THE PRAIRIES EDGE: UNUSUAL VEGETATION OF THE SOUTHEAST OLYMPIC PENINSULA.

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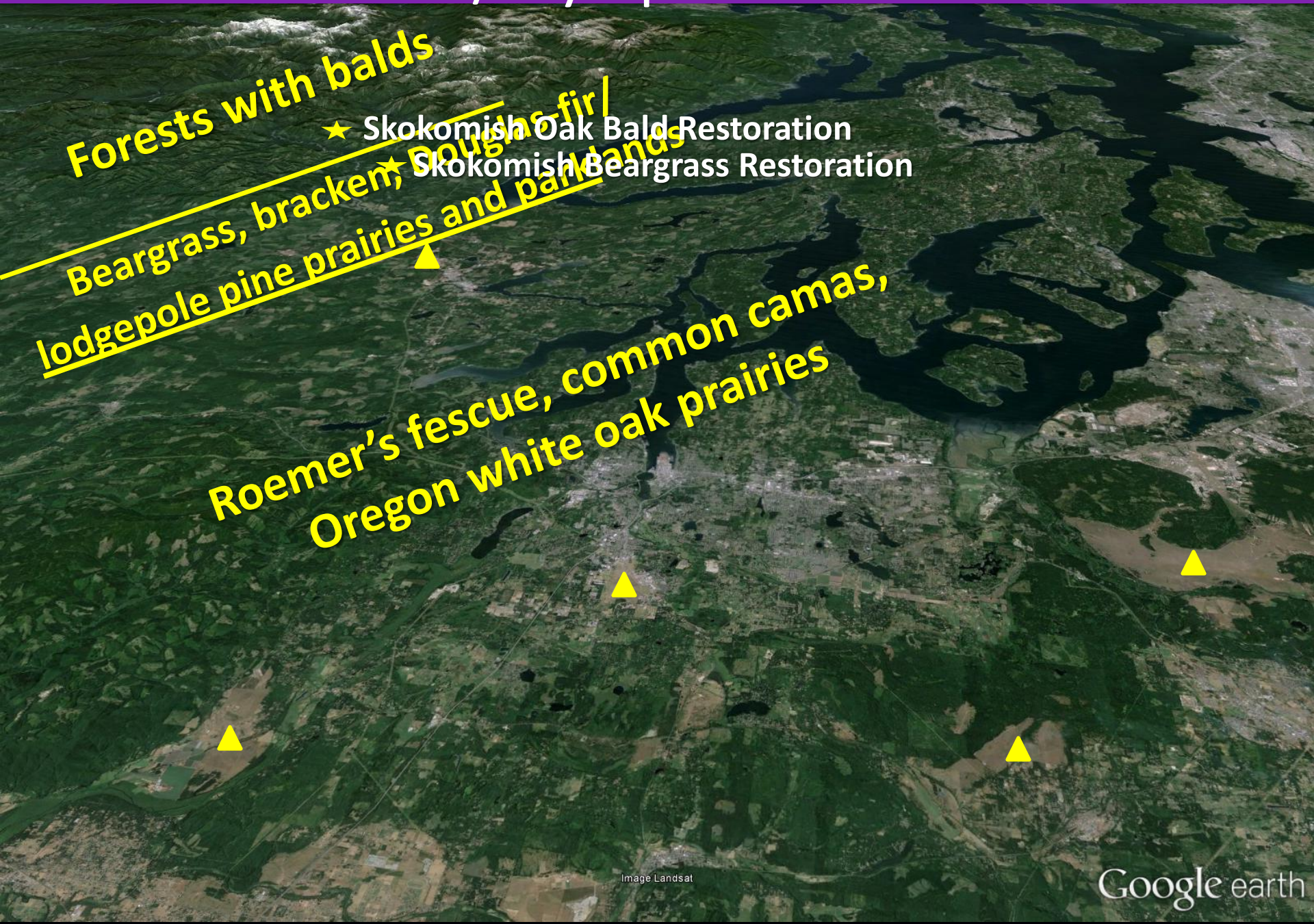
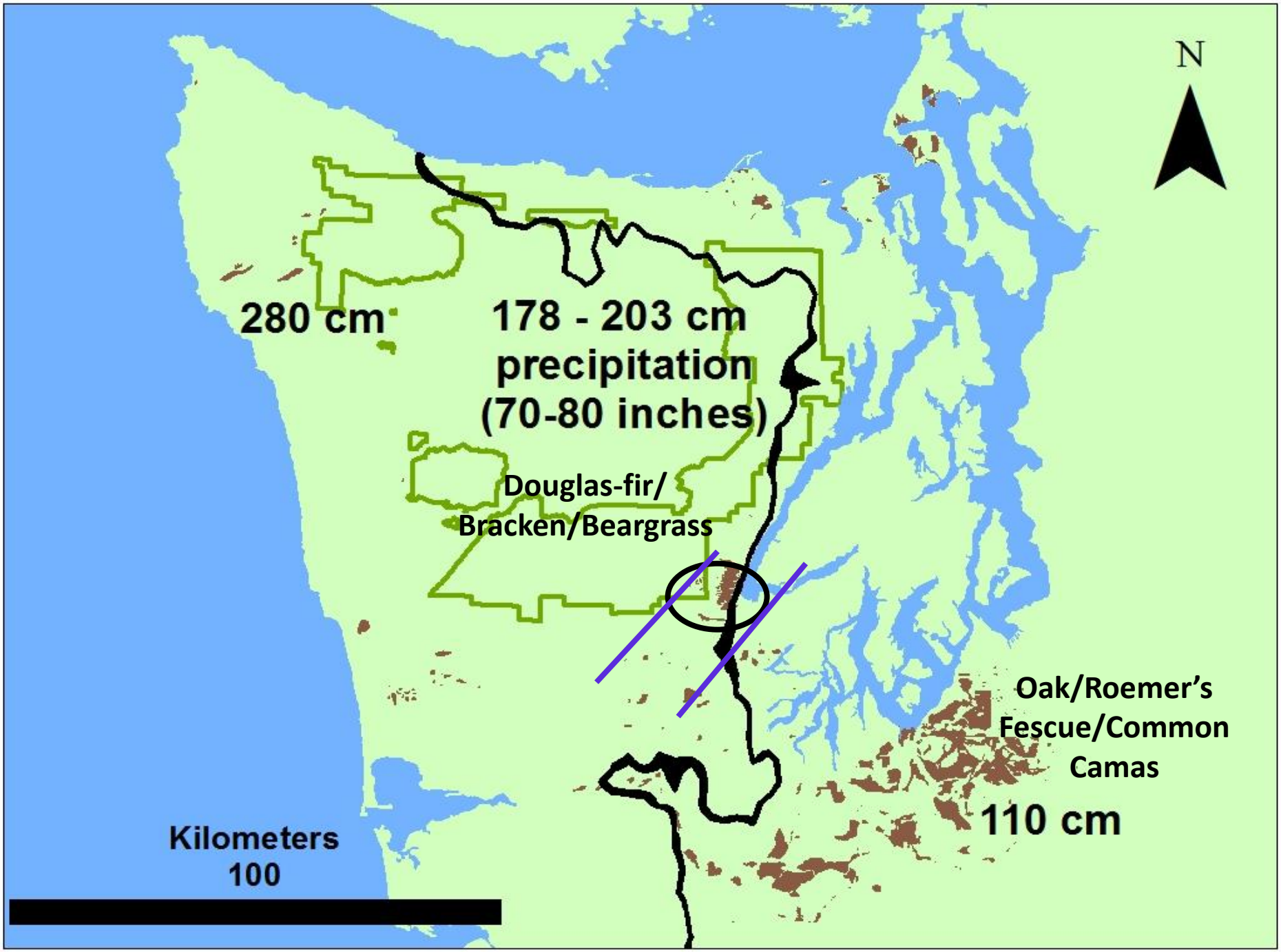
Olympic National Forest

