

Pre-emergents & Perennials

False Hope or Finally Eradicating
False Brome on a Landscape Scale?

Harris Kidd

Clark County Washington

Noxious Weed Management



Brachypodium sylvaticum – slender false brome

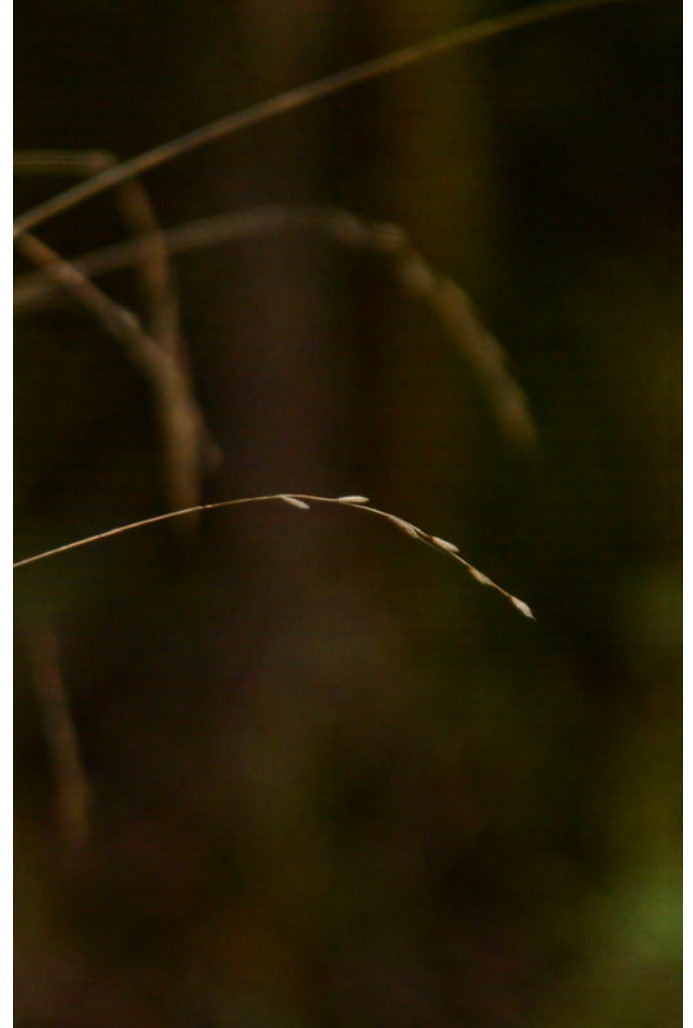
- Perennial bunchgrass
- Introduced, Hybridized, Escaped
- Thrives in disturbance
- Flowers in summer
- Easy to miss until it's a monoculture



Identification



Three Seasons of Seed



© Bruce Newhouse CC BY-NC-ND



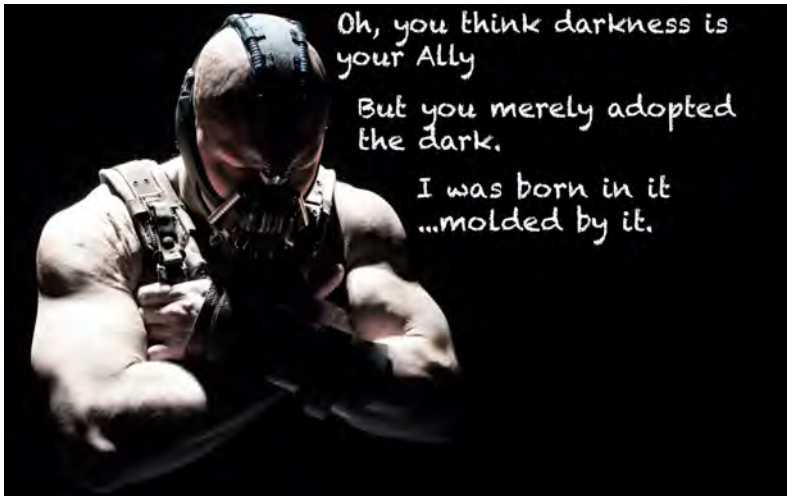
Habitat

- Dry to moist forests
- Prairies, riparian zones
- Roads, ditches. Even trees!
- Shade to full sun



Habitat

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- Prairies, riparian zones
- Roads, ditches. Even trees!
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Pause for Groans



Seed Dispersal

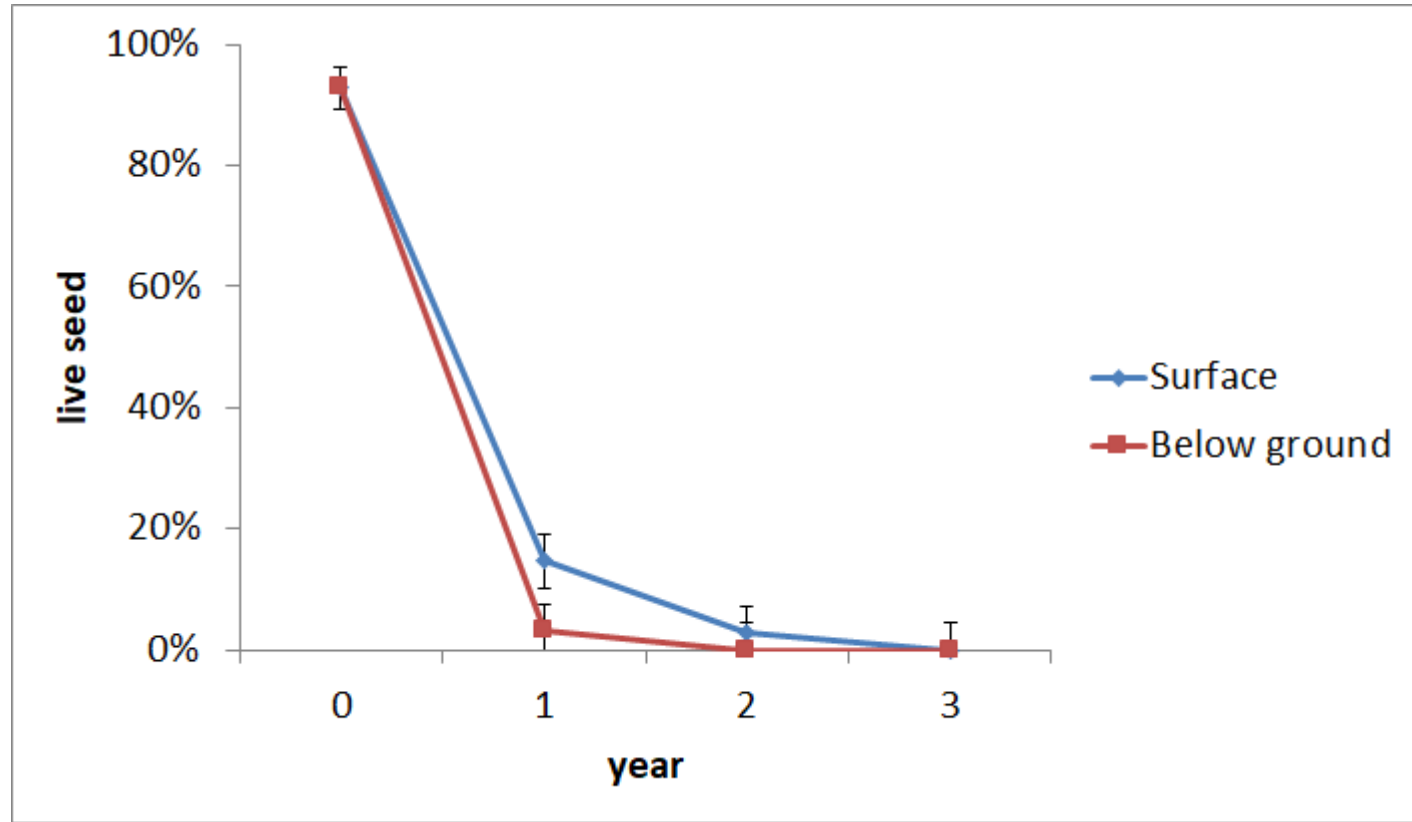


Vectors



Seed Bank Longevity

Year 0 – > 90%
Year 1 – 15%
Year 2 – < 3%
Year 3 – 0%



Tom Kaye, Institute for Applied Ecology and Greg Fitzpatrick, unpublished data



Surveying



Spring – New Growth



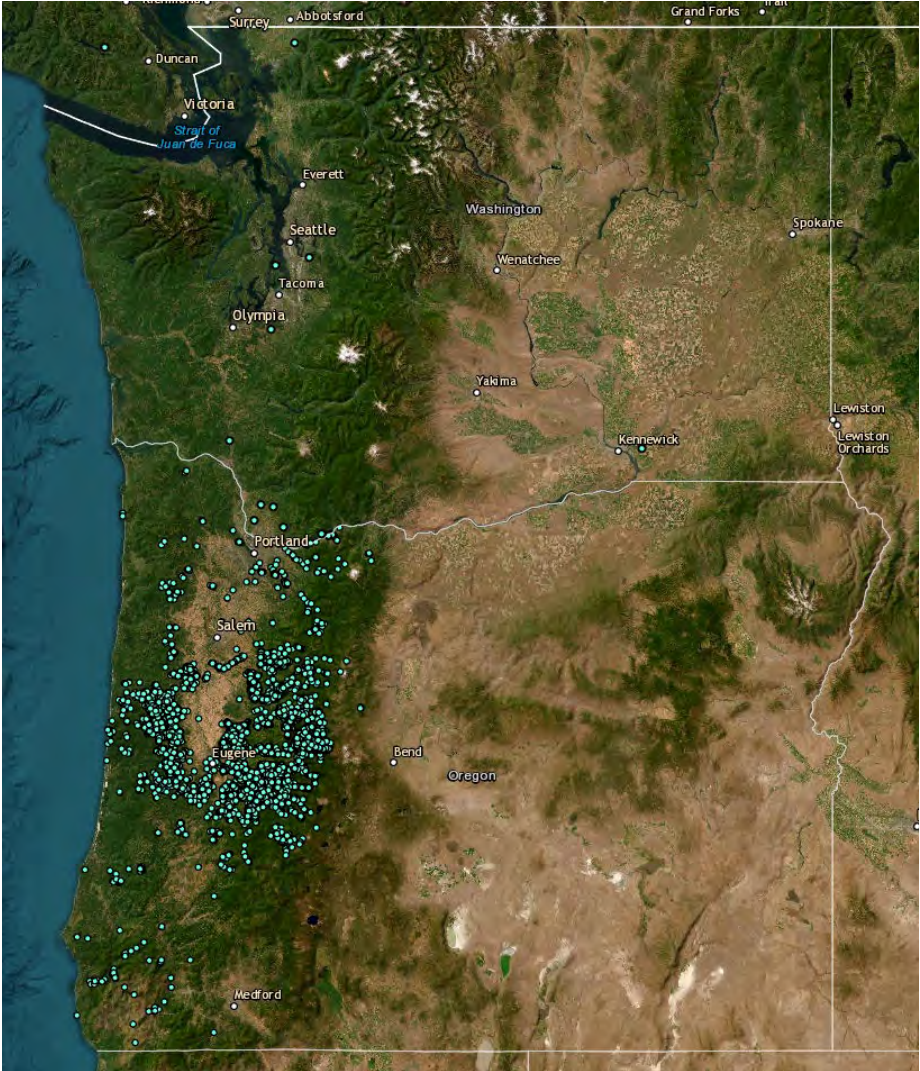
Spring – New Growth



Fall - Thatch

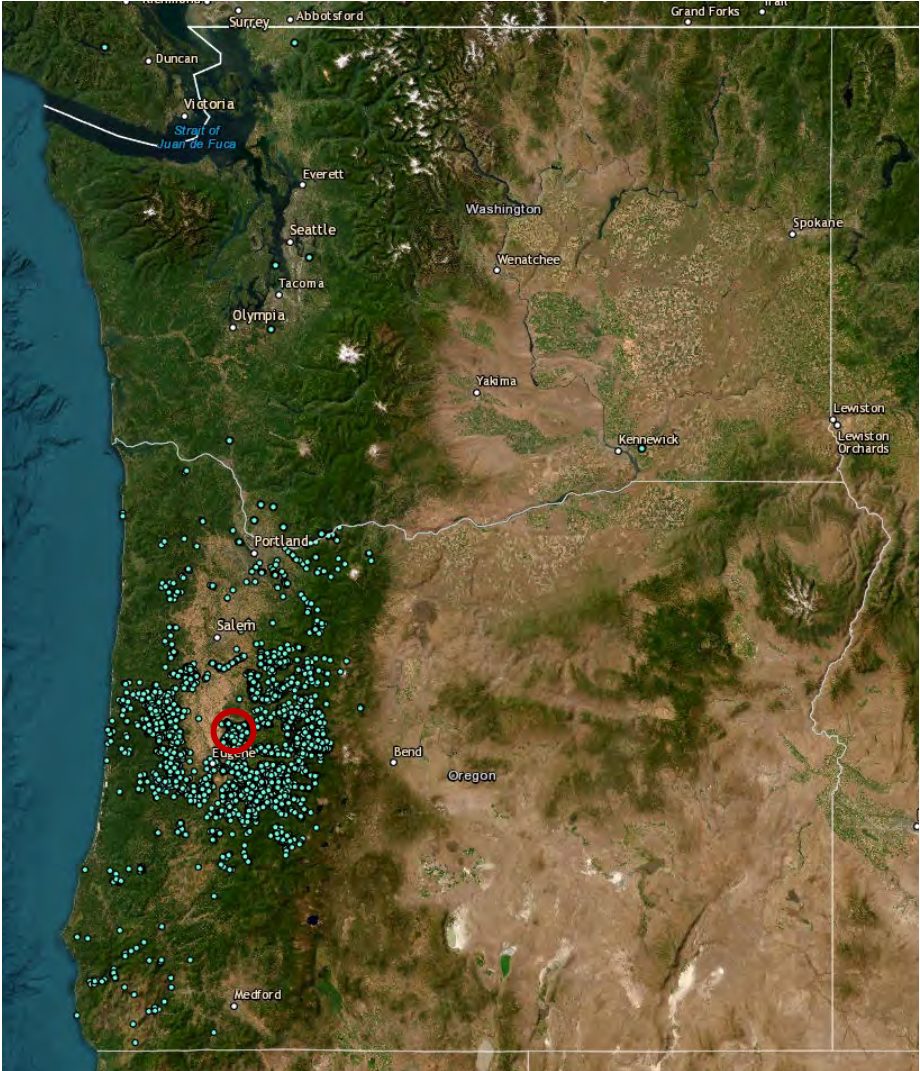


False brome Distribution in Washington & Oregon



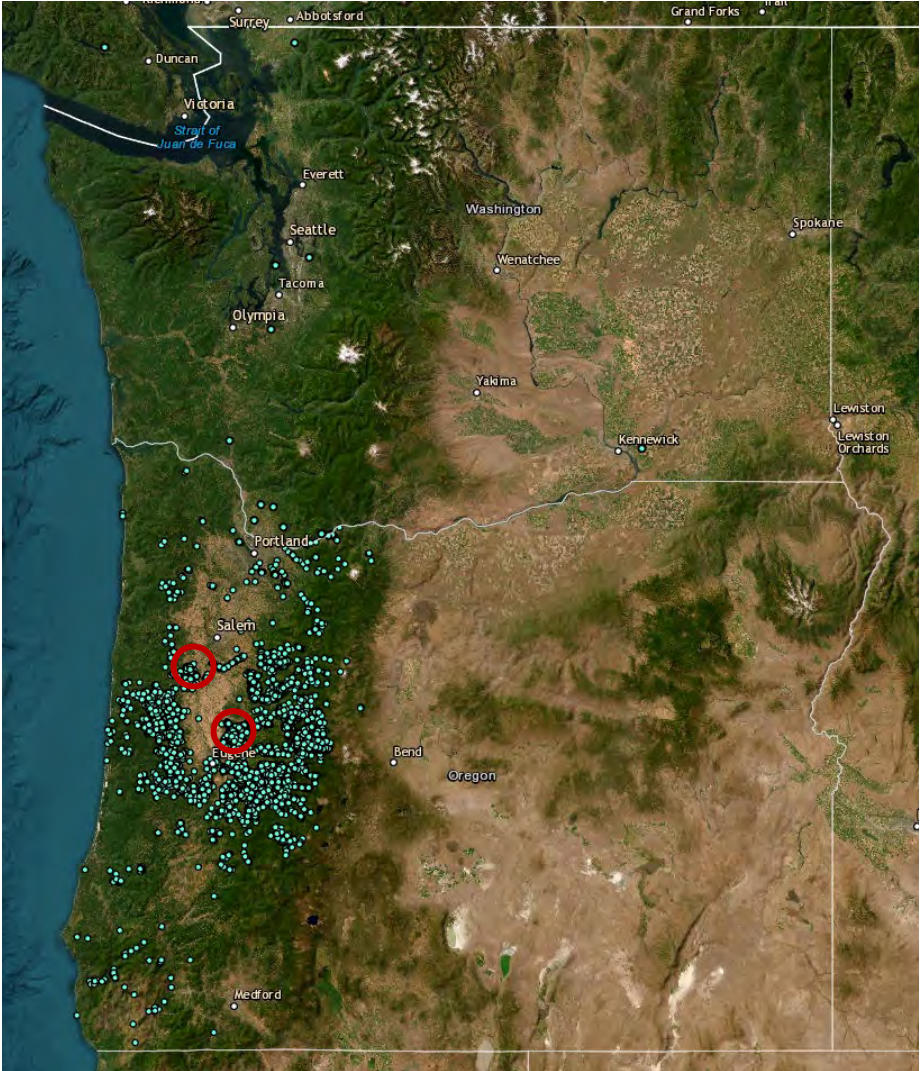
False brome Distribution in Washington & Oregon

Eugene – 1939



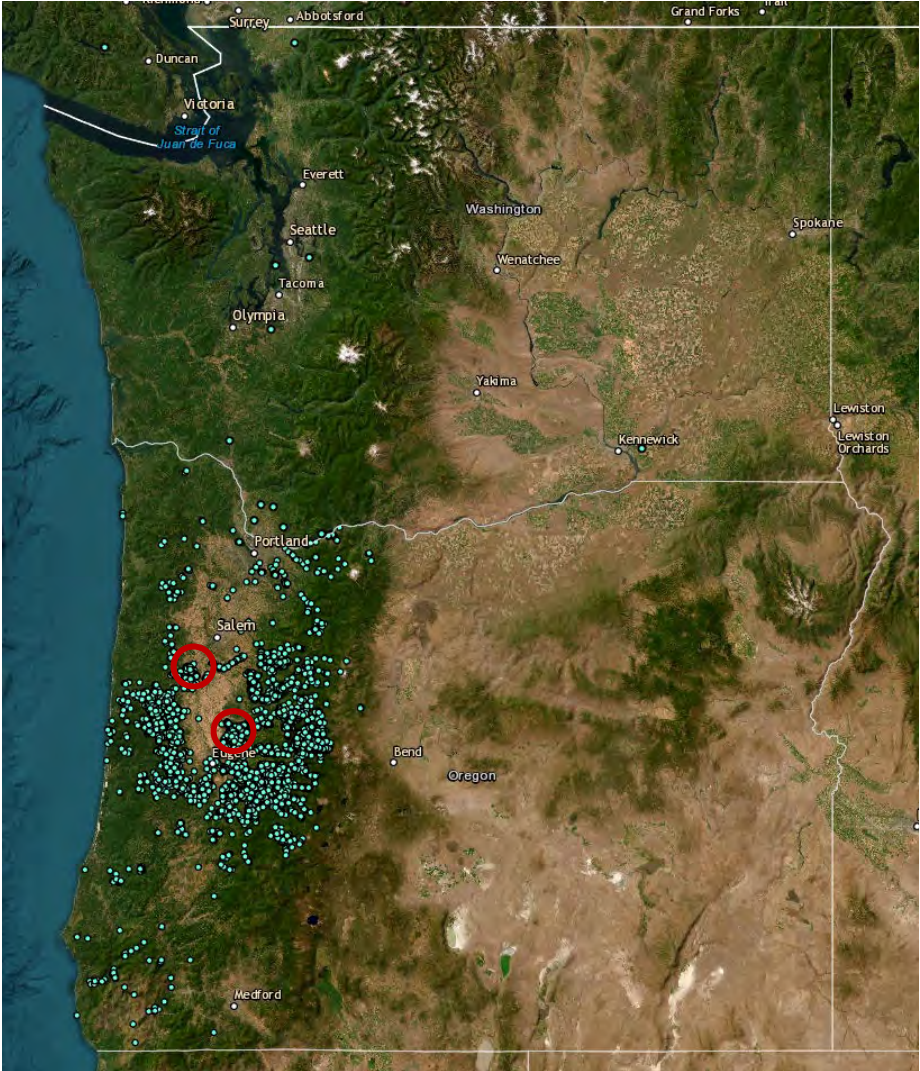
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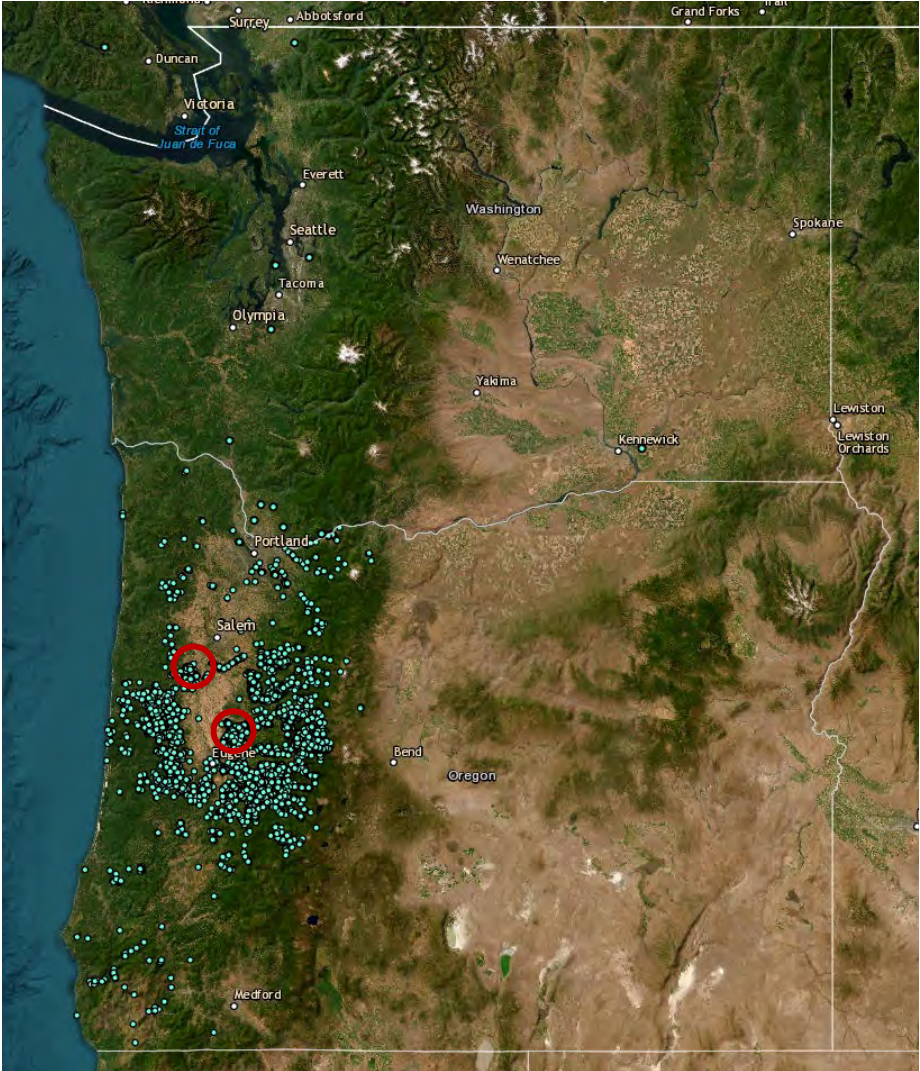
False brome Distribution in Washington & Oregon

