

NPS National & Regional Climate Change Program

March 2, 2011



Mount Rainier National Park

NPS Climate Change Response Program (CCRP)



Leigh Welling
Climate Change
Program
Manager

- Natural Resource Stewardship & Science Directorate (WASO)
- Four broad program areas:
 - Science – Patrick Gonzalez
 - Adaptation – Cat Hawkins Hoffman
 - Mitigation – Shawn Norton
 - Communication – Angie Richman
- Employees within other Directorates

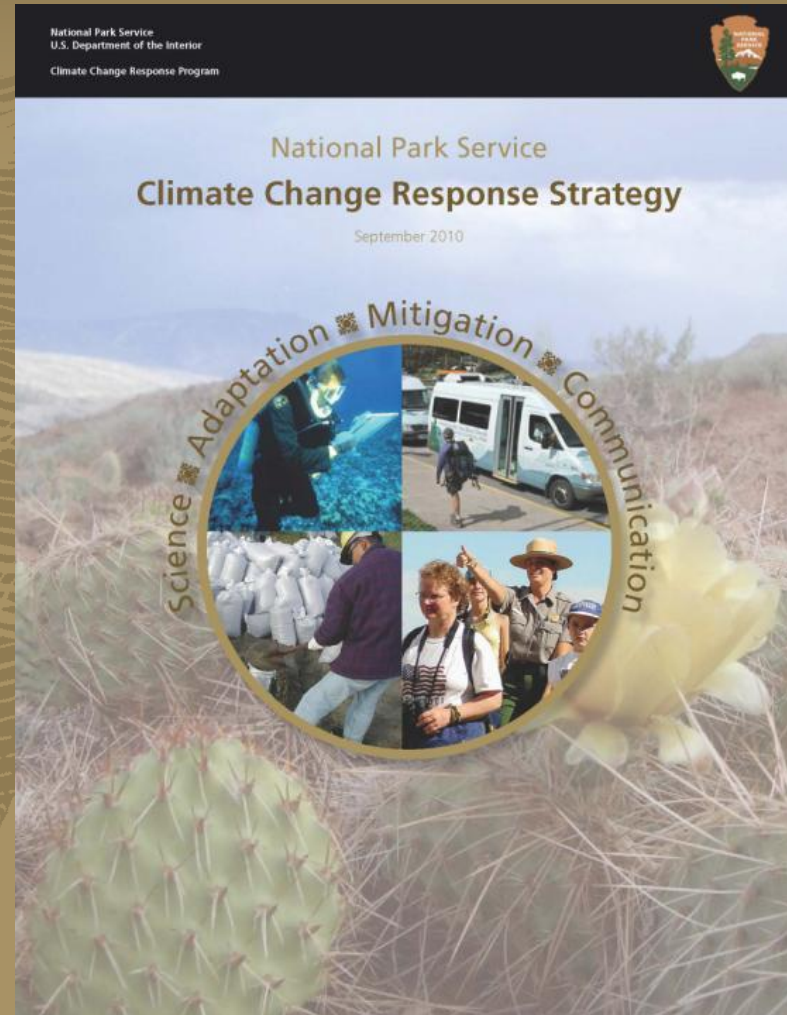


NPS Climate Change Response Strategy

4 Key Elements

- Science
- Adaptation
- Mitigation
- Communication

Plus legal and policy considerations



Science

- Conduct scientific research & vulnerability assessments to support NPS adaptation, mitigation, & communication
- Collaborate with scientific agencies & institutions to meet management needs
- Learn from and apply the best available climate change science

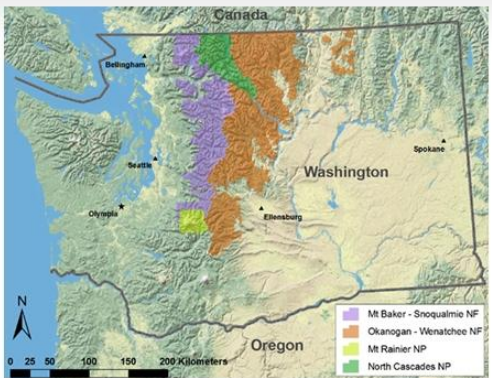
Adaptation

Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects.

