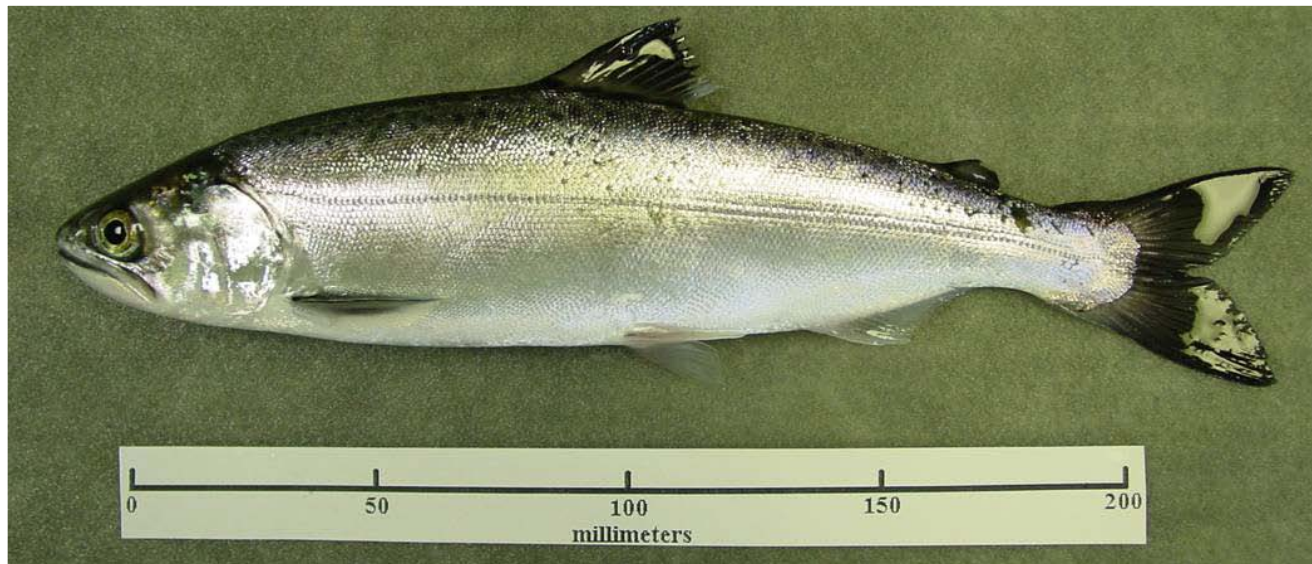
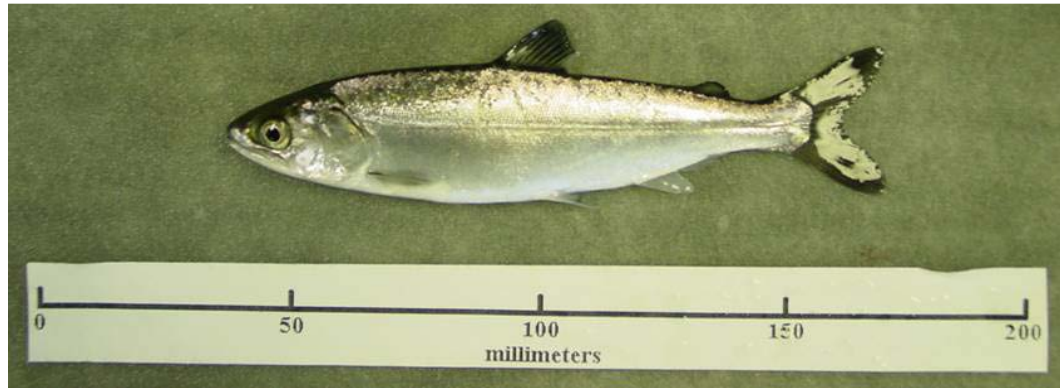
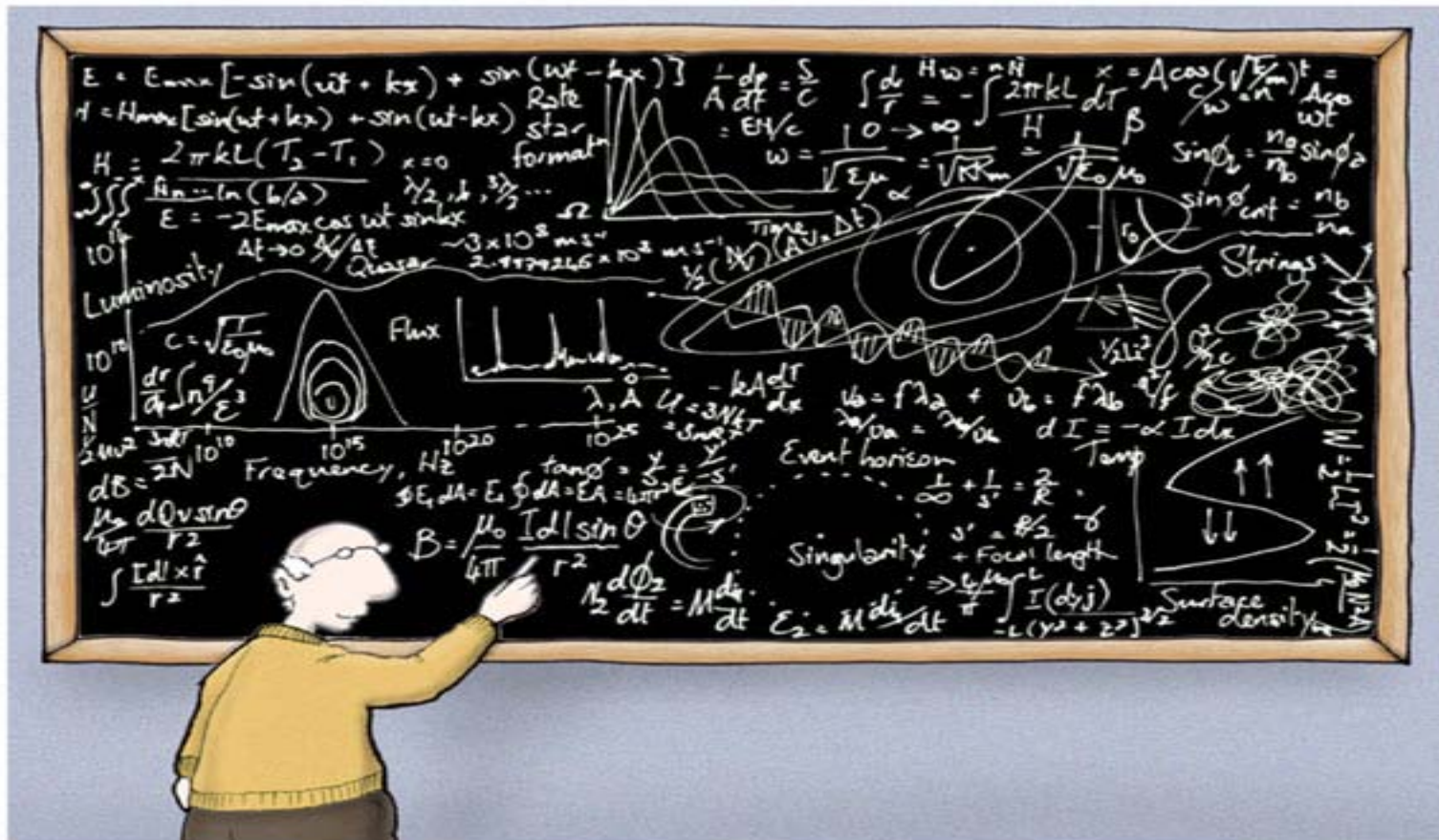


