

Ecoregions of the Northwest

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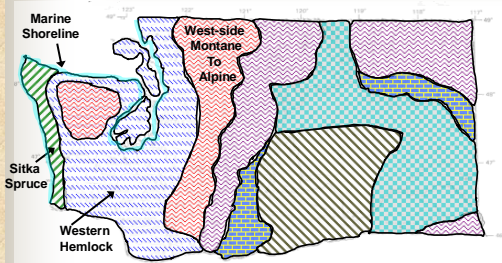
Ecoregion:

Focus on Washington State as representative of the NW

11 Ecoregions of Washington State

- | | |
|---------------------|----------------------------|
| 1. Marine Shoreline | 7. Alpine |
| 2. Sitka Spruce | 8. Douglas-fir / Grand Fir |
| 3. Western Hemlock | 9. Ponderosa Pine |
| 4. Silver Fir | 10. Shrub Steppe |
| 5. Mountain Hemlock | 11. Palouse Prairie |
| 6. Subalpine Fir | |

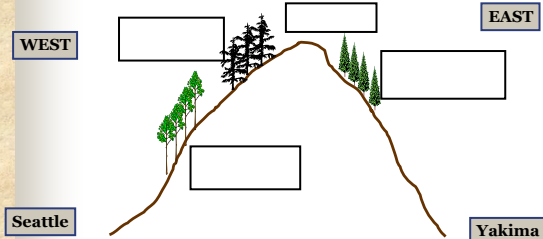
Washington State Ecoregions



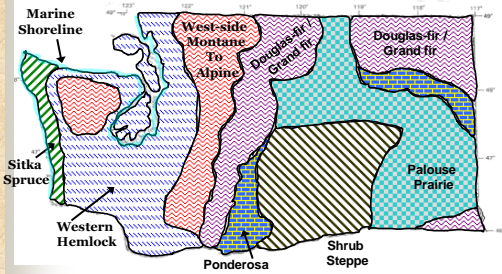
West-side Montane – Alpine: Silver fir; Mountain hemlock; Subalpine fir; Alpine

Washington State Ecoregions

Montane to Alpine Ecoregions



Washington State Ecoregions



West-side Montane – Alpine: Silver fir; Mountain hemlock; Subalpine fir; Alpine

WA Ecoregions

Environmental Determinants of Terrestrial Ecoregions

Ecoregion	Elevation Range (ft.)	Avg. Annual Temp (°F)	Avg annual precip (cm)
(Seattle) for reference	0	53	86
Sitka Spruce	0 – 500	52	200 – 300
Western Hemlock	0 – 2500	47	80 – 300
Silver Fir	1900 – 4200	42	220 – 280
Mountain Hemlock	4200 – 5900	39	160 – 280
Subalpine Fir	4200 – 5800	39	100 – 150
Alpine	>5000 – >7000	37.5*	46*
Douglas-fir/Grand Fir	2000 – 5000	46	60 – 110
Ponderosa Pine	2000 – 4000	47	40 – 70
Shrub Steppe	150 – 2000	50	15 – 25
Palouse Prairie	< 3000	48	40 – 70

* Data from Paradise R.S. on Mt. Rainier (subalpine zone) / precip includes average snowfall of 256 cm

WA Ecoregions

Environmental Determinants of Terrestrial Ecoregions

Bottom Line

Major determinants of ecoregion distribution:

I. Precipitation

WA Ecoregions

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WA Ecoregions

Environmental Determinants of Terrestrial Ecoregions

Bottom Line

Major determinants of ecoregion distribution:

I. Precipitation

II. Temperature

II. Ecosystems of WA

2. Environmental Determinants of Terrestrial Ecoregions

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II. Ecosystems of WA

2. Environmental Determinants of Terrestrial Ecoregions

Bottom Line

Major determinants of ecoregion distribution:

I. Precipitation

III. Interactive Effects of Temperature & Moisture

II. Temperature

WA Ecoregions

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WA Ecoregions

Environmental Determinants of Terrestrial Ecoregions

Bottom Line

Major determinants of ecoregion distribution:

I. Precipitation

III. Interactive Effects of Temperature & Moisture

- Moisture effects ability to cope with temperature

II. Temperature

- Temperature effects moisture availability

WA Ecoregions

Environmental Determinants of Terrestrial Ecoregions

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Marine Nearshore Ecoregion

Ecoregion below mean low low tide

We will only address the upper edge of these ecosystems in examining shoreline ecosystems of

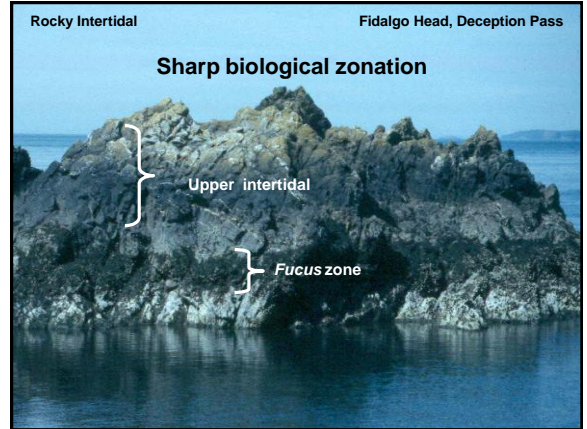
- Sitka Spruce (outer coast) and
- Western Hemlock (Puget Sound) ecoregions

