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# Welcome to the Forestry Lunch Breaks!

We'll get started promptly at 12PM

In the meantime, please remember to set your chatbox "To" setting to "Everyone" so your questions get shared to the group

This webinar will be recorded, links to recordings will be sent out early next week along with chatbox transcripts and any additional resources

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WASHINGTON STATE UNIVERSITY EXTENSION

# Forestry Lunch Breaks: Benefits of Western WA Hardwoods

## Oregon Oak (*Quercus garryana*)

**Patrick Shults, WSU Extension**

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## The Basics

**Scientific name**: *Quercus garryana*

**Family**: Fagaceae

**Height**: 40-90 ft (tallest - 120')

**Diameter**: 24-40 in (largest - 97")

**Crown**: 70+ ft (largest – 126')

**Age**: up to 500 years

**Notable features**:

- Also called "Garry oak"
- Long-living but slow growing
- Adapted to wildfire
- Washington's only native oak (*Quercus*) species
- Can be protected species in local municipalities

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## Identification

**Leaves**: 4-6" long, dark green and pale beneath, deeply lobed, thick/hardy, turning gold/brown in fall

**Leaf/twig arrangement**: Alternate

**Bark**: Brownish gray with shallow fissures in a checker-like pattern

**Flowers/Fruit**: Flowers from spring to early summer, long clusters, form large acorns (1-1.5")

**Habitat/range**: California to southern BC, most competitive on droughty soils, including seasonally saturated soils (heavy clays)

In WA, north Willamette Valley, south Puget Sound, San Juans

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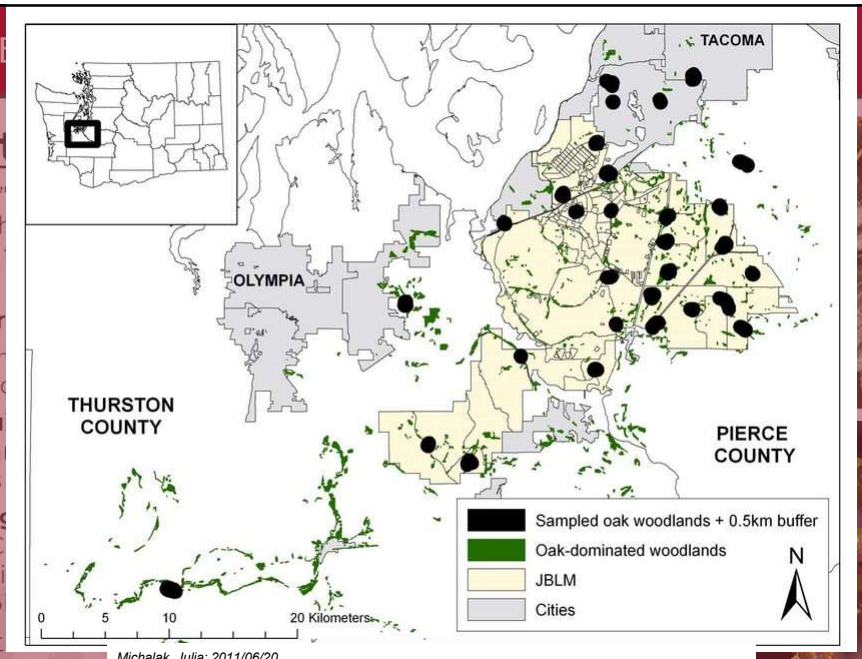


*Michalak, Julia; 2011/06/20*
*Effects of Habitat and Landscape Structure on Oregon White Oak (Quercus garryana) Regeneration Across an Urban Gradient*
*Northwest Science*

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## Silvics - Regeneration

- Monecious – separate male and female flowers but on the same tree
- Flower in late spring through to early summer
- Acorns ripen from Aug-Nov
- Germination in the fall or spring
- Rapidly develop taproots, able to establish in difficult soils
  - Difficult to transplant after taproot established
- Shoot may remain small and stubby for several years before reaching sapling stage
- Can also reproduce vegetatively

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## Silvics – Growth and Succession