# Winter Passage of Juvenile Fall Chinook Salmon in the Snake River

Kenneth Tiffan, U.S. Geological Survey



# Fall Chinook Salmon Life History Made Simple



<b>Year</b>	<b>Dam</b>	<b>Date dewatered</b>	<b>Date dewatered</b>	<b>Days dewatered</b>
<b>2004-05</b>	<b>LGR</b>	<b>10/31/2004</b>	<b>3/25/2005</b>	<b>145</b>
	<b>LGO</b>	<b>10/31/2004</b>	<b>4/01/2005</b>	<b>152</b>
	<b>LMO</b>	<b>10/01/2004</b>	<b>4/01/2005</b>	<b>182</b>
	<b>ICH</b>		<b>4/08/2005</b>	
	<b>Mean (<math>\pm</math>SD)</b>			<b>162 <math>\pm</math> 20</b>
<b>2005-06</b>	<b>LGR</b>	<b>10/31/2005</b>	<b>3/25/2006</b>	<b>145</b>
	<b>LGO</b>	<b>10/31/2005</b>	<b>4/01/2006</b>	<b>152</b>
	<b>LMO</b>	<b>10/01/2005</b>	<b>4/01/2006</b>	<b>182</b>
	<b>ICH</b>	<b>12/12/2005</b>	<b>3/02/2006</b>	<b>80</b>
	<b>Mean (<math>\pm</math>SD)</b>			<b>140 <math>\pm</math> 43</b>
<b>2006-07</b>	<b>LGR</b>	<b>12/16/2006</b>	<b>3/25/2007</b>	<b>99</b>
	<b>LGO</b>	<b>10/31/2006</b>	<b>4/01/2007</b>	<b>152</b>
	<b>LMO</b>	<b>9/30/2006</b>	<b>3/19/2007</b>	<b>170</b>
	<b>ICH</b>	<b>12/20/2006</b>	<b>3/05/2007</b>	<b>75</b>
	<b>Mean (<math>\pm</math>SD)</b>			<b>124 <math>\pm</math> 44</b>

