Oregon Aspen Project

Forest Restoration Partnership
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Grant Deliverables:
1- Aspen Management
2-Demonstration Projects
3- DVD

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Executive Summary

The Oregon Aspen Project was initiated in response to the decline of aspen groves in Oregon and throughout the Western United States, and the lack of information to guide managers interested in stewardship to enhance this resource. There were three central goals and accompanying objectives for this project which are listed below. The project accomplishments are provided below each bulleted objective.

1) **To increase the knowledge-base on aspen management and promote active restoration of this resources on private lands in Oregon through:**

   - Completion of a user-friendly management guide to guide landowners in assessment, restoration and maintenance of aspen groves.

Accomplishments: Originally planned as a 30-page guide, we produced a 79-page manual to provide thorough coverage of the aspen biology and management. A total of 600 manuals were produced and have been made available to workshop and tour participants, and other resource agency staff, professional and landowners unable to attend the organized events. The manual is available for download on the Oregon State Extension Website by chapter. Hard copy manuals were mailed to the extension offices in the following communities throughout Central and Eastern Oregon: Redmond, Prairie City, La Grande, Baker City, Lakeview, Klamath Falls, and Prineville. Electronic version links of the manual were emailed to 75 NRCS personnel on the Eastside of the Cascades.

A central feature of this manual and project was the development of assessment tools for landowners to document and analyze their aspen resources, as a basis for baseline documentation; understanding management needs and prescribe stewardship actions. Methodologies for these tools were developed, tested and published in the manual.

- Completion of educational workshops and tours to each aspen demonstration site.

Accomplishments: Aspen education workshops were held in the four planned communities (Prineville, Lakeview, Klamath Falls and John Day). An additional presentation was organized and conducted in Bend to expand participation for those unable to make the workshops in the more remote locations. A total of 215 participants attended these workshops, meeting our expectations for attendance and impact. Three half-day tours were conducted at three of the demonstration sites. A full day tour was organized for the Prineville, Oregon demonstration sites to allow a more thorough and comprehensive discussion of the treatments and results.

In addition to the workshops and tours, the following articles were published to promote this project and aspen stewardship practices:

Reclaiming Fading Glory: The Decline of Aspen and How to Bring it Back
By Darin Stringer. Published in the Spring 2009 Newsletter, "Northwest Woodlands". A Publication of the Oregon Small Woodlands, Washington Farm Forestry, Idaho Forest Owners & Montana Forest Owners Associations

Aspen in Oregon – and Beyond
What's Happening Where You Are?
By Nicole Strong. *Society for Range Management* – Pacific Northwest Section. August 2008. Volume 59, Section 3, Pg. 7

Aspen remnants get second chance
by Scotta Callister. *Blue Mountain Eagle*. November 12, 2008. Pg. 10

- Development of a program that provides on-site consultation on aspen resources, threats and management recommendations to private landowners.

Accomplishments: A total of 11 private landowner visits were conducted throughout North Central, Central and Eastern Oregon. Two workshops were delivered at the OSU Tree School days in Klamath Falls and Baker City and were attended by 30 people.

2) To test innovative methods and technologies for use in aspen management including:

- Completion of demonstration projects involving implementation of cutting-edge aspen treatments on four private ranches in Hood, Lake, Crook and Klamath Counties, involving the following prescriptions:

  1- Use of skid steer/mastication and tree sheer technology in a variety of conifer encroachment settings
  2- Examine the length of duration of exclosures needed prior to return of cattle grazing.
  3- Effectiveness of down wood to reduce browse pressure on aspen seedlings.
  4- Effectiveness of various buck and pole exclosures to minimize elk intrusion, as alternative to large fenced areas.

Accomplishments: Demonstration treatments were completed on five private ranches. On these ranches different combinations of treatments were completed including conifer felling, piling, prescribed burning, mastication of conifers, and construction of various types of big game fence. These treatments were applied on approximately 75 acres. Additional benefits to aspen were realized through consultation with a 6th demonstration site near Lakeview, Oregon managed by Pete Talbot for the Williams family. On this site, management for aspen was enhanced with alteration of grazing timing and intensity.

Results from the above treatments are promising. Aspen have responded in all conifer removal and burn treatments with increased suckering (See photos, Appendix C). Fencing treatments have resulted in protection of new suckers. Effectiveness of fence treatments will continue to be monitored by landowners using the techniques described in the Aspen Manual, and reported to the grant project coordinators to examine longer-term trends of tree survival and growth in exclosed areas. Repeat measurements on treated demonstration sites are planned for 2012 to gauge treatment response.

3) To develop and pursue funding sources for stewardship of aspen on private lands.

- Funding secured on an on-going basis to provide resources to assist landowners with management activities. This would be available to landowners other than demonstration site owners.

Accomplishments: Additional grant funds were secured for Jim Wood and Ralph Foster to continue aspen work using funds from the Oregon Department of Forestry's Mule Deer Recovery Project for the Maury Mountains. We were able to secure assistance from the South Lane School District to provide labor to further aspen assistance on the Westfall property, and the Rocky Mountain Elk Foundation for the Dovenberg ranch.

This part of the project will continue to be developed on an on-going basis. Plans and discussions are underway to secure funding for aspen enhancement on aspen on lands owned by the Deschutes Land Trust and The Nature Conservancy. Both Forest Restoration Partnership and Oregon State Extension will continue to develop a list of private landowners interested in aspen enhancement during future workshops. From this list, we will work with interested landowners to seek funding to complete restoration work.

Timeliness of Meeting Project Objectives:

There were several delays in meeting project objectives. These delays are explained below.

1- Treatment delays were caused by changes in several of the demonstration sites due to landowner budget considerations and changes in management directions (see interim reports).

2- The completion of the aspen manual was delayed due to budget cuts within OSU Extension, which scaled back the number of hours Nicole Strong could work on editing of the manual in 2008 and 2009.

3- Manual completion was delayed due to the expanded scope of the document, more authors and greater document content. A much larger effort was required to edit this document and there were delays in getting chapters from each author. We also decided to integrate workshop and field trip content into the plan, so we delayed publication until after these sessions were completed.

4- The final tour demo in the fall of 2009 (Prineville) was delayed due to the bad weather and rescheduled for the following spring after it was determined that poor winter season road access would prevent an effective winter tour. This tour was re-scheduled and lengthened from a ½ day to full day event.

5- With an expanded project timeframe, we were able to generate approximately $28,000 beyond our required match.

Customers Benefiting from this Project

The primary audience for this project was private landowners in Central and Eastern Oregon. We targeted both ownerships where ranching and forestry were the primary economic uses of the land and also lands where diversified interests such as recreation and wildlife were primary objectives driving management. Other customers benefiting from the work of this project include land conservation groups (The Nature Conservancy, Rocky Mountain Elk Foundation, Deschutes Land Trust and others) and State and Federal Land Management

Agency personnel. Workshops and demonstration events drew over 200 people. Six hundred copies of the aspen manual were printed and distributed to OSU Extension offices within the targeted communities so it is locally available for pickup. The plan is also available on-line and available to an expanded customer base including academia, wildlife enthusiasts, foundations other groups interested in funding land conservation efforts, and people with a general interest in aspen. With the posting of this manual on-line, it is available to the above customers in states beyond Oregon. Information related to aspen stewardship was also disseminated through various press releases and articles in trade journals (See Appendix A). We estimate these articles reached an audience of approximately 5,000 readers.

Project Funds Expended

Project funds were spent generally consistent with the grant proposal within the focus areas. Funds spent covered workshops, manual production, and demonstration site treatments.

Methods Employed to Demonstrate Alternative Technology

We used three approaches to provide the informational background of aspen (biology and ecology) and demonstrate management practices to enhance these resources:

1- Direct presentation in a classroom forum. This method used PowerPoint presentations and focused on short lectures by a variety of presenters with ample time at end of each session for interaction involving attendees.