Upcoming Efforts:

- NCAP
- Park Access
 - Coordinated with MORA projects (geologists, VERP)
 - Transportation Scholar

north cascadia adaptation partnership
Preparing for climate change through science-management collaboration




North Cascadia Adaptation Partnership (NCAP):

NCAP is a Forest Service - National Park Service collaboration that is using an "all lands" approach to:

1. Increase awareness of climate change;
2. Assess the vulnerability of cultural and natural resources; and
3. Incorporate climate change adaptation into current management of federal lands in the North Cascades region.

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- Who are NCAP?
- News & Events
- Climate Change Adaptation Resources & Links



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Mitigation

- Reduce the NPS carbon footprint
- Promote energy efficient practices, such as alternative transportation
- Enhance carbon sequestration as one of many ecosystem services
- Integrate mitigation into all business practices, planning, and NPS culture



Communication

- Coordinate and distribute climate change information throughout the National Park Service
- Increase climate change knowledge and understanding within the NPS
- Provide external communications about the implications of climate change & NPS response
- Model and communicate sustainable practices that lead by example



NPS Climate Change Implementation Plan Under Development

Effort being lead by the WASO CCRP

- **Dovetails off of the Climate Change Response Strategy**
- **4 Work Groups: Science, Adaptation, Mitigation, Communication**
- **2 rounds of reviews and completion by the end of FY 2011**

Pacific West Region Climate Change Coordination Committee (C4)

- *Share information, promote, and integrate climate change activities across the Pacific West Region.*
- *Cross-walk regional climate change efforts with NPS CCRP*
- *Organize and share climate change information with parks, directorate, program areas and partners.*
- *Articulate a regional climate change strategy (Science, adaptation, mitigation and communication)*





Other PWR Climate Change Tools

Pacific West Region

Green Accomplishments From the Past Year

National Park Service
U.S. Department of the Interior



EARTH DAY APRIL 22, 2010



Earth Day is about *connection and commitment*. It is our daily actions as an individual and the acknowledgment and promote our achievement in environmental performance. In doing so, we are effective and environmentally sound manner change. In 2008, the Pacific West Region published *Reducing Greenhouse Gas Emissions*. Because of the past year and in doing so, we renew our commitment to the future.

George J. Turnbull, Acting Regional Director

2009 proved to be a productive year for the Climate Friendly Parks program in the Pacific West Region. Since the previous Earth Day, nearly all of the parks in the Region have completed their greenhouse gas emissions inventories. North Cascades National Park, Olympic National Park and Mount Rainier National Park have been officially recognized as Climate Friendly Parks, bringing the Regional total to eight parks having completed the program. Four of the five Regional Networks have held Climate Friendly Parks Workshops, with the fifth and final workshop to be held this May.



The majority of the parks are in the process developing Change Action Plans, the step towards being recognized as Climate Friendly by the end of year. Through actions outlined in plans, parks aim to reduce emissions by 75,000 tons equal to removing 12,500 cars!

To complete this impressive five parks in the region from the Student Association to help gather emissions data, the inventory process by new Climate Friendly Parks will assist parks in developing Friendly Park Action Plans. Student Conservation interns has been a great model for the Climate Friendly program's implementation.



Representatives from parks across the North Coast & Cascades and Upper Columbia Basin Network create custom-fit Climate Action Plans, mitigating emissions in the areas of energy, transportation, waste and more.

Pacific West Region

National Park Service
U.S. Department of the Interior



Green Voice Special Edition Accomplishments in Reducing Greenhouse

Of all the various issues facing the National Parks in the next century, I believe global climate change will be the most challenging. For over a century, the foundation of national park management has been to protect natural processes and to restore ecosystems. Today, leading scientists around the world recognize these systems are being human influenced, shifting our baseline. Our coastlines, replete with the records of human history are expected to submerge beneath a rising sea. Fire regimes, floods and storms all are changing in frequency, duration and intensity with serious consequences to our parks. It is not all gloom and doom though. The mission of the National Park Service is inherently optimistic, as we are to preserve and protect parks for future generations. I interpret this charge as a mandate to the NPS to never be a bystander during times of crisis, but to lead by example and to help the public understand the changes we are seeing.

