NATIONAL WILDLIFE FEDERATION®
2100 Westlake Ave North Suite 107
Seattle WA 98109
206-285-8707
www.nwf.org/pacific

December 16, 2013

Mary Mahaffy
Science Coordinator
North Pacific Landscape Conservation Cooperative
510 Desmond Drive SE, Suite 102
Lacey, WA 98503-1263

RE: Progress Report, U.S. FWS Agreement Number F12AC01035

Dear Ms. Mahaffy:

National Wildlife Federation (NWF) is pleased to provide you with this progress report for U.S. FWS Agreement Number F12AC01035 – *Enhancing Outreach and Facilitating Climate-Smart Implementation of Strategic Science and Traditional Ecological Knowledge in the North Pacific Landscape Conservation Cooperative (NPLCC).* This report covers activity from January 1, 2013 through September 30, 2013.

NWF began work under this Agreement in January 2013 and will complete all work associated with the Agreement by December 31, 2013. Overall, the project deliverables are proceeding on-time and within the current budget. Currently, we foresee no obstacles to meeting the project timeline.

Under this Agreement, NWF is developing content for the "NPLCC Interactive Climate Change Map" – an interactive web-based map of climate change impacts in the NPLCC region. Content is drawn from the report *Climate Change Effects and Adaptation Approaches in Freshwater Aquatic and Riparian Ecosystems in the North Pacific Landscape Conservation Cooperative Region* and focuses on the effects of current and projected hydrologic changes in the North Pacific LCC region. More specifically, content has been developed for three categories of impact: glacier changes, changes in snowpack and streamflow, and increased water temperature. Under each of these categories of impact, content has also been developed for key risks and benefits to fish, wildlife, and ecosystems, and climate-smart response strategies and case studies. Every entry in the map synthesizes this information in 200-300 words and is specific to an ecological subregion of the NPLCC.

NWF is working closely with three partners to complete this work. To ensure the final product advances the NPLCC mission and goals and given this is a priority project of the NPLCC, NWF and the NPLCC work closely on map design, content development, and implementation. NWF also collaborates with the map developer, EnviroIssues, on the visual display of map content and map navigation. Finally, NWF is managing the development of additional map content by the U.S. Fish and Wildlife Service.

A *beta* version of the map was presented to the NPLCC Steering Committee on September 11, 2013 and received positive feedback. For example, one Committee member and one NPLCC partner stated the map's approach to synthesizing and visualizing detailed scientific information may be useful in their or their colleagues' work. They are planning to share the map with their colleagues.

The interactive map is an accessible, informative, and visual venue for the interested non-scientist or resource manager to acquire a synthetic summary of how climate change is or may affect fish, wildlife, and ecosystems in the NPLCC region. The map also provides information on what can be – and is being – done to address climate change impacts. The map is also unique to the region, as similar maps target larger geographies or different topics. When work under this Agreement is completed, a pilot version of the map will be available to the NPLCC.

Please see the Appendix on pages 3-5 for more detailed information on the project background and map structure. NWF appreciates the opportunity to contribute to this important work.

Thank you for your support.

Sincerely,

Patty Glick, Project Manager
Senior Climate Change Specialist
National Wildlife Federation, Pacific Region
2100 Westlake Ave. N., Suite 107
Seattle WA 98109

Patricia Tillmann, Project Coordinator
Research Associate
National Wildlife Federation, Pacific Region
2100 Westlake Ave. N., Suite 107
Seattle WA 98109

APPENDIX. Background & Map Structure

I. Background

Interactive tools that visualize climate change impacts and build understanding of climate change science were requested by natural and cultural resource managers, conservation practitioners, and researchers working in the NPLCC region.[1] Additional requests from these professionals include products that synthesize existing climate change-related information and improved communication with the public, decision makers, and among those working to address climate change in their conservation and sustainable management work.[1] The interactive map responds to all of these requests.

Content for the interactive map is drawn and synthesized from the report NWF produced on climate change effects and adaptation approaches in the region's freshwater ecosystems.[2] With this approach, the report's information can now "live" online and is more accessible and useful to a broader audience. As new peer-reviewed studies and agency literature are published on climate change effects in the region, the map can be updated easily to ensure the most relevant and recent information is available to the user. To our knowledge, this map is unique to the NPLCC region. While there are similar maps available, they are generally focused at a larger geographic scale or on different topics (e.g., Climate HotMap, EIS Mapper).

II. NPLCC Interactive Climate Change Map: Structure

A. Overview

At the highest level, a user can navigate the map by the category of impact or by location (Figure 1).[3] Once a user selects a category of impact, they have three ways to access information on the impact, depending on their location of interest:

- *NPLCC-Wide Summary* is the "big picture" and synthesizes information on the impact across the entire NPLCC region. There is one of these entries per category of impact.
- *Ecoregional Summaries* synthesize information on the impact within a particular ecological and jurisdictional subregion of the NPLCC (Figure 2). Up to 17 entries are possible per category of impact, one for each ecoregion. If there is no information in an ecoregion, the ecoregion will not be listed.
- *Specific Location Examples* synthesize information on a specific location within an ecoregion when two criteria are met. First, there is substantial information on the impact and location. Second, the location is of cultural, economic, recreational or other interest to the target audiences. The number of entries will vary by category of impact and may be zero.

