



Revisiting oak release after three years: Successes, lessons and next steps

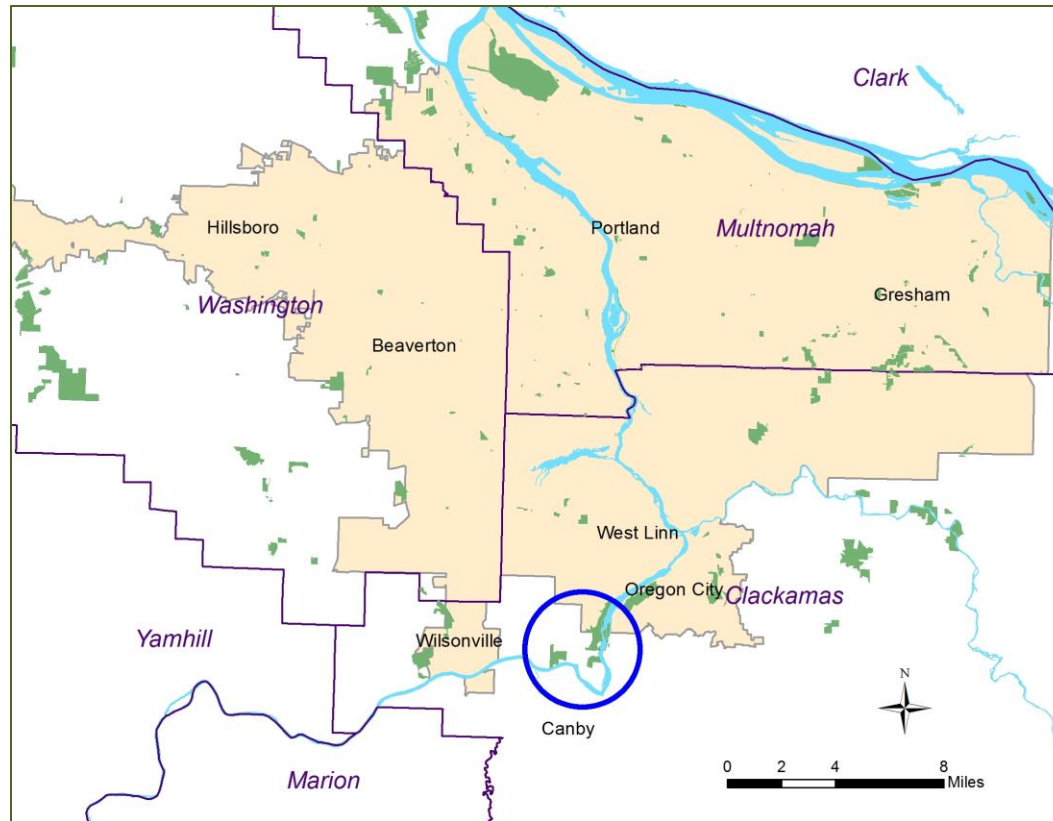


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Metro – Conservation Program

