

WINTER 2020

Stream and Riparian Area Management

Evaluating riparian areas for clean water and
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Current prices and trends

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Effects of post-fire management practices
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Snow and Precipitation Update

Precipitation conditions on the dry side of Oregon

Life on the Dry Side

Serving land managers and owners east of the Cascades



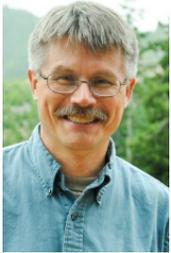
Oregon State
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Life on the Dry Side

OSU FORESTRY & NATURAL RESOURCES NEWSLETTER

Serving land managers and owners east of the Cascades

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Extension Service

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Log Market Report

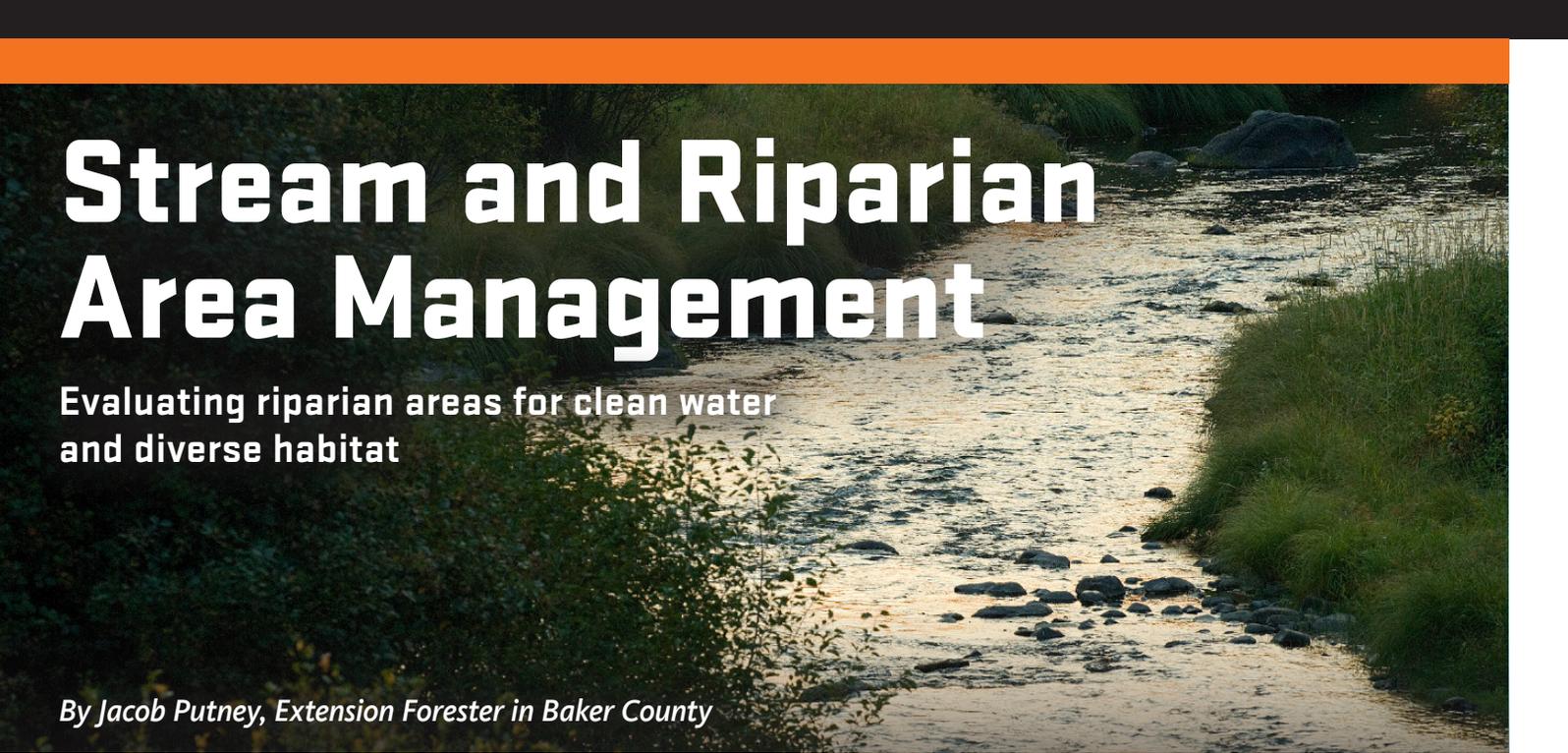
Data courtesy John Lindberg (Oregon Log Market Report), supplemented by John Punches

Log prices have, in general, strengthened slightly since our fall edition of Life on the Dry Side, but market trends have varied by location, species, and size class. In most locations, small diameter ponderosa pine prices rose slightly, while prices for large diameter weakened. Other species have generally increased a bit. Pulp prices are about the same as they were this fall, with the highest prices at the Columbia River ports. (These prices are a snapshot and do not reflect mill-specific reductions for oversized logs.) The broader economic indicators give hope of an uptick in prices – mortgage rates remain relatively low and housing starts bumped up nationally in January. This suggests there could be some positive impact on log prices as we move toward spring. Contact your local log buyers to discuss specifics if you're considering a harvest.

When planning a timber sale you'll do well to seek help from a professional/consulting forester (unless you have substantial personal experience). The professionals' knowledge of markets, forest management, and contractor capabilities is an invaluable resource.

