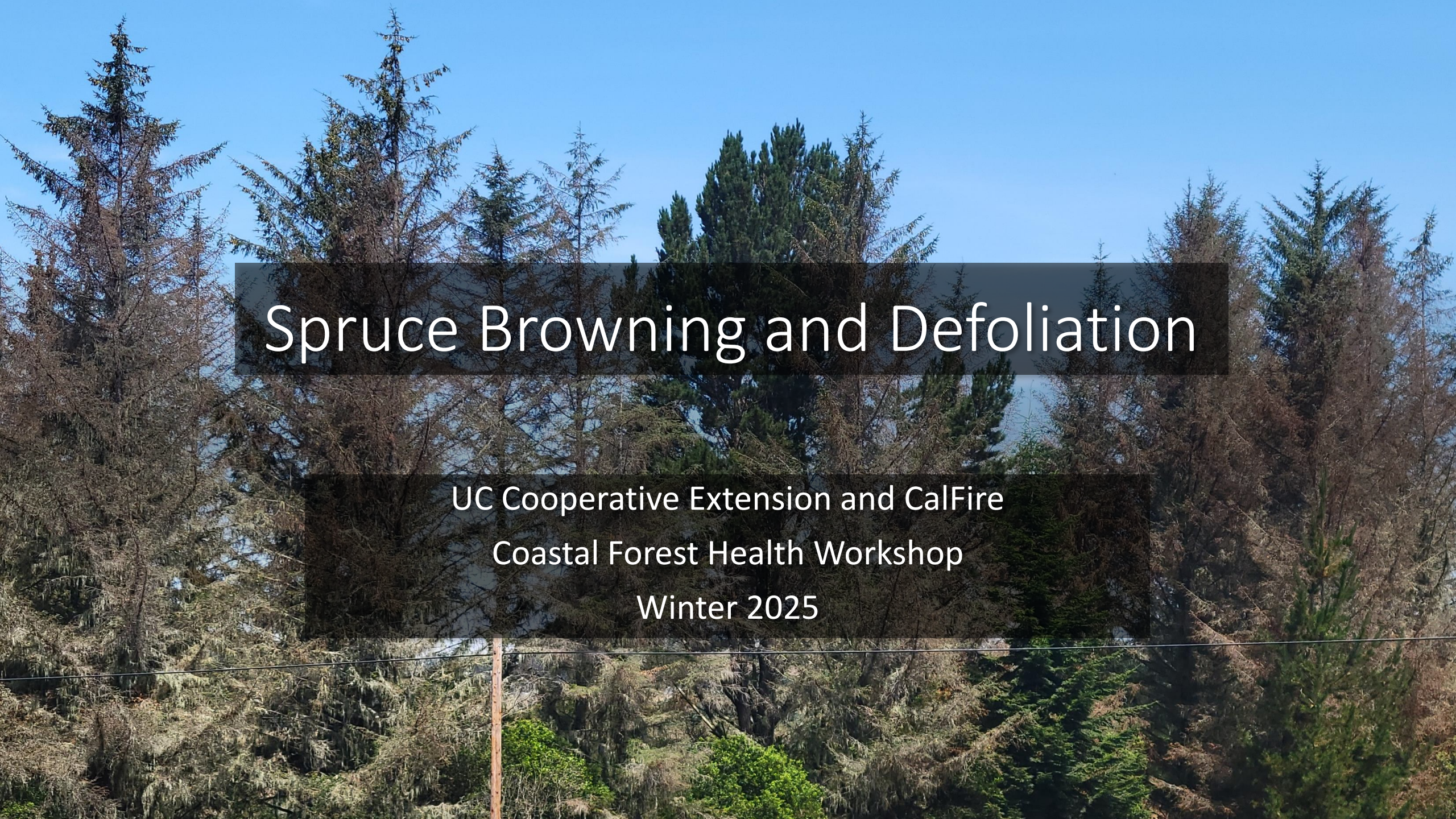
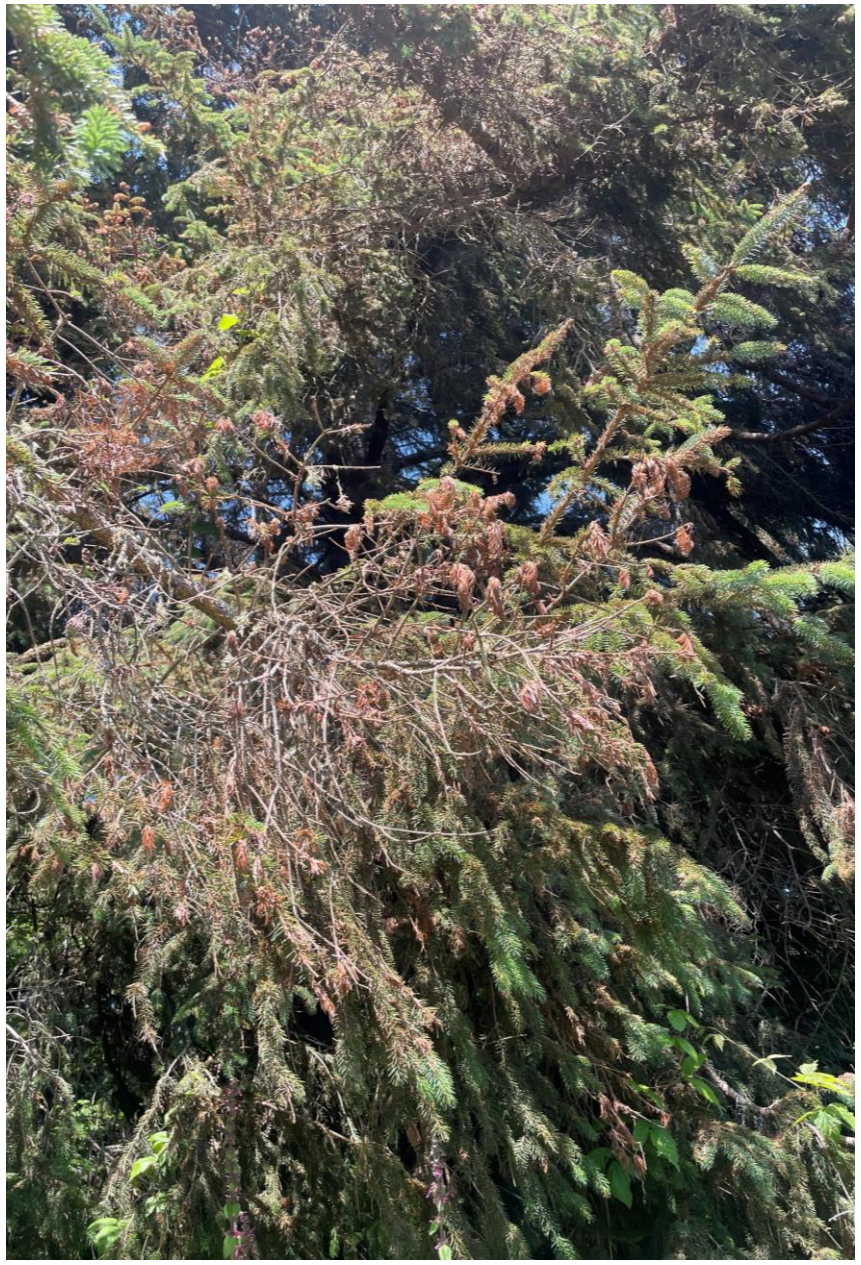