Eugene – 1939
Corvallis – 1966
Michigan – 1986



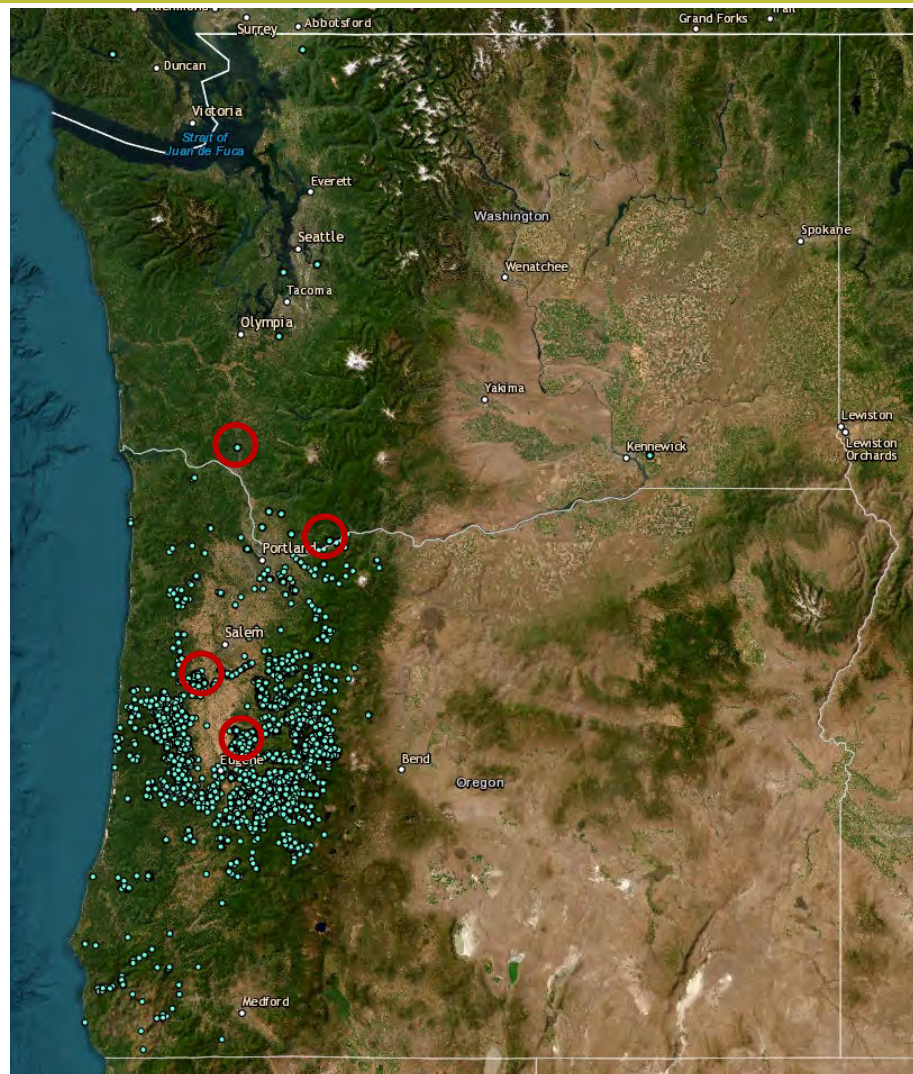
False brome Distribution in Washington & Oregon

Eugene – 1939
Corvallis – 1966
Michigan – 1986
California – 2003



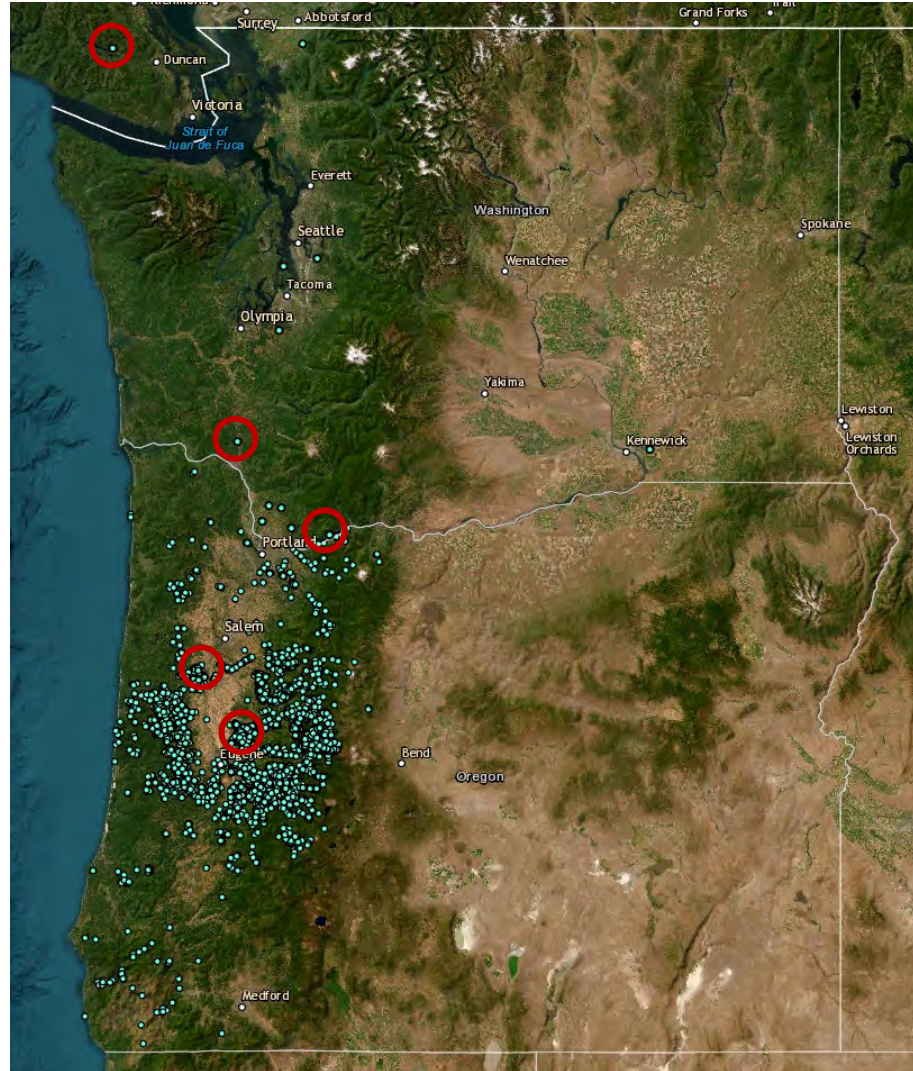
False brome Distribution in Washington & Oregon

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- Corvallis – 1966
- Michigan – 1986
- California – 2003
- Skamania County – 2007
- Cowlitz County – 2007



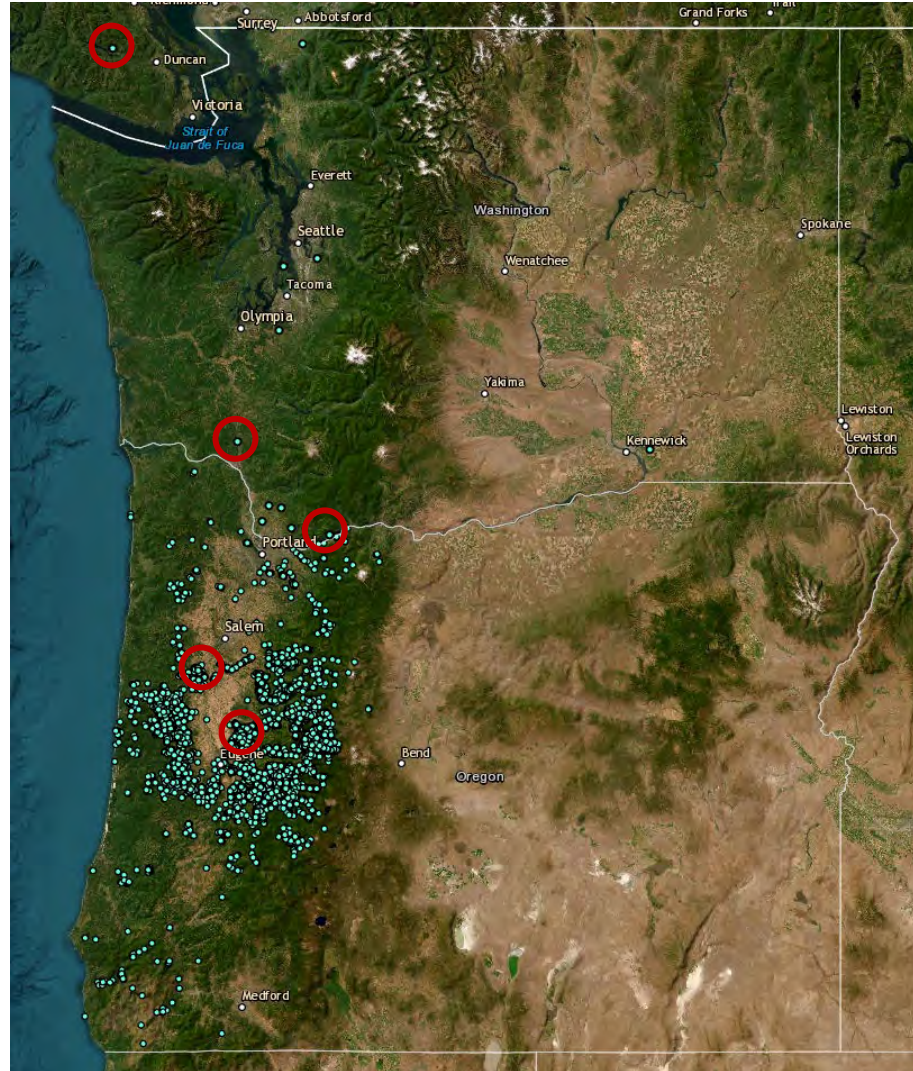
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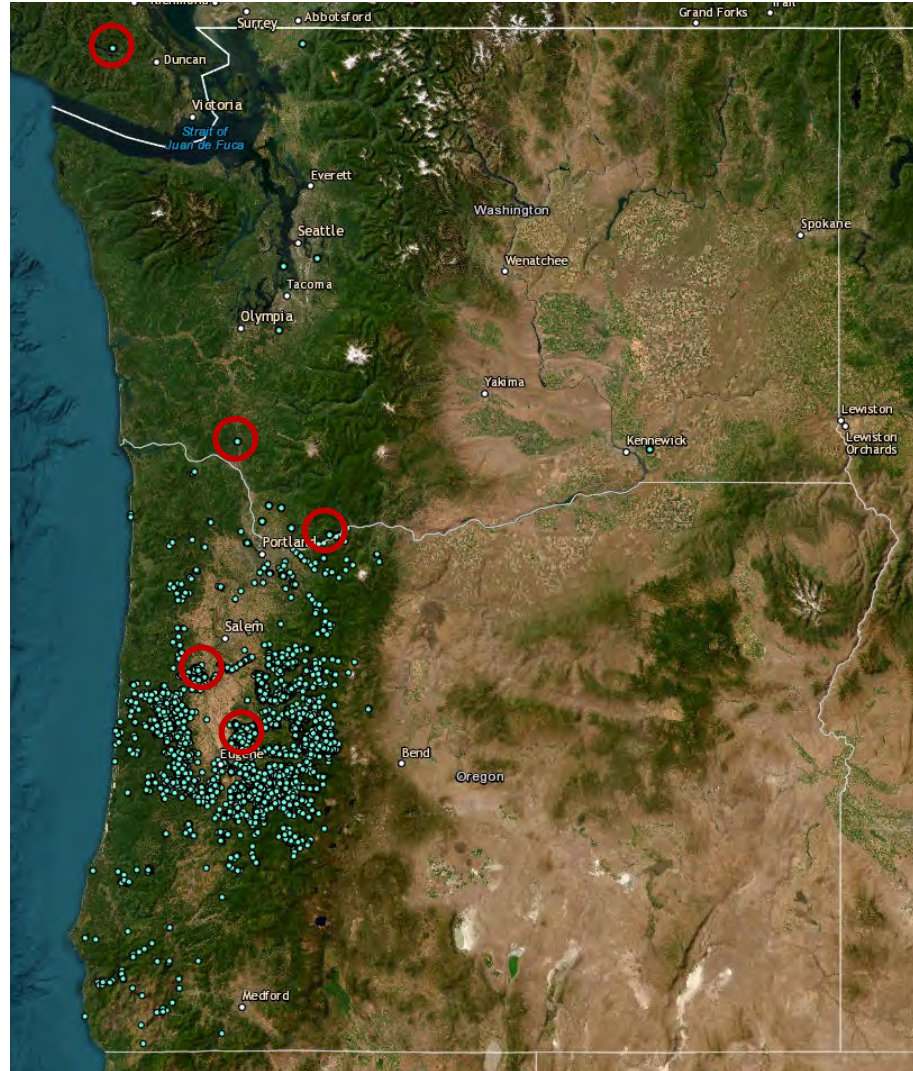
False brome Distribution in Washington & Oregon

- Eugene – 1939
- Corvallis – 1966
- Michigan – 1986
- California – 2003
- Skamania County – 2007
- Cowlitz County – 2007
- Canada – 2008
- New York – 2009



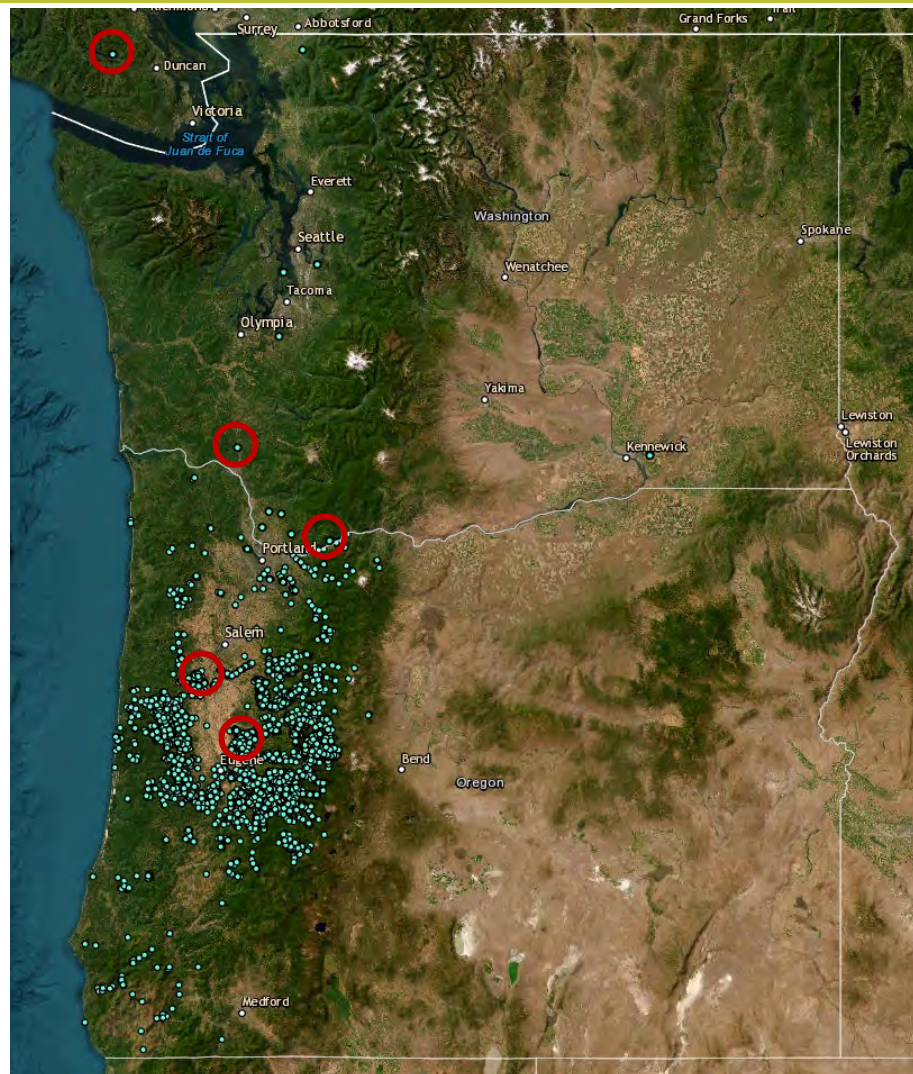
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- New York – 2009
- Virginia – 2010



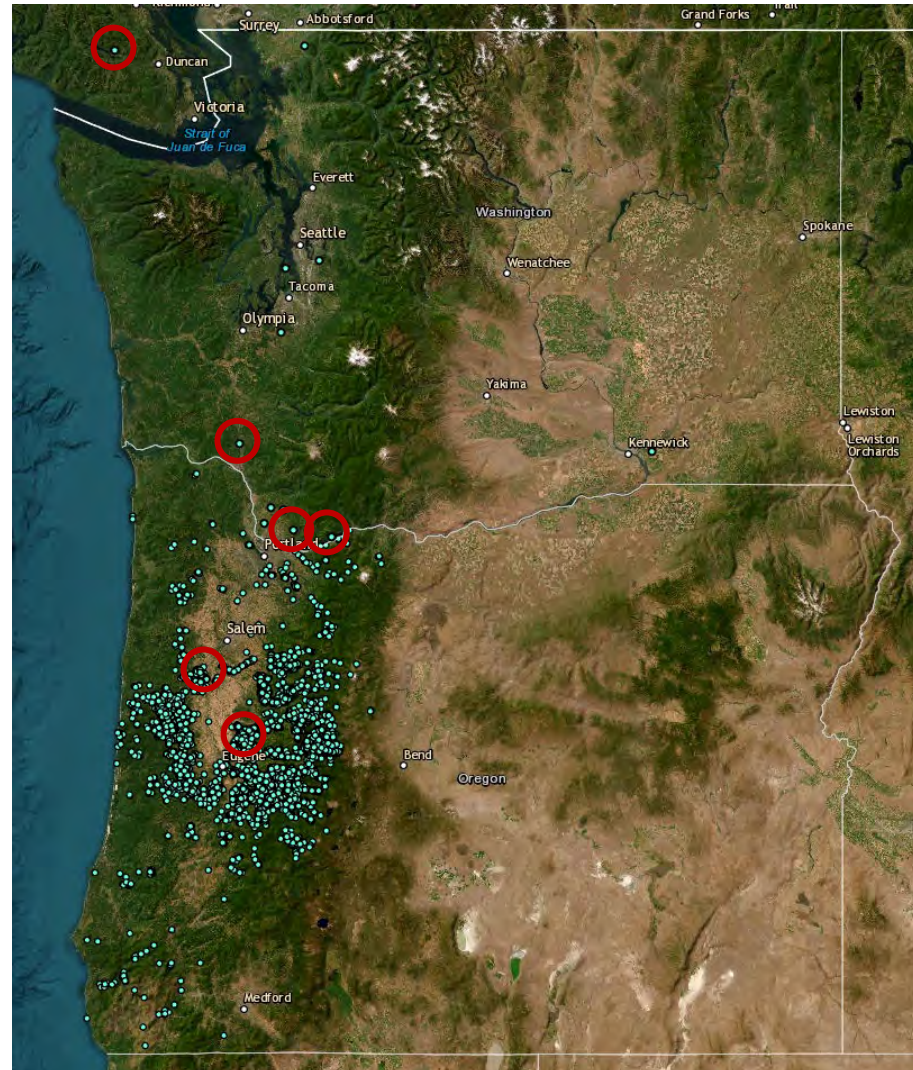
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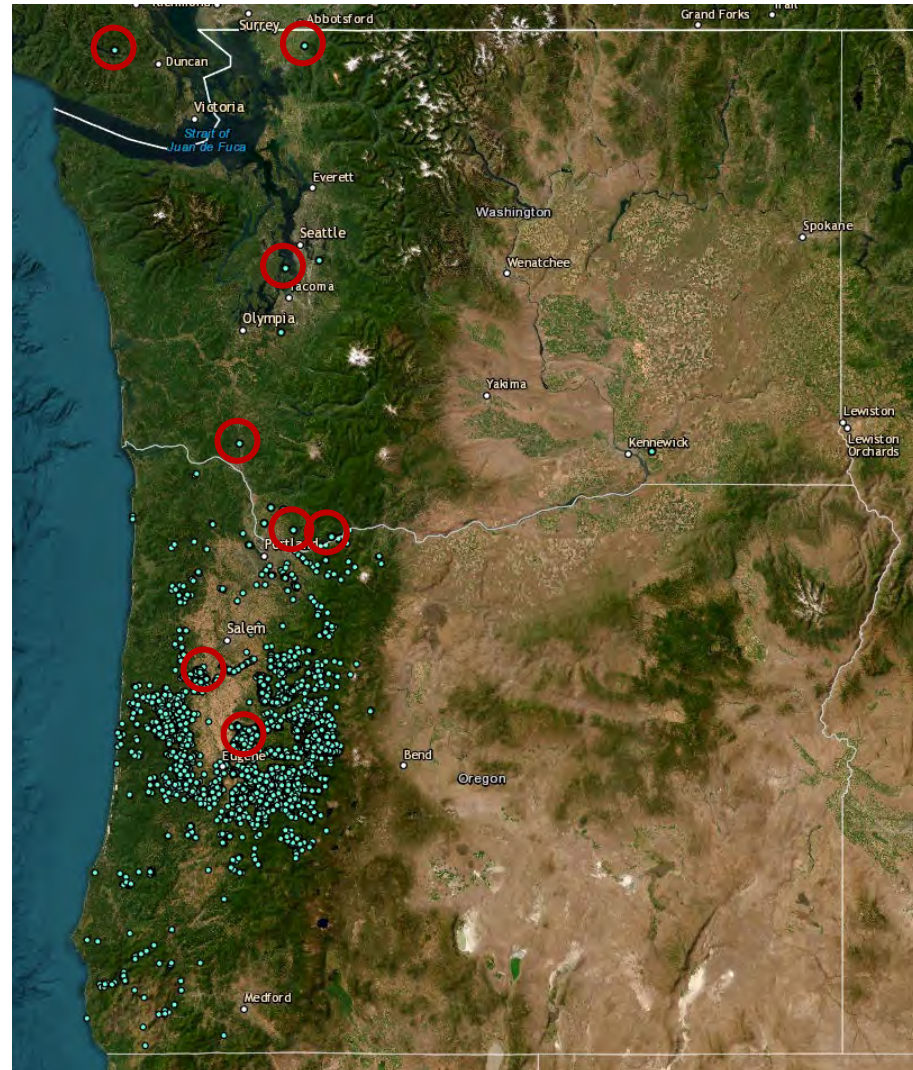
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- Skamania County – 2007
- Cowlitz County – 2007
- Canada – 2008
- New York – 2009
- Virginia – 2010
- Ontario – 2011
- Clark County – 2014

