

Washington Needlecast Working Group

Advisory team: Brett Morrissette, Florian Deisenhofer, Jim Hargrove, Dan Omdal, Rachel Brooks, Adam Carson

T3 sub-study on alternatives to coastal Douglas-fir rotations

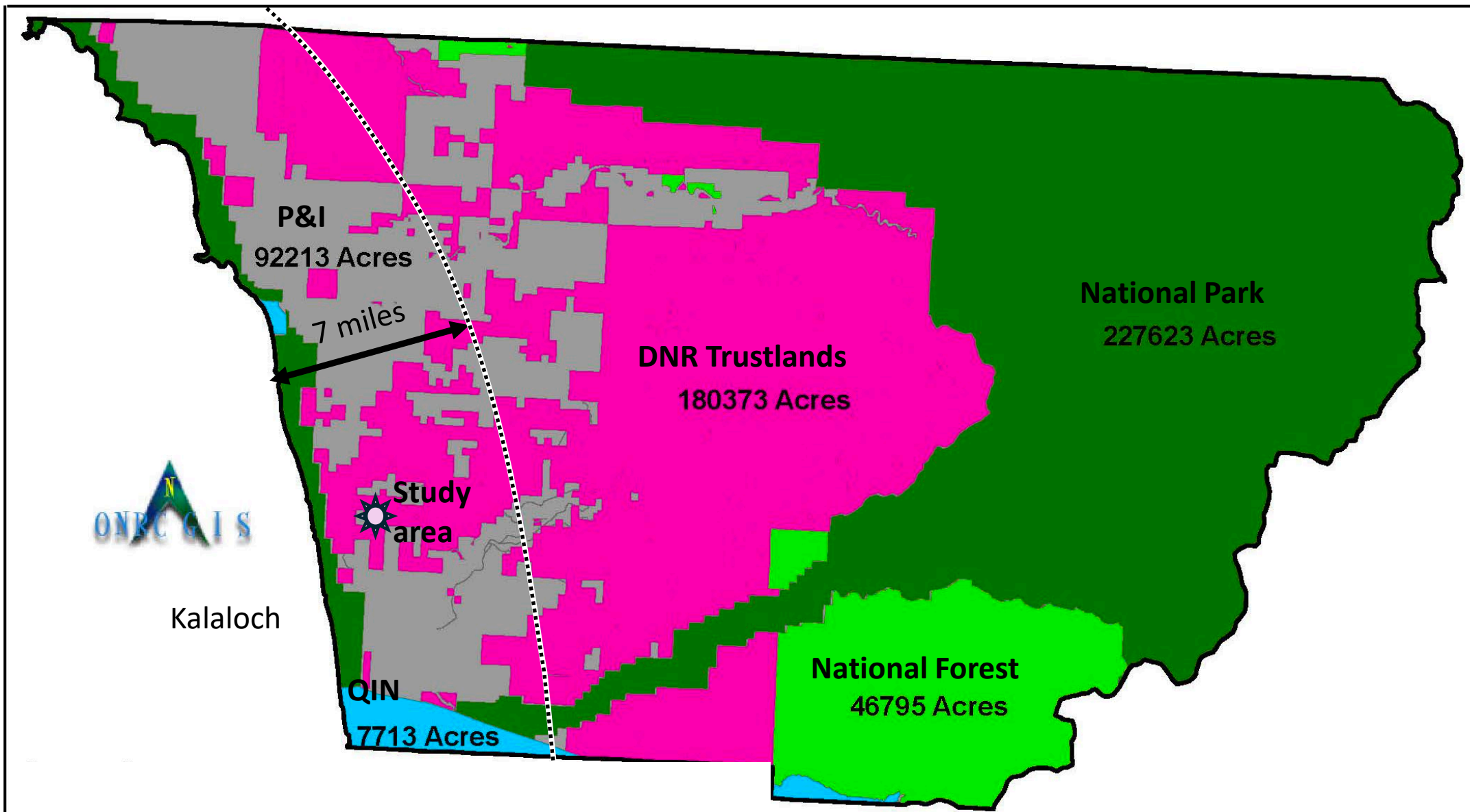
Study purposes

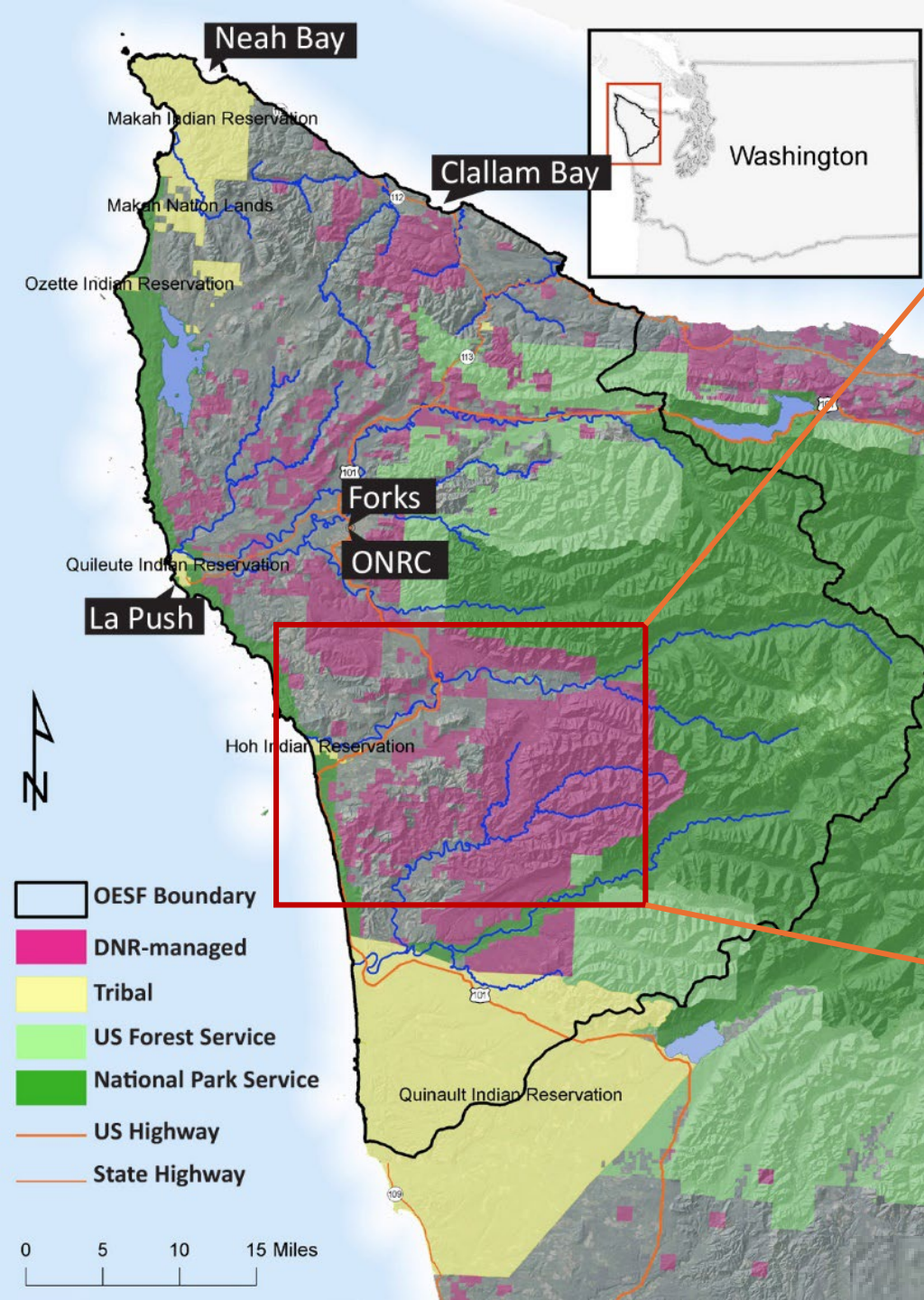
- Help evaluate recent DNR decision not to plant Douglas-fir within 7 miles of the outer Washington Coast (*major success of OSU SNCC & WA Working Group*)
- Find a better way to demonstrate Needlecast effects and alternatives to Douglas-fir to other landowners (*via operational trials*)
- Learn more about controlling factors

