



**Pend Oreille
Conservation
District**

Summer Newsletter



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How To Lower Your Risk of Bark Beetle Infestations

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Washington State University

While everyone has buttoned down the hatch to avoid the recording breaking heat-wave that 2021 has brought us, something else is lurking in the forest. Attacking trees that are stressed from drought or invading slash piles looking for a cool place to find some grub. What is it? They are bark beetles! Bark beetles are small native insects that feed and lay their eggs underneath the bark of live trees. There are many different types of bark beetles. Most tend to prefer a specific species of trees and sometimes prefer a specific size of tree.

Bark beetles begin their life cycle in early fall as eggs laid within what is called a maternal egg gallery (figure 1). This egg gallery, unique in shape to each species of beetle, is underneath the bark, within the cambium layer of the tree, where sugars and nutrients are moved through the bole (trunk). Within a short period, the eggs will hatch into larvae that will grow and feed outwards from the egg gallery. These new tubes are called feeding galleries. Here the larvae will overwinter and continue to feed and grow off the nutrient food source of the cambium wood layer, developing into a small pupa. The pupae are the final stage before the beetles reach maturity. It is during these first three cycles that most trees succumb to death. As the larvae and pupae feed outwards and around the tree, the nutrients that would have been sent up to the foliage of the tree for growth and photosynthesis, are now cut-off, and the tree dies from girdling.

Once the tree dies, it no longer provides the essential food resources that these beetles need to survive and reproduce. Therefore, in late spring, the pupae mature into the adult beetle phase, which fly to new trees to reproduce. Here is where the battle is waged. Trees have adapted to defend themselves against beetles. They do this by creating a resin inside of the tree, which under high pressure, use push out bark beetles that are chewing their way through the bark to the cambium layer. A major essential compound in the production of this resin is H₂O (water). During drought periods or if the tree is growing on a harsh site, the tree is weakened and cannot readily defend itself against a beetle invasion. If the initial swarm of beetles detect a weakened tree, they will emit what is called

an aggregation pheromone. This chemical tells other beetles in the area that this tree is weak and together they can colonize it and lay their eggs. Once the tree is fully occupied with beetles, they will then begin to produce an anti-aggregation pheromone signal, telling beetles to keep looking for another food source. This strategic warfare leads to a methodical spread of bark beetles through the summer.

While this life cycle outlines the general behavior of bark beetles, not all follow this pattern exactly. One such example is the Pine Engraver (*Ips pini*). Ips are a wide family of bark beetles, found throughout North America and Canada. The pine engraver is a small Ips beetle. Due to their size, they are restricted to attacking portions of trees that have thin, easily penetrable, bark. Pine engraver beetles are commonly found attacking the tops of pine trees where the growth is recent or invading recently dead wood on the ground where the tree still has fresh cambium but can no longer defend itself against the invasion. This can make thinning and harvesting trees difficult, as the residual material on the ground becomes breeding spots for the Pine engraver. Additionally, pine engraver beetles have an added step in their life cycle that allows them to produce several generations of mature beetles throughout a single summer season. A common indicator that a tree has been invaded by the pine engraver is a small pile of frass on the bark (figure 2). Frass is a mixture of wood material and excrement, left behind as the beetle bores through the bark. In order to reduce the potential for an outbreak of Pine engraver on your forest, it is critical that any woody material left on site has dried prior to the mature beetles flying to find a host to lay eggs. Since it can take several months for wood to fully dry, the best time to leave any pine wood on the ground is from August-December. If you cut wood between January-March, take steps to move the wood to an open area with full sun where the drying process is accelerated. Finally, if you must harvest or thin between April-July, you will need to completely remove any woody material greater than 3-inches from the site or breakdown the wood on site by chipping, masticating, or burning (following safe burning practices during the fire season).