October 26, 2015

South Sound/Olympic Prairie Transition



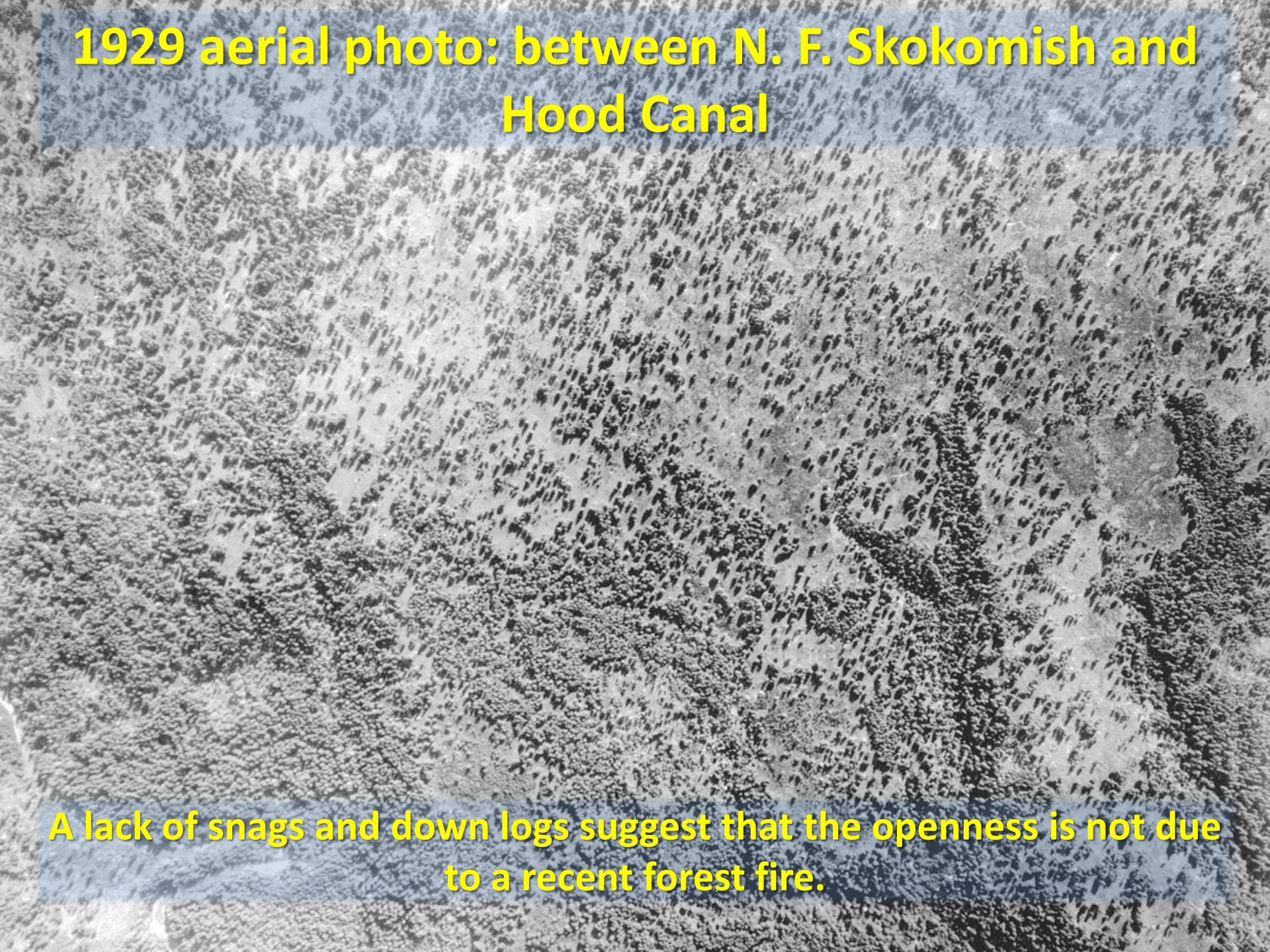

N
280 cm
178 - 203 cm
precipitation
(70-80 inches)
Douglas-fir/
Bracken/Beargrass
Oak/Roemer's
Fescue/Common
Camas
110 cm
Kilometers
100

- At Skookum Bay, we found Mike Simmons living. He sent his oldest boys to show us the Satsop Prairies. From the head of the Skookum we *traveled west through open timber* and almost level country to the Satsop.
  - P. H. Roundtree in 1861 (Trosper 1985).

- Skookum Bay = Oakland Bay at Shelton, WA.
- The Satsop prairies were near Matlock (15 miles west of Shelton).

(Jones, 1936. A botanical survey of the Olympic Peninsula, Washington)

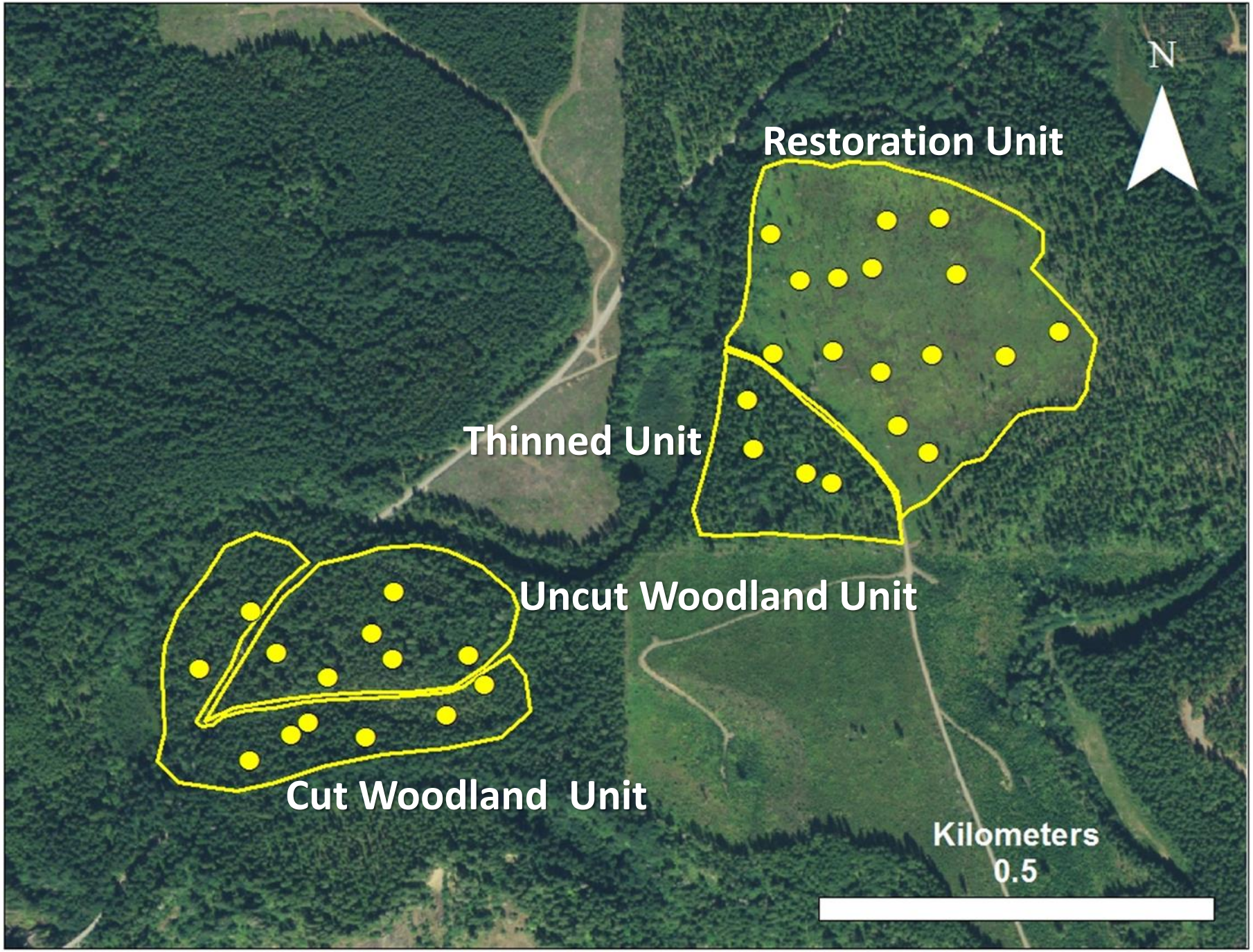
On the dry gravelly soils in parts of Mason County where the Douglas fir has already completed the first or invading stage of the sere, and is well on its way to the second, or competitive stage, there are open park like forests of fir and lodgepole pine, the latter soon outstripped and gradually replaced by the former, in which the trees are distant and well spaced. In this association there is a remarkable assemblage of subdominant ericaceous shrubs, such as salal, three species of huckleberry, rhododendron, manzanita, kinnikinnick, and the hybrid of the two. Usually these occur together in close proximity and are often accompanied by a ninth member of the same family, the madrona…. But the most surprising of all is the pine lily (beargrass) occurring scattered among the lodgepole pine and fir trees.

