



Washington's Natural Areas

A Statewide Network for Ecological Research

All areas within the state, except those which are expressly dedicated by law for preservation and protection in their natural condition, are subject to alteration by human activity. Natural lands, together with the plants and animals living thereon in natural ecological systems, are valuable for the purposes of scientific research, teaching, as habitats of rare and vanishing species, as places of natural historic and natural interest and scenic beauty, and as living museums of the original heritage of the state.

— Revised Code of Washington, Title 79.70

Conserving Washington's Natural Areas

Washington is home to a tremendous diversity of ecosystems and rare species. Natural areas designated by the Washington State Department of Natural Resources (DNR) protect much of this abundant biodiversity while also providing opportunities for researchers, educators and students to learn about Washington's species and ecological processes. Natural areas host research studies and serve as living laboratories for scientific and environmental education. By studying these areas, we improve our understanding of the natural world and what it takes to keep Washington's biodiversity healthy into the future.

A History of Research

Since the Natural Area Preserve Act established the program in 1972, more than 430 research projects and other studies have taken place on natural areas managed by DNR, including natural area preserves (NAPs) and natural resources conservation areas (NRCAs). The topics covered have been highly varied, including studies related to air and water quality, soil ecology, genetics, ecosystem monitoring, geologic events, rare species recovery, fossil distribution, climate change, and cultural histories. The majority of projects have focused on rare species monitoring and recovery, habitat restoration, and invasive species control methods. Natural areas provide a valuable ecological template of native ecosystems for use by other land managers.

Natural areas continue to be actively used for research and monitoring today. Here are a few highlights of recent projects:

- Researchers from Colorado State University and the [Bird Genoscape Project](#) are studying range-wide genetics and thermal tolerance in several subspecies of the Willow Flycatcher, a songbird found throughout much of North America and Central America. Goals of the study are to create a genetic “map” for this species and assess how the birds may adapt to higher temperatures under climate change. The research team received a permit to conduct the study at several natural areas in King County.



- Collaborating scientists from Oregon and Washington are [investigating carbon stocks in Pacific Northwest coastal wetlands](#), including at the Chehalis River Surge Plain NAP. These blue carbon ecosystems are recognized as providing many ecosystem services, including significant carbon sinks, yet few studies have quantified stocks of these coastal wetlands in the Pacific Northwest. This study is designed to assess the

range and variability of carbon stocks in different wetland types from Northern California to the Canadian border, measure how environmental variables such as inundation and salinity affect carbon stabilization, and determine what the historic rates of carbon sequestration are in intact coastal wetlands.

- As part of the [Sagebrush Songbird Survey](#), Audubon Society volunteers conducted surveys in 2019 at Cleveland Shrub Steppe NAP in Klickitat County. Results of these surveys and others from throughout eastern Washington will be used to update bird species maps, validate species distribution models, and ultimately to inform large-scale conservation projects and planning efforts.
- A graduate student from WSU-Vancouver established study plots at Columbia Hills NAP to measure pollinator diversity and abundance on the site. This is part of a study to assess how pollinators have responded to grassland restoration treatments implemented on the nearby Columbia Hills State Park. The intact native grasslands on the NAP provide an ideal reference site for comparison to the treatment area.

Who is involved?

Colleges and universities from throughout the U.S. and Canada, as well as high schools, government agencies, non-profit organizations, and individuals have conducted studies on Washington's natural areas. The DNR Natural Areas Program typically receives 10-15 applications to conduct formal research projects each year, in addition to many requests for field trips and educational outings. Natural Areas Program ecologists coordinate with researchers to help determine which natural areas will best suit their objectives, to ensure that their projects will not conflict with existing studies or with site conservation activities, and to provide data that may be of assistance.

The list of research participants includes universities and colleges both near and far, such as Washington State University, University of California-Berkeley, Duke University, University of Kansas, and, in Canada, the University of Alberta and the University of Guelph. A variety of local, regional, and international non-profit organizations are also represented, such as the Dishman Hills Conservancy (Spokane, WA), the San Juan County Land Bank (San Juan Islands, WA), the Institute for Applied Ecology (Corvallis, OR), the Natural History Museum of Los Angeles, The Nature Conservancy and the Canadian Museum of Nature.



A large number of projects were conducted at Pinecroft NAP in the 2000s by the North Central High School's science department in Spokane as part of a research program designed to teach real-life skills to aspiring scientists. These projects not only benefited the students involved, they also generated valuable data on a wide-range of topics.

A Statewide Network of Natural Areas

The system of natural areas managed by Washington State DNR includes 95 preserves and conservation areas throughout the state. This conservation system provides excellent representation of the state's biophysical environments and biodiversity, making natural areas prime candidates for ecological research. As of 2019, experimental and investigative research projects have been conducted on natural areas throughout the state, including 57 natural areas in 20 counties. Other types of inventory or monitoring projects have been carried out at an additional 22 sites statewide.





Getting Involved

Because DNR's natural areas are some of the highest functioning, most intact native ecosystems remaining, we can monitor them to better understand the challenges facing conservation ecology and natural resource management today, including climate change and the impacts of invasive species. These issues will require expanding and refining ecological theory and improving our understanding of ecosystem processes and functions. As new ecological questions emerge in the future, there will continue to be a need for establishing sites dedicated to hosting research addressing the wide array of topics related to species and ecosystems.

Washington's natural areas provide excellent research opportunities, today and into the future. Among current topics of research interest are:

- ***Influences of climate change***
 - *Natural area planning and design*
 - *Restoration targets*
- ***Invasive Species Ecology***
 - *Invasiveness and invasibility*
 - *Alternative control methods*
- ***Rare Species Ecology and Restoration***
 - *Butterfly habitat restoration*
 - *Pollination ecology*
 - *Introductions and re-introductions*
- ***Ecosystem and Community Ecology***
 - *Disturbance dynamics*
 - *Community assembly*
- ***Restoration Ecology***
 - *Minimum patch size and connectivity thresholds*
 - *Soil ecology*

***Interested in learning more or
conducting research on natural areas?***

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