# **Objective: Determine if and when overwintering juvenile Chinook salmon pass lower Snake River dams**

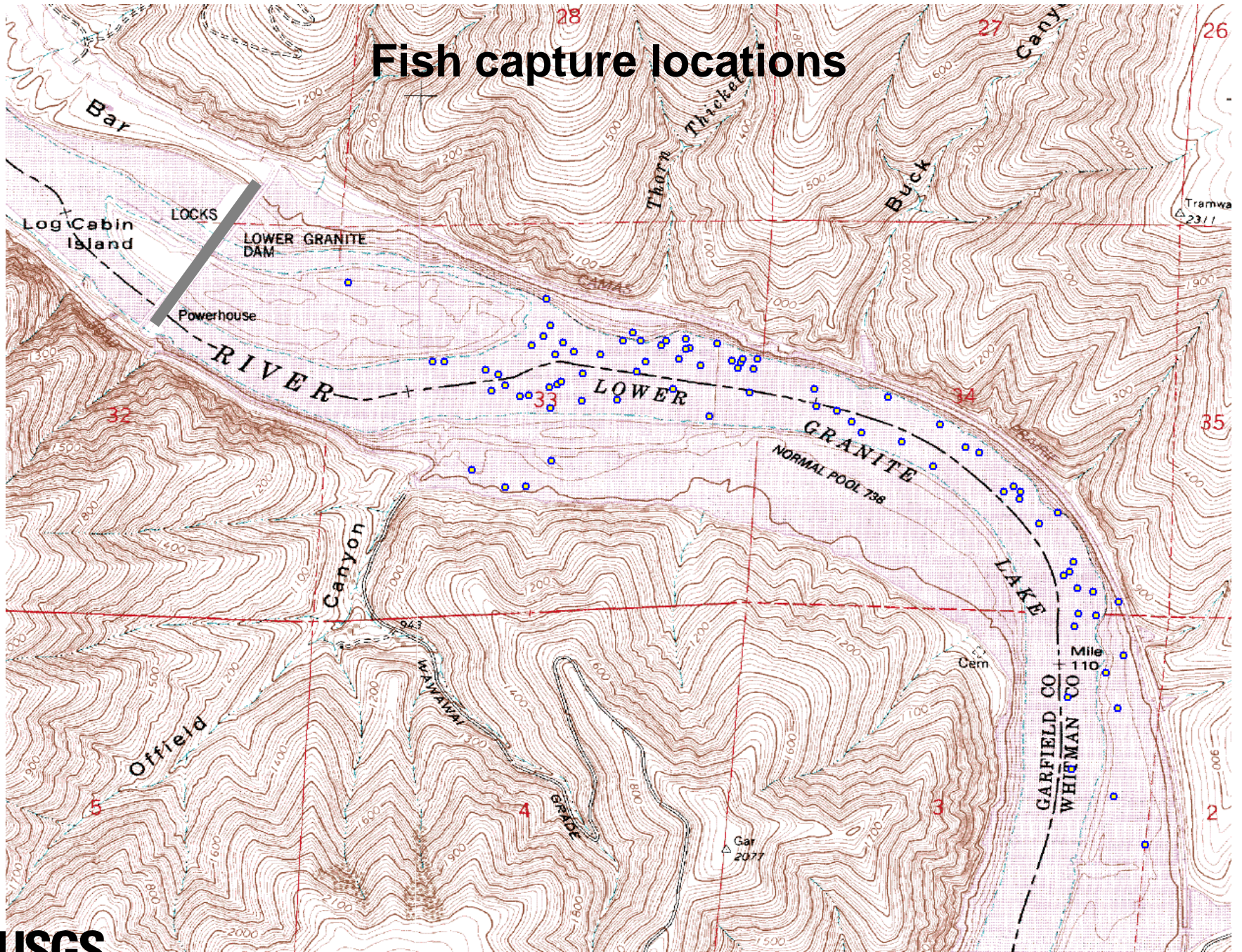
**Captured fish by hook and line in the forebay of Lower Granite Dam during the winters of 2004-05, 2005-06, and 2006-07**

**Tagged fish with radio tags from in the fall and winter –varied by year**

**Monitored forebay and tailrace of each Snake River dam through beginning of May**

**Compiled detection and passage timing information**

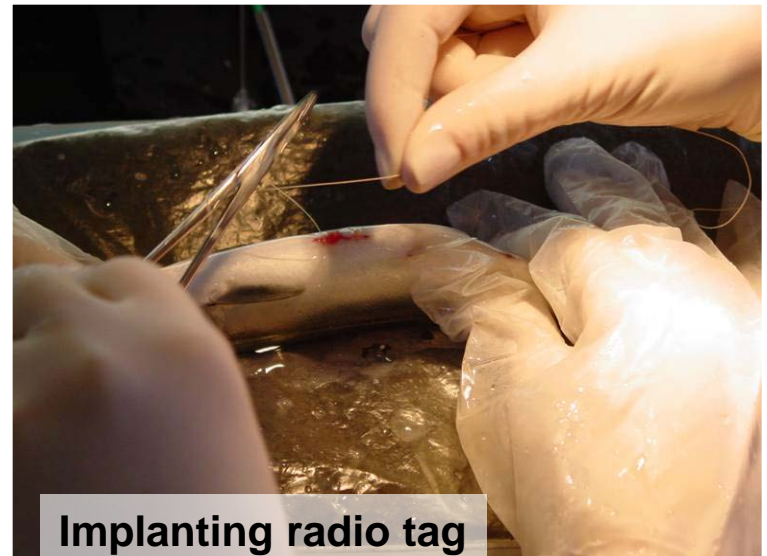
# Fish capture locations



Years	Number captured	Number tagged	Mortality (%)	Number released	Fork length	Weight	K
2004-05	174	141 (89)	0.7	140 (89)	200 ± 14	77.7 ± 17.1	1.0 ± 0.1
2005-06	81	48 (48)	0.0	48 (48)	196 ± 12	84.1 ± 16.6	1.1 ± 0.1
2006-07	204	102 (102)	3.0	99 (99)	188 ± 12	78.4 ± 17.5	1.2 ± 0.1
<b>Total</b>	<b>459</b>	<b>291 (239)</b>		<b>287 (236)</b>			