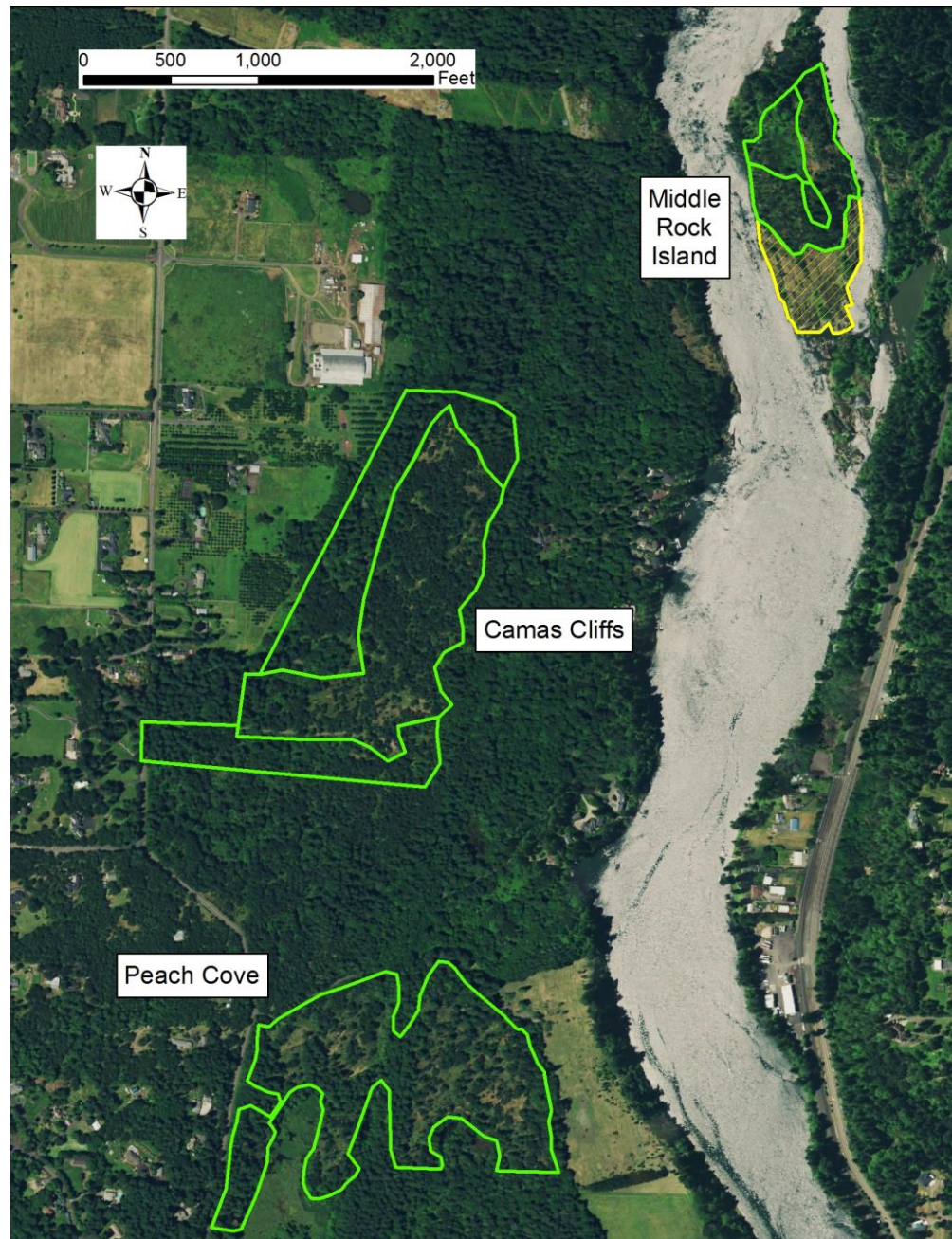


Metro | *Making a great place*

Metro's natural areas



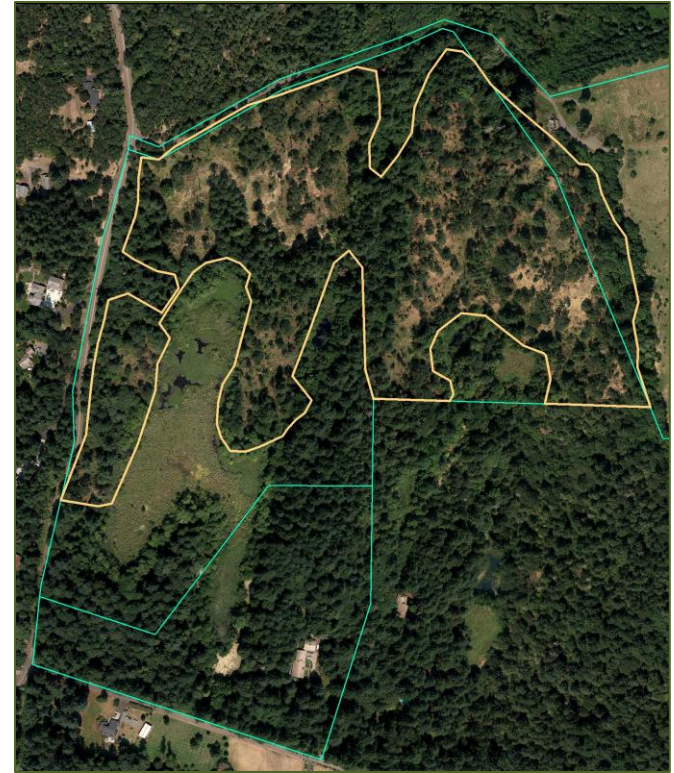
- About 17,000 acres (7,100 ha)
- Parks, boat ramps, natural areas





Thin soils on basalt outcrops

2012 oak release



Key elements

- Removal of competing trees
- Snag creation
- Down wood placed in conifer forest

	Ac. (ha)	Dropped	Snags
Camas Cliffs	50 (20)	52	20
Peach Cove	32 (13)	332	76
Rock Is.	14 (6)	38	45

So what happened next?