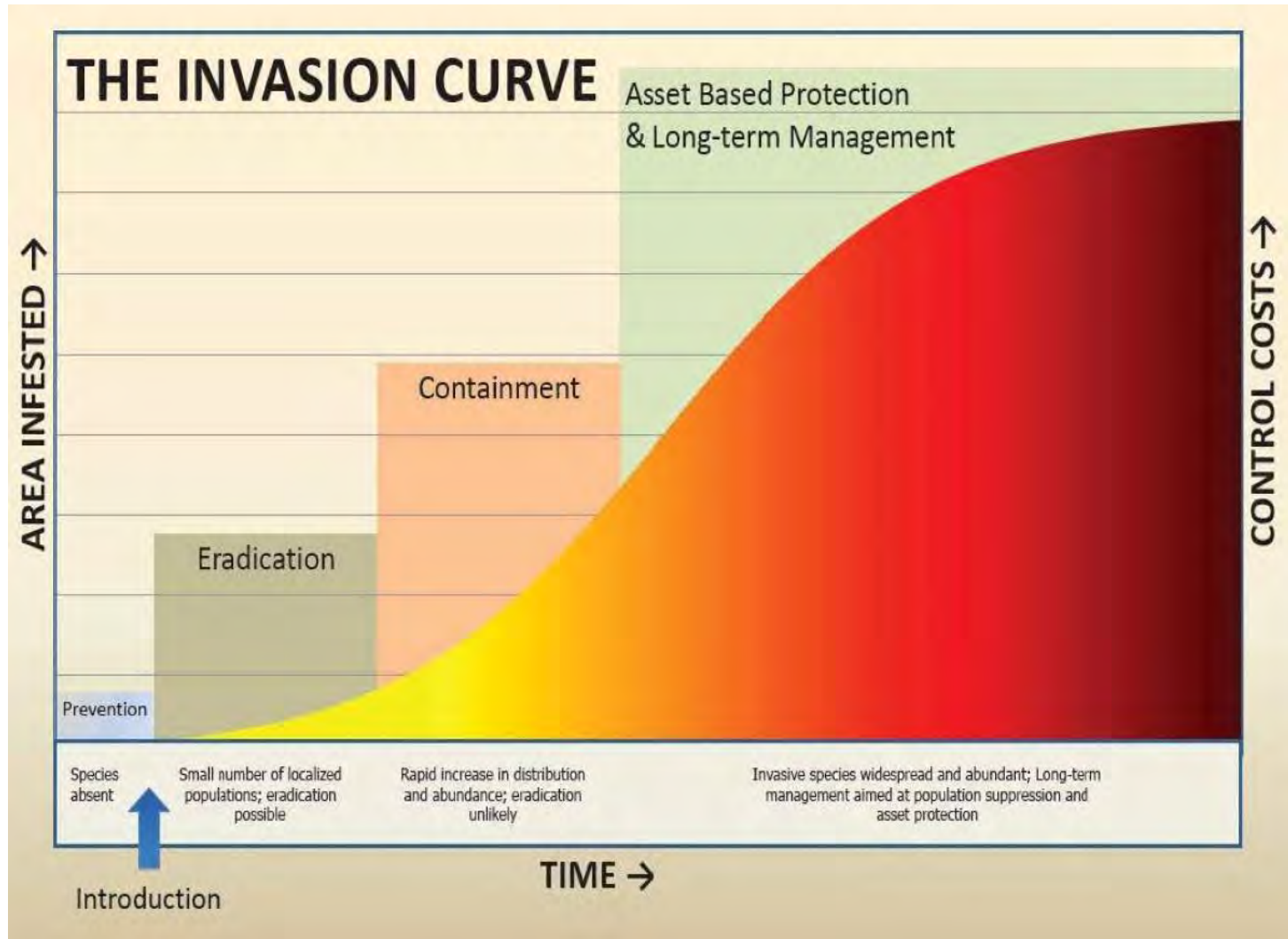


False brome Distribution in Washington & Oregon

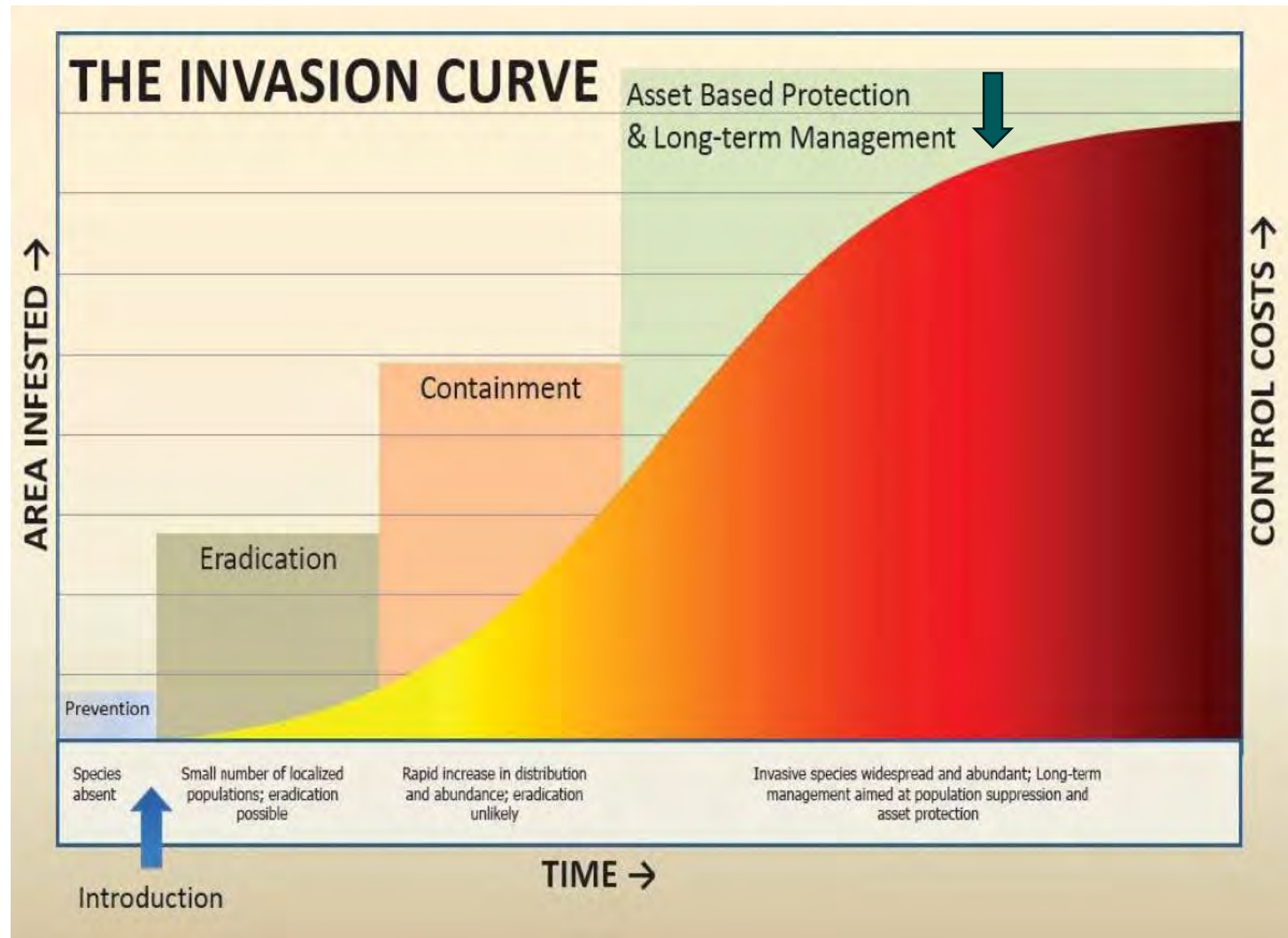
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- Cowlitz County – 2007
- Canada – 2008
- New York – 2009
- Virginia – 2010
- Ontario – 2011
- Clark County – 2014
- Whatcom County – 2015
- King County – 2015



