

# Contaminants in Lampreys Speed Session Overview

- Elena Nilsen: *Contaminant Body Burdens in Different Life Stages of Pacific lamprey: What We Know and What We Don't.*
- Robert Mueller: *Mercury Concentrations in Pacific Lamprey and Sediments in the Columbia River Basin.*
- Cassandra Smith: *Contaminants in Sediments and Larval Lamprey from Tributaries of the Deschutes River.*
- Cynthia LeDoux-Bloom: *Investigating the Utility of Using Lamprey (*Entosphenus spp.*) as a Surrogate of Ecosystem Health: Is a Prehistoric Fish the Canary of the Anthropocene?*
- Chuck Madenjian: *Trends and Biological Effects of Environmental Contaminants in Lamprey.*
- Tim Whitesel: *Monitoring Pacific Lamprey During The Ecological Revitalization Of The Portland Harbor Superfund Site.*



# Contaminants of Concern in Pacific Lamprey

Elena Nilsen, U.S. Geological Survey

Laurie Porter, Columbia River Inter-Tribal Fish Commission

Bob Mueller and Tim Linley, Pacific Northwest National Laboratory

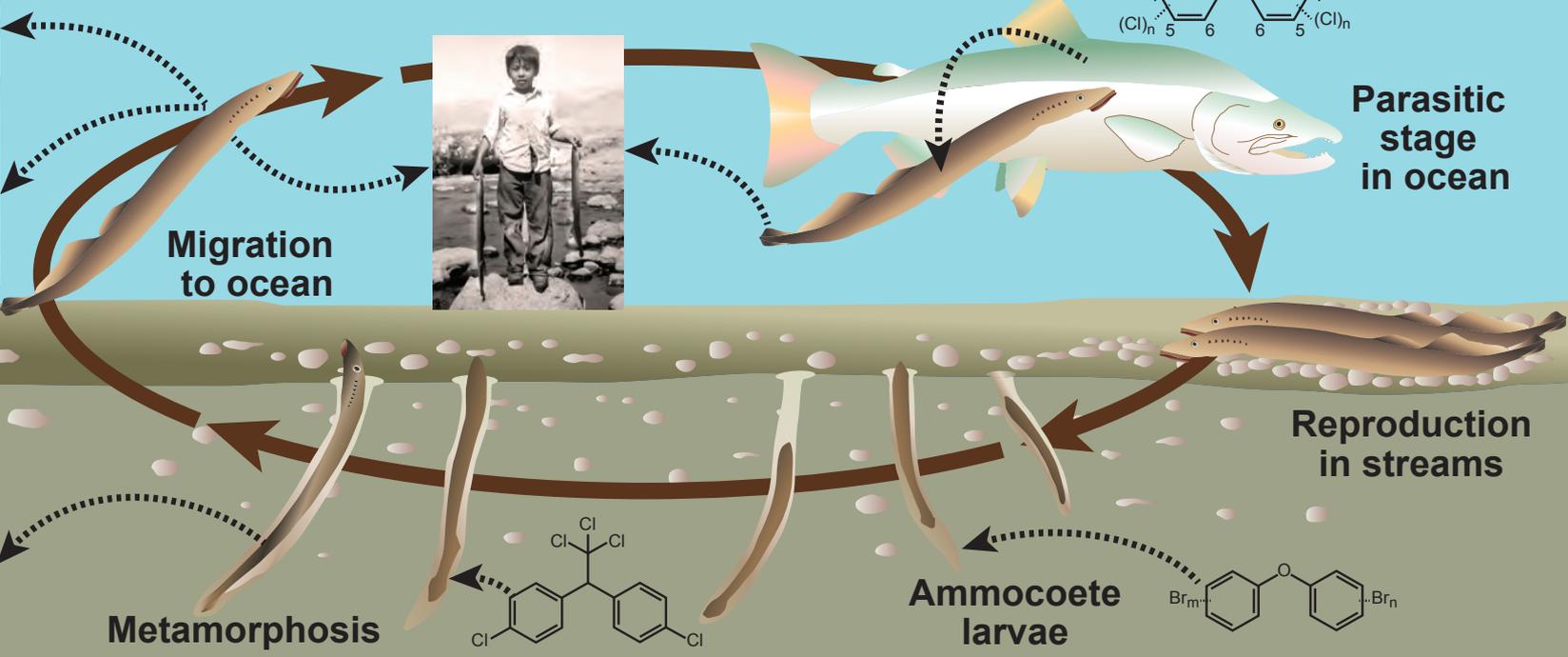
U.S. Department of the Interior  
U.S. Geological Survey

