Plant habitat distribution modeling and gap analysis for select species in Washington State

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Issue

Human development and changes to the climate threaten botanical diversity in Washington state. Understanding the distributions of plants helps inform vegetation management plans that address changes to land use and climate patterns.

Method

This project uses ArcGIS software to model select plant species distributions, analyze the intersection of these distributions with land management/ownership parcels, and run a gap analysis.

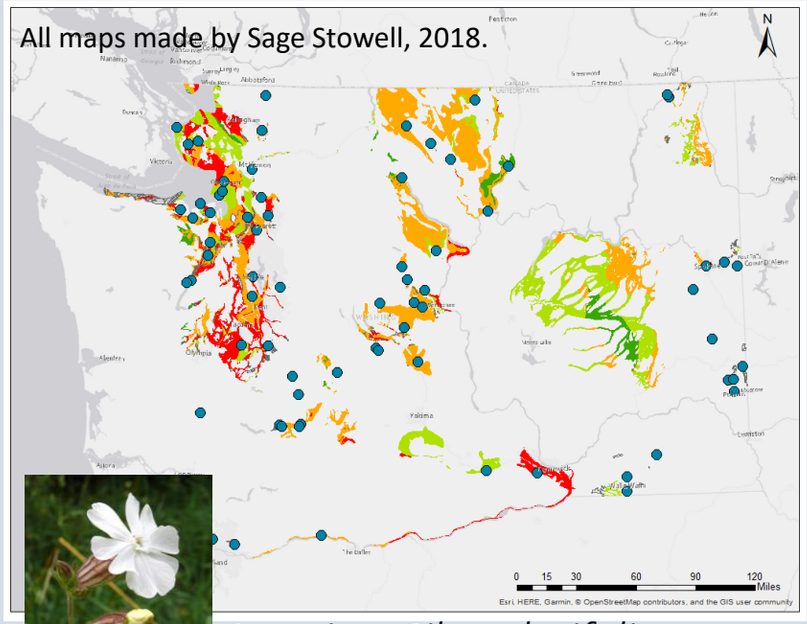
Main question

Are select plants growing in land management parcels that have conservation policies in place?

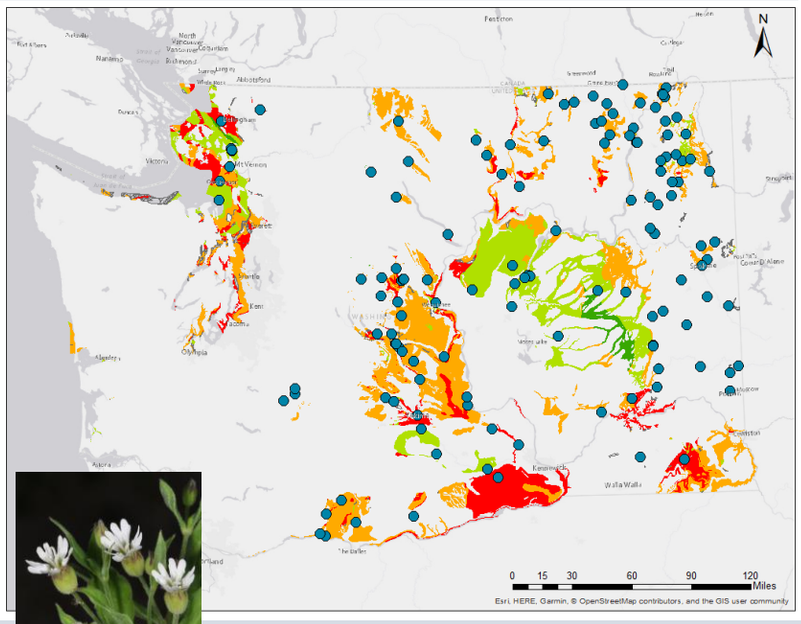
Plant Selection

Invasive, common and rare species in following genera*: Artemisia, Geranium, Hypericum, Lepidium, Impatiens, Nymphaea, Polygonum, Rubus, Silene* and *Spartina*. Example of *Silene* distributions in Caryophyllaceae family below.

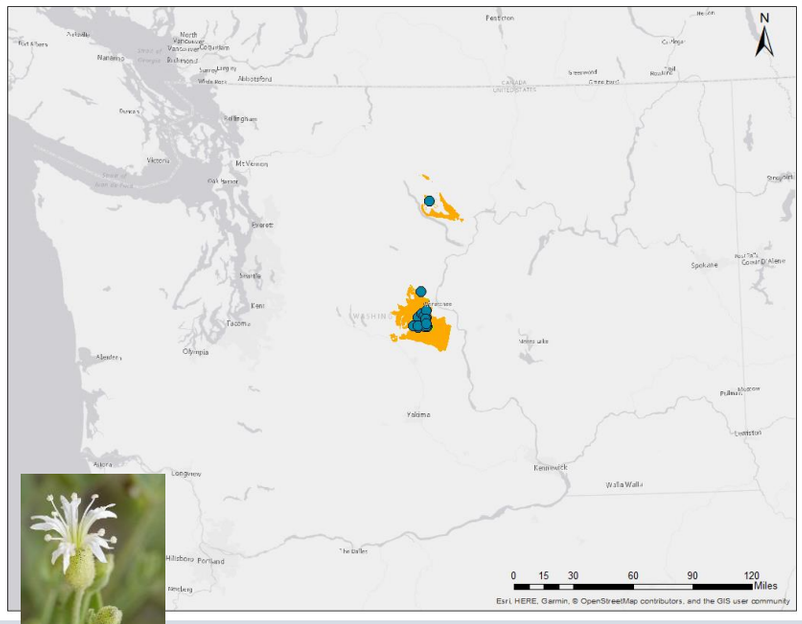
Plant occurrence point



Invasive: *Silene latifolia*



Common: *Silene menziesii*



Rare: *Silene seelyi*

What is gap analysis?

Gap analysis is a tool used in the field of conservation to determine areas where significant plant species and their habitats intersect with federal or state protected lands. These areas are called “gaps” and are given a rating from 1-4 by the National Gap Analysis Program.

A gap analysis consists of mapping three data layers:

1. land cover of dominant ecological system
2. predicted distributions of a species
3. land stewardship layer depicting conservation status of protected areas

Gap Category	Definition	Example
1	Permanent protection plan	National Parks and Monuments
2	Permanent protection plan/some mixed use	Nature Conservancy conservation easements
3	Some permanent protection/mixed use common	BLM, US Forest Service
4	No permanent protection/intensive use	Private, state, and tribal lands

Gap Status table adapted from Walter Fertig Dissertation, 2011.

Gap analysis information adapted from National Gap Analysis Program website, 2018.
Silene latifolia photographer name not found. Available on following website: http://www.uniprot.org/taxonomy/52853
Silene menziesii image credit: Robert L. Carr, 2009. *Silene seelyi* image credit: Rod Gilbert, 2008.