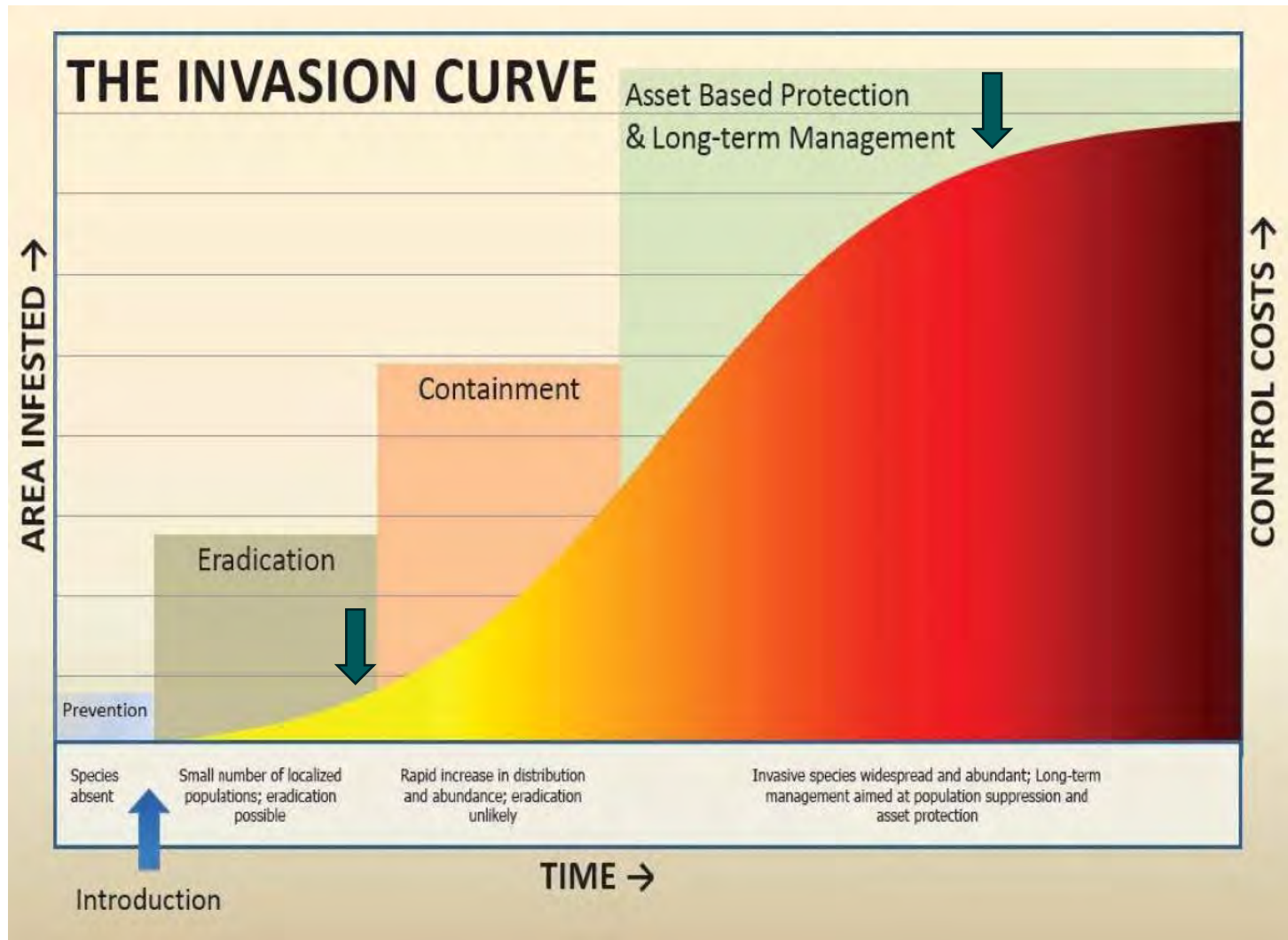
Invasion Curve



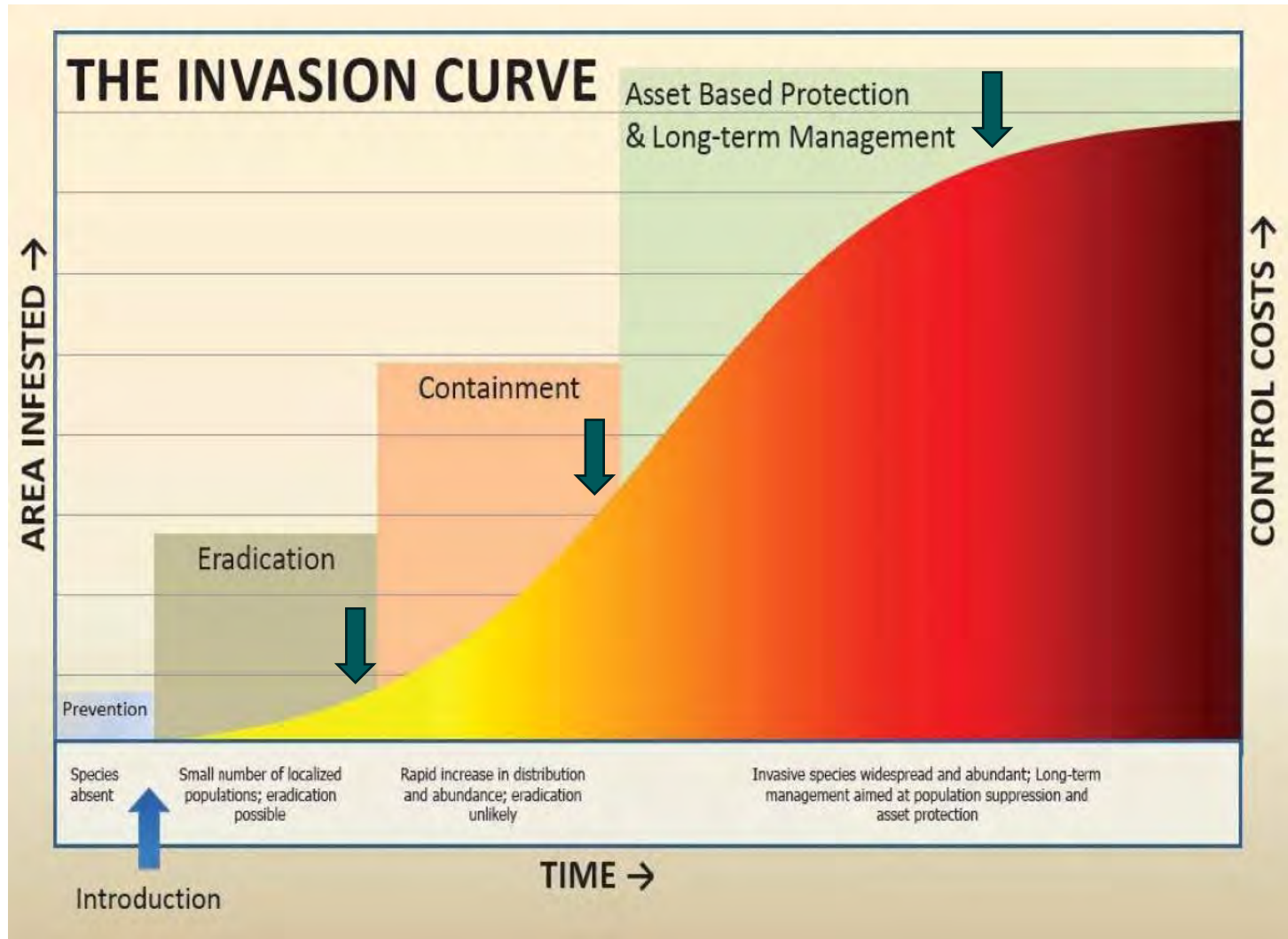
Oregon



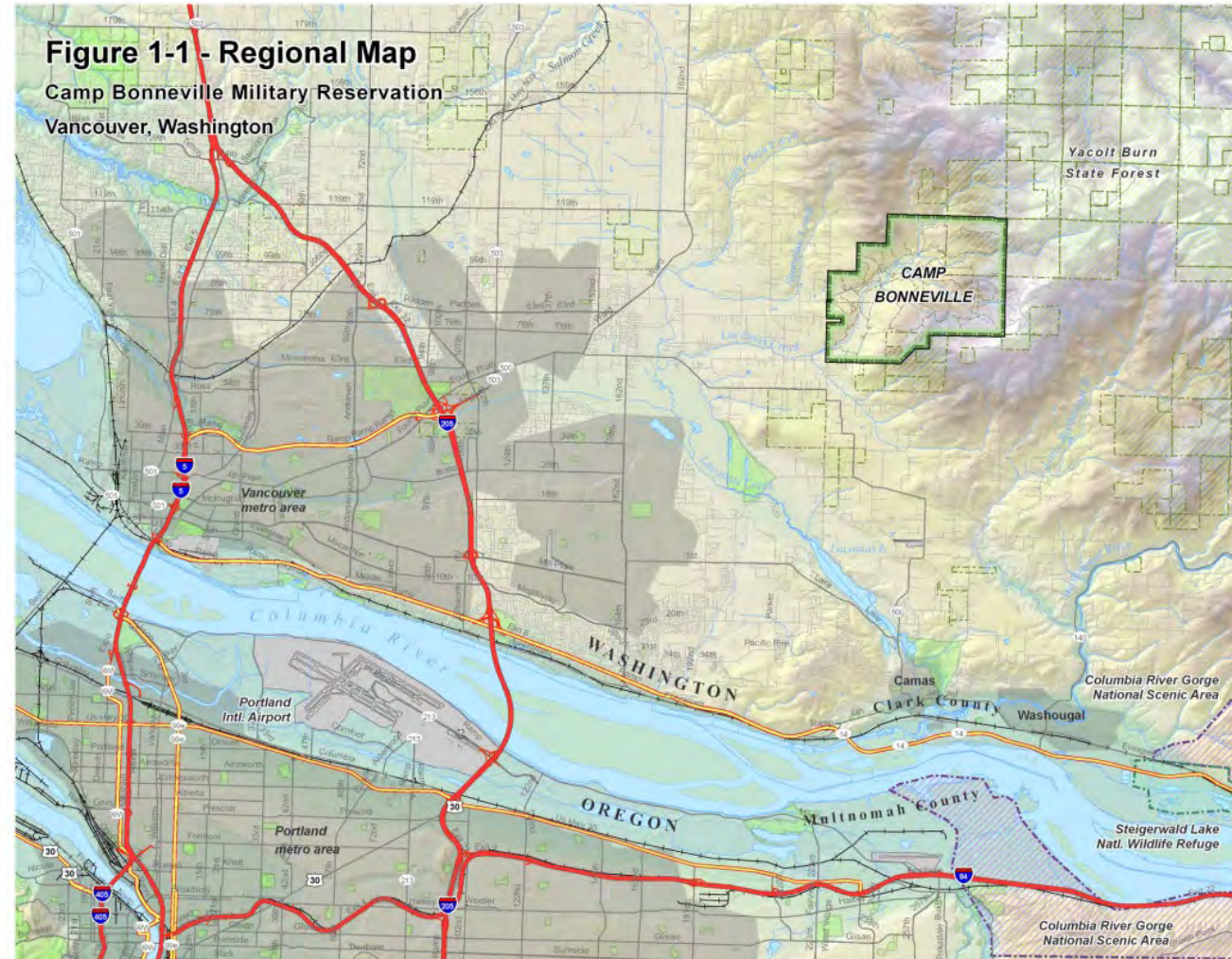
Washington



Clark County



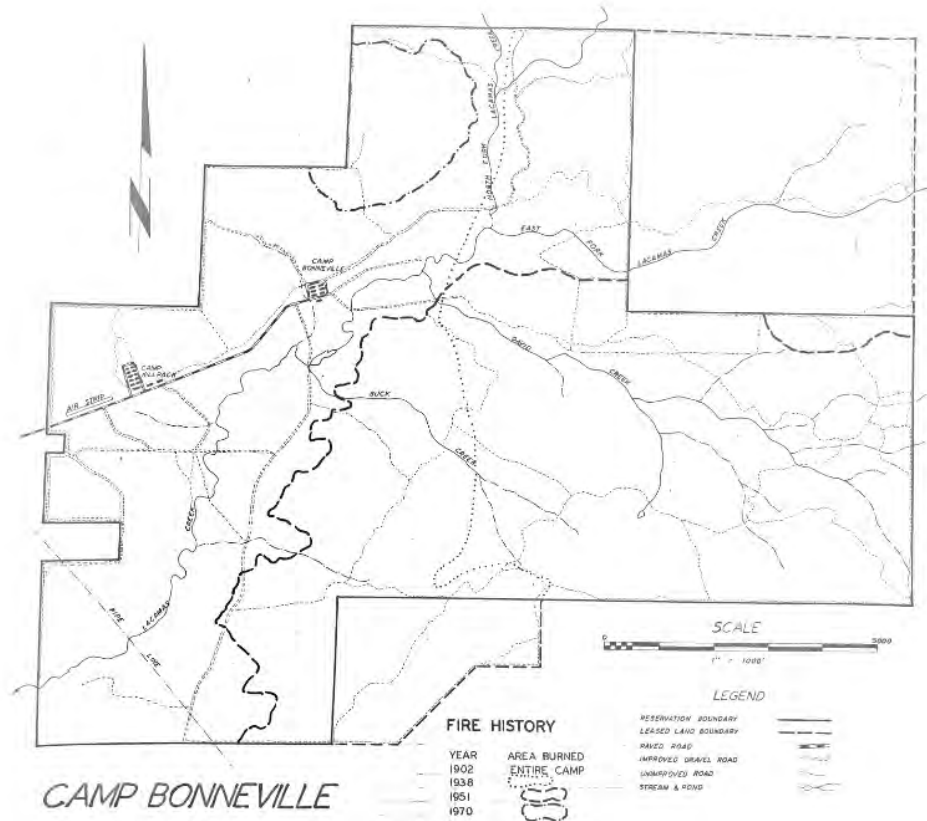
Site Location



Army Base 1909 to 1995



Forest Fires



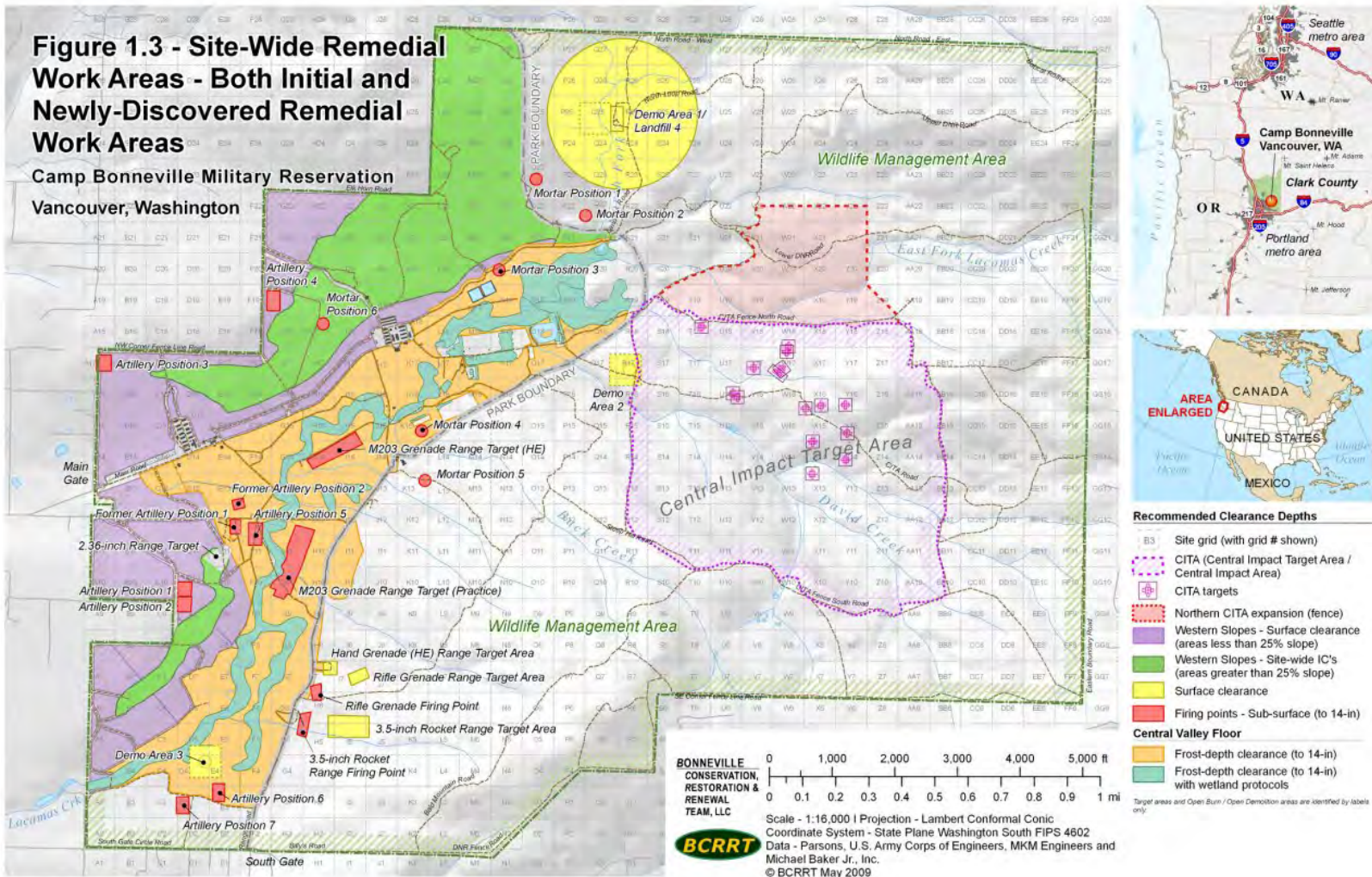
Logging



Unexploded Ordinance Clearing - UXO



Areas Affected by Clearing



Rare & Threatened Species



Remnant Prairies



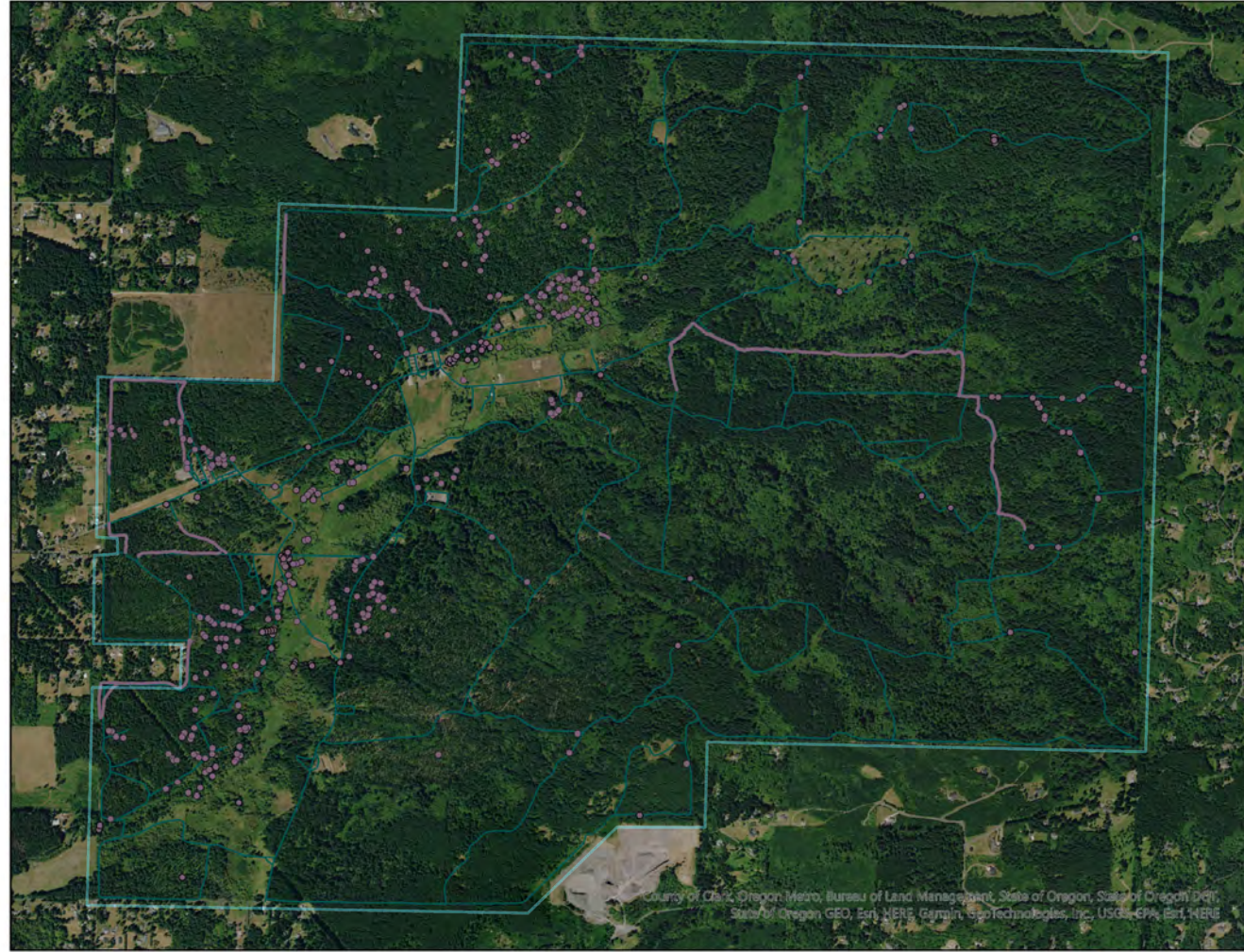
Discovered 2014



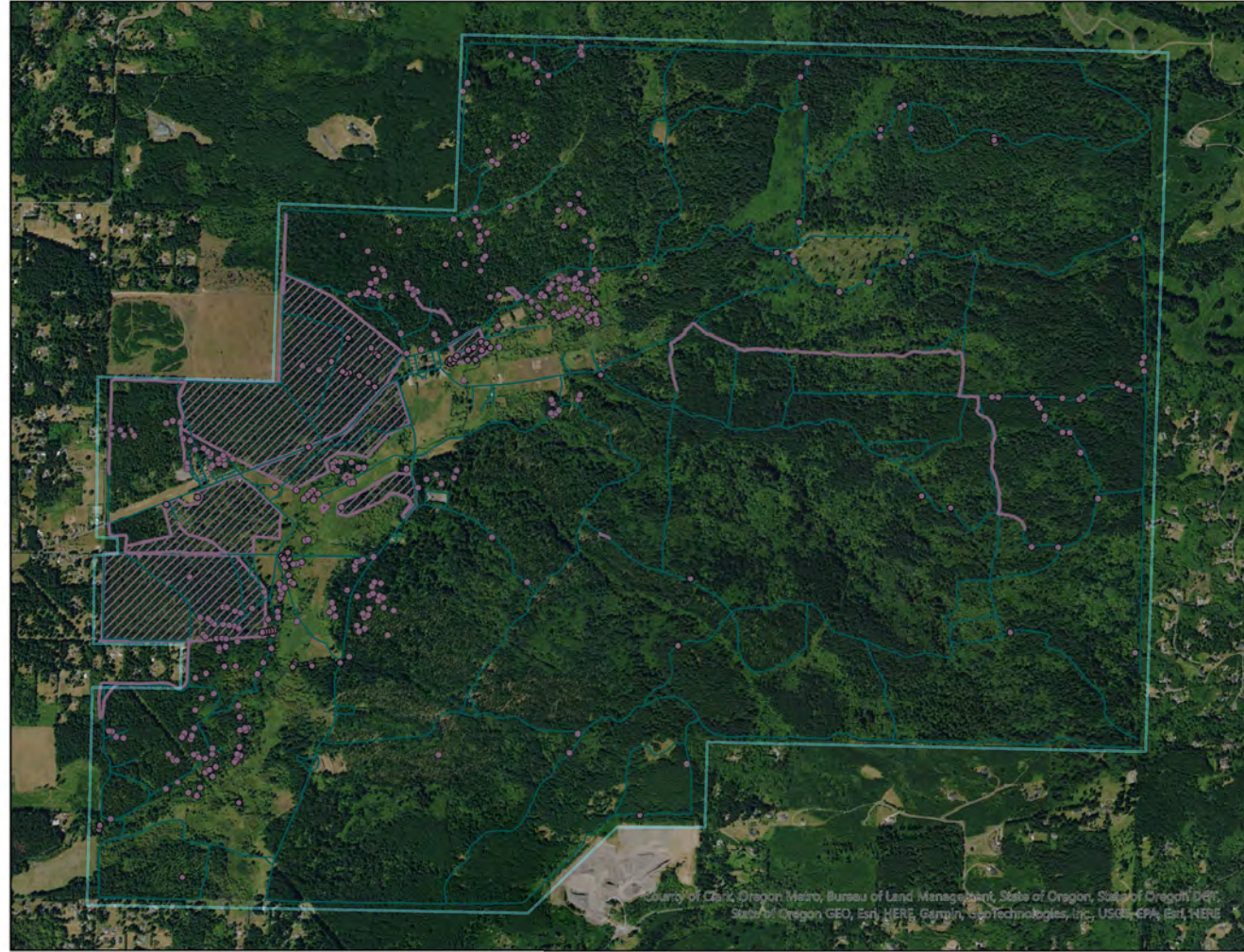
2014



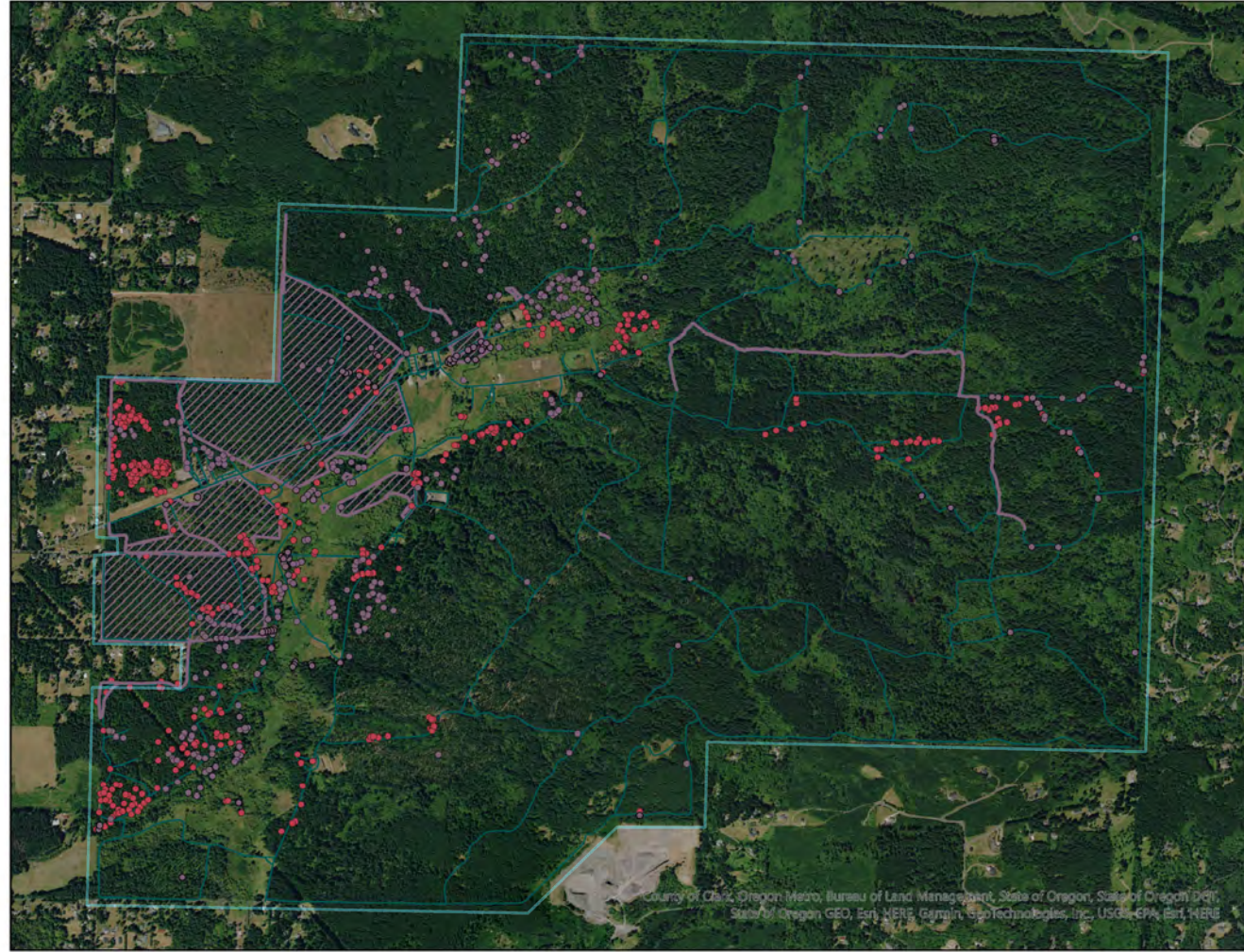
2018



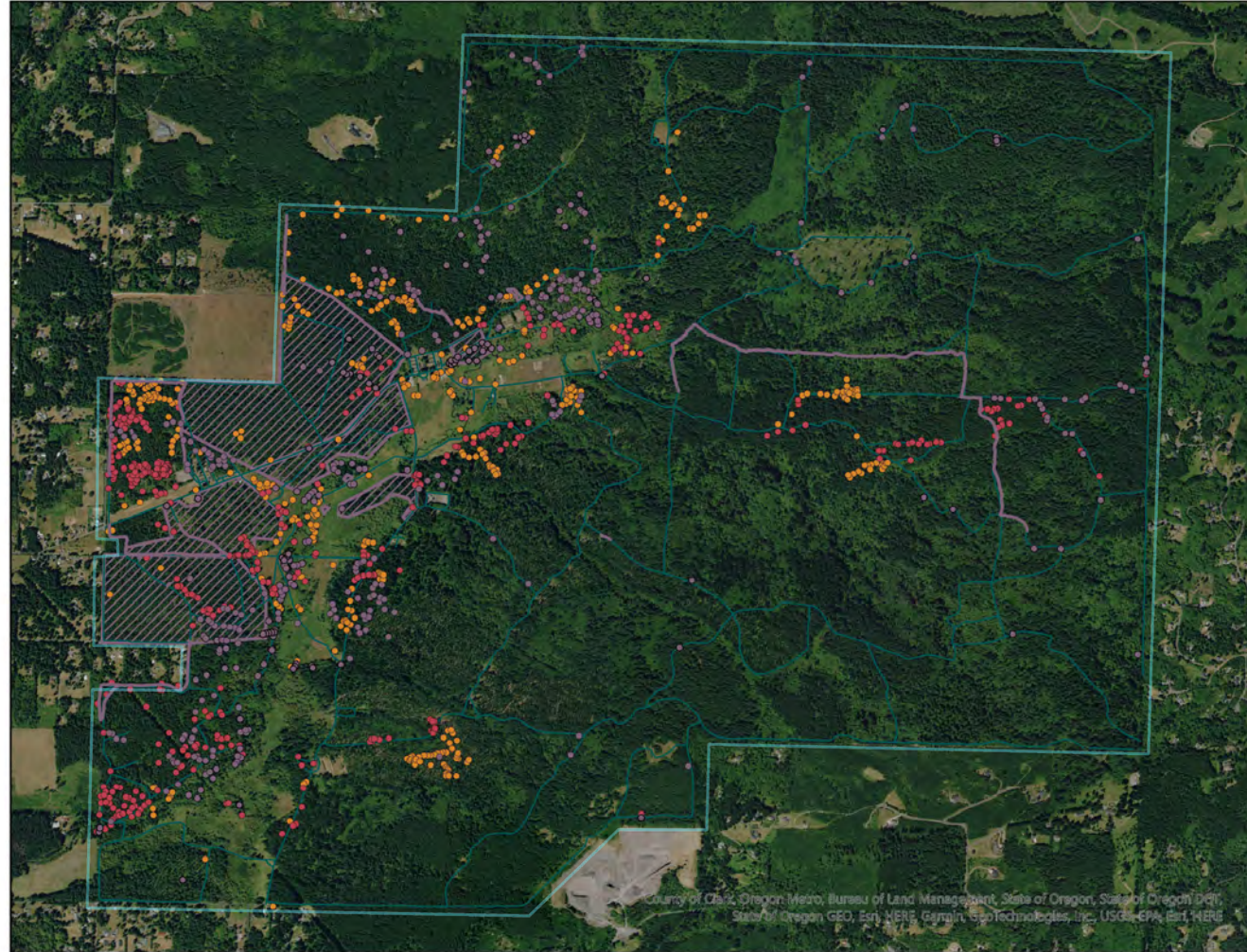
2018



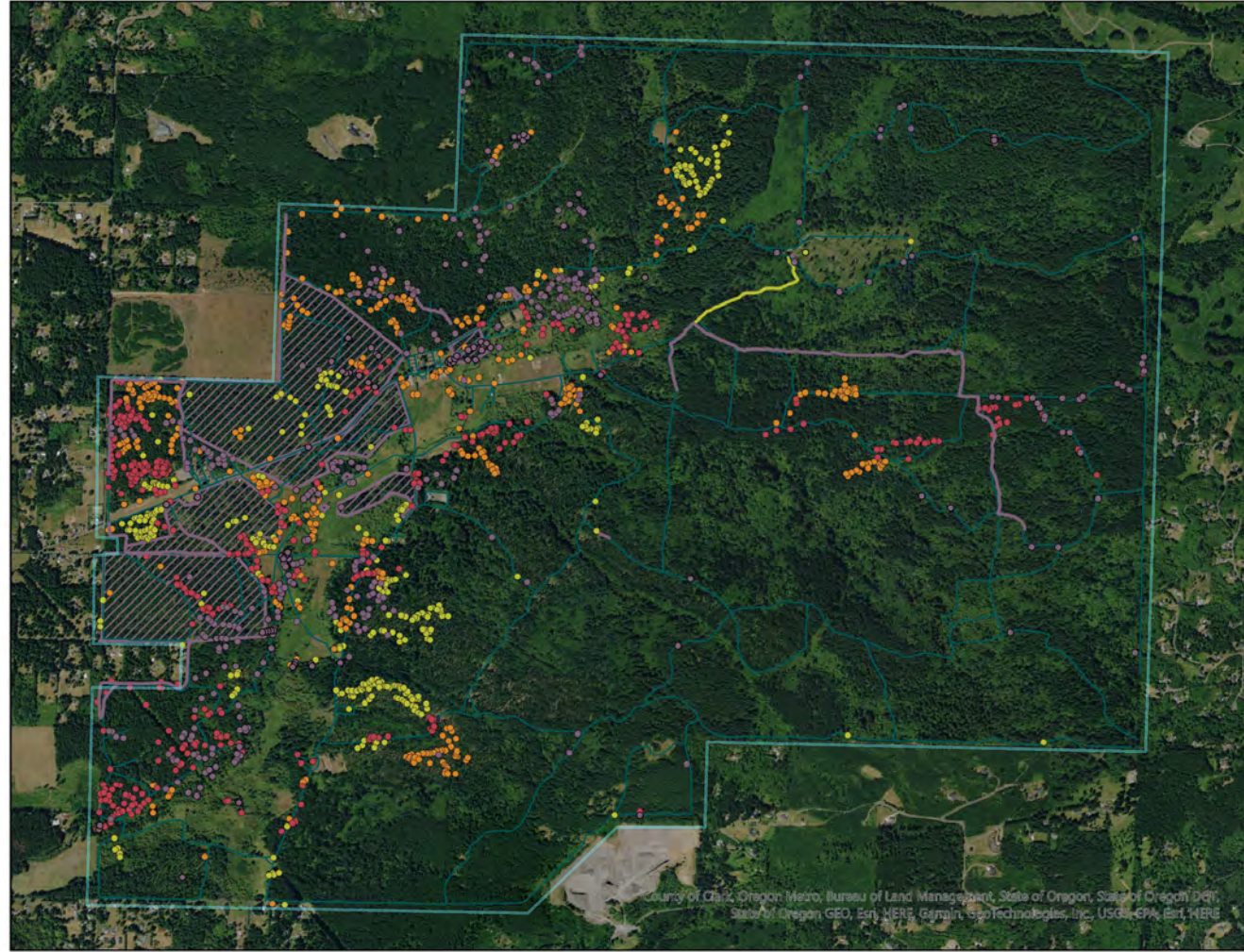
2021



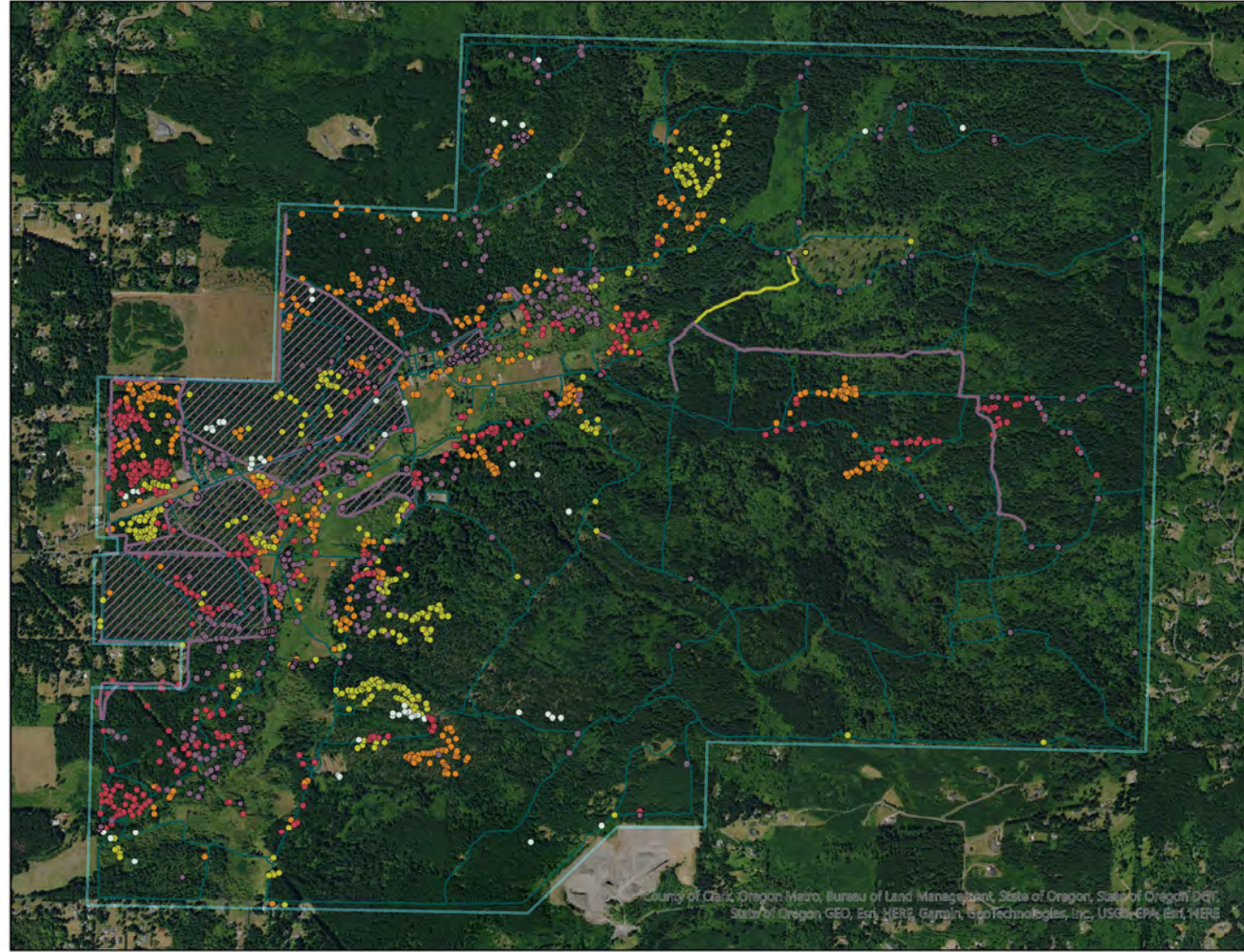
2022



2023



2024



Control Methods – Integrated Pest Management

- **Cultural**

- Cleaning Equipment – logging equipment, mowers
- Boot brushing – between sites, even between patches
- Mulching – mow or spray first, thick enough to prevent germination

- **Manual & Mechanical**

- Handpulling – small infestations, deadhead viable seed
- Mowing – early summer prevent seed development for fall herbicide

- **Chemical**

- What's in the toolbox?



