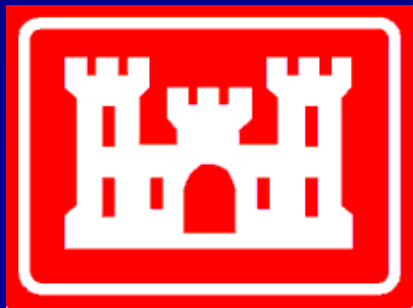


FROM SURPLUS TO BONUS: How Unplanned Reintroductions Informed Salmon Recovery Efforts in the Willamette River, Oregon

**Cameron Sharpe
Oregon Department of Fish and Wildlife
Fish Culture Concepts Workshop
December 2016**



Acknowledgments

- Funding: US Army Corps of Engineers and Federal Sport Fish Restoration Fund

Field Staff:

Administrative/ Technical Support:

Tom Friesen
Marc Johnson
Luke Whitman
Brian Cannon

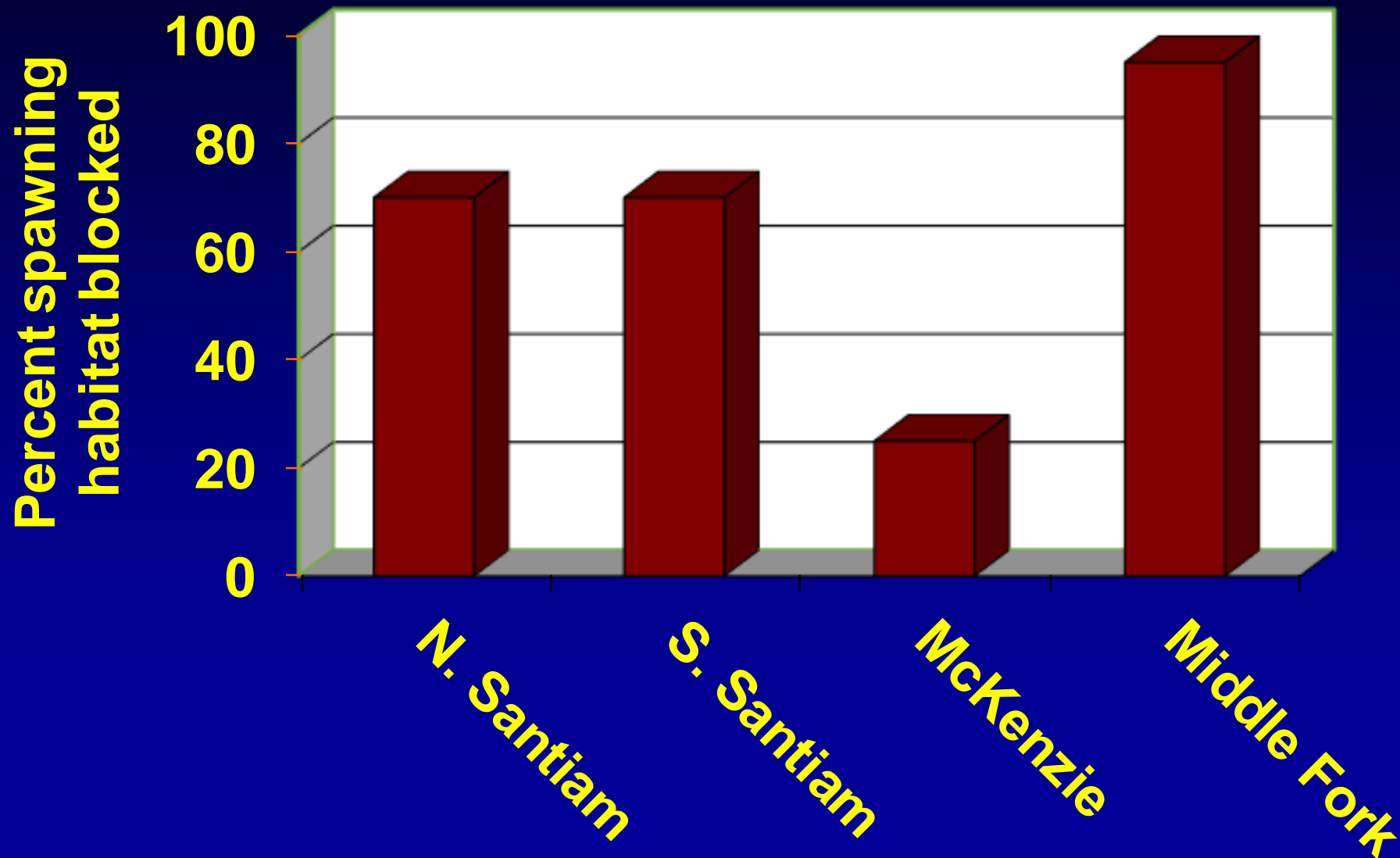
Paul Olmsted
Dave Hewlett
Sara Akins
Naomi Halpern
Justin Huff
Kevin Stertz
Chris Abbes
Amy Anderson
Chas Chamberlain
Nick Swofford
Katura Soule
Mariah McIntosh

Bart DeBow
Mike Sinnott
Mike Hogansen
Reed Fischer
JD Hansen
Chris Mayes
Gordon Rose
Keenan Smith
David Metz
Andrew Nordick
Eric Bailey

Hatchery Managers:

Greg Grenbemer
Chris Boyd
Brett Boyd
Kurt Kremers
Dan Peck

Chinook spawning habitat loss due to lack of passage at dams



What is Reintroduction?

- Hatcheries generally return more adults than can be harvested or used for brood.
- Surplus fish were trucked upstream and released. They spawned. Adult offspring returned.
- Is that reintroduction?
- No. Intent is to create **VIABLE SALMONID POPULATIONS (VSP)**.

What is a VSP?

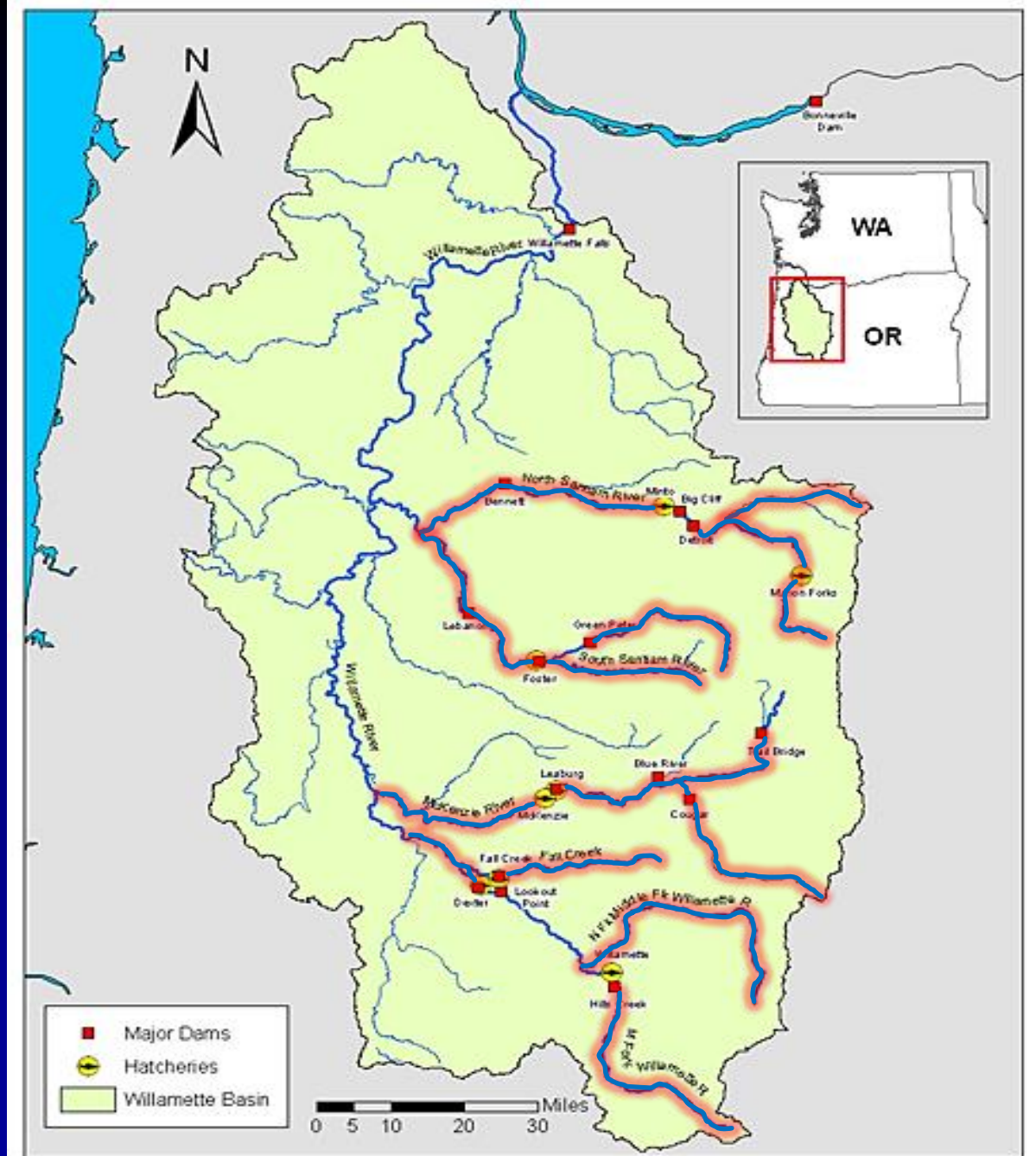
- **Self-perpetuating, naturally produced population exhibiting:**
 - **Replacement ≥ 1.0**
 - **Abundance commensurate with available habitat**
 - **Diversity sufficient to respond to a variable, possibly deteriorating environment**