Thanks to:

- SNCC
- Matt Perry (DNR Silv)
- Webster Nursery
- QIN
- T3 Pis

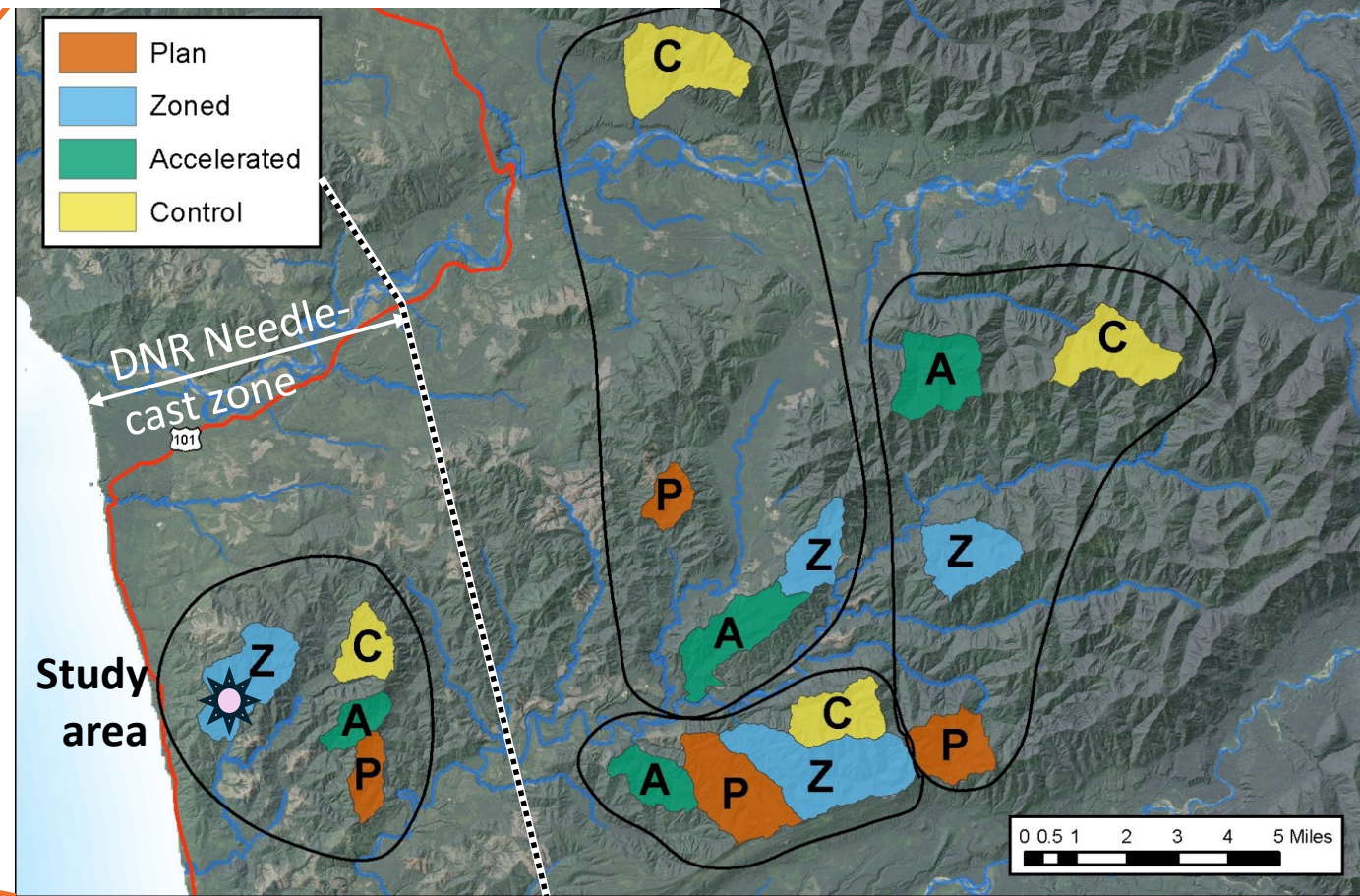
Trial setting Western Jefferson County; Olympic Experimental State Forest (DNR Trustlands)