Spruce Browning and Defoliation

UC Cooperative Extension and CalFire

Coastal Forest Health Workshop

Winter 2025



Highway 101 near lagoons

September 2023

Loleta overpass

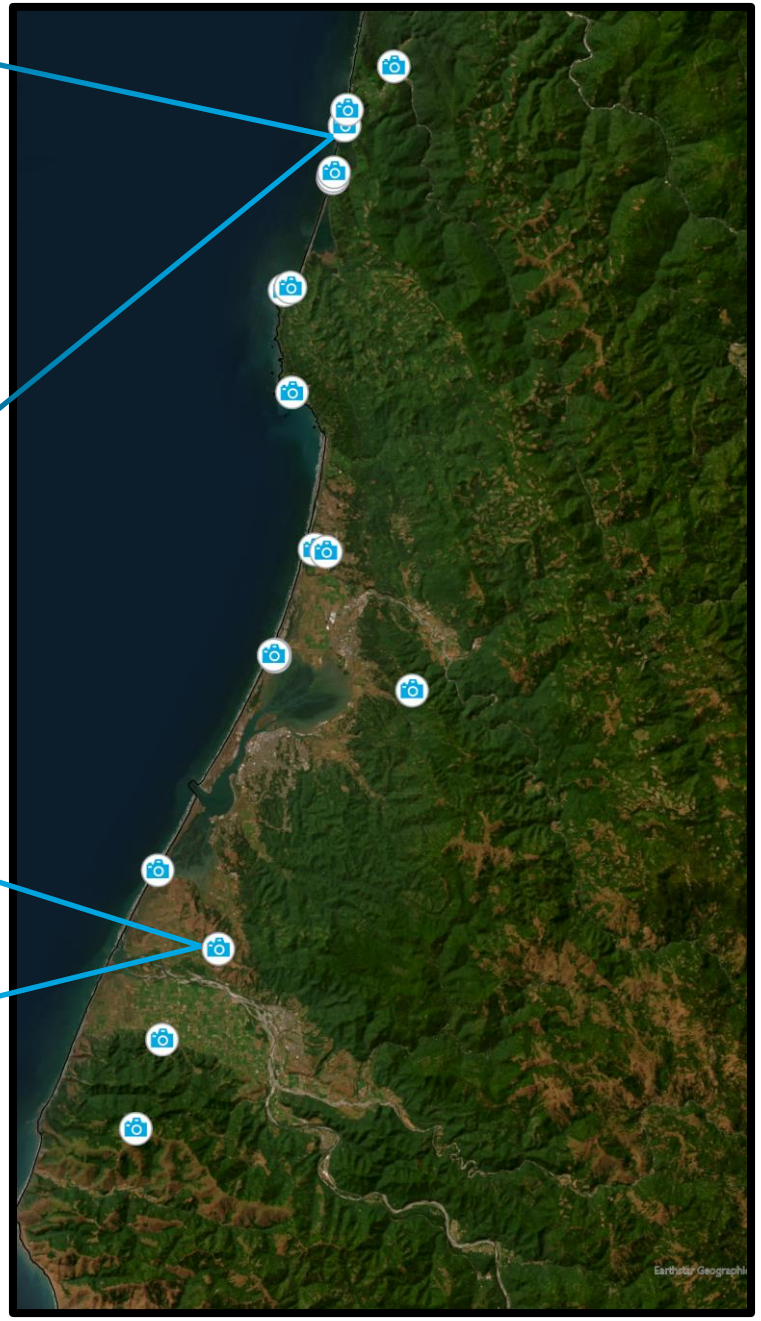
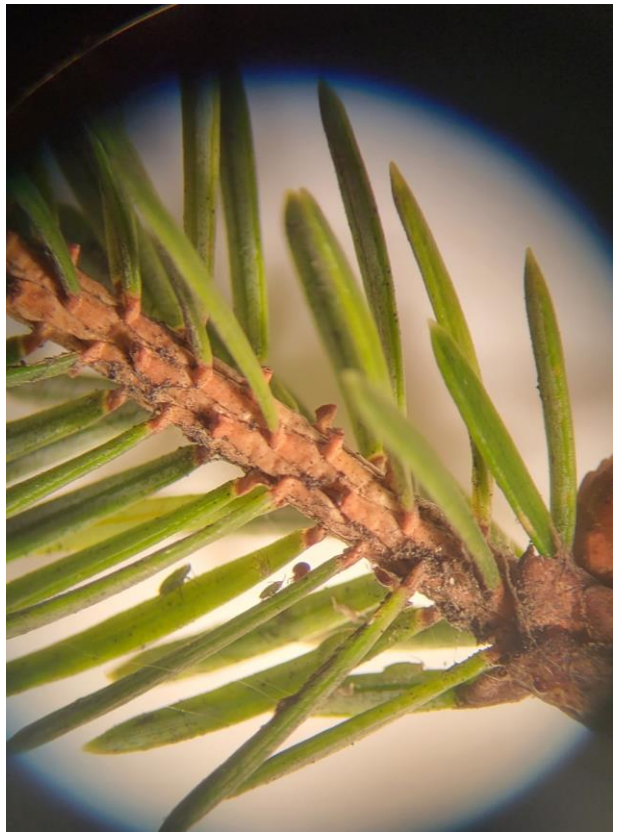


Photo Credit Chris Lee (left), Wallis Robinson (right)

What's Causing The Problem?



Green Spruce Aphid (*Elatobium abietinum*)

Giant Conifer Aphid (*Cinara spp.*)

Root Rots (*Phaeolous schweinitizii*, *Heterobasidion occidentale, Armillaria spp.*)

Various Tip-wilting Pests and Pathogens

What's Causing The Problem?

Green Spruce Aphid (*Elatobium abietinum*)

Giant Conifer Aphid (*Cinara spp.*)

Root Rots (*Phaeolous schweinitizii*, *Heterobasidion occidentale*, *Armillaria spp.*)

Various Tip-wilting Pests and Pathogens

What's Causing The Problem?

Green Spruce Aphid (*Elatobium abietinum*)

Giant Conifer Aphid (*Cinara spp.*)

Root Rots (*Phaeolous schweinitizii*, *Heterobasidion occidentale*, *Armillaria spp.*)

Various Tip-wilting Pests and Pathogens

What's Causing The Problem?

Green Spruce Aphid (*Elatobium abietinum*)

Giant Conifer Aphid (*Cinara spp.*)

Root Rots (*Phaeolous schweinitizii*, *Heterobasidion occidentale*, *Armillaria spp.*)

Various Tip-wilting Pests and Pathogens

What's Causing The Problem?

