Northwest **Power** and **Conservation** Council

September 30, 2014

MEMORANDUM

TO: Committee members

FROM: Mark Fritsch, project implementation manager

SUBJECT: Follow-up review action for accord Project #2008-115-00, *Lake Roosevelt Burbot Population*

BACKGROUND:

Presenter: Mark Fritsch, project implementation manager and Jason McLellan, project lead, Colville Confederated Tribes

Summary: Council staff recommends that the Fish and Wildlife Committee support the project for continued implementation. This recommendation is conditioned on full implementation of Deliverable 2 be demonstrated and based on a favorable ISRP review.

Relevance: The proposed action will address a condition placed on the project, as part of the Resident Fish, Data Management and Program Coordination Review of July 2012. The funding associated with this accord project totals $1,499,375 in expense funds for Fiscal Year 2008[1] through 2017. The Fiscal Year 2014 expense budget for the project is $229,182 and has a performance period of March 1, 2014 to February 28, 2015.

Workplan: There are no 2014 division workplan tasks linked directly to this presentation.

[1] The first project budget was establish in FY 2013.

Background: The intent of this project is to achieve a healthy and harvestable burbot population in Lake Roosevelt. The project monitors the status and trend of the Lake Roosevelt burbot population to facilitate management alternatives and implement appropriate strategies. Data collected through the project will be used to estimate current population harvest potential, evaluate alternative management scenarios, and assess recruitment variability.

The submittal and review of this Colville Confederated Tribes (CCT) accord project was conducted as part of the Council's 2011 Resident Fish Categorical Review. The ISRP review associated with the categorical review provided an "In Part" recommendation that addressed the evaluation of the burbot commonly observed in the bycatch of annual Lake Roosevelt Fall Walleye Index Netting (FWIN) surveys as a basis for the stock assessment in Lake Roosevelt. Based on the ISRP recommendation the Council provided the following specific recommendation as part of the Resident Fish, Data Management and Program Coordination Review of July 2012

> *Implement Objective 1, deliverable 1 only through completion and not beyond FY2017 (Analysis of Fall Walleye Index Netting Bycatch Data). Sponsor to submit revised proposal based on this analysis for ISRP/Council for review and recommendation prior to additional assessment efforts in Lake Roosevelt*.

On June 2, 2014 the CCT and Bonneville submitted a revised proposal based on their analysis of the FWIN data and assessment of its adequacy for Burbot stock assessment.

On July 31, 2014 the ISRP provided their review (ISRP document 2014-8). The ISRP found the revised proposal meeting scientific review criteria in part (qualified).

The ISRP provided an "in part (qualified)" recommendation to ensure that the proposed supplemental sampling (i.e., Deliverable 2[2]) is implemented in a pilot phase that can demonstrate benefit to burbot management in Lake Roosevelt. The CCT has proposed this sampling (e.g., trawls, cod traps and trammel nets) concurrent with FWIN using gears that will capture burbot of different sizes and ages, and use the information to correct catch at age data and calculate age-based stock assessment indices.

As expressed by the ISRP in their qualification, the CCT are also concerned about the feasibility and effectiveness of this expanded field

[2] Lake Roosevelt FWIN Burbot data that is corrected for size and age selectivity (DELV-2)

monitoring and agree with the ISRP on the need to demonstrate a benefit before implementing beyond a pilot phase.

Based on the extensive ISRP review and comments (16 pages) and the CCT concurrence regarding the pilot approach associated with Deliverable 2, the Council staff recommends that the Fish and Wildlife Committee support this project for continued implementation. This recommendation is conditioned on full implementation of Deliverable 2 be based on a favorable ISRP review demonstrating that the benefit of this effort provides confidence to the managers of Lake Roosevelt