2- Publication of an aspen management manual. Our approach was to focus the design on maintaining the attention of our target reader; a landowner with an average understanding of the subject. This strategy included use of a graphics intensive (color pictures, drawings, and flow charts) medium to deliver the information, in a "folksy" tone, limiting technical jargon and including definitions where advanced terminology is required.

3- Field demonstration tours to the project sites. These tours included background narratives, project descriptions and methodologies, and cost breakdowns. Attendees were given assessment forms and broken into small groups to complete monitoring. The tours concluded with a group discussion of the monitoring results, feedback on treatment results to date, and alternative practices and input for future management actions.

Major Recommendations from this Project

There are several recommendations resulting from this project:

1- Aspen is a resource suffering from poor management practices throughout private lands in Oregon. Efforts to enhance this resource are often successful with proper planning; however there are few funding sources currently to assist with the cost of such stewardship. We recommend that NRCS staff include this vegetation type as a priority for enhancement actions.

2- The aspen assessment steps developed in this project provide a relatively simple and straight forward method for landowners to determine the health of their aspen resources as a precursor to implementing stewardship actions. We recommend NRCS staff promote this methodology to landowners for use in the Wildlife Habitat Incentives Program and the Oregon Mule Deer Recovery Project.

3- Consider conducting more trainings to help landowners learn how to conduct these assessments and to train NRCS personnel in the use of the manual.

4- Consider modifying the aspen manual for use in other Western states.

Introduction/Methodology and Accomplishments

The Oregon Aspen Project is a new collaborative effort to reverse the loss of aspen resources on private lands though demonstration of innovative technology and techniques, funding for treatments and assistance with assessment and monitoring on range and forestland in Eastern Oregon. This project involved three components. 1- Publication of an aspen management manual including assessment guidelines. 2- Development of demonstration treatment areas on ranches throughout Central and Eastern Oregon. 3- Leading of educational workshops and tours to demonstration areas.

The principle project coordinators were Darin Stringer, Director of the Forest Restoration Partnership and Nicole Strong, Oregon State University Extension Master Woodland Manager Coordinator (see Qualifications in Appendix F). Qualifications of the authors of the Aspen Manual are described in Section IV of the manual.

The following entities and individuals participated in this project:

Forest Restoration Partnership
Oregon State University Extension
Lake County Watershed Council
Crooked River Watershed Council
John Day Watershed Council
Local Office of NRCS in the Counties of each demonstration site.
Oregon Department of Forestry
The Nature Conservancy
Rocky Mountain Elk Foundation
South Lane School District
Oregon Department of Fish and Wildlife
Westfall Family
Dovenberg Family
Wood Family
Foster Family
Thomsen Family
Pete Talbot- Range Management Consultant
Agricultural Research Station Eastern Oregon Agricultural Research Center

The project accomplishments are provided below each bulleted objective. See Table 1 for a timeline of project tasks.

1) **To increase the knowledge-base on aspen management and promote active restoration of this resources on private lands in Oregon through:**

- Completion of a user-friendly management manual (hard copy, web-based and DVD) to guide landowners in assessment, restoration and maintenance of aspen groves.

- Completion of educational workshops and tours to each aspen demonstration site.

- Development of a program that provides on-site consultation on aspen resources, threats and management recommendations to private landowners.

2) To test innovative methods and technologies for use in aspen management including:

- Completion of demonstration project involving implementation of cutting-edge aspen treatments on four private ranches in Hood, Lake, Crook and Klamath Counties, involving following prescriptions:

  1- Use of skid steer/mastication and tree sheer technology in a variety of conifer encroachment settings
  2- Examine the length of duration of exclosures needed prior to return of cattle grazing.
  3- Effectiveness of down wood to reduce browse pressure on aspen seedlings.
  4- Effectiveness of various buck and pole exclosures to minimize elk intrusion, as alternative to large fenced areas.

3) To develop and pursue funding sources for stewardship of aspen on private lands.

- Funding secured on an on-going basis to provide resources to assist landowners with management activities. This would be available to landowners other than demonstration site owners.

A narrative of methods and accomplishments for each objective is provided below.

1- Production of the Land Managers Guide to Aspen in Oregon and Outreach Workshops

The key tasks for production of the manual included the following: developing a list of authors, defining and organizing content, developing graphics, compiling case studies, developing and testing assessment techniques, editing chapters and conducting revisions and coordinating the printing process. A number of academic, non-governmental organizations and governmental agencies participated in the development of this manual. These included the Agricultural Research Station Eastern Oregon Agricultural Research Center, Nature Conservancy, Oregon State University Extension Service: Rangeland Management and Forestry and Natural Resources Programs, The Nature Conservancy, U.S Forest Service, National Park Service, Bureau of Land Management.

The final manual was 79 pages in length. The size was more than twice that in our original proposal. The enlarged size was to provide a more comprehensive content and supporting documentation including information gathered from the workshops and field trips. The results of these sessions were incorporated into the manual, eliminating the need for a DVD.

A key deliverable and success of this project was the creation of a methodology for assessment of aspen. This product was identified by NRCS field staff as an important product, and one that was

not available in a usable format for landowners. We developed a draft assessment system after reviewing several existing methodologies used by the National Park Service, US Forest Service and the Aspen Delineation Project (a California multi-agency project). These systems were found to be too complex and time consuming for use by most landowners. We also conducted interviews with landowners to gauge preferences, the average knowledge base, and the time commitment that would likely be allotted to conducting this work. We developed two assessment methodologies, to provide landowners with a range of options to encourage this action to be completed before management actions were undertaken (see Appendix E). A key product developed as part of these assessment tools is the "Aspen Condition Classification Chart", which allows the landowner to match his/her aspen grove with eight illustrations depicting the overstory and understory conditions. These custom illustrations were developed after site visits to numerous aspen sites throughout Oregon to characterize the entire range of structure and composition. We were able to reduce our original list of 32 types down to 8 and create graphics for each, which are presented on page 23 of the manual.

The manual also includes prescriptions for enhancement of aspen, to be applied after the reader completes the assessment. These prescriptions were developed in consultation with project partners, after considering Oregon Department of Forestry Practice Rules and the needs of landowners.

A total of 600 manuals were produced and have been made available to workshop and tour participants, and other resource agency staff, professional and landowners unable to attend the organized events. If all printed copies are used, OSU Extension will print additional copies on demand. The manual is available for download on the Oregon State Extension Website by chapter (http://ir.library.oregonstate.edu/jspui/handle/1957/18399). Hard copy manuals were mailed the extension offices in the following communities throughout Central and Eastern Oregon: Redmond, Prairie City, La Grande, Baker City, Lakeview, Klamath Falls, Prineville. Electronic version links of the manual were emailed 75 NRCS personnel on the Eastside of the Cascades. The completed manuscript is approximately 23,000 words, with over 50 photos, most of which are color and includes custom graphics.

Aspen education workshops were held in the four planned communities (Prineville, Lakeview, Klamath Falls and John Day). An additional presentation was organized and conducted in Bend to expand participation for those unable to make the workshops in the more remote locations. A total of 215 participants attended these workshops, meeting our expectations for attendance and impact. Three half-day tours were conducted at five of the demonstration sites. A full day tour was organized for the Prineville, Oregon demonstration sites to allow a more thorough and comprehensive discussion of the treatments and results.

We decided to forgo producing a DVD of the workshop, opting instead to put greater content into the manual since most participants in the workshop and tours felt an expanded manual would be more useful. The manual size increased from 30 to 79 pages.

