

## North Cascadia Adaptation Partnership

Progress Report – August 2011

NCAP personnel have been working to meet the objectives outlined in the NCAP study plan, with an ultimate goal of developing options for adapting to climate change across federal lands in north-central Washington. The project is divided into three phases, each designed to build towards adaptation options that are feasible and based on the best available science: (1) climate science education workshops at each national forest and national park, (2) a vulnerability assessment based on resource sector priorities identified by NCAP participants, and (3) development of adaptation strategies and tactics. The educational workshops were completed in April 2011. The NCAP core team selected four resource sectors for the focus of the vulnerability assessment and adaptation planning: (1) fish and fish habitat management, (2) vegetation and ecological disturbances, (3) hydrology, roads, and human access, and (4) wildlife. The vulnerability assessment and adaptation planning are underway with the completion of the first resource sector workshop on fish and fish habitat management in July. Work completed to date is described below.

### Educational Workshops

The educational phase of the project has been completed. The final educational workshop was held for the Mount Baker-Snoqualmie National Forest on April 28<sup>th</sup>. This workshop was well attended with over 80 participants. Attendees were primarily staff of the Mount Baker-Snoqualmie National Forest but other attendees included representatives from the Tulalip Tribes, Seattle Public Utilities, the Environmental Protection Agency, and The Nature Conservancy. Scientists from the University of Washington Climate Impacts Group presented information on climate change effects on hydrology, fish, vegetation and ecological disturbances. Other presentations included those given by: (1) Bill Shelmerdine, a forest engineer for the Olympic National and Mount Baker-Snoqualmie Forests, on the implementation of adaptation options for road management on Olympic National Forest, (2) Don Gay, a wildlife biologist for Mount Baker-Snoqualmie National Forest, on wildlife sensitivities to climate change, and (3) Tom DeMeo, acting climate change coordinator for the USFS Region 6, who presented summaries of the Region 6 vulnerability assessment and the USFS climate change strategy. Agendas and presentations for this and previous workshops are posted on the NCAP website (<http://www.northcascadia.org/>), so workshop

participants and others can follow up on the information presented in the workshops.

### Vulnerability Assessment and Adaptation Planning

Since completing the educational phase of the project, NCAP personnel have been focusing on vulnerability assessment and adaptation planning. These will be completed by holding paired two-day workshops for each of the four resource sectors: the first day focuses on vulnerability assessment, and the second day focuses on developing adaptation options. The workshops will bring together land managers from all four Parks and Forests in the partnership, as well as regional scientists with expertise in the field. The latest science from the University of Washington Climate Impacts Group (CIG) will form the foundation of the vulnerability assessment.

The first workshop, which focused on climate change effects on fish and fish habitat, was held in Seattle, WA on July 27-28. On the first day, CIG scientist Nate Mantua presented an overview of projected changes in regional climate and hydrology and the implications for fish and fish habitat. Fish biologists and aquatic ecologists from each of the four partner Parks and Forests presented their goals and objectives for fish management. They discussed how projected effects of climate change may affect

