Northwest Power and Conservation Council

April 29, 2014

MEMORANDUM

TO: Fish and Wildlife Committee members

FROM: Mark Fritsch, Project Implementation Manager

SUBJECT: Bonneville Power Administration update on habitat effectiveness monitoring and evaluation addressing Tributary Habitat (AEM approach at the project/reach scale, ISEMP, and CHaMP).

Jason Sweet, Supervisory Fishery Biologist at Bonneville will brief the Committee on the Council's 2011 RME&AP Project Category Review recommendation #2 on habitat effectiveness monitoring and evaluation addressing BPA's Tributary Habitat AEM approach at the project/reach scale, ISEMP, and CHaMP.

BACKGROUND

As you will recall the Council, as part of the June 12, 2013 decision associated with the Council's 2010-11 review of the *RME and AP Category* of projects, requested an annual update. The specific language that conditioned the Council decision is as follows.

- **The CHaMP and ISEMP projects and the AEM Approach as it is developed should be subject to continued oversight by Bonneville, the Council and the ISRP, including submission of reports for review on an annual basis for Projects #2003-017-00 (ISEMP) and #2011-006-00 (CHaMP) and an overall status update for the AEM Approach which will be implemented under a number of projects. Among other things, the review of these activities in 2014 should address the questions and comments provided by the ISRP in this year's review (ISRP document 2013-02). The project sponsors and Bonneville should submit the needed information for this review no later than March 2014.**

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Executive Director

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800-452-5161
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- **In addition, the document submitted for review in 2014 should explain how these tributary habitat monitoring and evaluation activities link to and integrate into the monitoring, evaluation, reporting and data management effort for the entire program, including for the tributaries (ISEMP, CHaMP and AEM), the estuary (CEERP), artificial production (such as the CHREET proposal); Bonneville's data management framework, the Coordinated Assessment (CA) data sharing effort, and other large scale aquatic monitoring programs occurring within the Basin that are funded by other agencies such as PIBO and AREMP.**

It is important to note that this update is intended to provided the region a progress report on the deliverable anticipated by the Council in March 2015 for a comprehensive review on whether and how to transition CHaMP out of the pilot phase; to confirm or alter the timeline for completion and end of the Program funded IMW studies and the evolution of the rest of the ISEMP project; to confirm and implement or alter the AEM Approach to project-level effectiveness; and to flesh out, explain and decide on the analytical framework for an overarching evaluation of the habitat monitoring and evaluation information.

Programmatic Habitat Monitoring: A Progress Report

Update to the NWPCC Fish and Wildlife Committee

May 6th, 2014

Overview

- Status Update for the Project Level Action Effectiveness Program
- Brief Update for CHaMP and ISEMP
  - Additional updates will be provided once 2013 reporting is complete
- Discussion of Project Linkages across BPA's RM&E Program

Project Level Action Effectiveness Monitoring (AEM)

- Monitors select projects within categories of habitat improvement action
- Measures fish response at the individual project scale
- Program is ramping up rapidly
  - 2013 – 1 pilot project
  - 2014 – 59 projects (+ 23 WA SRFB projects)

AEM Dashboard

Action	*Sub-Category*	*Study Design*	*~Cost / Sample*	*2014*	*2015*	*2016*	*Sites - in progress and planned in relation to estimated sample need*
Fish Passage	Barriers-Complete	**EPT**	$8,500	$144,500	$110,500	Complete	17 / 13 / 30
	Barriers-Partial	**MBACI**	$8,500	$25,500	$85,000	$127,500	3 / 12 / 15
Instream Structures	LWD / Boulders	**EPT**	$14,000	$0	$0	$182,000	30 / 30
	Bank Stabilization	**MBACI**	$14,000	$42,000	$126,000	$126,000	1 / 3 / 6 / 10
	Eng. Logjams / Structures	**EPT**	$14,000	$0	$112,000	Complete	15 / 15
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	Floodplain reconnection	**MBACI**	$15,000	$240,000	$360,000	$360,000	8 / 16 / 6 / 30
	Floodplain creation	**MBACI**	$15,000				
	Re-meandering	**MBACI**	$15,000	$105,000	$165,000	$165,000	4 / 7 / 4 / 15
Riparian Improvement	Fencing	**MBACI**	$6,000	$24,000	$60,000	$84,000	1 / 4 / 10 / 15
	Planting	**EPT**	$6,000	$0	$0	$0	30 / 30
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Acquisition & Protection	Acquistion,	**MBACI**	$14,500	$0	$0	$0	3 / 12 / 15
Totals				**$716,000**	**$1,153,500**	**$1,179,500**	

Clarifications

1) Annual cost estimates are based on an approximate cost/sample & don't account for potential savings opportunities being pursued (i.e. leveraging existing fish/habitat data)
2) Since the study design being used varies by action type, some sites require a one time visit (EPT design) and others multiple visits (MBACI design).
3) Total number of sites chosen for each action category in a given year will be driven by final field inspections, resources and funding.

