Learning Lunch
Understory Seeding

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July 2019

WEST MULTNOMAH
Soil & Water Conservation District

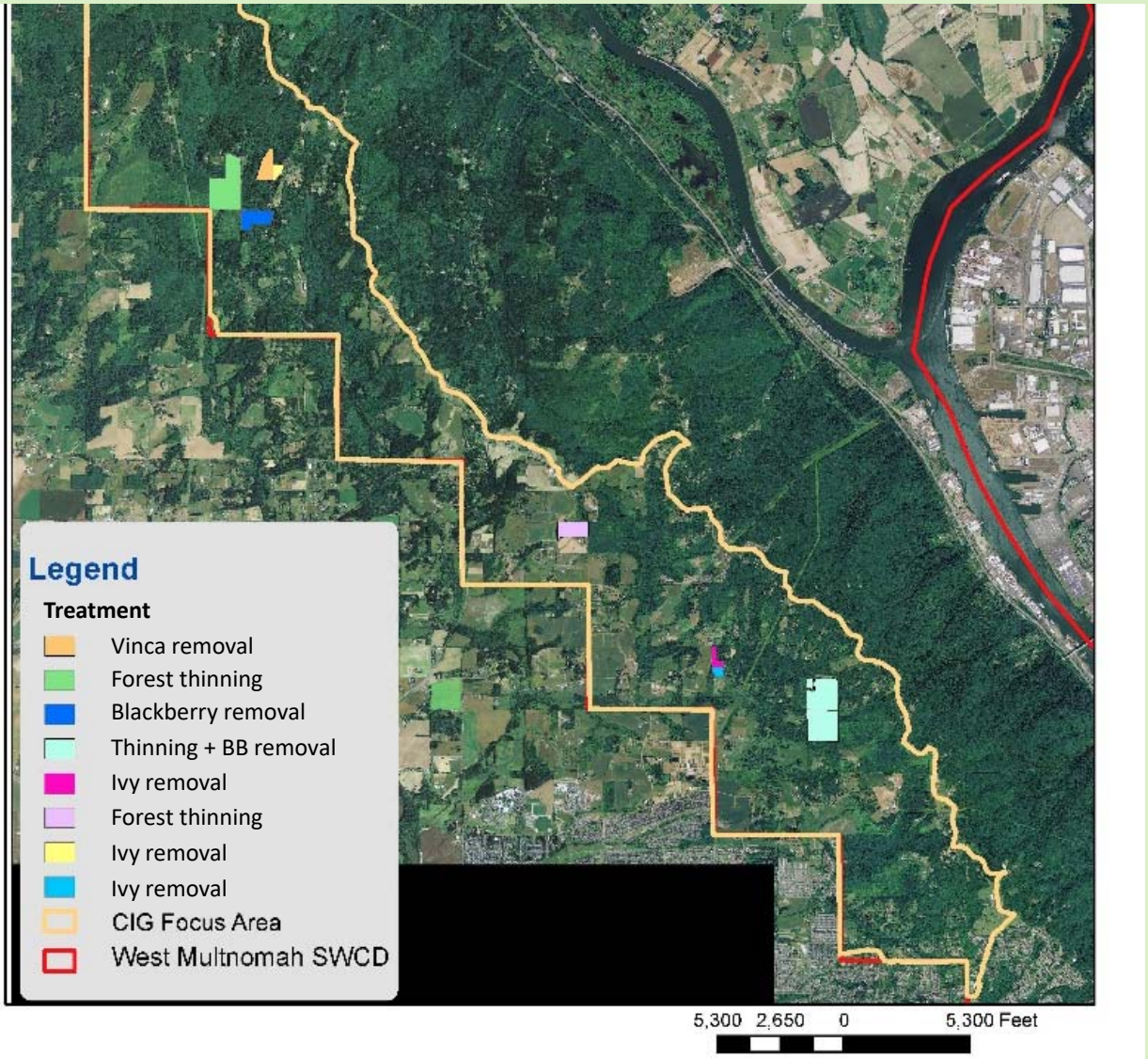
Adult Inside-out flower with young seedlings beneath