VSP Monitoring Guidelines (Crawford and Rumsey 2011)

- Adult Spawner Abundance and Productivity**
- Spatial Distribution**
- Diversity**

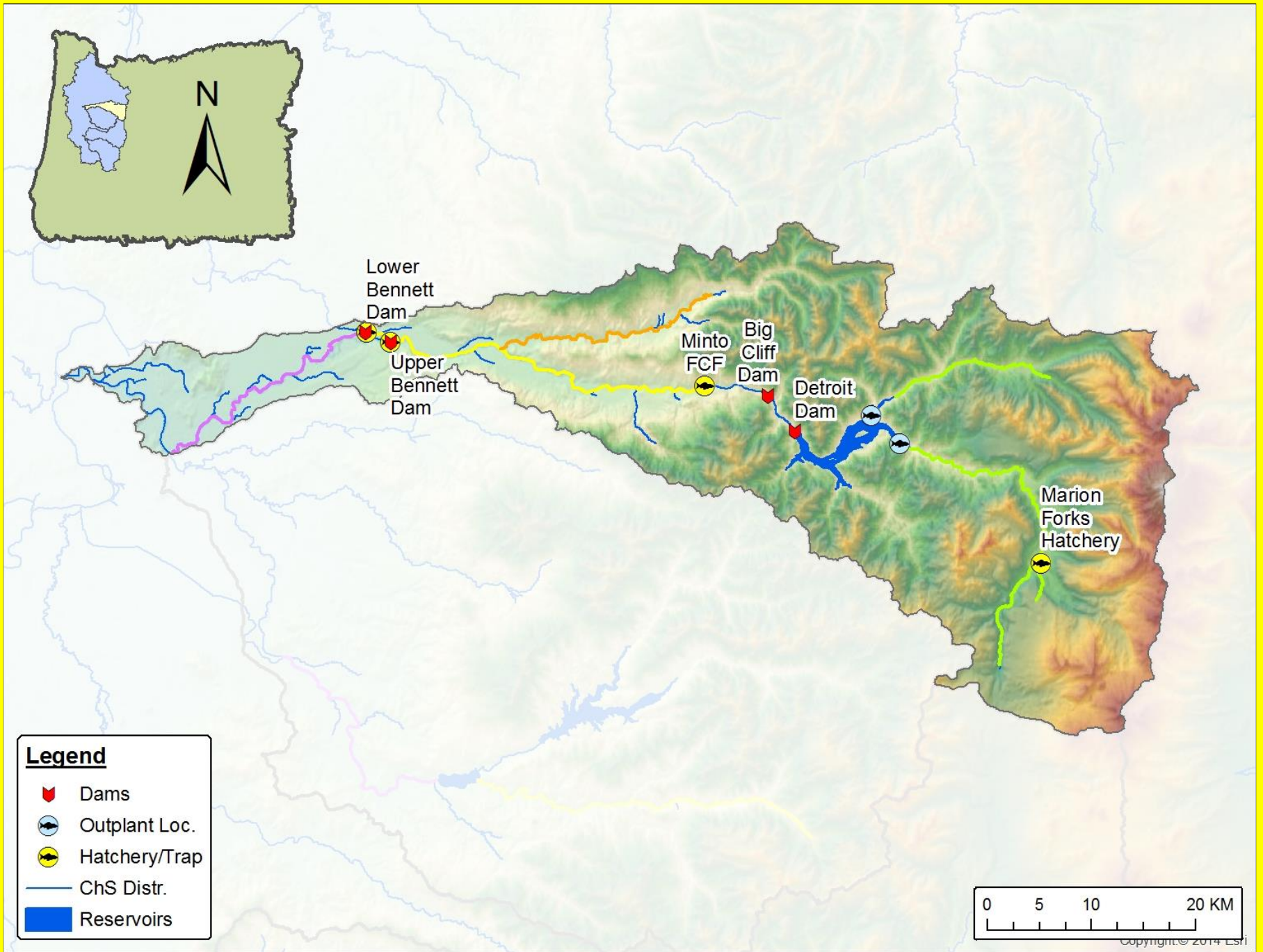
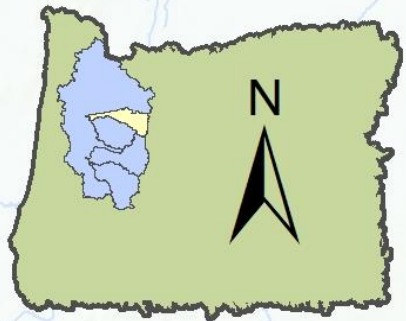
Geographic Scope:

- N. Santiam: Upper N Santiam & Breitenbush
- S. Santiam: Upper S. Santiam; NOT Middle Santiam
- McKenzie: S. Fork McKenzie
- Middle Fk Willamette: Fall Creek, NFMF, MF Above Hills Cr



RECENT HISTORICAL OUTPLANTS

	North Santiam		South Santiam		McKenzie		Middle Fork Willamette		
Year	Outplant abv Detroit		Abv Foster Outplant		Abv Cougar Outplant		Abv Fall Cr Outplant	Abv LOP Outplant	Abv Hills Cr Outplant
2002	2,677		765		4,771		1,381	3,765	3,328
2003	2,914		556		2,981		1,939	1,695	1,500
2004	2,511		2,580		3,409		2,805	2,703	2,011
2005	614		936		868		802	798	1,052
2006	1,843		932		1,018		613	827	694
2007	994		403		743		339	555	176
2008	216		686		874		283	513	0
2009	900		445		1,387		354	1,253	927
2010	2,444		720		510		540	1,502	1,357
2011	151		1,221		345		365	1,741	1,576
2012	257		975		952		338	2,520	2,043
2013	1,138		927		629		467	1,966	2,113
2014	872		408		697		456	1,065	1,005
2015	1,521		572		757		259	1,086	1,897
TOTAL	19,052		12,126		19,941		10,941	21,989	19,679
			GRAND TOTAL		103,728				