Sitka Spruce Ecoregion

Typical Ecosystems:

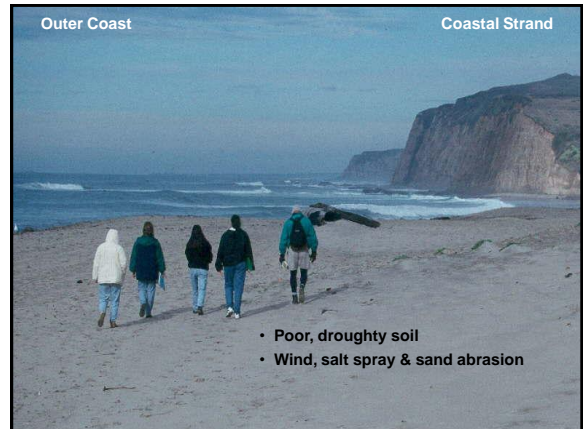
Shoreline Ecosystems:	Coastal Bogs
Rocky intertidal	Sitka Spruce Forests
Beach / Dune	Riparian Wetlands
(Estuaries)	





Rocky Intertidal

Diversity created by



Coping with a Coastal Strand Habitat

Sea rocket (*Cakile edentula*)

European beachgrass (*Ammophila arenaria*)




Sitka Spruce Forests

Dominant coastal tree:
Oregon to Alaska

Among the 3 largest trees in WA

Sitka spruce
(*Picea sitchensis*)





Coastal Bogs

Unique species

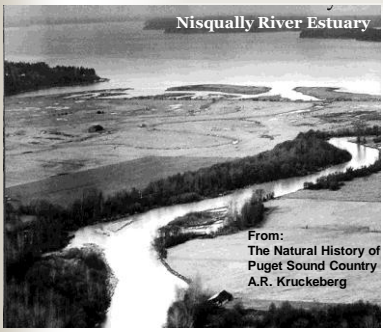



Estuaries /Tideflats

Nisqually River Estuary

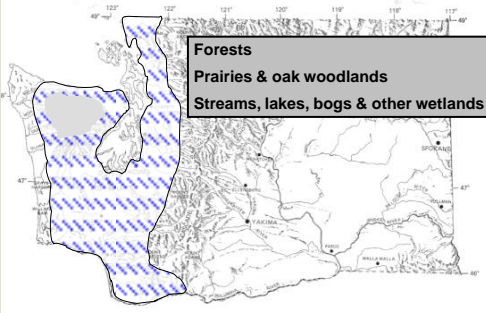
- Salt marshes
- Eelgrass beds
- Tide flats

From:
The Natural History of
Puget Sound Country
A.R. Kruckeberg




Western Hemlock Ecoregion

Forests
Prairies & oak woodlands
Streams, lakes, bogs & other wetlands





Western Hemlock Ecoregion

- Low elevation forests
- Dominated by large evergreen trees



Western Hemlock Ecoregion

Deciduous Forests

Red alder
Alnus rubra

Western Hemlock Ecoregion

Streams & Wetlands: openings in a sea of forest



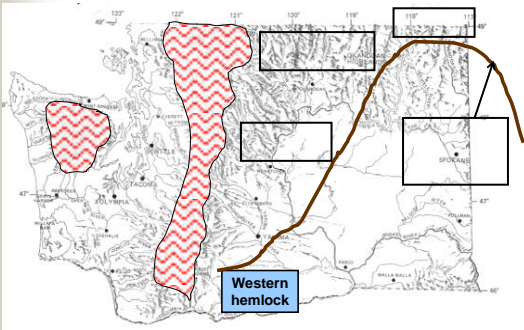
Western Hemlock Ecoregion

Puget Prairies & Oak Woodlands

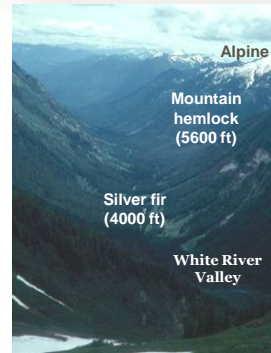


Unique, threatened habitats

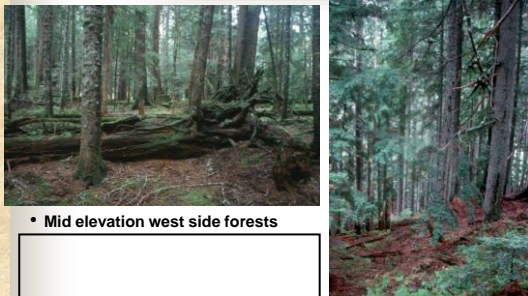
West-side Montane to Alpine Ecoregions



West-side Montane to Alpine Ecoregions



Silver fir Ecoregion



• Mid elevation west side forests

Mountain Hemlock Ecoregion

High elevation snowy subalpine forests & meadows



Subalpine Fir Ecoregion

High elevation dry subalpine forests & meadows

- Cold, dry, short growing season
- Low productivity



Subalpine fir
(*Abies lasiocarpa*)

