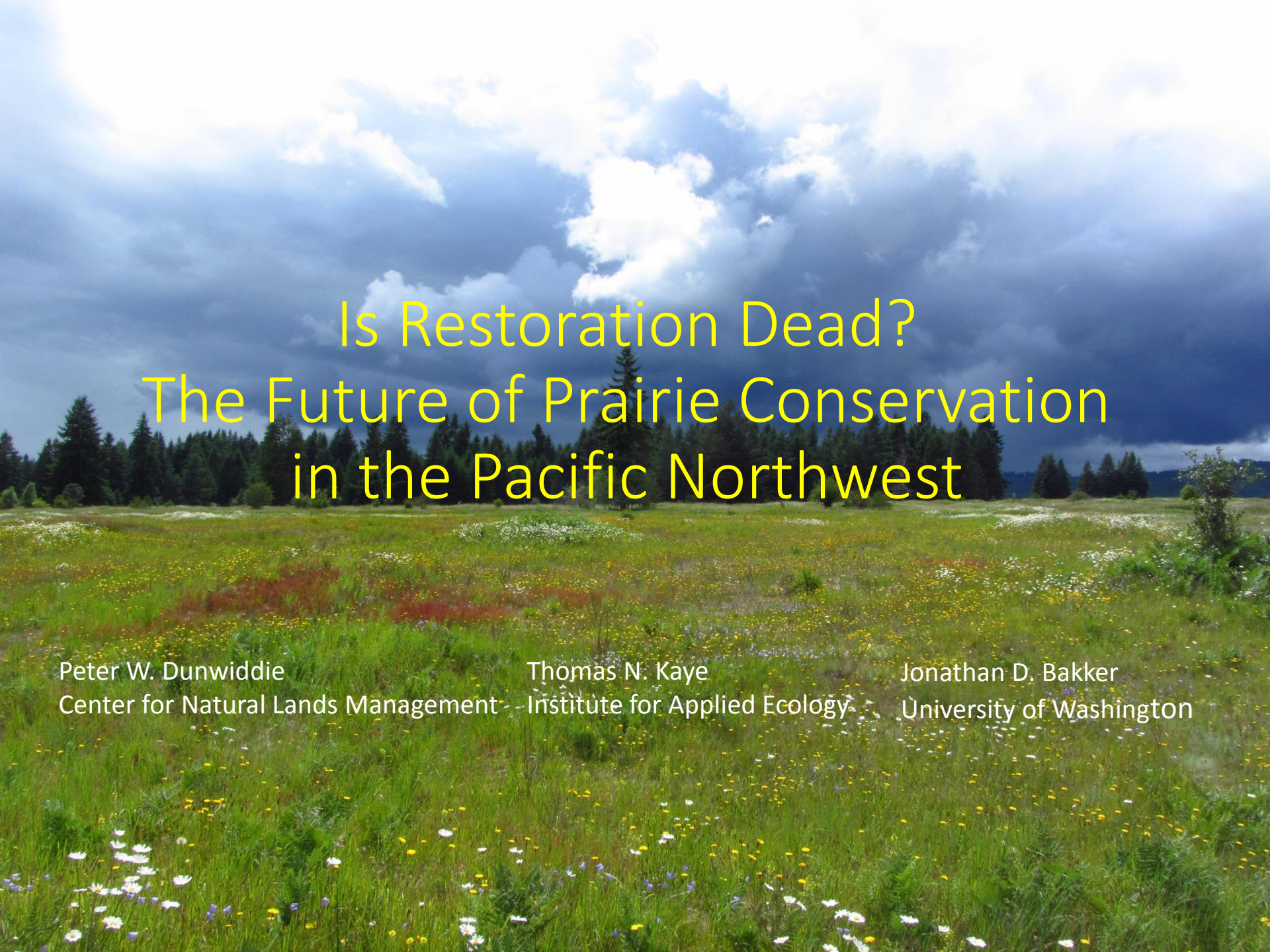




Is Restoration Dead? The Future of Prairie Conservation in the Pacific Northwest

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It depends...



