An Overview of Pacific Lamprey Health Monitoring in Oregon

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Pacific Lamprey Health Work in Oregon

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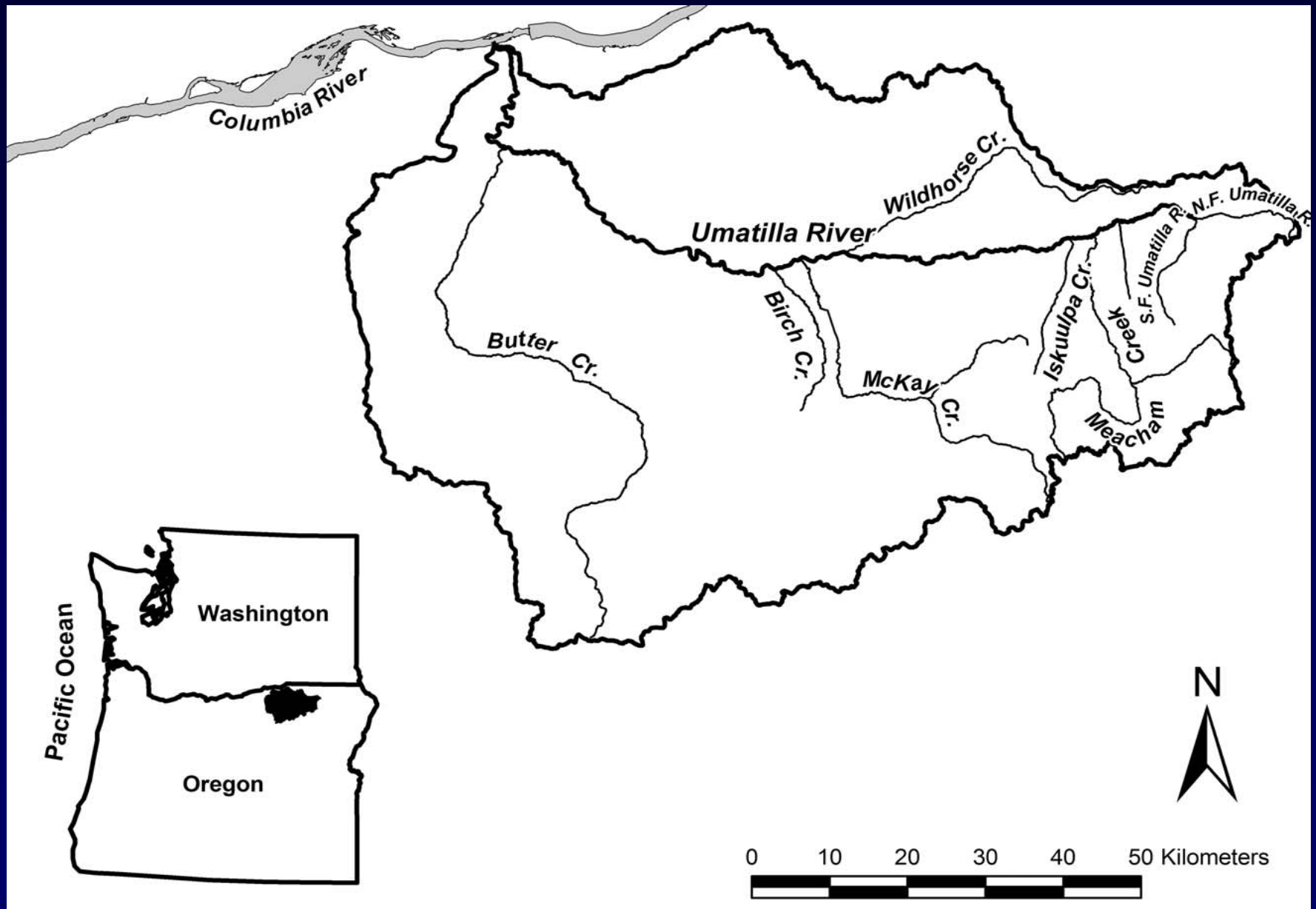
- Stan van de Wetering (Confederated Tribes of the Siletz Indians)
- John Fryer (Microbiology Department, OSU)

History of Pacific Lamprey Health Monitoring in Oregon

- Late 1960's or early 1970's John Fryer (Microbiology Department, OSU) reported identifying *Aeromonas salmonicida* (furunculosis bacteria) from lamprey passed above Siletz Hatchery.
- ODFW Corvallis Fish Health Services Laboratory has examined at least 90 lamprey since 2003.
- ODFW La Grande Fish Health Services Laboratory began monitoring lamprey in 1999 as the CTUIR began projects in NE Oregon.
- Fall 2009 the Lower Columbia fish Health Center (Willard, WA) examined 60 ammocoetes from Eagle Creek, OR for a tagging study project – results and program in development at Eagle Creek Hatchery.