Alpine Ecoregion

Highest elevation, treeless ecosystems

Islands in the sky

Mount
St. Helens

Mount
Rainier

Mount
Adams



Alpine Ecoregion

High elevation treeless ecosystems



Tundra



Rawmark

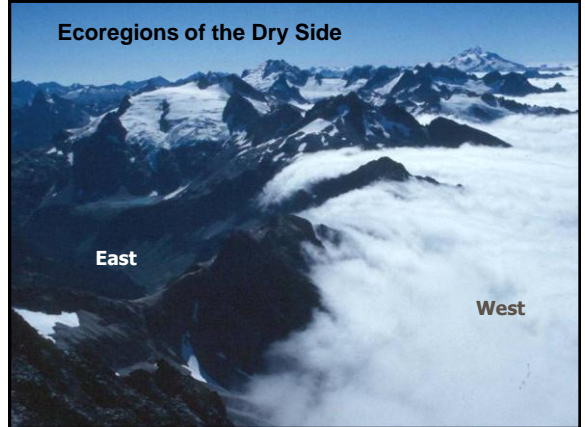


Fellfield



Fellfield

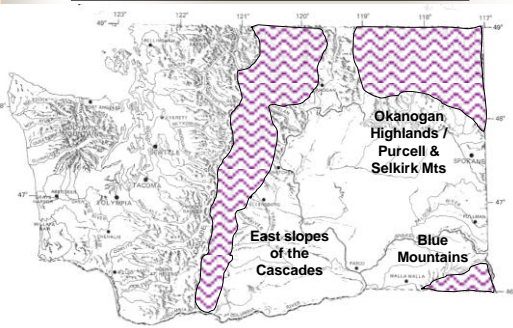
Ecoregions of the Dry Side



East

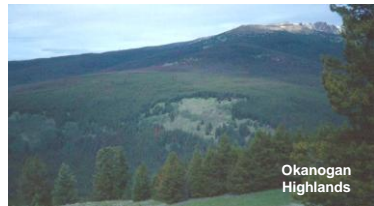
West

Douglas-fir / Grand fir Ecoregion



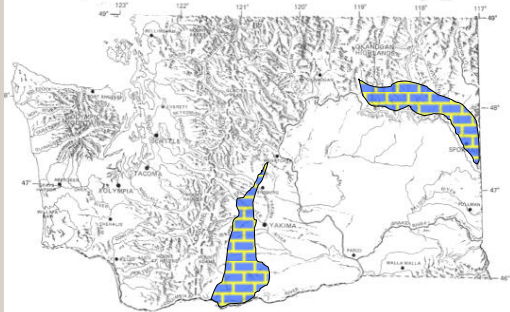
Douglas-fir / Grand fir Ecoregion

Dry, mid-elevation forests



Okanogan
Highlands

Ponderosa Pine Ecoregion

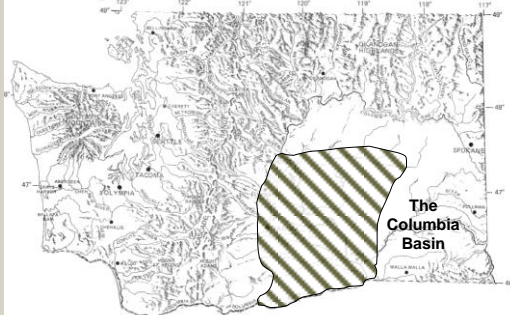


Ponderosa Pine Ecoregion

Dry, mid- to low-elevation fire-dependent forests



Shrub Steppe Ecoregion

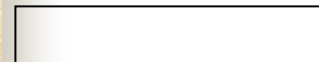


Shrub Steppe Ecoregion

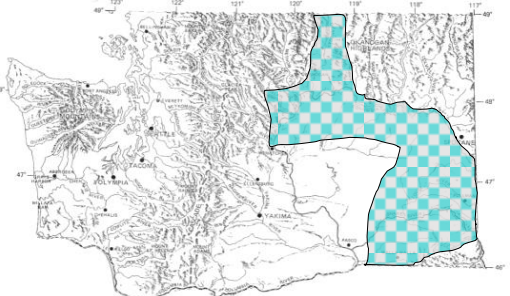
Low elevation hot, very arid shrub and grass dominated ecosystems



Big sagebrush (*Artemisia tridentata*)



Palouse Prairie Ecoregion



Palouse Prairie Ecoregion

Low elevation hot & semi-arid grass dominated ecosystems

