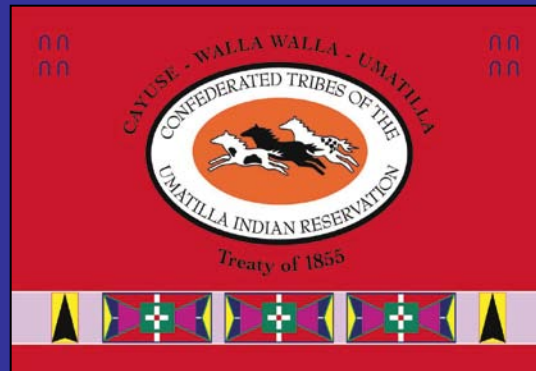


# Pacific Lamprey Research and Restoration Project



## Confederated Tribes of the Umatilla Indian Reservation

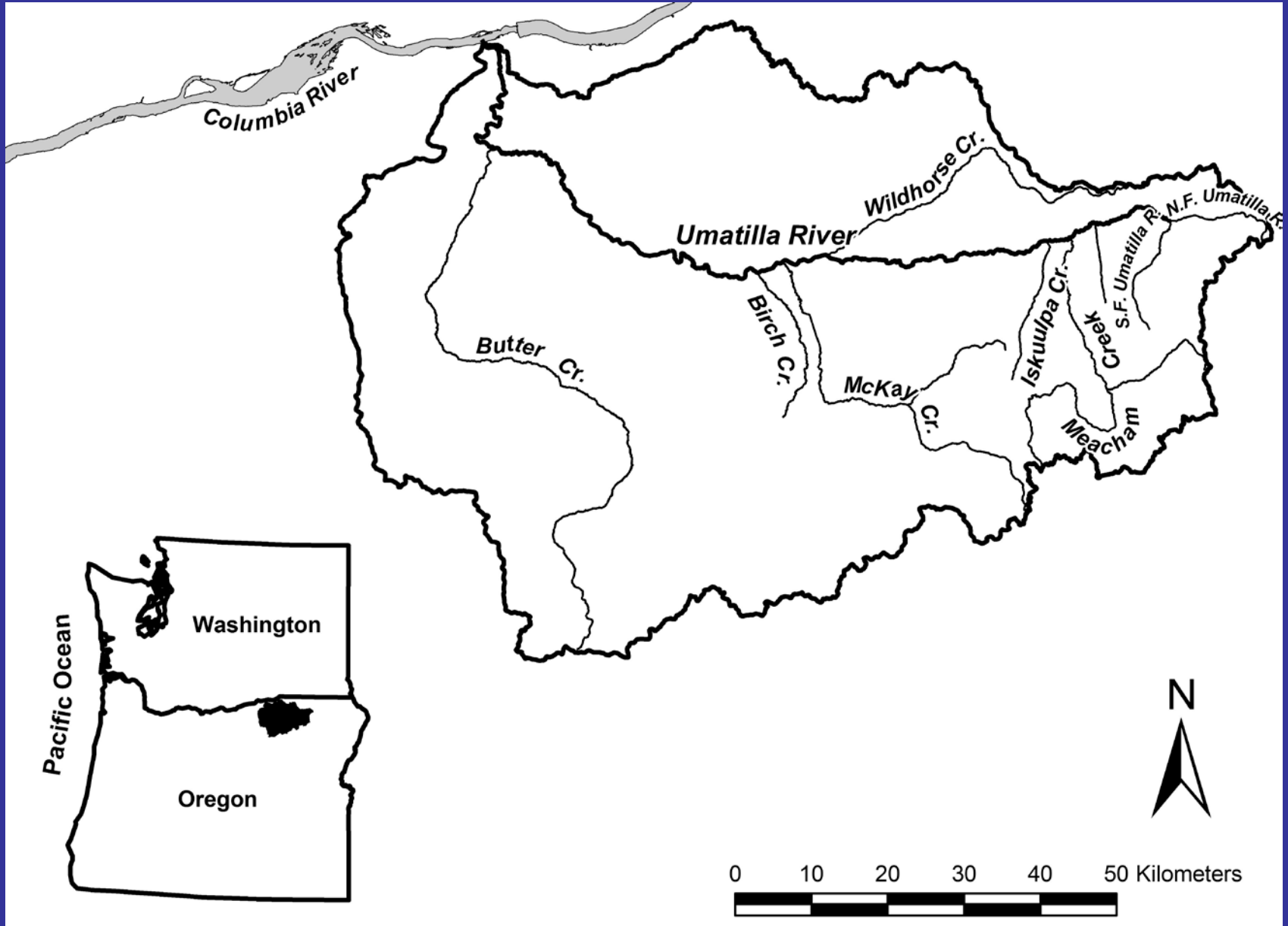
International  
Forum on Lamprey  
Recovery and  
Propagation  
April 19-21, 2011