Project Background

- Biodiversity
- Replacing ivy, garlic mustard, invasive geraniums, etc
- Understory Species Increase Project (USIP)
  - Survey to EcoUnite listserve
  - Partner w/ Metro, Portland BES & Clean Water Services
- NRCS Conservation Innovation Grant (CIG)
- Tualatin Watershed


Ivy infestation


Bare ground after Ivy removal


Legend
Treatment
Vinca removal
Forest thinning
Blackberry removal
Thinning + BB removal
Ivy removal
Forest thinning
Ivy removal
Ivy removal
CIG Focus Area
West Multnomah SWCD
5,300 2,650 0 5,300 Feet

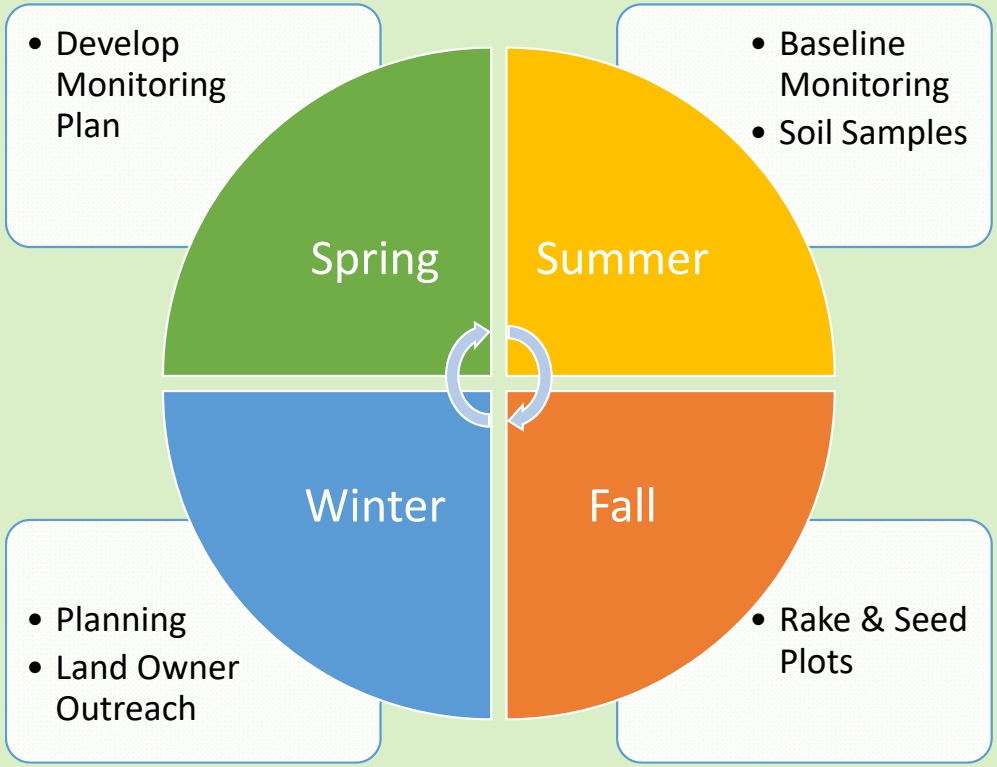
Big Questions

- Effectiveness of establishing native understory plants from seed
- What species perform best?
- Are different species especially suited to certain conditions?
  - If so, what are these associations?