What do we mean by
“restoration”?



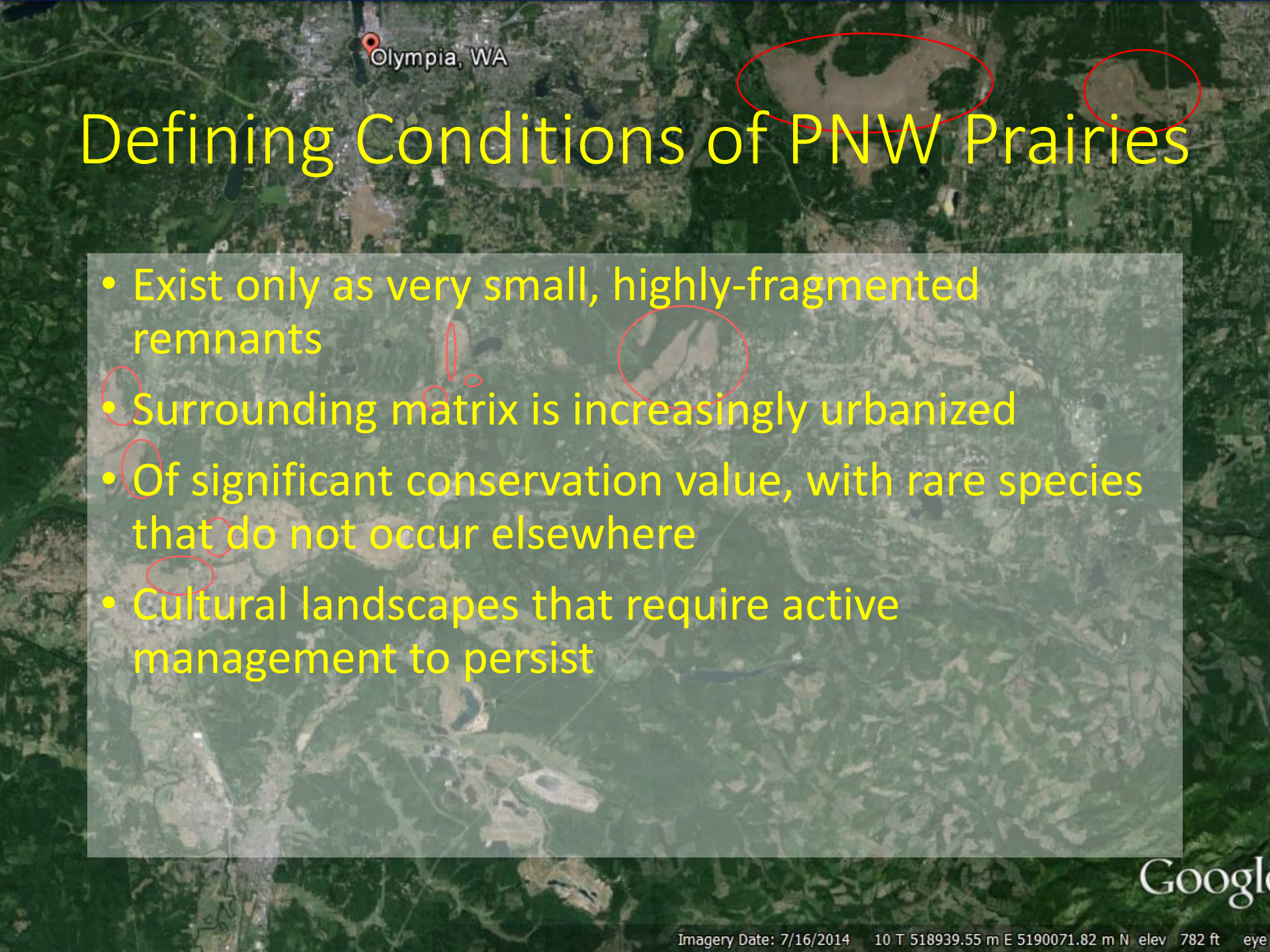
What do we mean by
“dead”?