Green Spruce Aphid (*Elatobium abietinum*)

Giant Conifer Aphid (*Cinara spp.*)

Root Rots (*Phaeolous schweinitizii*, *Heterobasidion occidentale*, *Armillaria spp.*)

Various Tip-wilting Pests and Pathogens

December 2023

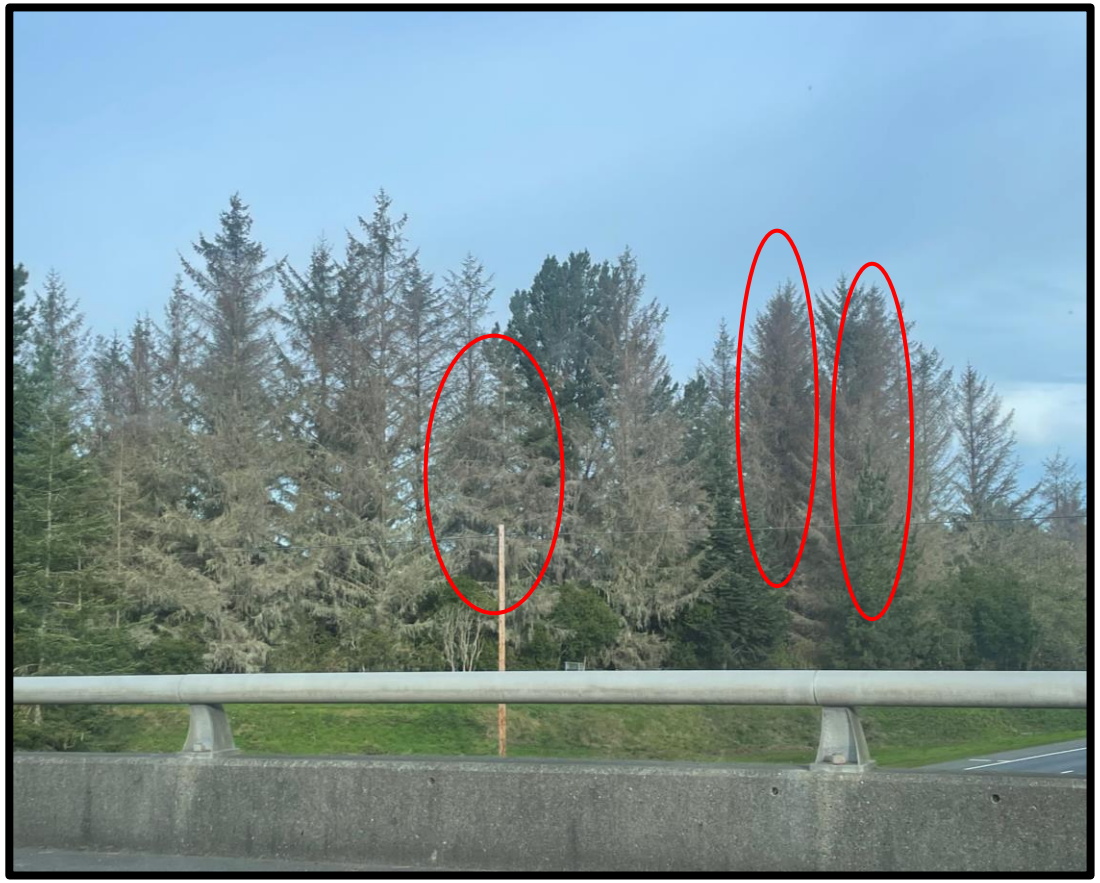
Loleta

January 2025

Loleta

December 2023

Loleta



January 2025

Loleta

2023 was the wettest water-year since 2019!

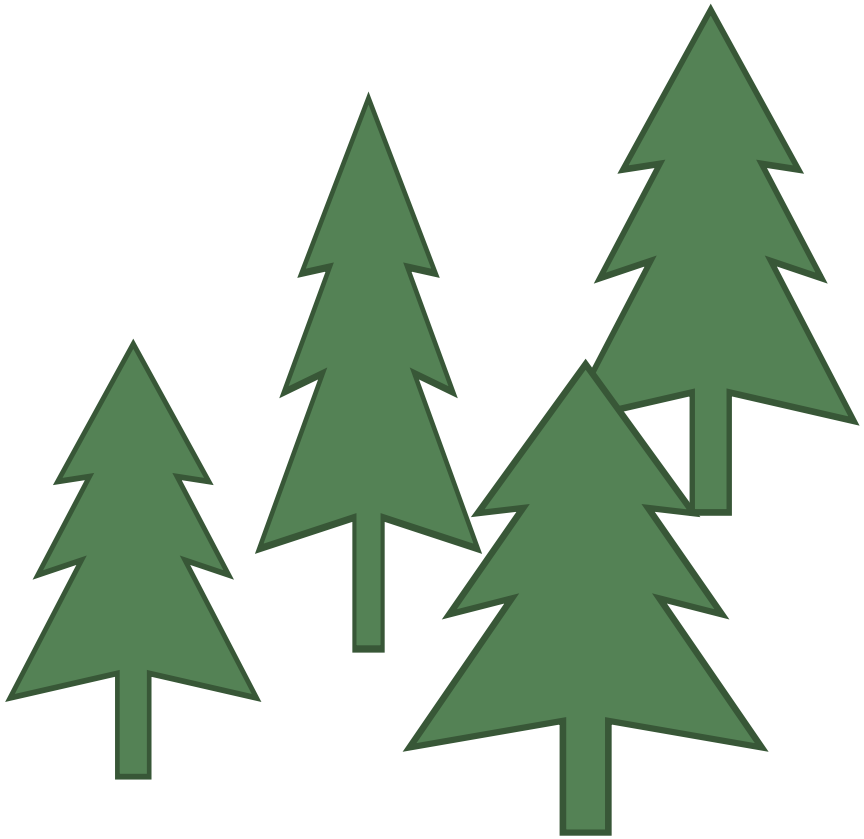
Monthly Precipitation Data for Eureka, CA