# Pacific Lamprey Contaminants



2-3 years

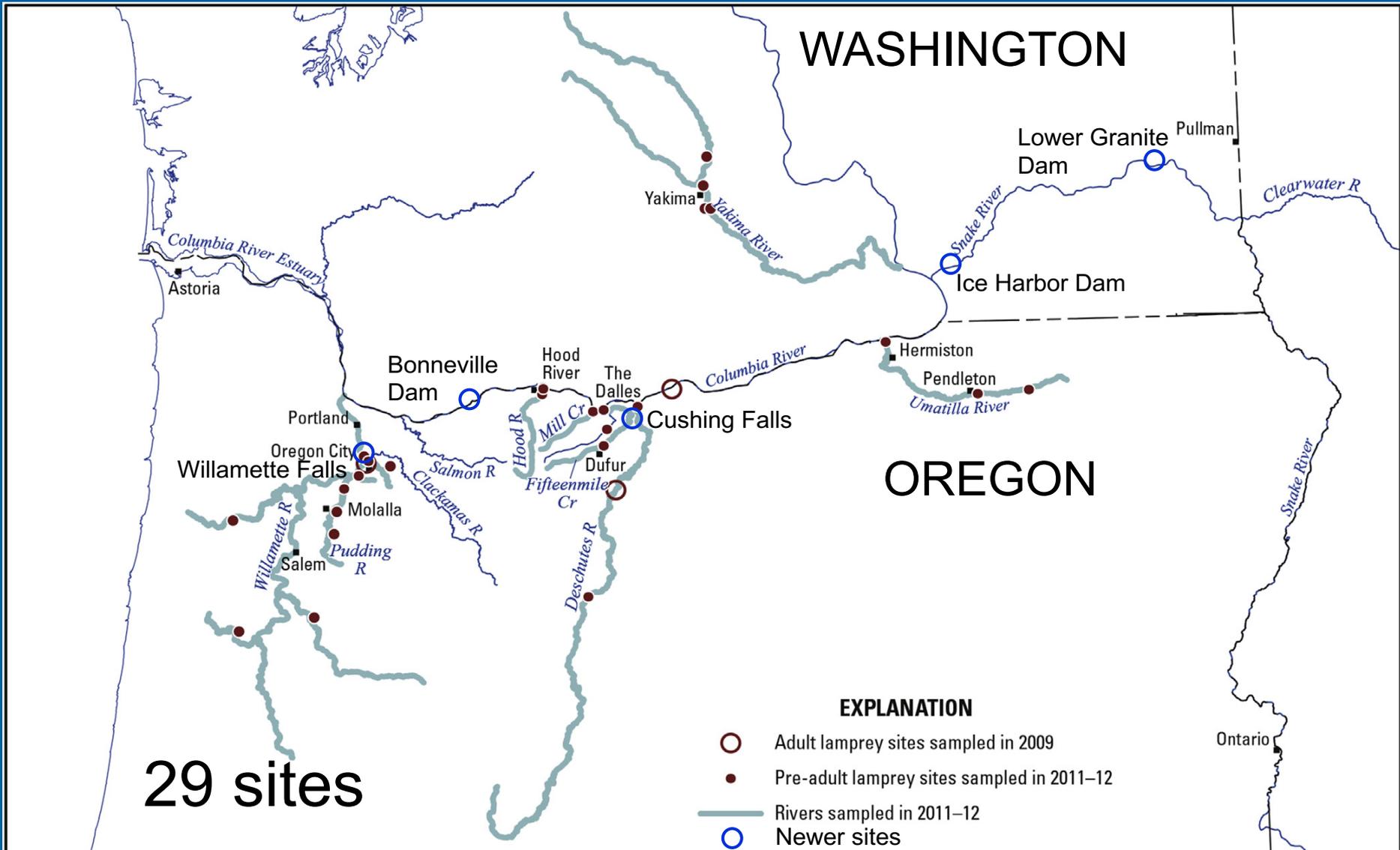
## Lamprey stages and contaminant exposure