CTUIR Project Leader:  
Aaron Jackson

Fisheries Prog. Mger:  
Gary James

# Study Area



# **CTUIR's Umatilla Program Goals**

- **Restore natural production of Pacific lamprey in the Umatilla River to self sustaining and harvestable levels and**
- **Evaluate success of restoration to inform management and for potential application elsewhere.**

# Project Objectives

- **Increase larval abundance in the Umatilla River by continuing to outplant adult lamprey**
- **Estimate the number of adults entering the Umatilla River**
- **Monitor adult passage success over low-elevation diversion**
- **Develop structures to improve adult passage success**

# Project Objectives

- **Monitor larval population trends in the Umatilla River by conducting annual electrofishing surveys**
- **Estimate the numbers of juvenile lamprey migrating out of the Umatilla River**
- **Investigate juvenile lamprey screening criteria for use in the Umatilla Subbasin (multi-agency)**

# Umatilla Case study

- Before and after translocation study in the Umatilla River.
- Case study sampling began in 1998, followed by adult lamprey translocation in 2000.
- **Key Question:** Can translocated adult lampreys increase natural production and restore self- sustaining and harvestable levels of lampreys?

# Translocation Plan Objectives

Translocation creates the means to perform the following objectives:

- Implement and evaluate adult holding
- Evaluate spawning success in natural environment
- Evaluate juvenile rearing success
- Evaluate juvenile outmigration success
- Evaluate adult up-migration by radio telemetry
- Determine adult return by mark-recapture
- Evaluate lamprey passage structures

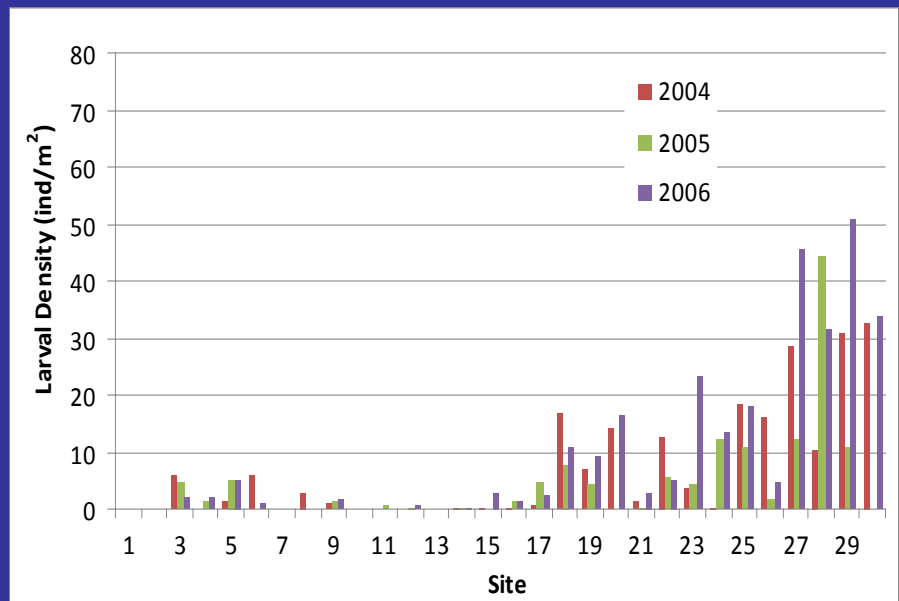
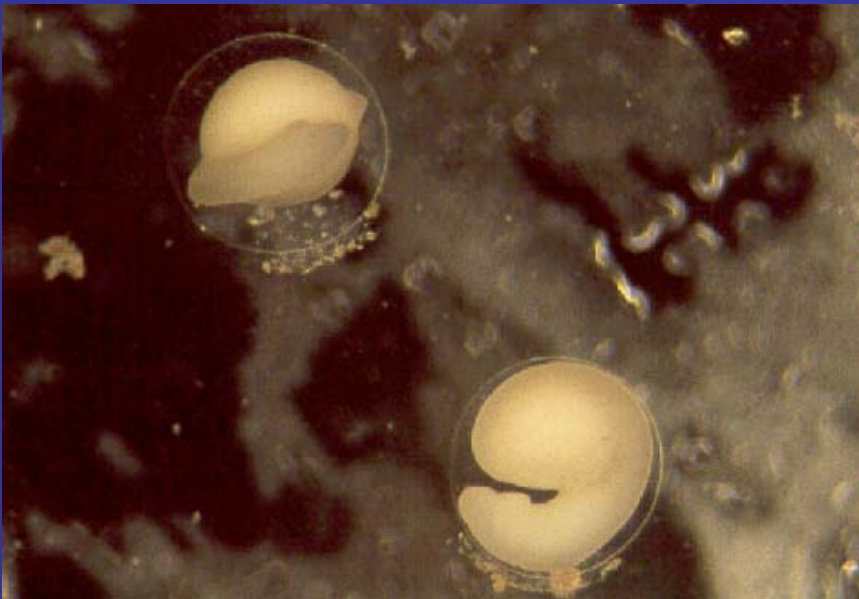
# Findings – Initial Success