This Special Issue of the Green Voice is a summary of the actions we are taking in the Pacific West Region to address climate change, to demonstrate leadership in sustainability and educate the public about their options. Kermit the Frog said "It's not easy to be green" and I agree. It takes first leadership at the top. The PWR Directorate decided several years ago to make climate change a priority and it has become a central theme in all that we do. As is so often in the NPS, the parks only needed permission and away they have run with a multitude of ideas. Park maintenance staffs have converted fleets to bio-fuels, hybrid vehicles are appearing everywhere, and LEED certification has become the standard for new construction. For the second year running, we have purchased enough photovoltaic systems to more than offset all of our Regional office travel for the year, and we now are producing 700,000 KW of green power, enough to operate 18 small parks for a year. Composting systems, waste management, green procurement, and generator replacement are all in play in parks across the region.

Our emphasis on environmental leadership provides the perfect opportunity to educate the public about actions individuals may also take to create a sustainable world. The PWR is actively interpreting our many projects to inspire visitors to also take action themselves. Our next big challenge, aided in part by the Climate Friendly Parks program, is to better understand how we as park managers might play in a growing carbon market. Already we are calculating the carbon sequestration of the Redwood National Park restoration projects. So stay tuned, this is going to be a great ride.

Jon Jarvis
Regional Director, Pacific West Region

North Coast and Cascades Network Climate Change Resource Brief

Pacific West Region
Inventory & Monitoring
National Park Service
U.S. Department of the Interior



High Mountain Lakes

Global climate change is expected to impact mountain lake systems. With over 1,500 mountain lakes in North Cascades, Mount Rainier, and Olympic National Parks, this key and treasured ecological resource is at-risk to rapid and substantial increases in air and water temperature. At-risk are the timing and duration of ice cover and hydrologic regimes (e.g., snowmelt), potentially altering food web interactions, species diversity, and nutrient dynamics. To assess change, North Coast and Cascades Network Inventory and Monitoring Program (NCCN) monitors 18 high-elevation lakes, 6 in each park, to identify long-term trends in water quality, biological indicators, and lake physical characteristics.



Staff rafting to water samples locations in a high-elevation mountain lake at North Cascades National Park (NOCA).

Glaciers

Glaciers, sensitive to seasonal variation in temperature and precipitation, are excellent indicators of regional and global climate. Covering a combined area of ~60,000 acres in North Cascades, Mount Rainier, and Olympic National Parks, glaciers have shaped each park's dramatic scenery, topography, and landscapes while providing billions of gallons of freshwater for drinking, irrigation, hydroelectricity, fishing, water-based recreation, and wildlife. With small mountain glaciers in rapid retreat in these parks, declining upwards of 50% in the last 100 years, NCCN monitors six "index" glaciers for yearly mass balance and summer meltwater discharge, and for ten-year glacier area/volume changes.

Old-growth Forests

Tree mortality in old-growth forests of the Pacific Northwest is doubling every 17 years, most likely due to climatic shifts to warmer and drier conditions. Implications are fewer large trees, less carbon storage, forests predisposed to abrupt dieback, and habitat modifications affecting plant and animal composition and distribution. Of the old-growth forests that remain, the most significant—large contiguous blocks—persist in NCCN parks. To track the health of this iconic ecosystem, NCCN monitors trends in tree mortality, recruitment, and growth, and forest structure and composition, as it relates to climate change, in old-growth and mature forests of Olympic, North Cascades, Mount Rainier, and Lewis and Clark National Parks.



National Parks preserve, and NCCN monitors, some of the largest tracts of remaining old-growth in the Pacific Northwest.

Intertidal

National Parks in the North Coast and Cascades Network support the highest diversity of intertidal invertebrates and seaweeds on the west coast of North America (>350 species). While adapted to a harsh wave-swept environment, these marine organisms are especially vulnerable to global climate change through increased water and air temperature, changes in sea level and pH, and increases in the frequency and magnitude of storm events. NCCN monitors water and air temperature at 13 intertidal park sites, and sea level and marine organism abundance and diversity at 11 rocky beach and eight sand beach reference sites.



Staff monitoring plots in rocky intertidal habitat, a hotspot of biological diversity.

Contact Information

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NPS Climate Change Websites

Climate Change Response Program
www.nps.gov/climatechange

Climate Change SharePoint
nrpcsharepoint/climatechange

Climate Friendly Parks Program
www.nps.gov/climatefriendlyparks