As I mentioned in the last edition, non-industrial forestland owners are probably best served by setting their sights on sustainable management of their forests to promote forest health and wildfire resilience, rather than on trying to seek maximum revenue. Delaying forest management activities such as thinning or fuels reduction, while hoping for better markets, is likely to end up being counter-productive.

LOG MARKET REPORT \$/1,000 board feet (or ton)							January 15, 2020			
Umatilla/Pendleton										
Douglas-fir/Larch	Ponderosa Pine					Grand/White Fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs (ton)	
	CR	6-11"	12-18"	19"+						
375-420		250	300	350		300-320	285-300	285-300	28-34	
La Grande/Elgin										
Douglas-fir/Larch	Ponderosa Pine					Grand/White Fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs (ton)	
	CR	6-7"	8-14"	15-17"						
430		270	310	390		320	270-310	270-310		
Pilot Rock										
Douglas-fir/Larch	Ponderosa Pine					Grand/White Fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs (ton)	
	CR	10-14"	15-16"	17"+						
		340	370	390						
Burns/John Day										
Douglas-fir/Larch	Ponderosa Pine					Grand/White Fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs (ton)	
	CR	6-7"	8-11"	12"+	18"+					
8"+ 350		250	270	320	360	8"+ 220			23	
Redmond/Bend/Gilcrst										
Douglas-fir/Larch	Ponderosa Pine					Grand/White Fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs (ton)	
	CR	6-13"	13-15"	16"+						
		280	280	280			330			
Lakeview/Klamath Falls										
Douglas-fir/Larch	Ponderosa Pine					Grand/White Fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs (ton)	
	CR	6-11"	12-16"	17-23"	24"+					
		285	300	350	350	8"+ 285	8"+ 300			
Lewiston ID										
Douglas-fir/Larch	Ponderosa Pine					Grand/White Fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs (ton)	
	CR	6-7"	8-14"	15-20"	21"+					
420-450		240	240	240	240	420-450	400-430	400-430		



Stream and Riparian Area Management

Evaluating riparian areas for clean water and diverse habitat

By Jacob Putney, Extension Forester in Baker County

Adapted from: Werling, R. and Bennett, M. 2019. Streams and Riparian Areas: Clean Water, Diverse Habitat. EM9244. Extension Catalog, Oregon State University, Corvallis, OR.

Water is a precious resource, particularly here on the dry side, so protecting streams and the areas around them is critical. These areas are important for providing clean water for livestock, crops, wildlife, and communities. If you have a stream or waterbody on your property, there are a variety of things you can do to enhance and protect these areas to help ensure they provide benefits into the future.

A riparian area is defined as the place in which moisture interacts with the surrounding soils and geology. These zones are typically characterized by the specific trees and plants that are found within them. They help reduce erosion, filter pollutants, slow floodwaters, increase groundwater recharge, and serve as habitat for wildlife. Prior to completing any management in these areas, be sure to check your local rules and regulations. City and County governments, the Oregon Department of Agriculture, and the Oregon Department of Forestry have specific rules and regulations depending on the waterway's benefits and uses. For example, does it have fish? Is it used for irrigation? Is it a drinking water source? Contacting your local Extension office, Soil and Water Conservation District, watershed council, Department of Agriculture, Department of Forestry, Department of Fish and Wildlife, County Water Master, or other local

resources can help answer these questions and provide guidance for management.

After determining the local rules and regulations, consider your management objectives and things you would like to accomplish. Here are some ideas for promoting a healthy and functioning riparian area:

- **Promote Native Vegetation**, such as trees, shrubs, and grasses along the vegetated streamside buffer. These buffers help prevent erosion and act as a filter for sediment and pollutants.
- **Limit Mowing** within 10-25 feet, or more, of the stream bank. Leaving the native grasses and other vegetation provides more diverse habitat, and does a better job of protecting water quality.
- **Remove Invasive Species**. These plants inhibit regeneration and growth of native species and can be detrimental to riparian function. It is important to target these species early, as they are increasingly difficult to remove after colonizing these areas.
- **Keep it Clean** and don't pile leaves, manure, or other debris in the riparian zone. These materials, when they reach the stream, can lower oxygen levels and are a form of water pollution.
- **Be Careful When Using Pesticides, Herbicides, and Fertilizers**. Particularly in the riparian zones, these products can be detrimental to water quality. However,

they may be necessary for controlling invasive species. Always follow directions on the label, and use extreme caution when applying them adjacent to water.

In addition to the riparian area, it is also important to consider the stream itself. Water systems are dynamic and have formed, and continue to change, over time. Especially in flatter terrain, floods, droughts, and natural changes in water flow can alter the course of streams and rivers. Consider these objectives for protecting your waterway:

- **Respect the Meander Belt.** Limit building in riparian areas and avoid straightening stream channels. These activities lead to problems of erosion, flooding, and decreased water quality.
- **Design Culverts and Bridges** to protect the stream, allow for fish passage, and accommodate high water flows. It is better to have an over-sized culvert than an undersized one.
- **Design Roads with Care.** Roads are often a major source of erosion, sediment, and pollution runoff, but with careful design these effects can be mitigated.

If you manage and graze livestock on your property, there are some important steps you can take to protect streams and riparian areas. Livestock can create issues of increased erosion, spread of noxious weeds and invasive species, and decrease streambank stability and water quality. However, there are steps you can take to help reduce or prevent these problems:

- **Consider Fencing** around riparian areas to keep livestock out.
- **Off-channel Water Sources** are a good solution to draw livestock away from stream areas while still providing water. Ensuring adequate forage is available can help draw livestock to these alternative water sources.
- **Time your Grazing.** If cattle and other livestock graze in riparian areas, consider the timing and allow for rest periods. Avoiding riparian areas in the rainy season and allowing periods of time for vegetation to rest and regrow can help protect riparian areas and stabilize stream banks.