2- Demonstration Site Development

We initially envisioned developing four sites in as many counties to provide demonstration of methods for enhancing aspen. Demonstration treatments were completed on five sites in three counties. The sites were developed on private ranch lands. The tasks for development of the demonstration sites are described as follows: site visits were completed, site modifications made, baseline assessment plots installed demo sites mapped, and final design of treatments made.

Treatments were implemented over a 2+ year period. The following treatments were completed on each of the demonstration sites.

1- **Dovenberg:** Competing conifers were removed within aspen release areas (7 acres), and buck and pole fencing was constructed. A total of approximately .57 miles of buck and pole were constructed.

2- **Thomsen:** Competing conifers were cleared and burned, within and around aspen groves and buck and pole and big game fencing constructed. A total of approximately 35 acres were thinned and burned and 2,540 feet of buck and pole and big game fencing was constructed.

3- **Wood:** Competing conifers were cleared within and around aspen groves and buck and pole fencing and big game fencing constructed. On this property we used felled conifers scattered on the ground as strategy to reduce browse without use of fencing. A total of approximately 15 acres were thinned and .19 miles of steel woven wire and plastic big game fence constructed. Grazing was modified to keep cattle out during restoration work period. Controlled grazing is being used on one site, that is too steep to fence, to see if such an approach can be used effectively.

4- **Westfall:** Competing conifers were cleared within and around aspen groves. A total of approximately 30 acres were thinned using a combination of mechanical and hand methods and mastication. Prescribed burning was completed to encourage aspen production and reduce slash.

5- **Foster:** Competing conifers were cleared within and around aspen groves and big game fencing constructed. A total of approximately 15 acres were thinned and .15 miles of steel woven wire fence constructed. Grazing was modified to keep cattle out during restoration work period.

3- Provide outreach to landowners interested in aspen enhancement and pursue funding to support restoration activities.

Two aspen workshops were delivered at the OSU Tree School days in Klamath Falls and Baker City. In addition to the landowners chosen for demonstration sites, visits were conducted to seven additional landowners. Additional grant funds were secured for Jim Wood and Ralph Foster to continue aspen work using funds from the Oregon Department of Forestry's Mule Deer Recovery Project for the Maury Mountains. We were able to secure assistance from the South Lane School District to provide labor to further aspen assistance on the Westfall property, and the Rocky Mountain Elk Foundation for the Dovenberg ranch. This part of the project will continue to be developed on an on-going basis. Plans and discussions are underway to secure funding for aspen enhancement on aspen on lands owned by the Deschutes Land Trust and The Nature Conservancy. Both Forest Restoration Partnership and Oregon State Extension will continue to develop a list of private landowners interested in aspen enhancement during future workshops. From this list, we will work with interested landowners to seek funding to complete restoration work. The Oregon Natural Desert Association and Deschutes Land Trust are using our assessment methodology in cooperation with private landowners in Deschutes and Grant Counties. The principal managers of this project are presenting aspen management for private landowners at the annual Wildlife Conservation Society in Bend, Oregon in February 2011.

Table 1. Schedule of Major Project Tasks

Project Task	Dates of Activity
Demonstration Site Visits	Fall 2007 through Summer 2008
Monitoring, Assessment Protocol Development, Project Layout	Fall 08
Demonstration Treatments and Follow up Monitoring	Fall 2008 through Fall 2010
Manual Development	Summer 2008 through Fall 2010
Aspen Management Workshops	Spring 2008 through Fall 2009
Demonstration Tours	Fall 2009 through Fall 2010

This project is innovative for several reasons.

1- It consolidates existing technical information on aspen management into a user-friendly manual that landowners can use to develop stewardship strategies on their lands.

2- It developed an approach to monitoring and assessing aspen that landowners can employ rapidly without extensive training or equipment. This methodology involved two approaches (Rapid and Full) to provide solutions to landowners with varying backgrounds in mensuration and assessment and time to complete assessment work.

3- This project provided a host of management tools to landowners interested in aspen enhancement, and a tool within the manual to guide landowners toward practices most suited to their specific needs based on unique site conditions and objectives. By providing a range of treatment actions on private lands where owners have agreed to let the public view, allows interested parties to examine such practices prior to committing to implementing. These demonstration sites will be monitored over time with additional tours scheduled as longer-term results are realized. We hope to demonstrate with longer-term monitoring that a range of treatments are suitable to stimulate aspen, and that these treatments do not always have to involve fencing. Fencing is typically prescribed to regenerate aspen, yet it is not always necessary and many landowners are reluctant to put up more fence due to cost and effort required for maintenance. We are hopeful our treatments including falling and leaving trees in place as a barrier to ungulate movement and moving livestock through aspen groves for brief intense grazing.

Background

Ranchers and wildlife managers have long understood the importance of aspen for both livestock forage and habitat value. Aspen groves are second only to riparian areas in biodiversity in the inland Northwest (Kay 1997). These hardwood groves have been described as biodiversity hotspots in the west, with high densities and diversity of lichens, understory plants, bats, and birds. Use is very high by elk and other native ungulates.

The understories of aspen groves usually offer exceptional grazing for domestic livestock. They are also an iconic tree species on the western landscape and are culturally and historically important. Aspen resources are seriously declining throughout the West. These declines range from 49% in Colorado to 95% in Arizona. In Oregon, up to 50% of aspen stands have been lost in the last century (Brown 1995). These declines are caused by the combined effects of fire prevention and conifer expansion, cattle grazing, and increased ungulate populations. Aspen groves are being replaced by sagebrush on dry sites and conifers in moister areas. The effects of this conversion are dramatic. Forage production can be reduced by up to 67% when aspen are replaced by conifers (Mueggler 1988). Bird species richness also declines with conifer replacement (Winternitz 1980). Conifer replacement leads to reduced water recharge. Some estimates suggest a 2-7″ increase in water consumption by conifers compared to aspen (Harper 1981). Wildlife biologists fear the loss of aspen could have deleterious effects on some game species including elk.

Declining aspen due to conifer encroachment. Western states have lost from 49-95% of aspen stands in the last 100 years.

The following press headlines of aspen decline have appeared recently:

Fewer Wolves and Wildfires may have led to aspen's decline
ABCNews 9-21-2000

Anxiety rises for aspen groves : Wallowa County presses ahead with efforts to ensure survival of its ancient stands
The Oregonian 10-15-2006

Scientists seek root cause of aspen decline: fungus, drought, human interference among suspected factors in tree deaths
Associated Press 9-16-2006

Disappearing Aspen
National Public Radio 5-24-2004

Wolves linked to aspen recovery
Billings Gazette 10-29-2003

Plan to save aspen: clearcutting could give seedlings chance to replace dying trees

Rocky Mountain News 9-11-2006

Landowners in Oregon have few resources to provide technical or funding assistance to assist with management of aspen. Of the twenty landowners that responded to our initial outreach questionnaire, 90% noted lack of information on how to manage aspen. Most respondents said lack of funding was also an inhibiting factor in lack of management. All noted the aspen on their properties appeared to be in decline. The technical information published on aspen is often in formats unavailable or too complex for many landowners. Furthermore, the time requirements for compiling management related publications prevents many landowners from getting the information they need. The limiting factors for good stewardship of aspen in Oregon are summarized as follows:

1- Lack of technical information in understandable formats for the target audience (private landowners) related to management of aspen resources. There are currently no materials or methodologies for use by this audience to examine aspen and prescribe stewardship actions in a coordinated approach.

2- Lack of outreach/educational sessions to provide basic information to private landowners on aspen biology and management.

3- Lack of demonstration sites to visit to see actual treatments implemented, and results observed.

4- Lack of information on response of aspen groves in Oregon to various treatments.

5- Lack of funding to assist landowners with aspen enhancement projects.

