

Adfluvial Life History - Chinook in the Upper Willamette Basin



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The term adfluvial defines a fish life history in which adults spawn in rivers or streams and juveniles subsequently migrate to lakes (or reservoirs) to rear to adulthood before returning to rivers or streams to spawn.



Detroit Reservoir



Cougar Reservoir

Chinook ?



Statesman Journal - Jul 12, 2012

Questions

- Where did they come from ?
- Do Green Peter Reservoir Chinook return to tribs to spawn ?
- When do they return to the tributaries ?
- Do their progeny survive / Are they self sustaining ?
- Where else does this occur ?
- Potential impacts for recovery monitoring, current research ?

Where did they come from ?

ODFW Surplus Releases

Brood Year	Hatchery	Number Released	Mean Fork Length at Release (mm)	Marks	Release Date	Release Site
2006	S. Santiam	7,856	137	AD	9/5/2007	Green Peter
2006	Willamette	101,217	66	AD, OT	5/24/2007	Quartzville Creek
2007	S. Santiam	15,000	148	AD	9/30/2008	Green Peter
2007	Willamette	84,000	64	AD, OT	6/12/2008	Quartzville Creek

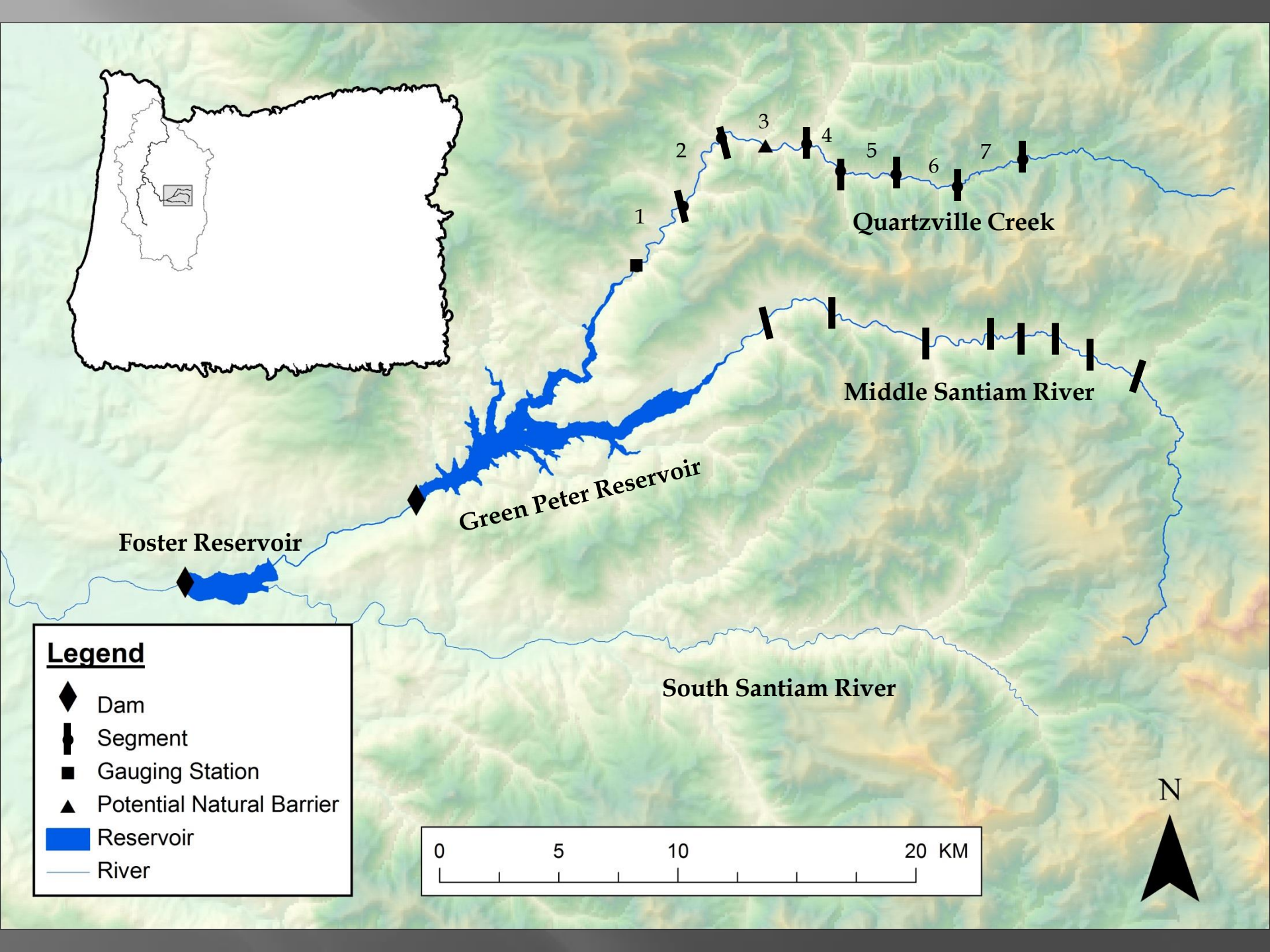
100% AD clip, 89% OT marked

**Did Green Peter Reservoir Chinook
return to tribs to spawn ?**

Spawning Ground Surveys

September 17 - October 15, 2012

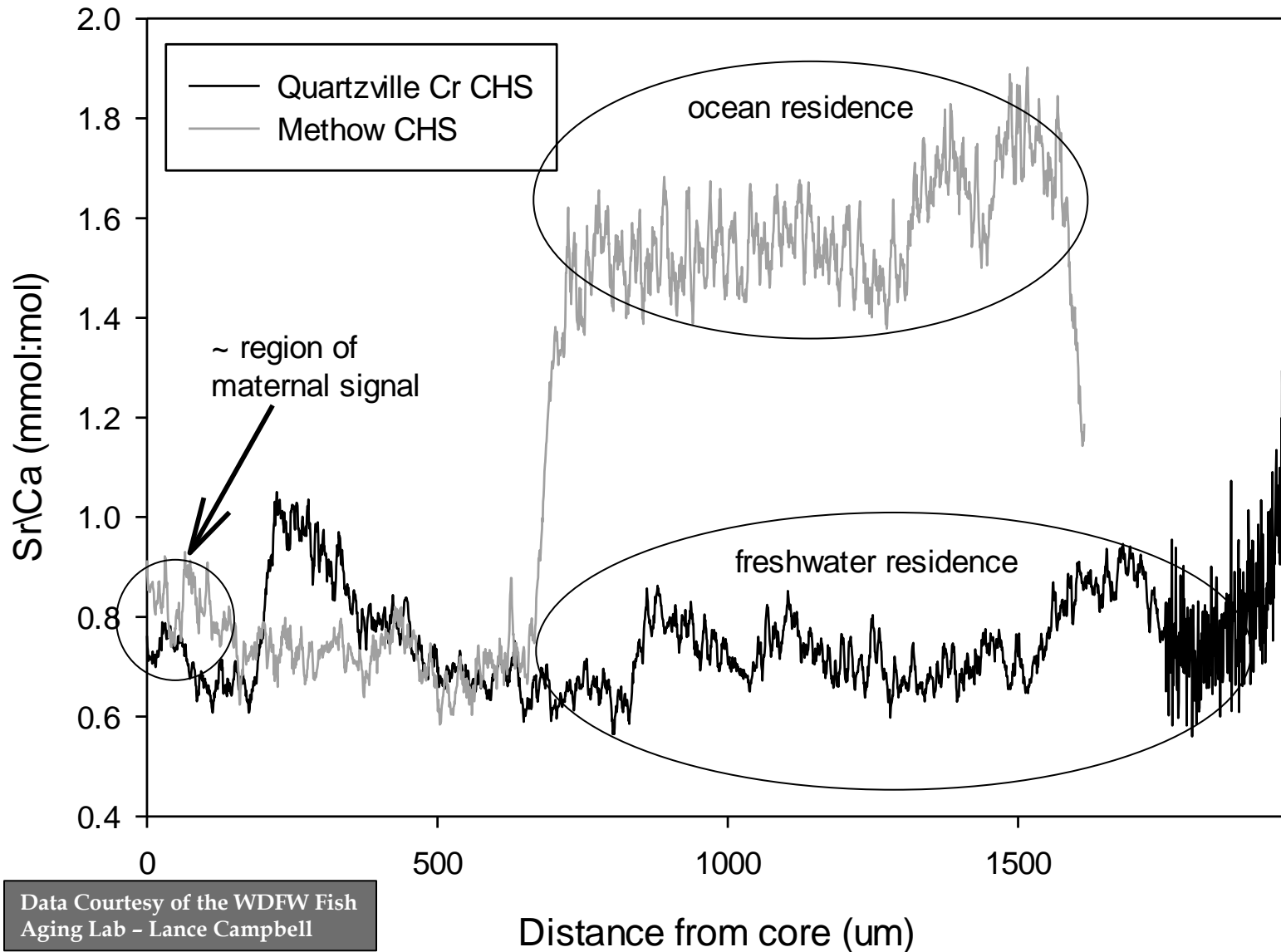




Spawning Ground Survey Results 2012

- 9 Individual adult Chinook observed
- 9 Redds observed
- 6 Carcasses recovered (4 verified female)
All females appeared to have spawned
- 2 Unmarked (non-hatchery) carcasses recovered