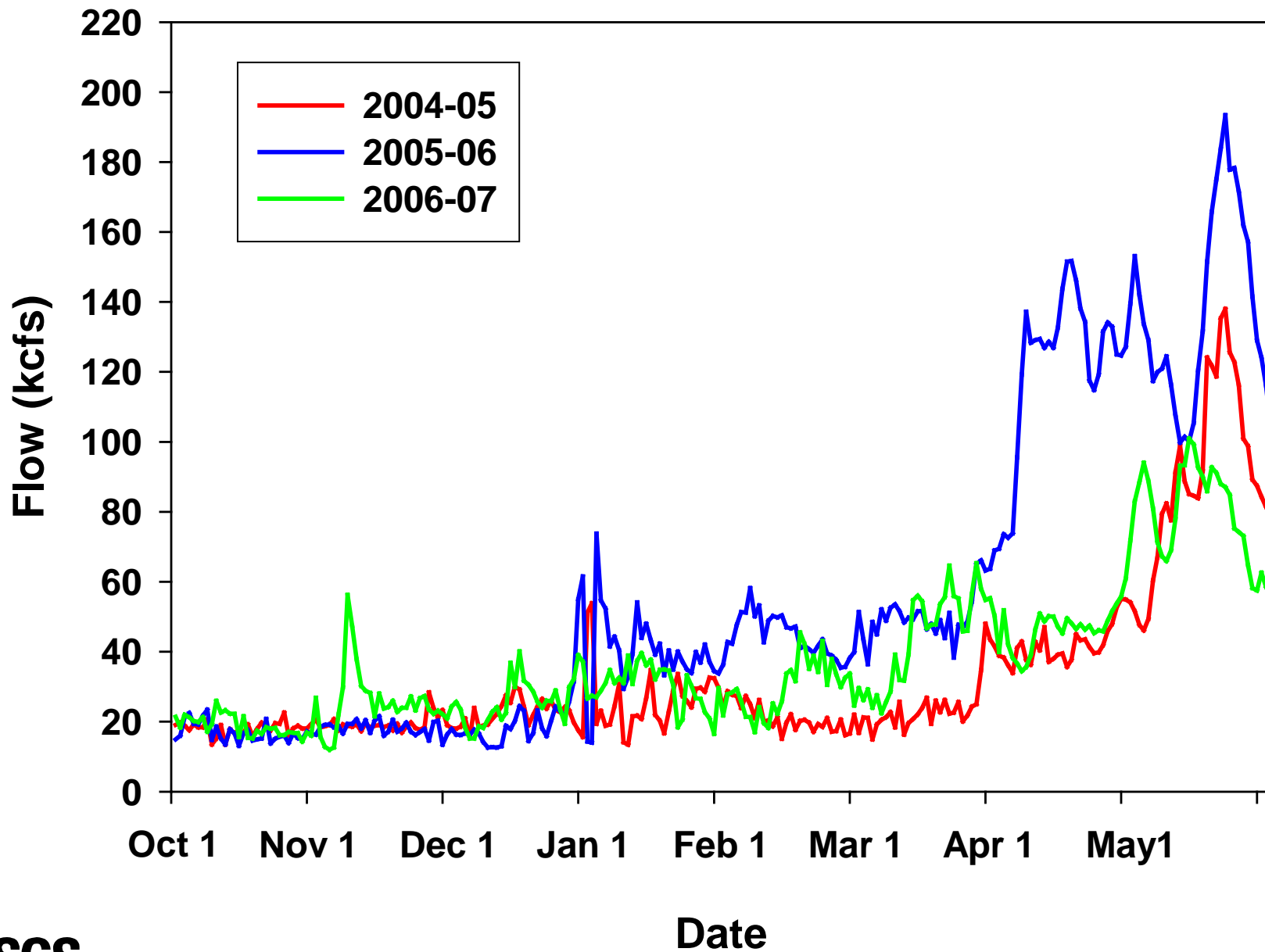


Reservoir-type juvenile

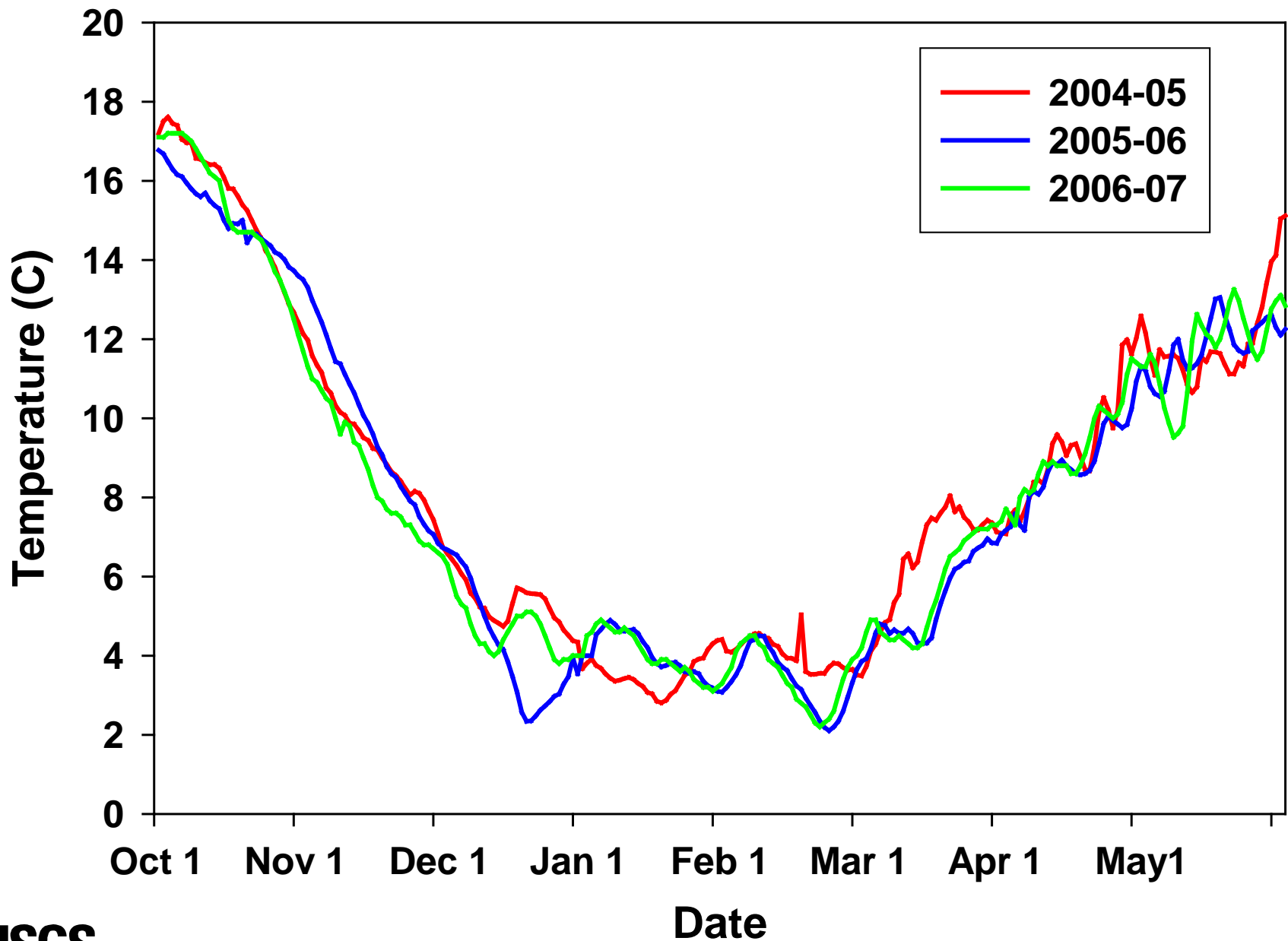


Implanting radio tag

# Flows at Lower Granite Dam



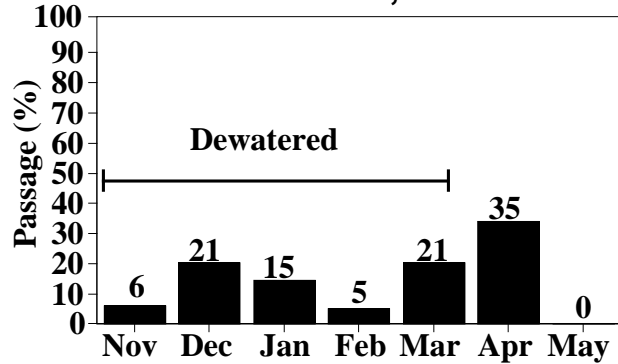
# Temperatures at Lower Granite Dam



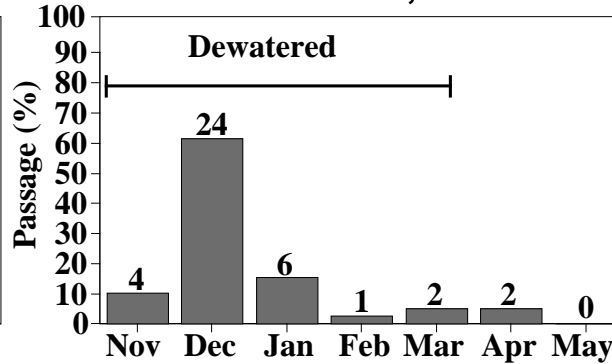