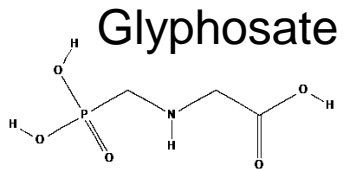
IPM Toolbox



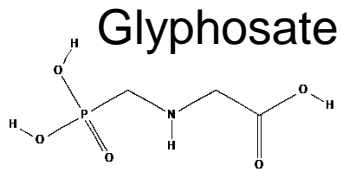
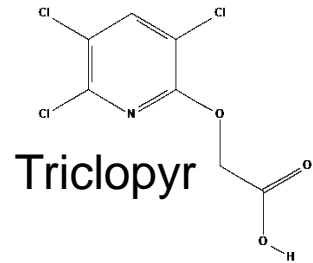
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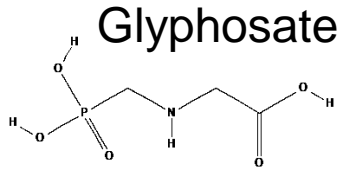
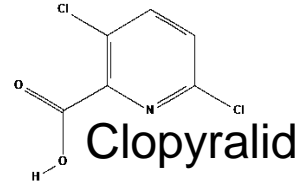
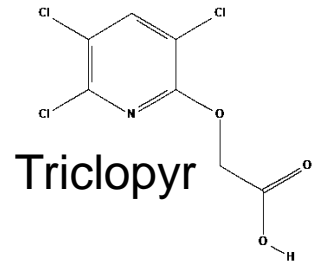
Post-emergent Non-Selective



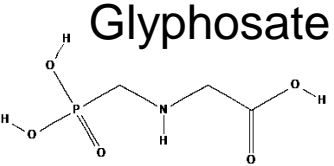
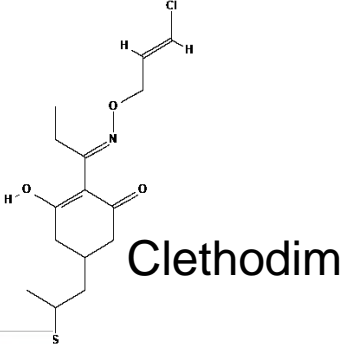
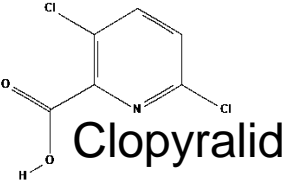
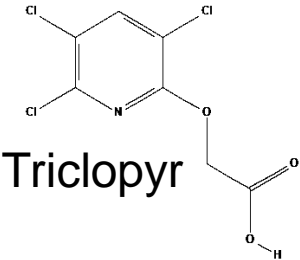
Post-emergent Broadleaf-Specific



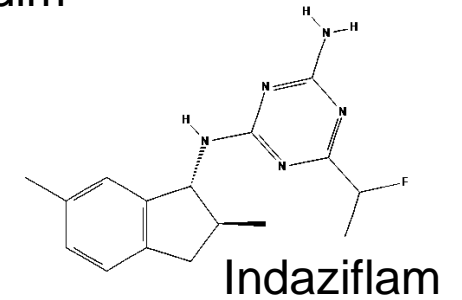
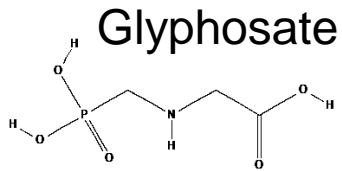
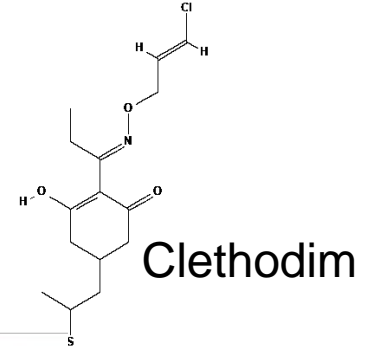
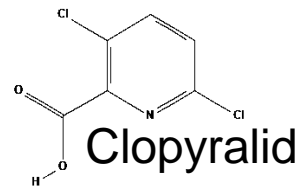
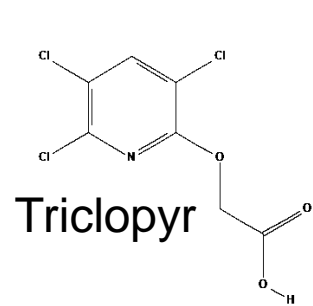
Pre & Post-emergent Broadleaf Family-Specific



Post-emergent Grass Specific



Pre-emergent Non-Selective



False brome mixed with natives



False brome mixed with natives



Collateral



March 2020
2020

- June 2020

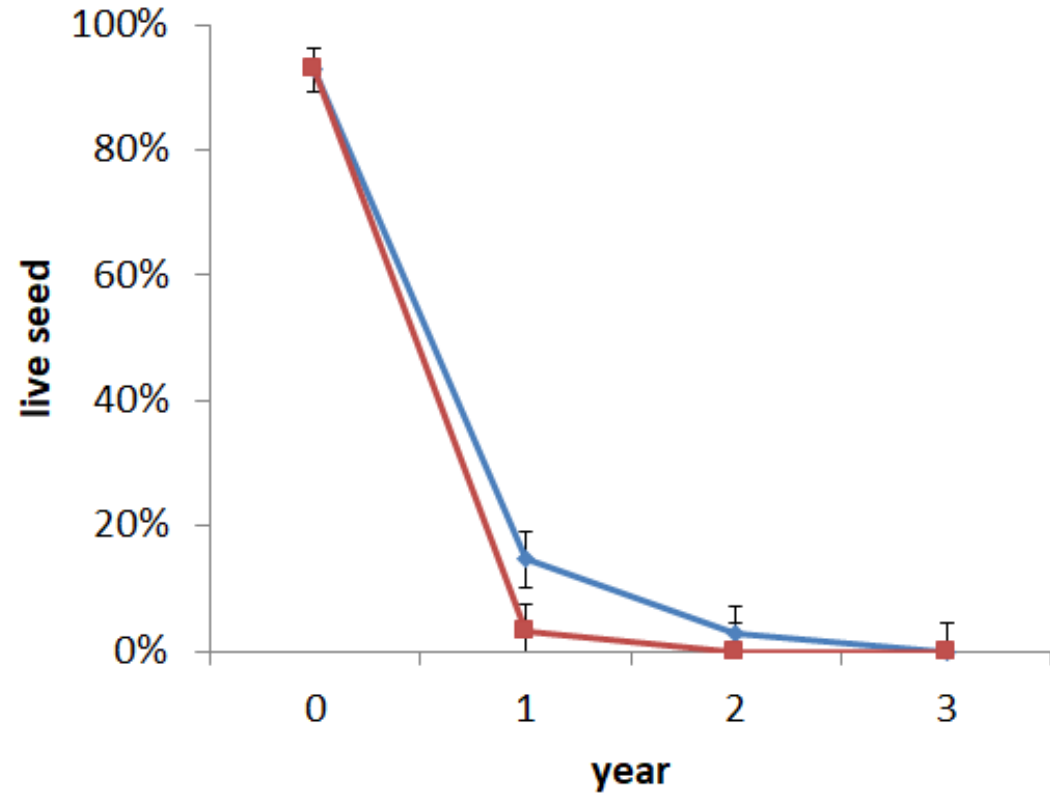
- July



Seed Bank



- 29 seeds per spikelet
- 84 stems per plant
- 2,436 seeds



Year 0 – 2,192

Year 1 – 365

Year 2 – 73

Year 3 – 0



Brachypodium sylvaticum Control

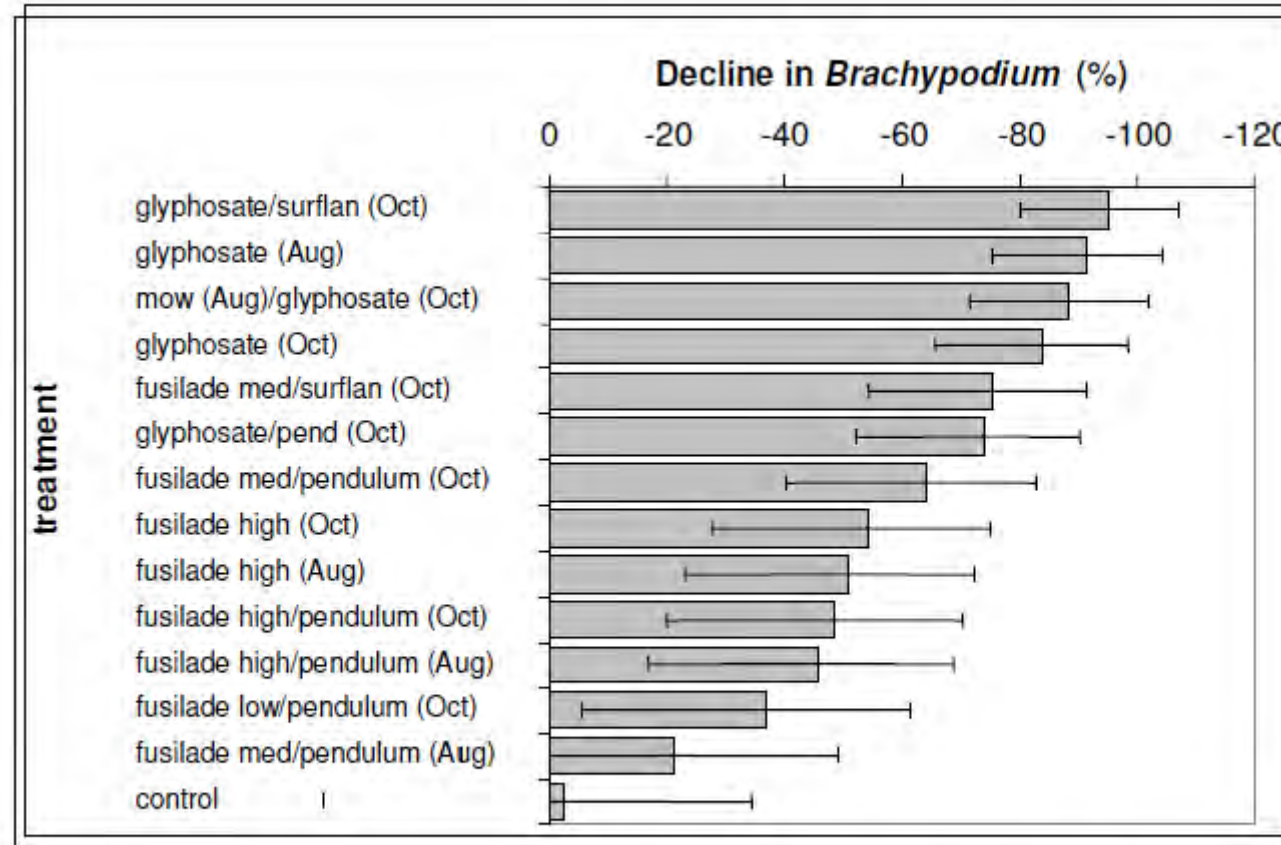


Figure 2. Percent decline in *Brachypodium sylvaticum* nearly one year after 13 combinations of herbicide treatments were applied.

Clark, D., Blakeley-Smith, M., Hammond, P., Johnson, D., Kaye, T., Kelpas, B., Pfund, F., Vomocil, M., and Wilson, M. 2004. Final Report, YEAR TWO: Control of *Brachypodium sylvaticum* and Restoration of Rare Native Upland Prairie Habitat at Butterfly Meadows, Benton County ODA 1514 GR. Report submitted to Oregon Department of Agriculture, Salem, OR



Indaziflam



- Rejuvra® is a selective, preemergence, alkylazine herbicide for control of many annual grasses and broadleaf weeds
- Reduces the emergence of seedlings through inhibition of cellulose biosynthesis (CB Inhibitor)
- Low use rates – 5 to 7 oz/acre
- Up to 4 years control
- Caution. Non carcinogenic, or mutagenic. No reproductive harm
- Stays in top ½ in of soil
- Can apply in the rain
- Expensive. \$2,755.20 for 2.5 gal
- \$8.61 per oz
- Toxic to fish, and aquatic vertebrates
- Not with heavy rainfall



Indaziflam on Annual Grasses



Garlic Mustard



Garlic Mustard Research at Park City and Payson Canyon, 2019-2020

Fronk, Natalie Layne, "Management of Garlic Mustard (*Alliaria petiolata*), Sahara Mustard (*Brassica tournefortii*), and Elongated Mustard (*Brassica elongata*) in Utah" (2022). All Graduate Theses and Dissertations. 8489. <https://digitalcommons.usu.edu/etd/8489>