- Adult lampreys can be held until sexually mature (holding mortality about .8%)
- Outplanted lamprey successfully built nests (observed 40-80 redds per year)



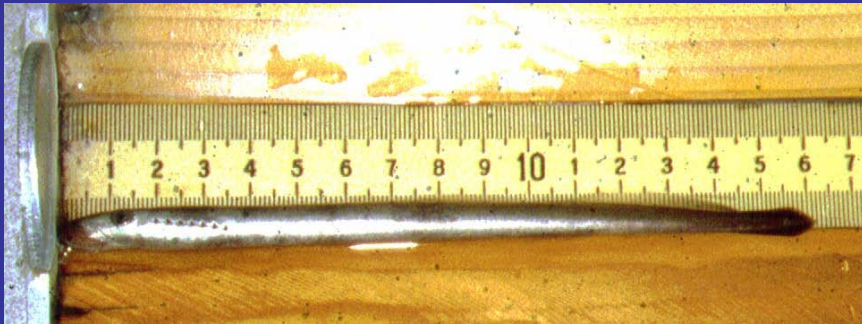
# Findings – Initial Success

- Egg viability was relatively high (60-100%)
- Distribution of larvae increased in headwater areas and moved downstream through time



# Findings – Initial Success

- Larvae grew fast
- Larval density increased through time (.8 to 6 individuals/m<sup>2</sup> )