Once a user selects a category of impact and location of interest, they are presented with their selected entry. Each entry provides information on the climate change impact (e.g., glacier changes), key risks and benefits for fish, wildlife, and ecosystems, and climate-smart response strategies and case studies (Figure

[1] Tillmann, Patricia, and Dan Siemann. *Advancing Landscape-Scale Conservation: An Assessment of Climate Change-Related Challenges, Needs, and Opportunities for the North Pacific Landscape Conservation Cooperative.* National Wildlife Federation – Pacific Region, Seattle, WA. 2012.
[2] Tillmann, Patricia, and Dan Siemann. *Climate Change Effects and Adaptation Approaches in Freshwater Aquatic and Riparian Ecosystems of the North Pacific Landscape Conservation Cooperative Region: A Compilation of Scientific Literature.* Final Report. National Wildlife Federation – Pacific Region, Seattle, WA. December 2011.
[3] Contingent on future funding, categories of impact for terrestrial and other impacts will also be included.

3).[4] Every entry therefore answers the questions "What are the historic, current, and potential future impacts of this category of impact? How will these changes affect fish, wildlife, and ecosystems in the NPLCC region? What can be done to prepare for the coming changes?" Once a user has explored one entry, they can navigate to other entries using the navigation buttons. For users interested in a more in-depth look at the science, a complete source list is available.

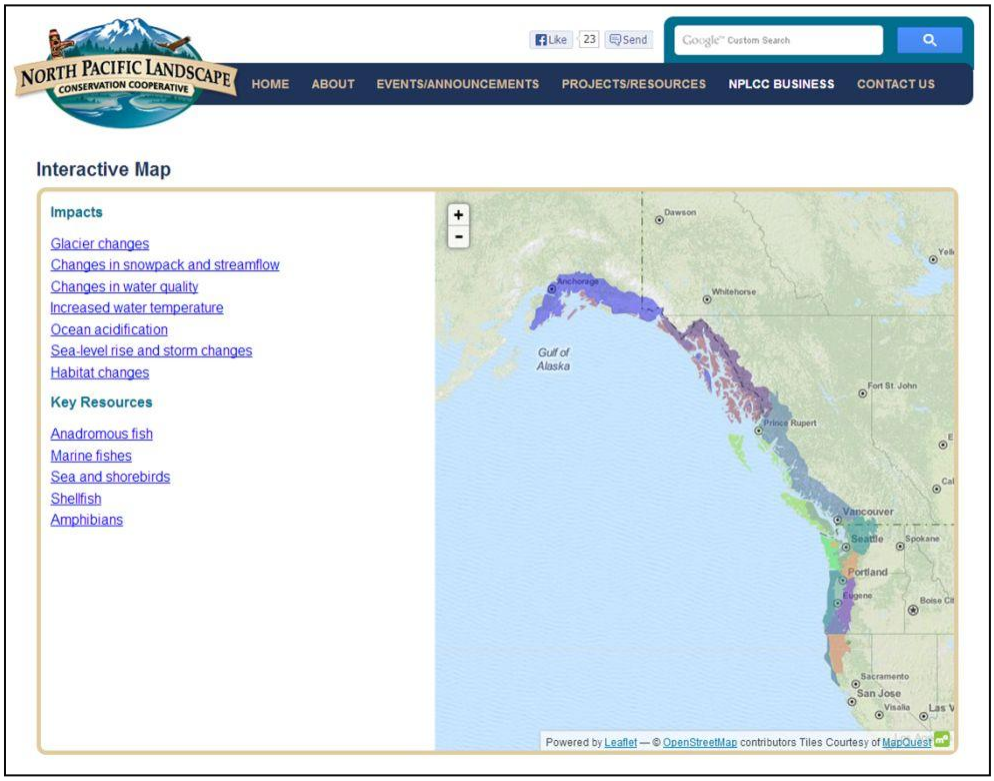

Figure 1. NPLCC Interactive Climate Change Map Homepage (*beta*) showing categories of impact (left) and the NPLCC region (right).

[4] Given the criteria for Specific Location Examples, some of this information may not be available for Specific Location Examples.