# Passage by Month

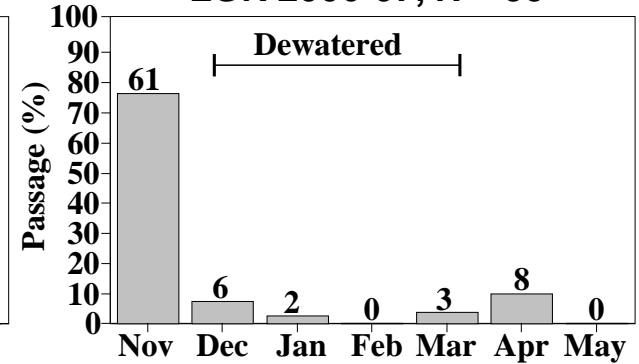
LGR 2004-05, N = 140



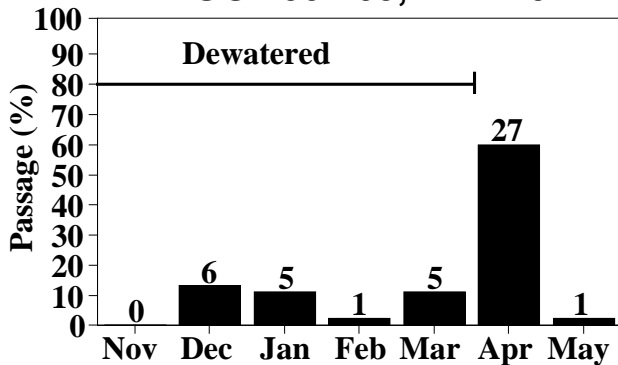
LGR 2005-06, N = 48



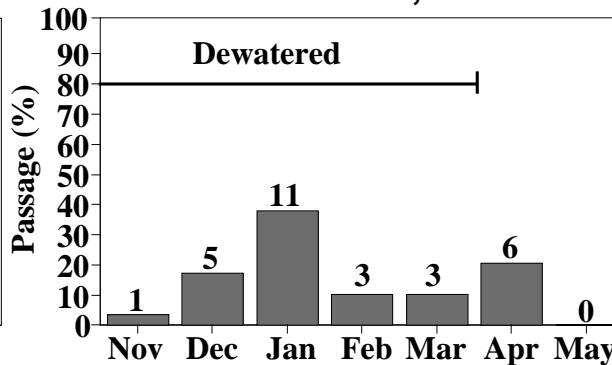
LGR 2006-07, N = 99



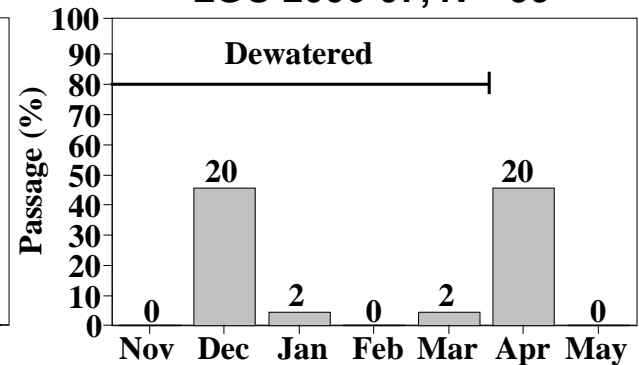
LGO 2004-05, N = 140



LGO 2005-06, N = 48