Figure 1 - Beetle Gallery

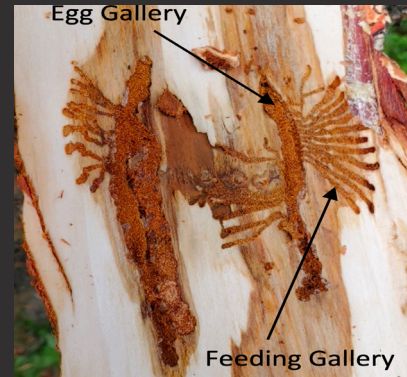


Figure 2 - Beetle frass



Figure 3 - Douglas-fir beetle



Figure 4a

Figure 4b

Continued:

There are many other bark beetle species found in Washington as well, varying in the species, tree size, and stand type they attack. Pictures of mountain sides turned red are showing large-scale outbreaks of the mountain pine beetle. Mountain pine beetles only produce one generation of beetles per year, attacking medium size pine trees. These beetles typically stay at low population sizes until a drought year, where they attack dense, mature, pine stands. Western pine beetles and red turpentine beetles hop from one tree to the next, attacking stressed larger trees, with the red turpentine beetle invading the base and the western pine beetle attacking the middle of the tree. Oftentimes, multiple beetles will attack the same tree, each occupying a different section of the tree. Douglas-fir trees are host to a larger beetle, which attacks larger mature trees, called the douglas-fir beetle (figure 3). The douglas-fir beetle will hide in down douglas-fir trees, then breakout into overstocked stands of douglas-fir in drought periods. There are several other secondary beetles which exclusively attack douglas-fir; however, they are often isolated to the tips of branches and small trees, rarely producing a large enough brood to kill commercial trees.

120 years of fire suppression has led to forests growing dense, creating shady conditions. Species like grand fir have spread beyond their historic range, into areas where they are susceptible to drought and insect attacks. The fir engraver is one such beetle that has succeeded with the expansion of true firs. These overly dense forests, which now face continued seasons of unprecedented heat-

waves and record-breaking droughts, are full of non-commercial trees, weakened from competition between themselves for what little resources are available.

While bark beetles may sound like doom and gloom, on the verge of attacking our favorite family old-growth tree, they are a part of our natural ecosystem. Stands that reinitiate after a fire oftentimes seed (Figure 3 - Douglas-fir beetle) in thick, leading to thickets of competing trees. Bark beetles act as nature's loggers, thinning out the unhealthy, leaving behind the healthy and vigorous. Healthy stands are diverse stands, in both the species of the tree and the sizes of the trees. Bark beetles may attack and kill trees, but this creates opportunity for sunlight to reach the forest floor, allowing shrubs, forbs, and grasses to grow, increasing biodiversity and providing habitat and resources for wildlife. When managing your forest to be resilient to large scale outbreaks of bark beetles, the most effective strategy is to proactively manage your forest, so that the trees that grow on site have access to an abundant amount of water that they need to grow and produce defensive compounds, such as the pressurized resins (figure 4). You do this by acting as the bark beetle, thinning out dense areas that are competing for water and sunlight, leaving behind healthy, large, vigorous trees. Do not be too worried if you see a tree or two succumb to the beetles; it is their home after all. If your focus is timber management, then you will need to be more proactive in early-stand management to reduce the risk of losing future harvest material.

Check out our new YouTube Videos!

We've created a channel where you can tour farms, our new projects and more! Visit: www.tinyurl.com/pocdvideos



No-Till Method

Through VSP, we work with local residents to develop a plan to manage growth, protect critical areas, and maintain viable agriculture. This new method of no-till is helping do just that! Now streaming on our YouTube channel!



Shoreline Stabilization

You may have noticed some erosion along our banks along the Pend Oreille River. Watch this video for more information how we helped a landowner find funding and get the project done!



Metaline Shoreline Crisis

Our friends in Metaline have a shoreline erosion crisis. Join our district manager, Alex while we discuss the project goals with Metaline mayor, county commissioners and resource biologists.

Follow our Facebook Page

For community updates, conservation tips, giveaways and the latest news from us!