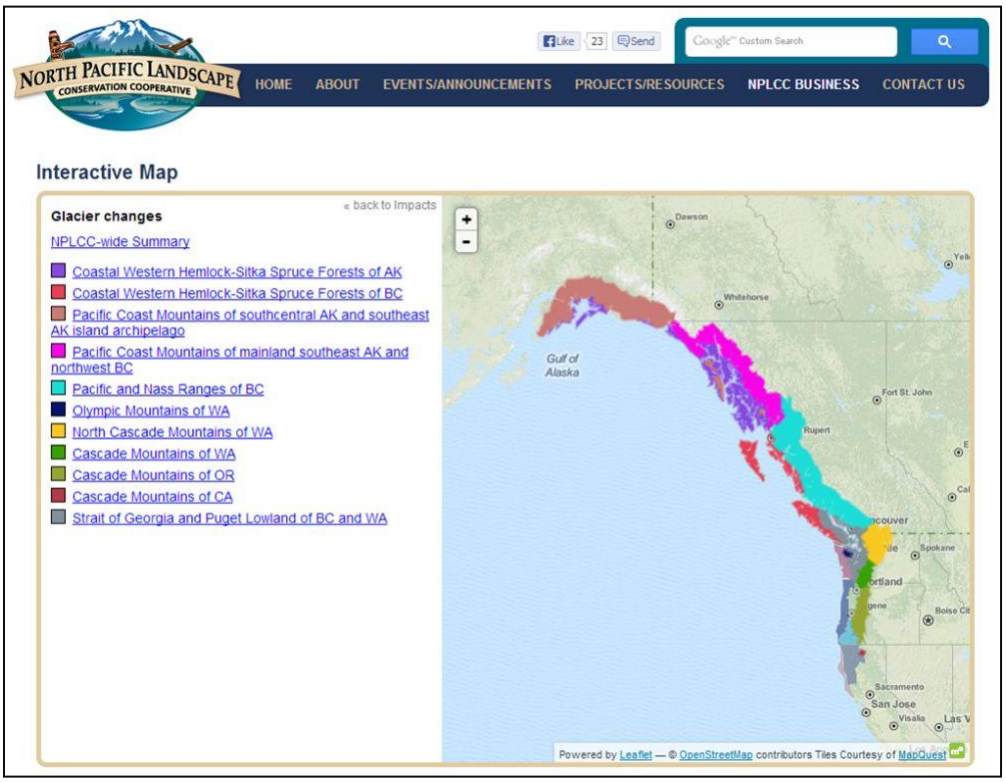

Figure 2. For the category of impact Glacier Changes, hyperlinks to the NPLCC-Wide Summary and the available Ecoregional Summaries are shown at left.

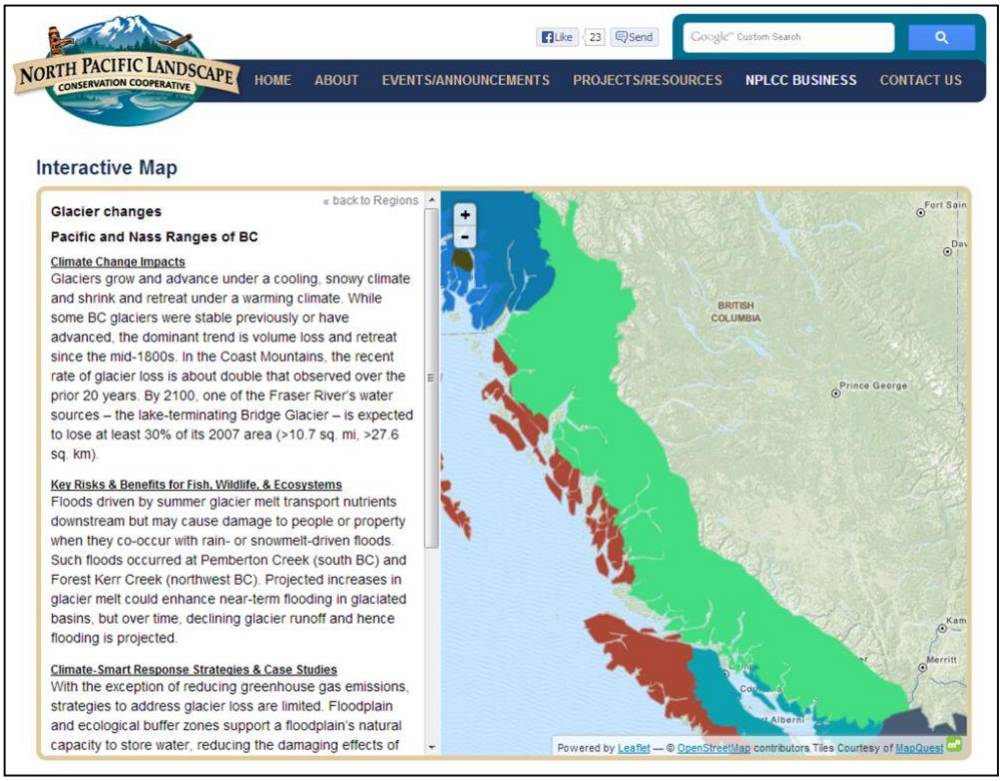

Figure 3. Sample Entry showing the three categories of information (left) and a close-up of the relevant location (right).