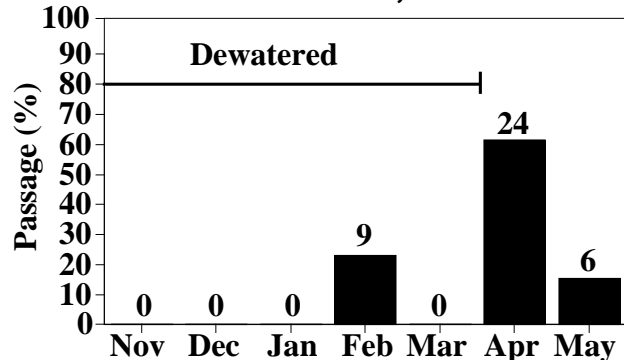


LGO 2006-07, N = 99

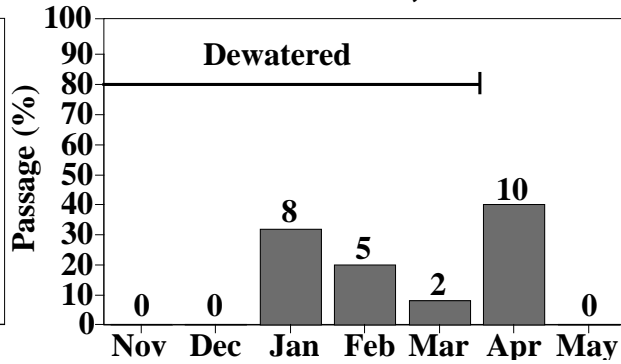


# Passage by Month

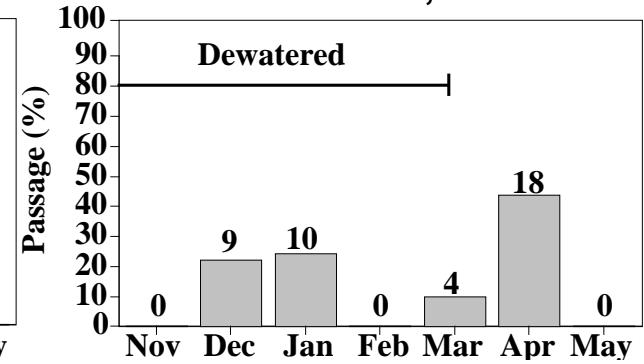
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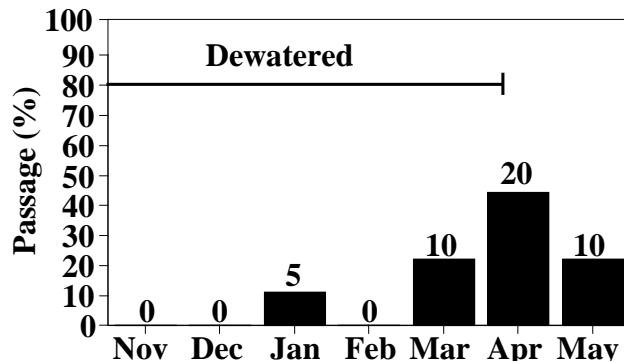
LMO 2005-06, N = 48