Legend:

- In progress
- 2014 start
- 2015 or TBD
- Total Need

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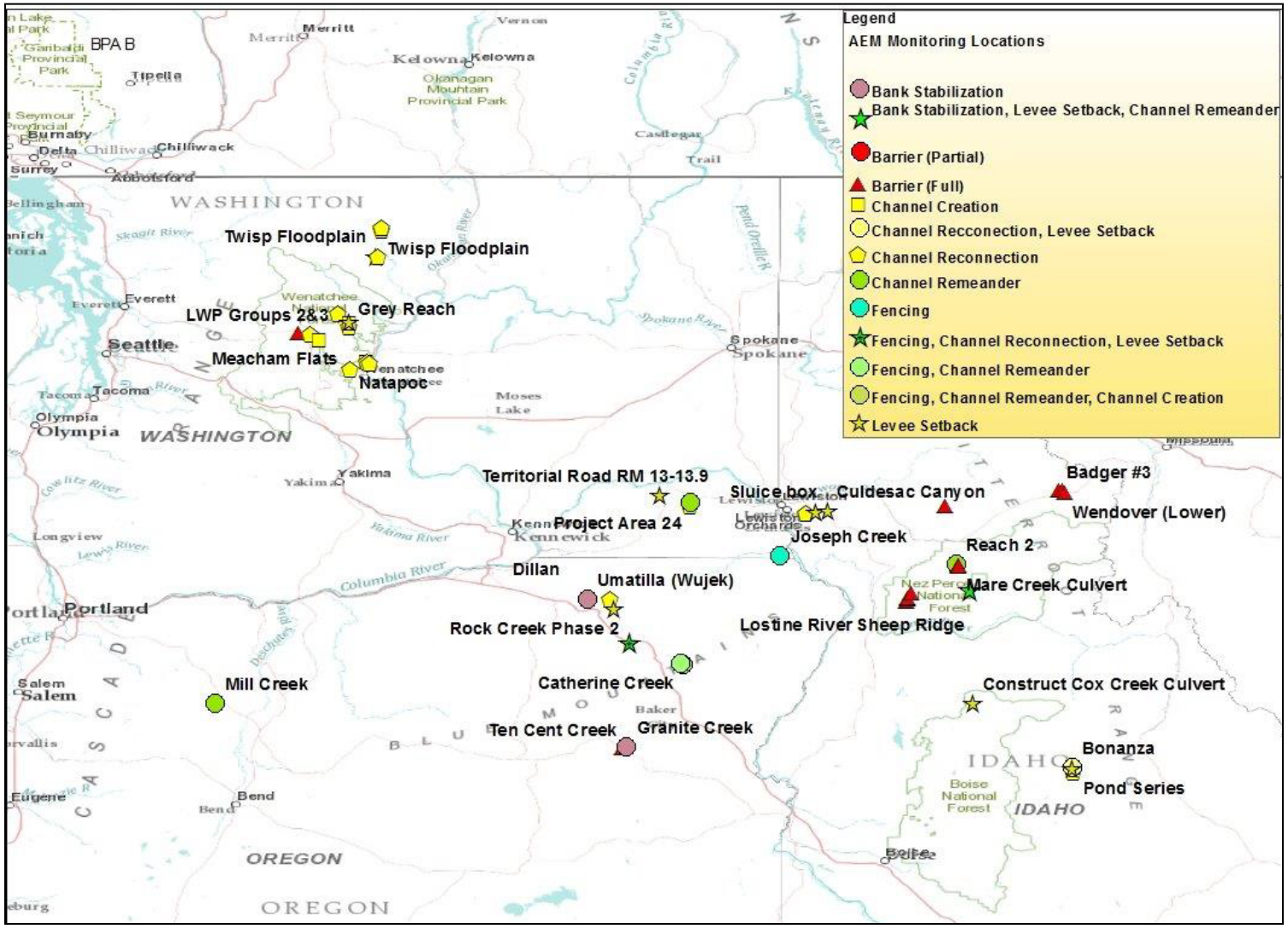
2014 Action Effectiveness Monitoring



AEM Linkages with CHaMP and ISEMP

- Complementary Field Techniques & Measurements
  - AEM Field Crews will attend CHaMP Training
- Coordination of Site Locations
- Coordination on Equipment Development
- AEM data will be housed and analyzed on the same platform as CHaMP