Quality Assurance

To insure quality of aspen manual, an extensive editing process was completed that included technical reviews by OSU Extension and Range Personnel. The guide was edited by two professional editors and the OSU Extension printing services department.

The assessment tools were developed in consultation with resource professionals in the USFS, Oregon Department of Forestry, OSU Extension and the Aspen Delineation Project. The protocol was field tested, modified several times and then tested using landowners to insure methods could be completed without supervision. Instructions and graphics were reviewed by a professional editor, and landowners to insure clarity.

Aspen treatments were closely supervised by landowners and the project manager. Prior to implementation, a pre-work meeting was held with each contractor to review expectations and project details such as resource protection and tolerances. A site visit was conducted at completion of work to examine quality of enhancement treatments. Two site visits were made at each project site to collect information and design treatments in close collaboration with landowner. Monitoring plots were installed and permanently delineated using steel posts, for repeat measurement. Photopoints were established at each plot. The complete survey protocol is provided in pages 8-23 of the manual. These plots will be used to evaluate treatment effects in the future, with a scheduled re-measurement to occur in 2012.

Findings

The following findings resulted from this project

1- There is a strong interest in the information developed and presented as indicated by participation by landowners and land management agency participation in field trips and workshops.

2- There is an interest in financial support to landowners to enhance aspen. We had more landowners than funding.

3- Assessment tools developed were found to be useful for landowners, understandable and easy to implement. There are key findings because overly complex and time consuming protocols do not get used.

4- Enhancement methods for aspen used in other parts of the country are not necessarily compatible in Oregon, validating the need for management guidance that is specific to each state or Ecoregion.

5- The enhancement methods employed at each site were successfully implemented. Lessons learned included: A- Mastication treatment was best suited to sites that did not contain aspen regeneration because the machine could not treat the conifers without also damaging small aspen. B- Mastication also was difficult in groves with high levels of down wood. C- Buck and pole fencing was difficult on slopes, use of a combination of buck and pole on gradual slopes, and big game fencing on steep slopes was successfully constructed. D- Purchase of poles and posts for buck and pole fencing are often cost prohibitive in remote areas. Use of local materials is an option, but these trees often had too high taper for use. Juniper was successfully used, but only low taper trees could be used. E- Type of fence to construct is a major decision and involves understanding patterns of ungulate use in the aspen. This information was available on some sites where landowners were actively engaged in management and had an intimate understanding of aspen and animal use. On sites with less information on animal use, the type of fence to construct was not always clear. Browse pressure and animals involved varied widely across enhancement sites. Understanding the animals involved in browse and timing is critical to protecting aspen. F- Burning appeared to have a positive effect on aspen suckering. G- Some landowners are reluctant to construct new fencing (as learned during the workshops), because of the maintenance issue. Other techniques including managing grazing is not sufficient on many sites because the browse problem is also caused by wild ungulates. The use of felling conifers as a barrier was implemented on the Wood site, and we will be monitoring results in the future to determine effectiveness of this procedure. We also learned that some landowners will not use this method for aesthetic reason and because of the perceived increased fire risk. H- The response of aspen to treatments varied and was not always predictable. Short term results showed that aspen actively suckers with treatments to increase light and reduce competition with conifers. However, several sites we did not get good suckering. To gauge success of these treatments, at least 5-years are needed. This time period is needed because it takes at least 5 years for aspen to grow to sizes to resist browse.

Conclusions and Recommendations

We demonstrated that aspen resources are important to landowners and there is interest in technical and financial assistance to aid in its recovery on lands in Eastern Oregon. The assessment tools developed to examine aspen groves was found to be useful by landowners both for establishing a baseline of conditions and providing information to guide stewardship actions. Furthermore, the design of these tools were found to be easy to use, based on landowner feedback. The treatments implemented on the demonstration sites all have application in the enhancement of aspen. Preliminary results from enhancement work on the demonstration sites shows that the treatments have resulted in new aspen suckering all the sites. More time is needed to determine success of each treatment relative to the goal of establishing new aspen and allowing it to grow to sizes to resist browse.

The following recommendations are offered as a result of work completed in this project:

1- Additional funding mechanisms should be developed to specifically support aspen enhancement working including resources for initial assessment work.

2- The aspen assessment tools should be used to help resource managers assess aspen and prescribe treatments under various NRCS programs, Wildlife Habitat Incentives Program and the Oregon Mule Deer Recovery Project.

3- The "Land Manager's Guide to Aspen Management in Oregon" should be promoted and distributed by NRCS personnel during contact with private landowners.

4- Consider modifying the aspen manual for use in other Western states.

5- NRCS field personnel are encouraged to conduct future visits to the demonstration sites to learn more about the treatments and aspen response. The sites are open with landowner contact. Consider conducting more trainings to help landowners learn how to conduct these assessments and to train NRCS personnel in the use of the manual.

Appendices

A- Articles/Press Releases/Workshop Flyers

Aspen remnants get second chance
by Scotta Callister. *Blue Mountain Eagle*. November 12, 2008. Pg. 10

Aspen remnants get second chance

Projects on private land could provide lessons for others

By Scotta Callister
Blue Mountain Eagle

DAYVILLE – Some Grant County aspen groves are getting a new lease on life in projects that also aim to provide lessons for resource managers and private landowners.

Forest Restoration Partnership (FRP), a Philomath-based nonprofit, contracted with Grayback Forestry out of John Day to build fences and do other work to protect aspen stands damaged by fire in 2006.

"We're really looking at an emergency-room-type of treatment here," said Darin Stringer, a consulting forester and FRP director. "We're trying to get a new age class of aspens re-established."

Still-green aspens stand tall behind a new buck-and-pole fence.

FRP obtained a $93,000 grant from the Natural Resources Conservation Service though its Conservation Innovation Grant program to do the work in Grant County, along with similar projects in Crook and Klamath counties. FRP also obtained in-kind matches from other agency partners, and put out a call for private landowners interested in participating in the project. The landowners pay part of the cost of work done on their land.

In Grant County, the work is under way on land owned by Jim Dovenburg and Tom and Connie Thompson.

Stringer said the goal not only is to save aspens, but also to create demonstration projects to show how various treatments work. A third part of the project is to create a user-friendly manual for other landowners with aspens to manage. He hopes the manual will be available next spring through the OSU Extension Service and online.

Stringer said saving aspens has an emotional appeal for people.

"I don't think I've met anyone who doesn't like quakies," he said.

But it's also important for wildlife and ecological diversity.

When healthy, stands of quaking aspens – with their white bark and shimmering leaves – provide habitat for small mammals, nesting cavities for a variety of birds, including neotropical migratory species, and forage for a variety of animals.

"It's a really important species," said Stringer.

That's true even though aspens are but a small part of the natural resources of the region. Aspen, he said, may account for less than 1 percent of the local landscape now.

It hasn't always been that way, however. Aspen stands have been shrinking – and dying – across the Northwest in recent decades.

Man's success at fire suppression in the past century is one of the culprits. Ideally, fast-moving fires would sweep through a grove every 20-30 years, cleaning out competing brush and older trees. Fires warm the soil, and the heat triggers a new flush of root sprouts that crop up the next spring.

The Eagle/Scotta Callister

Grayback workers Don Gabbard (left) and Mat Elliott position a pole in a fence that is being built to protect a fire-damaged aspen grove.

However, suppression of those periodic fires – combined with over-browsing by animals, encroachment of invasive brush and trees, and loss of groundwater – resulted in weakened stands.

Aspens are relatively short-lived – 80 to 100 years – and many of today's stands feature mature or dying trees, with little or no new growth.

Since the aspen grove is really a single clone, it is extremely susceptible to any disruption of the natural cycle, Stringer said.

In the event of a catastrophic fire – like the one in Murderers Creek in 2006 – the green growth above ground may be destroyed, leaving no structure to feed the roots of the clone. Stringer said the whole grove could die, "and it could happen very quickly."