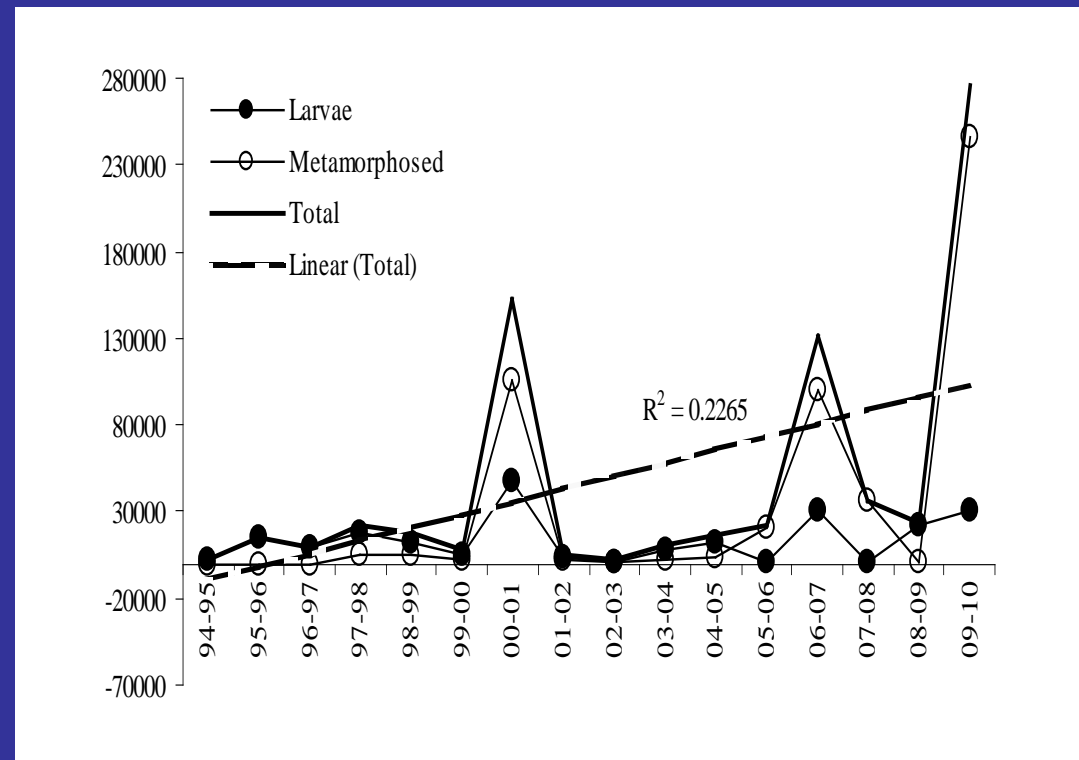


# Findings – Initial Success

- Increase in metamorphosed lamprey outmigration (from 3,500 to ~275,000/yr)
- Large portion of larvae metamorphose in main-stem Columbia River



Screw trap for outmigrant capture



# Findings Continued

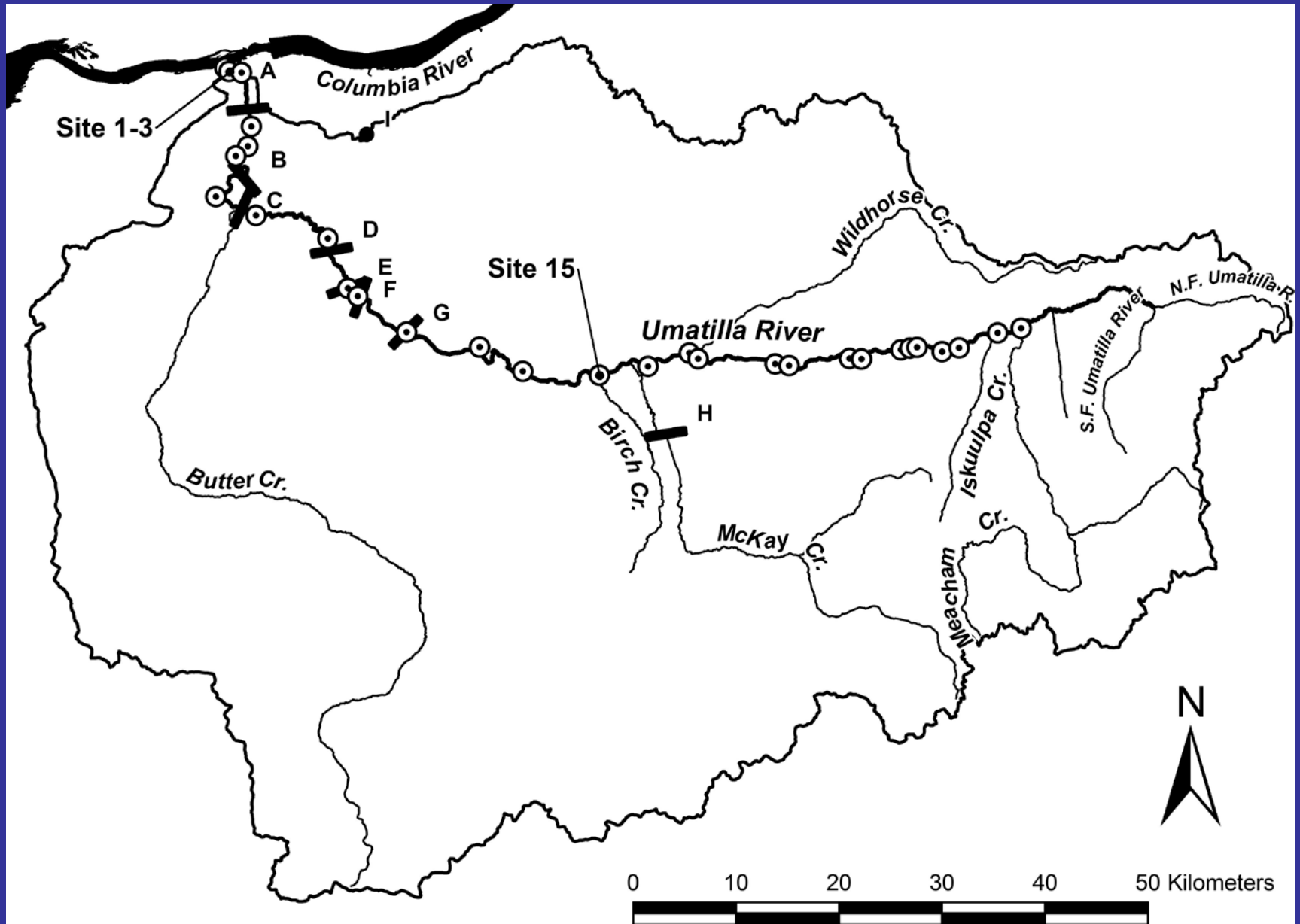
- **Adult lampreys numbers slightly increased – still early**
- **Adults began using new lamprey passage structure**