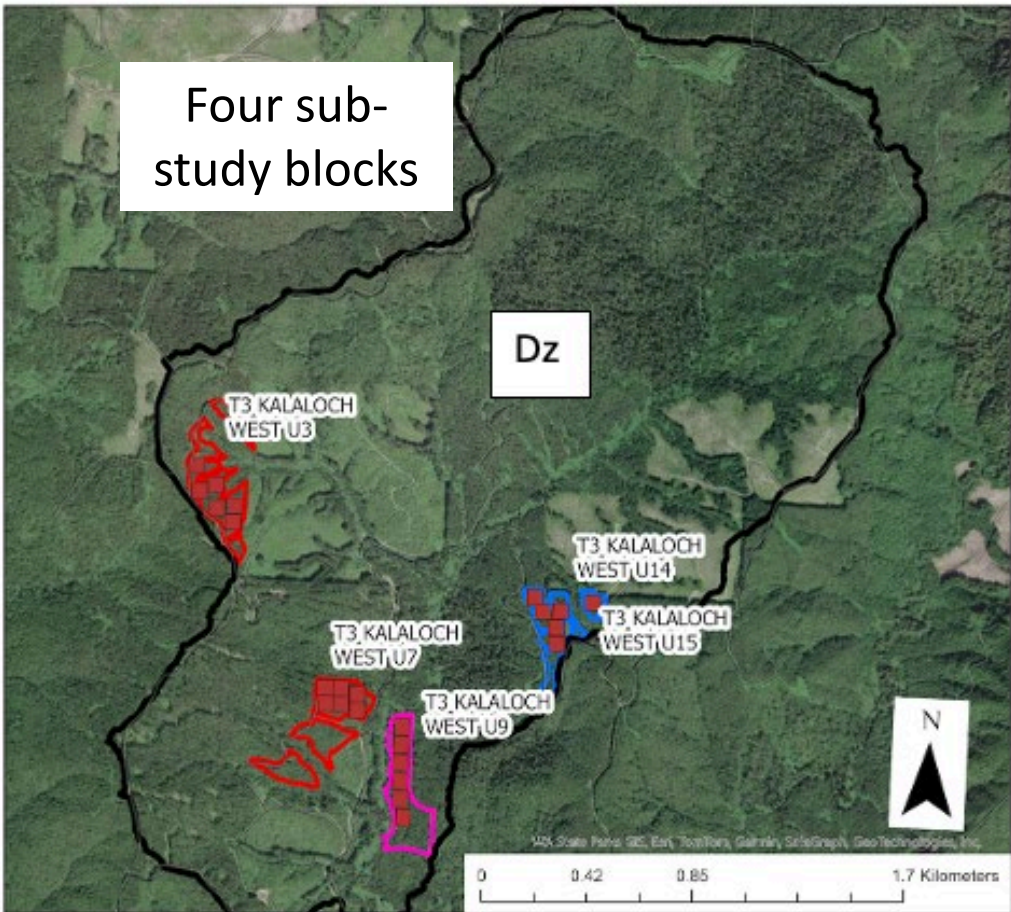
Trial Setting T3 Watershed Experiment

Spatial Design

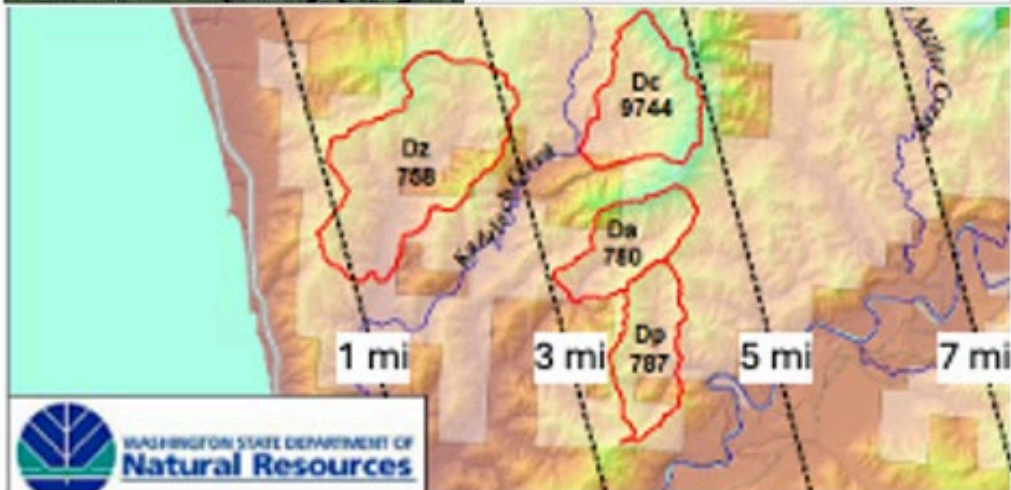


4 blocks of 4 watersheds
20,000 acres (2k ac harvested)
Random assignment of mgmt. strategies