Techniques for restoring aspen stands include building fences to protect new sprouts, thinning out other trees, removing junipers and burning out underbrush. The FRP project is using both buck-and-pole and the taller big-game fencing.

Stringer said the fences will need to stay up for seven to 10 years. Once the new growth is established, the fences can be removed – although some landowners like the look of the buck-and-pole fencing, he said.

FRP plans to monitor the effectiveness of the work over time, and Stringer cautions that the results won't be immediate.

"It's going to be a long process – maybe five to 10 years – before we can really see the aspen up and growing," he said.

A Year in Review—Community Service and Quality Care

The Eagle/Cheryl Jessup

From left, producer Beth Harrington, leading actress and John Day resident Charlene Hopkins, cameraman Todd Sonflieth.

OPB: Show features local talent, historic figures

Continued from Page A1

Andy Lockhart played the part of Jay McKern – Mt. Vernon resident Wilma Bauer's father – who was treated for lockjaw by Hay. Harrington herself played the part of Lola Johnson who, as a young girl, went to Doc Hay for bronchial problems.

In additon to scenes of Doc Hay checking pulses, re-enactments were also done of Hay mixing herbs in a pot as well as an episode of then city councilman, Gordon Glass, shining a flashlight inside the darkened building when it was first reopened back in 1968. Until then, the long-abandoned store had been closed up for about 20 years, according to museum curator Christy Sweet.

The program will air on OPB sometime in 2009, with the date to be announced later.

Public can view street plan

Blue Mountain Eagle

JOHN DAY – A community open house for the John Day Local Street Network Plan will be held from 6:30 to 8:30 p.m. Wednesday, Nov. 19, in the Grant Union High School Library, 911 S. Canyon Blvd. John Day residents, property owners, business owners, and other interested parties are encouraged to attend.

The John Day Local Street Network Plan is intended to provide guidance for future local street connections and bicycle/pedestrian routes within the City of John Day. The open house is an opportunity for the public to meet the consultant project team, learn more about the project, and explore opportunities for future local street connections and bicycle/pedestrian transportation routes within the city.

Peggy Gray, city manager, said public input is important in developing a plan that reflects the community's goals and values.

Anyone who would like to comment but is unable to attend can contact the project manager, Matt Hughart at Kittelson & Associates, Inc. 610 SW Alder, Suite 700, Portland, OR 97205, or by phone at (503) 228-5230, or e-mail to mhughart@kittelson.com.

Aspen in Oregon – and Beyond
What's Happening Where You Are?
By Nicole Strong. *Society for Range Management* – Pacific Northwest Section.
August 2008. Volume 59, Section 3, Pg. 7

Aspen in Oregon – and Beyond
What's Happening Where You Are?

By Nicole Strong

We all can appreciate and admire aspen groves. Aspen woodlands provide a variety of economic and ecological benefits, including shade and high quality livestock forage, habitat for many species of birds, bats, 4-footed wildlife, and recreation from hunting to admiring colorful fall foliage. Aspen stands contribute to our water supply by serving as snowdrift banks, accumulating snow which melting slowly, releases a steady source of water to feed springs and streams.

Aspen is not a long-lived species. Aspen woodlands depend on disturbance, such as fire or blow-down to reduce competition from conifers and to stimulate the growth of suckers from the root system. Without disturbance, 50 to 100 year old stands will be replaced by other vegetation, including western juniper, Douglas fir or ponderosa pine which will overtop aspen. In addition to the changes from fire suppression, poorly managed grazing by wildlife or livestock can cause loss. Many existing stands are reaching the end of their life cycle; without young aspen trees to replace them, the stands will be lost.

There is good news! Promoting aspen regeneration is a fairly feasible practice for most land managers. Depending on the reason for its decline, a landowner may remove overtopping conifers, change grazing rotations, construct elk fencing, or even cut a few aspen to encourage suckering.

In Oregon, a team of organizations has developed "The Oregon Aspen Project" to increase the knowledge base on aspen management and to promote active restoration on private lands. Demonstration sites are being established, workshops presented, and a publication is in process. For information, contact OSU Extension Forester, Nicole Strong at Nicole.strong@oregonstate.edu

On the OSU Extension Forestry team 3½ years, Nicole coordinates the statewide Master Woodland Manager program. Wherever she travels, along with her forestry gear, you will find mountain bike and/or whitewater kayak in her car, just in case!

Please bring auction items to Williams Lake!

Poster session at the Joint International Grassland & Rangeland Congress in Hohhot, China (story on page 4). Photo by Joe Wagner.

Plant identification at the Joint International Grassland & Rangeland Congress in Hohhot, China (story on page 4).

Aspen Management Workshop Flyer

Aspen Woodlands: Management Options
October 29, 8:30am - 4:30pm

When: Thursday, October 29
8:30am - 4:30pm
Lunch is provided

Where: Klamath OSU Extension Service
3328 Vandenberg Road
Klamath Falls, OR 97603

RSVP: Klamath OSU Extension Service
(541) 883-7131 or
nicole.strong@oregonstate.edu

This workshop is intended to help you identify opportunities to improve aspen stand health and vigor on your property. We will start out in the classroom and then go out in the field to look at on the ground aspen restoration work.

This session will cover the basics of aspen ecology and management. A panel of local experts, representing the Oregon Department of Forestry, Natural Resource Conservation Services (NRCS), OSU Extension Service and the Forest Restoration Partnership will share their knowledge. You will leave with tools and skills that you can use to start assessing your stand condition, choose a treatment option that suites your property goals, and develop a management plan.

WORKSHOP TOPICS:

8:30 - 11:30 am Presentations

- Aspen Biology and Ecology
- Aspen Decline: Indicators, factors, and concerns.
- How do you assess your aspen stand?
- Integrating range and timber objectives with aspen enhancement.
- Choosing the Right Treatment for you and your objectives.
- Monitoring for success.