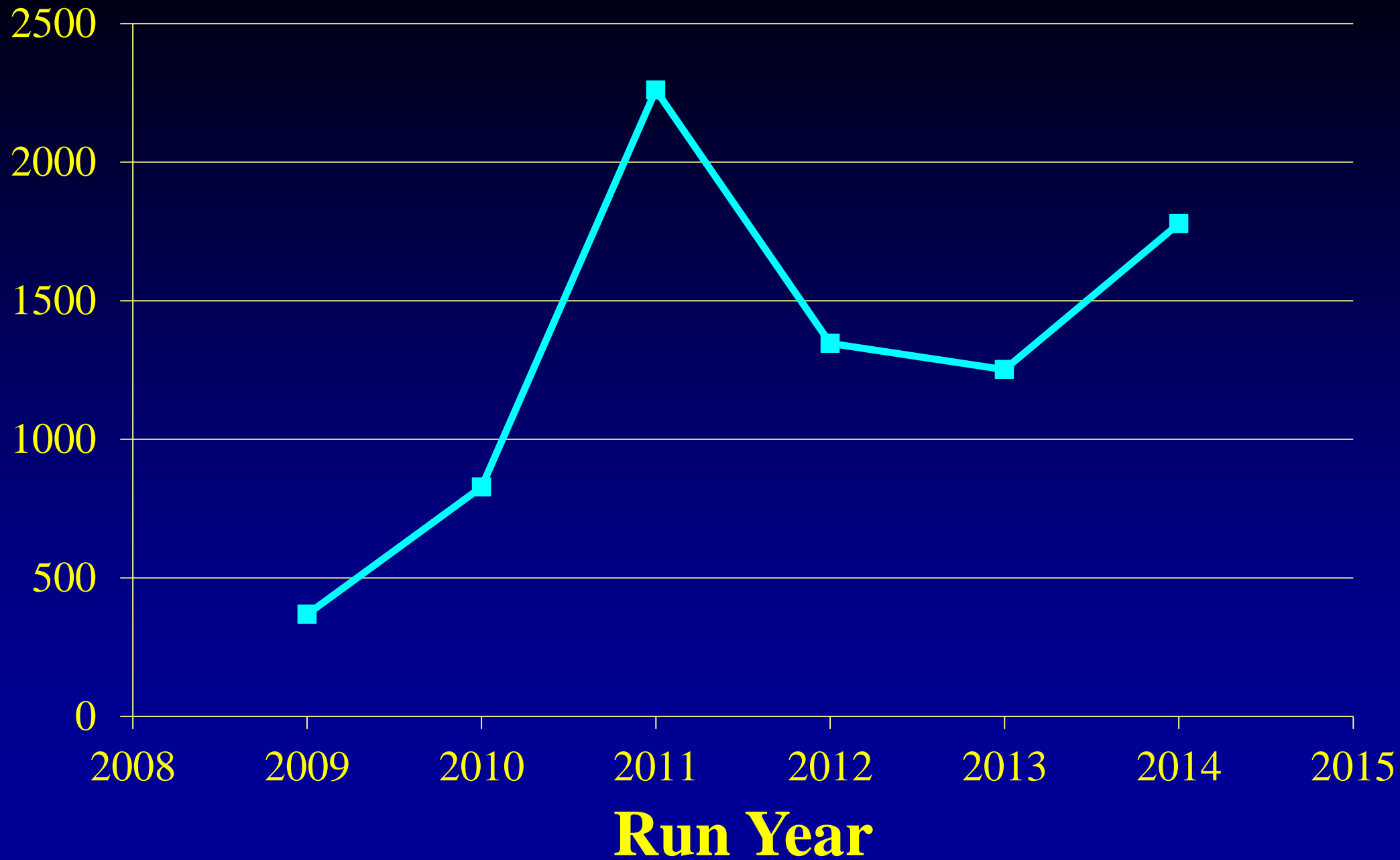
NORTH SANTIAM



MINTO FISH COLLECTION FACILITY



Bennett Dam Unmarked CHS Count



AN EVALUATION OF SPRING CHINOOK SALMON REINTRODUCTIONS ABOVE
DETROIT DAM, NORTH SANTIAM RIVER, USING GENETIC PEDIGREE ANALYSIS

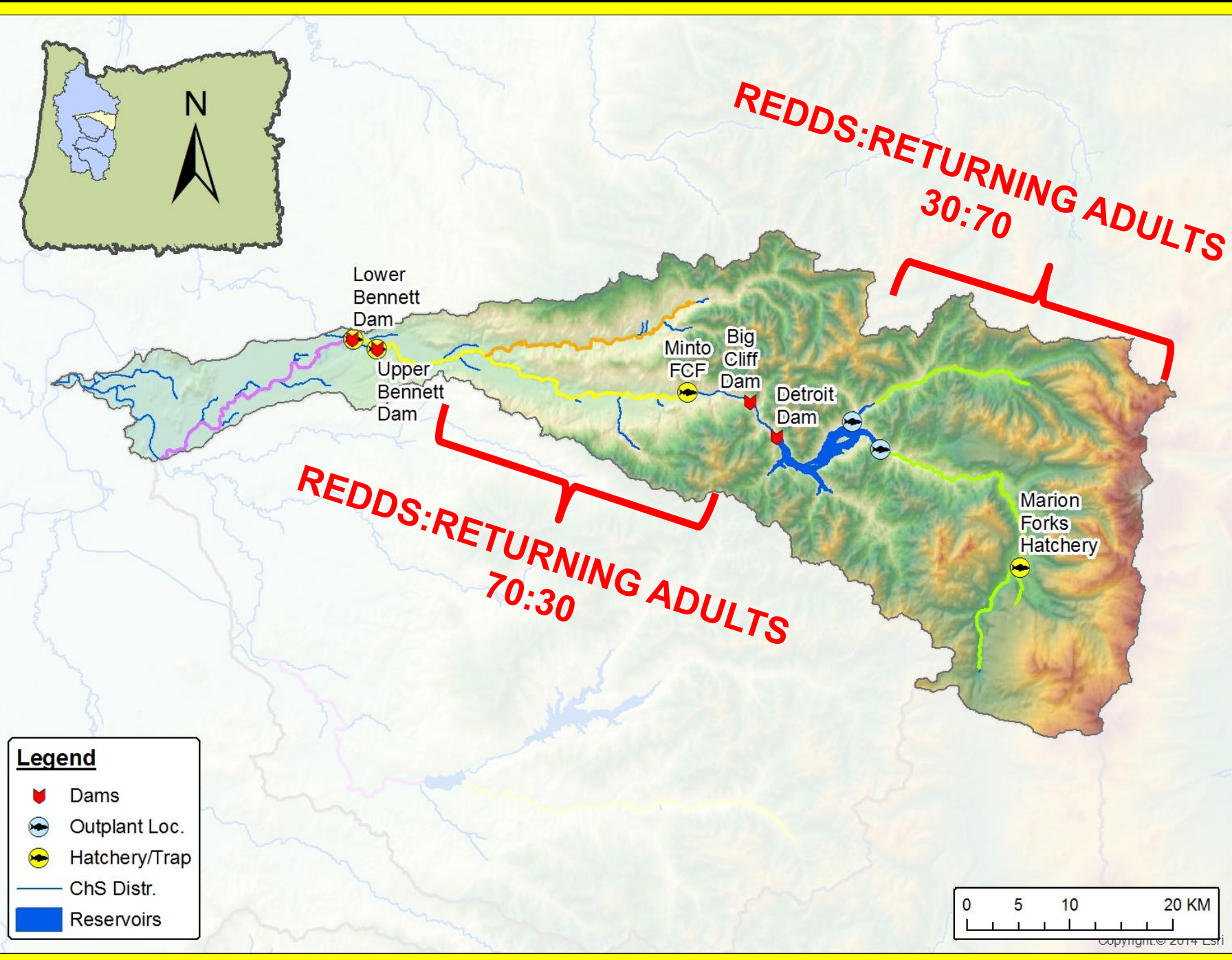
Prepared for:

U. S. ARMY CORPS OF ENGINEERS
PORTLAND DISTRICT – WILLAMETTE VALLEY PROJECT
333 SW First Ave.
Portland, Oregon 97204

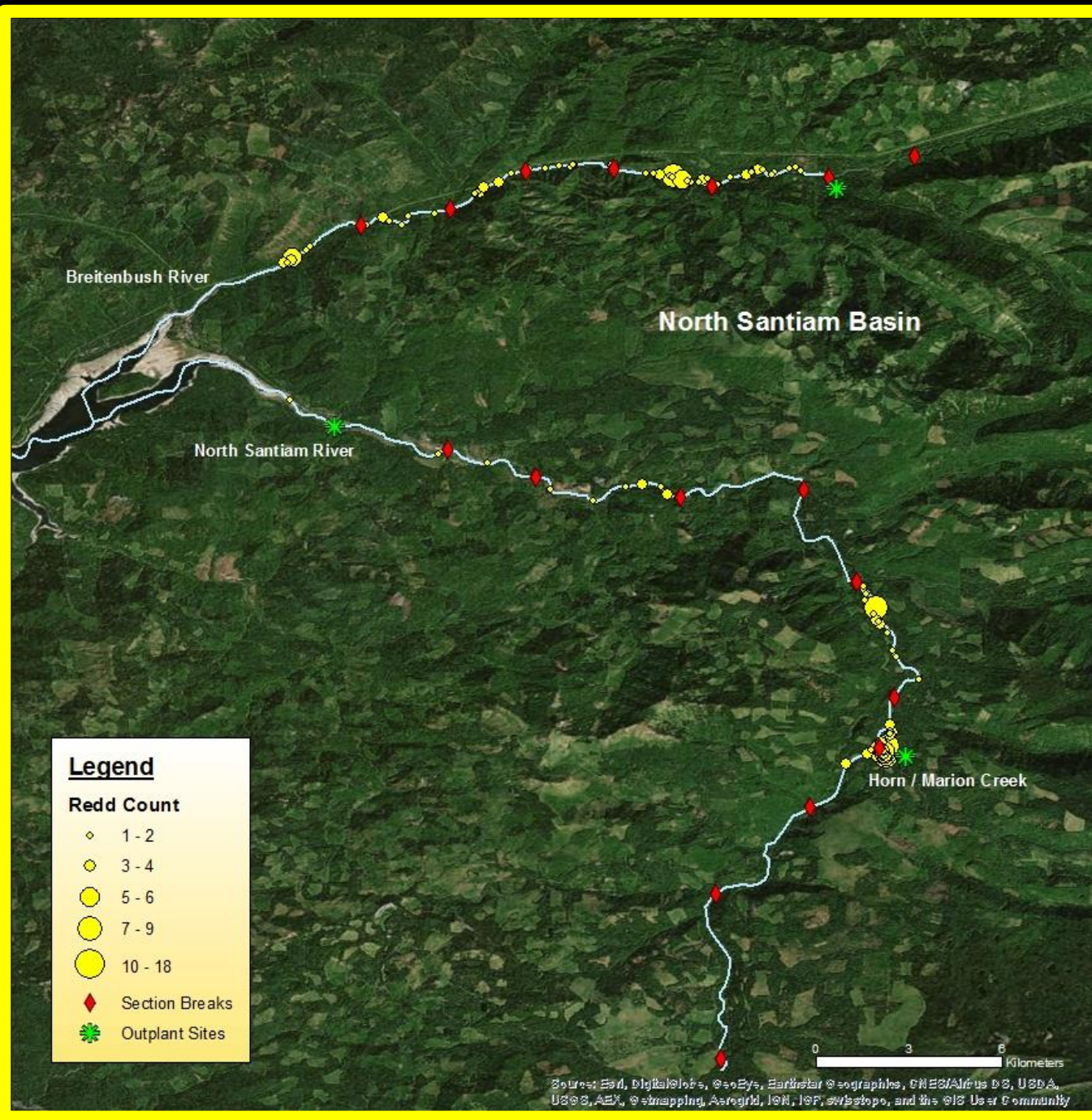
Prepared by:

Kathleen G. O'Malley¹, Melissa L. Evans¹, Marc A. Johnson^{1,2}, Dave Jacobson¹, and Michael
Hogansen²

O'Malley et al. 2015. USACE Tech. Report. 26 pp.



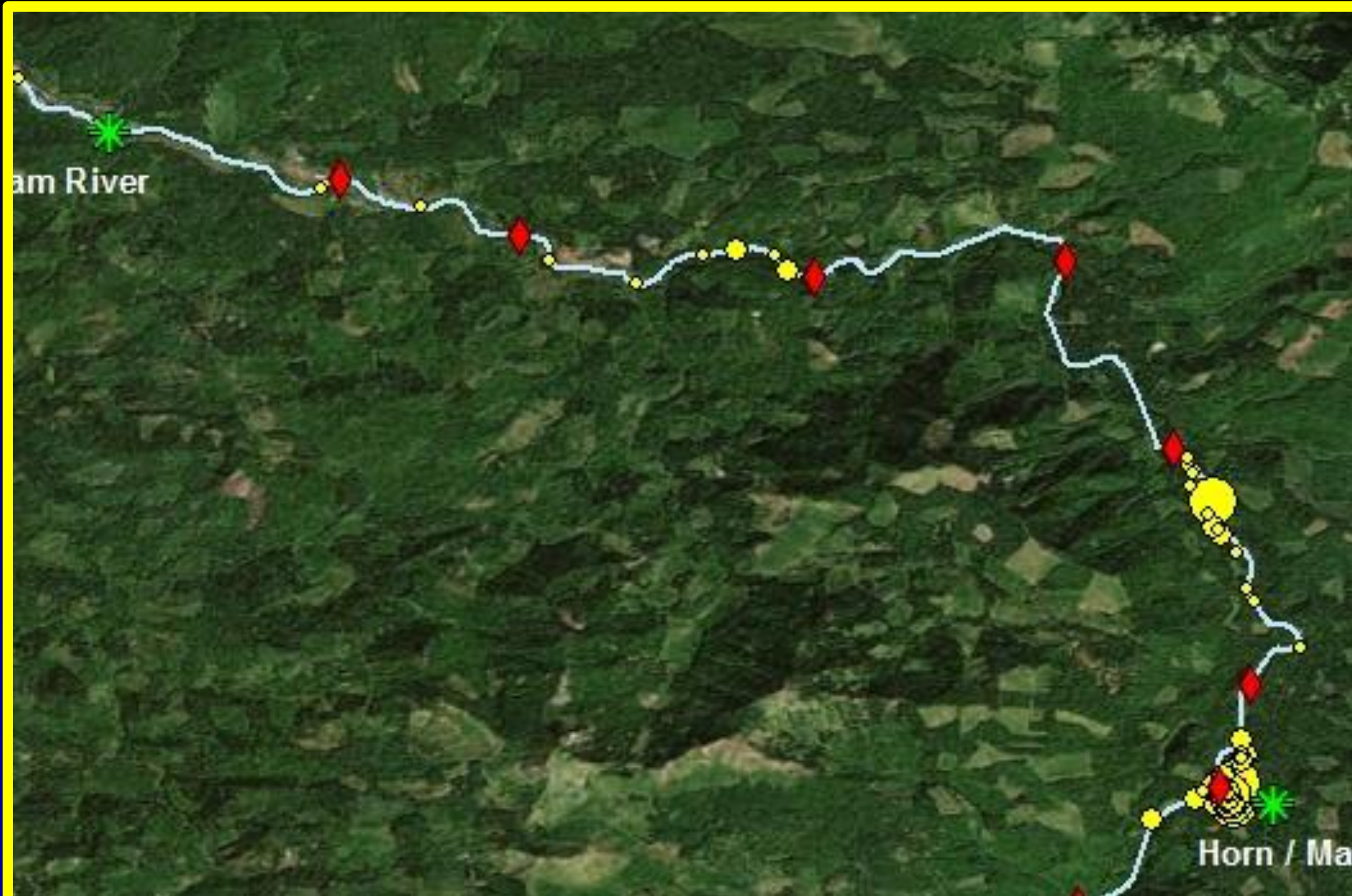
2014
Returning
Adults:
Above/Below
pedigree
assignment
compared to
spawner
distribution