More Info: INDREV14-2008-115-00

Lake Roosevelt Burbot Population Assessment

Project No. 2008-115-00

Jason McLellan

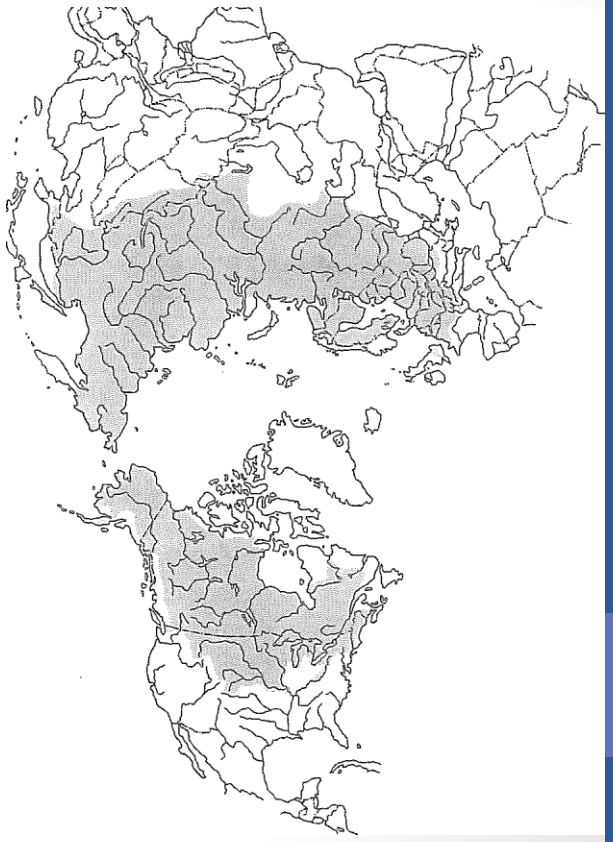
Confederated Tribes of the Colville Reservation

October 7, 2014

Burbot – *Lota lota*

- Only freshwater member of the cod family (Gadidae)
- Holarctic distribution
- Some populations are in decline
- Angler interest - mixed

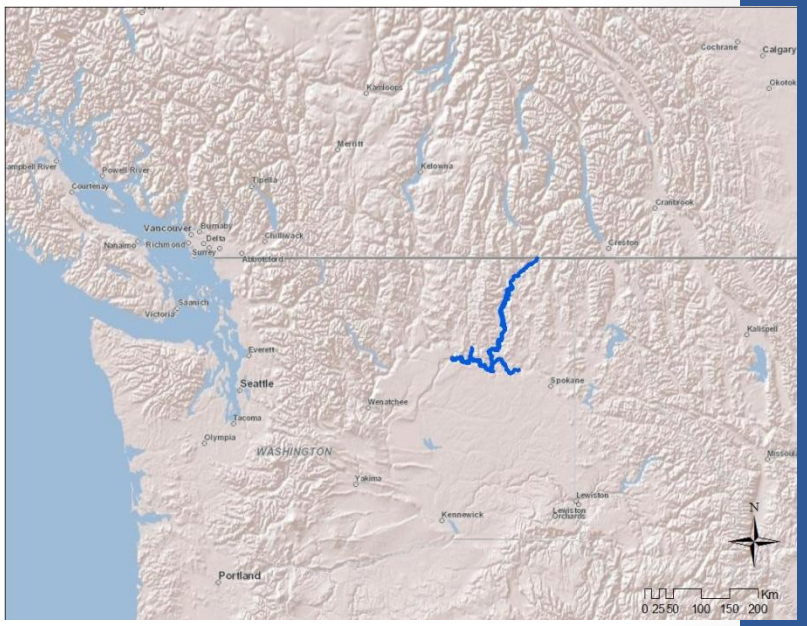
From Scholz and McLellan (2010)



From McPhail and Paragamian (2000)

Burbot – Lake Roosevelt

- One of 11 Washington waters supporting a population
- Generally neglected by managers and anglers
- Status Assessments – 1997, 2001
  - "Healthy," increasing in abundance, poor condition
  - Limited data
- Conservative Management Approach