Otolith and Scale Analyses



Data Courtesy of the WDFW Fish Aging Lab - Lance Campbell

← = Annulus

← = Estimated ocean entrance

4 yr old, unclipped

South Santiam - Below Foster Dam

Mount no. 11116.393

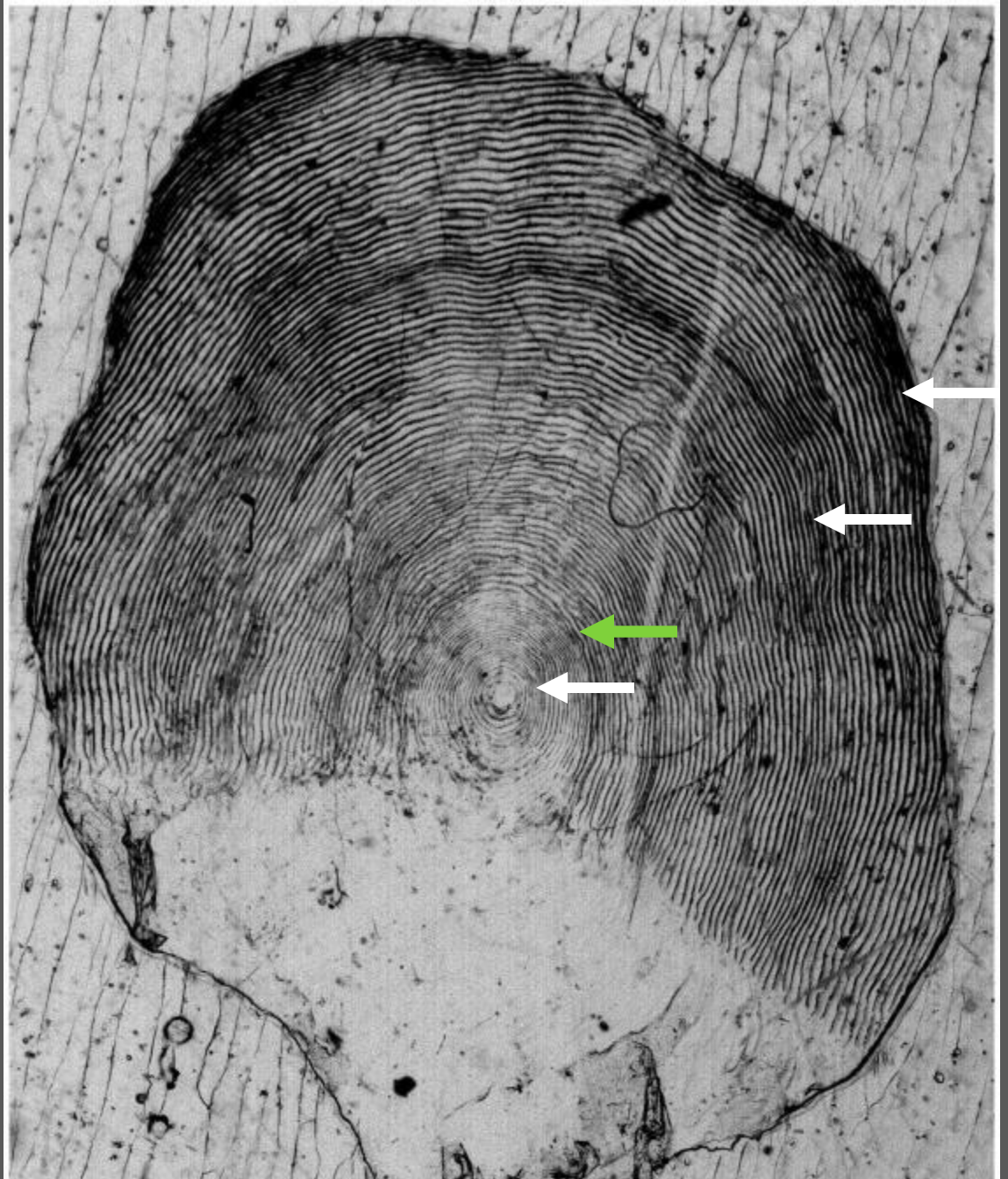
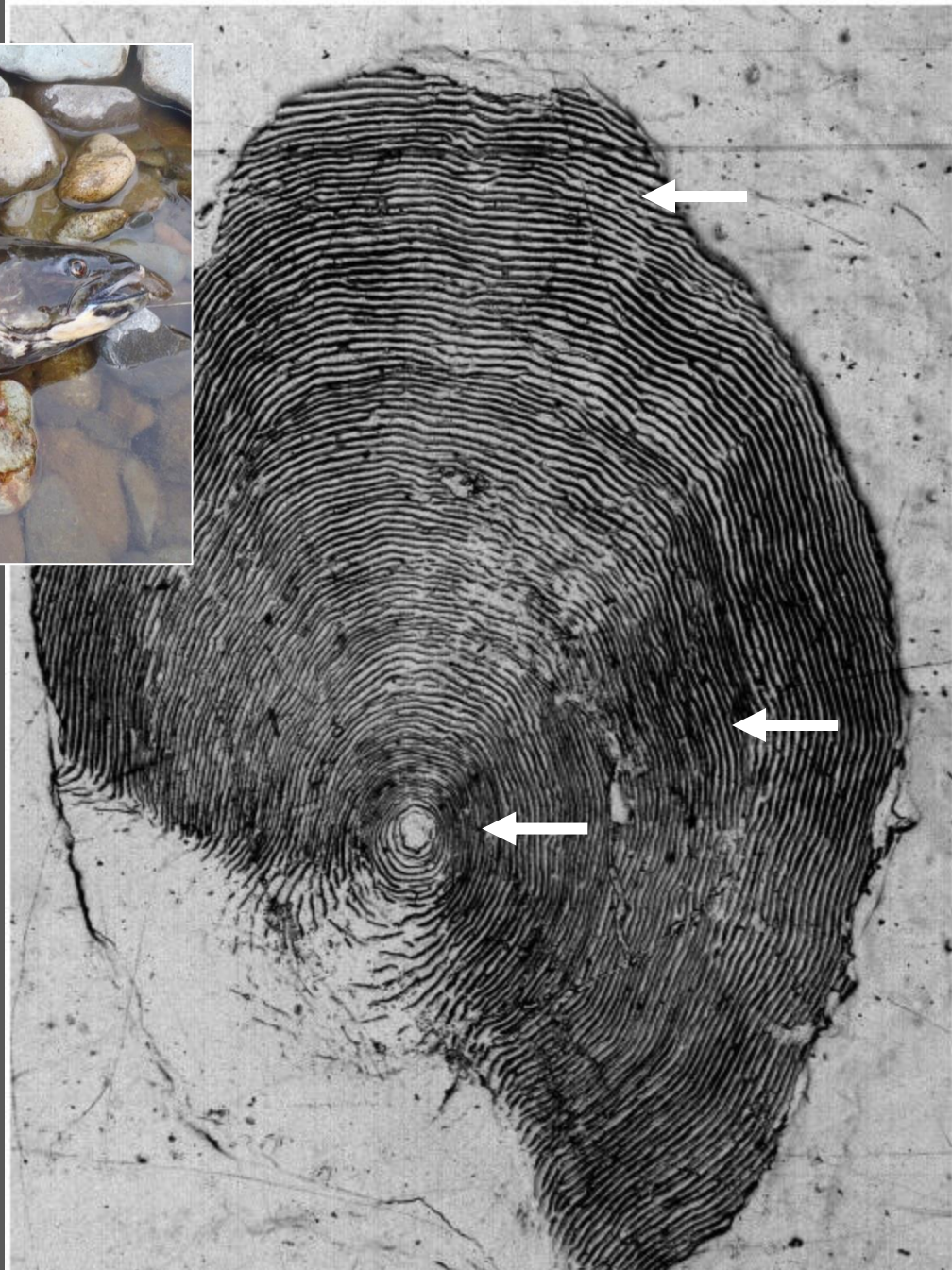