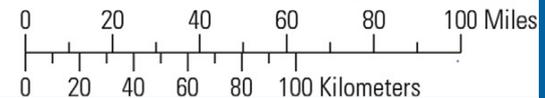
3-7 years



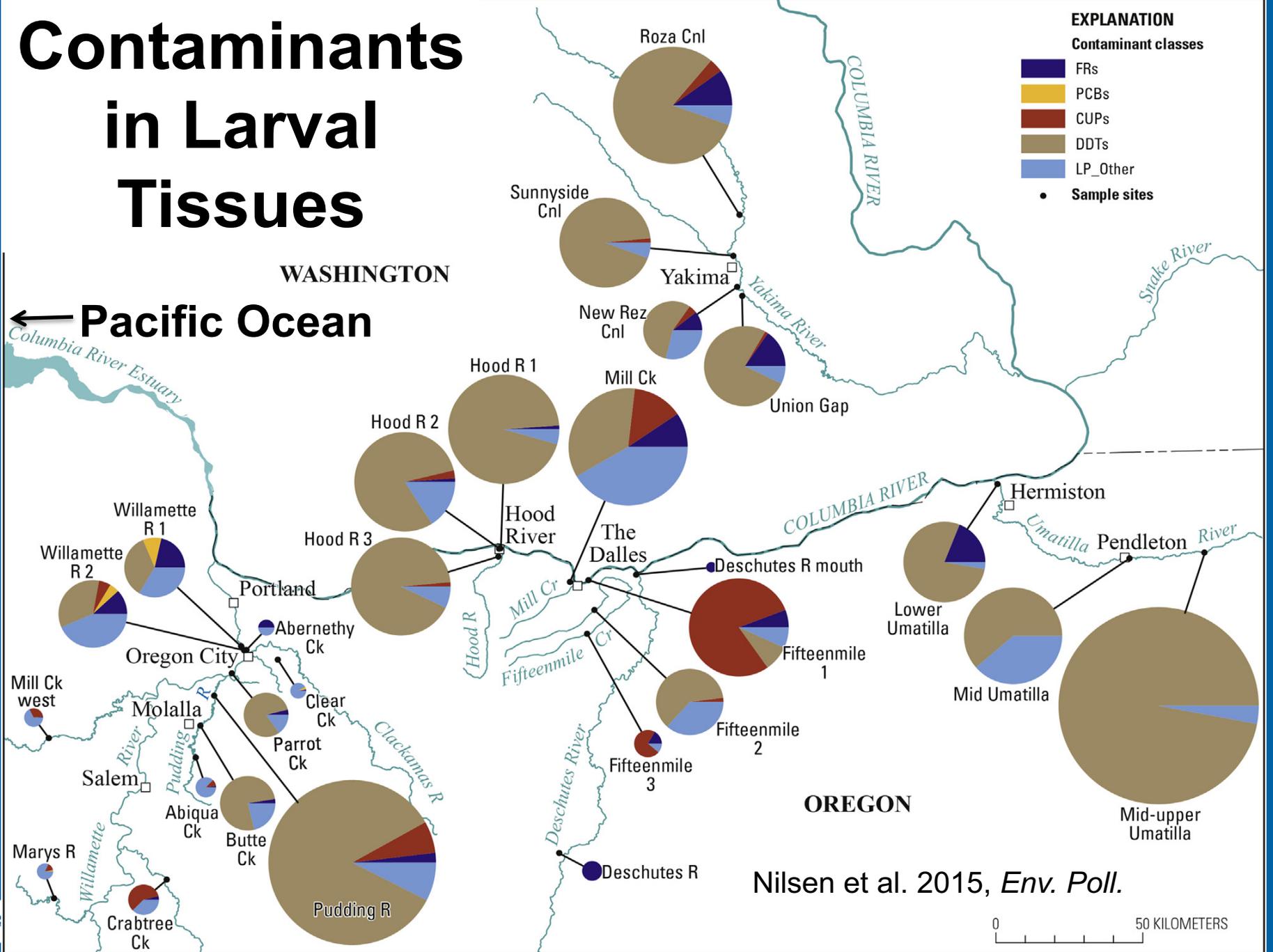
# Site Map



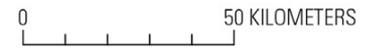
Base map modified from USGS and other digital data sources, various scales. Projection: Lambert Conformal Conic CM: 120°30'0.00"W LO: 41°45'0.00"N, Datum: North American 1983