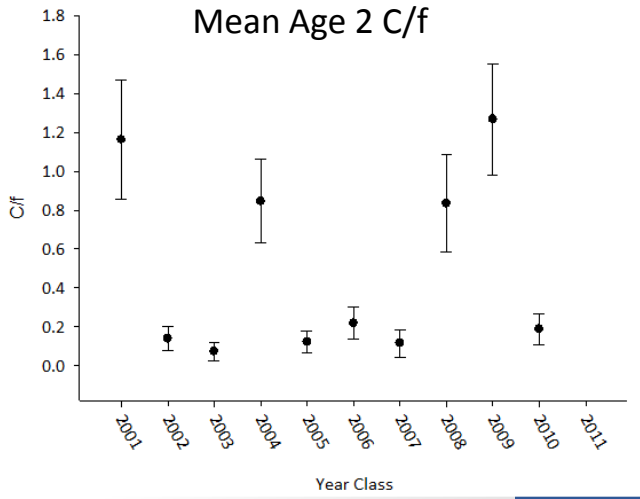


2011 Resident Fish Categorical Review

- CCT proposal – Lake Roosevelt Burbot Population Assessment
  - Project No. 2008-115-00 – Accord project
- Objective
  - Facilitate management by developing a standardized stock assessment program
- Burbot by-catch in annual Fall Walleye Index Netting (FWIN) surveys
  - ISRP recommended evaluate FWIN Burbot data - revise proposal

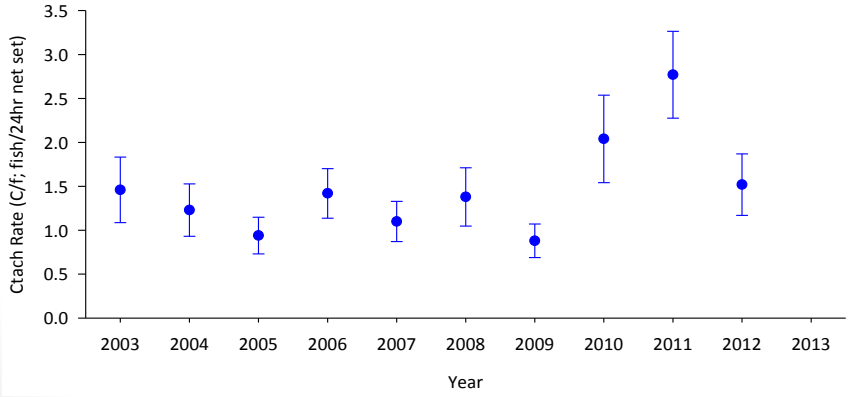
FWIN Burbot Data Analysis

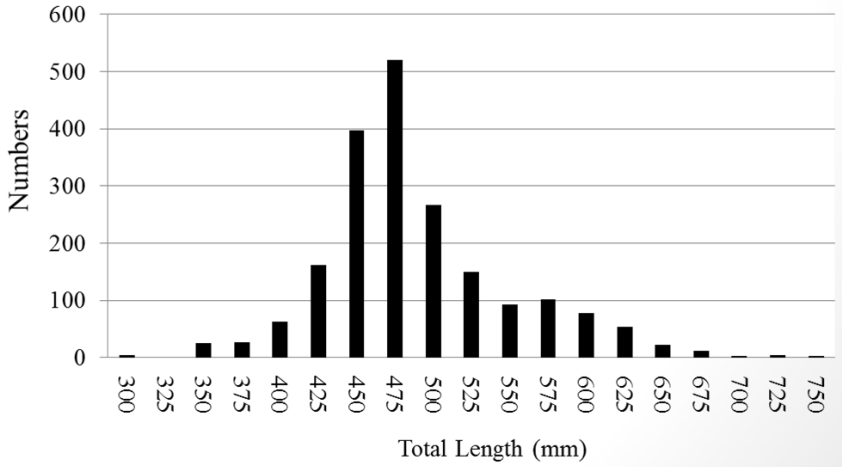
- Contracted with Dr. David Bennett and Dr. Kirk Steinhorst
- Analyzed 10 year FWIN Burbot data set
- Concluded - generally adequate for burbot stock assessment
  - High power to detect annual changes in: catch rate, proportional size distribution, and body condition
- Also able to index annual recruitment