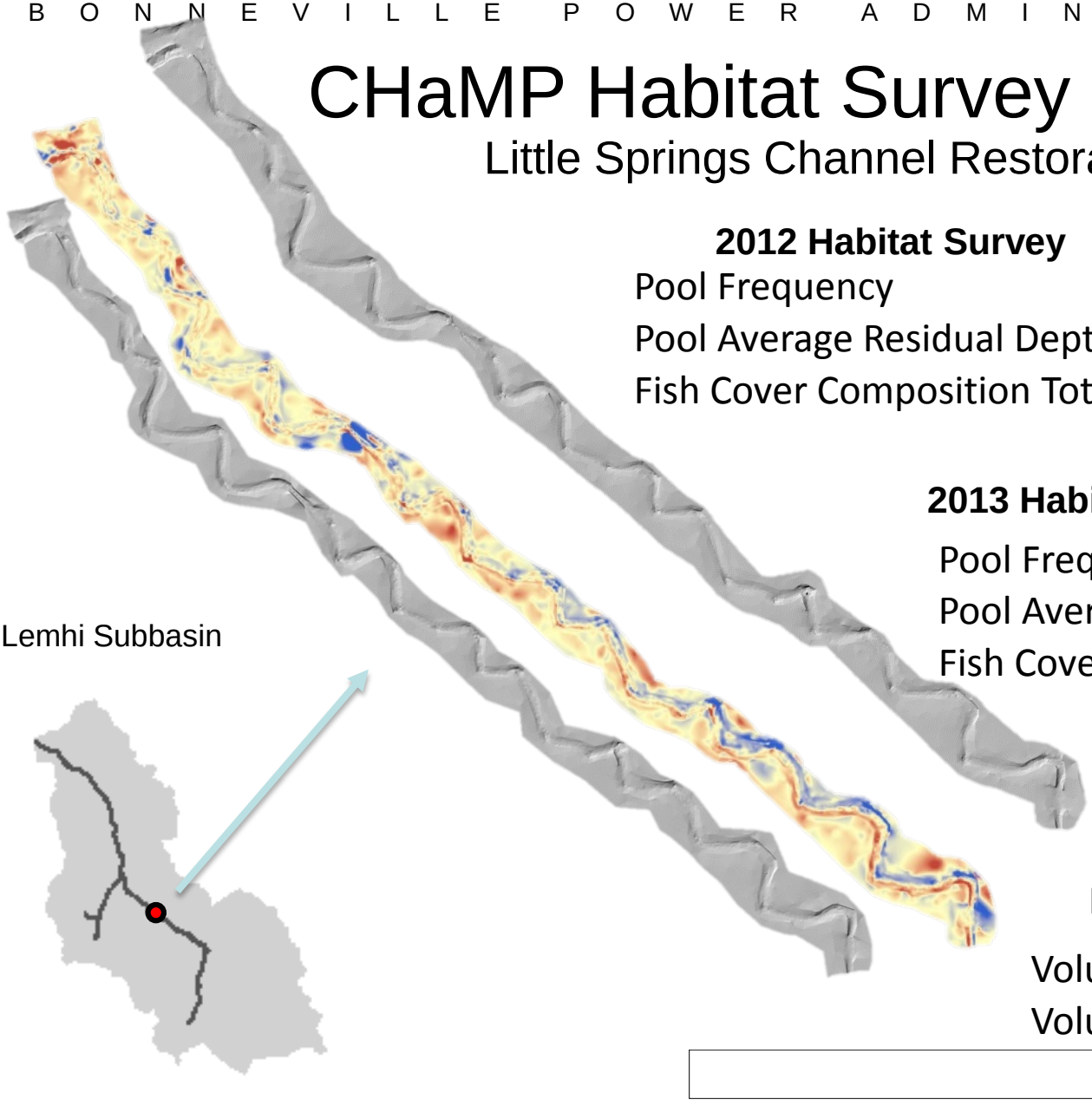
2013-2014 ISEMP / CHaMP Update

- 2014 review based on 3 years of CHaMP habitat data analysis combined with ISEMP fish/habitat data

- Focus of program review was to present and showcase methods of displaying data summaries that are useful for managers

CHaMP Habitat Survey Results-

Little Springs Channel Restoration



Lemhi Subbasin

2012 Habitat Survey

Pool Frequency	3.51
Pool Average Residual Depth	0.54
Fish Cover Composition Total	3

2013 Habitat Survey

Pool Frequency	3.84
Pool Average Residual Depth	0.46
Fish Cover Composition Total	23