Image Courtesy of the ODFW Fish Life History Analysis Project - Ben Clemens, Kanani Bowden



← = Annulus

4-5 yr old, **unclipped** female
Fork length 687 mm

Quartzville Creek – upstream of
Green Peter Reservoir

Mount no. 12116.4001

Image Courtesy of the ODFW Fish Life History Analysis Project - Ben Clemens, Kanani Bowden

Quartzville Cr. – Spawning Ground Surveys

All spawners were observed upstream of this potential natural barrier.



When do they return to tributaries ?

Do progeny survive / Are they self-sustaining ?

Snorkel Surveys

July 18, 2013



Snorkel Survey Results

2013

- 1 **Adult Chinook observed (July 18) upstream of 2.2 m step.**
- 3 **Juvenile Chinook observed in August 2013 in Quartzville Cr.**

Green Peter Reservoir



Where else does this occur ?

Other Adfluvial Chinook Populations in the Pacific Northwest

<u>Location</u>	<u>Size (acres)</u>
Coeur d' Alene - ID	31,872
Lake Chelan - WA	33,335
Cushman Lake - WA	4,010
Green Peter Res. - OR	3,720
Lake Billy Chinook* - OR	3,916
Folsom Lake - CA	11,450

Potential impacts on recovery monitoring and current research

Redd counts.

Overestimate production from outplanted females.

Affect ongoing pedigree studies above Cougar and Detroit dams.

Eventually could lead to higher frequency of adfluvial life history expression.

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Matt Walker



Questions ?



Fisherman Shane - 2013