Remember the most important first step is to determine the regulations that apply to your stream. Then consider these suggested activities to create a healthy stream system and vibrant habitat for wildlife. Good streamside



Blue Heron wading in the Umatilla River. Photo © Lynn Ketchum, OSU.



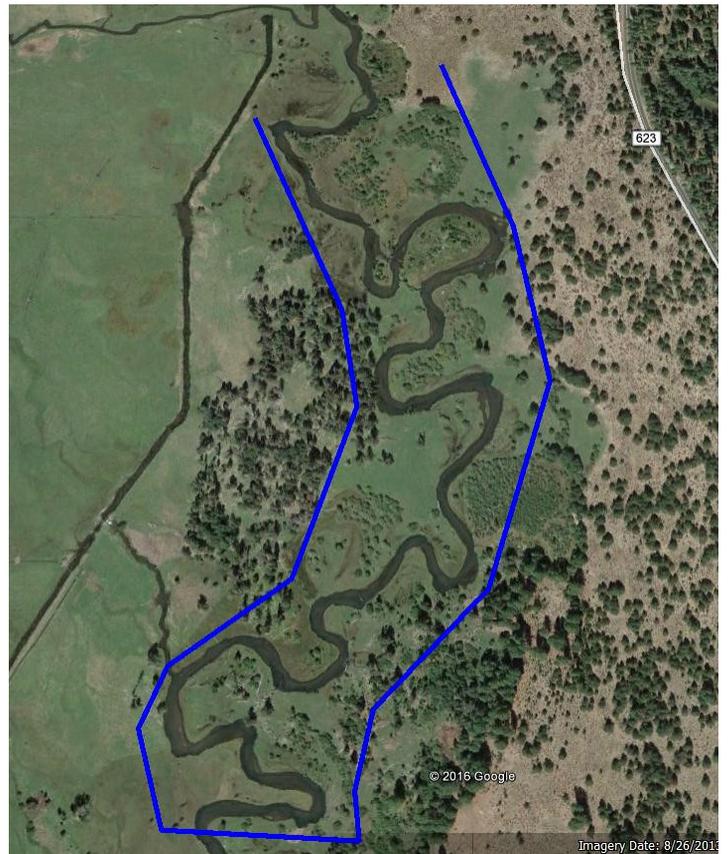
Creating a buffer of native vegetation along the water could help enhance this stream system. Photo © Rachel Werling, OSU.



Proper grazing management can help protect and enhance streams and riparian areas.

stewardship is an important and rewarding endeavor; be sure to check out these additional resources for more information:

- *Streams and Riparian Areas: Clean Water, Diverse Habitat.* EM 9244. <https://catalog.extension.oregonstate.edu/em9244>
- *Riparian Areas: Reservoirs of Diversity.* U.S. Department of Agriculture Natural Resources Conservation Service. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/?cid=nrcs143_014206
- *Polluted Runoff: Nonpoint Source Pollution.* Environmental Protection Agency. water.epa.gov/polwaste/nps/wetlands.cfm
- The National Pollutant Discharge Elimination System: An Oregon NPDES pesticide general permit is required for certain pesticide applications in, over, or near water. Contact the Oregon Department of Environmental Quality for information. oregon.gov/oda/programs/Pesticides/Water/Pages/NPDES.aspx
- Guide to Oregon Permits in Riparian Areas. Be sure to verify the most up-to-date regulations with the proper governing body. oregon.gov/dsl/WW/Documents/water_related_permits_user_guide_2012.pdf
- *Forest and Woodlands: Protecting an Ecosystem.* EM 9245. <https://catalog.extension.oregonstate.edu/em9245>



The Wood River in Klamath County, Oregon. Notice how the stream meanders across the landscape. Protecting the water's natural course protects water quality and reduces the chance of flooding and erosion. Photo © Google Earth.



Save the Date: Tree School East

June 12, 2020 at Baker City High School in Baker City, Oregon

This Extension Service mini-college will feature classes on a variety of topics of interest to family forestland owners, professional foresters, loggers, arborists, teachers, and the general public. Vendors will be on hand and we'll throw in snacks and a great lunch to keep energy levels high!

Hold the date and watch for the Tree School brochure this spring.

For more information, contact Jacob Putney (541-523-6418; jacob.putney@oregonstate.edu) or John Punches (541-963-1061; john.punches@oregonstate.edu).



BAKER COUNTY NEWS

Jacob Putney, Extension Forester in Baker County

Funding Opportunities

The Natural Resource Conservation Service (NRCS) provides technical assistance and administers financial assistance conservation programs. If you have forests that have been affected by disease or insect infestation, or high fuel loads, and are interested in conducting pre-commercial thinning, brush management, fire breaks, or fuels reduction there may be funding available to help implement these projects. Priority areas in Baker County include the Baker Watershed and Burnt River Range. Contact the local NRCS or Oregon Department of Forestry (ODF) office for more information and to determine eligibility.



Firewise USA® in Baker County

Homeowners in the Spring Creek area, along the eastern flank of the Elkhorn Mountains, have received Firewise USA® recognition — Congratulations! This is the first Firewise USA® community in Baker County, and the second for northeast Oregon. Organizers are planning a community event for May 9th to talk more about the Firewise program. Stay tuned for more information.