DEM of Difference

Volume of Erosion	16.77
Volume of Deposition	46.07

Beasley et al. QCI and ISEMP

ISEMP Fish Survey Results-

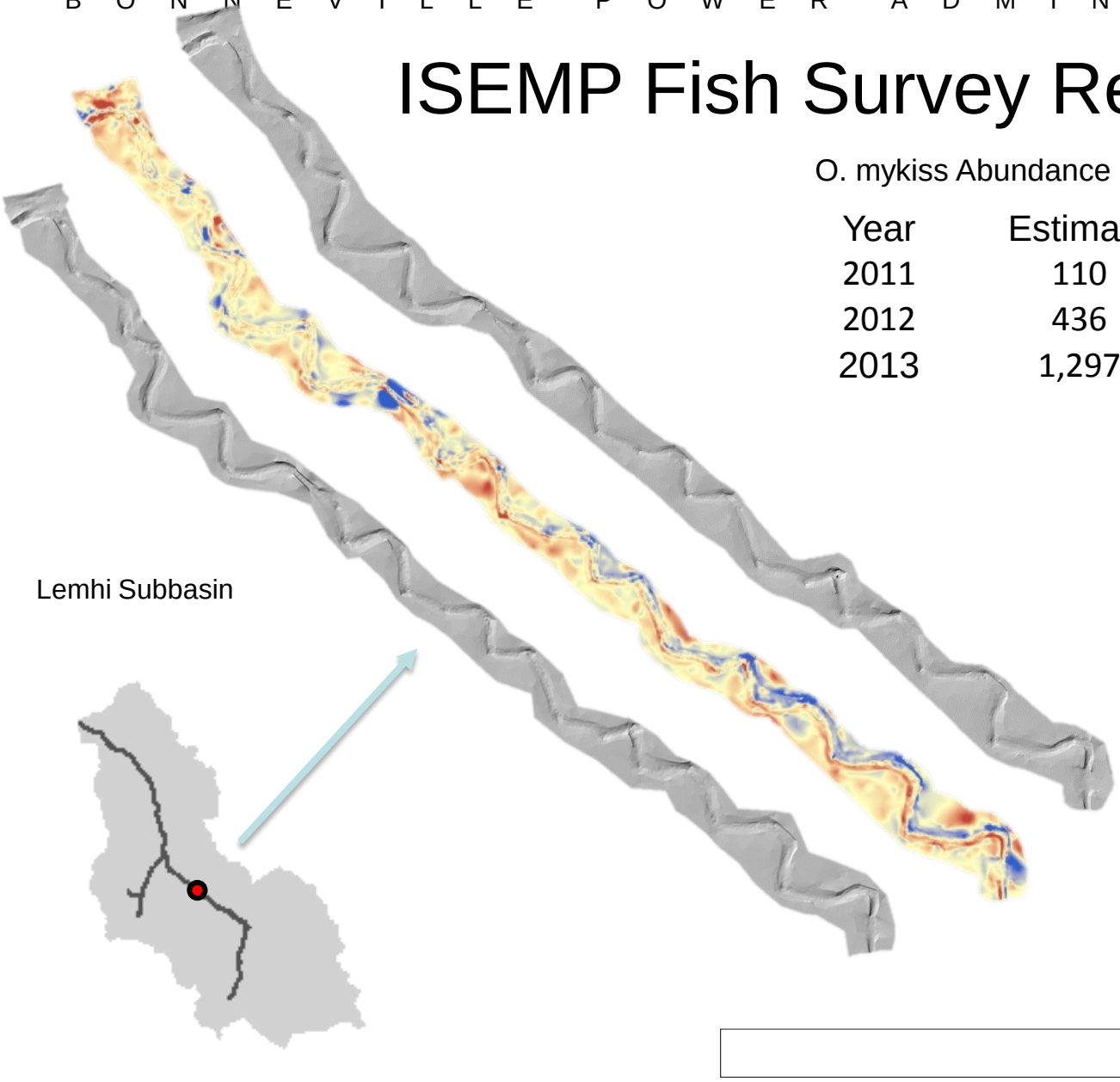
O. mykiss Abundance

Year	Estimate
2011	110
2012	436
2013	1,297

Chinook Survival

Year	Estimate
2012	29%
2013	80%

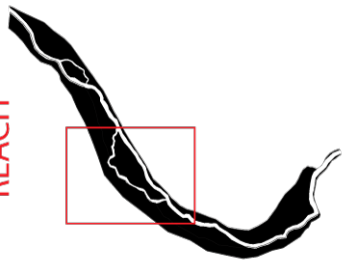
Lemhi Subbasin



