change and its effects on Coast Range Environments?"

Yachats Commons

Cost: FREE

Contact: Jane Kertis (jkertis@fs.fed.us)

June 21- June 22, 2011

"Using plant associations to read and manage the landscape"

Westside and eastside field trips.

Mt. Hood National Forest

Cost: FREE

Contact: Jeanne Rice (jrice@fs.fed.us)

June 24, 2011

"Early Seral Forest on Pacific Corps Lands: Field Tour of Management Techniques."

Sponsored by the RMEF, this field day will highlight management techniques on Pacific Corps Land in western Washington.

Ariel, Washington

Cost: FREE

Contact: brichardson@rmef.org for an agenda and to RSVP

July, 2011 (Date TBD)

"Using plant associations to read and manage the landscape"

Willamette National Forest, Detroit RD Forest

Cost: FREE

Contact: Cindy McCain (cmccain@fs.fed.us)

Date TBD

"Using plant associations to read and manage the landscape"

Siuslaw National Forest/ Salem BLM

Cost: FREE

Contact: Cindy McCain (cmccain@fs.fed.us)

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The Northwest Oregon Ecology Group relies on a variety of professionals throughout the area to support their activities. The following ecologists and biologists also contribute to the program.

Linda Geiser, Lichenologist and Air Quality Specialist,
Siuslaw National Forest.
Specialty: Lichens.

Tom O'Neil, Ecologist,
Northwest Habitat Institute.
Specialties: Oak restoration, wildlife habitat,
and biodiversity data management.

John Christy, Ecologist,
Oregon Natural Heritage Information Center.
Specialties: Wetland ecology and mosses.

Allison Reger, Analyst,
Willamette National Forest.
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Specialties: Wetland ecology.

Dirk Shupe, Fire Planner,
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