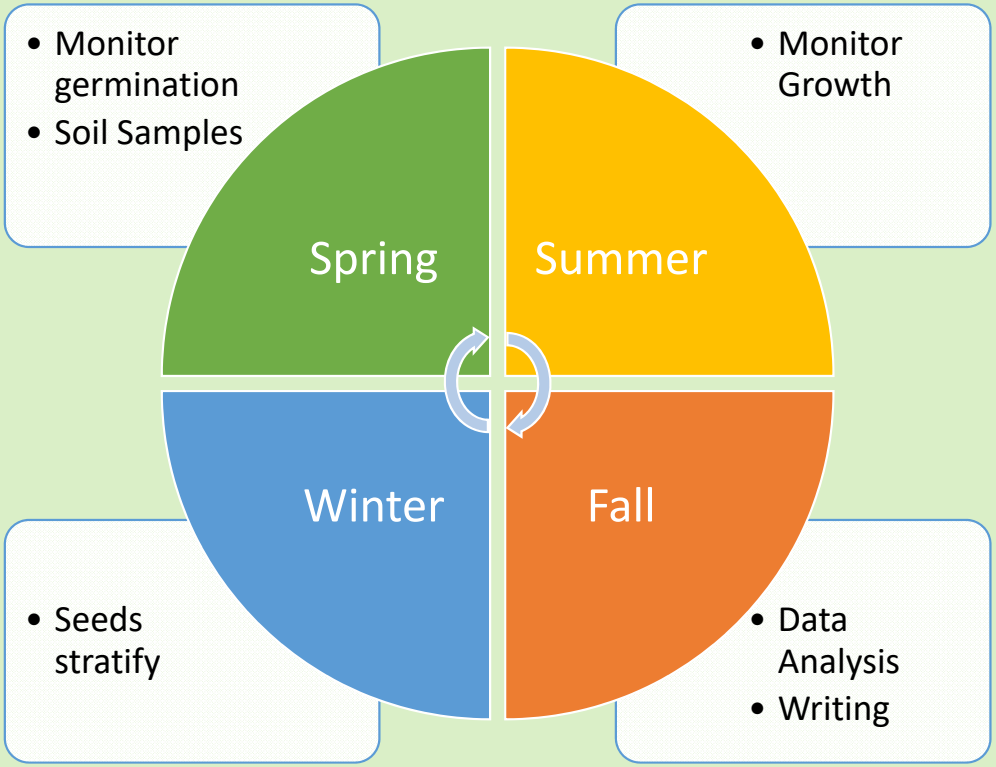
Approach

The Process

2018



2019



Study Design

- 8 Sites
  - 4 w/ Ivy or Vinca Removal
  - 2 w/ Blackberry Removal
  - 3 w/ Forest Thinning (one also had BB removal)

- 6 plots at 7 of the sites, 4 plots at the 8th site
  - 2 Raked, Unseeded Control
  - 2 Raked, Seeded w/ USIP seed mix
  - 2 Unraked, Seeded w/ simple mix from Jane

- 15-16 replicates per seeding treatment

Seed Mix

Common Name	Latin Name	bulk grams per plot	tz test % viability	PLS grams per plot	seeds per pound
pathfinder	Adenocaulon bicolor	1.5	0.91	1.365	100,666
western columbine	Aquilegia formosa	0.7	0.85	0.595	248,000
Columbia brome	Bromus vulgaris	1.7	0.85	1.445	100,000
slender-foot sedge	Carex leptopoda	0.8	0.89	0.712	647,142
enchanter's-nightshade	Circaea alpina	0.6	0.88	0.528	838,889
miner's-lettuce	Claytonia perfoliata	0.8	unknown	<0.8	261,346
Siberian miner's-lettuce	Claytonia sibirica	1.2	unknown	<1.2	404,000
blue wildrye	Elymus glaucus	1.4	0.97	1.358	130,000
western fescue	Festuca occidentalis	0.4	0.52	0.208	605,000
large-leaved avens	Geum macrophyllum	0.8	0.9	0.72	906,000
Pacific waterleaf	Hydrophyllum tenuipes	16.2	0.9	14.58	45,300
small-flowered nemophila	Nemophila parviflora	1	0.88	0.88	250,000
sweet-cicely	Osmorhiza berteroi	4	0.89	3.56	60,670
broad-leaved penstemon	Penstemon ovatus	0.2	0.89	0.178	600,000
fringecup	Tellima grandiflora	0.1	0.74	0.074	7,000,000
piggyback plant	Tolmiea menziesii	0.2	0.89	0.178	600,000
inside-out flower	Vancouveria hexandra	1	0.87	0.87	7,000,000