BROOD YEAR 2015 SPAWNER DISTRIBUTION



**OUTPLANT ADULTS
HIGHER, LATER**

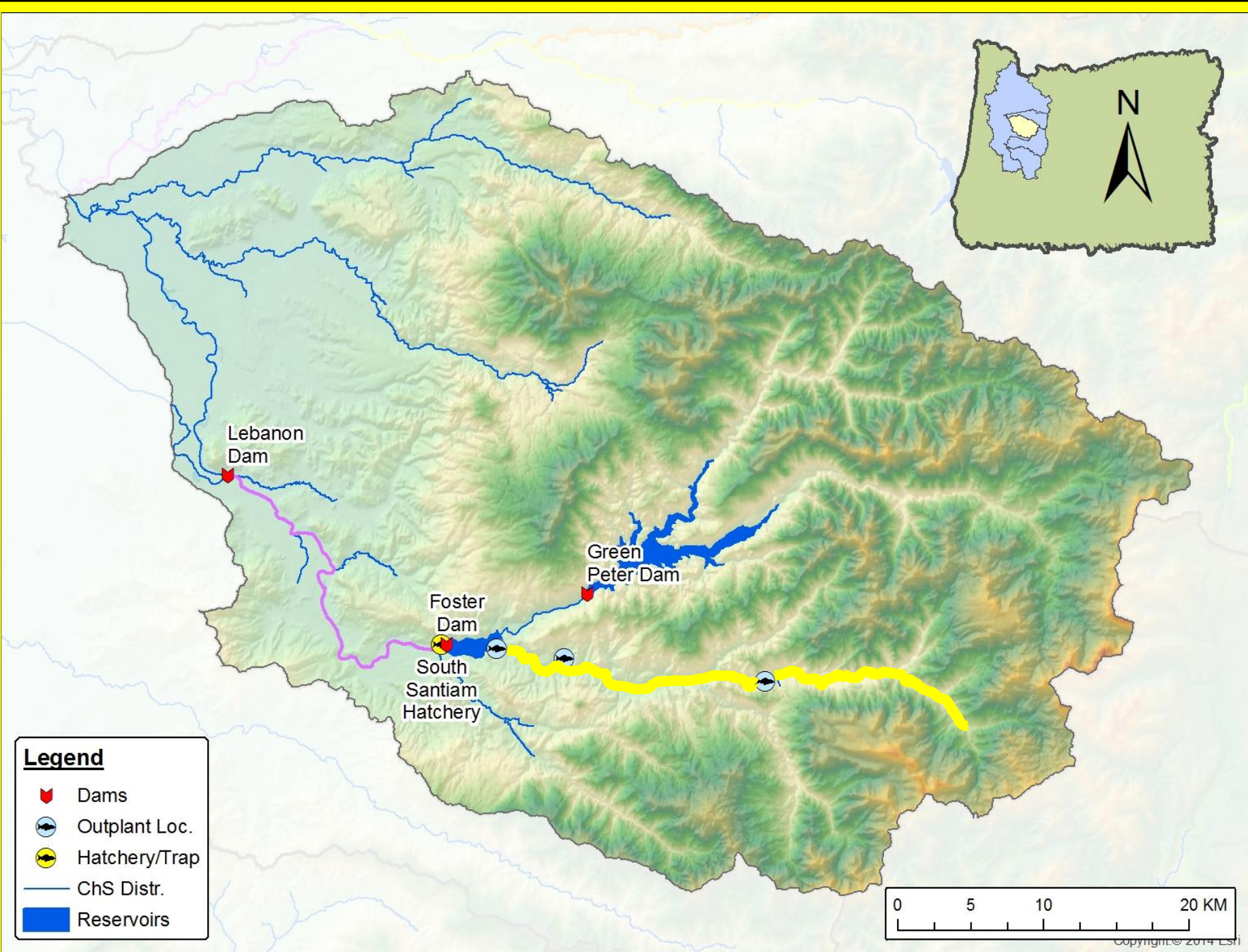




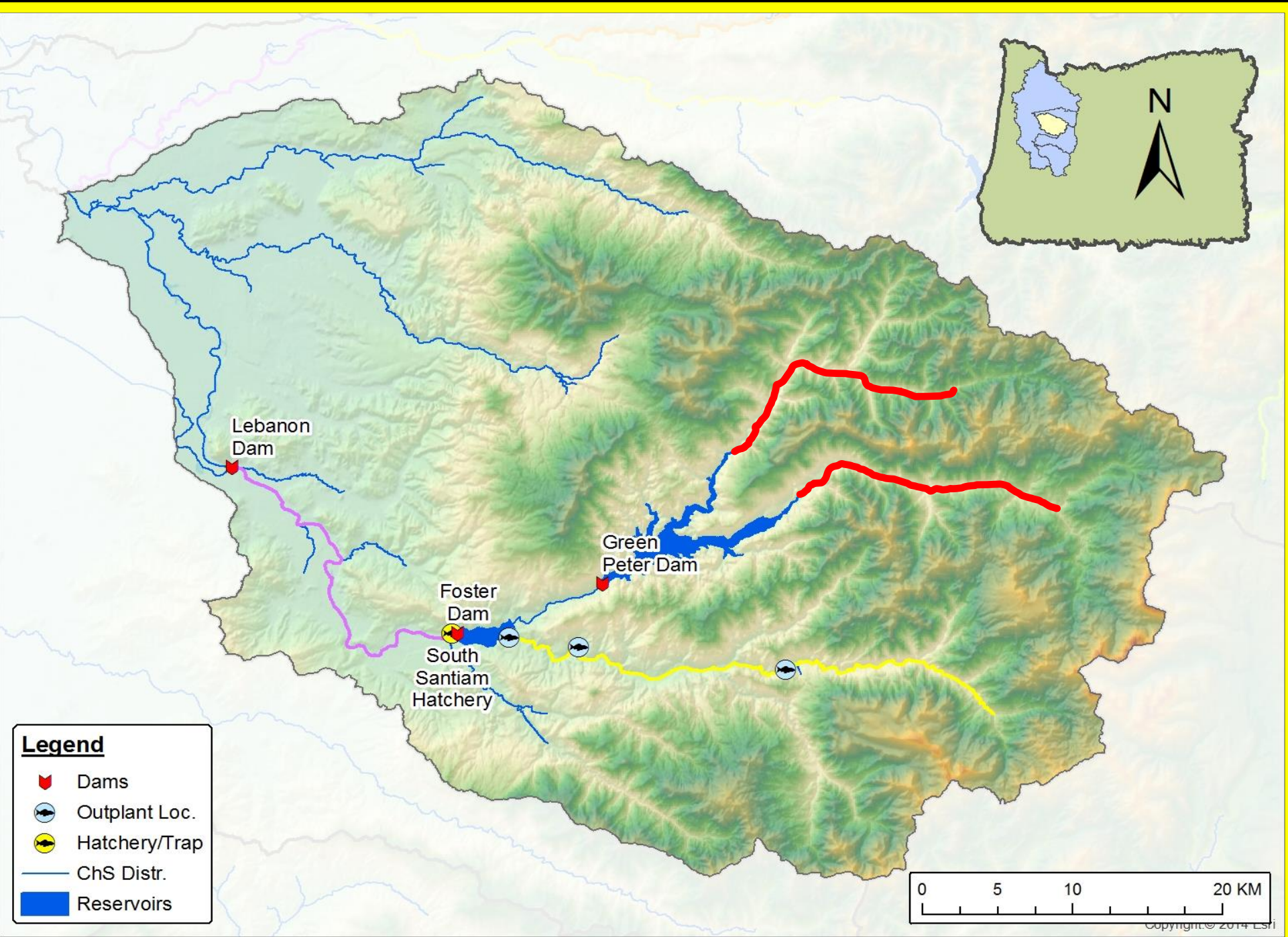
**PAY
ATTENTION
TO NMFS
CRITERIA**

2016 HORN CREEK WEIR





SOUTH SANTIAM





North American Journal of Fisheries Management

ISSN: 0275-5947 (Print) 1548-8675 (Online) Journal homepage: <http://www.tandfonline.com/loi/ujfm20>

Adfluvial Life History in Spring Chinook Salmon from Quartzville Creek, Oregon

Romer and Monzyk. 2014. North American
Journal of Fisheries Management 34:885–891

Green Peter Reservoir



FOSTER FISH COLLECTION FACILITY



Evaluating a multi-generational reintroduction program for threatened salmon using genetic parentage analysis

Melissa L. Evans, Marc A. Johnson, Dave Jacobson, Jinliang Wang, Michael Hogansen, and Kathleen G. O'Malley