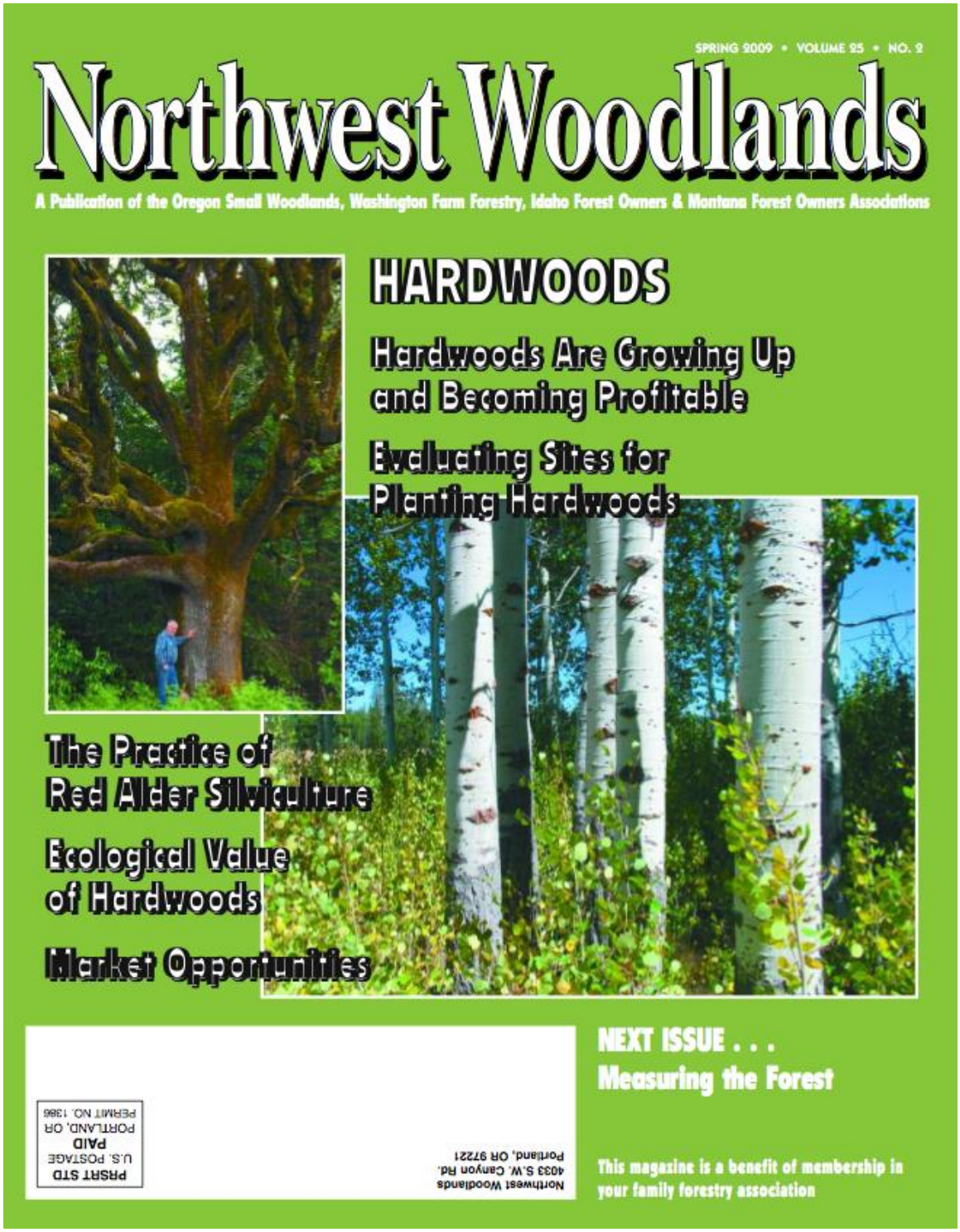
11:30- 12:15 Lunch (provided)

12:30 - 4:30 Westfall Site Visit

The workshop is free, but please register in advance as space is limited. We will be going out in the field in potentially cold weather, please dress accordingly. We will carpool to the field site. If you are willing to carpool, please let us know. Thanks in advance!

This event is brought to you by OSU Extension Service and the Forest Restoration Partnership with funding from NRCS.

Reclaiming Fading Glory: The Decline of Aspen and How to Bring it Back
By Darn Stringer. *Northwest Woodlands*. Spring 2009. Pg. Cover Photo, and 16-18.



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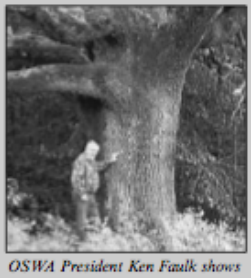

OSWA President Ken Faulk shows off his prized oak tree. Photo courtesy of Robert Petit.

Quacking aspen is slowly being restored through active management. Photo courtesy of Darin Stringer.

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Reclaiming Fading Glory: The Decline of Aspen and How to Bring it Back

By DARIN STRINGER

Quaking aspen (*Populus tremuloides*) is one of a few iconic species that symbolizes the spirit of the west. Its brilliant fall colors against alpine backdrops are postcard sceneries. While often admired at a distance, its cool, humid understory and rustling canopy have soothed many a wary hunter, rancher or hiker. Though often sparse and scattered in distribution throughout the region, aspen is heavily used by wildlife from big game to neotropical migratory birds. Aspen is one of the shortest-lived trees in the west, yet their clones can live for millennia.

"Quakies" as many call aspen, are venerated by most; in fact I've not met a person that didn't speak fondly of them. Even so, the species is seriously declining throughout the west and has already disappeared from many landscapes. Bringing this tree back to its former glory will require active management. That effort is starting to take shape throughout the west, one grove at a time.

Aspen is the most widely distributed tree in North America, occurring from New England to Alaska and as far south as Central Mexico. In the Pacific Northwest, aspen is found across the intermountain regions from shrub-steppe to upper montane forests. Though very rare, a few scattered populations are found west of the Cascades, even near sea level in the southern Puget Sound. Unlike the large expanses of aspen forest that occur in Colorado, Utah and New Mexico, in the PNW, most are found in small isolated groves of a few acres or less.

PHOTO COURTESY OF DARIN STRINGER

This overstory of aspen is old and declining, but the clone has successfully re-established a new generation of "cohort" trees.

Aspen prefer cool conditions and moist well-drained soils. The best aspen sites are well-drained loams, high in organic matter, calcium, magnesium, potassium and nitrogen. Dig around in an aspen grove and you will often notice high soil organic levels. The forestry adage that "site makes height" is strikingly apparent when examining aspen across its range. In marginal places where moisture is limiting, soils thin and/or growing seasons short, aspen can top out at 30 feet, while reaching heights above 100 feet on the best sites. The Oregon state champion aspen, found in the Northeast part of the state, is 130 feet tall.

Aspen distribution in the Pacific Northwest can broadly be fit into three categories.

Upland Aspen: Aspen is found on a wide range of vegetation cover types on upland sites. In mixed-conifer stands, aspen is often found in close quarters with ponderosa pine, Douglas-fir, grand fir and Western larch. Further upslope, it reluctantly shares ground with lodgepole pine, Engelmann spruce and subalpine fir. In the sagebrush-steppe country, aspen occurs as small deciduous island groves amidst the sea of rangeland. Observant folks have noticed aspen growing in other peculiar upland places. Krummholz aspen is found on exposed ridgelines, avalanche tracks and wind-swept alpine areas. Snowpocket aspen occurs in areas throughout the Great Basin and other sparsely treed areas where topography promotes snow accumulation. Lithic aspen is found on glacial

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moraines, talus slopes and lava flows, where it finds cool moist growing conditions between rocks, reduced animal browse and more freedom from conifer competition.

Riparian Aspen: Aspen is frequently found along permanent and seasonal creeks, seeps, springs and other water bodies. In steep drainages and other areas where the riparian zone is confined by slope, aspen often are scattered or following a narrow line along just above high water mark and in the company of willow, alder and conifers.

Meadow Fringe Aspen: Aspen is often found on the edges of meadows where soils are moist, but not permanently saturated. These aspen sites are generally very high in understory plant productivity and diversity and are well used by wildlife and livestock.

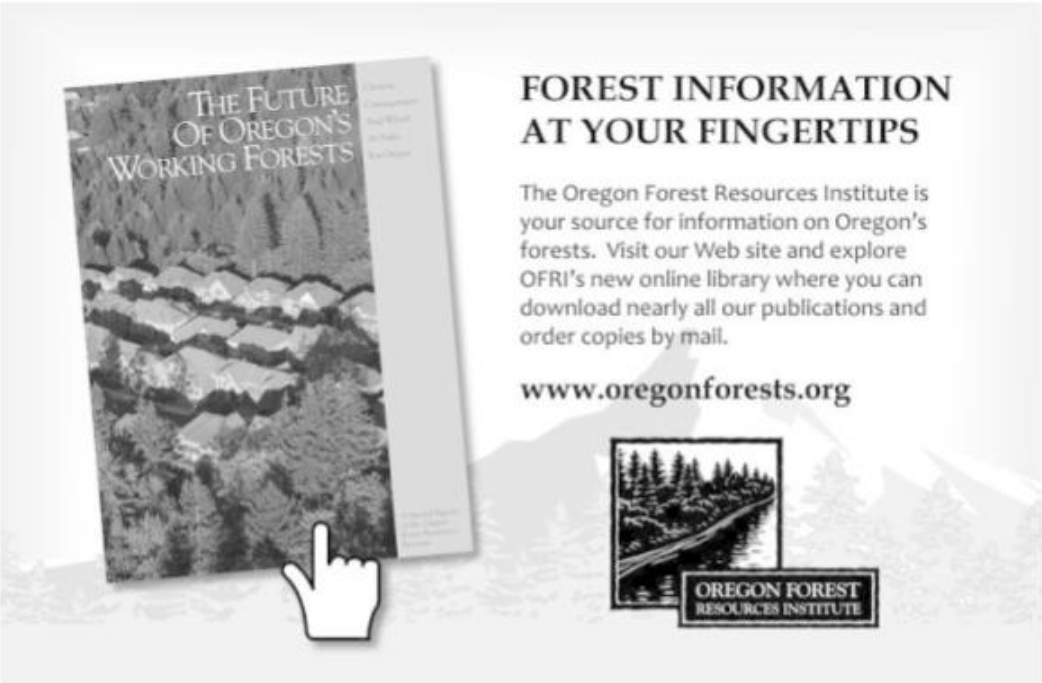
Aspen is disappearing from western landscapes in all of the above categories at alarming rates. Losses of aspen in the west by state range from 50-96 percent since pioneer settlement, and include a 61 percent reduction in Montana and 64 percent in Idaho. Rates of loss in Washington and Oregon are estimated at around 50 percent.