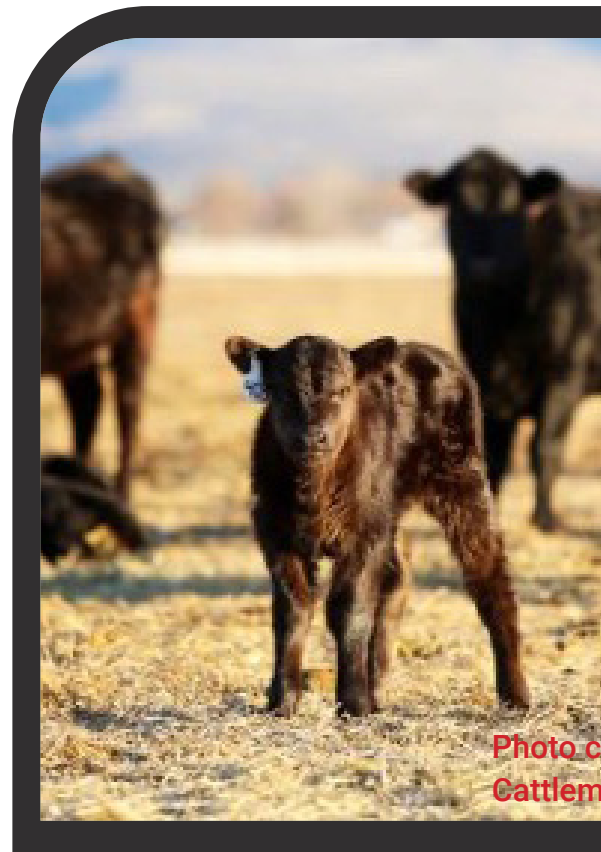
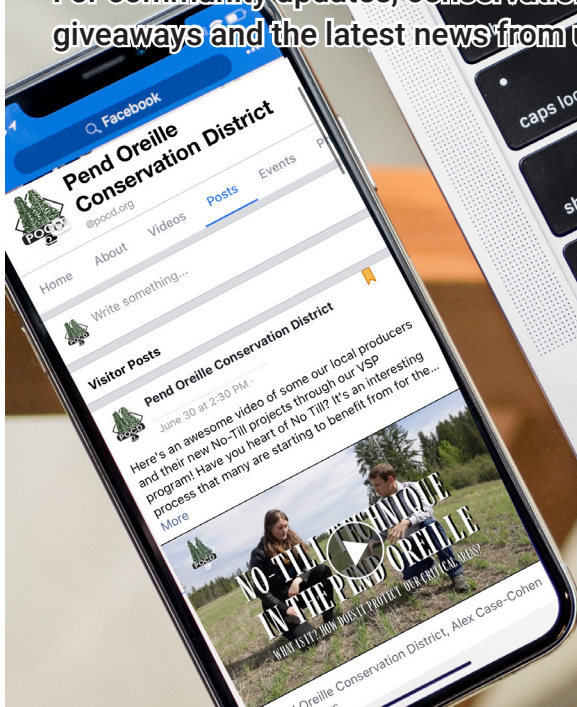


Photo of Cattle

Did you know you can get live updates on the air quality in Pend Oreille County on our website?

Visit www.pocd.org/airquality

Interested in Hosting a Purple Air Monitoring Unit?

Call us at 509 447 1155 or email admin@pocd.org

Current U.S. Drought Monitor Conditions for Washington

Current Last Week Last Month

The U.S. Drought Monitor (USDM) is updated each Thursday to show the location and intensity of drought across the country. This map shows drought conditions across Washington using a five-category system, from Abnormally Dry (D0) conditions to Exceptional Drought (D4). The USDM is a joint effort of the National Drought Mitigation Center, USDA, and NOAA. [Learn more.](#)

The following state-specific drought impacts were compiled by the [National Drought Mitigation Center](#). While these impacts are not exhaustive, they can help provide a clearer picture of drought in Washington.