Shiny geranium



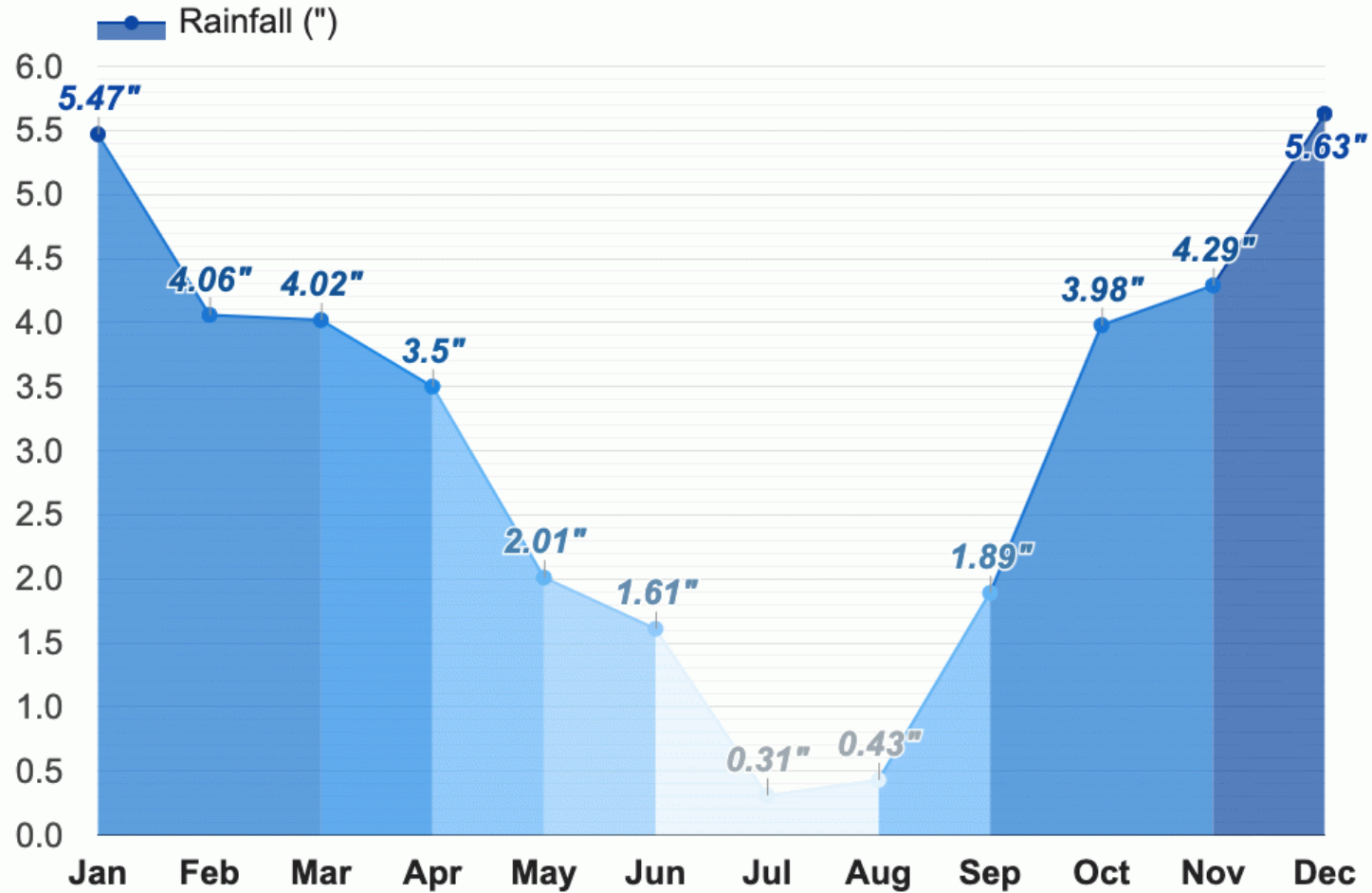
May 2023



January 2025

0.25 - 0.5 inches of Rainfall

Rainfall - Camas, WA



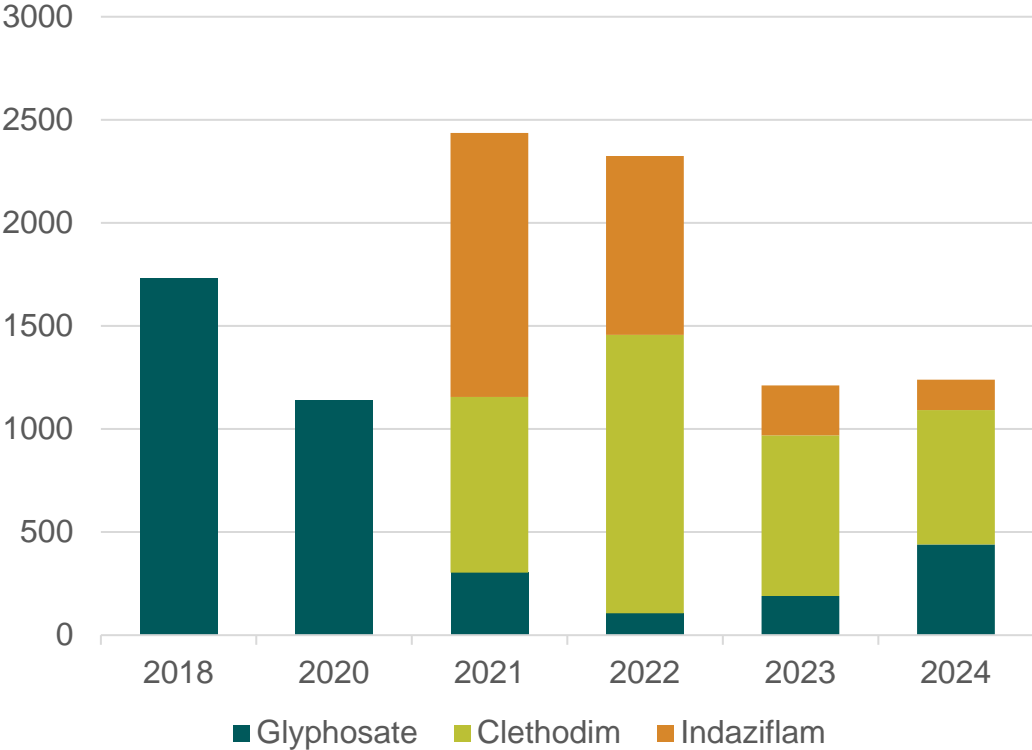
Ensuring Accurate Rates

- Constant flow valve
- Pressure gauge
- Proper agitation
- Even coverage



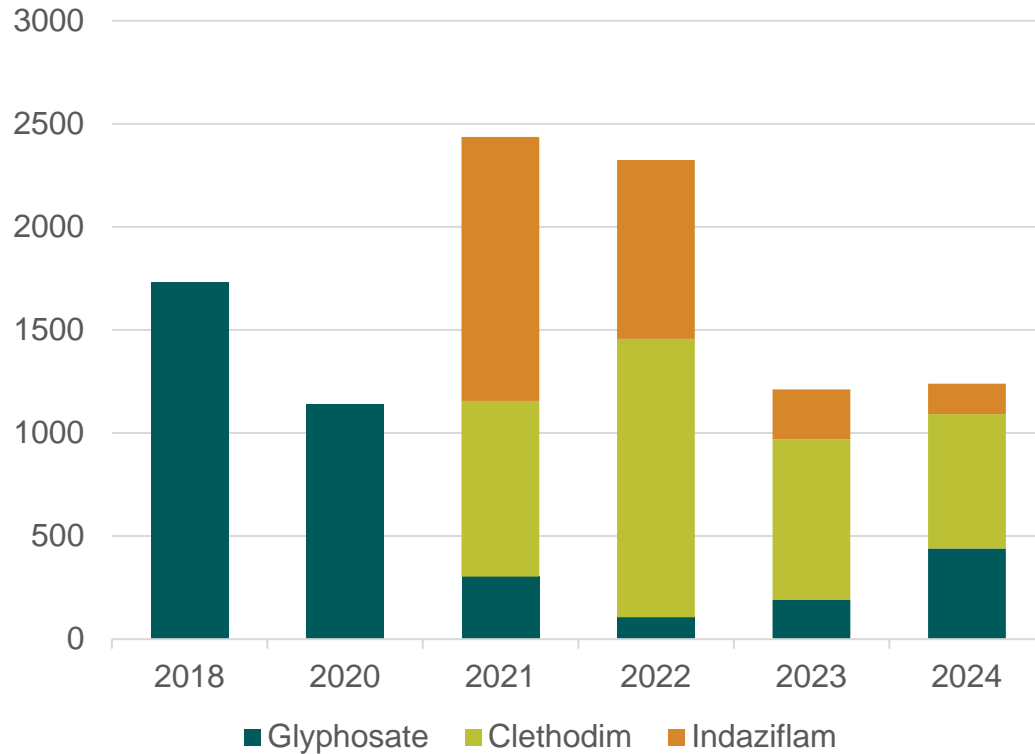
Herbicide Analysis

Total Herbicide in Gallons

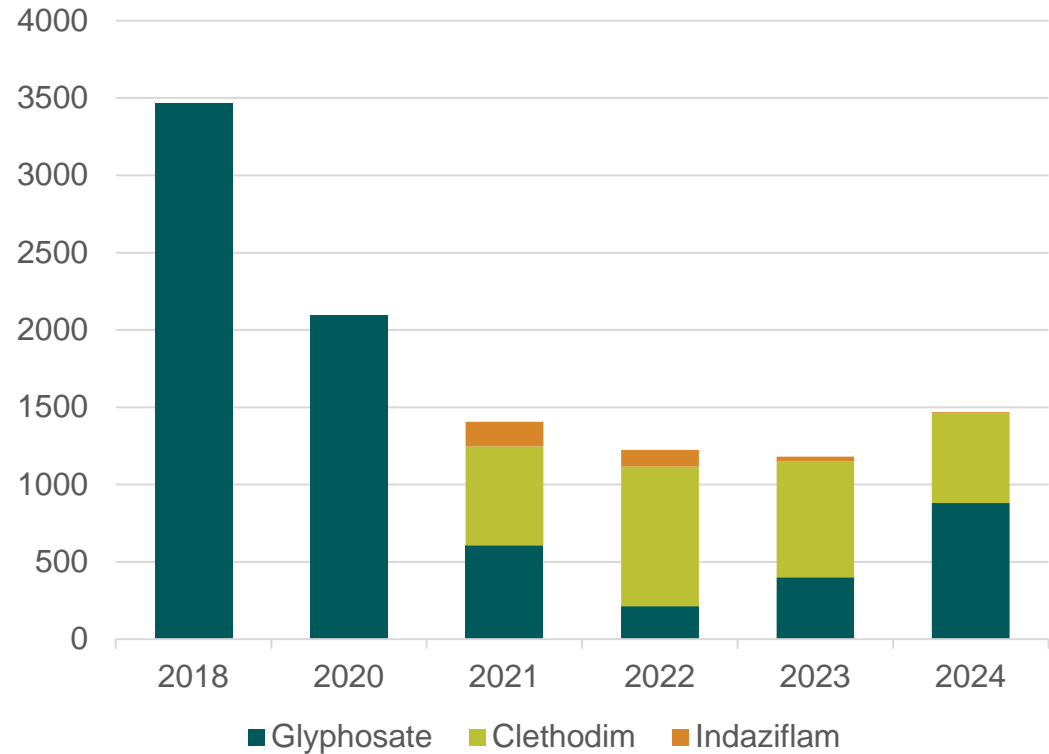


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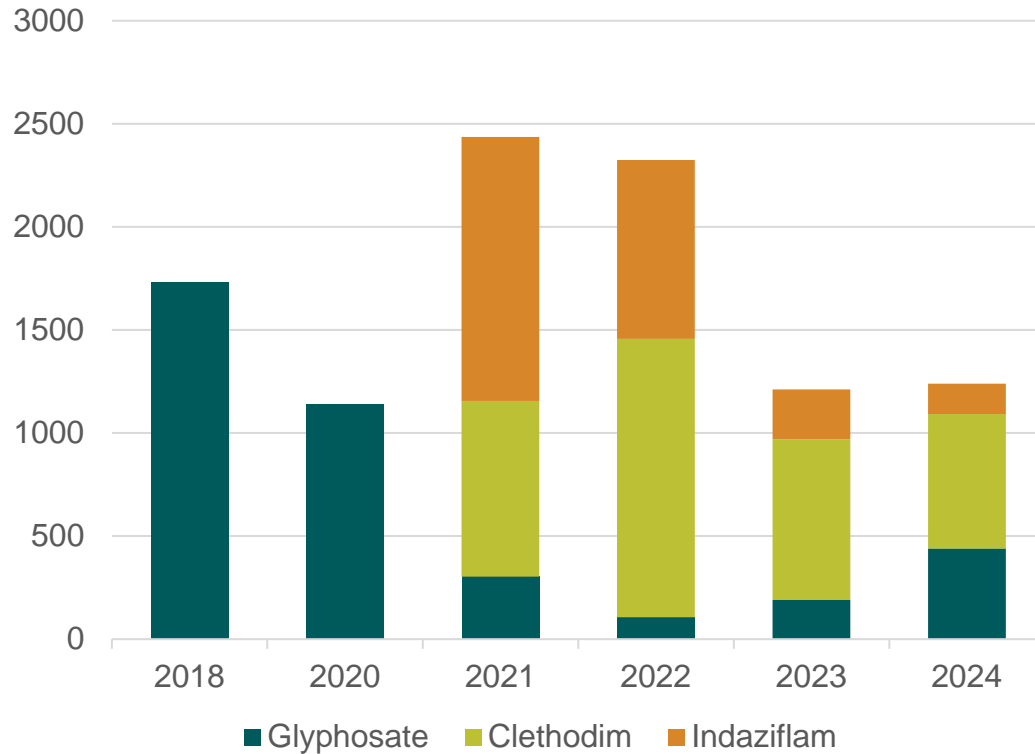


Total Herbicide in Ounces

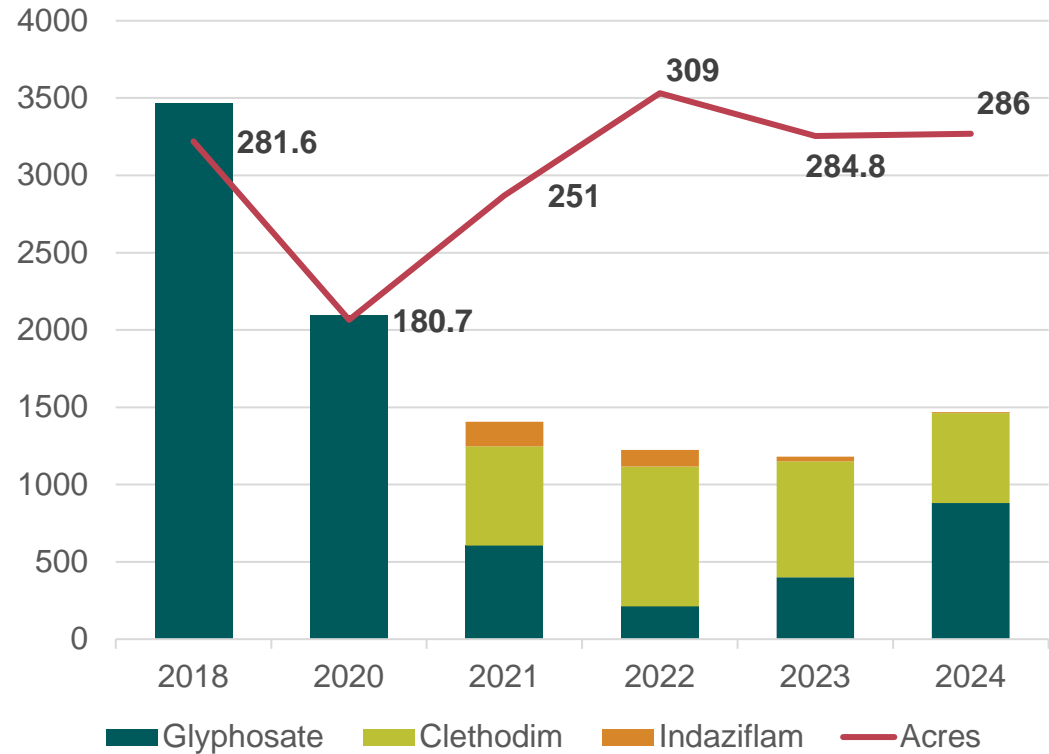


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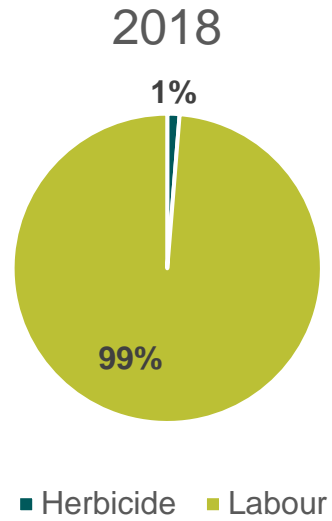
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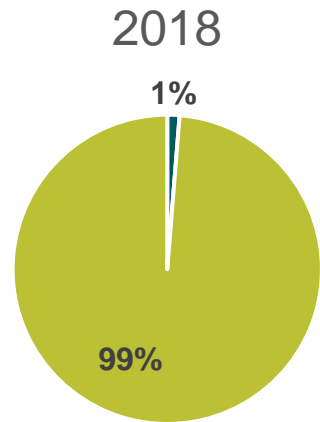
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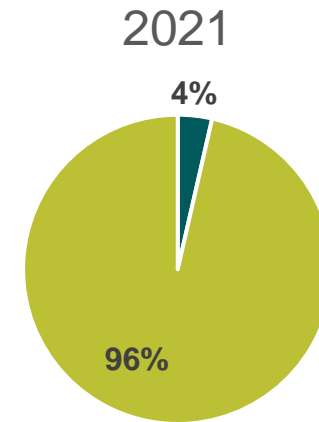
Cost Analysis



Cost Analysis



■ Herbicide ■ Labour

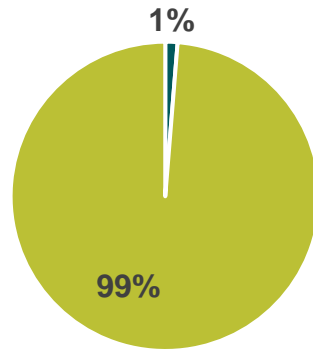


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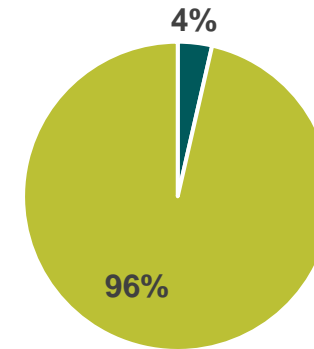
Cost Analysis

2018



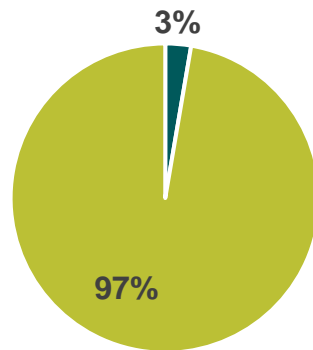
■ Herbicide ■ Labour

2021



■ Herbicide ■ Labour

2022

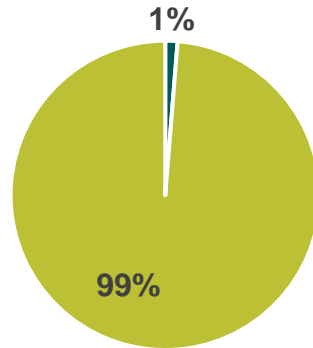


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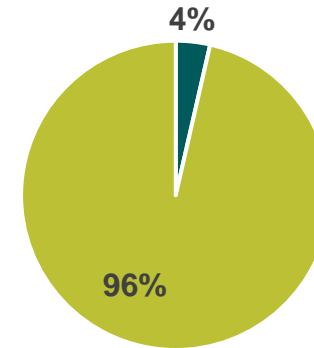
Cost Analysis

2018



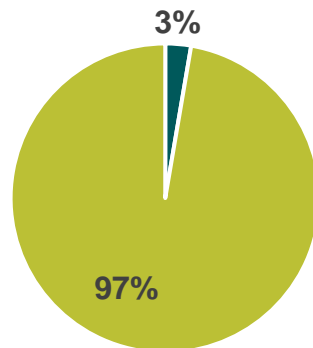
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2021



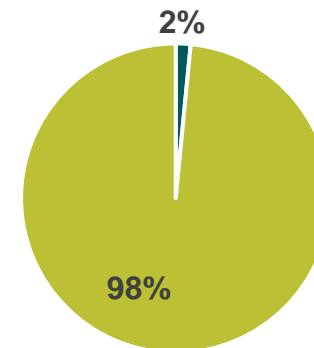
■ Herbicide ■ Labour

2022



■ Herbicide ■ Labour

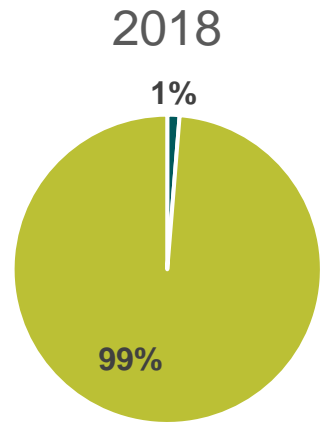
2023



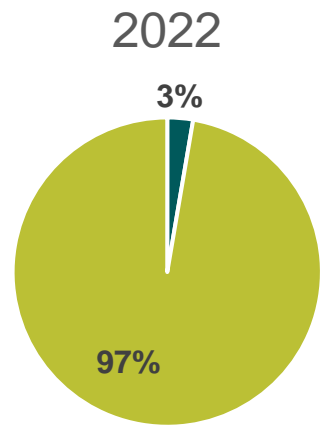
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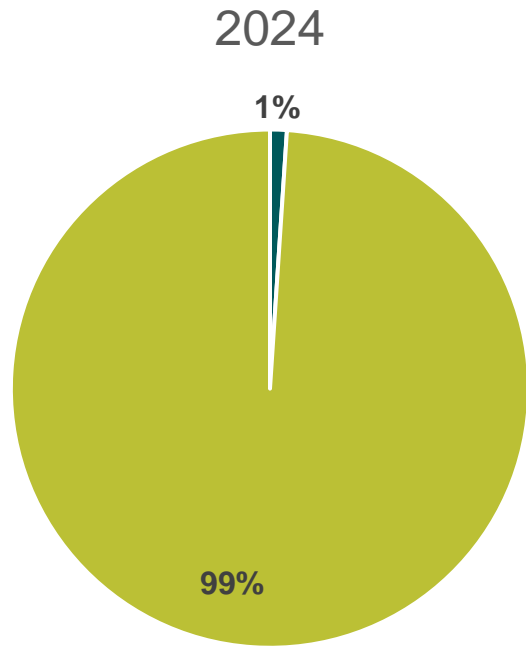
Cost Analysis



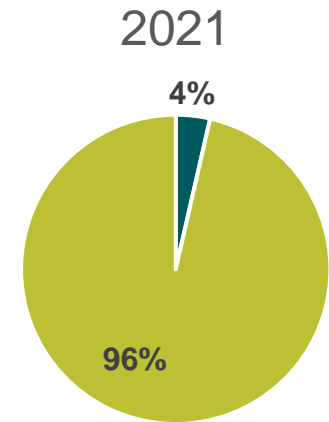
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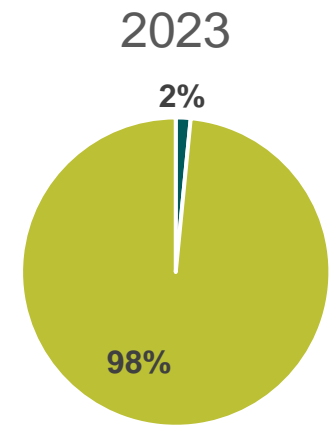
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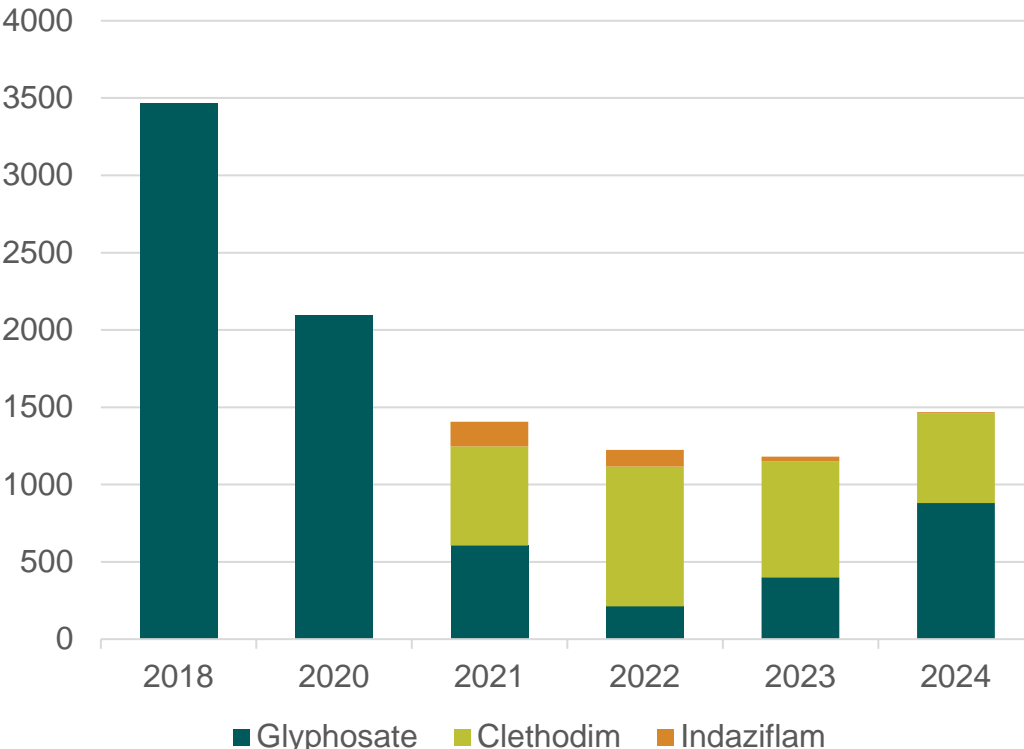


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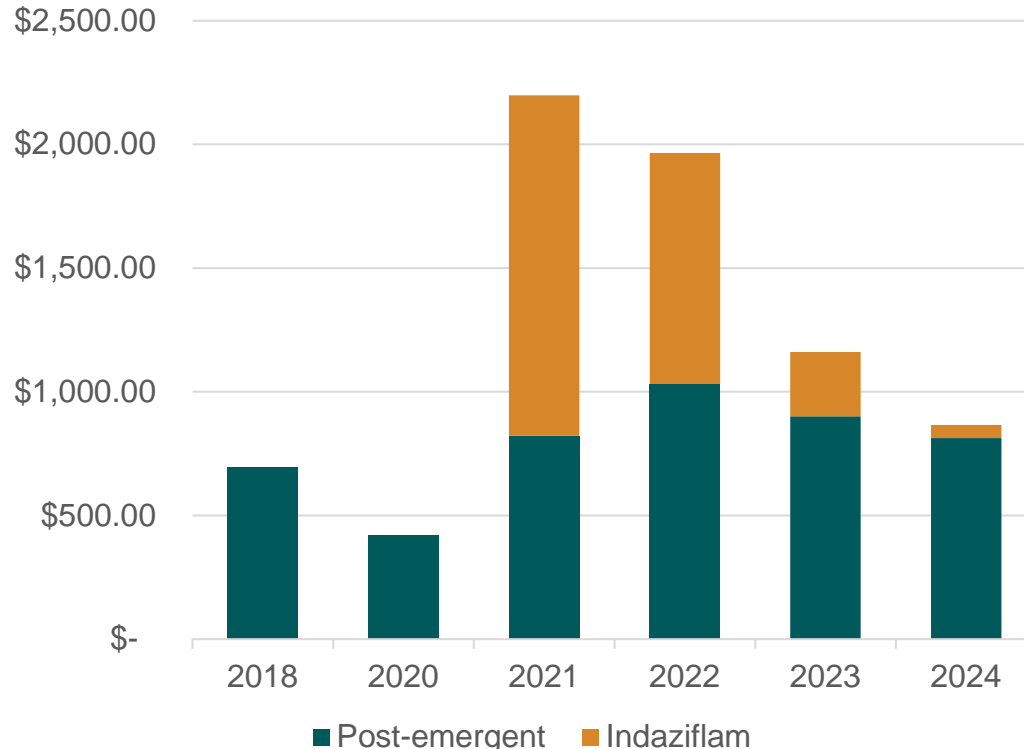