At local levels, declines are also reported. In southeastern Oregon, 75 percent of 91 surveyed aspen stands were encroached with juniper. On the North Fork John Day River District in northeast Oregon, 90 percent of groves are in poor shape, with 50 percent loss of remaining aspen predicted within 10-20 years. Recently, managers in Colorado, Utah and Nevada have noticed a rapid die off of aspen in what scientists are now calling Sudden Aspen Decline (SAD). This phenomenon appears limited to these southern states.

To understand the decline of aspen, one must delve into the fascinating biology of this species. Aspen is a clonal species. Individual stems are connected below ground to a single root network. Trees within a grove are often a single organism with identical genetic makeup. This is an important adaptation because though aspen is a prolific seeder, reproduction very rarely occurs from seed. Instead, clones replace individual trees, which don't commonly live beyond 100-150 years, by "sucker-

Enhancing Aspen: Six Simple Steps for Landowners

1. Locate and map aspen on your property.
2. Determine if aspen is healthy or fading.
3. Set goals and targets, and prioritize areas and treatments.
4. Prescribe treatments.
5. Implement treatments.
6. Evaluate response of aspen to treatments, and adjust to meet goals and targets.



ing." These new stems grow directly from the root system.

Aspen need periodic disturbance (fire, beavers, avalanche, cutting) to stimulate suckering. Without disturbance, these clones lose vitality. On most sites, aspen is "seral," meaning it will be replaced by another more shade-tolerant species if undisturbed. As conifers overtop and replace the aspen, the clone eventually dies as its roots become depleted of carbohydrates. If fire or another agent kills encroaching conifers, new suckers must grow above the browse height of deer, elk and livestock. Like conifer overtopping, chronic heavy browsing of regeneration also depletes the aspen root systems and can kill the clone if the roots do not have another source of sugars (e.g. from the overstory aspen). Re-establishing dead clones through plantings is very difficult and often not possible.

If aspen is declining on your property, it is probably driven by a few simple causes including: (1) lack of disturbance to regenerate new aspen and keep conifers in check; and/or (2) lack of aspen suckers reaching "free to grow" sizes due to excessive browse and physical damage by deer, elk and livestock.

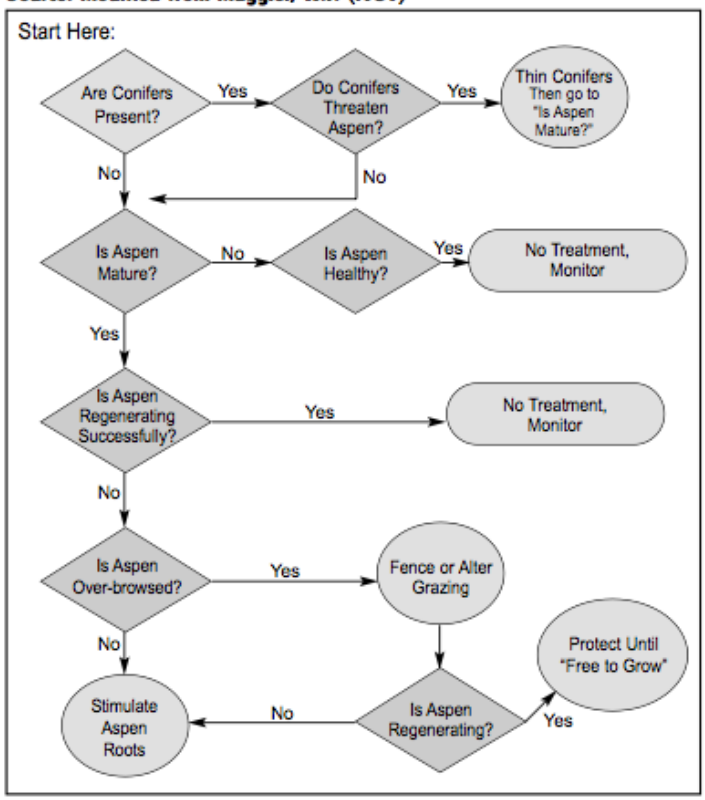
Aspen is a highly resilient species and will usually rejuvenate itself if actively managed. The key to success is following a series of steps starting with locating and assessing aspen conditions, prescribing and implementing appropriate treatments, and evaluating responses to actions.

The Aspen Management Options Flow Chart (Figure 1) is designed to guide landowners toward appropriate actions. In some cases no action or minor changes (altering grazing timing or intensity) to management practices are needed to maintain/enhance your aspen. Other situations require more aggressive measures, such as cutting out conifers and/or constructing fencing to protect aspen regeneration. In extreme situations where conifer removal and fencing do not stimulate adequate regeneration, cutting some mature aspen, ripping roots and prescribed burning have been successful. These treatments should not be done without careful planning and appropriate consultation.

A healthy grove has at least one vigorous age class of aspen, preferably more, and <10-15 percent basal area stocking of conifers. Dead mature trees and conk-infected trees do not necessarily indicate poor health of the clone. At least 34 species of wildlife nest in cavities within decayed wood. Remember, aspen is short-lived and the key to long-term health of the clone is for successful regeneration of new age classes. Noxious weeds and overgrazing pose a threat to aspen understory health and should also be controlled.

Because so much aspen throughout the west is old, decadent, overtopped and lacks healthy regeneration, quick action is needed to save many clones. Finding and assessing your groves will help prioritize treatments so time and resources can be used most efficiently. ■