	D0 - Abnormally Dry • Soil moisture is substantially lower	100.0% of WA
	D1 - Moderate Drought • Fire danger increases • Possible dust storms • River flow is low	72.6% of WA
	D2 - Severe Drought • Wheat and corn are stunted; harvest is early • Producers feed cows; carrying charge is harder to find • Number of wildfires increases; grasses are brown	55.0% of WA
	D3 - Extreme Drought • Crop and hay yields are poor; wheat protein content is higher • Unprecedented wildfires occur; soil is exposed for erosion; volunteers to fight fires; firefighting funds are running out • Tourism is reduced, and recreation is affected	45.6% of WA
	D4 - Exceptional Drought • Washington has experienced 11 years of exceptional (D3) or drought, so I believe no D4-level drought impacts occurred in the Drought Impact Register	34.0% of WA

Sources: NDMC, NOAA, USDM



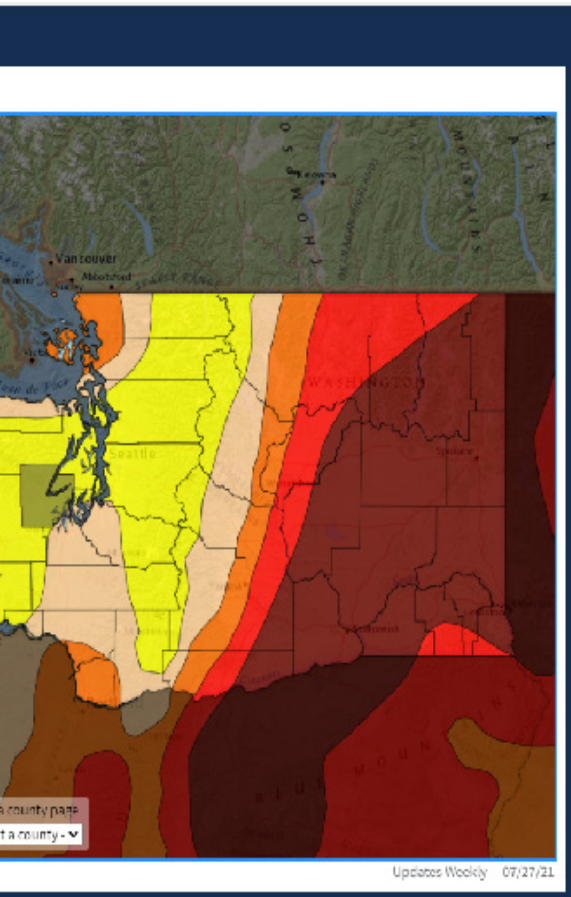
Credit: Washington
Farmers Association

» Exceptionally Dry Conditions Impact Local, Regional Producers - Alex Case - Cohen Pend Oreille Conservation District Manager

The National Integrated Drought Information System (NIDIS) has declared all of Washington as "Abnormally Dry"; however, 34% of the state, including Pend Oreille County, is experiencing an "Exceptional Drought", a category which the state has not yet endured. Areas categorized at this level of drought experience "exceptional and widespread crop and pasture losses, fire risk and water shortages resulting in water emergencies" (National Centers for Environmental Information). Every person I've talked to, farm-

er or not, agrees that this is the driest year they can remember. Timothy fields are brown with few spindly stems. Windrows are heart-wrenchingly small, producing scarce round bales that typically cover a field. These signs indicate the winter to come, the availability of feed for livestock, and how much income a farmer or rancher can earn... or lose. According to Jon Paul Driver, a local hay grower and economist for Northwest Farm Credit Services, there are two primary impacts to local farmers and

ranchers. "In the short term, we're seeing higher cost structures due to the price of hay being double what it was last year... in the long-term, there is a true shortage of hay to feed the livestock that we have. This means that ranchers are forced to sell their breeding stock, which impacts their long-term profitability". For ranchers, breeding stock are their investment; they produce calves to be sold for profit the following year. This year, Jon Paul estimates that livestock producers are selling 10-20% more of their breed-