If your community is interested in becoming a recognized Firewise USA® site, or you would like more information on the program and risk-reducing techniques for your property, contact Jacob Putney (Jacob.Putney@oregonstate.edu). You can also check out the free educational materials on the National Fire Protection Association (NFPA) website, or the defensible space tips in the Winter 2019 issue of Life on the Dry Side.



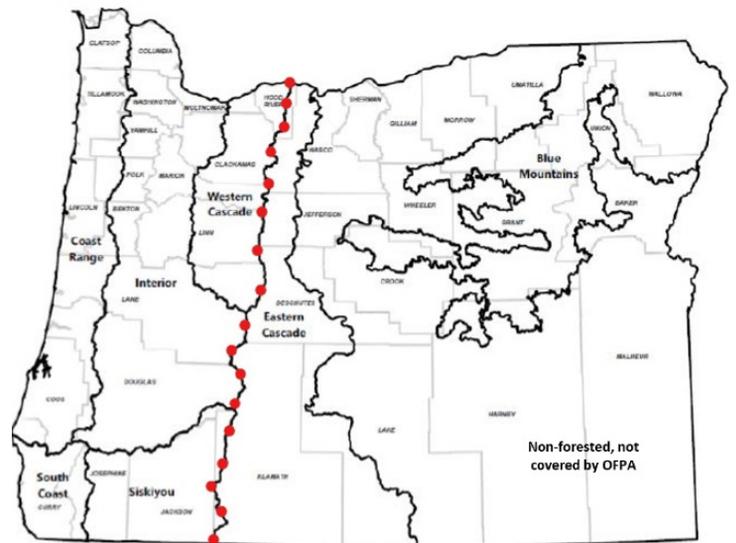
Forestry Activities near Water Resources

What you need to know about the Oregon Forest Practices Rules and activity near streams

By Kasey Johnson, Extension Forester in Klamath and Lake Counties

Oregon is committed to protecting fish, wildlife, water quality, and forest health in all of its forested ecosystems. This is reflected in the various rules and restrictions documented within the Oregon Forest Protection Act (OFPA). You may be familiar with the OFPA from the perspective of timber harvest, but a large part of the act is actually focused on protecting water resources, including streams, ponds, lakes, and wetlands (see sidebar). The rules can seem complex and highly nuanced, but if you're considering a commercial harvest, thinning, or other tree or vegetation management near a water resource don't be discouraged - help is available. In this article I'll give you an overview of key aspects of the rules, as they relate to stream resources, and let you know when you should contact your Oregon Department of Forestry (ODF) office for specific guidance.

Within the OFPA, laws and guidance related to stream and wetland system protection are tailored to the specific types of water resources: streams, ponds, wetlands, springs, lakes, and reservoirs. The rules are further tailored to where the water is located in the State— the OFPA divides the state into seven geographic regions for the protection of water. Luckily for us, only two of these regions apply here on the Dry Side; the Blue Mountain geographic region covers the northeastern part of the state, and the Eastern Cascade geographic region covers the rest of Eastern Oregon. For this article, we'll look at the OFPA implications for forestry work around stream resources in these two regions.



Now that you know the OFPA really likes categories, it should come as no surprise that it has 12 different stream classifications based on size and use, with laws specific to each. These are based on three classifications of stream size and four classifications based on use (type).

Stream Size:

- Small: average annual flow of 2 cfs (cubic feet per second), with a general width of less than 7 feet
- Medium: average annual flow of 2-10 cfs, with a general width of 7-12 feet
- Large: average annual flow of greater than 10 cfs, with a width greater than 12 feet.

Given the dynamic landscapes that we live and deal with on the Dry Side these classifications can be hard to visualize: you might expect a stream to be classified as small, but the OFPA may classify it as medium. The ODF maintains a database of stream size classifications, and can perform on-site determinations of your stream (or other water resources) as needed to assist with classification.

Stream Types:

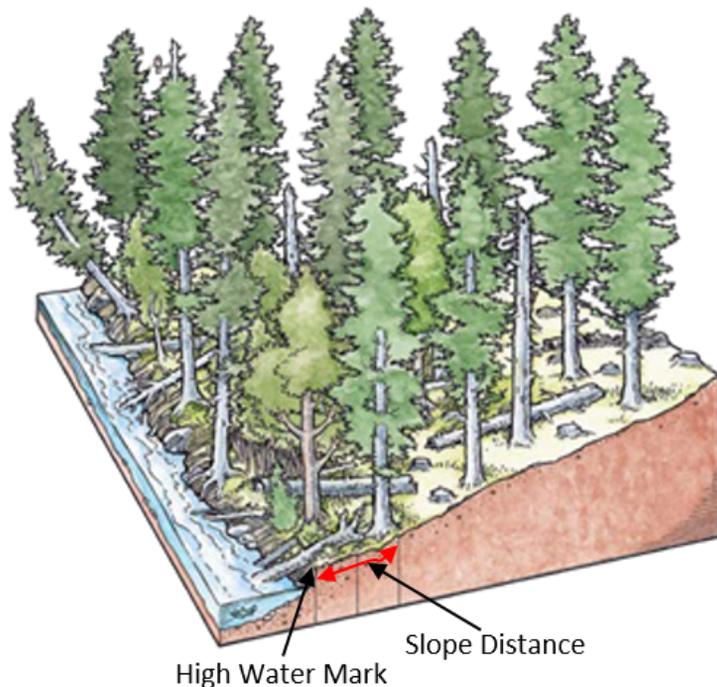
- Type F: streams with fish use/presence (may also be used as a domestic water source)
- Type SSBT: contain salmon species, steelhead or bull trout and are typically small or medium streams
- Type D: domestic water source, no use by fish
- Type N: no fish presence and is not used as a domestic water source