# Contaminants in Larval Tissues



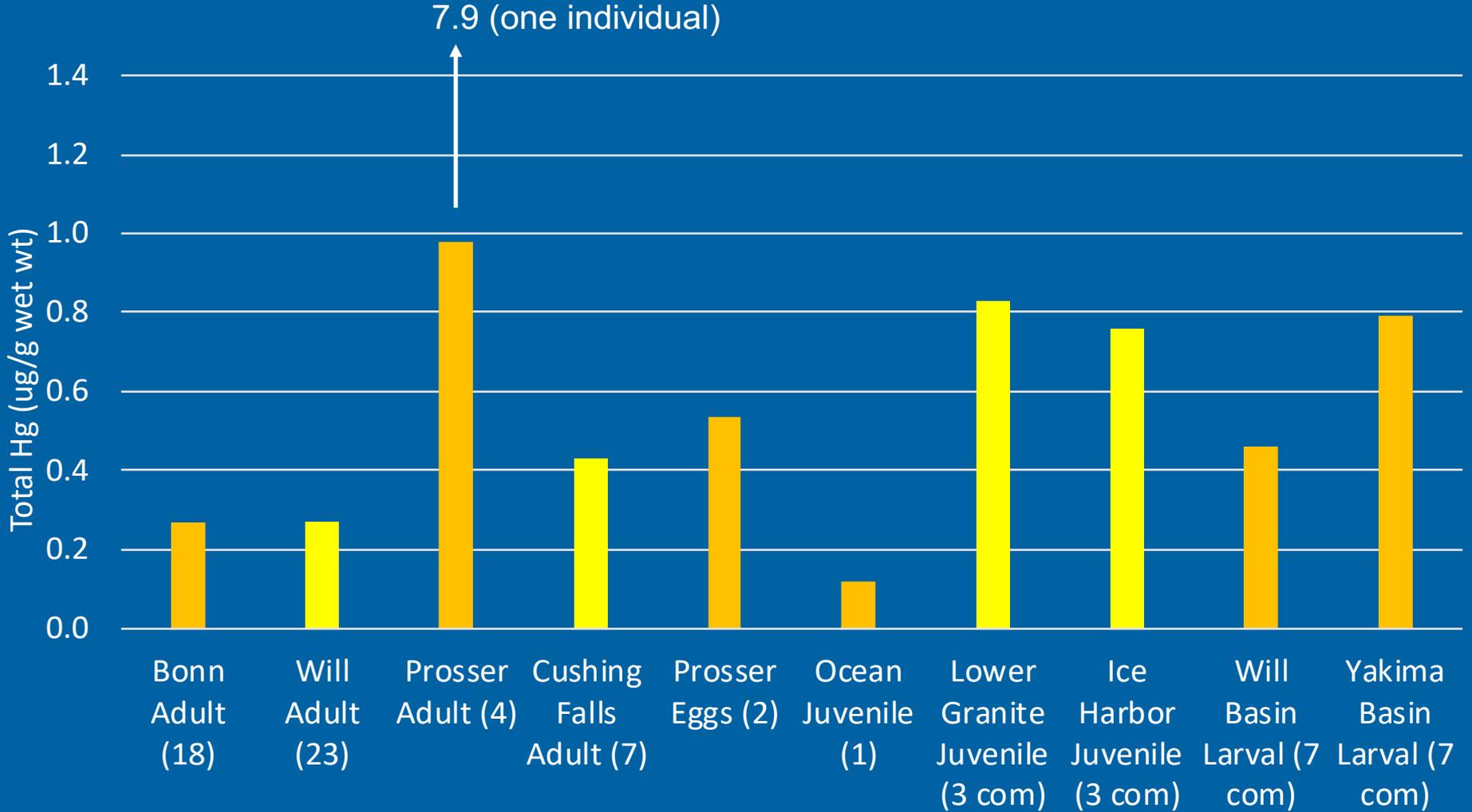
Nilsen et al. 2015, *Env. Poll.*



# Legacy Contaminant Concentrations in Adult Pacific Lamprey

	<u>Bonneville Dam</u>	<u>Willamette Falls</u>	<u>Cushing Falls</u>
<b>Lipids (%)</b>	<b>25.7</b>	<b>17.2</b>	<b>11.1</b>
(SD)	2.0	3.1	2.4
	<u>Average Concentration (ng/g)</u>		
<b>PCBs</b>	<b>44.8</b>	<b>39.8</b>	<b>39.1</b>
(SD)	14	19	12
<b>DDTs</b>	<b>31.6</b>	<b>33.8</b>	<b>36.9</b>
(SD)	16	17	7.8
<b>PBDEs</b>	<b>ND</b>	<b>0.27</b>	<b>ND</b>
(SD)	NA	1.1	NA

# Mercury by Location and Life Stage



(N) = number of samples; (N com) = number of composited samples  
Lighter yellow = newer data