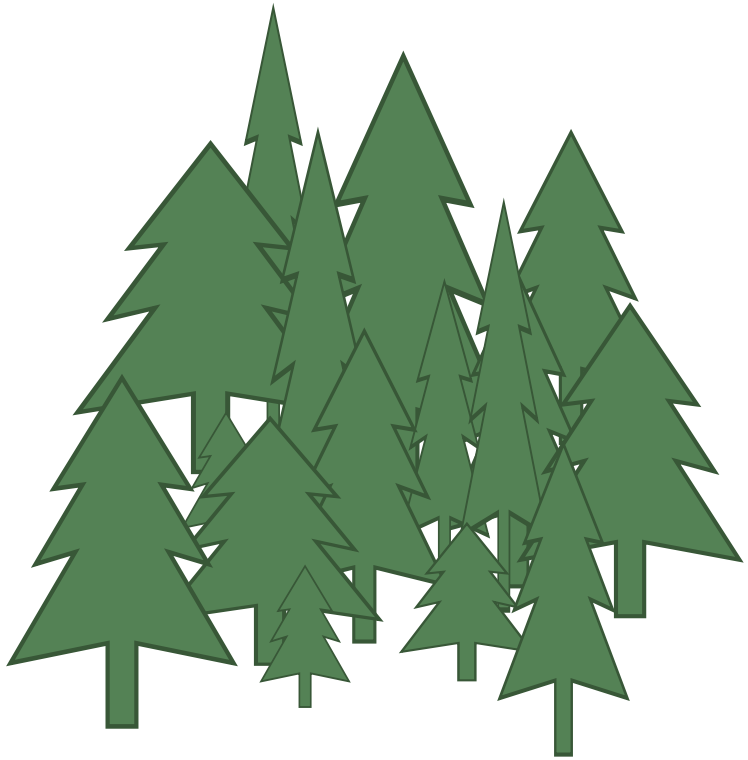
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Annual Water Year
2018	7.86	2.87	8.5	5.02	0.79	0.7	0.03	0.05	0.19	0.85	4.94	4.95	36.75	M
2019	6.67	14.43	4.79	2.51	2.61	0	0	0.18	1.92	1.51	1.75	7.63	44	43.85
2020	7.5	0.6	3.69	2.05	4.73	0.2	0.03	0.08	0.74	0.41	2.55	3.96	26.54	30.51
2021	7.1	4.32	3.93	0.71	0.25	1.06	0.21	0.03	1.24	4.02	2.85	7.25	32.97	25.77
2022	1.9	0.51	1.49	4.57	1.36	1.53	0.76	0.11	0.43	0.14	5.36	8.54	26.7	26.78
2023	7.89	5.74	9.25	2.66	0.97	0.23	0.02	0.11	1.83	M	M	M	M	42.74
Mean	6.49	4.75	5.28	2.92	1.79	0.62	0.18	0.09	1.06	1.39	3.49	6.47	33.39	33.93
Max	7.89 2023	14.43 2019	9.25 2023	5.02 2018	4.73 2020	1.53 2022	0.76 2022	0.18 2019	1.92 2019	4.02 2021	5.36 2022	8.54 2022	44 2019	43.85 2019
Min	1.9 2022	0.51 2022	1.49 2022	0.71 2021	0.25 2021	0 2019	0 2019	0.03 2021	0.19 2018	0.14 2022	1.75 2019	3.96 2020	26.54 2020	25.77 2021