Although type SSBT (salmon, steelhead, bull trout) streams are listed in the OFPA, these management rules have not yet taken effect on the Dry Side (Eastern Cascade and Blue Mountain georegions). However, it's worth keeping these rules in mind if your streams have salmon, steelhead or bull trout, or their habitat, present. Another essential thing to remember is that even though your stream may not have water present year-round (or even a majority of the year), if water flows within the stream channel at some point during the year (given an average snowpack) it meets the criteria for classification of a stream and for specific protection within the OFPA and forest activities.

The OFPA protects streams by requiring buffer strips along each side of the stream. These are referred to as Riparian Management Areas (RMAs for short). RMA are specific to local situations given the stream size and type, and have requirements for retention of trees (live trees),

snags (standing dead trees), and understory vegetation based on classification. RMA size governs forestry practices carried out within them. The size and type of the RMA is determined by the stream's size and use.

RMA width is measured from the "high water mark" and proceeds away from the stream following the slope (slope distance). Slope distance (SD) is measured in a straight line perpendicular to the stream, along the gradient of whatever slope is present. The high water mark (or



ordinary high water mark) is the point on the stream's bank where water reaches at its normal high levels; it is typically identified by the transition/lack of vegetation between the surrounding area and the stream bed.

Commercial harvests and many forms of restoration can be carried out within RMAs, but the OFPA has specific requirements related to how much and what type of timber (hardwood vs conifer, live vs. dead) must be retained throughout the activity and RMA. The specifics are related to the size and use of the stream. Given the possible combinations of current vegetation present, harvest type, and stream classifications I have not included any figures to portray this. You can find an overview in the Illustrated Manual (*see sidebar, next page*), but the best way to identify requirements for your RMA is to consult with your local ODF Stewardship Forester, your local Oregon State Extension Forest Agent, or a private forestry consultant (one familiar with stream rules

Oregon Forest Practice Act RMA Buffers				
	Type F	Type SSBT	Type D	Type N
LARGE	100 feet	N/A	70 feet	70 feet
MEDIUM	70 feet	80 feet	50 feet	50 feet
SMALL	50 feet	60 feet	20 feet	Apply specified water quality protection measures, and see OAR 629-642-0400

Learn More About Oregon's Forestland Water Protection Rules

QUICK REFERENCE GUIDE:

Oregon's Forest Protection Laws: An Illustrated Manual; <https://oregonforests.org/node/549>

ALL THE DETAILS:

ODF Forest Practice Administrative Rules and Forest Practices Act; <https://www.oregon.gov/odf/Documents/WorkingForests/FPARuleBook2018Final.pdf>

- Division 635: Water Protection Rules: Purpose, Goals, Classification and Riparian Management Areas
- Division 642: Water Protection Rules: Vegetation Retention Along Streams
- Division 645: Water Protection Rules: Riparian Management Area and Protection Measures for Significant Wetlands
- Division 650: Water Protection Rules: Riparian Management Areas and Protection Measures for Lakes
- Division 655: Water Protection Rules: Protection Measures for "Other Wetlands," Seeps and Springs
- Division 660: Water Protection Rules for Operations Near Water of the State
- Division 665: Specified Resource Site Protection Rules

for your area). ODF is the agency that enforces and monitors these rules and laws so they will provide the final "check" for your proposed activity, while an Oregon State Extension Forester or forestry consultant can work with you to identify options and the impacts of your proposed treatment. When discussing the retention requirement and harvest proximity to the stream it will be important that the ODF forester understand fully the intent of your harvest or treatment. Written Plans and Alternative Practices can be made (exceptions or alternatives to meet the intent of the OFPA) if your proposed activity does not immediately align with the rules. ODF Stewardship Foresters are the ones who can create a Written Plan or Plan for Alternate Practice, and they will know when such a plan is allowed and beneficial.

Regardless of your proposed activity or goal for your forest in relation to streams and forest activity in the associated RMA, it is important to know three rules:

- 1 All trees within 20 slope-feet of the high water mark must be retained.**
- 2 All vegetation (brush, grasses, shrubs) within 10 slope-feet of the high water mark must be retained.**
- 3 Trees that are leaning over the channel must be retained.**

These three rules can be found within **section 629-642-0100** of the OFPA.

These retention requirements aid in providing stream shade, soil and erosion protection, and nutrient input for stream ecosystems. They are in place to protect stream functions and you should be mindful of this before identifying an action that would negate these rules and benefits. Along with these three rules it is also a good practice to retain all snags within an RMA, so long as they do not pose a hazard to the operation activity or your general use of the stream or riparian area.



To-Do List for Winter/Spring

- Check your forest road and driveway culverts. Make sure they are free of debris in anticipation of upcoming snow melt.
- Make sure your tax preparer has receipts for your forest management expenses.
- Talk to your ODF Stewardship Forester and/or NRCS technician about potential cost-share or other financial assistance programs. Get signed up if appropriate.
- Tune up your chainsaw and sharpen your saw chains.
- Put the Tree School East date on your calendar (June 12, 2020, at the Baker City High School).
- Review your forest management plan and make updates if needed. Spend time chatting with family members about your forestry objectives and get them involved.
- If you don't have a forest management plan, ask your favorite consulting forester or Stewardship Forester if you qualify to have a plan developed for you.

