Vegetation Classification and Mapping in the National Parks of the North Coast and Cascades Network

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Presentation Overview

• Completed Projects- Overview and Highlights
  – San Juan Island, Ebey’s Landing, Fort Vancouver and Lewis and Clark National Historical Parks and Reserves

• Wilderness Park Mapping Challenges and Preview
  – Mount Rainier, North Cascades and Olympic

• Classification and Mapping in the Context of Climate Change
• NPS Project Standards:
  – Maps
    • 1:24,000 scale, 80% accuracy, using Alliance level from National Vegetation Classification System
  – Final Products
    • Vegetation classification- keys and descriptions
    • Field data, spatial data, accuracy assessment, report
• National Vegetation Classification System
http://usnvc.org/

Forest and Woodland
Temperate Forest
Cool Temperate Forest

Western North American Cool Temperate
Vancouverian Lowland & Montane Rainforest
North Pacific Hypermaritime Sitka Spruce Forest

Picea sitchensis - (Tsuga heterophylla) Forest Alliance
Picea sitchensis / Gaultheria shallon Forest
Standards and Goals - NPS Inventory and Mapping

- Key to and Descriptions of Associations

Tsuga heterophylla is prominent to dominant in the tree canopy layer, typically with greater than 10% cover. Pseudotsuga menziesii almost always codominates and Thuja plicata may be present to codominant.

Rhododendron macrophyllum forms a variable-density tall shrub layer, typically with greater than 10% cover, but sometimes as low as 5%. Holodiscus discolor is usually prominent to codominant in the tall shrub layer. Gaultheria shallon forms a lower shrub layer and Vaccinium ovatum is occasionally present.

Pseudotsuga menziesii - Tsuga heterophylla / Rhododendron macrophyllum - Vaccinium ovatum - Gaultheria shallon Forest, p. 22

Polystichum muniment is the dominant herbaceous species, typically with greater than 10% cover, but sometimes as low as 2% when understory vegetation is sparse. Other ferns may also codominant.

Tiaralia trifoliata and/or Athyrium filix-femina are present, occupying greater than 1% total cover and exceeding cover of Gaultheria shallon. Other moist-site indicator species such as Rubus spectabilis and Dryopteris expansa are frequently present. Sambucus racemosa occasionally dominates the tall shrub layer. Thuja plicata and Alnus rubra are common in the tree canopy layer.

Tsuga heterophylla - (Pseudotsuga menziesii - Thuja plicata) / Polystichum muniment - Athyrium filix-femina Forest, p. 20

Gaultheria shallon is the dominant shrub in a variable density shrub layer. Holodiscus discolor frequently codominates. Shrub cover may be sparse and combined G. shallon and Polystichum muniment cover may be as little as 3%. Moist-site indicators such as Rubus spectabilis and Dryopteris expansa are absent.

Pseudotsuga menziesii - Tsuga heterophylla / Gaultheria shallon - Polystichum muniment Forest, p. 21

Gaultheria shallon dominates a variable density low shrub layer. Holodiscus discolor is present and characterizes the tall shrub layer. Liriope borealis often forms a persistent carpet. Vaccinium ovatum or V. parvifolium may be present. Rhododendron macrophyllum is characteristically absent.

Pseudotsuga menziesii - Tsuga heterophylla / Gaultheria shallon - Holodiscus discolor Forest, p. 24

Key and Descriptions of the Vegetation of Ebey's Landing National Historical Reserve - Version: 08.31.2015

Pseudotsuga menziesii - Tsuga heterophylla / Rhododendron macrophyllum - Vaccinium ovatum - Gaultheria shallon Forest

Acreage: 786,000

NatureServe Code: CEGL002615

Macroprop: Vancouverian Lowland and Montane Rainforest

Group: North Pacific Maritime Douglas-fir - Western Hemlock Forest

Alliance: Tsuga heterophylla - Pseudotsuga menziesii / Holodiscus discolor Dry Forest Alliance

Range: This association occurs below 460 m (1500 ft) in west-central portions of the Puget Lowland, including the Kittaap Peninsula, Whidbey Island and the northeastern Olympic Peninsula.

EBLA Distribution: Comprises the majority of the forested lands at Ft. Ebey State Park, Kettles Recreation Area, Rododendron County Park, and the surrounding private lands. It is the largest plant association by area within the Reserve.

Plots: EBLA (3), Chappell (2006b)

Environmental Description: This association typically occurs on moderately dry, very nutrient-poor sites including soil parent materials of gravelly gravelly till or outwash, or basalt bedrock. At EBLA, it can occur on any slope or aspect.

Vegetation Description: This is an evergreen needle-leaved forest dominated by Pseudotsuga menziesii and Tsuga heterophylla, the former usually taller and more abundant, the latter usually dominating tree regeneration. Thuja plicata is usually present and sometimes codominant, and Pinus monticola is present in about half the plots collected otherwise, but absent at EBLA. The understory is dominated by the evergreen broad-leaved shrubs Rhododendron macrophyllum (2-4 m tall), Vaccinium ovatum, and Gaultheria shallon, and may be sparse or dense depending on tree density, though Vaccinium ovatum is frequently absent or low in cover at EBLA. Other frequent species are Perilla aquinata, Mahonia nervosa, and Vaccinium parvifolium. Herbaceous species are typically found in very small amounts.

