



A Coupled Assessment of Climate Change

Project Title: A Coupled (Ocean and Freshwater) Assessment of Climate Change Impacts on Pacific Lamprey and Pacific Eulachon

Headline Title (2-5 words): A Coupled Assessment of Climate Change

Brief Summary (Abstract): This project will evaluate the impacts of future climate change scenarios on the survival and viability of Pacific lamprey (*Entosphenus tridentatus*) and Pacific Eulachon (*Thaleichthys pacificus*) populations that are used as food sources by the Native American tribes of the Columbia River Basin and the coastal areas of Washington and Oregon. This evaluation will couple projected changes to ocean conditions and to freshwater habitat, and consider the effects of these changes on the life cycles of these fish populations.

Project Location: Columbia River Basin and the Eastern Pacific Ocean and estuaries.

Partners: Columbia River Inter-Tribal Fish Commission, NOAA Fisheries, University of British Columbia

Background: Like Salmon, Pacific Lamprey and Pacific Eulachon are important food sources for the Native American tribes of the Columbia River Basin. These first foods are likely threatened by climate change through a myriad of impacts which will affect the life cycles of these fishes, including shifts in stream flow, warmer stream temperatures, and changes to ocean upwelling conditions and food availability. In order for the tribes to prepare for changes to these food sources, an assessment of how these impacts will affect different populations is needed. Such an assessment must couple ocean changes with freshwater changes from future climate scenario in order to understand how the entire life cycle will be affected. Management of these stocks is a joint concern of the tribes and state and federal agencies, but is hindered by the lack of reliable information about how their abundance and survival may be threatened by climate change.

Project Goals:

1. Develop an assessment of how climate change impacts will affect different populations of Pacific lamprey and Pacific Eulachon in the Columbia River Basin.
2. Disseminate the progress and findings of the project to a wide and appropriate audience.

Strategy Goals Implemented: 3.1, 4.1, 4.2, 5.2, 5.3, 6.1

Climate Impacts Addressed: Sea surface temperatures, coastal ocean conditions

Status of Project Implementation (Timeline, Milestones, Next Steps): In progress with an end date of September 30, 2015

Expected Project Outcomes:

1. Develop empirical relationships with key environmental variables and survival abundance for lamprey and eulachon
2. Build on existing models to develop scenarios for future ocean conditions and for stream temperature flows aiding in understanding of lamprey and eulachon response to climate change scenarios.



NATIONAL *fish, wildlife & plants*
CLIMATE ADAPTATION STRATEGY

3. Disseminate project results through publication in a peer reviewed journal, presentations to state federal and tribal fisheries managers, advisory committees, technical committees and the Columbia River InterTribal Fish Commission and website.

Funding Sources: North Pacific LCC and NW Climate Science Center

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Photos/Attachments: Attached – “sharma1.jpeg”

Photo/Figure Credits (do we have permission to print): Roger Tabor/USFWS, yes permission to print

Suggested Photo Caption: An adult Pacific lamprey, a key food source for Columbia River Basin Native American tribes, rests in the Columbia River.