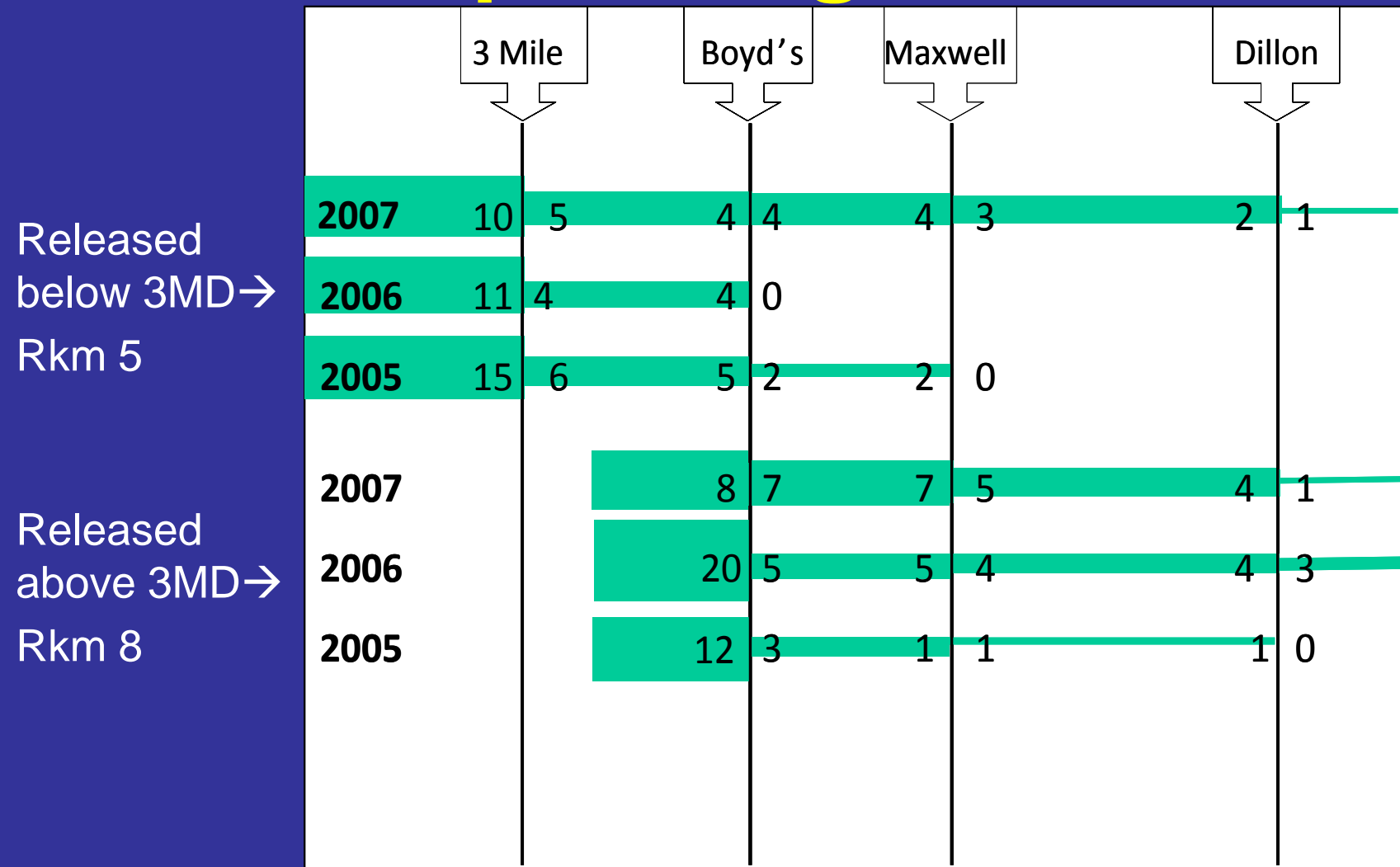
# **Additional Accomplishments and Needs**