USEWS Wetland System: Not applicable.

Comments: This association is distinguished from similar ones by >10% cover of Tsuga heterophylla or Thuja plicata, >5% cover of Rhododendron macrophyllum, usually with Vaccinium ovatum, combined with <3% cover of Polystichum muniment.

Rank: C2S2

Rank Justification: This association is found in a limited range within the Puget Lowland, with few good quality occurrences remaining due to logging and fragmentation.

Synonyms:

Pseudotsuga menziesii-Tsuga heterophylla/Rhododendron macrophyllum-Vaccinium ovatum WA; Chappell 2006b
San Juan Island National Historical Park

Vegetation Map

- Vancouverian Ruderal Flooded & Swamp Forest Group
- Vancouverian Ruderal Forest and Plantation Group
- North Pacific Maritime Lowland Hardwood-Conifer Swamp Group
- Carex tumulicola Alliance
- Festuca idahoensis asp. roemer - Agrostis paltens - Koeleria macrantha Herbaceous Alliance
- Festuca rubra - Calamagrostis nutkaensis Coastal Headland Herbaceous Alliance
- Symphoricarpius albus Pacific Coast Shrubland Alliance
- Acer macrophyllum, Alnus rubra Riparian Forest Alliance
- Pseudotsuga menziesii - (Arbutus menziesii) Forest and Woodland Alliance
- Tsuga heterophylla - Pseudotsuga menziesii / (Holodiscus discolor) Forest Alliance
- Thuja plicata - (Abies grandis) Maritime Forest Alliance
- Vancouverian Freshwater Coastal Marsh & Meadow Group
- Western North American Ruderal Wet Meadow & Marsh Group
- Crataegus douglasii Pacific Coast Shrubland Alliance
- Rubus spectabilis Shrubland Alliance
- Temperate Pacific Tidal Salt & Brackish Marsh Group
- Vancouverian Cliff, Massive Bedrock and Rock Outcrop Group
- Cornus sericea Shrubland Alliance
- Salix hookeriana Seasonally Flooded Shrubland Alliance
- Malus fusca Seasonally Flooded Shrubland Alliance
- Juncus balticus - Juncus effusus) Herbaceous Alliance
- Carex obtusa Seasonally Flooded Herbaceous Alliance
- Equisetum arvense, variegatum, hyemale, telmateia) Semipermanently Flooded Herbaceous Alliance
- Oenanthe sarmentosa Herbaceous Alliance
- Agrostis capillaris - Holcus lanatus - Schedonorus phoenix Mesic Ruderal Grassland Alliance
- Ammophila (arenaria, breviligulata) - Leymus mollis Dune Ruderal Herbaceous Alliance
- Bromus hordeaceus Dry Ruderal Grassland Alliance
- Rubus armeniacus Ruderal Shrubland Alliance
- Leymus mollis - Festuca rubra Herbaceous Alliance
- Fruit Orchard
- Mowed Lawn
- Ornamental Trees

K. Beirne & C. Copass, NCCN, Oct 2012

Produced by K. Beirne & C. Copass, NCCN, Oct 2012
San Juan Island National Historical Park

Festuca idahoensis ssp. roemeri - Camassia quamash - Cerastium arvense
Roemer’s Fescue - Blue Camas - Field Chickweed Herbaceous Vegetation Association

Leymus mollis - Abronia latifolia Herbaceous Vegetation Association
American Dune Grass - Yellow Sand-verbena Herbaceous Vegetation Association
**Camassia quamash - Triteleia hyacinthina**
Common Camas - White Fool’s Onion Seasonally Flooded Herbaceous Vegetation Association

**Quercus garryana / Symphoricarpos albus / Carex inops**
Oregon White Oak / Snowberry / Long-stolon Sedge Association
Ebey’s Landing National Historical Reserve

Vegetation Map

Produced by T. Koren-Gruenberg, NCC, March 2015
Pseudotsuga menziesii- Symphoricarpos albus 
Forest Association
Douglas fir / Snowberry  Forest Association
Ebey’s Landing National Historical Reserve

Forest Vegetation

Pseudotsuga menziesii - Tsuga heterophylla / Rhododendron macrophyllum - Vaccinium ovatum - Gaultheria shallon Forest

Douglas fir - Western Hemlock/ Rhododendron - Huckleberry - Salal Forest
Location

Produced by T. Ramm-Granberg, NCCN I&M, August 2015
*Camassia quamash* Wet Prairie Herbaceous Vegetation
Common Camas Wet Prairie Herbaceous Vegetation
Vegetation

Water Resources Center Area

Quercus garryana - (Fraxinus latifolia) / Symphoricarpos albus Forest
Oregon White Oak - (Oregon Ash) / Snowberry Forest
Products

NPS Vegetation Inventory Products

IRMA Portal
Integrated Resource Management Applications

Vegetation Inventory Project for Lewis and Clark National Historic Park 2009-2013. Project 2177300.

NatureServe EXPLORER.
An Online Encyclopedia of Life
Plant species respond individually to climate change, what are the benefits of community level classification work?

- Species occur together repeatedly
- Plant communities are often more than the sum of their parts
- No-analog communities
- Baseline studies needed for assessing change
Thank you!