- Monitoring
 - Detailed plant monitoring (frequency)
 - 2012-2014
 - Avian point counts pre and post
 - 2008-2014
 - Amphibian egg mass surveys pre and post
 - 2008-2010 and 2012-2014

Prairie-associated plants

- List from The Nature Conservancy (Alverson et al. 2009)
- H and M fidelity to prairies
- Frequency of occurrence & richness
- Goals:
 - very good richness (60+ spp.)
 - good frequency
 - 3+ occurring > 75% quadrats
 - 9+ in > 25% quadrats

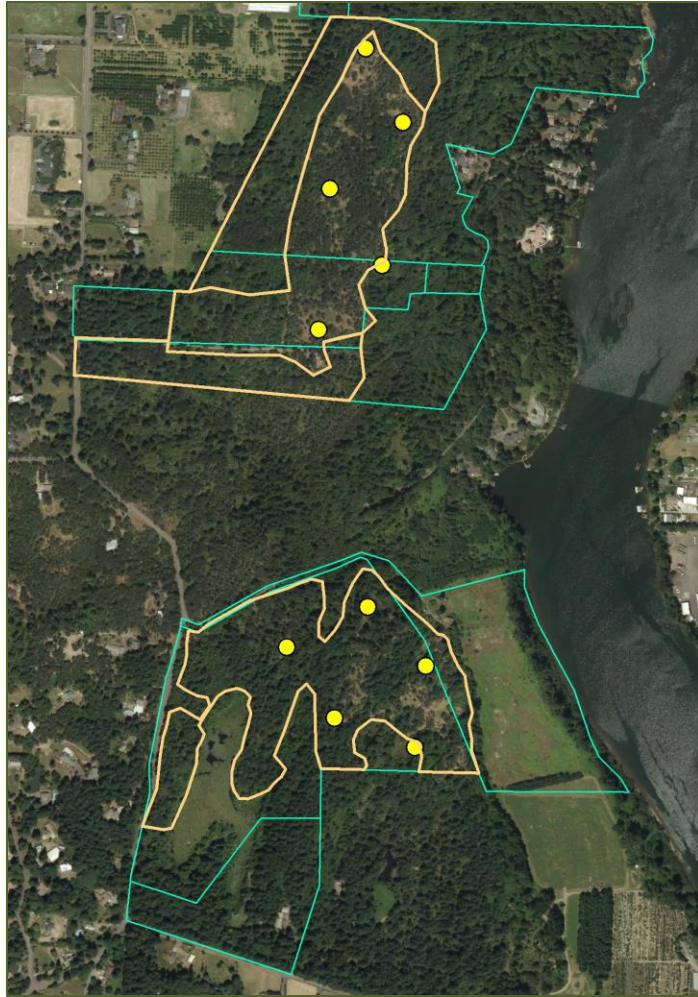
Modest, steady increases

Species	2012 (pre)	2013	2014
<i>Elymus glaucus</i>	17	24	24
<i>Fragaria vesca</i>	14	10	14
<i>Carex inops</i>	3	10	13
<i>Triteleia hyacinthina</i>	2	3	13
<i>Bromus carinatus/sitchensis</i>	14	10	12
many more....			
Totals	21	25	27