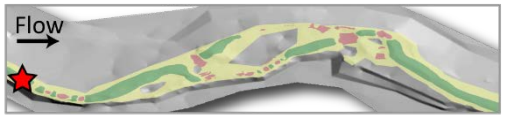
Beasley et al. QCI and ISEMP

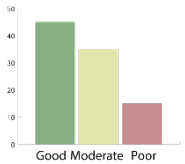
The Roll-Up of Information is Key

REACH



1 SITE LEVEL

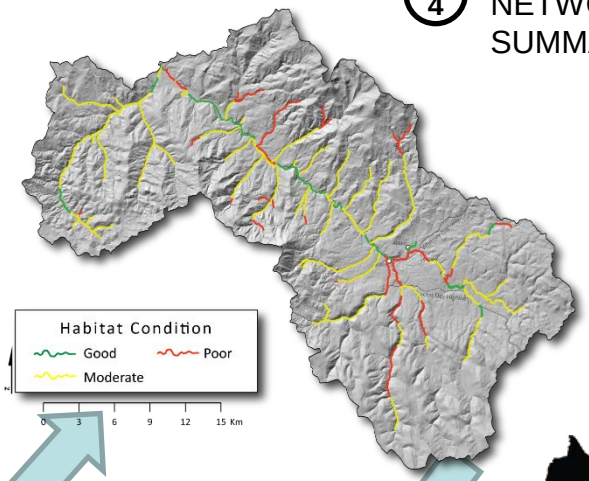




2 SITE SUMMARY:

3 SITES ON NETWORK

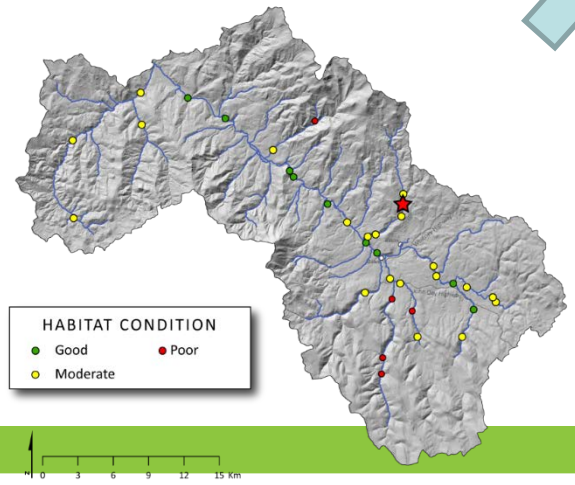
4 NETWORK SUMMARY



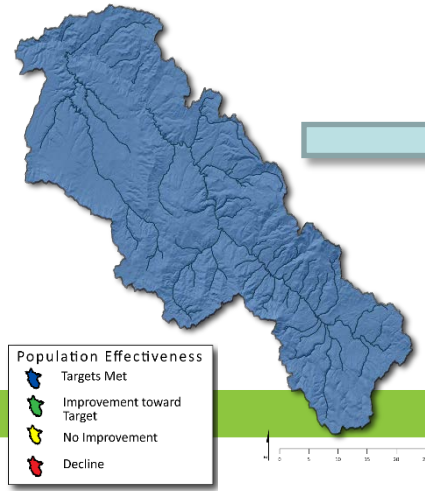
BASIN