KLAMATH BASIN NEWS

Kendal Martel @ Kasey Johnson, Extension Agents in Lake and Klamath Counties

Kendal Martel and Kasey Johnson have been settling into their new positions as Extension agents in Lake and Klamath Counties. Kendal is currently partnering with local forestry and public health partners in Lakeview to develop a Community Response Plan for prescribed fire and wildfire smoke. The purpose of this plan is to increase opportunities to accomplish critical prescribed fire treatments to improve forest health and reduce the risk of extreme wildfires. Most importantly, this plan will enhance coordination, communication, and notification of residents and visitors of Lake and Klamath Counties about planned prescribed fire, potential smoke and air quality impacts, and recommendations to reduce exposure and mitigate the health impacts of wildland fire smoke from all sources.

Kendal is reaching out to private landowners that are interested in learning how to conduct Home Hazard Assessments on their property. The goal is to provide tools to understand your home and property's wildfire risk and prioritize actions to reduce that risk.

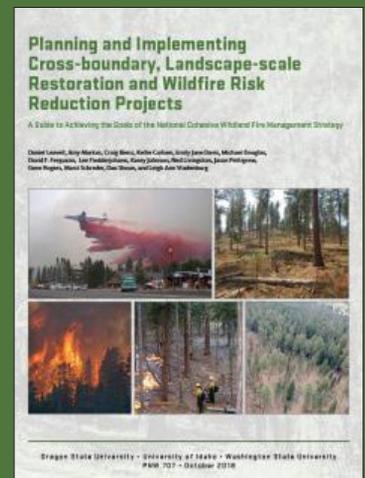
Kasey is continuing support of the work of the Klamath-Lake Forest Health Partnership (KLFHP). In Klamath County, the Chiloquin Community Forest and Fire Project (CCFFP) is starting the next round of landowner sign-ups for 2020 NRCS funding. The Klamath Watershed Partnership, Oregon Department of Forestry and other partners are working with landowners that are currently implementing restoration treatments on their land.

In Lake County, the North Warner and Thomas Creek Landscape Projects are steadily undergoing planning efforts in preparation for winter thawing and large scale restoration treatments in the spring.

In early December, the KLFHP received the OSU Extension Service Cooperator Award for their great work and valuable partnership with OSU Extension.

If you are a landowner interested in a Wildfire Home Hazard Assessment, please contact Kendal at kendal.martel@oregonstate.edu or 541-941-6054.

For more information on the process the Klamath-Lake Forest Partnership has used to plan and implement cross-boundary restoration projects, download the free e-book, [Planning and Implementing Cross-boundary, Landscape-scale Restoration and Wildfire Risk Reduction Projects](https://catalog.extension.oregonstate.edu/pnw707). <https://catalog.extension.oregonstate.edu/pnw707>



After the Fire

Effects of post-fire management practices on watersheds

*A review of the journal article, "Long-term Hydrologic Recovery after Wildfire and Post-fire Forest Management in the Interior Pacific Northwest," by Ryan J. Niemeyer, Kevin D. Bladon, Richard D. Woodsmith, 2020, Hydrological Processes, Vol. 34, Issue 5, p. 1182-1197.
By Kendal Martel, OSU Forest and Fire Extension in Lake and Klamath Counties*

Living in the West, one of the most salient issues in natural resource management is the role of fire on our landscapes. Our past story of fire suppression and our future story of climate change increases concern about wildfire activity, changes in fire behavior, and what that means for the future of our forests. First order and second order fire effects are multifaceted, but increasingly, attention has been given to the effect of forest fires on watersheds, garnering more holistic management strategies like “ridgetop to ridgetop restoration” that considers both forest and watershed health.

These connections are incredibly important, as most discharge for water supply is generated in forested headwater catchments, which eventually makes its way into the water supply. Wildfires affect these processes in several ways. For example, crown fires reduce forest canopies and lead to increased runoff. In addition, wildfire has a substantial effect on soil structure and subsequent flooding and erosion.

Most research has focused on the short term fire effects on watersheds, usually 5 years or less after a fire occurs. This study focuses on the longer term effects of wildfire on catchment hydrology.

STUDY OBJECTIVES AND IMPORTANCE:

The objective of this study was to examine the short and long term effects of post-fire management treatments on watersheds. In particular, researchers focused on annual discharge, peak flows, low flows, and evapotranspiration.

Anyone who has lived in a community near a fire event or has been a land manager associated with conversations around post-fire management knows that it is a contentious subject. As with all contentious subjects, it is important to improve understanding of post-fire management practices in the short term and the long term. There is still debate about the impacts that post-fire management strategies can have on ecosystems.

Common Post-Fire Forest Management Practices:

- Salvage logging
- Emergency stabilization
- Sub-soiling (cutting furrows along the contour of hillslopes)
- Contour-felled logs
- Application of straw wattle to hillslopes
- Seeding or replanting of hillslopes

There has been evidence to suggest that these practices increase disturbance to soils, erosion, and sediment delivery into streams, rivers, and waterways. The authors of this study underscore a critical need to improve the understanding of post-fire hydrologic recovery to facilitate better post-fire land and water management decisions.