CTUIR Study Area



Lamprey Health Monitoring Methods
La Grande Fish Health Services Laboratory

- Tested annually prior to being released to spawn - Preliberation Examination: N=5-20 grab-sampled
- Grab-sampled lamprey anesthetized in strong MS-222 solution
- Testing of mortalities that occur during holding

Lamprey Health Monitoring Methods
Pathogen Detection
La Grande Fish Health Services Laboratory

Category	Method	Lamprey Tissue Tested	Details
Viruses	Cell Culture	-Gill port and kidney -whole viscera of larvae	Cell lines: CHSE-214, EPC, SSN and BF-2
Bacteria	Plate Culture BKD	-Kidney, Heart and Liver Kidney	-Tryptone Yeast Extract agar (TYE-S) plates -ELISA (one tested)
Parasites	Light Microscopy	Wet mount of skin smears and other tissues of interest	Examined at 100-400x
Blood Work	Hematocrit Leukocrit	Blood	-Micro hematocrit tube spun in microcentrifuge -Blood smear exam

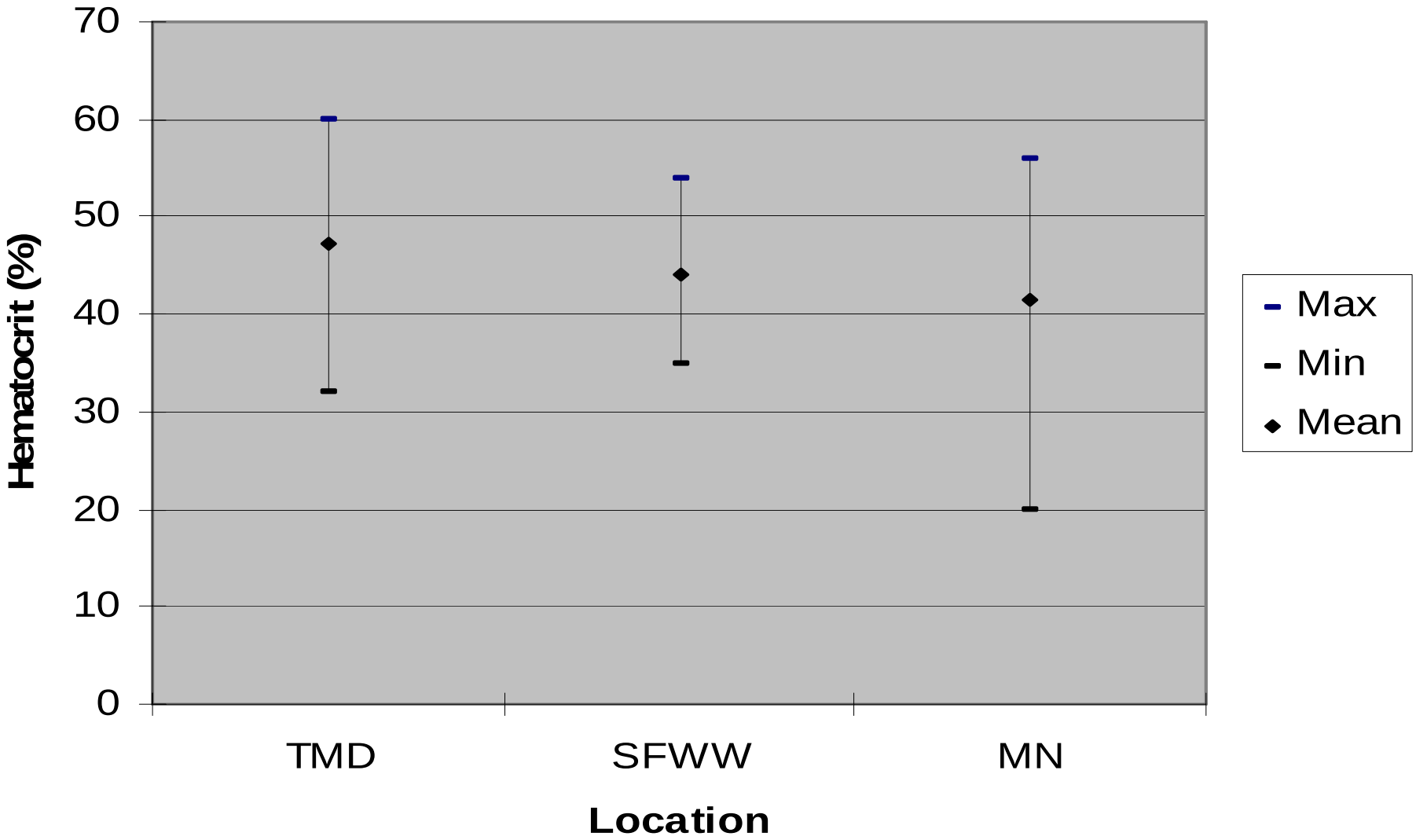
Lamprey Health Monitoring
Overall Results Table 1999-2009
La Grande Fish Health Services Laboratory