Current Paradigm

- Restore composition, structure, and ecological functions to conditions and trajectories similar to historical
 - Assumes if restored, ecosystem integrity/health will be improved



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1. Why many current assumptions and restoration practices are obsolete
 2. What is the new restoration paradigm
 3. How should management change

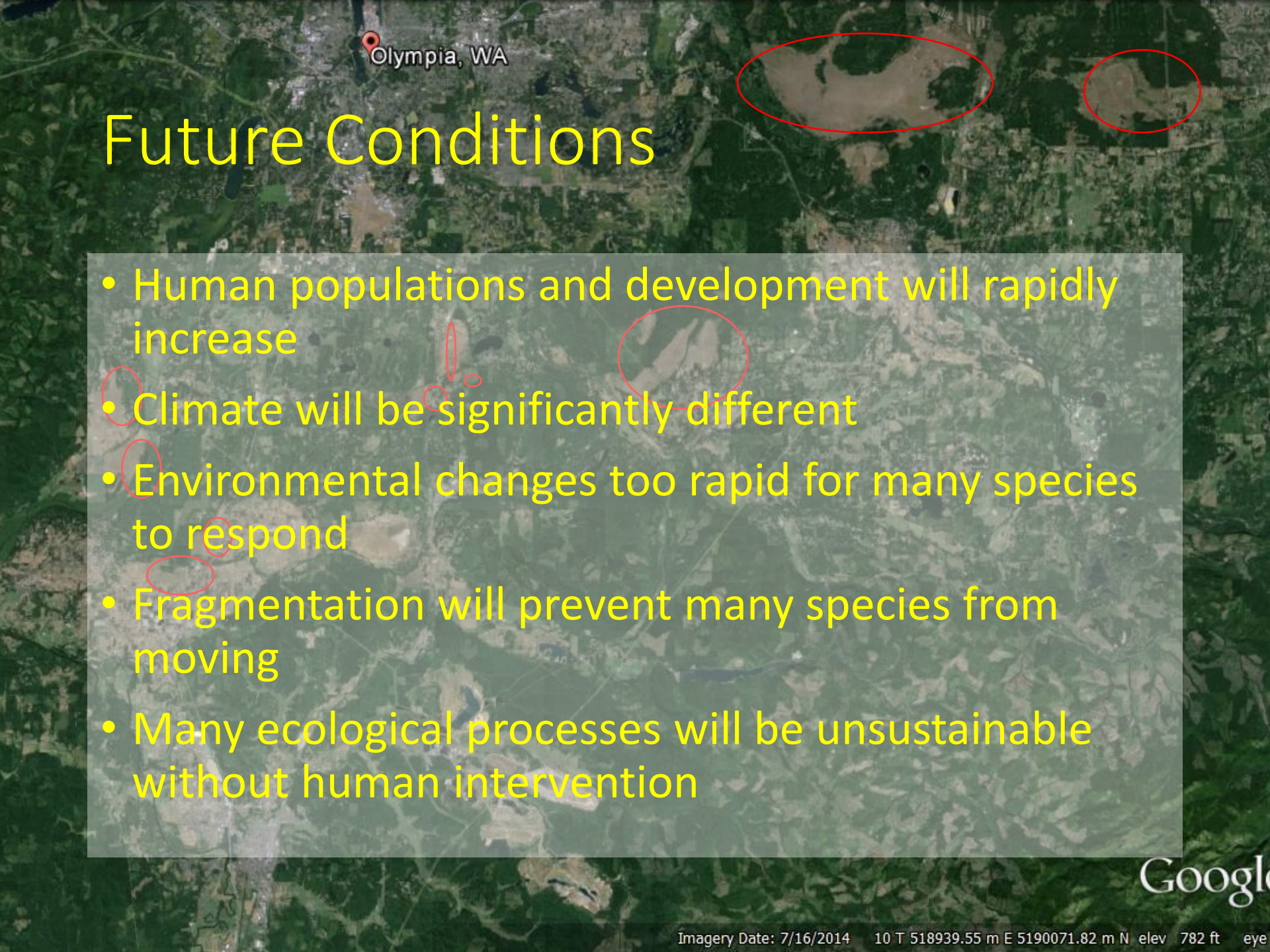
A satellite map of the Olympia, WA area. The map shows a mix of green fields, brown patches, and urban areas. A red pin marks 'Olympia, WA' in the upper left. Several red circles are drawn on the map, highlighting specific areas of land, likely the prairies mentioned in the text. The background is a dark green, textured surface.

