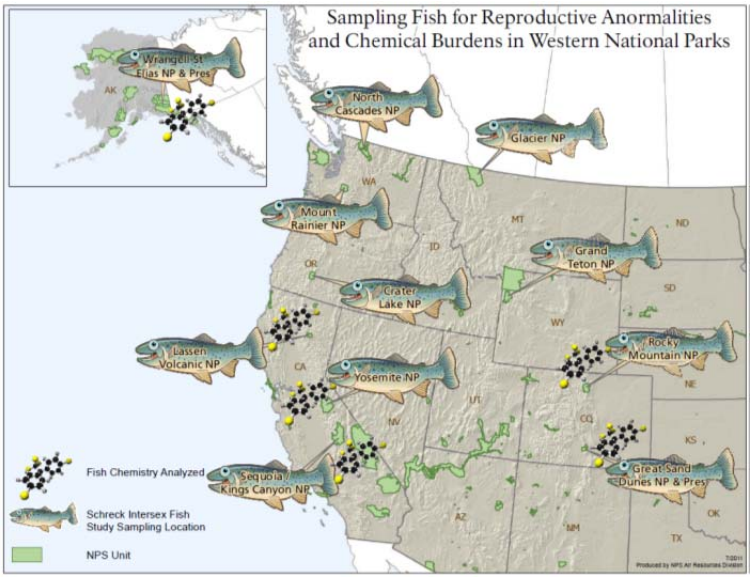
Extent of Endocrine Disruption and Contaminant Burdens in Fish Across Western U.S. & Alaskan National Parks

Study Description:

Results of the recently-released Western Airborne Contaminants Assessment Project (WACAP) indicate that contaminant concentrations in fish exceed human and wildlife health thresholds, and some fish exhibit reproductive abnormalities (i.e., intersex). Intersexuality in fish, the presence of both male and female reproductive structures in the same animal, is a common biomarker of a response to exposure to certain xenoestrogenic contaminants (including pesticides) that mimic the hormone estrogen. This response can lead to endocrine disruption. Contaminants detected in WACAP fish include pesticides, PCBs, and emerging chemicals. Given the remote nature of the study sites, atmospheric transport is a significant pathway of contaminant delivery to these ecosystems. Through a collaborative effort between OSU and NPS, fish samples collected from additional, mostly non-WACAP, national parks will be analyzed for endocrine disruption and contaminant concentrations. This effort is designed to document the presence of contaminants in fish and potential biological effects, and fill gaps in our spatial understanding of contaminants of emerging concern throughout western and Alaskan national parks.

Study Locations:

Fish tissue samples and contaminant burdens were analyzed from national parks across a broad geographic area, spanning north-south from Alaska to southern California, and east-west from the Pacific Ocean to the Rocky Mountains. See adjacent map for participating national park units throughout the western U.S. and Alaska. Over 1,000 fish samples (*Salmonid* spp.) were collected from 41 remote, high elevation/high latitude lakes.



Media Sampled and Parameters Analyzed:

Fish tissue samples from 11 national parks were analyzed for reproductive abnormalities, while contaminant burdens were analyzed in a subset of those fish from 5 national parks. Contaminant data from an additional park (Sequoia & Kings Canyon) will be final in 2012.

Study Timeline:

Fish were collected from parks in 2008, 2009, and 2010. Contaminant data for 5 of 6 parks is final and available (Simonich et al., 2012). A report on findings of endocrine disruption is forthcoming.

Agencies and Partners:

Oregon State University
USGS Oregon Cooperative Fish and Wildlife Research Unit
NPS Air Resources Division and participating national park units

Contacts:

Carl Schreck
Oregon State University (OSU)
Corvallis, OR
541-737-1961
carl.schreck@oregonstate.edu

Staci Simonich
Oregon State University (OSU)
Corvallis, OR
541-737-9194
staci.simonich@orst.edu

Tamara Blett
National Park Service (NPS)
Denver, CO
303-969-2011
tamara_blett@nps.gov