A Climate Change Assessment of Vegetation, Fire, and Ecosystem Services for Tribal lands in the Pacific Northwest

Investigators

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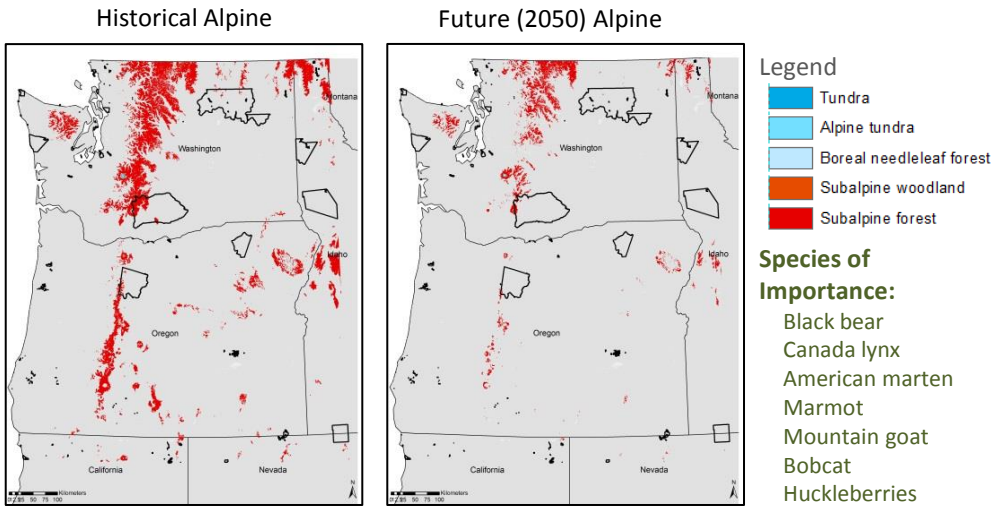
Partnerships

Skokomish Indian Tribe
Confederated Tribes of Warm Springs
Confederated Tribes of the Umatilla Indian Reservation
Bureau of Indian Affairs Northwest Region Office
Pacific Northwest Tribal Climate Change Project
University of Washington
Tulalip Tribes
Confederated Tribes of Siletz
Confederated Tribes of Grand Ronde
Upper Snake River Tribes Foundation
Northwest Indian Fisheries Commission
Northwest Fire Science Consortium

Results

We synthesized projections of changes in vegetation and fire across tribal lands in the PNW. We also explored how traditional knowledge can help inform the understanding of climate change impacts and its effect to tribal ecosystem services, such as traditional foods, hunting, timber production, non-timber forest resources, ranching quality, agricultural suitability, and threats to cultural resources. Our results show substantial changes in some vegetation types (such as subalpine forests and shrub steppe) due to climate change and fire. We demonstrate how these changes will impact economically and culturally important ecosystem services for tribes. Surprisingly some first foods and medicinal plants may increase in suitable habitat whereas arid-land species and grazing quality are projected to decline.



Potential changes in alpine and subalpine vegetation types as simulated by MC2 dynamic global vegetation model (DGVM) for historical (left) and one future climate projection (CESM1-CAM5 GCM simulating RCP8.5 climate change scenario, 2040-2060) (right). Black polygons delineate tribal reservations.

Products

We produced a series of visual aids that illustrate how vegetation, fire, and ecosystems services are projected to change across tribal lands in the PNW (see figure for example). We also produced a vegetation – ecosystem service guide which allows us to assess impacts to tribal resources.

Use

In the summer and fall of 2017 we will collaborate, exchange information, and disseminate our results through a series of workshops, reflecting on tribal knowledges when possible, and identify possible adaptation responses and opportunities.