Category	Fish Health Results NE Oregon	Comment
Viruses	No viruses detected	
Bacteria	9/107 (8.4%) *Aeromonas salmonicida* (furunculosis bacteria) Aeromonad-pseudomonad (APS) bacteria detected in 7/107 (6.5%)	-Grab-sampled and mortalities combined -Adult and larvae results combined
Parasites	No parasites detected	
Blood Work	Ranged from lower 30's to 60 Exception: 20 and 24	One anemic lamprey in 2007 and 2009 at Minthorn

Lamprey Health Monitoring NE Oregon Results by Location 1999-2009

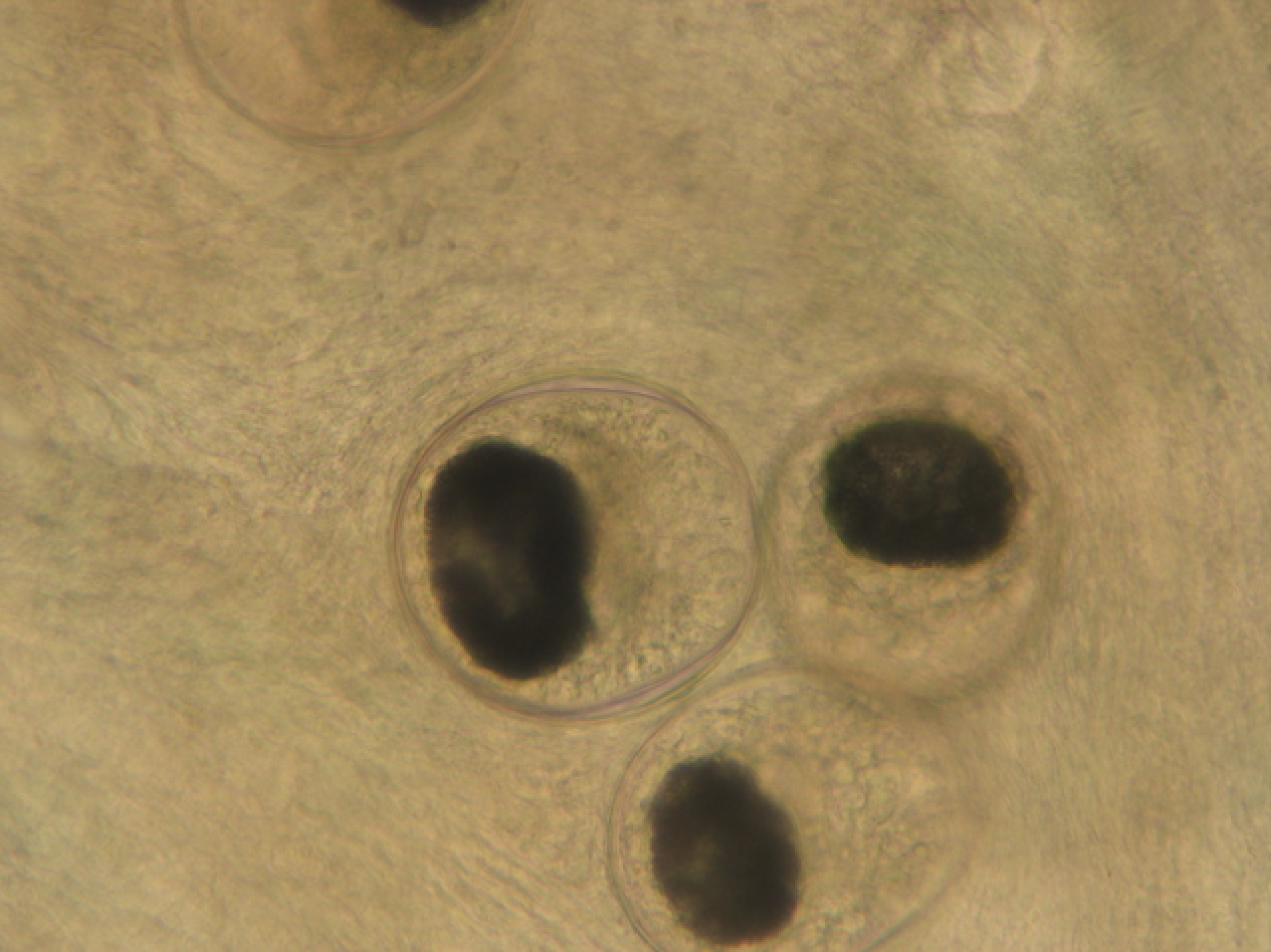
Location	Life stage	No. Live	No. Dead	Virus Results	Bacterial Results	Parasite Results	Blood Hematocrit Leukocrit	Comment
M.F. John Day River	Larvae	21	0	-	-	-	-	Sept. 1999
Grande Ronde River	Larvae	0	1	-	-	-	Not done	June 2007 old mort
Three Mile Dam	Adult	32	5	-	4/37 (10.8%) APS	-	Hem:32-60 Lk: 0.1-2.5	2000-2003 APS in morts
South Fork Walla Walla	Adult	8	11	-	9/19 (47.4%) *A. salmonicida* 1/19 (5.3%) APS	-	Hem:35-50 Lk: <0.1	2004-2005 FURUNC loss 6-05 OXYTET
Minthorn Adult Facility	Adult	18	11	-	2/29 (6.9%) APS	-	Hem:20-56 Lk:<0.1-1.0	2004-2009
Totals		**79**	**28**					**N=107 examined 1999-2009**