5 WATERSHED / POPULATION

NETWORK



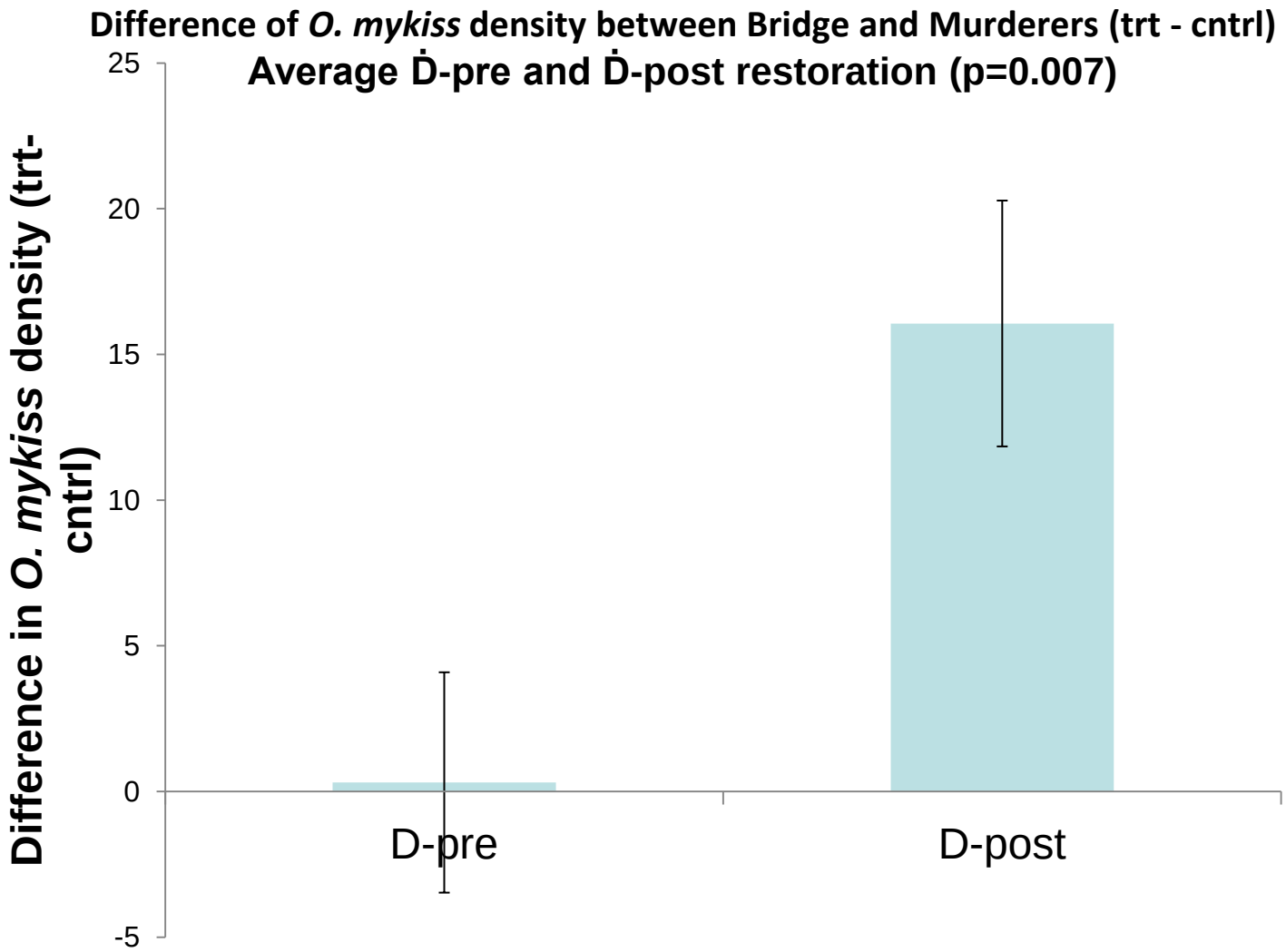
6 MPG/BASIN



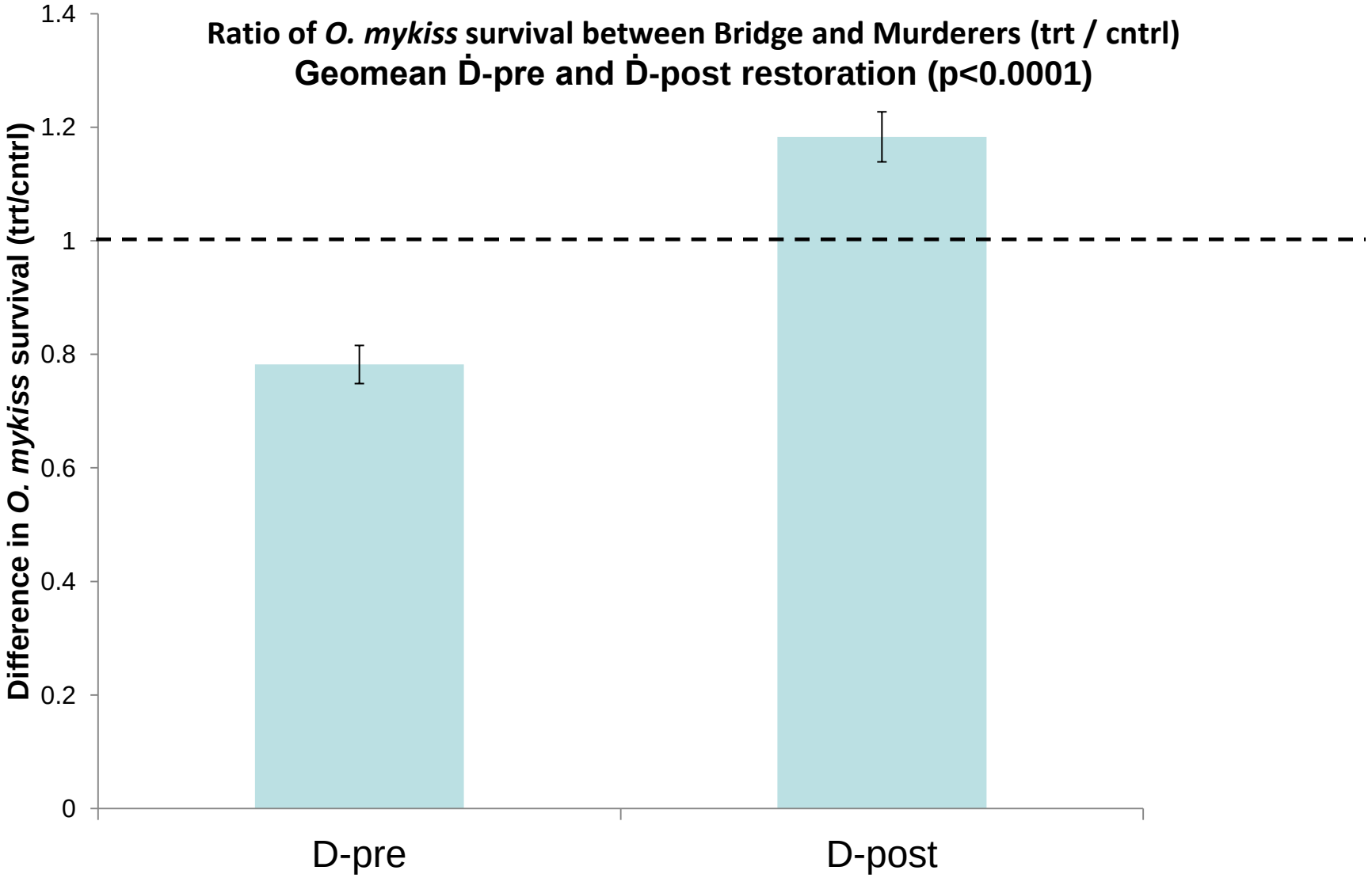
Jordan, Wheaton, et al.
ISEMP/CHaMP

ISEMP/CHaMP Techniques Put Into Practice

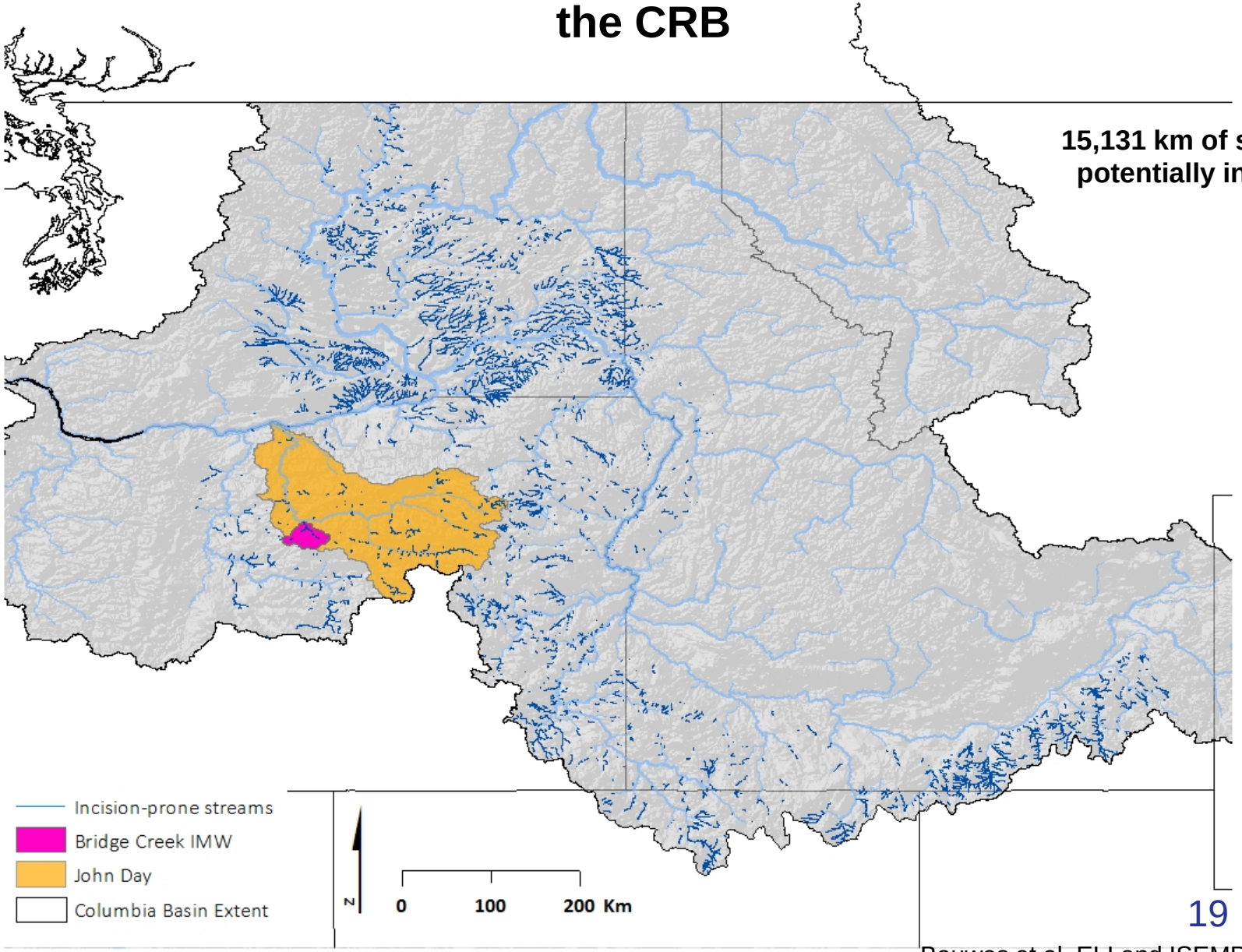
Abundance


Difference of O. mykiss density between Bridge and Murderers (trt - cntrl)
Average Ḋ-pre and Ḋ-post restoration (p=0.007)
Difference in O. mykiss density (trt-cntrl)
25
20
15
10
5
0
-5
D-pre
D-post

Survival


Ratio of O. mykiss survival between Bridge and Murderers (trt / cntrl)
Geomean Ḋ-pre and Ḋ-post restoration (p<0.0001)
Difference in O. mykiss survival (trt/cntrl)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
D-pre
D-post

