WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

Research and Related Projects on DNR-managed Natural Areas

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Who is involved?

To date, over 400 research and related projects have been conducted on natural areas managed by the state Department of Natural Resources (DNR), including natural area preserves (NAPs) and natural resources conservation areas (NRCAs). The majority of these have been led by various universities and colleges (127 projects) or state agencies (123), followed by high schools (43), volunteers (41), non-profits (30), federal agencies (30), consultants (10) and local agencies (2).

Highlights include:

- 32 universities and colleges from throughout the U.S. and Canada including:
  - Nine different institutions from within Washington State
  - 23 institutions from other states and Canada, including: University of California (Berkeley), Duke University (North Carolina), University of Nevada – Las Vegas, University of Kansas, Notre Dame University (Indiana), St. Cloud University (Minnesota), University of Alberta, University of Victoria (BC), University of Guelph (Ontario)
- Non-profit organizations including: *local* (such as Dishman Hills Association in Spokane and San Juan County Land Bank in Friday Harbor); *regional* (such as Cascadia Research Collective, Institute for Applied Ecology and the Natural History Museum of Los Angeles); and *national* or *international* (such as The Nature Conservancy and the Canadian Museum of Nature).

What are they studying?

Project focus has been highly varied and includes: air quality, water quality, soil ecology, genetics, population monitoring, ecosystem monitoring, habitat restoration methods, weed control methods, geologic/earthquake history, rare species recovery, plant cultivar development, fossils, climate change, species inventories, cultural resource inventories, cultural histories and others. The majority of projects have focused on species inventory, monitoring and recovery, as well as habitat restoration.

Where are the Projects taking place?

Experimental and investigative research projects have been conducted at 45 natural areas in 20 counties throughout the state. Pinecroft NAP, near Spokane, and Mima Mounds NAP, near Olympia, have hosted the largest numbers of research projects, with 44 and 29 projects respectively.

Other types of inventory or monitoring projects have been carried out at an additional 22 sites statewide.

Recent Projects

Currently, 51 projects are active at 28 natural areas, including 11 research projects. Examples of active or recently-completed projects include:

- A research team from the U.S. Forest Service established long-term plots to assess the health of whitebark pine (*Pinus albicaulis*) stands at Chopaka Mt. NAP. Whitebark pine has been declining in recent years, due to disease and insect damage and potentially climate change, and has been added to the federal Endangered Species Act list of candidate species.
- A study is being led by the United States Geological Service to assess key factors influencing potential climate change response of pika populations (*Ochotona princeps*). Among other components, this project is examining the distribution and connectivity of pika within the Columbia River Gorge, as well as microclimatic variables at occupied and unoccupied sites including Columbia Falls NAP and Table Mt. NRCA. (http://www.usgs.gov/newsroom/article.asp?ID=3526)
- Northwest Lichenologists (http://home.comcast.net/~nwlichens/nwl.htm), a regional non-profit group, conducted a first-ever survey of lichens associated with Garry oak habitats in Washington State. This project, which included surveys at several DNR Natural Areas, also provided insights into air quality conditions at the sites due to the sensitivity of certain lichen species to air pollution.
- Soil scientists are measuring soil carbon levels in the Columbia Plateau ecoregion as part of a study to quantify soil health in actively managed agriculture, Conservation Reserve Program, and unmanaged reference sites, including several DNR Natural Areas. This study is part of the "*Palouse Soil Carbon Project: A Public-Private Partnership*." (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1081478.pdf)
- An artist-in-residence in coastal Ireland conducted a project entitled "*Artistic interpretations of Irish and Pacific Northwest Bogs*" that included North Bay NAP as one of its focal sites. This project incorporated photography, drawing, sound recording, and writing to interpret bog environments in Ireland and the Pacific Northwest.

Future Research Interests

Washington's natural areas provide opportunities to study a wide variety of ecosystems and species. Topics of particular interest currently include:

- **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

Prepared by David Wilderman, Natural Areas Ecologist, June 2013