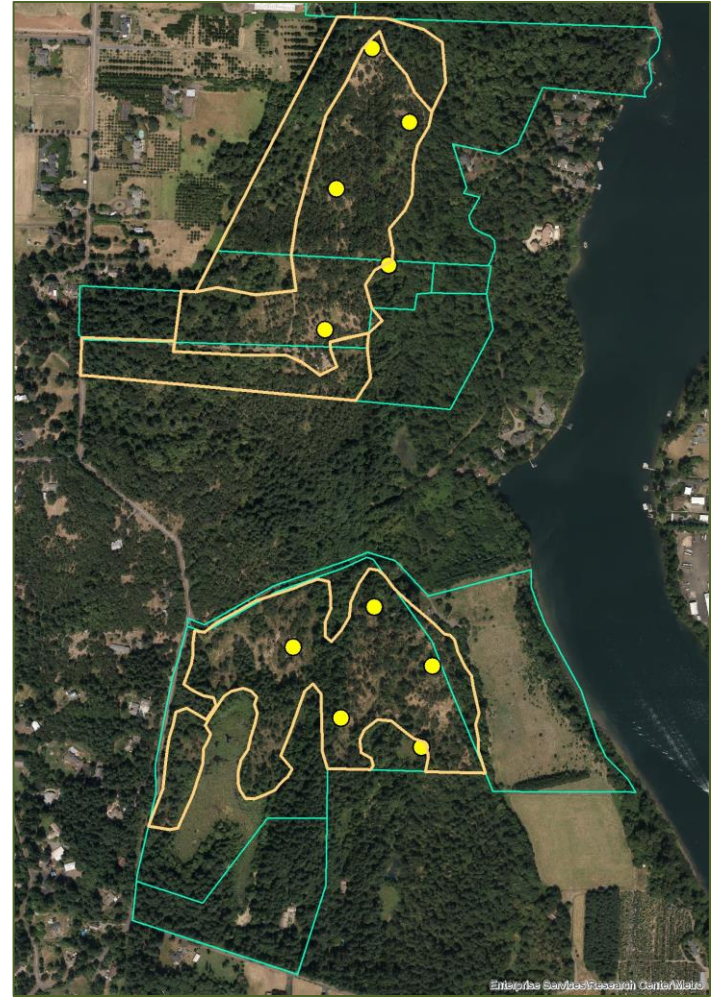
38 H & M spp. in quadrats over 3 years

None with frequency of occurrence > 25%

Avian monitoring

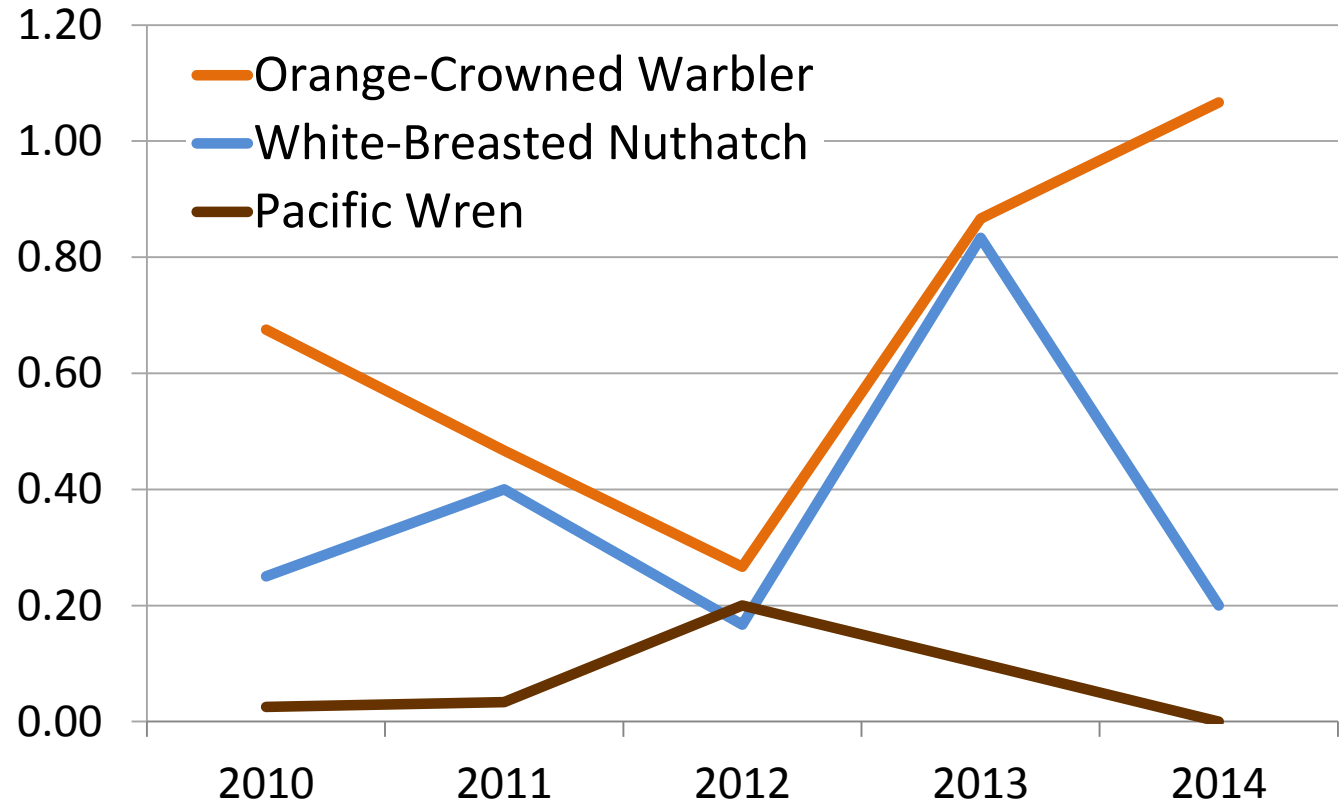


2010



2014

Average detections



Within habitat, within 50 m

Amphibian egg mass



Habitat use, not population size

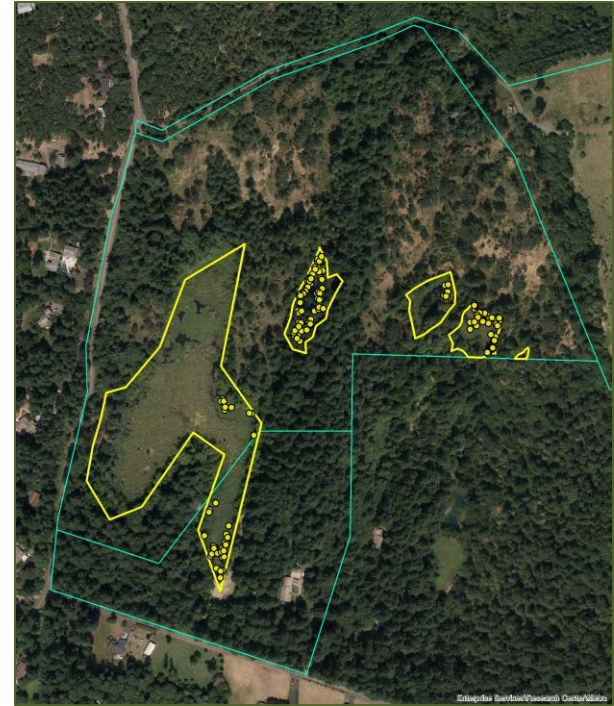
Oak habitat modification a factor?

Red-legged frog

Rana aurora

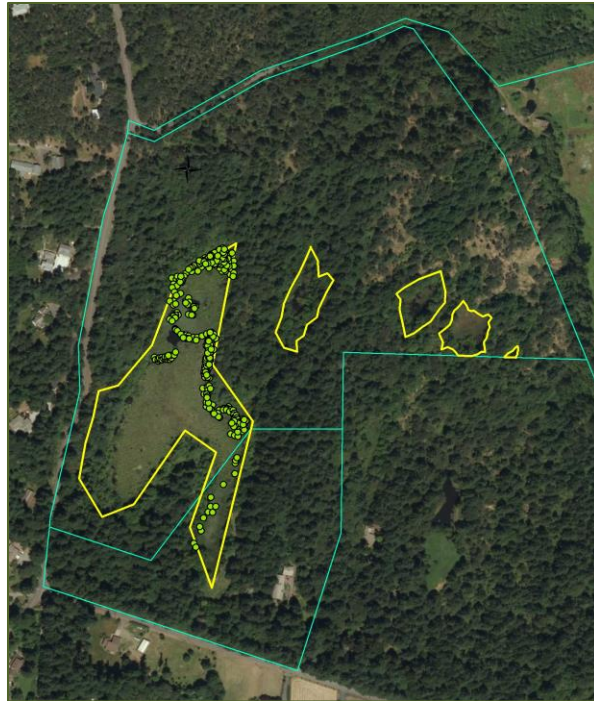


2010



2014

Northwestern salamander *Ambystoma gracile*



2010



2014

Equipment route rehab



Seeded, installed bare-roots, plugs, root fragments
Nearly invisible by 2014

Weed treatments



Spot spray broadleaf weed rosettes

Hand pull *Cytisus scoparius*

Next step: herb layer



Carefully timed fall glyphosate spray (right)

Releasing native forbs



Ongoing grass-specific herbicide treatments
Increasing appearance of native forbs

Another step: shrubs...?

- Prescribed burns not feasible
 - Terrain and access
 - Ex-urban
- Shrubs advancing quickly
 - Exotics controlled annually
 - *Toxicodendron*? *Symphoricarpos*?
- Do shrubs threaten herbaceous layer?
- “Keep open areas open”?



Red-legged frog, *Rana aurora*