Evans et al. 2016 Can. J. Fish. Aquat. Sci. 73: 844–852

GENETIC PARENTAGE EVALUATION OF SPRING CHINOOK SALMON
REINTRODUCTIONS ON THE SOUTH SANTIAM RIVER

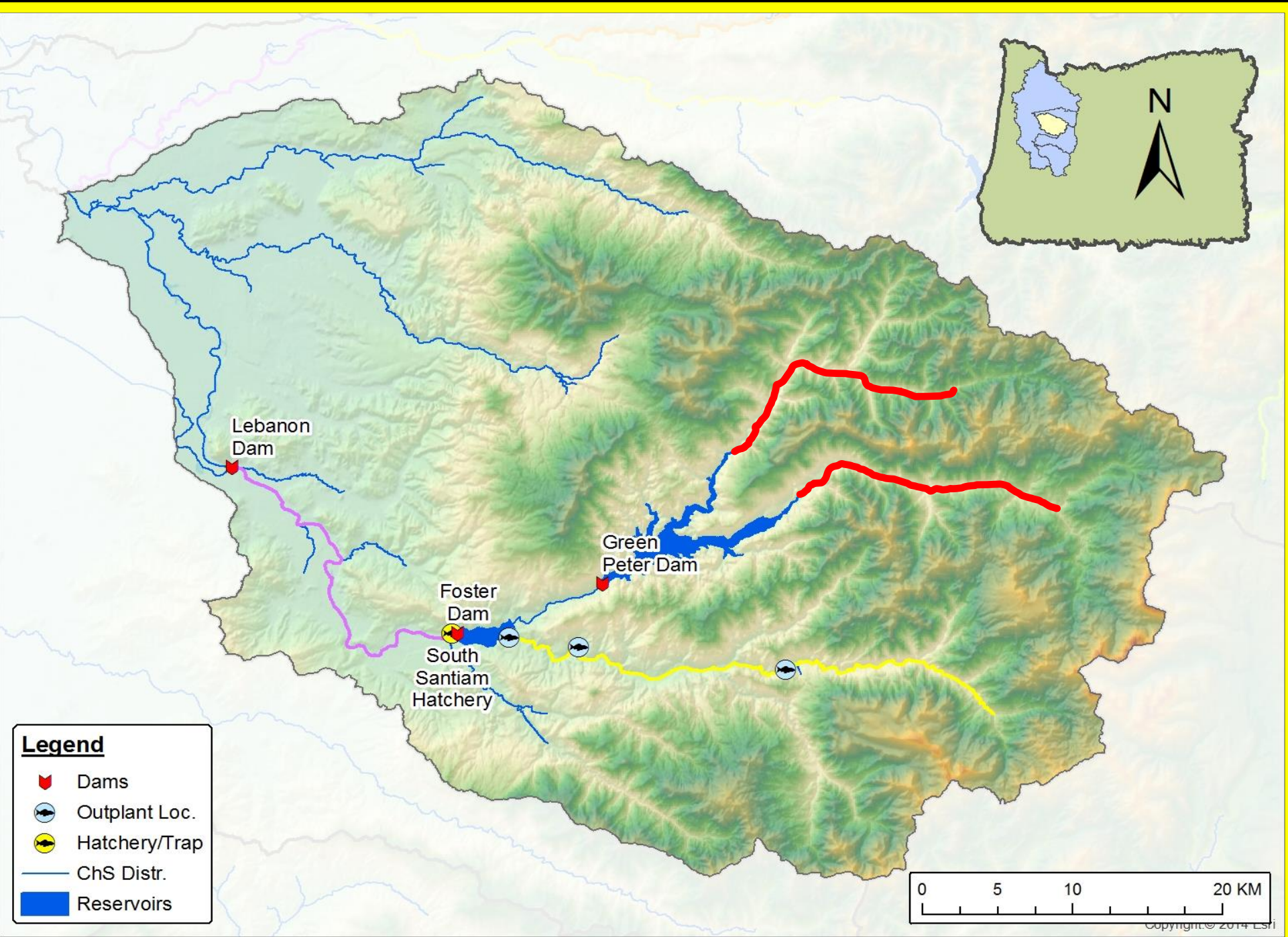
Prepared for:

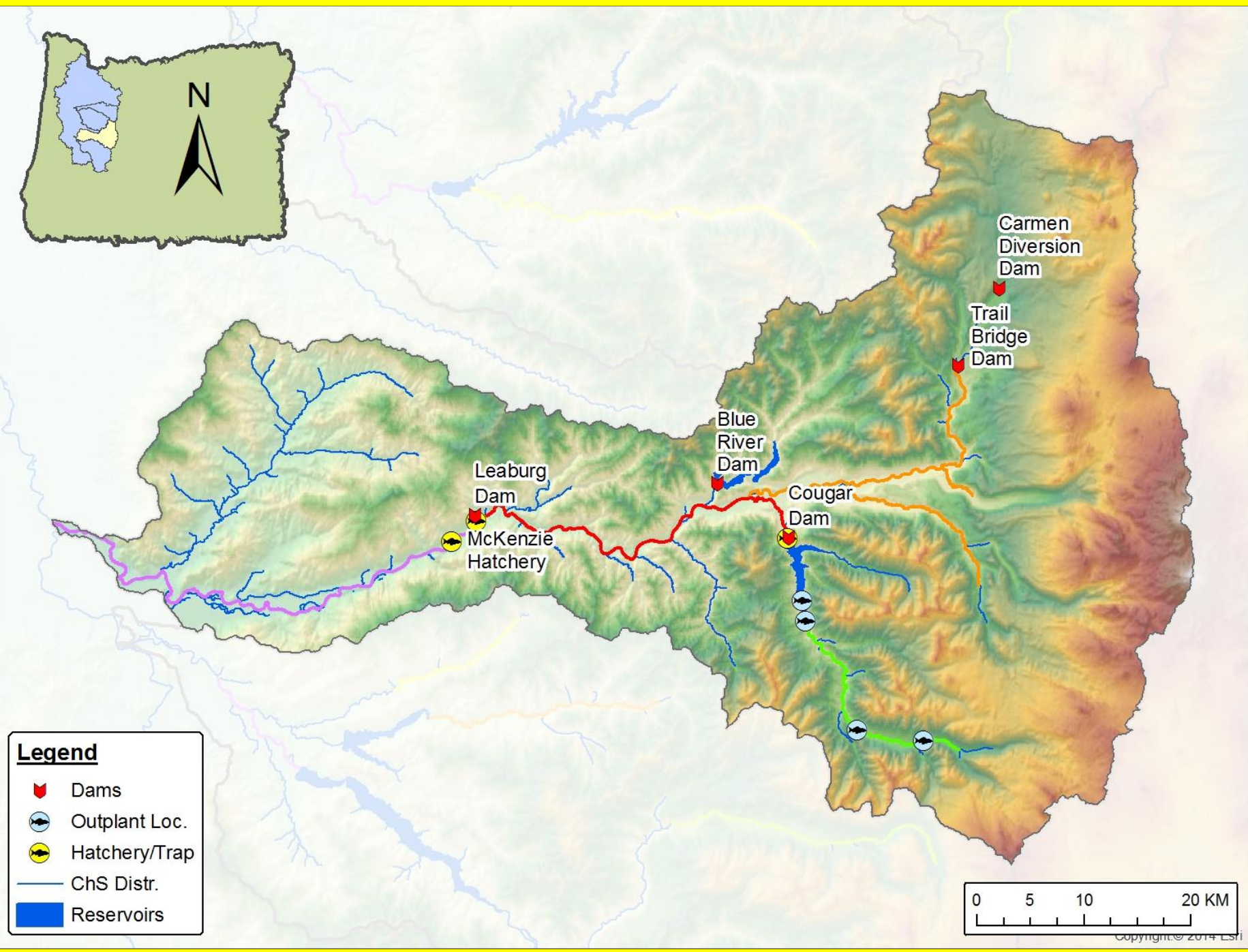
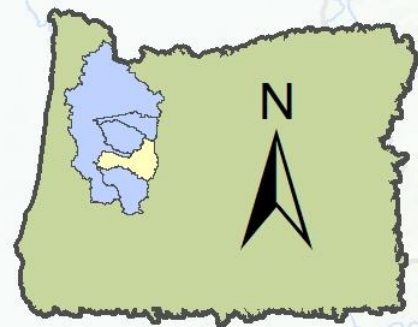
U. S. ARMY CORPS OF ENGINEERS
PORTLAND DISTRICT – WILLAMETTE VALLEY PROJECT
333 SW First Ave.
Portland, Oregon 97204

Prepared by:

Kathleen G. O'Malley¹, Melissa L. Evans¹, Marc A. Johnson^{1,2}, Michael A. Banks¹, Dave
Jacobson¹, and Michael Hogansen²

O'Malley et al. 2015. USACE Tech. Report. 27 pp.





McKenzie

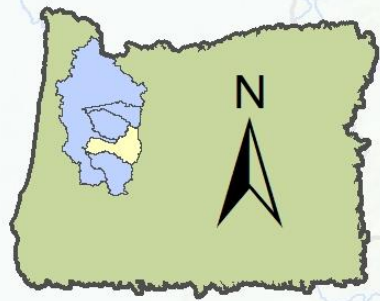


Cougar Fish Collection Facility

Factors influencing spawner success in a spring Chinook salmon (*Oncorhynchus tshawytscha*) reintroduction program

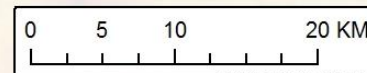
Nicholas M. Sard, Kathleen G. O'Malley, Dave P. Jacobson, Michael J. Hogansen, Marc A. Johnson, and Michael A. Banks