- **Adult passage investigations and installation of lamprey passage structures**
- **Juvenile passage investigations and improved screening facilities**

# Irrigation dams - Umatilla R.



# Adult Telemetry Results- Spawning Phase



# Adult Telemetry Results- Migratory Phase

		3 Mile		Boyd's		Maxwell		Dillon	
Released below 3MD→ Rkm 5	<b>2008</b>	6	3	2	1	1	1	1	0
	<b>2006</b>	9	2	2	2	2	1	1	0
	<b>2005</b>	9	1	1	1	1	1	1	0
Released above 3MD→ Rkm 8	<b>2008</b>			7	5	4	4	0	0
	<b>2006</b>			9	4	4	4	4	0
Released at Rkm 22→	<b>2008</b>					3	2	1	0
	<b>2006</b>					7	7	7	0

# Adult Telemetry Study- Findings

- Both spawning-phase and migratory phase tagged adults exhibited low passage success at most in-basin diversions
- Passage was directly related to flow and temperature
- Passage improvements are needed to increase passage efficiency

# Adult Passage Improvements

- BPA Flow enhancement in lower Umatilla River during adult migration period (July 1-Aug 15)
- Installation of Lamprey Passage Structure at Three Mile Falls Dam (June 2009) and Feed Diversion (Oct 2010) other diversion lamprey passage structures in 2011+

# New Adult Ladders



← New lamprey passage structure at Threemile Dam, Rkm 6.5

New lamprey passage structure at Feed Diversion, Rkm 45.0 →



# Ladders To Come



Westland Diversion



Dillon Diversion

- New lamprey ladders will be added at additional irrigation diversion sites

# Juvenile Passage



- Salmonid screening systems may not adequately protect lamprey
- Subcontract to USGS to investigate juvenile lamprey passage
- Screen improvements to be implemented & evaluated in Umatilla River

# CTUIR Application of Science

- 1995 - Columbia Basin lamprey status report to NPCC/ISRP
- 1999 - Umatilla lamprey restoration plan with translocation guidelines approved by NPCC/ISRP
- 2002 - CBLTWG plan included “Umatilla pilot program” recommendations and translocation guidelines
- 2009 - Overall CTUIR project findings published in AFS symposium “Conservation and Biology of North American Lamprey”
- CTUIR/NOAA publication under development on adult passage success in lower Umatilla River

# Acknowledgements

- **Dr. David Close – CTUIR Lamprey Project Leader 1998 – 2003**
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- **Dr. Jeanette Howard – CTUIR Lamprey Project Leader 2004-2006**
- **Aaron Jackson – CTUIR Lamprey Project Leader 2007 - present**
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- **Brandon Treloar – CTUIR Lamprey Tech II, 2000-2010**
- **Jerrid Weaskus – CTUIR Lamprey Tech II, 2008-present**

# Questions?