RESEARCH AREA: ENTIAT EXPERIMENTAL FOREST

The Entiat Experimental Forest was established in 1957 to study the effects of road building and timber

harvesting on the quantity, quality, and timing of water discharge from small watersheds in the mountains of north-central Washington. Instrumentation was installed in three similar, adjacent watersheds to monitor weather and streamflows. Scientists from the Pacific Northwest Research Station's Wenatchee Forestry Sciences laboratory collected baseline data for almost 12 years before a lightning-caused wildfire burned all three watersheds in 1970. Three catchments that were burned by this wildfire were used in the study.

(source: <https://www.fs.usda.gov/pnw/experimental-forests-and-ranges/entiat-experimental-forest>)

Data Used:

- Ten years of pre-fire data.
- Post-fire data from 1 to 7 years and 35 to 41 years after wildfire in three experimental catchments.
- Two catchments were salvage logged, aerially seeded, and fertilized after the fire.
- A third burned catchment was unmanaged and left as a reference.

OBSERVATIONS:

- In the first seven year period after the wildfire, the researchers observed increases in annual discharge, peak flows, and low flows, as well as decreases in evapotranspiration across all three study catchments.
- 35-41 years after the fire, researchers observed that annual discharge, peak flows, low flows, and evapotranspiration had returned to pre-fire levels in the two catchments that were salvage logged and seeded.
- In the burned catchment that was not actively managed, the annual discharge and runoff ratios remained elevated and evapotranspiration remained lower during the 35-41 years after burning.

KEY TAKEAWAYS:

- The research suggests that these post-fire land management strategies may have increased the rate of hydrologic recovery in long term when compared to unmanaged catchments.
- This could be attributed to delayed vegetation recovery in the unmanaged catchment and harvesting of the standing dead wood, aerial seeding, and limited replanting may have created conditions for more productive long-term vegetation growth.
- It is important to note that hydrologic recovery can vary

depending on several factors such as the severity of the fire, aspect, soil type, vegetation type, and weather/precipitation patterns after the fire. The researchers note that key factors such as fire severity, aspect, and soils were generally uniform across catchments.

- The researchers also note that the study catchments were south facing, which could have contributed to the delayed regeneration and hydrologic recovery in the unmanaged catchment.



Over 120,000 acres of the Wenatchee National Forest were burned down on August 23, 1970. This is known as the Entiat Burn. Photo © Ryan Niemeyer.

CONCLUSION

As mentioned before, what happens after a fire, whether through ecological recovery or social recovery is nuanced, contentious, and wrapped in social, ecological, and economic desired outcomes. Moving forward, it is important to use these findings in the broader context of understanding the trade-offs associated with post fire management. The authors state that there could also be negative consequences beyond their findings that should be considered, such as loss of habitat, increased sediment and turbidity in streams, and elevated short-term fire risk.

These studies are important for helping citizens of the West understand the nuanced ways that we can adapt to living with fire, and the outcomes of our decisions about post-fire management strategies on the forests and waterways that we depend on. Finally, if you're a private forestland owner remember that it's ultimately you who will determine what management actions you take to make your forests more resilient to fire, and what you'll do if those forests experience wildfire.

Snow and Precipitation Update

By Jacob Putney, Extension Forester in Baker County

Well this year has been warmer than normal, and Punxsutawney Phil says we will have an early spring, but what do the snowpack and precipitation conditions look like on the dry side of Oregon? Snowmelt provides the source of around 70 percent of the water supply for the western United States. Water from snowmelt is essential for communities, agriculture, industry, fish, and wildlife. The Natural Resource Conservation Service (NRCS) Snow Survey program measures values such as snow depth and precipitation, and predicts how much water will be available throughout the year. These values are crucial for determining potential drought or floods.

Precipitation is measured as the amount of water in inches, and snow accumulation is measure as snow-water equivalent (SWE). Snow-water equivalent is the amount of water (in inches) that is in the snowpack, based on its depth and density. These values are averaged across different regions, or basins, and reported as percentages of the historical median (for SWE) or historical average (for precipitation).

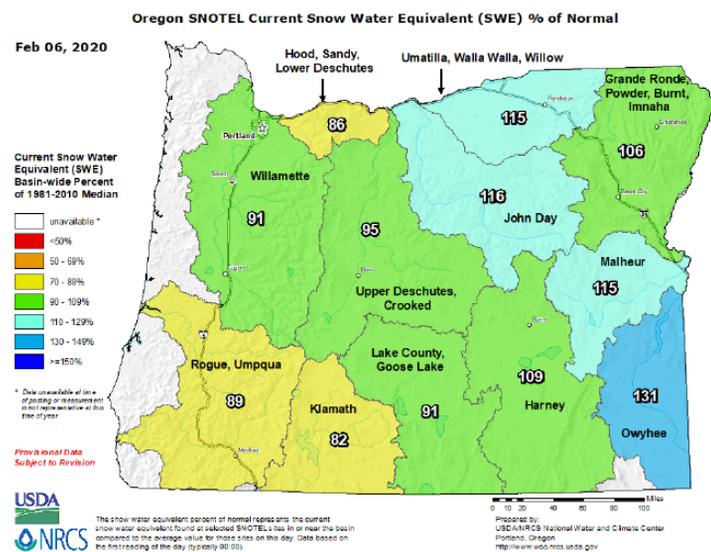
As of the beginning of February, eastern Oregon basins are in the “normal” range or are at or above the 100% of the historical median for snow-water equivalent. Central

Oregon and the Klamath basins are below the historical median suggesting, if Punxsutawney Phil is correct, that spring conditions could be drier than normal. In terms of precipitation, all basins are below the historical averages (see table on next page), with the exception of northeast Oregon. Central Oregon, Klamath, and Lake basins have been the driest so far this winter.