Precipitation Data reported in inches
Source: NOAA Online Weather Data

Water-year = October of previous year – September of current year

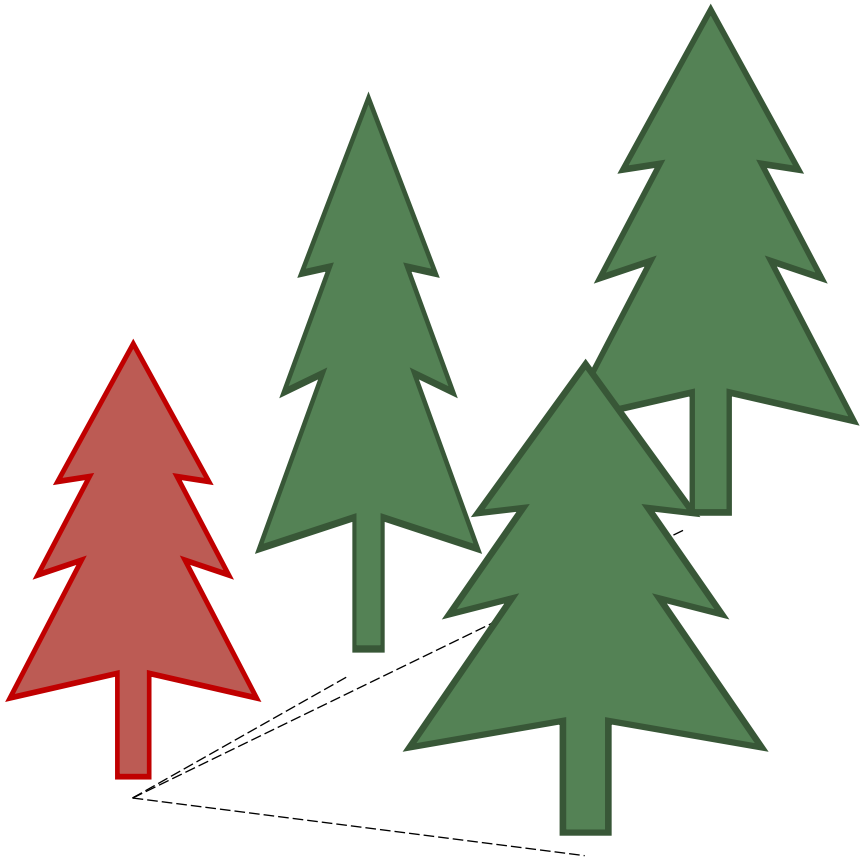
Changes in Land Stewardship: Stand Density