Olympia, WA

Defining Conditions of PNW Prairies

- Exist only as very small, highly-fragmented remnants
- Surrounding matrix is increasingly urbanized
- Of significant conservation value, with rare species that do not occur elsewhere
- Cultural landscapes that require active management to persist

Google

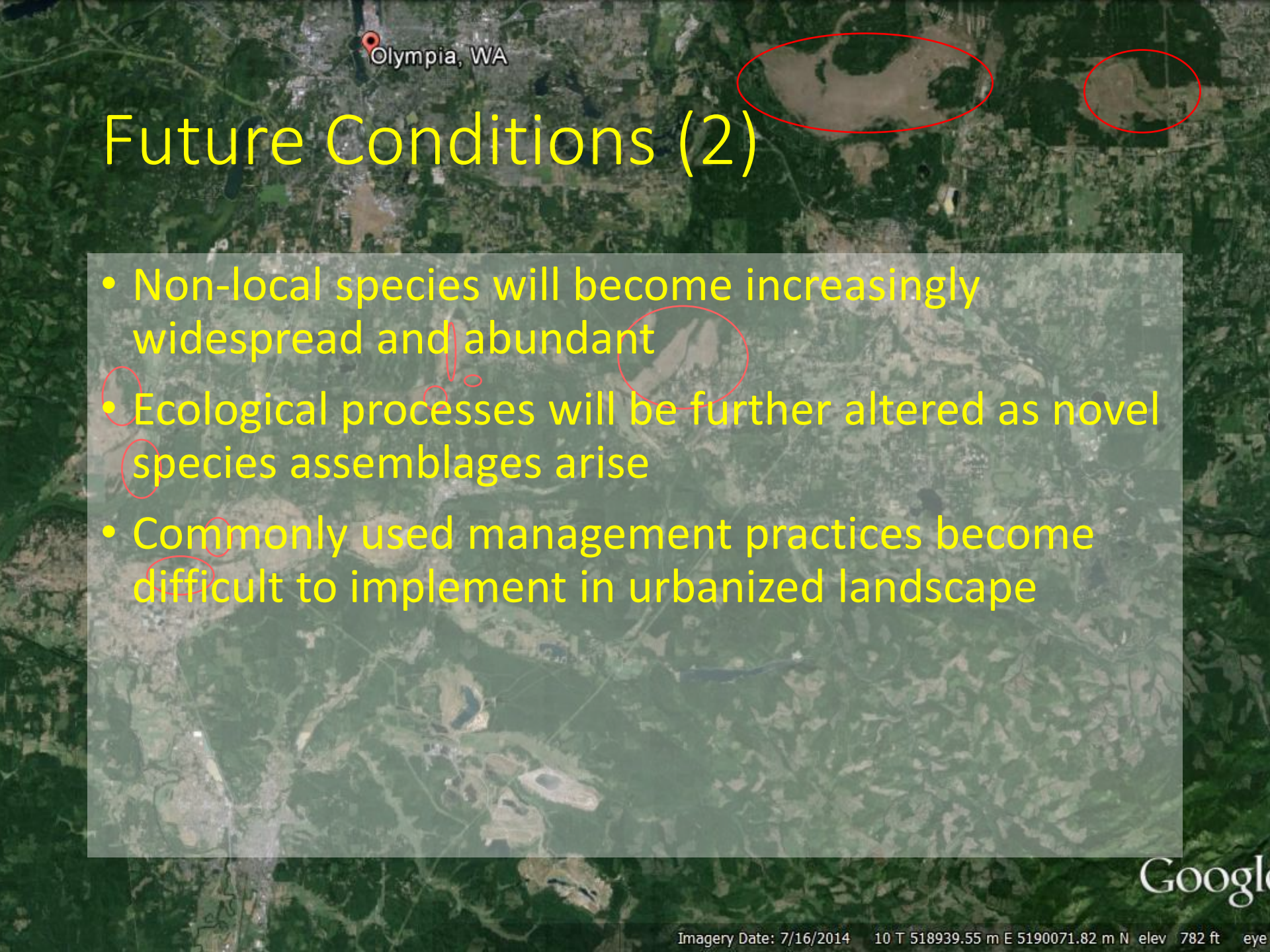
A satellite map of Olympia, WA, showing a mix of urban, agricultural, and natural landscapes. Several areas of wetland or marsh are circled in red, indicating areas of concern or interest. The text 'Olympia, WA' is visible in the upper left corner.