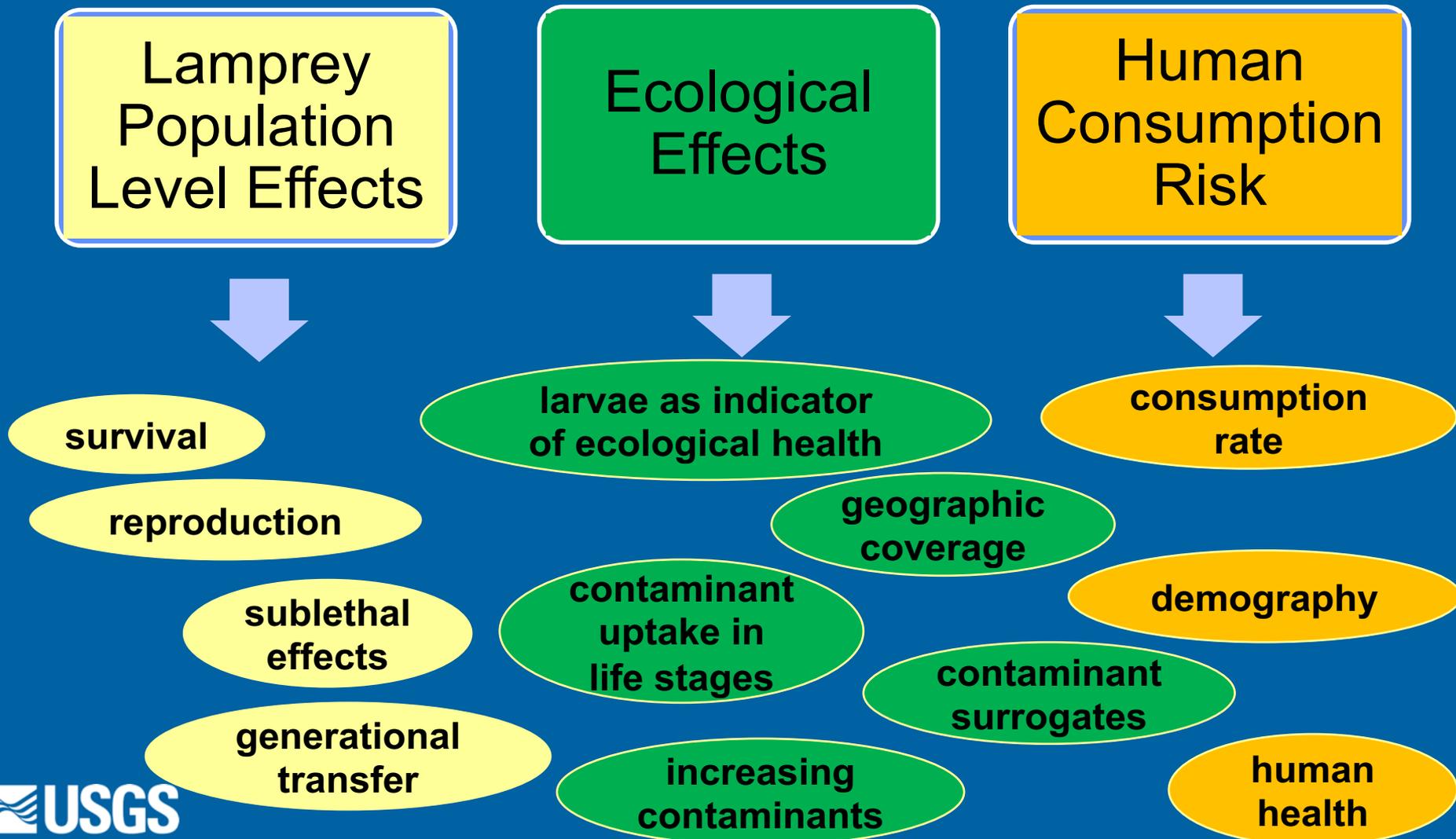
*Unpublished data from USGS and PNNL; do not cite or release*

# Results Summary

- Pesticides, mercury, flame retardants abundant in larval tissues; PCBs low at larval stage
- Higher PCBs, lower flame retardants in adults
- Some compounds show increasing trend moving inland?
- Some also exceeded effects levels for salmonids
- Data gaps by life stage; contaminants may play a role in population declines



# Unanswered Questions about Contaminants in Lampreys



# Questions?

- Sampling assistance (thank you!): Andrew Wildbill, Brian McIlraith, Ralph Lampman, Aaron Jackson, Cyndi Baker, Gabe Sheoships, Patrick Luke, Matt Fox, Lance Wyss
- Funding: CRITFC and USGS Cooperative Water Program
- More information:  
<http://or.water.usgs.gov/proj/lampreys/> and  
[http://or.water.usgs.gov/projs\\_dir/lampreys\\_phase2/index.html](http://or.water.usgs.gov/projs_dir/lampreys_phase2/index.html)  
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