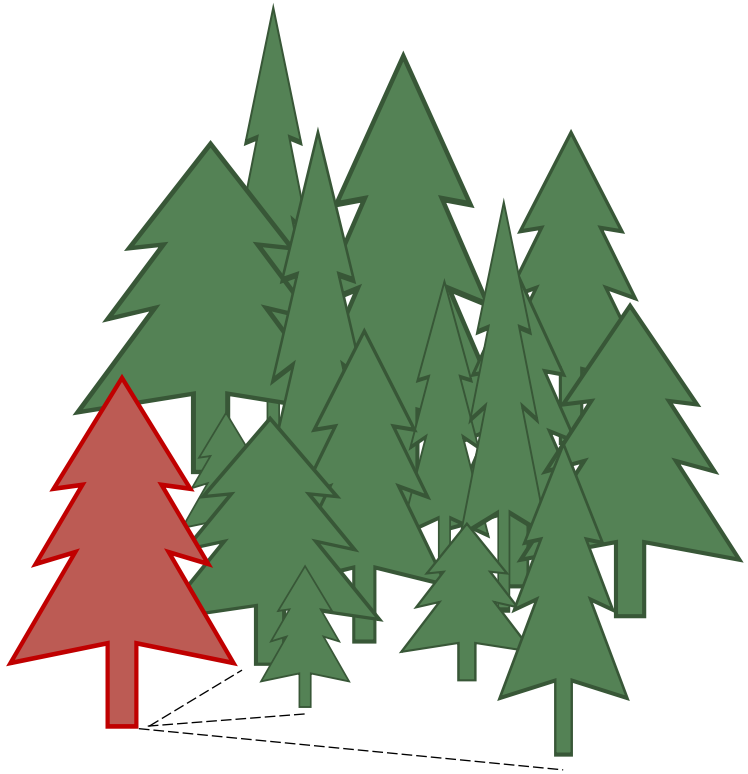




Resource Pool = Resource Pool

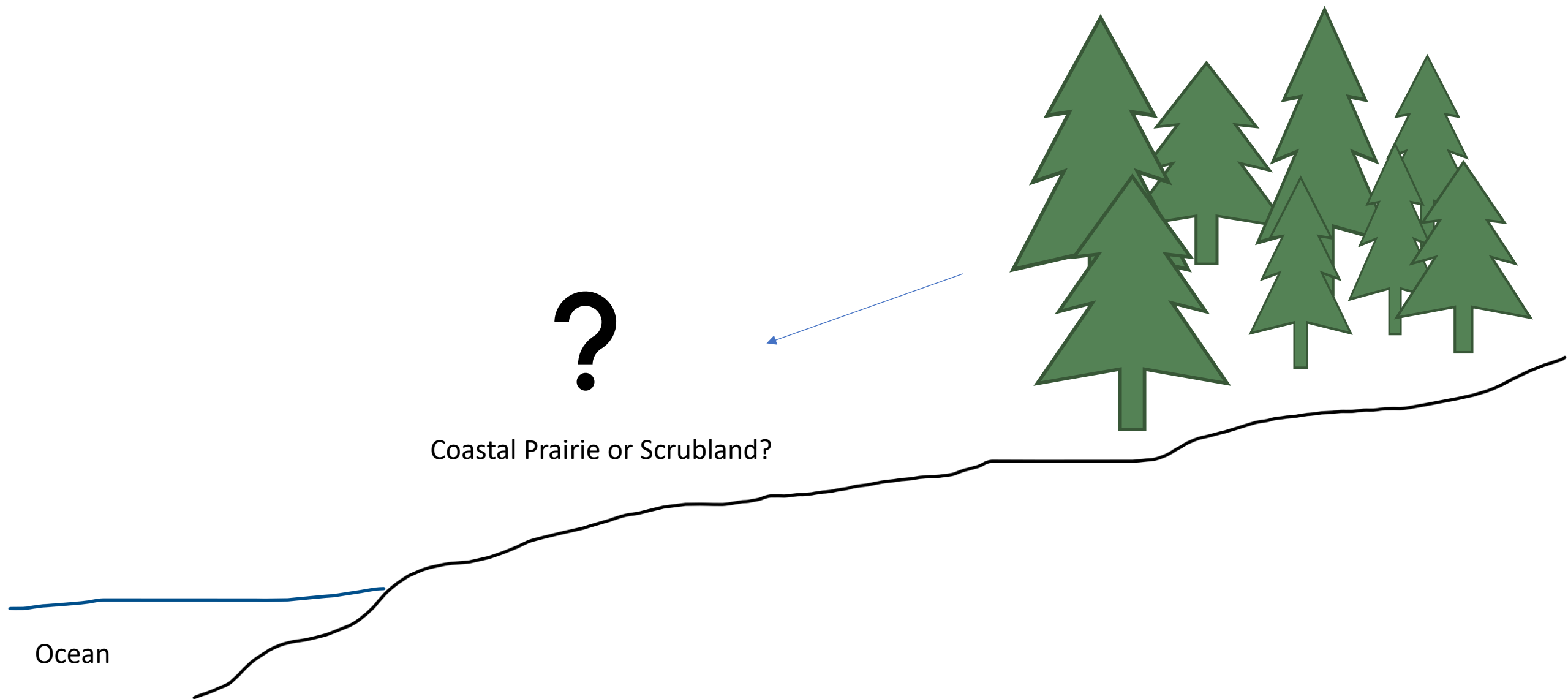
Changes in Land Stewardship: Stand Density