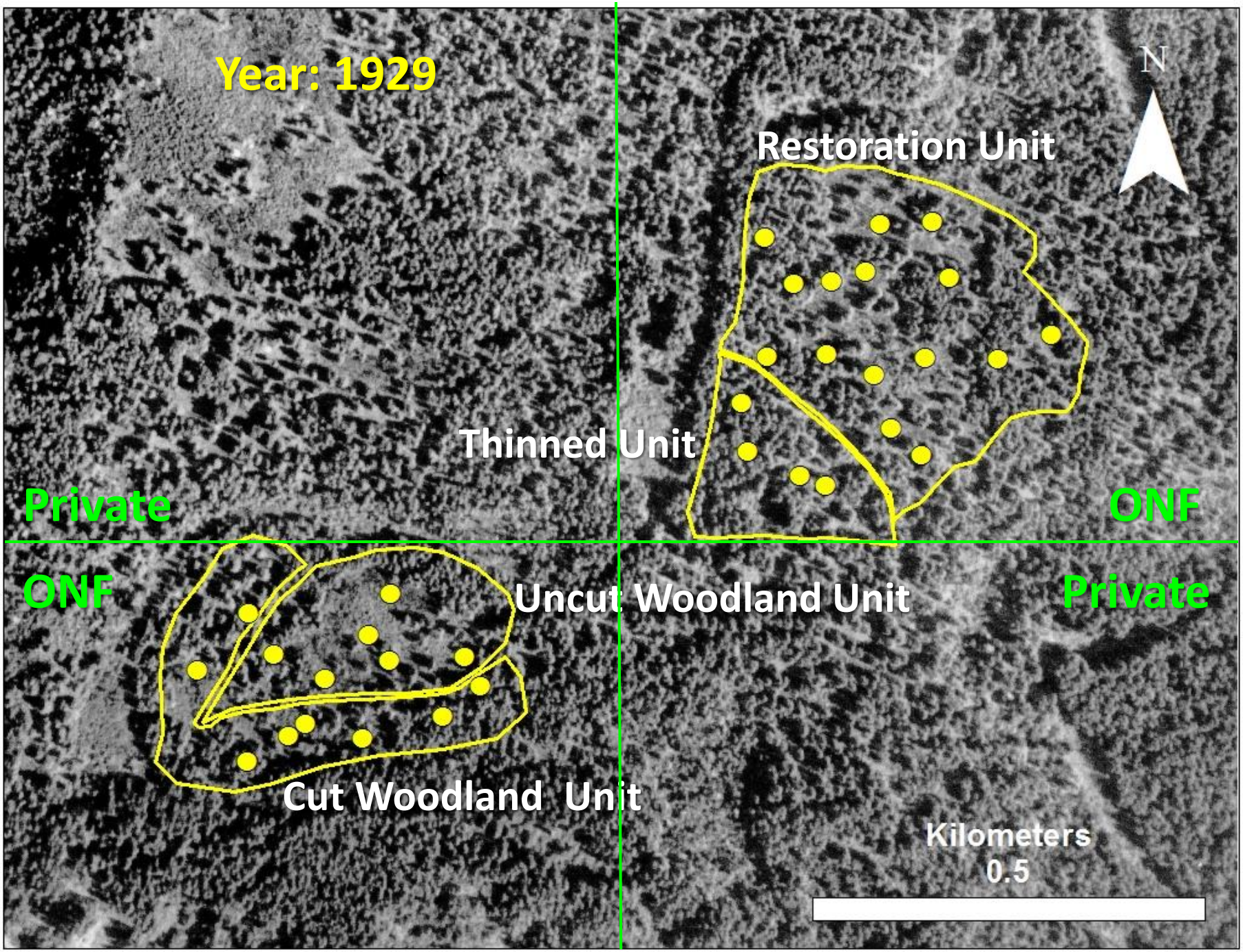

1929 aerial photo: between N. F. Skokomish and Hood Canal
A lack of snags and down logs suggest that the openness is not due to a recent forest fire.

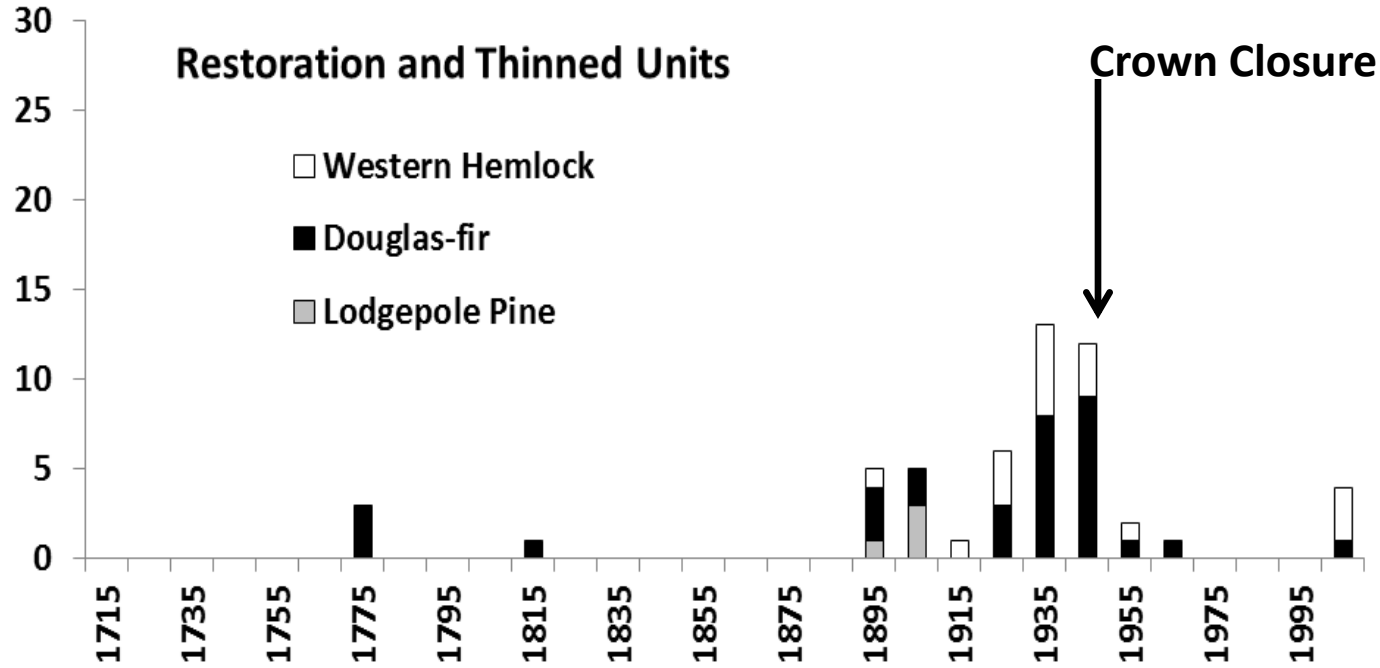

How do we determine the original structure and composition?
• Seek out historical references.
• Dendrochronological studies of invading and legacy trees.
• Seek out remnant patches of “prairie” vegetation.

