Critical Habitat and Invasive Species

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Invasive Lake Trout in Yellowstone Lake – A Case Study
History of Yellowstone Cutthroats

- Native trout of northwestern WY, eastern ID, southeastern MT and parts of MT, UT and NV
- Extirpated from over 57% of its native range by habitat degradation, competition with invasive species, hybridization with other trout, general warming of historic waters.
- Significantly hybridized in 1/3 of remaining range by rainbow trout.
- Petitioned for listing under ESA in the late 1990’s. Declined primarily based on then current restoration efforts.
Yellowstone Lake Population of YCT

- Yellowstone Lake population of 4 million in the 1970’s was the most significant remaining genetically pure population anywhere.
- Thought secure due to NPS land status, protection from development, high elevation ensuring cold water, lack of competing species, and isolation.
- Reduced to 5-10% of former level by 2008 as a result of direct predation by an illegal lake trout implant in the 1980’s.
Ecosystem Impacts

– 40 Species

Directly and Likely Secondary Impacts
Economic Impacts

• Direct loss of sport fishing ($36 million annually).
• Losses to the outfitting industry.
• Impacts to general tourism and their experiences.
What is Being Done?

• Netting to reduce the numbers of lake trout.
• Telemetry to ID lake trout spawning areas allowing alternative suppression of ova/fry.
Results of the Recovery Efforts

• Lake trout numbers are roughly \( \frac{1}{2} \) of what they were 4 years ago.

• Cutthroat numbers are about 3 times their level of 4 years ago with much greater juvenile survival.
Who’s Paying for the Efforts

- NPS spends roughly $1 million annually for netting and other scientific studies.
- Yellowstone Park Foundation spends another $1 million annually for the netting.
- NGO’s (TU, GYC, NPCA) and the USGS spends about $1/3 million annually for the Telemetry and ova/fry studies. Majority from WWNRT grant.
Lake Trout Throughout the West

• There are at least 14 major systems in the west where non-native lake trout are preying on native or popular sport fish and are considered problematic:
  – Flathead Lake
  – Lake McDonald in Glacier NP
  – Swan Lake
  – Blue Mesa Reservoir
  – Lake Granby
  – Lake Chelan
  – Lake Pend Oreille
PNW - Regional Defense Strategy

- Funded by the State of Washington
- 2014-2015

Estimated Economic Impact of Quagga/Zebra Mussels to the Region:
Over $500,000,000 per year every year!
Little Mussel...Big Threat
The Northwest is the last region in the U.S. without mussels...

...but we know they’re coming.
Intake Towers Hoover Dam - April 2009

Trash Racks
6/2009

Upper Cylinder Gate
11/2007

Fore bay 1094 ft

Intake - 1045 ft

Intake - 895 ft
Penstock belly drain – Oct 2010
Why Focus on Prevention?

Because it is MUCH cheaper AND more effective than control!

**Prevention**
Current expenditures in NW $3 million

**Control**
will cost hundreds of millions of dollars per year (IEAB, 2010)
Key Recommendations for Region

- Stop them at the source!
- Secure long-term sustainable funding
  - U.S. – WRRDA Funds?
- Establish real time information sharing
- Share resources across the region
- Engage all at-risk stakeholders
- Coordinate efforts and share best practices
- Establish regional coordination entity
**AT RISK: Reliable, Affordable, Clean Energy**

- CRB is home to 60 hydropower and storage facilities
- Mussels can survive and reproduce in CRB (PSU, 2012)
- In-water infrastructure = high risk (hydropower, irrigation, fish passage screens, etc.) (IEAB, 2010)
Prevention

It’s our best line of defense….It’s the most cost effective measure….yet we can’t seem to generate support to implement an effective prevention program provincially or nationally. How do we get the support needed?

An unfortunate new “reality” for Lake Winnipeg.
Lahontan Cutthroat Trout Recovery in Nevada
Background
Originally listed under ESA as endangered in 1970 and reclassified as threatened in 1975
Recovery actions are guided by 1995 LCT Recovery Plan

LCT in Nevada are currently managed under three distinct Geographical Management Units (GMUs)
- Northwest GMU, Humboldt GMU, & Western GMU
Humboldt & Northwest GMUs

Characterized largely by the fluvial life form of LCT – Found in small, isolated, high elevation streams with limited metapopulation potential

Recovery actions in these GMUs are guided by the 1995 Recovery Plan, State Species Management Plans, and goals established by respective GMU Teams

Primary recovery efforts by the states (OR, NV) are currently focused on these GMUs
Although some existing and potential fluvial populations exist, the Western GMU is characterized by a number of lacustrine (adfluvial) populations such as Pyramid Lake, Lake Tahoe (potential), and Independence Lake.

Recovery actions are guided by the Carson, Walker, Truckee, and Tahoe Basin Recovery Implementation Teams (RITs).
Primary Threats to LCT in Nevada

- Non-native salmonids (competition and/or hybridization)
- Diversions
- Habitat degradation (ungulate use)
- Fire
- Drought
LCT Stream Recovery Protocols in Nevada

Pretreatment habitat and population surveys
Safe Harbor Agreement
Temporary management barrier construction
Chemical treatment
Post-treatment evaluation
Reintroduction of LCT
Keys to Success

Landowner participation (Safe Harbor Agreements)
Cooperation with partners (BLM, USFS, Tribes, etc.)
Coordination with USFWS
Learning from past mistakes
Western Governors’
Species Conservation and ESA Initiative Webinar Series

February 4, 2016
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Learn more about the Chairman’s Initiative of Gov. Matt Mead at westgov.org/initiatives/esa-initiative