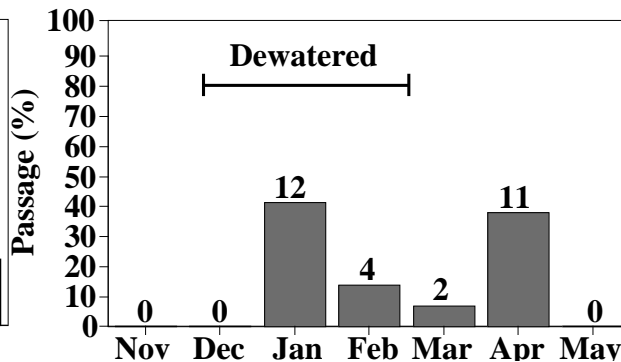
LMO 2006-07, N = 99



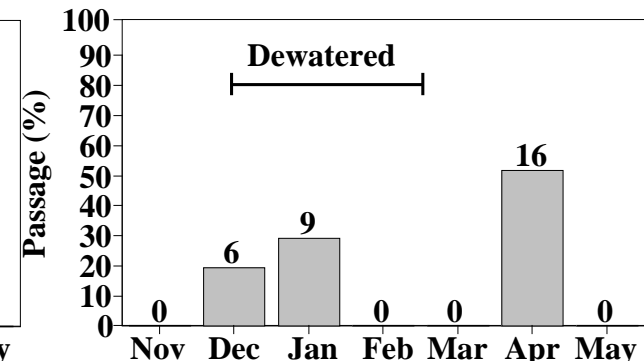
ICH 2004-05, N = 140



ICH 2005-06, N = 48

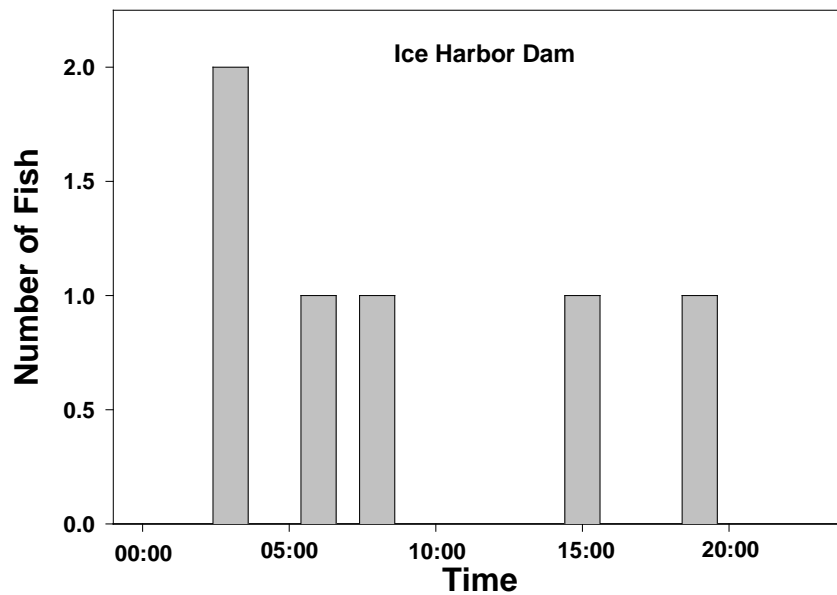
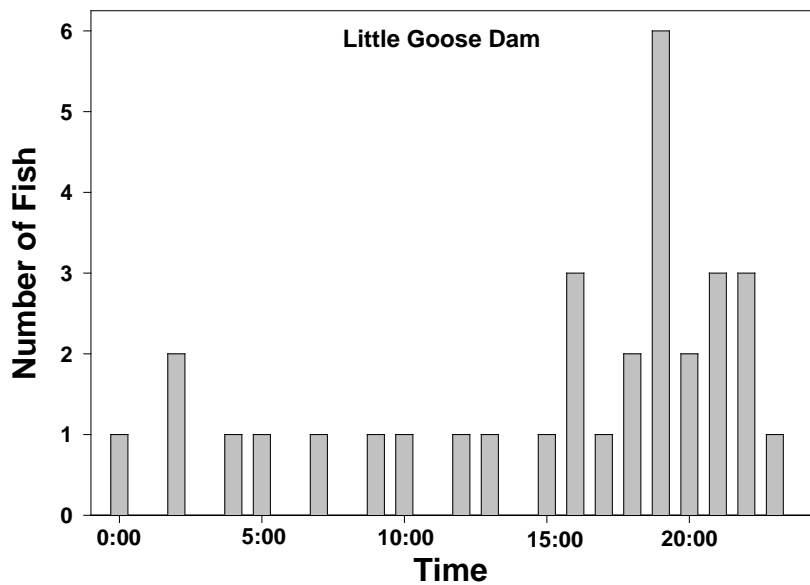
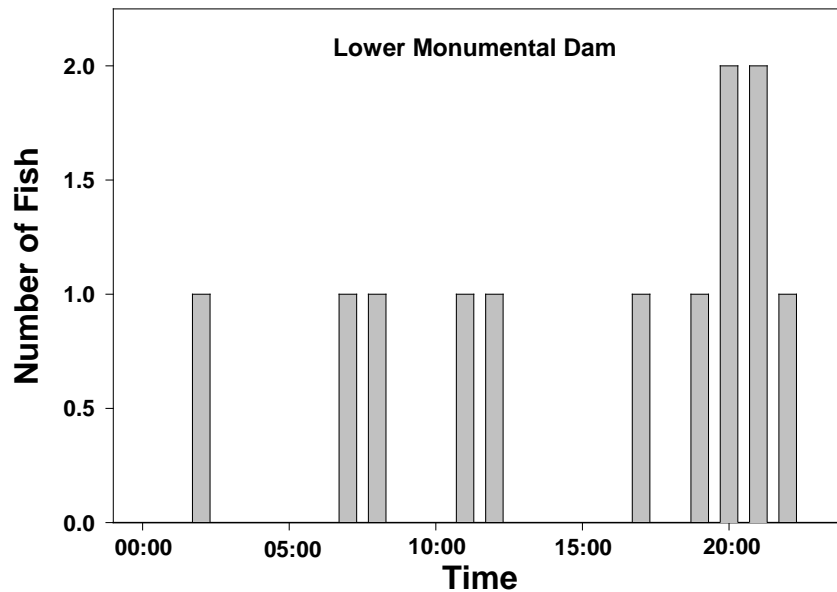
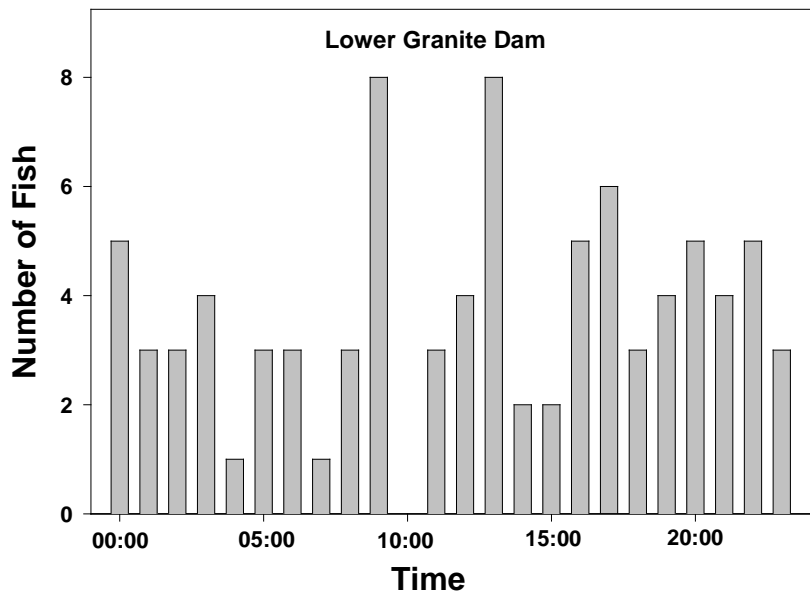