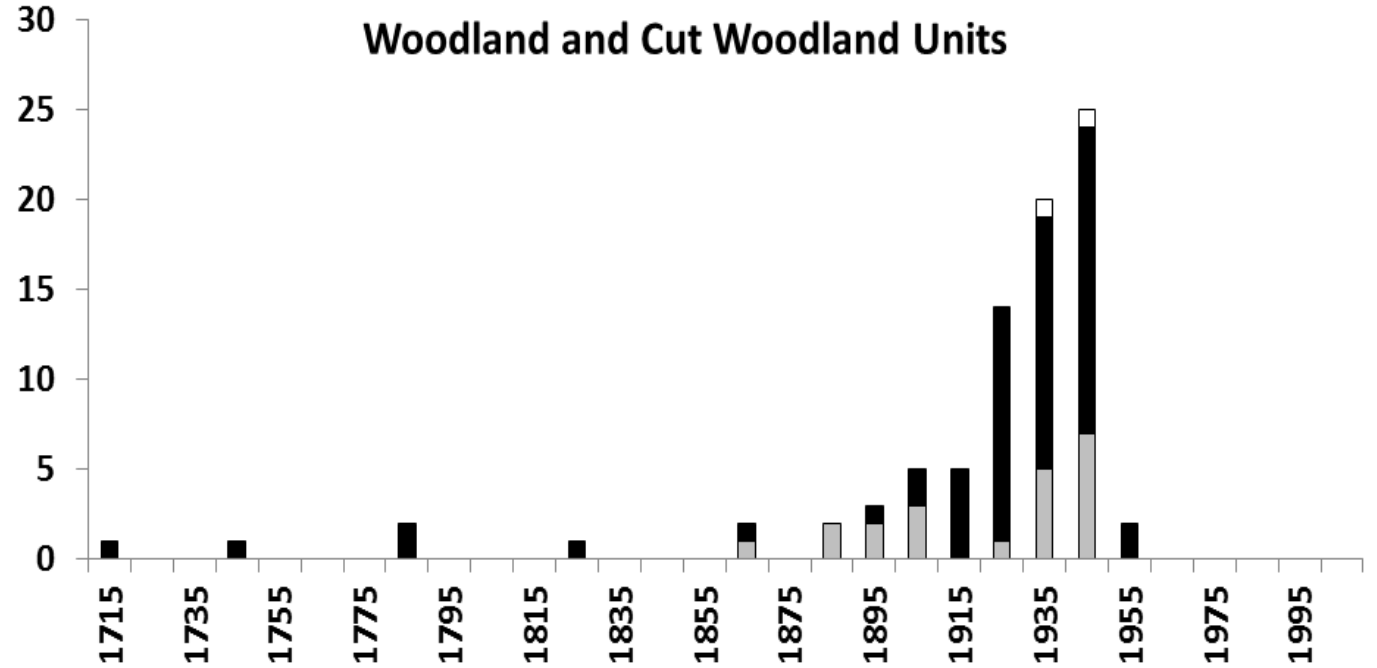
Partial Plant List for Eells Hill

Castilleja hispida	harsh paintbrush
Eriophyllum lanatum	Oregon sunshine
Erythronium oregonum	Oregon fawnlilly
Fritillaria lanceolata	mission bells
Lupinus albicaulis	sickle-keeled lupine
Pteridium aquilinum	bracken fern
Ranunculus occidentalis	western buttercup
Viola adunca	hook violet
Arctostaphylos uva-ursi	kinnikinnick
Berberis aquifolium	shining Oregongrape
Arctostaphylos columbiana	hairy manzanita
Lotus aboriginus	aboriginal lotus
Vaccinum caespitosum	dwarf huckleberry
Danthonia spicata	poverty danthonia
Xerophyllum tenax	beargrass


N
Restoration Unit
Thinned Unit
Uncut Woodland Unit
Cut Woodland Unit
Kilometers
0.5


Year: 1929
N
Restoration Unit
Thinned Unit
Private
ONF
ONF
Uncut Woodland Unit
Private
Cut Woodland Unit
Kilometers
0.5





- 60+ years of shade.
- Most prairie species have been shaded out.
- Beargrass does not reproduce in shade.
- Beargrass is vegetatively shade tolerant, but cannot last forever.