Olympia, WA

Future Conditions

- Human populations and development will rapidly increase
- Climate will be significantly different
- Environmental changes too rapid for many species to respond
- Fragmentation will prevent many species from moving
- Many ecological processes will be unsustainable without human intervention

Google



Olympia, WA

Future Conditions (2)

- Non-local species will become increasingly widespread and abundant
- Ecological processes will be further altered as novel species assemblages arise
- Commonly used management practices become difficult to implement in urbanized landscape

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A new paradigm for highly altered landscapes

- Manage prairies as refugia to prevent extinctions



Moving Forward

- Change how we think about preserve management from all perspectives
 - Genetic
 - Species
 - Community
 - Ecological processes

Genetics

- Create a melting pot
 - Increase genetic diversity
 - Maximize potential for adapted genotypes to survive
 - Introduce genotypes from diverse environments (especially those anticipated to match future conditions)



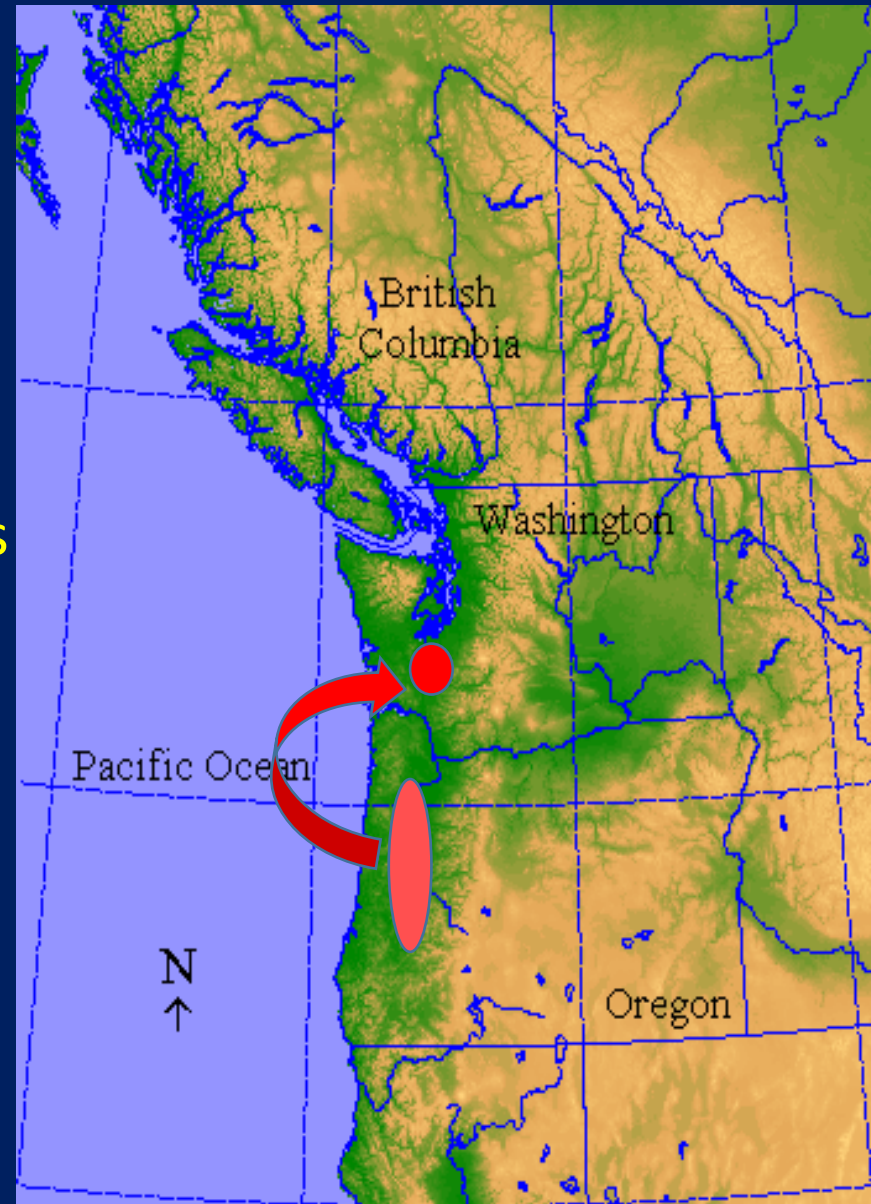
Genetics

Examples:

- In South Puget Sound, include genetic material from Willamette Valley sites

Risks:

- Losing or swamping locally-adapted genotypes



Species

- The more the merrier
 - Maximize species diversity
 - Introduce all species that potentially could grow on a site (especially considering future conditions)
 - Prioritize at-risk species



Species

Examples:

- Introduce rare species from Willamette prairies, such as *Sidalcea nelsoniana* and *Erigeron decumbens*
- Introduce *Asclepias* species for monarchs as they move north

Risks:

- Introduce species that become invasive
- Introduce species that hybridize



Communities

- Novelty is the new norm
 - Less concern for historical precedents
 - Greater concern with resilience
 - Could include natives, non-local natives, and non-natives

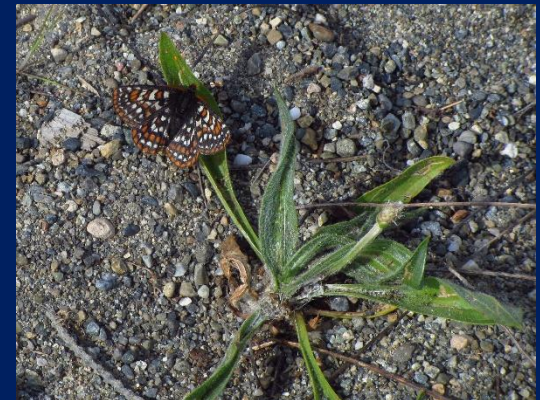
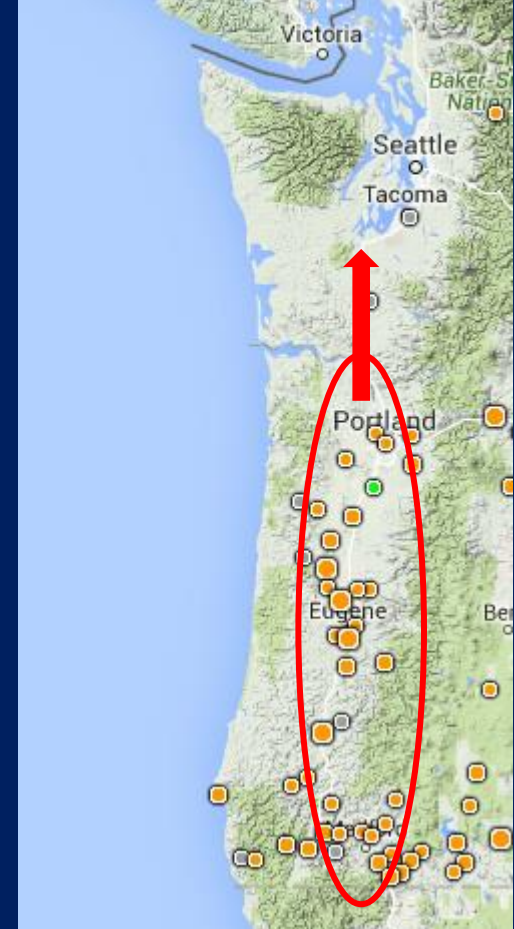
Communities

