

TerrAdapt: Guiding Large-Landscape Conservation Planning in Cascadia

STORY ONE IN A SERIES HIGHLIGHTING WASHINGTON STATE-FUNDED WORK LED BY THE CLIMATE IMPACTS GROUP AT THE UNIVERSITY OF WASHINGTON

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TERRADAPT IS AN ONLINE CONSERVATION TOOL THAT SUPPORTS FAST, COORDINATED ACTION ACROSS LANDSCAPES TO ADDRESS CLIMATE CHANGE AND DEVELOPMENT.



AT A GLANCE

- > **THE CHALLENGE.** Because of climate change and human development, landscapes are outpacing traditional monitoring techniques. At the same time, conservation practitioners need current information to make conservation decisions in this changing world.
- > **THE GAP.** Grants and other funding supported the core technologies of TerrAdapt but did not support the development of cloud-computing technologies
- > **STATE SUPPORT.** State funding has supported the development of critical cloud-computing technologies as well as engagement with land managers and other users
- > **THE IMPACT.** TerrAdapt is being used in Washington by a non-profit organization and multiple state agencies, and land managers nationally and globally are looking to Washington as a model for conservation planning.

THE CHALLENGE OF LARGE-LANDSCAPE PLANNING IN A CHANGING CLIMATE

TerrAdapt, a web-based conservation tool, was developed to fill a gap in regional-scale conservation planning. “Managers often have great local information to inform natural resource management within their boundaries, but rarely have access to the big picture regional-scale view needed to cooperatively manage the resource across boundaries,” Andrew Shirk, research scientist at the Climate Impacts Group, says.

As species move to find more suitable habitats in the face of climate change and our expanding human footprint, the need for regional-scale conservation planning has only increased. Now, decision makers need to not only act quickly, but work in concert. TerrAdapt recognizes the need to think and act at broader scales than in the past by painting a ‘big picture’ perspective of the landscape that can guide local decision-making. The conservation tool uses Google Earth Engine and other cloud computing technologies to provide managers with up-to-date regional-scale information so they make decisions based on current conditions, not the landscape as it was a decade or more ago.

ADDRESSING A GAP WITH STATE SUPPORT

The TerrAdapt team received federal, local and private funding to develop the tool's core capabilities and technologies. However, these funds did not cover the cost of automating TerrAdapt's workflows in Google Cloud or engaging with users across Cascadia – two features of the project that make it both ground-breaking and useful. Funding from the Washington state legislative proviso filled these gaps and supported the development of a cloud-based infrastructure for automating TerrAdapt workflows as well as outreach activities to users.

TERRADAPT IMPACT

60+

Layers of data

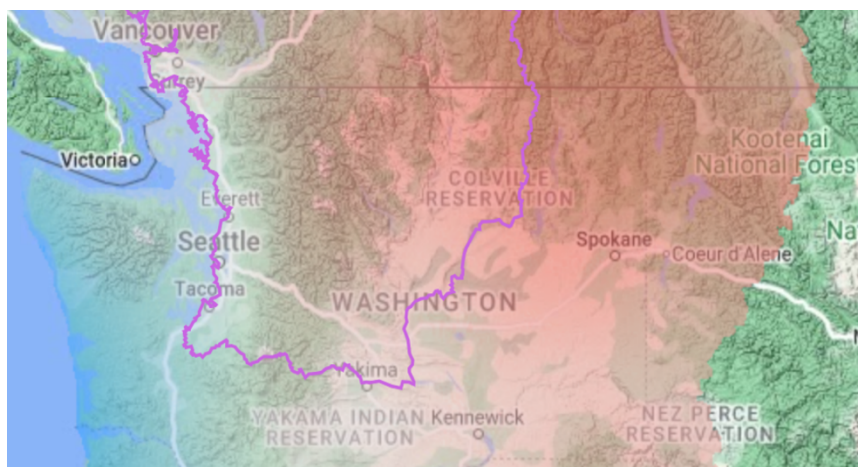
TerrAdapt: Cascadia reports on trends of biodiversity, projected climate, disturbance and landscape connectivity for four ecosystem types and four species, with a new data update expected in December 2023.

AGENCIES AND ORGANIZATIONS USING TERRADAPT

- > Washington Department of Natural Resources
- > Washington Department of Fish and Wildlife
- > Washington Shrubsteppe Restoration and Resiliency Initiative
- > US Forest Service
- > Cascadia Partner Forum
- > Aldo Leopold Wilderness Research Institute (upcoming, 2023 partner)

TerrAdapt is now used by non-profits and Washington state agencies with guidance from the Climate Impacts Group. At the Department of Natural Resources, we are integrating TerrAdapt data and functionality into their [Forest Action Plan](#) to help them better monitor how forest landscapes are responding to climate change and other stressors. We are also working with the [Cascadia Partner Forum](#) to monitor our region's changing landscape and both assess and project impacts of climate change and other stressors to key habitats and connectivity areas.

And the impact of TerrAdapt goes well beyond Washington. Other regions in the US and globally are looking to adopt the groundbreaking methods and frameworks we are using in Washington to better manage natural resources and keep conservation plans up to date in a rapidly changing world. In 2022, Shirk and others developed a non-profit organization to support application of TerrAdapt in regions around the world. Ultimately, state funding has allowed the TerrAdapt team to make a difference on the ground to improve the viability of species and habitats threatened by climate change and our expanding human footprint.



This TerrAdapt map shows projected change in annual temperature from 1990 to 2100.