Restoration Goals

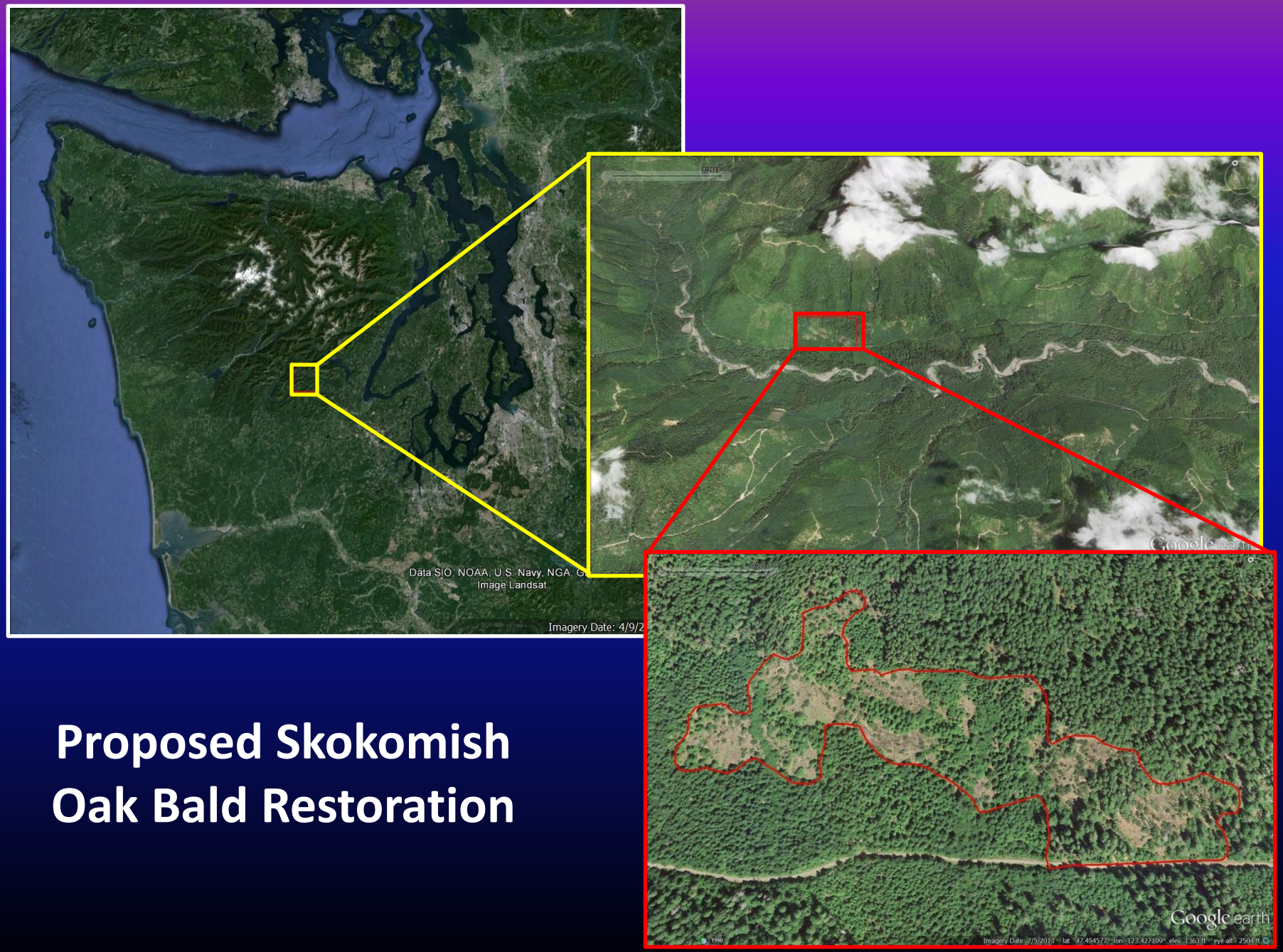
- Re-establish savanna/woodland structure (around 24 trees/acre or 60 trees/ha).
- Reduce dominance of salal to provide for greater diversity.
- Re-establish species currently missing from the site, but believed to have been present based on nearby areas (increase the native diversity).
- Re-introduce fire through a prescribed burn program to help maintain the open structure and flora (3-10 year cycle to be determined).
- Maintain a healthy, reproducing population of beargrass.

First Steps: 2002/2003 thinned and burned. 2 trees were left for each old-growth stump. Fuels were heavy and dry. The fire was hot and killed most of the leave trees.

Skokomish beargrass restoration unit, September 23, 2015 (day of 2nd burn).

The 2015 fire was much cooler than the 2003 fire.

We are currently assessing fire effects. 80% of the area burned, 20% in large and small patches did not. All legacy trees and some young trees survived.