ICH 2006-07, N = 99

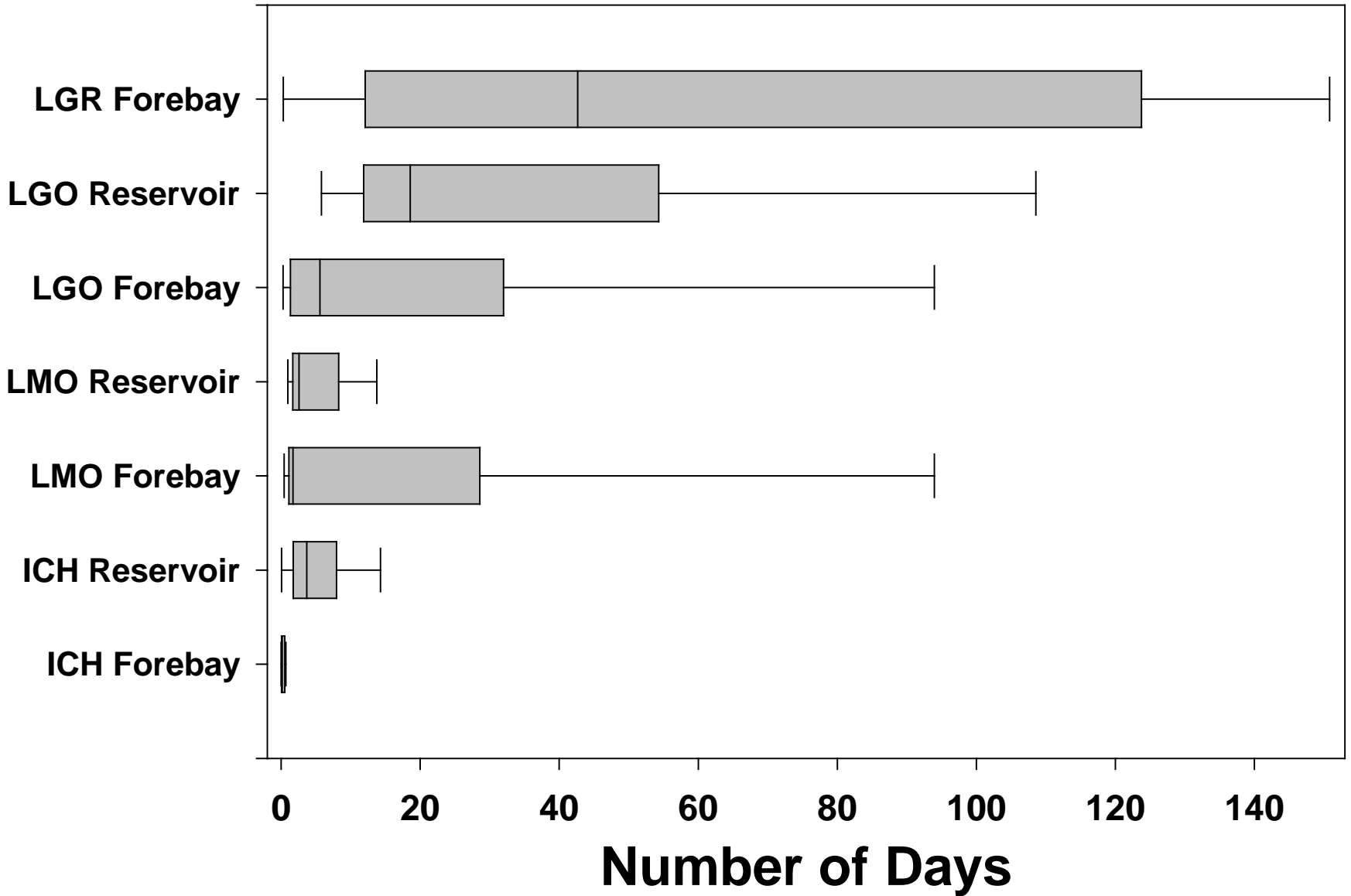


**Passage at Bonneville - 2005-06: 5/48 fish (10%), 2006-07: 3/99 fish (3%)**

# Hourly Passage 2004-05



# Residence Times 2004-05





Questions?