Four sub-
study blocks



Each of the
4 blocks will
have the 6
planting
treatments
assigned at
random



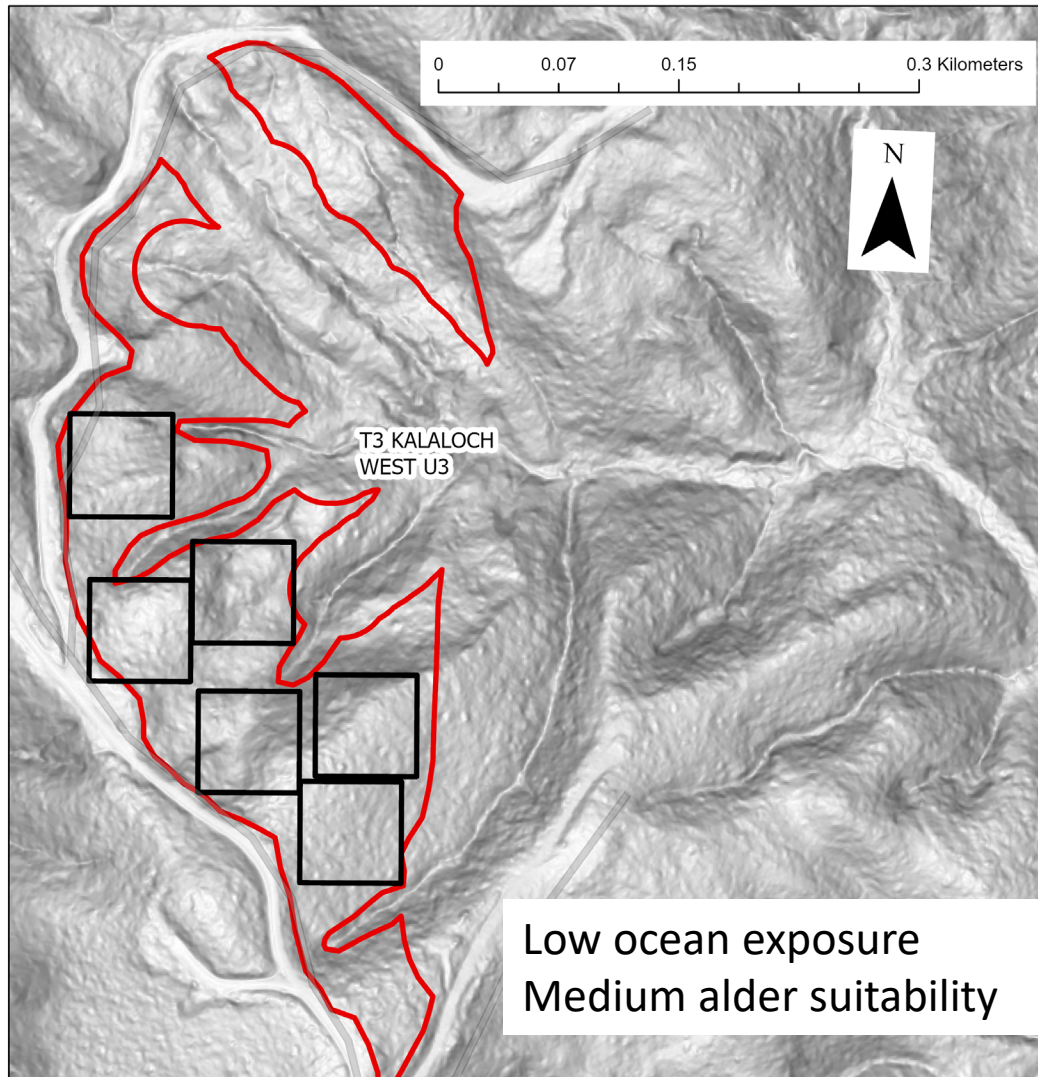
Alternatives to growing Douglas-fir where Needlecast is an issue

- Douglas-fir historical standard (control as cultivated in areas without Needlecast)
- Douglas-fir, Burnt Woods seed source (less affected by Needlecast?)
- Western hemlock standard (new DNR normal close to Coast)
- Western hemlock improved stock (Quinault nursery)
- Red alder standard (as provided by DNR nursery)
- Sitka spruce (Weevil-resistant as provided by DNR nursery)

Responses to be tracked (on 1-acre plots)

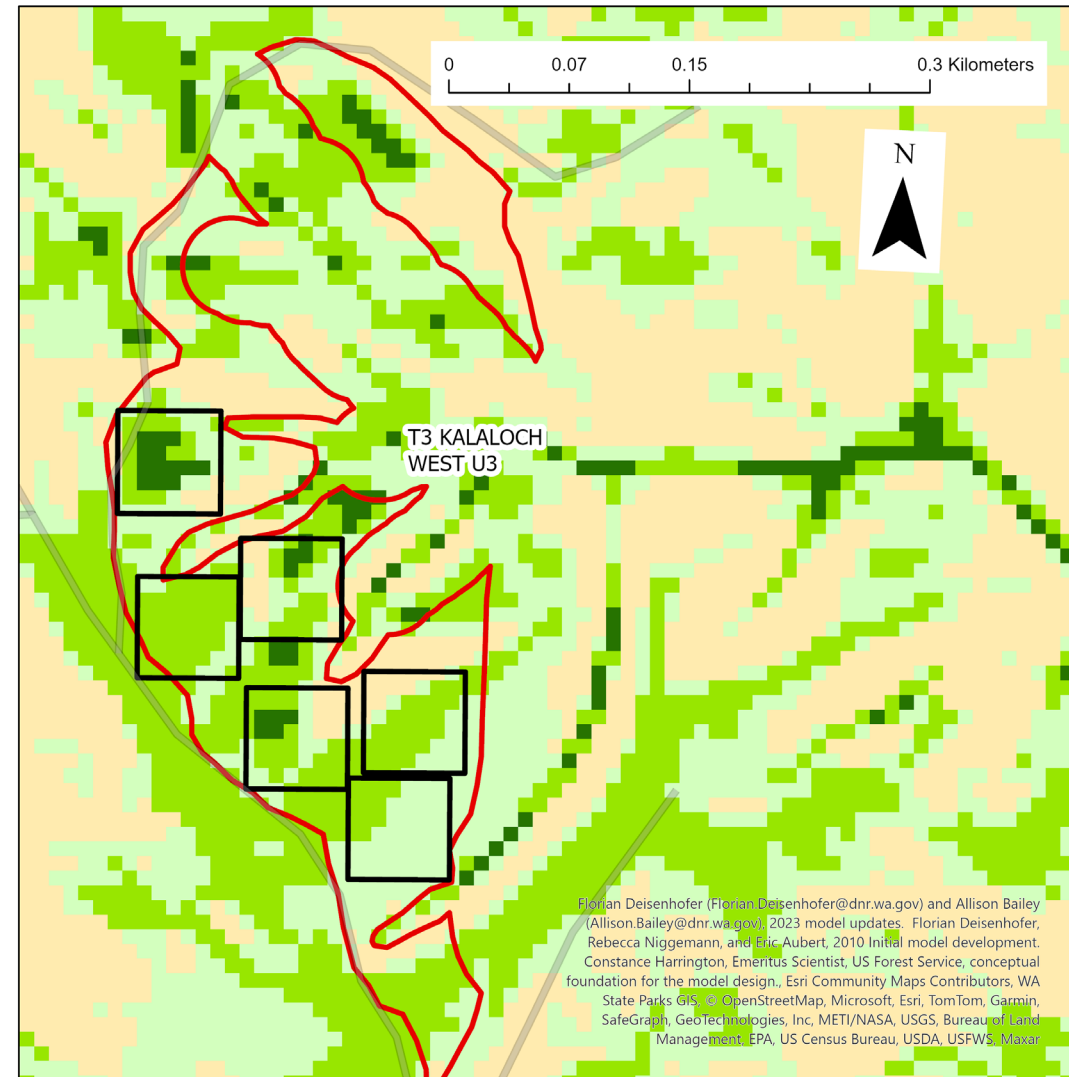
- Growth and yield in an operational setting (not highly tended research plots);
- Douglas-fir needle retention;
- Stomatal occlusion on needles; and
- Effect of topography and alder site projections