Herbicide Cost

Total Herbicide in Ounces

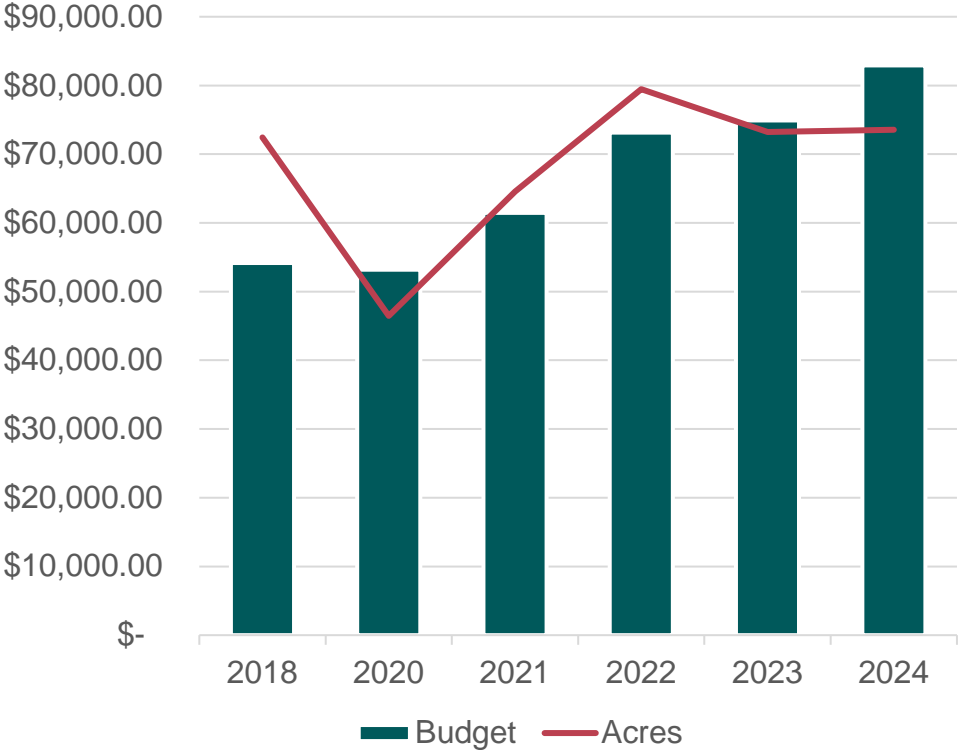


Pre Vs Post Cost

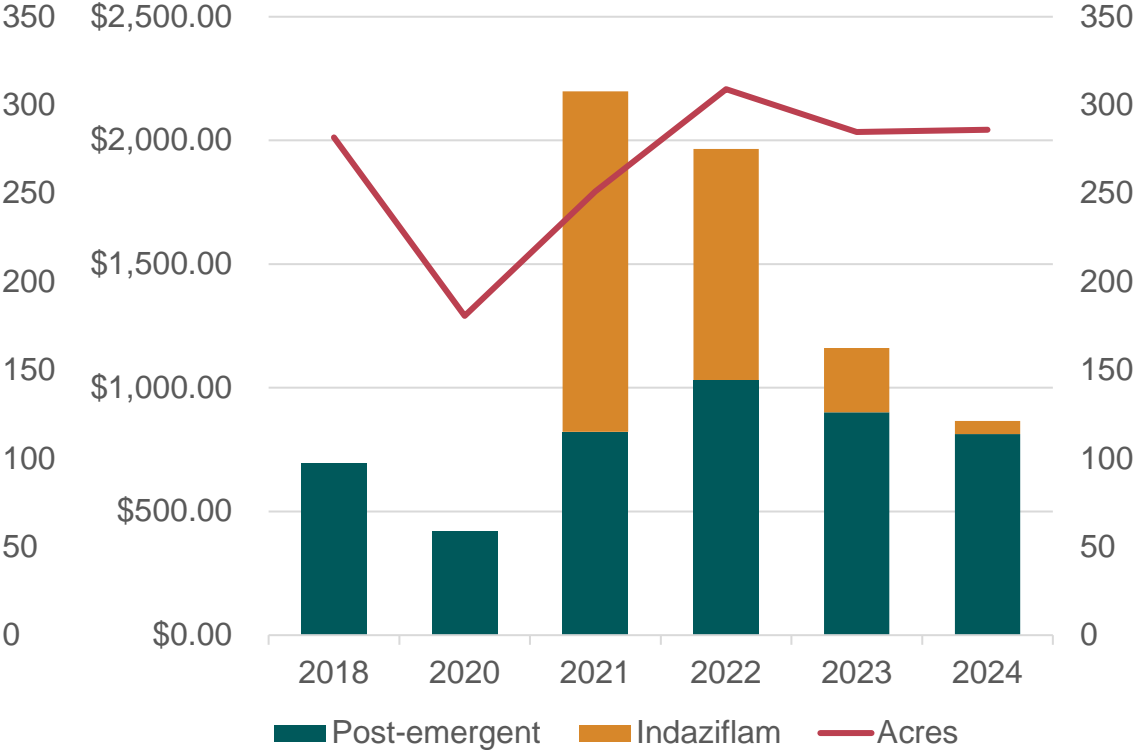


Cost Per Acre

Budget to Acres



Herbicide Cost to Acres



Cost Per Acre



Before & After



Click image and delete to replace



Click image and delete to replace

Before & After



Before & After



Before & After



Before & After



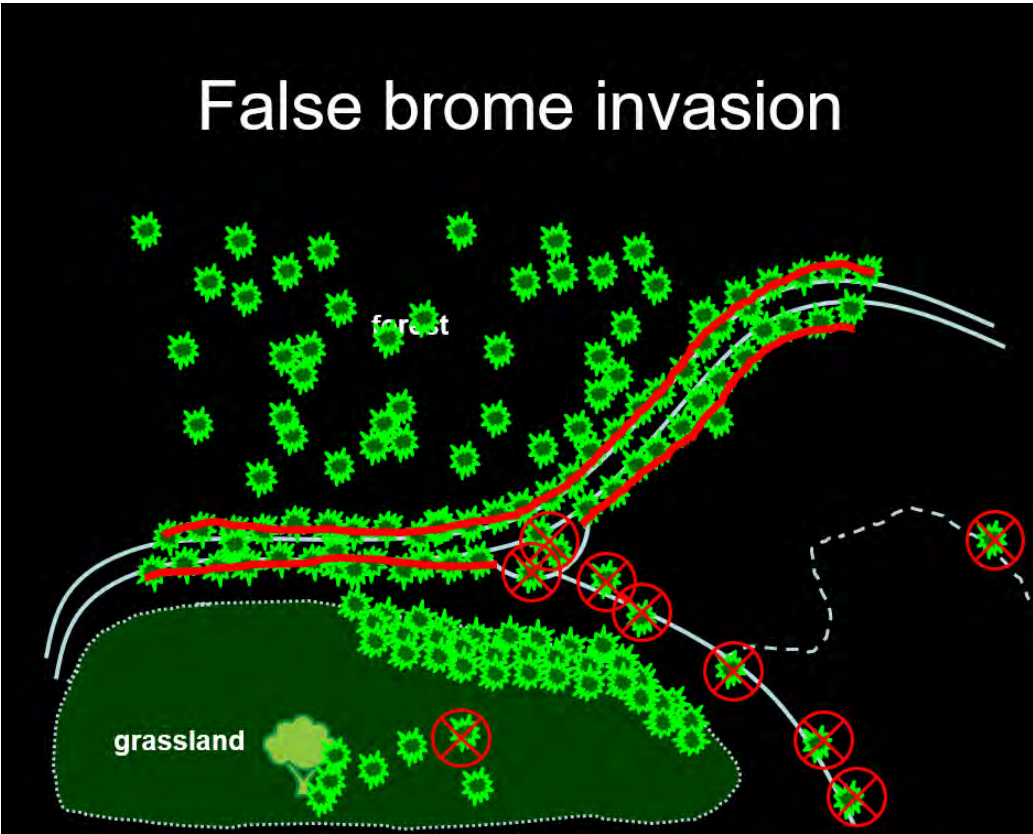
Before & After



Before & After

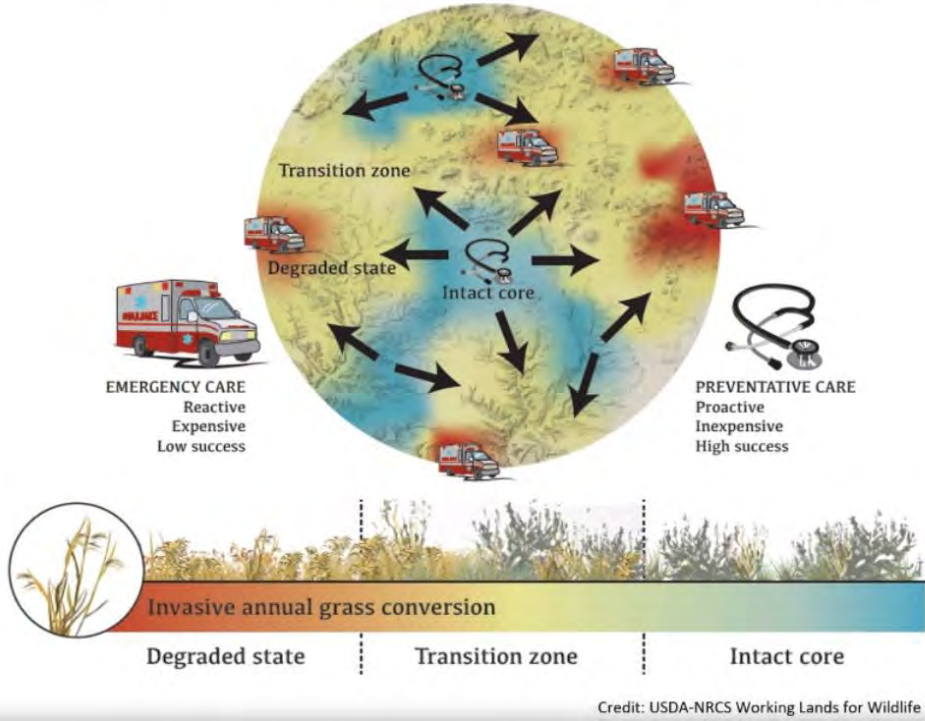


Developing Landscape Strategies



- Stop the spread
- Control new and isolated patches
- Contain large infestations

A Proactive Spatial Strategy Is Required

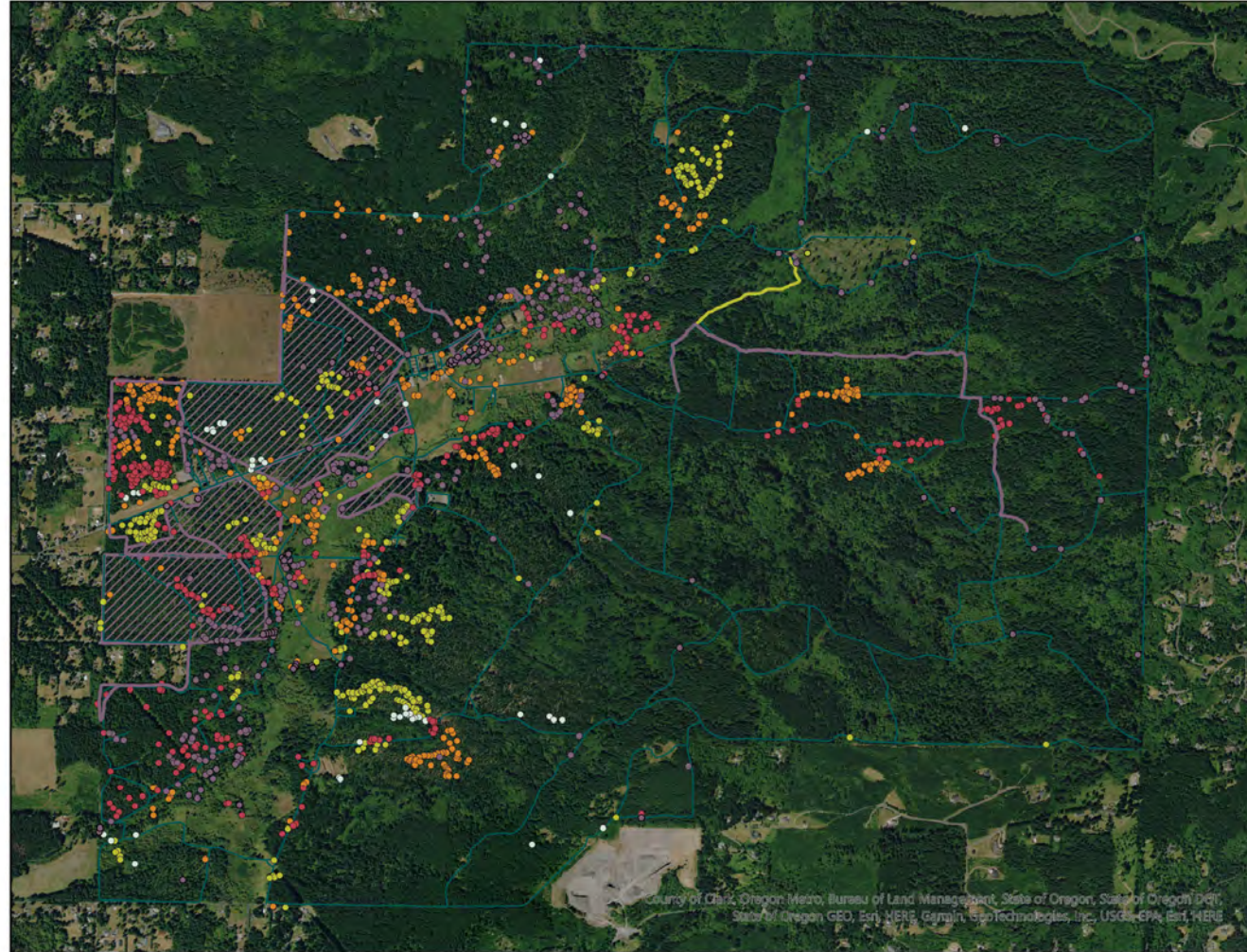


Jeremy D. Maestas, Mark Porter, Matt Cahill et al., Defend the core: Maintaining intact rangelands by reducing vulnerability to invasive annual grasses, Rangelands, <https://doi.org/10.1016/j.rala.2021.12.008>