Sard et al. 2015. Can. J. Fish. Aquat. Sci. 72: 1390–1397



Legend

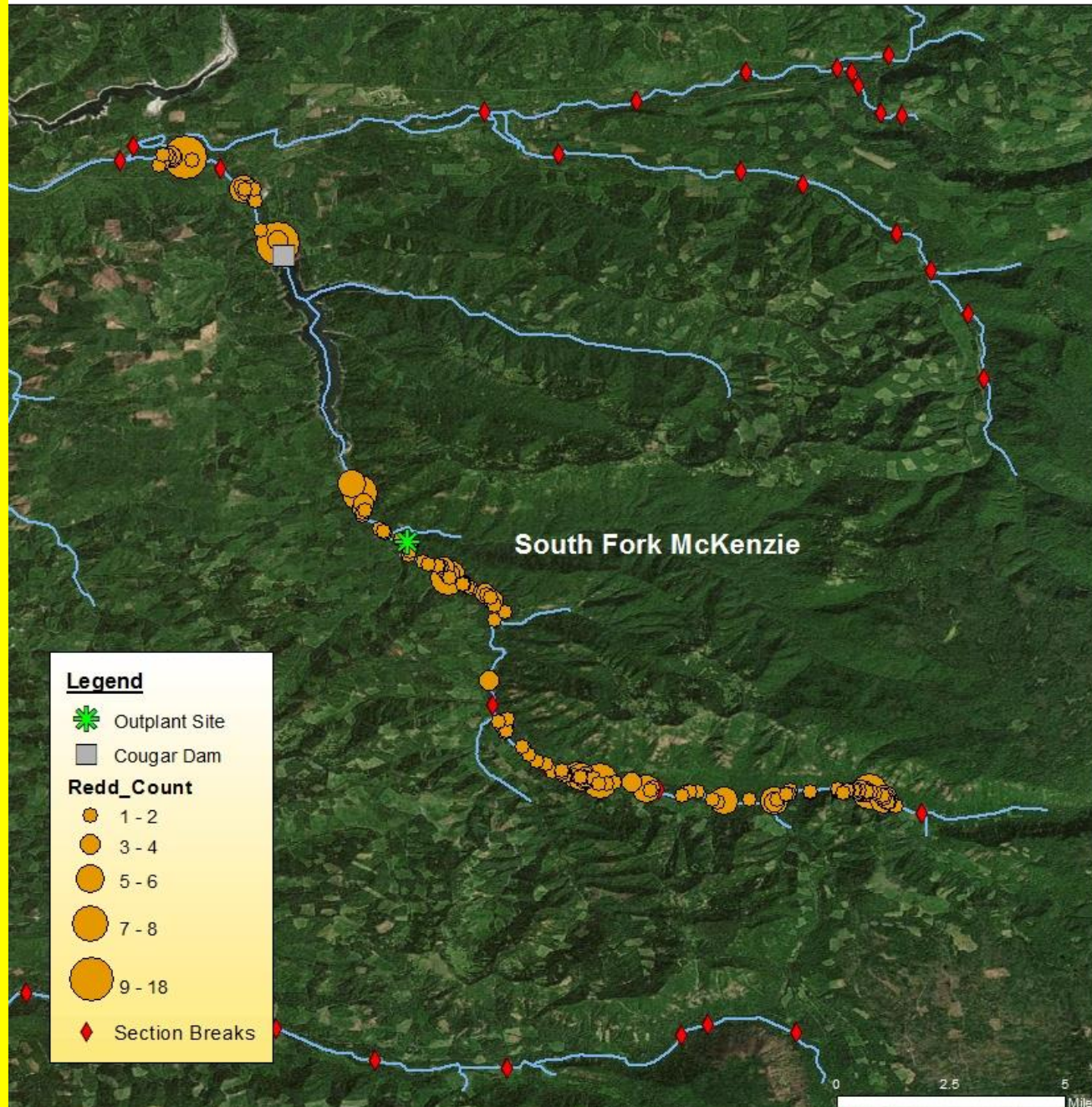
- Dams
- Outplant Loc.
- Hatchery/Trap
- ChS Distr.
- Reservoirs