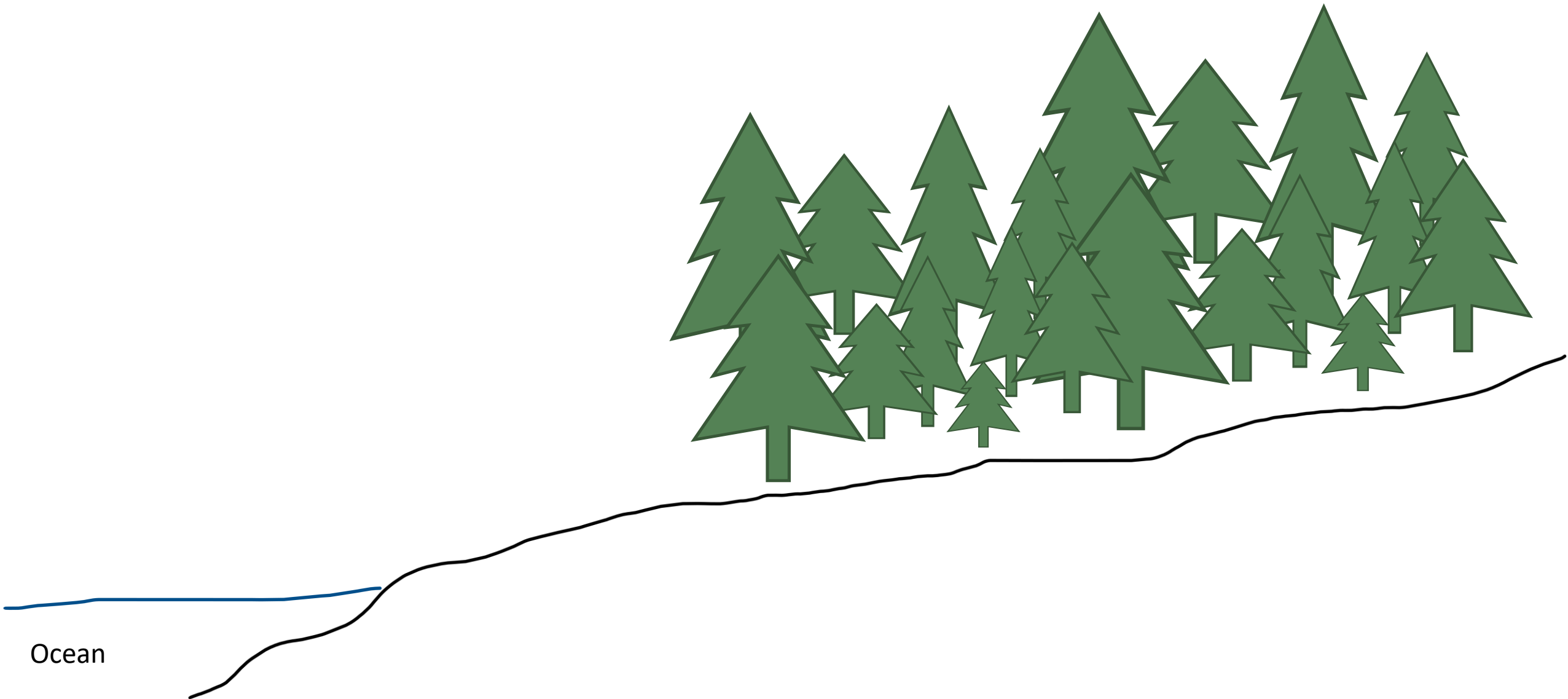


Changes in Land Stewardship: Stand Location

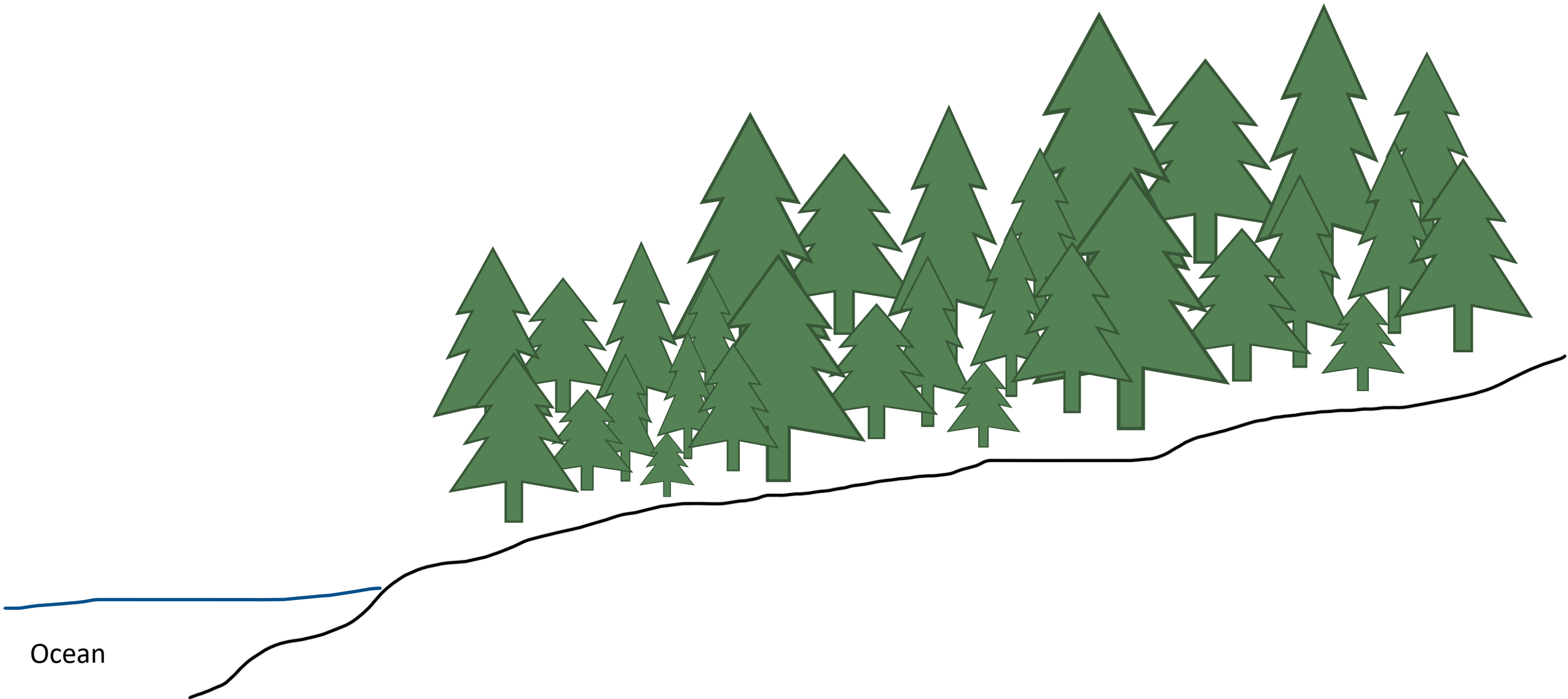
Changes in Land Stewardship: Stand Location



Changes in Land Stewardship: Stand Location



Changes in Land Stewardship: Stand Location



Hanging in the Balance: What's Next?

<u>Past Experience</u>

- Spruces have recovered from past defoliation events
- Current defoliators usually non-lethal

Where is the tipping point?

<u>Current Conditions</u>

- More hot droughts
- Unpredictable rain events
- Accumulated stress from overcrowding, root disease