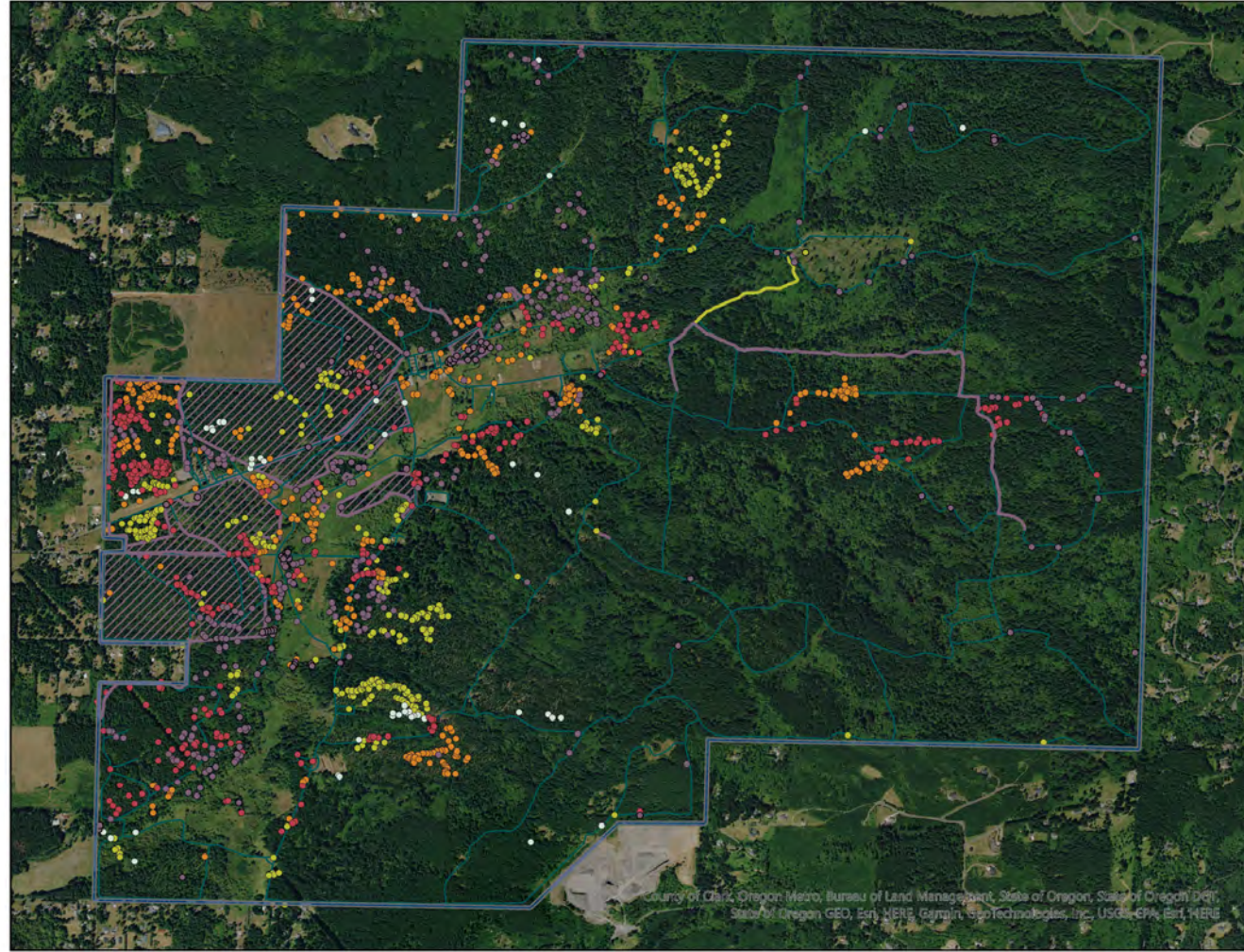
Defend the core – Grow the core



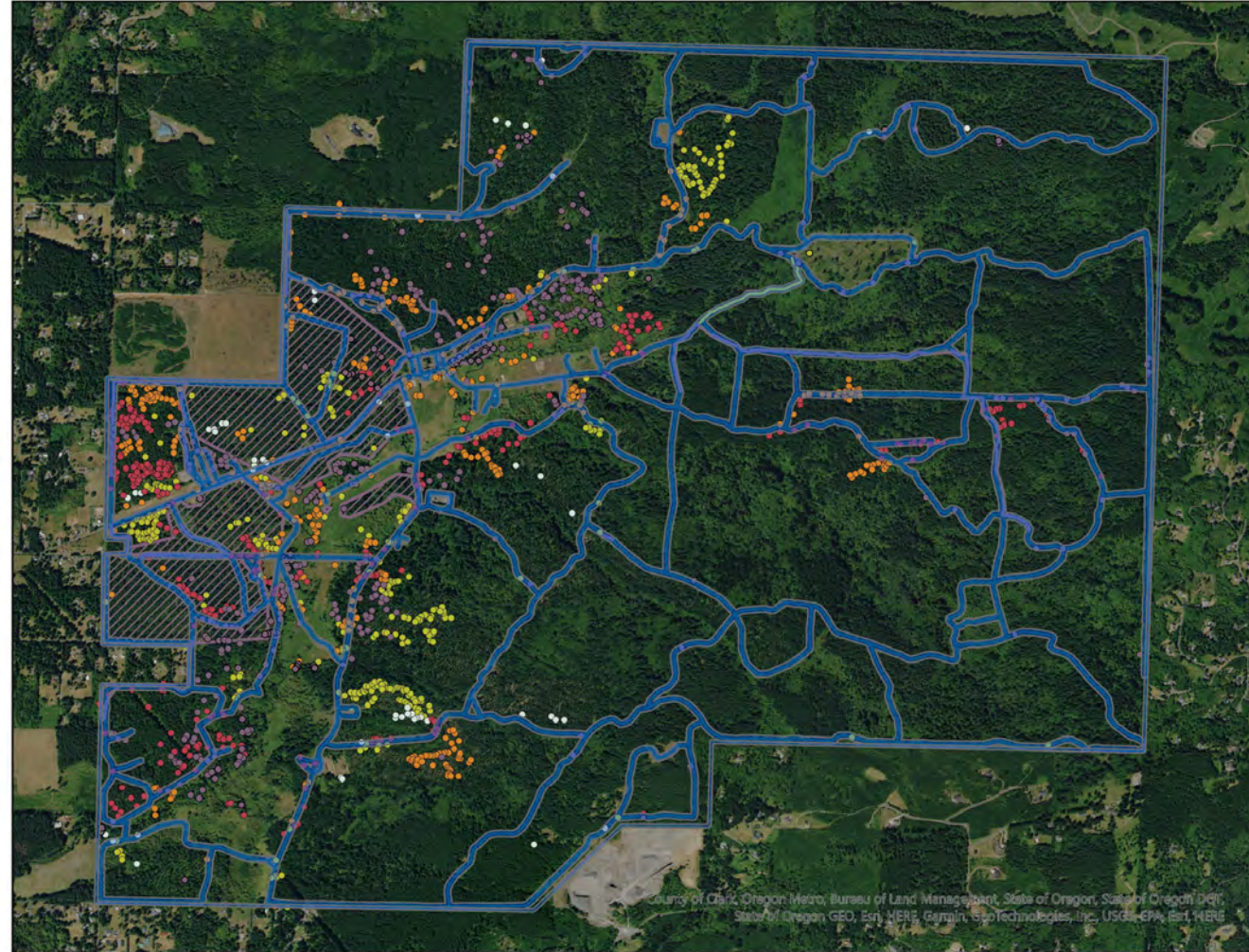
Landscape Priorities



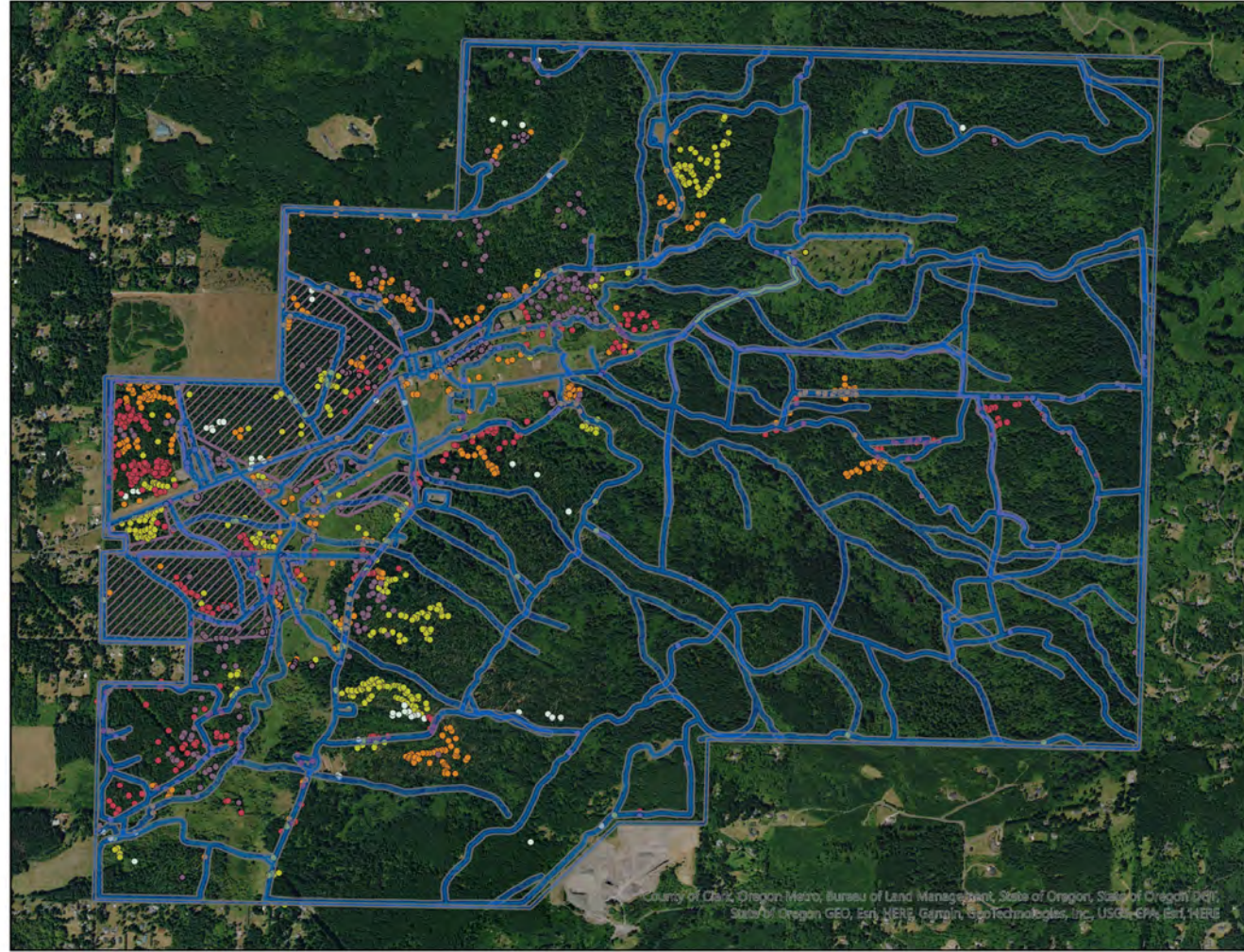
Fenceline



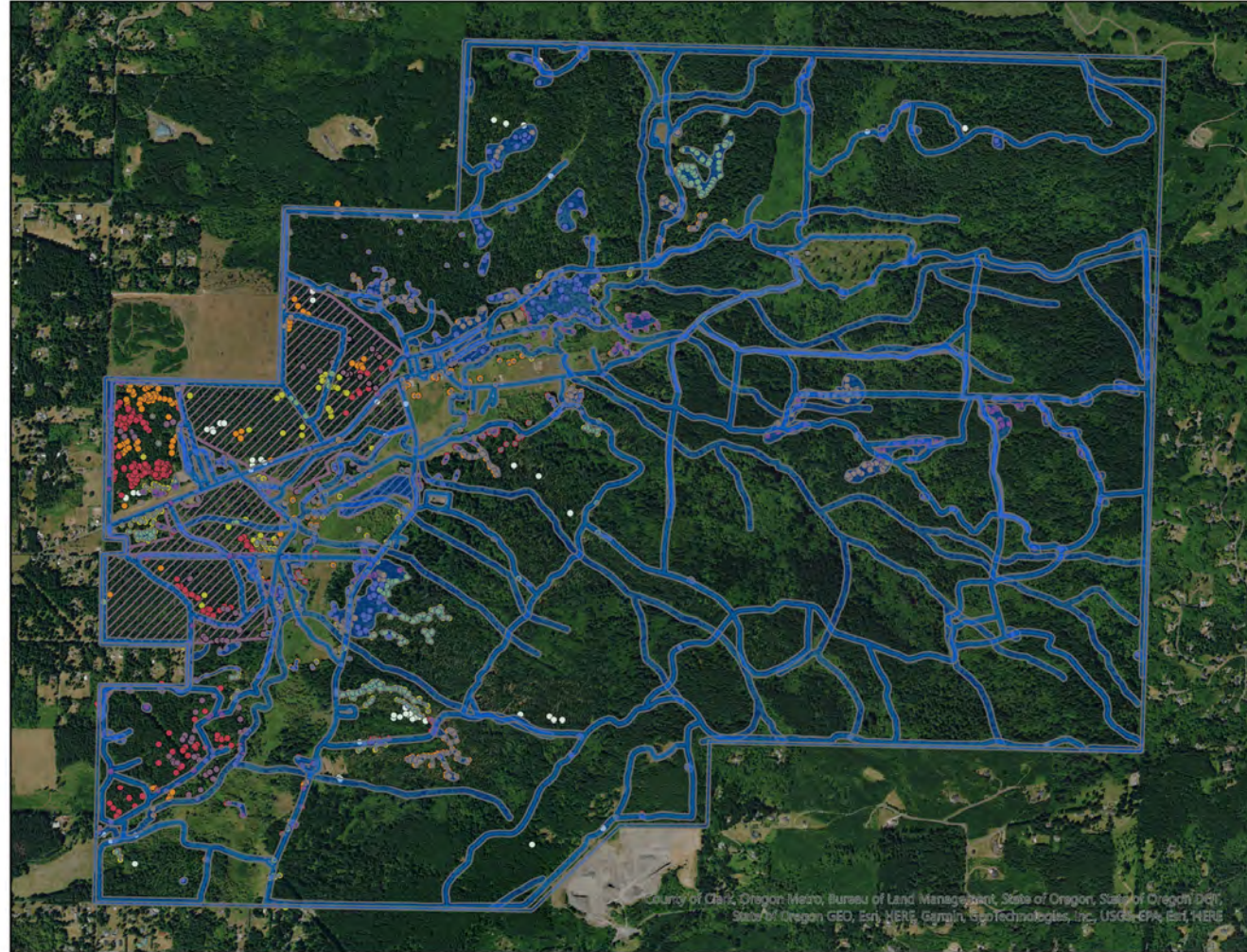
Roads



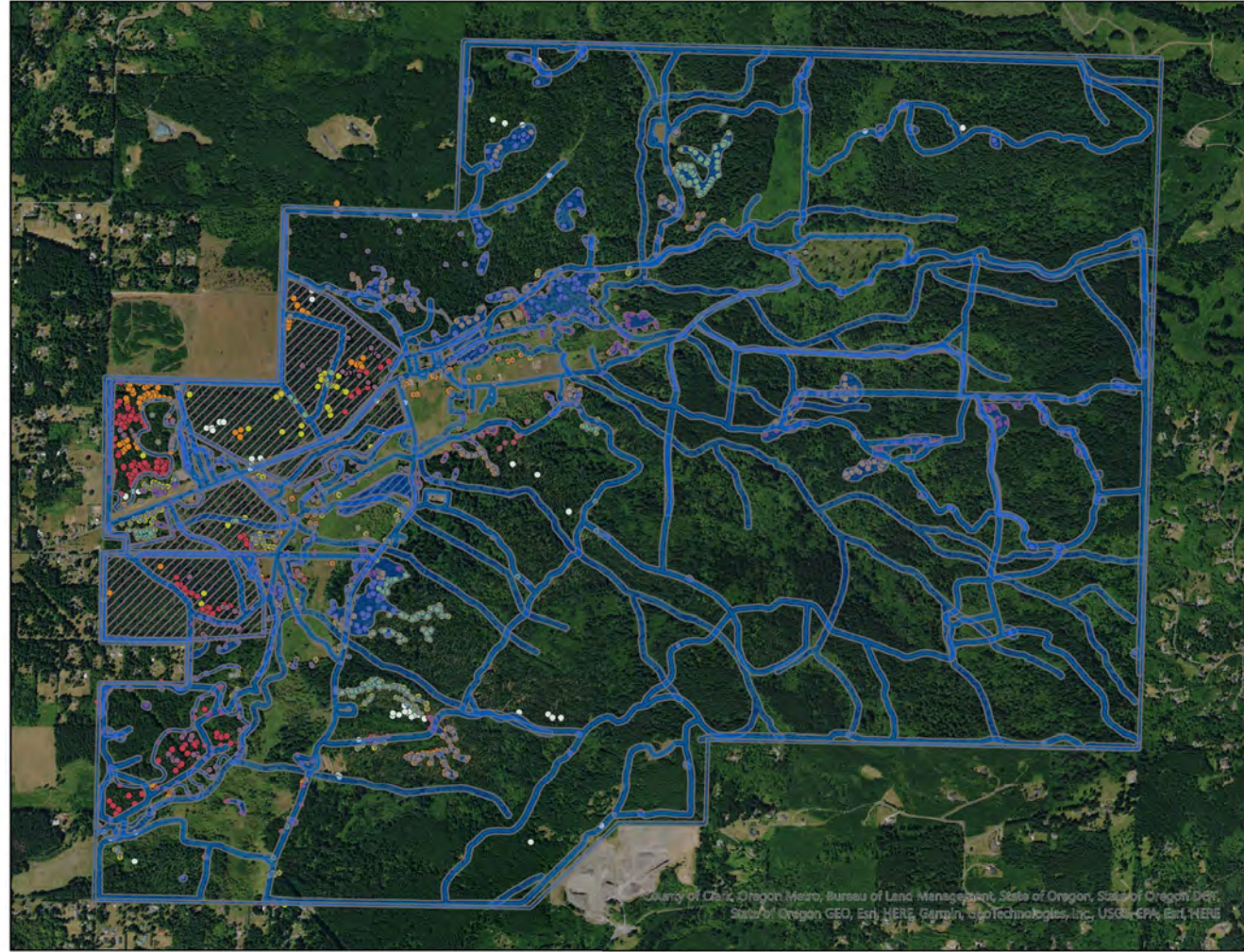
Streams



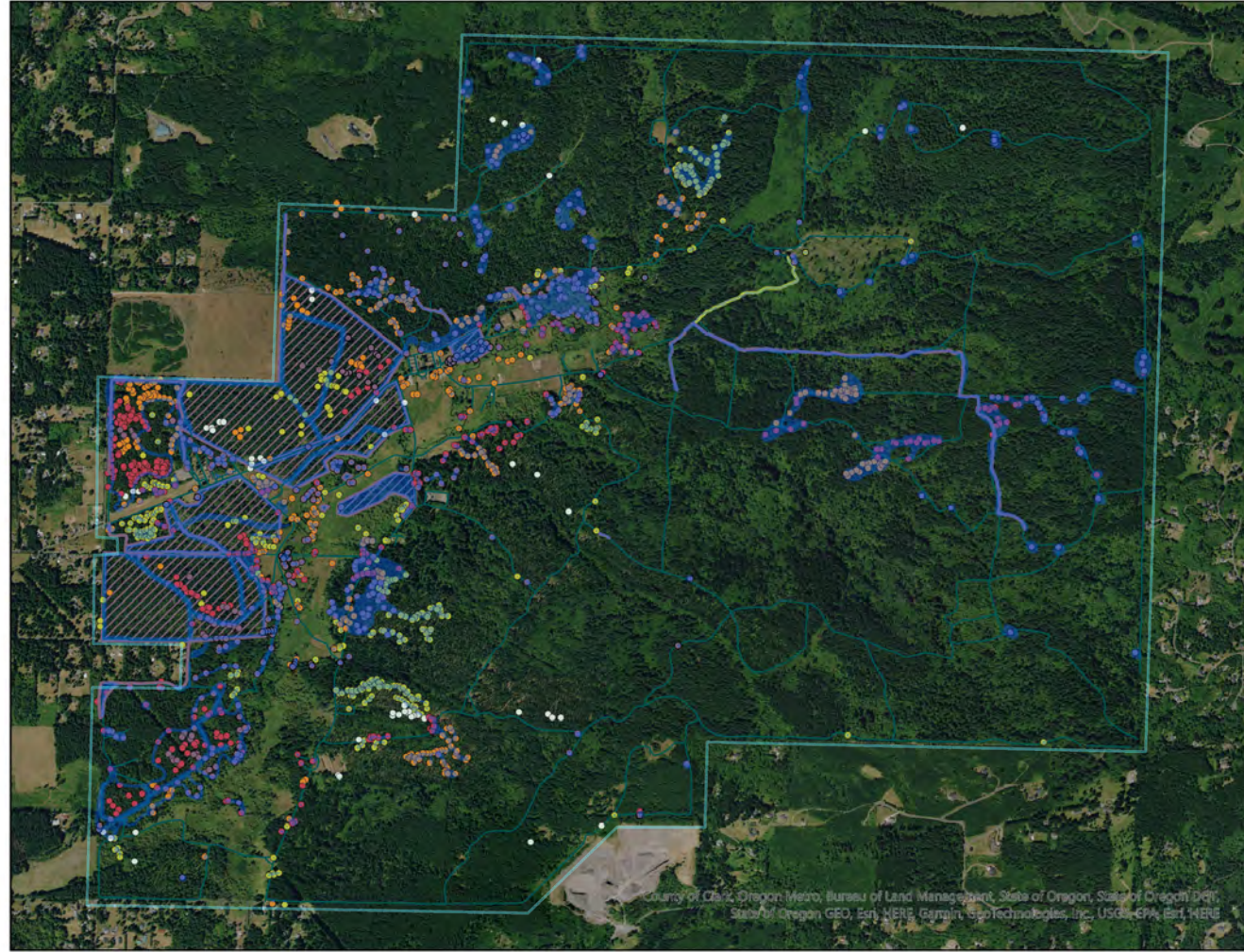
Small Infestations



Large Infestation Edges



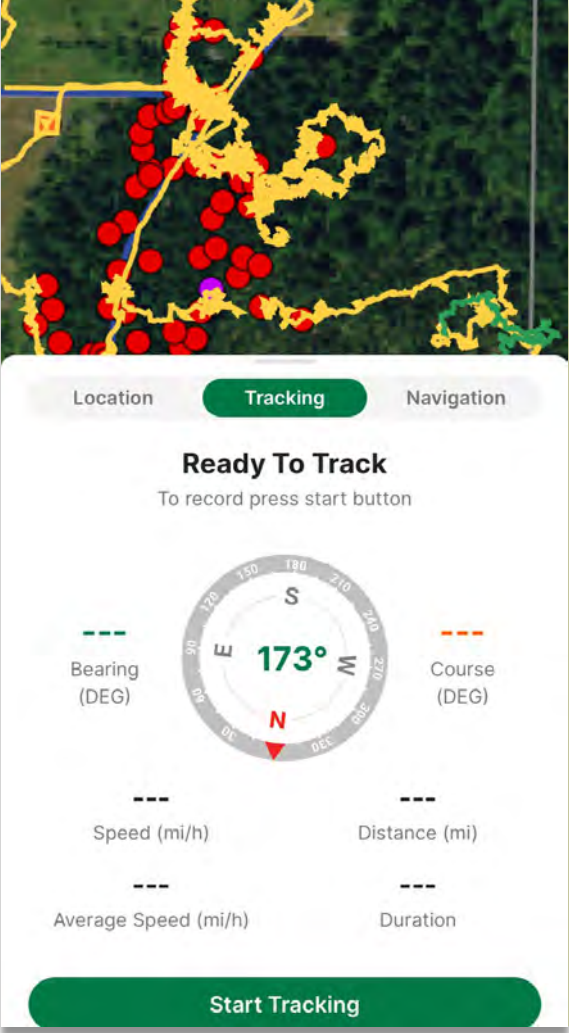
Priority Treatments



Priority Treatments



Tracking Treatments



Tracking Treatments

Location **Tracking** Navigation

Ready To Track
To record press start button

Bearing (DEG) **173°** Course (DEG)

Speed (mi/h) Distance (mi)

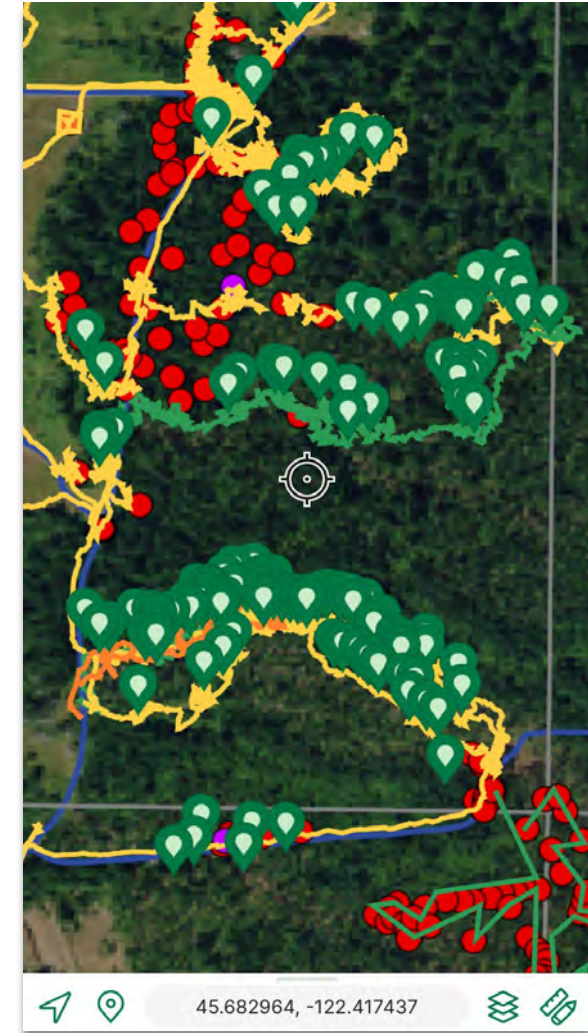
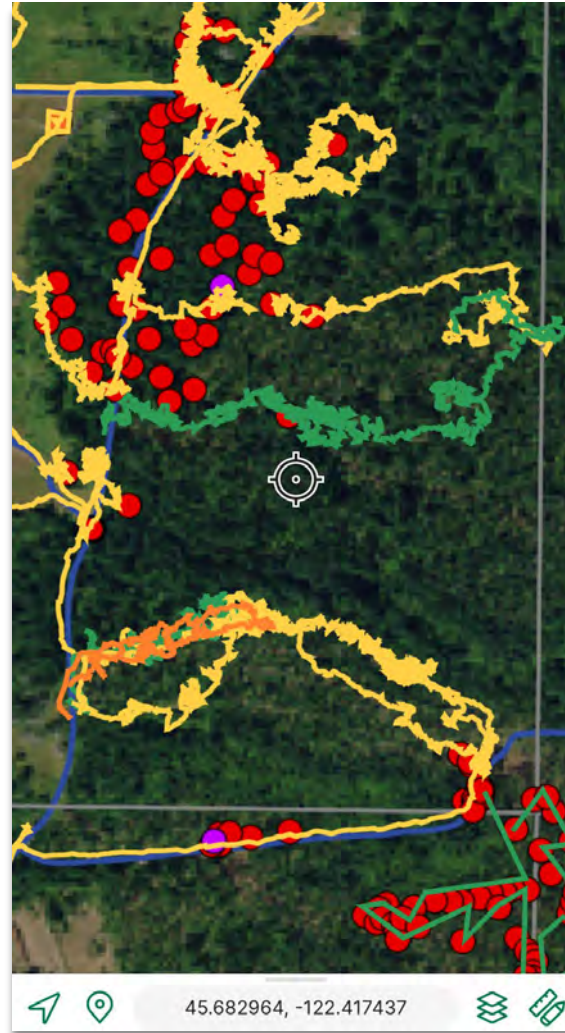
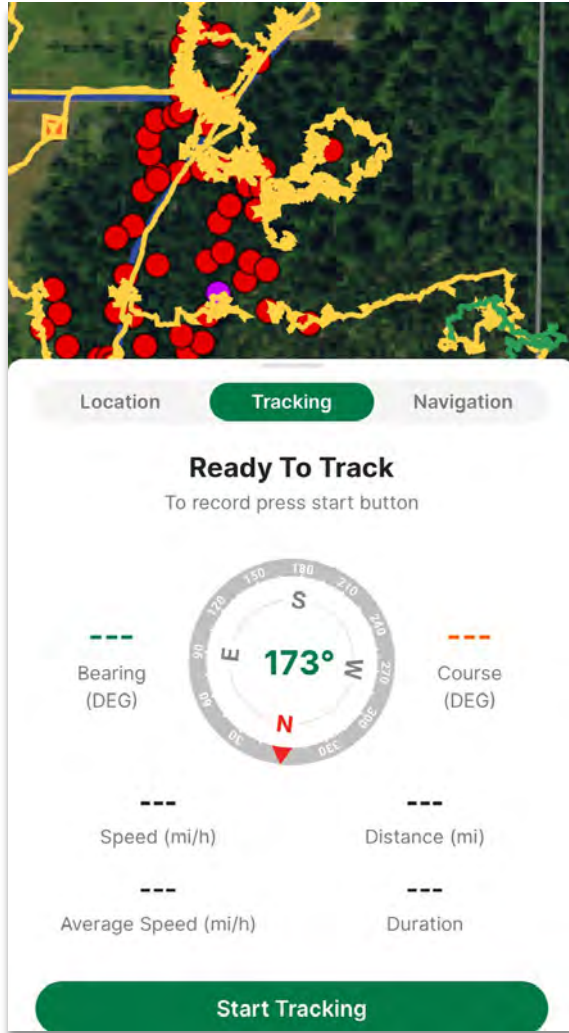
Average Speed (mi/h) Duration

Start Tracking

45.682964, -122.417437



Tracking Treatments (and adding data!)



Spring – Pre-germination



Spring – Pre-germination



Spring – Pre-germination



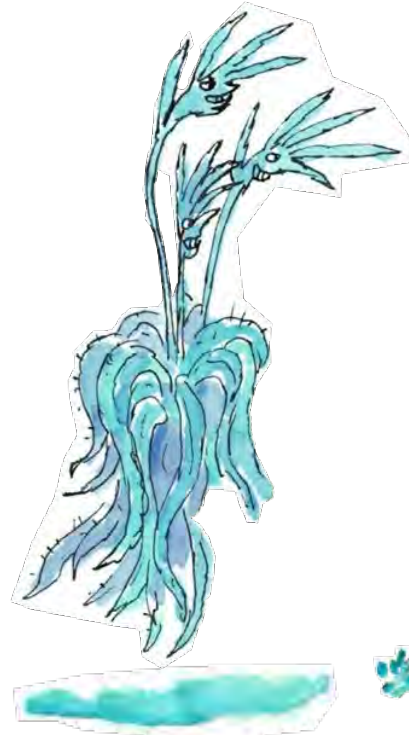
Spring – Pre-germination



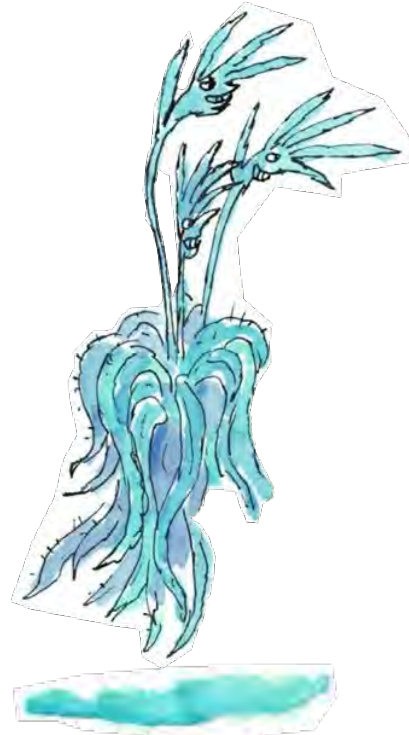
Spring – Pre-germination



Spring – Pre-germination



Spring – Pre-germination



Spring & Early Summer – Post-germination



Spring & Early Summer – Post-germination



Spring & Early Summer – Post-germination



Spring & Early Summer – Post-germination



Spring & Early Summer – Post-germination



Summer – Post-germination



Summer – Post-germination



Summer – Post-germination



Summer – Post-germination



Summer – Post-germination



Summer – Post-germination



Summer – Post-germination



Summer – Post-germination



Summer – Post-germination



Summer – Post-germination







Thank you!

Questions?

harris.kidd@clark.wa.gov

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