Channel incision is a common degraded state of streams in the CRB



Bouwes et al. ELI and ISEMP

ISEMP/CHaMP Techniques Put Into Practice

Oregon Department of Fish and Wildlife

Confederated Tribes of the Warm Springs

Beech Creek Restoration

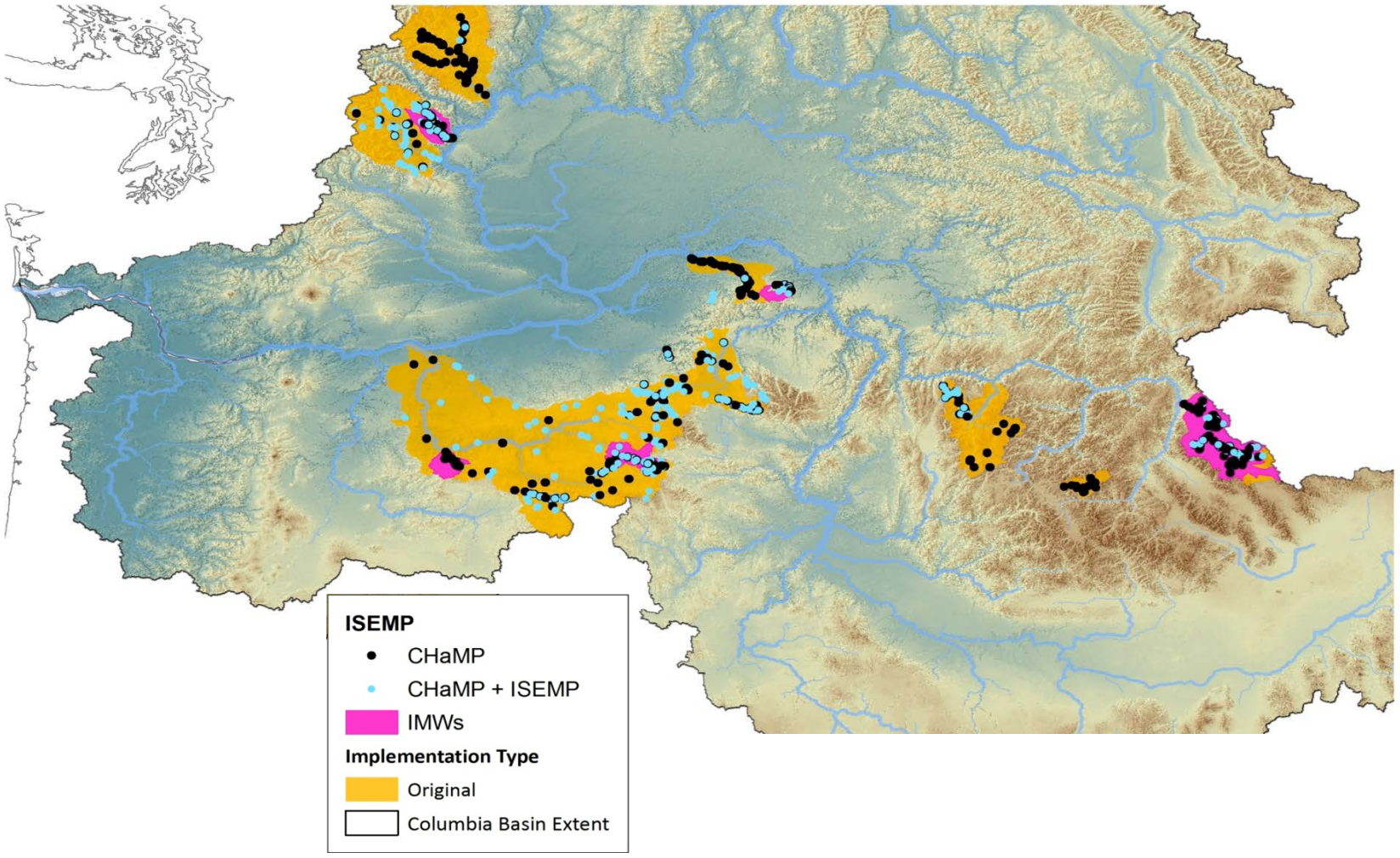
Agencies Leveraging Results of Bridge Creek to Develop Restoration Using Beaver

- BLM
- NRCS
- USFS
- CTWS
- Coeur d‘Alene Tribe
- ODFW
- IDFG
- Wyoming Game and Fish
- Utah Div. Wildlife Resources

Next Steps

- 2013 ISEMP and CHaMP Annual Reports
- 2014 AEM Report
  - Results from ~2/3rds of Full Barrier Projects
  - Initial pre-installation data from 2013-2014 field seasons
  - Prepared by NOAA Fisheries and Tetra Tech
- 2015 - ISRP Review

Questions?


ISEMP
CHaMP
CHaMP + ISEMP
IMWs
Implementation Type
Original
Columbia Basin Extent