ing stock than they would in a normal year. The true losses of selling breeding stock are felt in the future; if livestock producers sell their breeding cows for less money now, they will spend more to replace them in the future. This is due to the surplus of livestock available now (due to many farmers selling the livestock they cannot feed) and the shortage of livestock expected for the future (once forage and feed recover with more rainfall). There are few, if any farmers in the county that will not experience loss this year. What resources are available to mitigate the impacts of the drought at present and in the future? For immediate assistance and cost-share, you can contact your local Farm Service Agency (FSA) at: 509-924-7350 or Natural Resource Conservation Service (NRCS) at: 509-685-0858. If you feel overwhelmed by stress due to these circumstances, there is help available, as well. Contact the Western Regional Agricultural Stress Assistance Program (WRASAP) via their Farm

Aid Hotline at: 1-800-FARM-AID (327-6743). If you or someone you know is considering suicide, please contact the National Suicide Prevention Lifeline: 1-800-273-TALK (8255). To say that this year has been tough is an understatement but remember that you and those you love are not alone. For the future, it's important to remember that extreme droughts could be the new normal. This means that we must plan and prepare during years of plenty to prepare for years without. Investing in your soil bank during years of high rainfall may help lessen impacts during dry years. Practices such as cover cropping, bale grazing, and no-till planting could help retain water and organic matter, key components to protecting healthy pastures during droughty years. More research on the benefit of these practices in our area is required, and the District hopes to support these efforts in the near future. For more information and assistance for now and the future, contact Alex Case-Cohen at the Pend Oreille Conservation District.



Weeds In Our Waterways

By Mary Malone - Education and Outreach Specialist - Pend Oreille Conservation District & POC Weed Board

With its abundance of lakes, rivers, creeks and streams, Pend Oreille County is no stranger to aquatic weeds.

While there are several invasive plants that plague our waterways, milfoil is a noticeable problem, washing up on shores in droves and getting caught in boat propellers. Because of this, milfoil was one hot topic during this year's aquatic workshop, hosted by the Pend Oreille County Weed Board.

"If they get out of hand, they can cause problems," Terry McNabb, Aquatechnex owner and one of this year's workshop presenters, said as he spoke about aquatic weeds in general. "The most obvious problem to humans is you can't drive your boat through it, you can't swim if they get pretty dense. Safety is another real issue – there is a number of drowning deaths every year directly attributed to people getting tangled in milfoil beds."

Weed problems also impact the environment, wildlife, property values and more, McNabb said. McNabb's presentation primarily focused on ProcellaCOR, a new herbicide that targets milfoil. It is highly selective and highly effective with a short exposure time.

Another option was presented during a bonus presentation at the end of the workshop by attendee Jim Hassler. He lives on a small lake in southern Pend Oreille County, and two years ago purchased an Eco-Harvester. The aluminum pontoon boat is built to pull weeds out by the roots and remove them completely from the water. In order to make it cost-effective and efficient,

Hassler will come out if there are enough interested people in any one area (email mmalone@pocd.org with your name, where you are located on the water, and contact information).

Other non-herbicide removal options were presented by Scott Jungblom, Natural Resource Manager with the Pend Oreille Public Utility District, including hand tools: cutters, pullers, rakes, rollers and tillers; power tools such as cutters, rollers and rakes; and contracted services, which include ground barriers, dive assisted pulling, and harvesting.

The non-herbicide options can be supported by repurposing the milfoil as well, as pointed out by Alex Case-Cohen, manager of the Pend Oreille Conservation District, who presented primarily on bank stabilization.

"I found some really unique methods for managing aquatic weeds," Case-Cohen said. "Scott actually went into great detail about using Eurasian milfoil as a fertilizer, and there are some sites that I found where you can use it as supplemental forage for livestock – in a drought year like this, maybe there is a way we could team up with some of our ag producers and provide some additional forage when there is not much in the fields."