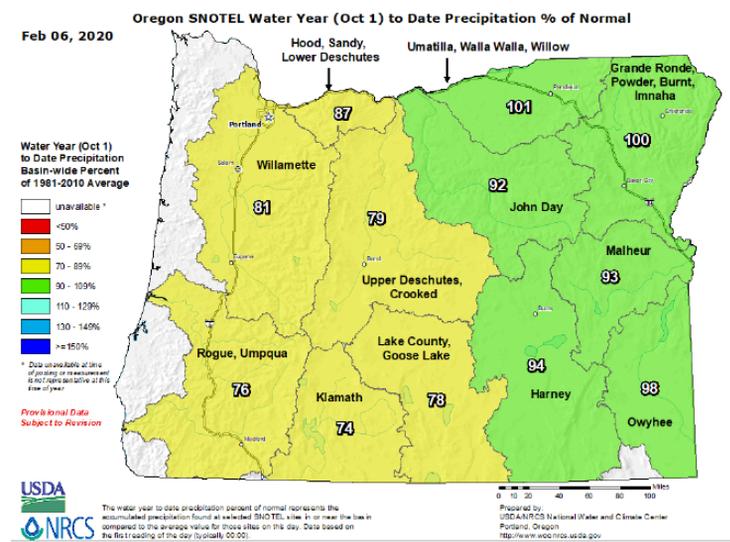
It’s still early in the water year and much could change as the winter progresses. Be sure to check out these resources below to keep an eye on the snow pack and precipitation conditions throughout the state:

HOW MUCH WATER WILL WE HAVE?

- An Introduction to the NRCS Snow Survey Program. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_041398.pdf
- Oregon Snowpack Summary Maps and Graphs. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/or/snow/products/?cid=nrcs142p2_046169
- Snow and Precipitation Data and Analysis. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/or/snow/products/?cid=nrcs142p2_046161



Current Snow-Water Equivalent (SWE) % of Normal. © USDA/NRCS.



Current Precipitation % of Normal. © USDA/NRCS.

Basin as of February 6, 2020	Snow Water Equivalent (% of Median)	Precipitation (% of Average)
Owyhee	131	98
Malheur	115	93
Grande Ronde, Powder, Burnt, Imnaha	106	100
Umatilla, Walla Walla, Willow	115	101
John Day	116	92
Upper Deschutes, Crooked	95	79
Hood, Sandy, Lower Deschutes	86	87
Klamath	82	74
Lake County, Goose Lake	91	78
Harney	109	94

NORTHEAST OREGON NEWS

John Punches, Extension Forester in Union, Umatilla, & Wallowa Counties

Funding Opportunities for Private Land Fuels Reduction

The Natural Resource Conservation Service (NRCS) and Oregon Department of Forestry (ODF) have funding programs to help private, non-industrial forestland owners carry out fuels reduction treatments. The programs focus on removing small trees and are available in specific geographic locations. If you live in any of the following locations, contact your NRCS or ODF office to determine if you might qualify:

- In Wallowa County the Wallowa Front project has funds remaining for projects along the northeast edge of the Wallowa Mountains. Contact Tim Cudmore (ODF); 541-886-2881.
- In Union County the Upper Grande Ronde project is in its last year (inquire soon). The Mount Emily project is new and has significant funding for landowners on the east half of the mountain and its flanks. Contact Mike Burton or Nick Vora (NRCS); 541-963-4178.
- In Umatilla County funds are available from the Mill Creek area south along the flanks of the Umatilla Forest to Hwy 204. Contact Lindsay Olivera (ODF); 541-276-3491.



Many opportunities exist in northeastern Oregon to mitigate wildfire risk. Photo © USDA Forest Service.

Webinar Series: Forest of the Northern Blues

Want to learn more about forests and forestry in NE Oregon and SE Washington? Jacob and I, along with guest experts, are offering a free, 6-part, basic forestry webinar series on selected Tuesday evenings in March and April. Participate from the comfort of your home, or anywhere you have an internet connection. Classes include forest types, tree ID, forest health, wildfire conditions, forest management options, and ways to protect your home from wildfire. Find more details and register at: blogs.oregonstate.edu/northernbluesforests



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RESTORATION ON OUR NATIONAL FORESTS

By John Punches, Extension Forester in Union, Umatilla, and Wallowa Counties

A wide range of partners spent the past several weeks crafting a proposal for the Collaborative Forest Landscape Restoration Program (CFLRP). If funded it will provide nearly \$44 million to the Umatilla and Wallowa-Whitman National Forests, over 10 years, to: conduct fuels reduction treatments on the Forests adjacent to private and/or tribal lands; create a network of strategic fuel breaks within the Forests; and protect or enhance cultural sites, rare habitats, municipal watersheds, and other valued resources – all with the overarching goal of making our landscape more resilient to wildfire.

The partners included both National Forests, Wallowa Resources, The Nature Conservancy, Extension Service, Oregon Department of Forestry, the Natural Resources Conservation Service, the Northern Blues Forest Collaborative, and others. We emphasized the positive ecological and economic benefits of these efforts and our unique readiness to carry out collaborative, cross-boundary work. While we eagerly await the CFLRP decision we're actively pursuing other opportunities to get this important work done.