- Niche species, able to grow in conditions most other species cannot
- Shade intolerant, requires open large gaps or clearcuts
- Slow growth
  - Less than 1ft per year
  - As much as 15-20 rings/inch
- Growth can be better on good soils, with management, and through vegetative sprouting
- Can develop oak woodlands with dense overstories or widely spaced
- Resistant to ice, snow, and windthrow

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## Damage and Disease Agents

**Insects**
- Filbert worm and weevils (acorns)
- Western oak looper
- Forest tent caterpillar
- Gall wasps

**Fungus**
- Armillaria root rot
- Butt rot
- Anthracnose
- Sudden oak death (not present, may not be susceptible)

**Others**
- Hairy mistletoe


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## Ecological Role and Importance

- Can be a component of mixed stands but frequently forms oak dominant woodlands
- Associated species: Doug-fir, grand fir, Ponderosa pine, Pacific madrone, Oregon ash, hazelnut, snowberry, poison-oak, wild rose, oceanspray, grasses, wild strawberry, camas
- Creates oak woodlands where it is climax species with periodic fire
  - Can be succeeded by conifers like Doug fir and Grand fir
- Much of the historical Oregon oak (and prairie) habitat in OR and WA has been lost to development, agriculture, and fire exclusion

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## Ecological Role and Importance

- Importance to wildlife:
  - Critical wildlife species, highly valued for its food and habitat
    - More than 200 vertebrate species utilize oak woodlands in WA
  - Diversity of bird species in oak woodlands > conifer forests
  - Important habitat for western gray squirrel and pocket gopher (both threatened)
  - Deer, bear, and small mammals, eat acorns, as do several bird species (turkeys, woodpeckers, jays, band-tailed pigeons)
  - Foliage is fair browse for deer and elk, oak also provides good grazing space

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## Ecological Role and Importance

- A Frequent Fire System in western WA:
  - Oregon oak woodlands are one of western WA's only frequent fire ecosystems
  - Oaks have thick, hardy bark that protects them from low-severity fire (+vegetative sprouting abilities)
  - Historically maintained by indigenous burning
    - Better hunting ground and understory management for food/medicinal species
  - Frequent fire prevents conifers like Doug-fir or grand fir from succeeding oaks
  - Significant efforts to restore native oak/prairie ecosystems in WA and OR

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## Ecological Role and Importance

- **Could Oregon oak be a climate resilient species?**
  - *Controls on the distribution and resilience of Quercus garryana: ecophysiological evidence of oak's water-limitation tolerance* - Hahm et al. 2018
  - *Physiological Response of Garry Oak (Quercus garryana) Seedlings to Drought* – Merz et al. 2017
  - *Stand Structure and Composition Affect the Drought Sensitivity of Oregon White Oak and Douglas-Fir* – Gedalof & Franks, 2019
  - *Resilience of Oregon white oak to reintroduction of fire* - Nemens et al. 2019

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## Indigenous Uses:

- Acorns were an important source of protein
  - Soaked to leach tannins, then roasted or eaten raw
  - Can be ground into a kind of flour
- Bark used to treat tuberculosis and other ailments
- Wood used for structures
- Used fire to manage oak woodlands and associated camas prairies

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## Uses/Products

Characteristics

- Hard, tough, heavy wood
- Ring porous, tyloses (good for holding fluids)
- Relatively machineable (planning, turning), exceptionally bendable after steaming
- Decay resistant

Wood products

- Furniture
- Flooring
- Veneer (sliced)
- Crates/pallets
- Pulp
- Barrels (whiskey)

Rarely harvested for commercial value in Washington

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## Agroforestry Opportunities

- Silvopasture
  - Grazing under oaks is common in western Oregon
  - Light shade (when managed)
  - + acorn production for finishing livestock (pigs)
  - Careful timing on floodplain, saturated sites required
- Other Forest Farming Opportunities
  - Light shade creates opportunities to grow “forest crops”
  - Ex: serviceberry, wild strawberry, wild rose