Examples:

- Non-local species
- Non-natives: *Plantago lanceolata* as a host for Taylor's checkerspots.

Risks:

- Some species might become problematic



Management

- Manage to increase species diversity at all spatial scales
 - Enhance site heterogeneity
 - Reduce species dominance
 - Increase evenness
 - Multiple disturbance regimes
 - Variable types, intensity, frequency, scale
 - Seeding



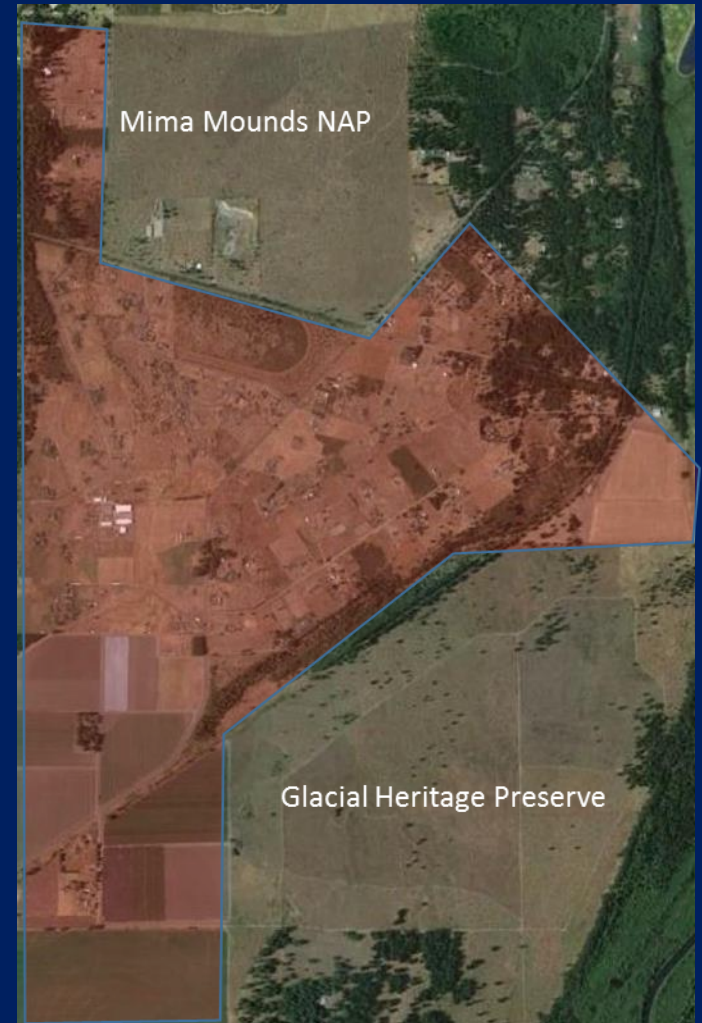
Management (2)

- New opportunities for expanding prairies
 - Longer, hotter droughts
 - Large wildfires
- New approaches
 - Mowing
 - Livestock grazing
 - Herbicides



Management (3)

- Enhance the matrix to increase effectiveness of refugia



The Takeaway

1. Need for new paradigm
2. What should it be
3. How to make it happen
4. Question conventional practices
5. Experiment with new approaches
6. Be willing to take risks, learn how to minimize them

“Our mission is to explore strange new worlds, to seek out new life, and to boldly go where no (hu)man has gone before.” – Capt. James T. Kirk