Needlecast Block 1: Kalaloch West U3



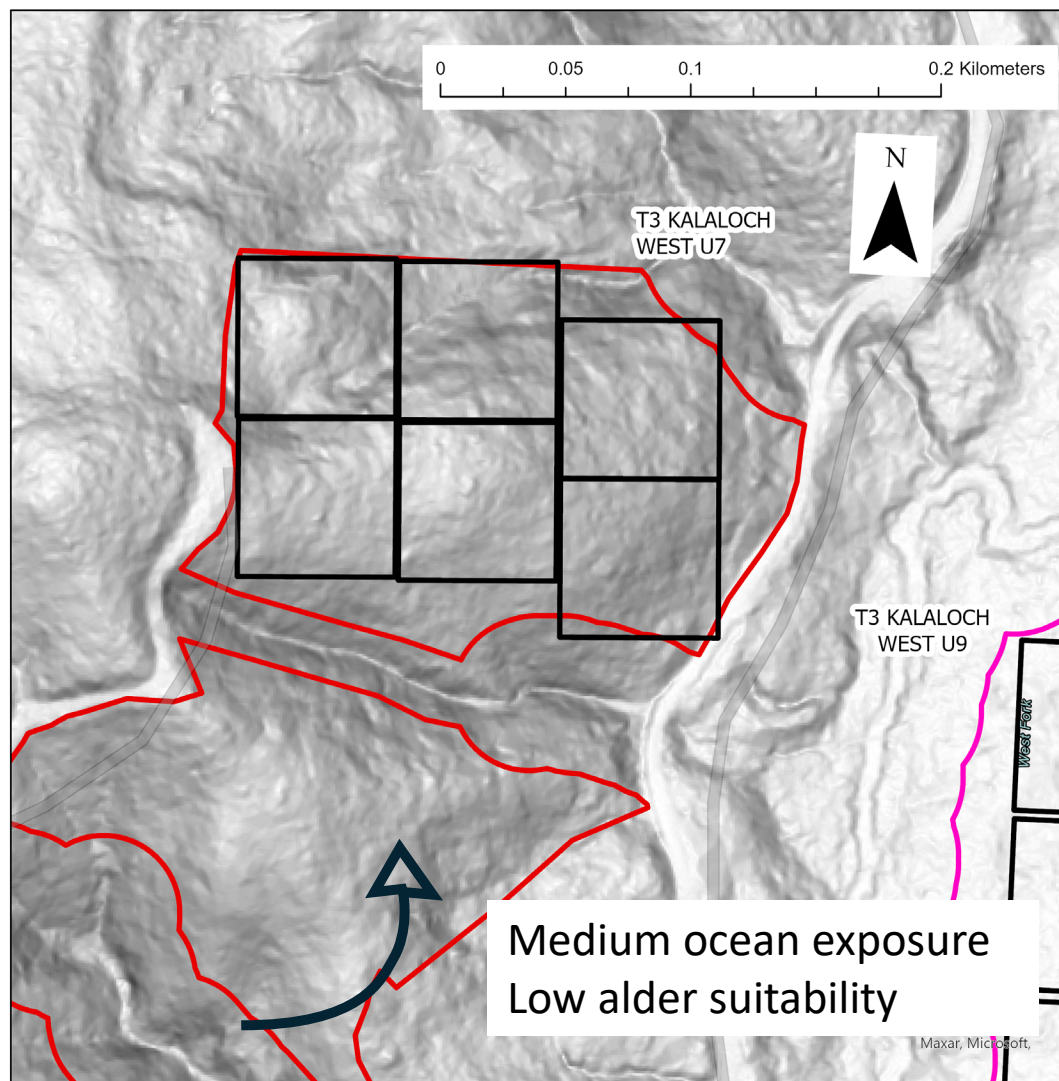
T3_Needlecast_treatments Terrain: Slope in Degrees
 T3_Needlecast_treatments Value
 90
 0