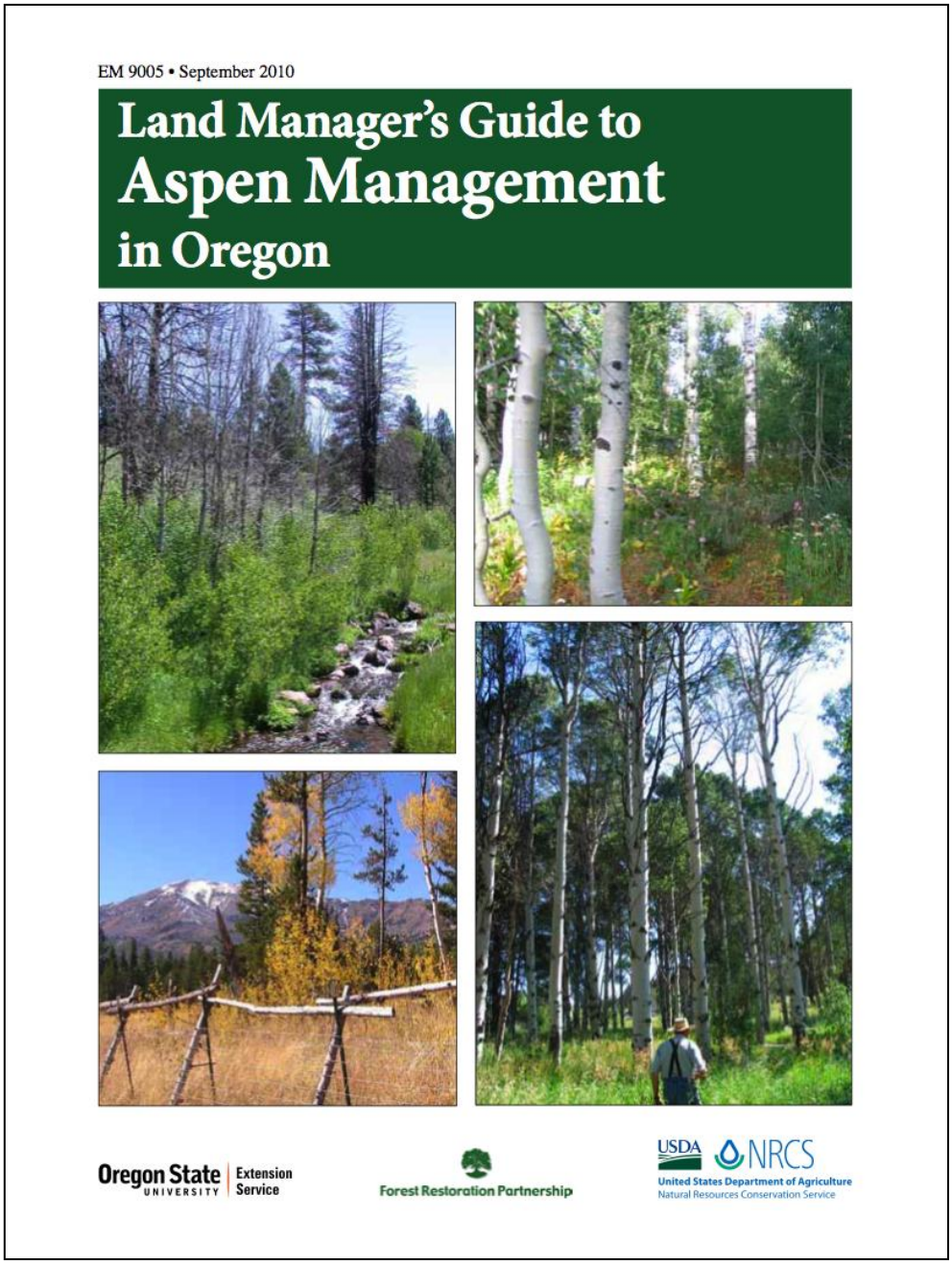
Figure 1. Aspen Management Options Flow Chart
Source: Modified from Muggler, W.F. (1989)



Darin Stringer *is a consulting forester with Integrated Resource Management and coordinates The Oregon Aspen Project, a partnership of private landowners, land agencies and state extension service promoting aspen management on private lands. They are producing a free aspen management manual for landowners, funded by the NRCS Conservation Innovation Grant. He can be reached at 541-484-1217 or darin@irmforestry.com.*

B- Land manager's guide to aspen management in Oregon

Land manager's guide to aspen management in Oregon
by OSU Extension Service, Nicole Strong, Darn Stringer, Teresa Welch, and Betsy Littlefield. 2010.



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This manual is available online at http://extension.oregonstate.edu/catalog/pdf/em/em9005.pdf

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Home › News & Events › Land manager's guide to aspen management in Oregon publication now available

Land manager's guide to aspen management in Oregon publication now available

Nicole Strong, FES faculty member and Extension forester, is a co-author on a new publication that has been added to the Extension online catalog. It is publication EM 9005, Land manager's guide to aspen management in Oregon. Whether your interest is wildlife, aesthetics, or general land stewardship, maintaining and enhancing aspen on your property requires active management. If you are a landowner or a manager, this guide will help you improve management of your aspen.

Visit the websites:
ScholarsArchive
Nicole Strong's webpage

C- Project Photo Gallery

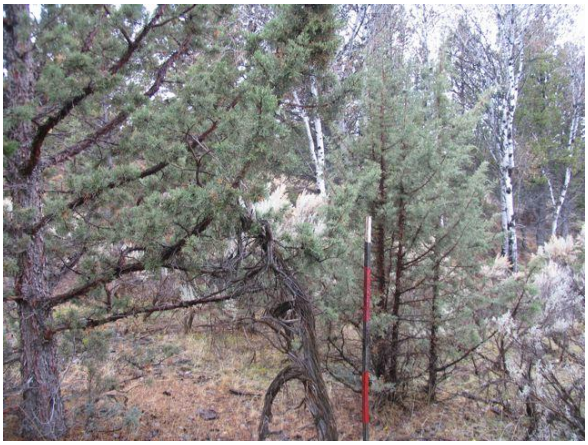

Photo 1. Pre-treatment photopoint at the Foster demo site.

Photo 2. Post-treatment photopoint at the Foster demo site.

Photo 3. Buck and pole fence construction at Dovenberg demo site.

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Photo 11. Aspen workshop in Klamath Falls.

Photo 12. Field visit to the Westfall demo site and assessment training.

E- Aspen Assessment Tools

CHAPTER 3

Assessing Aspen Health

Darin Stringer

Figure 9. A healthy grove contains a range of sizes and ages of aspen, with few or no conifers. Groves with a dead and declining overstory should contain an abundant understory of young aspen. A vigorous native plant understory indicates an optimal condition. (Photo: Darin Stringer)

Why should I assess my aspen?

Knowing the extent, location, and condition of aspen on your land is a key first step toward enhancing this resource. As discussed in Chapter 2, many aspen groves in Oregon are especially at-risk and may be lost without swift action. Completing an assessment of your aspen provides information that will help you:

- Better understand the condition of the grove
- Determine what types of treatments, if any, are needed
- Create a baseline that will help you see trends over time and evaluate the effectiveness of management actions

What is a healthy condition for my aspen grove?

The condition of an aspen grove depends on a variety of site factors, including soils, aspect, elevation, topography, past and current management, and wildlife use. Climate conditions, such as precipitation and temperature, also influence aspen. Indicators of productive sites for aspen include deep, dark, organic topsoil; presence of tall aspen; and presence of vegetation indicative of abundant soil moisture.

On very productive sites, where soils and moisture are optimal, aspen trees can become quite large and vigorous. In contrast, sites with thin, rocky soils and limited moisture often contain trees that are much smaller, stunted, or unhealthy. General indicators of healthy aspen (Figure 9) include the following:

- **Aspen overstory**: An overstory of vigorous to declining aspen.
- **Young aspen understory**: Newly regenerated trees below or around the edges of a more mature overstory of aspen. Where overstory aspen are declining and dead, lack of a vigorous understory indicates very poor aspen health.
- **Aspen dominance**: An overstory and understory made up primarily or completely of aspen, with few competing conifers present. Conifers should generally comprise less than 10 percent of tree cover, although this percentage may be higher in riparian areas within ponderosa pine and mixed-conifer stands. Aspen should be free of juniper. Other native hardwoods are considered a healthy part of the plant community.
- **Native plant understory**: A diverse understory plant community free of noxious weeds. The understory should include a mix of native shrubs, grasses, sedges, rushes, and forbs (non-grass flowering plants). These conditions benefit wildlife and suggest grazing levels appropriate for aspen regeneration.

See page 9-23 in **Land Managers Guide to Aspen Management in Oregon** for full chapter describing the assessment tools.