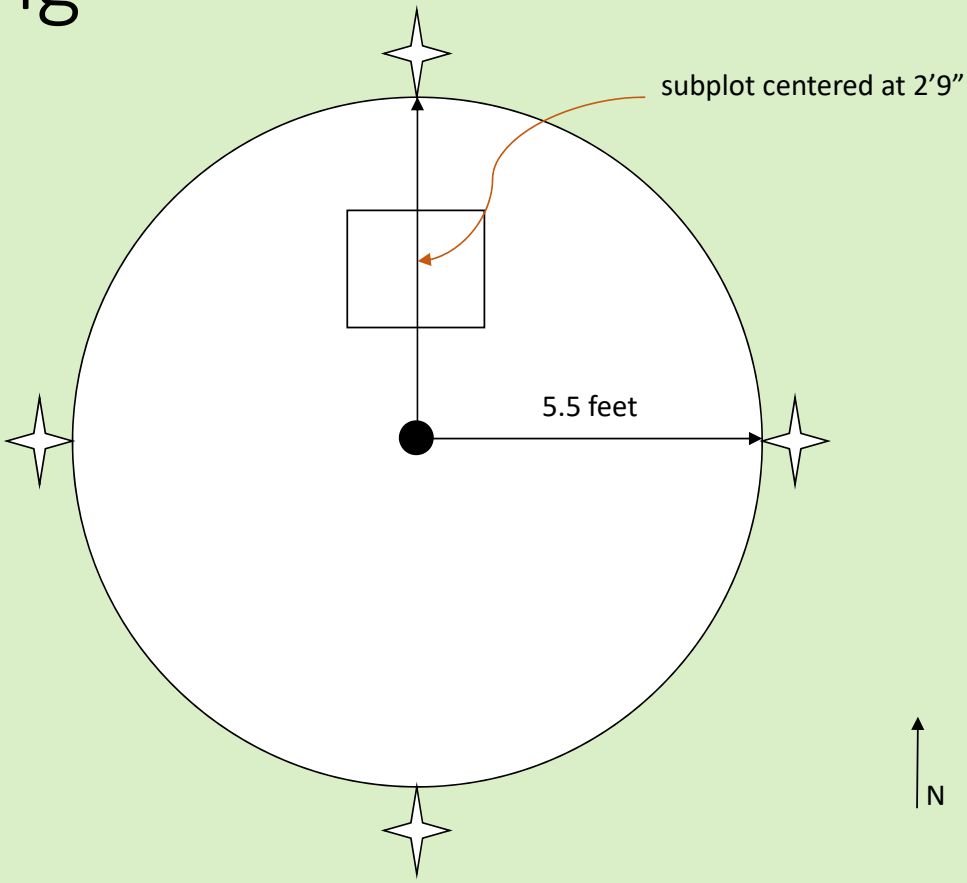
Before & after raking a plot

Raking & Seeding

Study Plots & Monitoring

- 11 ft Diameter plots (95 ft^2)
  - Large-scale trends
- 4 ¼-meter sub-plots per plot
  - Full inventory
- 5 ft buffer around plots
  - Presence of seeded species

- Baseline: June 2018
- Spring Germination: April 2019
- Full Leaf-out: June 2019



Monitoring

Seedlings

Fringe cup & Large-leaved avens

Inside-out flower

Sweet cicely

Raked Seeded Plots

June Average: 19 plants / sub-plot
Dominated by native seeded species

Raked Unseeded Plots

June Average: 9 plants / sub-plot
Dominated by introduced
Disturbance-loving species

Unraked Seeded Plots

June Average: 5 plants / sub-plot
Seeded species sparsely patchy

Soil Data

- Will results be different for different soils?
- Will soil change over time?
- All the soils seem pretty similar…

Next Steps *and assumptions*

- This basic idea seems to work
- Let's order some seed!
- Few resources exist
- Jonny Native Seed
  - http://nurseryguide.com/find_companies/detail/jonny-native-seed
- District volunteers collect seed…?