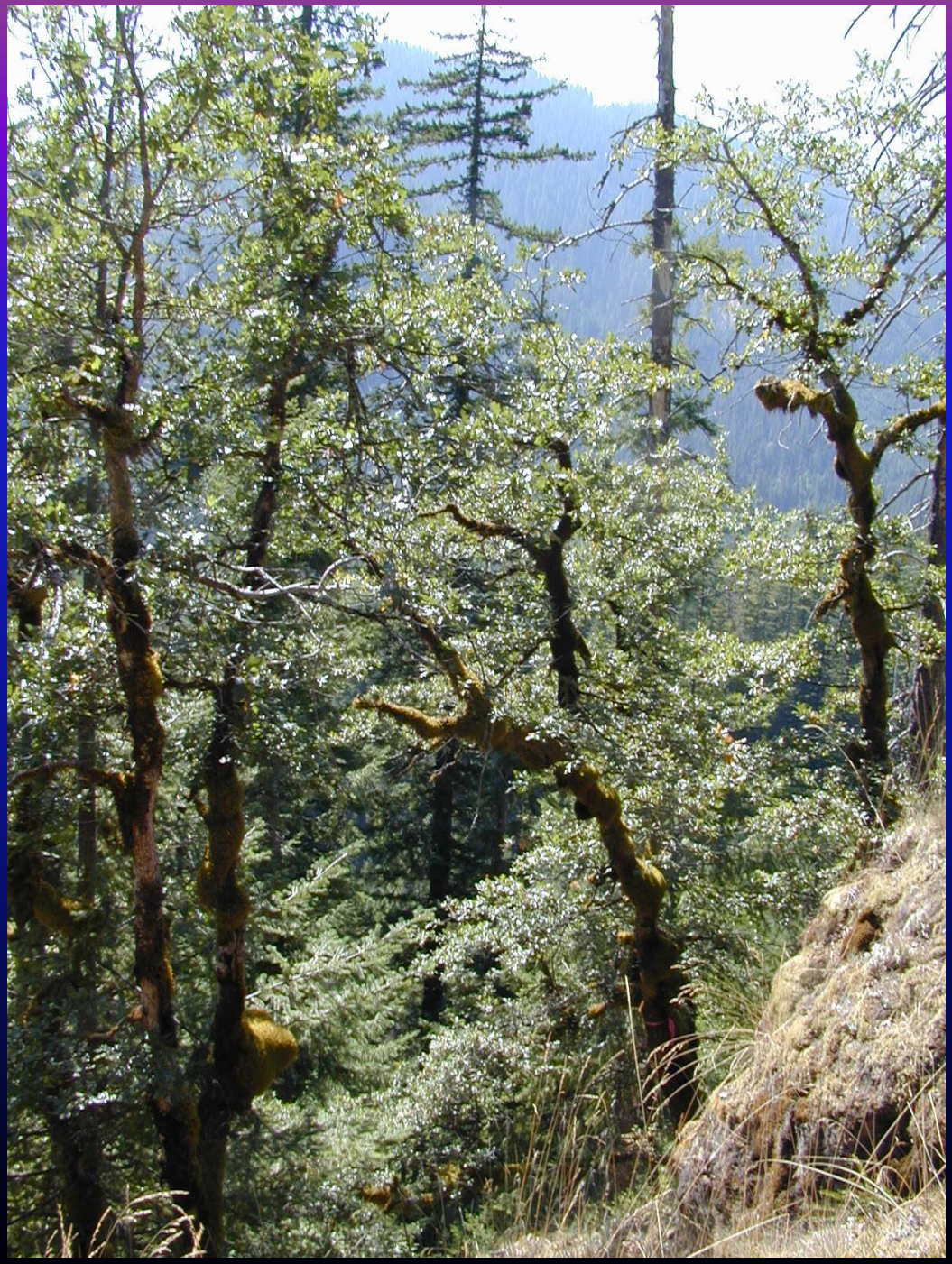
Proposed Skokomish Oak Bald Restoration

Individual oak trees are visible in aerial images (circles). The brown areas are a prairie-like flora that includes (among others) Roemer's fescue, California oatgrass, Oregon sunshine and Indian's dream (*Aspidotis densa*).

- Steep rocky balds surrounded by deeper soils supporting conifers. Douglas-fir is invading.
- Natural mean fire return interval is ~ 177 years. Probably no anthropogenic burning.
- Conifer stand to the west and below harvested in mid-80's, burned, and replanted.
- Conifer stand above is ~177 years old.

Management Goals

- Preserve the Oregon white oak and bald flora by reducing competition from Douglas-fir within the balds.
- Reduce shading by cutting or girdling conifers within ~150 foot radius especially to the south and west of balds.



Summary

- Potential prairie vegetation varies over environmental gradients.
  - In the past there was a greater diversity of prairie-like structure and flora than currently exists.
- Skokomish Beargrass Restoration
  - Underway—thinned and burned twice
  - Currently assessing fire effects to guide timing and intensity of future prescribed fires.
  - Prairie species introductions are planned.
- Skokomish Oak Bald Restoration
  - In the planning stage.
  - Currently considering limited conifer removal to promote oak and the bald flora.


Thank you!
Questions?

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As the South Puget Sound prairies graded into the forests of the Olympic Peninsula they took on unique floristic and structural characteristics. Oaks gradually disappeared as the conifers became more aggressive in zones of higher precipitation and less frequent fire history but persisted on isolated steep, dry, south facing rocky balds in the Skokomish River watershed. The prairie-to-forest transition graded through approximately16,000 ha of Douglas-fir savannas and woodlands with beargrass understories in which more familiar prairie dominants (Roemer's fescue and common camas) were largely absent. Euro-Americans converted much of this open landscape to farms and towns and ended regular anthropogenic burning permitting much of the remaining open area to grow into forest. We characterized the pre-contact structure and flora of these woodlands and their succession into forest to inform current and future restorations. In 2003 the Olympic National Forest undertook a restoration of a 12 ha portion of this former woodland that overlapped the National Forest boundary. We evaluate the effects of this restoration treatment which comprised thinning followed by a prescribed burn and subsequent vegetation succession since 2003. The Olympic N.F. plans further restoration with additional prescribed burns followed by reseeding with native species in this and possibly nearby areas, as well as restoring remnant oak balds within the watershed. The oak bald restoration will focus on maintaining gaps and open crown conditions by girdling or removing competing conifers and possibly planting oak seedlings, as natural regeneration is lacking.

Mima Prairie by Paul Kane (1847)