FWIN Burbot Data Analysis

- Catch rate highest 2010-2012
- Annual survival was high (>60%)
- Few small (young) and large (old) fish in FWIN catch





Revised Proposal - Goal & Objective

- Goal
  - *Achieve a stable, harvestable population in Lake Roosevelt*

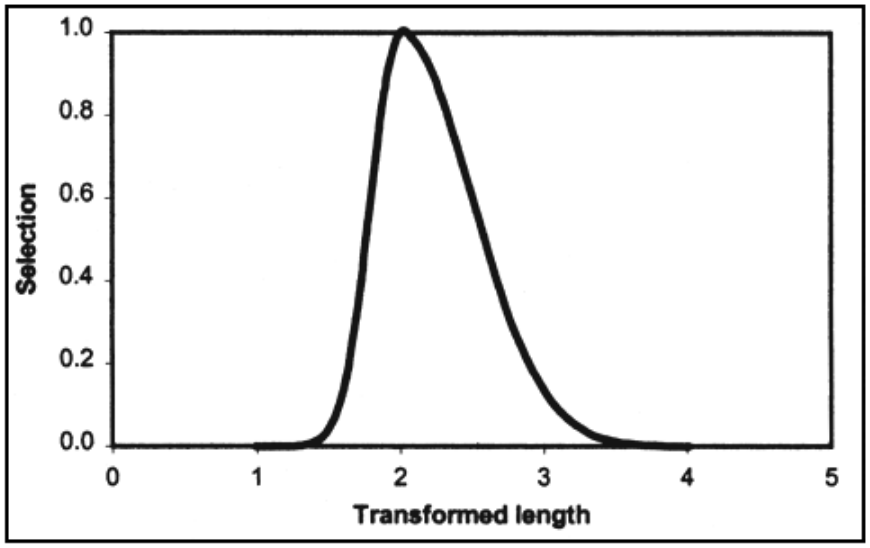
- Objective
  - *To provide technical advice to the Lake Roosevelt Co-Managers regarding management alternatives so that they can develop realistic fishery targets and appropriate implementation strategies.*

Revised Proposal - Strategies

- Estimate current harvest potential
  - Fishery Analysis and Modeling Simulator (FAMS) software (Slipke and Maceina 2010)
  - Model inputs come from FWIN survey data – with bias corrections
    - Recruitment (indexed), mortality (natural and fishing), and growth
- Evaluate alternative management scenarios
  - Identify (with managers) a series of management alternatives
  - Simulate using FAMS to predict population responses
  - Provide results to managers
- Evaluate Recruitment Variability

Potential Bias in FWIN Data

- Size selectivity of fishing gear can bias estimates of size structure, growth and mortality
- Gill nets are often size selective
- Should be evaluated and corrected for – ISRP 2011 comments



Potential Bias in FWIN Data

- Data suggests size selective bias in FWIN nets
  - Few small and large fish in FWIN catch
  - Younger fish in FWIN catch faster growing
  - Older fish in FWIN catch slower growing
- Indirectly estimate size selectivity using SELECT method (Share Each Length's Catch Total)
  - Compares catch within each mesh size
- Size selectivity function will be applied to the catch data to correct for bias

Potential Bias in FWIN Data

- Age bias can be corrected by applying proportions of each age with each length bin
- Supplemental sampling conducted to catch small (young) and large (old) fish for aging
  - Trawling, modified cod traps, and trammel nets
- Implement thin-section method for aging to reduce aging bias

Long-term Implications

- Allows us to determine if there is under utilized harvest potential or not
- Evaluation of alternatives to sustainably utilize the available harvest (if there is any)
- If additional harvest potential exists – explore options to incentivize anglers to use
  - Education/outreach
  - Regulation changes

Long-term Implications

- Recruitment evaluation allows us to identify potential limiting factors

- Limiting factors can potentially be addressed
  - Conservation
  - Increase harvest potential

Questions?