The workshop on July 23 was held both virtually and in person at the Kalispel Casino in Cusick. More than 100 people registered for the annual event. In addition to McNabb, Jungblom, Case-Cohen and Hassler, this year's speakers included John Geist from the Washington Department of Natural Resources Aquatic Invasive Species Program, and Sharon Sorby and Loretta Nichols from the POC Weed Board. These presentations included an overview of the DNR aquatic invasive species program, an update on flowering rush in the Pend Oreille River, weed identification, cost-share opportunities, tool rentals and more.

Videos of each presentation, as well as other information, can be found on the Weed Board website at tinyurl.com/AquaticWSCost-Share.

The POC Weed Board would like to thank all of this year's speakers listed above, as well as our amazing sponsors: Pend Oreille Public Utility District, Washington State Department of Ecology, Pend Oreille Conservation District, Aquatechnex, Aquatic Weed Solutions, Diversified Diver Specialties, Selkirk ACE Hardware, Voodoo Blendz, Nomad Coffee and The Newport Roxy Theater.



As an aging landowner who has incurred debt from the last few purchases, Wilson said the future of these valleys is uncertain. To ensure these valleys remain unspoiled from the area's rapid development, he is applying to the Forest Legacy Program which, if accepted, would place more than 1,800 of these acres into a conservation easement. Of the 2,100 acres that he owns, 272 are already protected under an NRCS (Natural Resource Conservation Service) Wetland Reserve Easement.

The program is administered nationally by the USDA Forest Service, and is carried out by the state Department of Natural Resources. According to the DNR program website, Washington was one of the first states to participate in the Forest Legacy Program and through 2019, more than 62,000 acres of forestland had been permanently protected from development.

None of the state's Forest Legacy easements, however, are in eastern Washington – If accepted, Wilson's would be the first.

Wilson said his vision is that the valleys will remain under one ownership in perpetuity, with public access by permission for environmental education, wildlife viewing, hiking, cross country skiing and related activities compatible with a "natural, unspoiled environment."

With his ongoing forest management and restoration, the majority of the property is productive forestland. Wilson has been improving the forest over the years through selective harvest to remove trees with root rot or other diseases, replanting with species less prone to these diseases. Areas reforested by Wilson about 25 years ago are nearing the first commercial thinning. Clusters of large, healthy trees have been preserved, along with downed wood and snags for wildlife habitat. The lowland areas along the Selkirk Mountains are particularly important as wildlife habitat, Wilson said, because a lot of animals change elevation throughout the seasons. From wolves to wolverines, a wide variety of animals travel through the valleys. While there have been several wolverine sightings on the property, one was inadvertently caught by a trapper and had to be killed prior to Wilson's purchase of the land. The wetlands, in particular, are habitat for waterfowl and other birds that use the area for nesting and rearing their young. Wilson also highlighted some of the historical value, including the ancient cedar grove, a historical log cabin, a baby's grave from the original homestead family, the old wagon trail – part of which still exists – among other landmarks of historical significance. "There is a lot of history up there," Wilson said. "The environmental importance and the scenic value, the wildlife and the productive forestlands – all of that just makes these valleys worth preserving." For more information about the Forest Legacy Program, visit www.dnr.wa.gov/leaving-legacy-forests.

SAVING THE SCENIC VALLEYS FROM SUBDIVISION

By Mary Malone - Education and Outreach Specialist - Pend Oreille Conservation District & POC Weed Board

When he first purchased his 400-acre Rocky Gorge ranch in 1973, John (Steve) Wilson knew there was something magical about the valleys surrounding it.

Situated along the Selkirk Mountain range about 16 miles from Newport, the upper and lower valleys are home to a diverse population of plants and trees – including an ancient cedar grove – as well as the wildlife that live in and travel through the vast forest, meadows and wetlands. For this reason, Wilson has made it his life's work to protect the area, taking on 36 land purchases over the past 47 years to increase his 400 acres to 2,100.

"This is a lifetime project for me," Wilson said. "I just thought those two valleys were really special. The setting, the proximity to the mountains and the remote character of them, the importance for wildlife ... I thought they were worthy of being saved from subdivision."



**PEND OREILLE
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Protect and enhance all natural resources. Together.

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