Needlecast Block 1: Kalaloch West U3

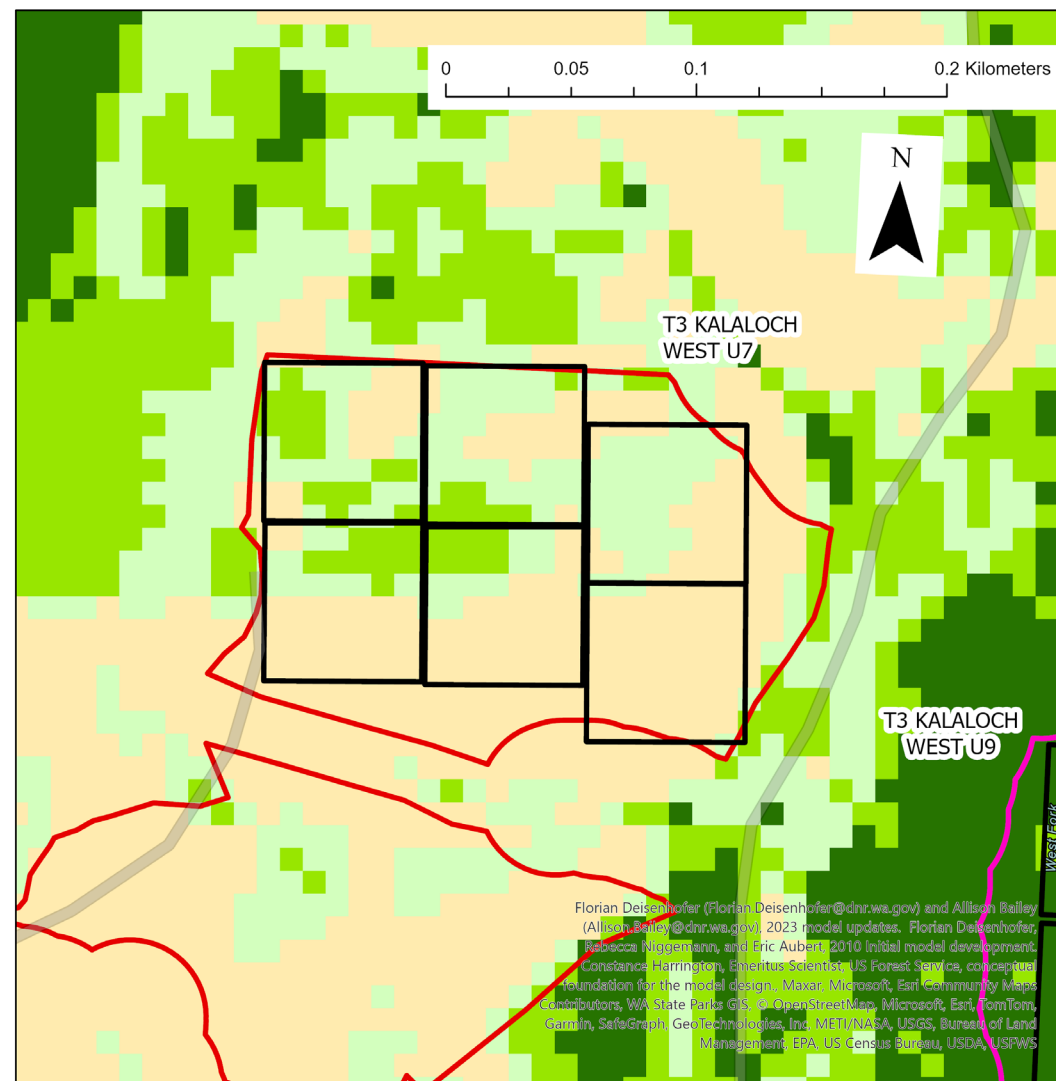


T3_Needlecast_blocks ALDER_INDIX
 HIGH
 MEDIUM
 LOW
 NO POTENTIAL

Needlecast Block 2: Kalaloch West U7



Needlecast Block 2: Kalaloch West U7



T3_Needlecast_treatments Terrain: Slope in Degrees

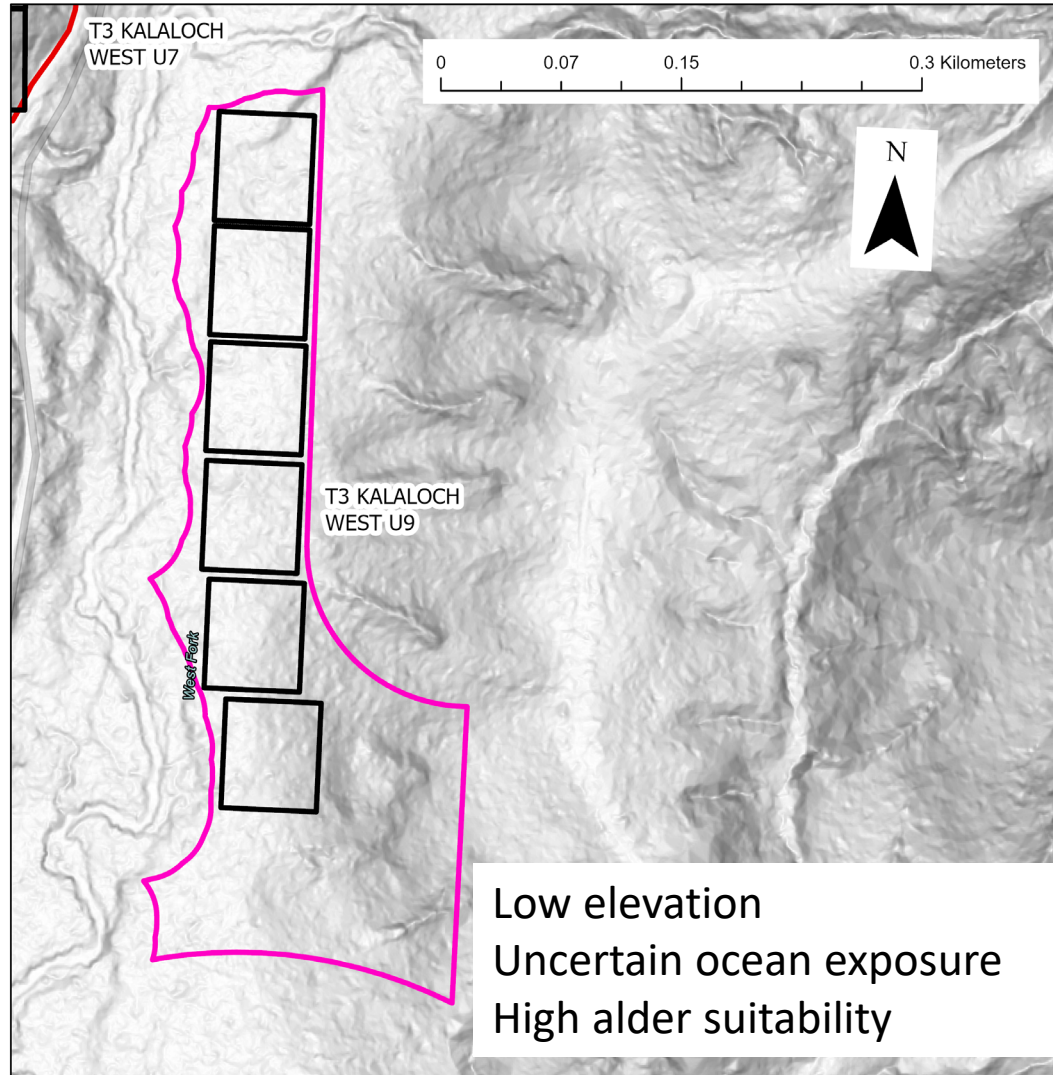
T3_Needlecast_treatments Value



T3_Needlecast_treatments ALDER_INDX

HIGH
MEDIUM
LOW
NO POTENTIAL

Needlecast Block 3: Kalaloch West U9

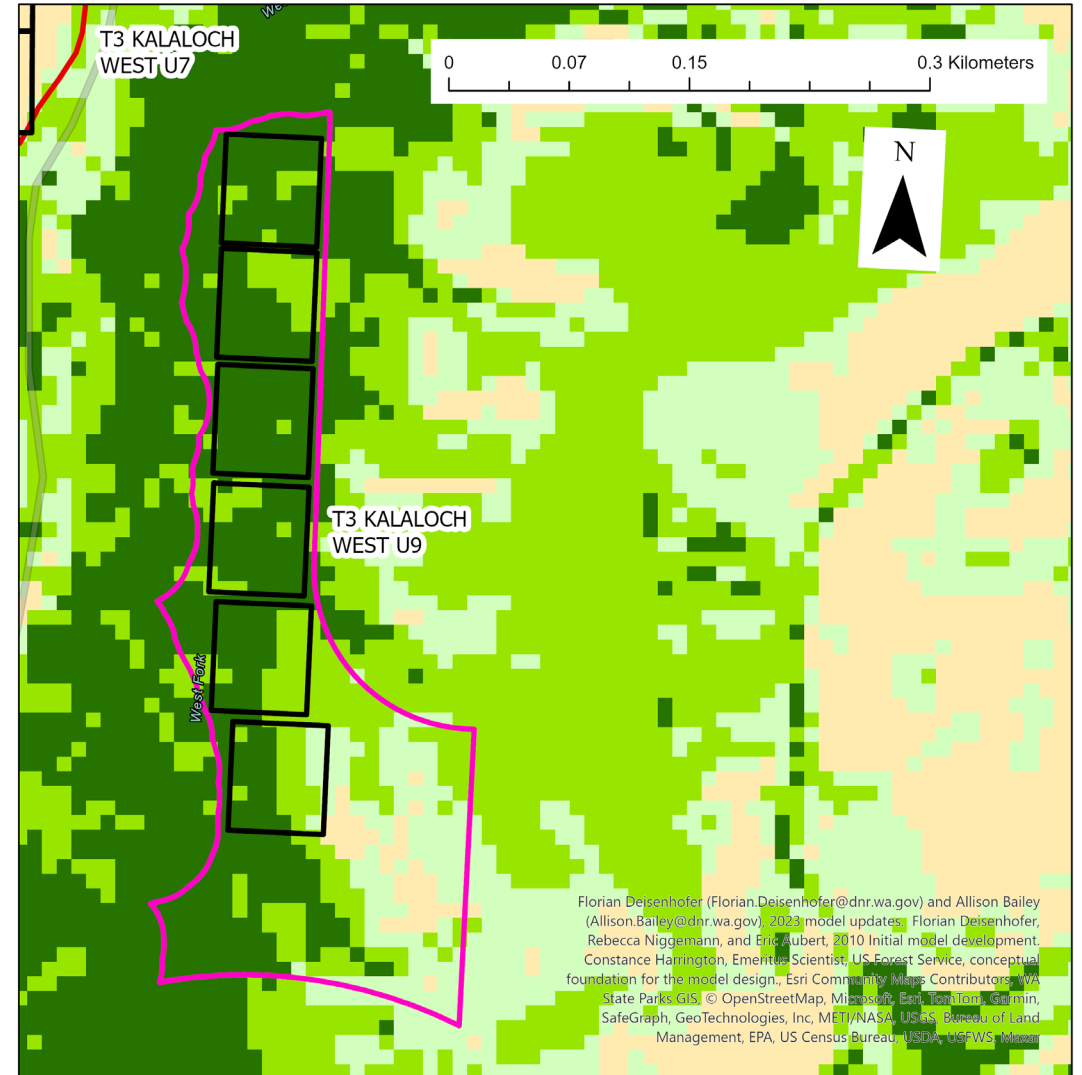


T3_Needlecast_treatments Terrain: Slope in Degrees

▭ T3_Needlecast_treatments Value



Needlecast Block 3: Kalaloch West U9



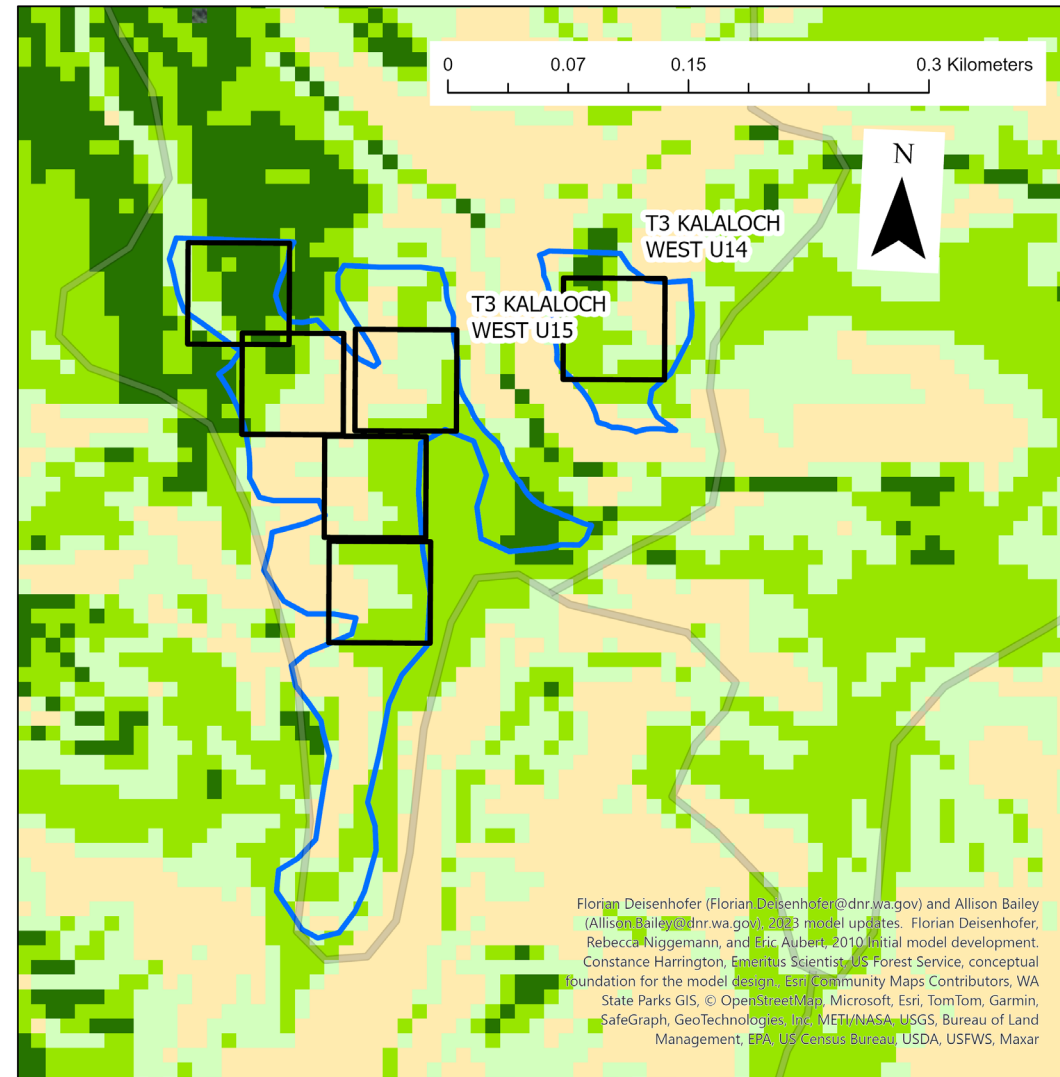
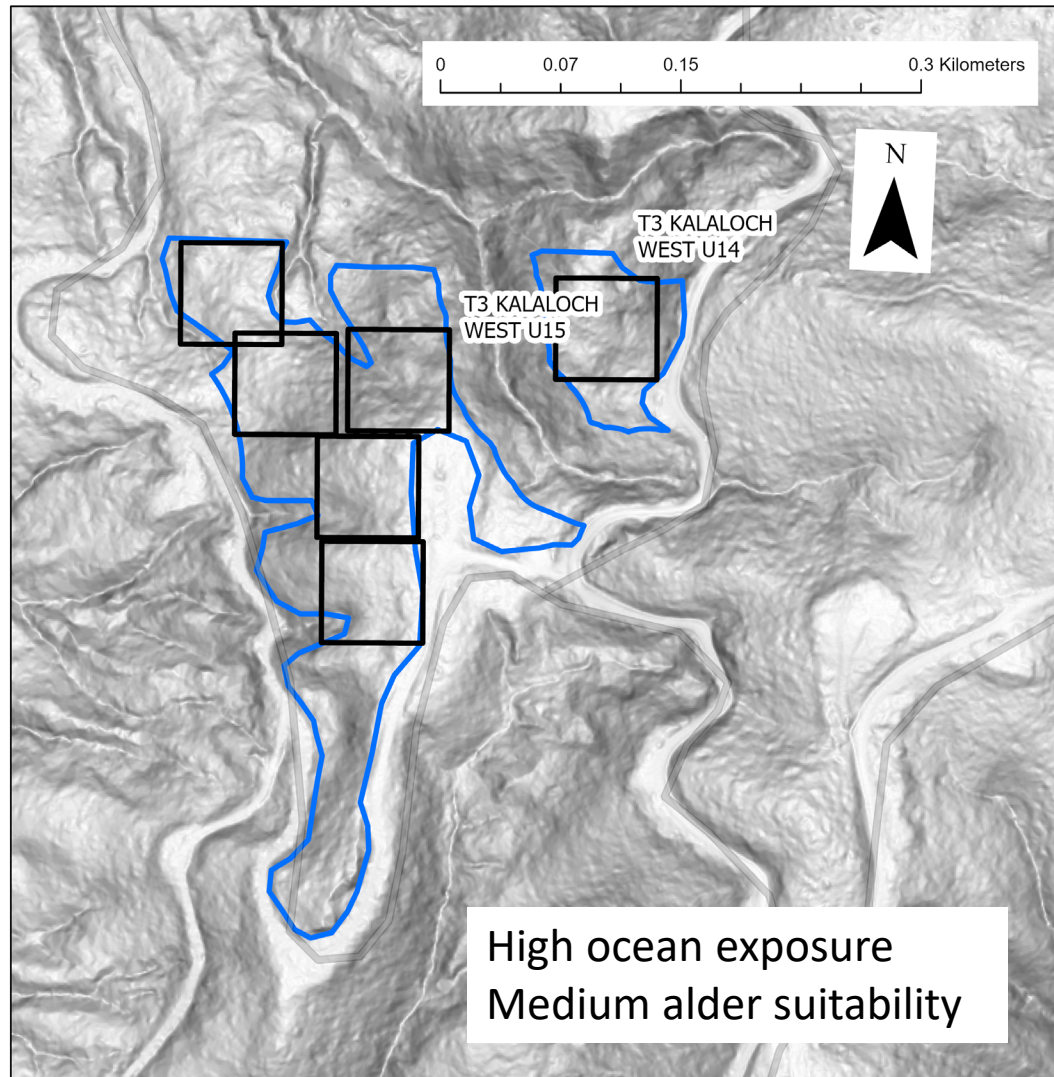
▭ T3_Needlecast_treatments ALDER_INDEX