Hematocrit values of Pacific Lamprey by Location (2001-2009)



Lamprey Health Examinations Western Oregon Results by Location 2004-2009

Location	Life stage	No. Live	No. Dead	Virus	Bacterial Results	Parasite Results	Comment
Leaburg Trap	Various	4	0	-	Not done (ND)	ND	2003
Spencer Creek	3 Juv. 1 Adult	4	0	ND	ND	-	Klamath R. Tributary Oct. 2004
Willlam-ette River	6 Juv 14 Ad	20	0	-	1/14 (7.1%) *A. salmonicida* 5/14 (35.7%) APS	6/20 Trich (Gills) 2/12 Crepidostoma 2/20 trematode cysts	2006-2008 FURUNC Nematodes(L)
Smith Farm	Adult	44	17	-	4/8 *A. salmonicida*	0/8	2006-2008
Siletz R. Satellite Rock Ck.	Adult	1	0	Pend.	ND	*Nanophyetus salmincola*	9-Nov. 2009 Loss situation
Totals		**73**	**17**				**N=90 examined 2003-2009**



Summary

- A total of 152 live and 45 dead lamprey have been examined and results entered into the ODFW Fish Health services database. There were some examined prior to the database (Fryer).
- *Aeromonas salmonicida* (the causative agent of furunculosis) has been the most prevalent bacterial pathogen detected. This bacterium is most likely being brought into lamprey programs from the natural environment.
- Parasites have been found (Western Oregon) and most recently *Nanophyetus salmincola* caused loss (C. Banner and S. van de Wetering) at the Siletz River Satellite facility.
- Fish health data shows that lamprey are susceptible hosts to some serious pathogens that cause loss not only to lamprey but to other fishes. Developing health history information should be a priority for lamprey projects.
- Water supplies and treatment regimes should be considered in holding lamprey for experimentation or translocation projects.

THE END

Any Questions??