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## Management - Planting

- Not commonly planted for commercial timber (no known plantations), mostly restoration
- Site selection – tends to be most competitive on droughty soils, seasonally saturated sites that become droughty
  - A good tree for "problem sites"
- Site preparation – control of grasses and competing veg can improve growth
  - Relatively long time to "free-to-grow"
  - Mulch and tree protection can increase seedling growth (Devine et al. 2007)
- Seedlings can be difficult to come by but also easy to start from seed

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## Management – Thinning and Harvesting

- Sensitive to competition, requires lower density stands (Gould et al. 2011)
  - Thinning may be necessary to maintain vigor
  - Select poor-performing trees, leaving best behind
- Ongoing management of understory conifer encroachment will likely be necessary, particularly on dry sites
  - Possible prescribed burns
- Generally, not recommended for harvest in WA (priority habitat species, low populations)
  - Commercial thinning potential
  - Shelterwood/seed tree possible

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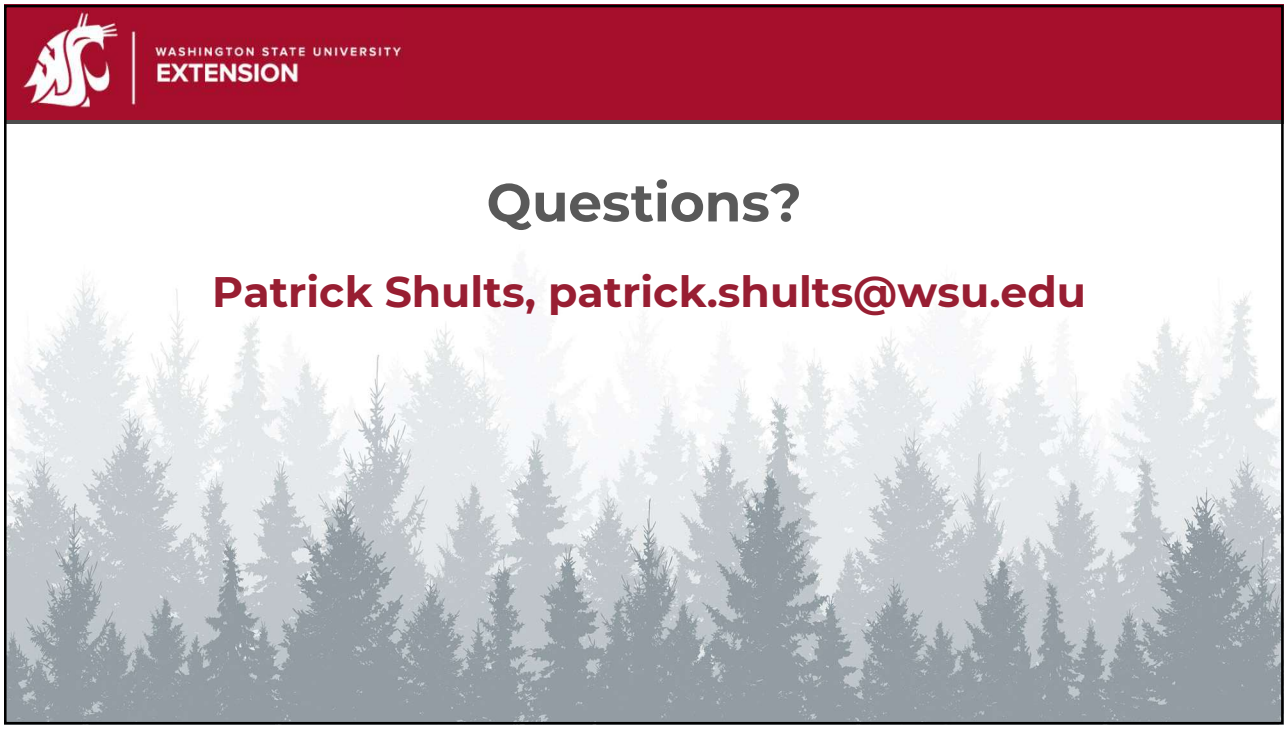
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Questions?
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