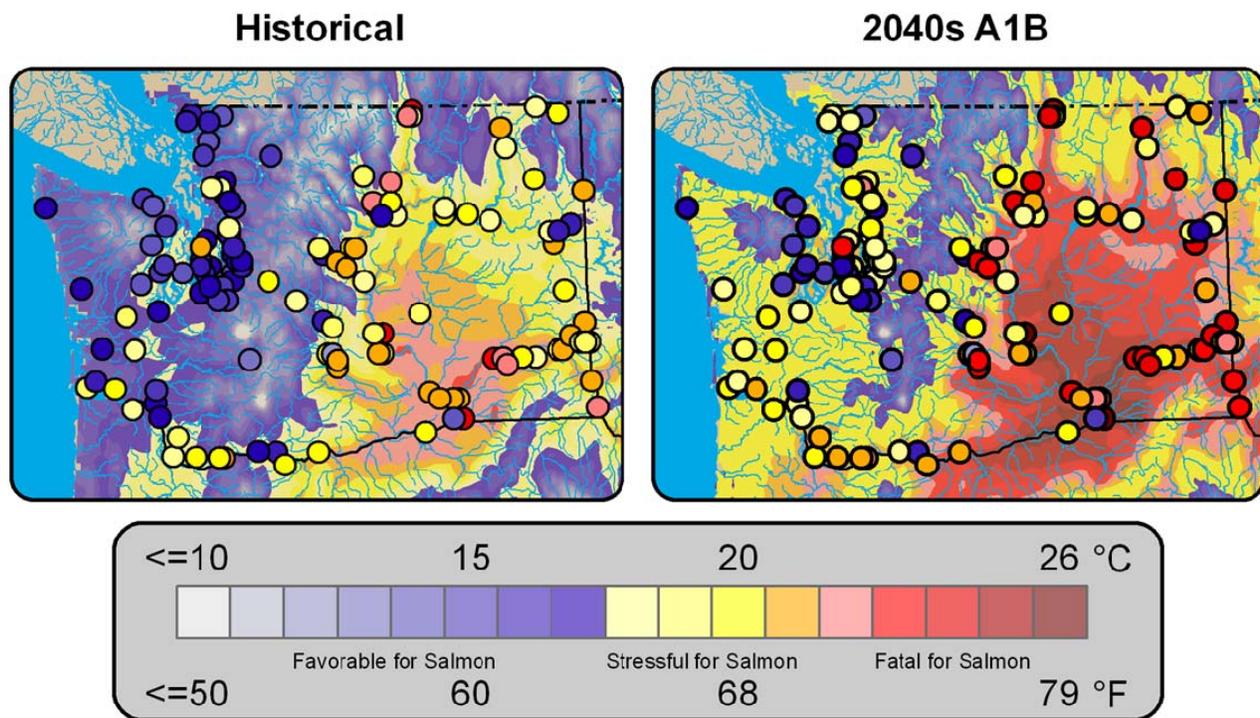


Figure 1. Color shading shows the historical (1970-1999) and future projected (2040s, A1B emissions scenario) mean surface air temperatures for August, and shaded circles show the simulated mean of the annual maximum for weekly water temperatures for select locations. Figure courtesy of Nathan Mantua, Climate Impacts Group, University of Washington<sup>1</sup>.

their ability to meet these management goals and objectives. Presentations by resource managers were followed by a panel of scientific experts from the National Oceanic and Atmospheric Administration, the USFS Pacific Northwest Research Station, Seattle City Light, and the Tulalip Tribes. The experts covered several topics including salmon restoration, bull trout monitoring, in-stream habitat restoration, and tribal perspectives on fish management. The afternoon included a working session during which scientists and resource managers worked together to identify the key climate change effects and sensitivities for fish management in the North Cascadia ecosystem.

The second day of the workshop focused on adaptation planning. Dave Peterson presented principles of climate change adaptation for resource management, and Dan Miller of Earth Systems Institute gave a demonstration of NetMap, a GIS-based program that can be used as a tool to plan adaptation projects. For the

remainder of the day, workshop participants identified adaptation strategies and tactics to reduce the vulnerability of fish and fish habitat to four climate impacts: (1) lower low flows, (2) higher peak flows, (3) increased stream temperatures, and (4) increased sedimentation from wildfires and glaciers. The results of this workshop will be compiled into a final report published as a USFS General Technical Report.

#### Collaboration and Communication

NCAP personnel continue to foster relationships with potential collaborators and stakeholders. NCAP partners include U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Seattle City Light, Seattle Public Utilities, NOAA, and University of Washington. A listserv is now available for the NCAP project. Partners and stakeholders can subscribe to the listserv to keep informed of events and progress of the NCAP project.

<sup>1</sup>Mantua, Nathan, Tohver, Ingrid, Hamlet, Alan. 2010. Climate change impacts to streamflow extremes and summertime stream temperature and their possible consequences for freshwater salmon habitat in Washington State. *Climatic Change* 102: 187-223.