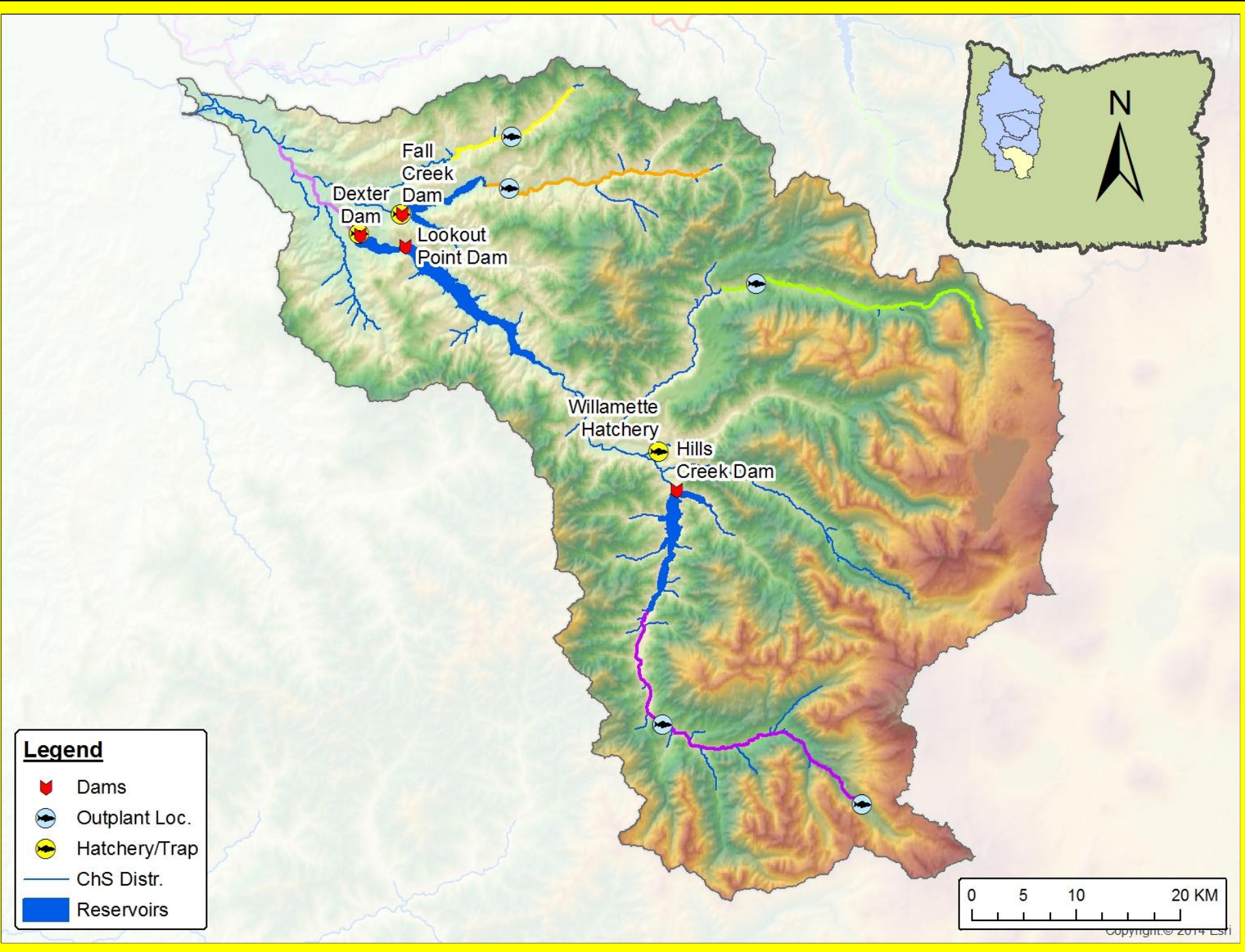
Copyright © 2014 LSI

**2016 HORs
outplanted
upstream
and late**

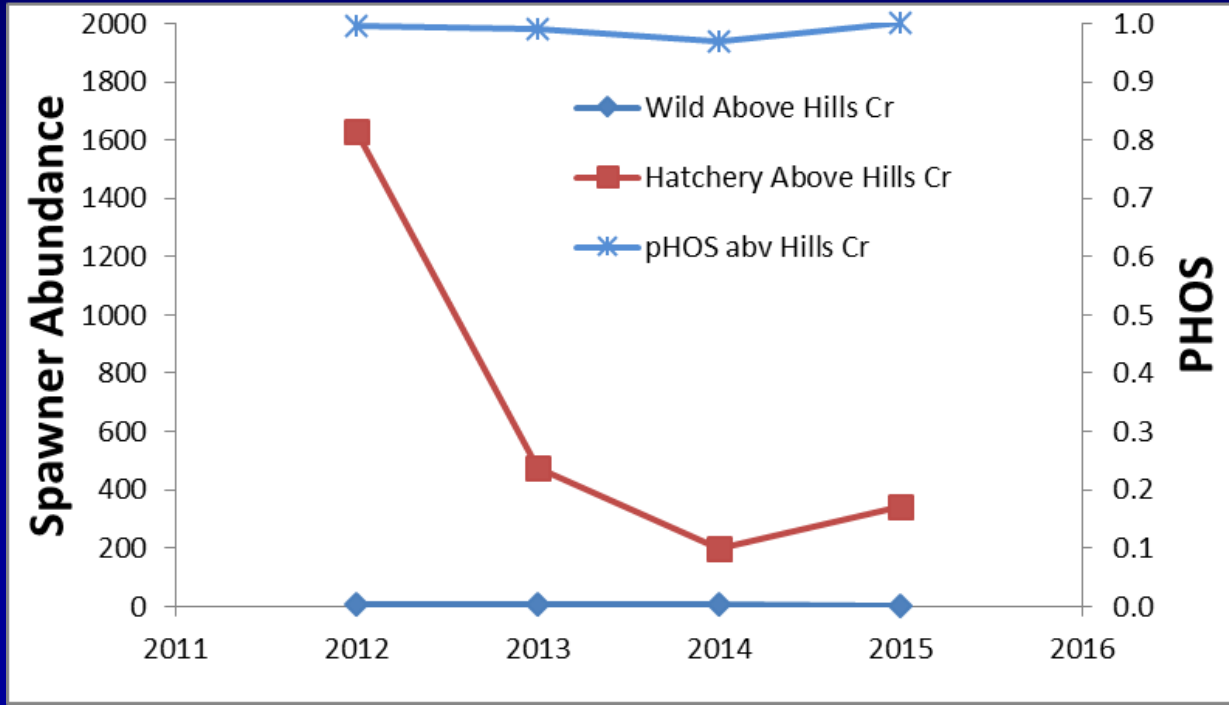
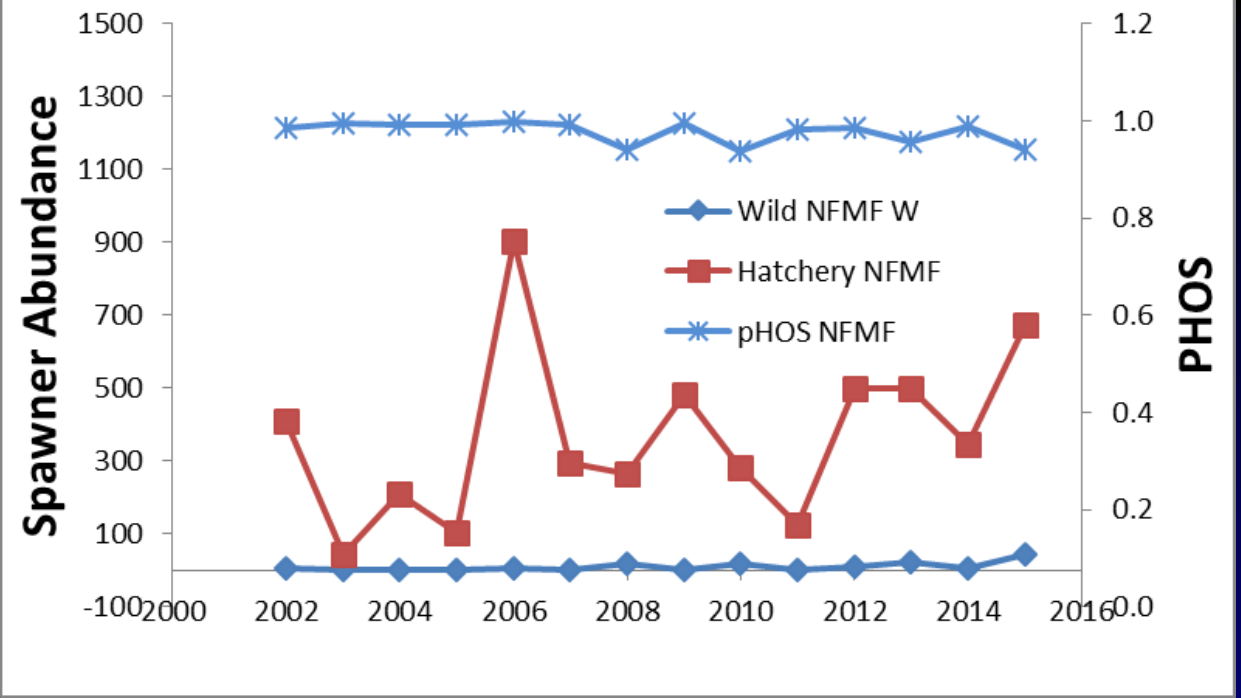
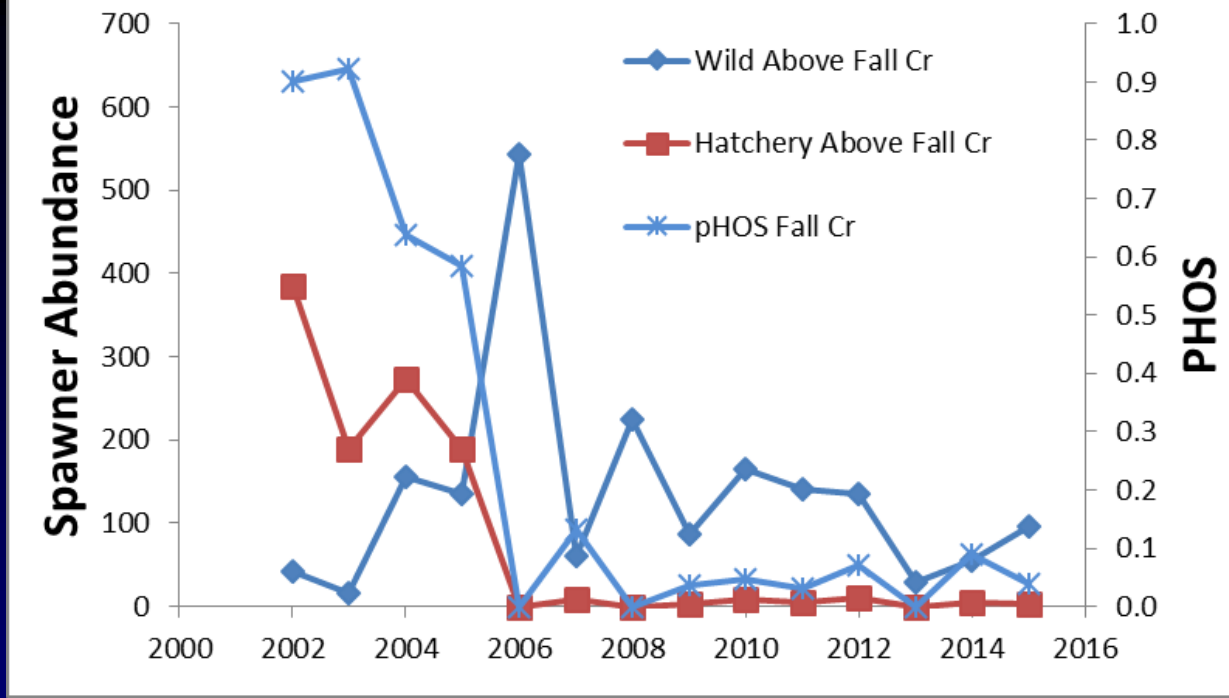
Broad Spawner Distribution & High Survival



Brood Year	Females Outplanted	Estimated PSM Rate	Females Adj for PSM	Redds (Peak)	Redds/ Female
2009	629	0.62	239	274	1.15
2010	320	0.2	256	190	0.74
2011	336	0	336	241	0.72
2012	448	0	448	249	0.56
2013	337	0.25	253	146	0.58
2014	462	0	462	222	0.48
2015	456	0.09	415	133	0.32
2016	410	0	410	293	0.71



Middle Fork Willamette



Summary

- North Santiam: Our evil plan is working
- South Santiam: Increase spatial distribution of spawners
- South Fork McKenzie: Increase understanding of how PSM affects replacement rate
- Middle Fork Willamette: Challenging

**We have a Website (Sorry,
we don't tweet)**

**[http://oregonstate.edu/dept/ODFW
/willamettesalmonidrme/home](http://oregonstate.edu/dept/ODFW/willamettesalmonidrme/home)**

(Or GOOGLE Corvallis Research)

Questions?



Photo by Suzette Savoir 9/21/2012