- HIGH
- MEDIUM
- LOW
- NO POTENTIAL

Florian Deisenhofer (Florian.Deisenhofer@dnr.wa.gov) and Allison Bailey (Allison.Bailey@dnr.wa.gov), 2023 model updates; Florian Deisenhofer, Rebecca Niggemann, and Eric Aubert, 2010 Initial model development; Constance Harrington, Emeritus Scientist, US Forest Service, conceptual foundation for the model design; Esri Community Maps Contributors; WA State Parks GIS; © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, MET/NASA, USGS, Bureau of Land Management, EPA, US Census Bureau, USDA, USFWS, Mazon

Needlecast Block 4: Kalaloch West U14/15

Needlecast Block 4: Kalaloch West U14/15



T3_Needlecast_treatments Terrain: Slope in Degrees
 T3_Needlecast_treatments Value

T3_Needlecast_treatments ALDER_INDX

- HIGH
- MEDIUM
- LOW
- NO POTENTIAL

Feedback for final study plan?

Alternatives to growing Douglas-fir where Needlecast is an issue

- Douglas-fir standard as a control (as cultivated in areas without Needlecast)
- Douglas-fir, Burnt Woods seed source (less affected by Needlecast?)
- Western hemlock standard (new DNR normal close to Coast)
- Western hemlock improved stock (Quinault nursery)
- Red alder standard (as provided by DNR nursery)
- Sitka spruce (Weevil-resistant)

Responses to be tracked

- Growth and yield in an operational setting (not highly tended research plots)
- Douglas-fir needle retention
- Needlecast occlusion of needle stomates
- Effect of topography and alder site projections