

Roza Reach Smolt Survival Study 2012-2014

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US Fish and Wildlife Service

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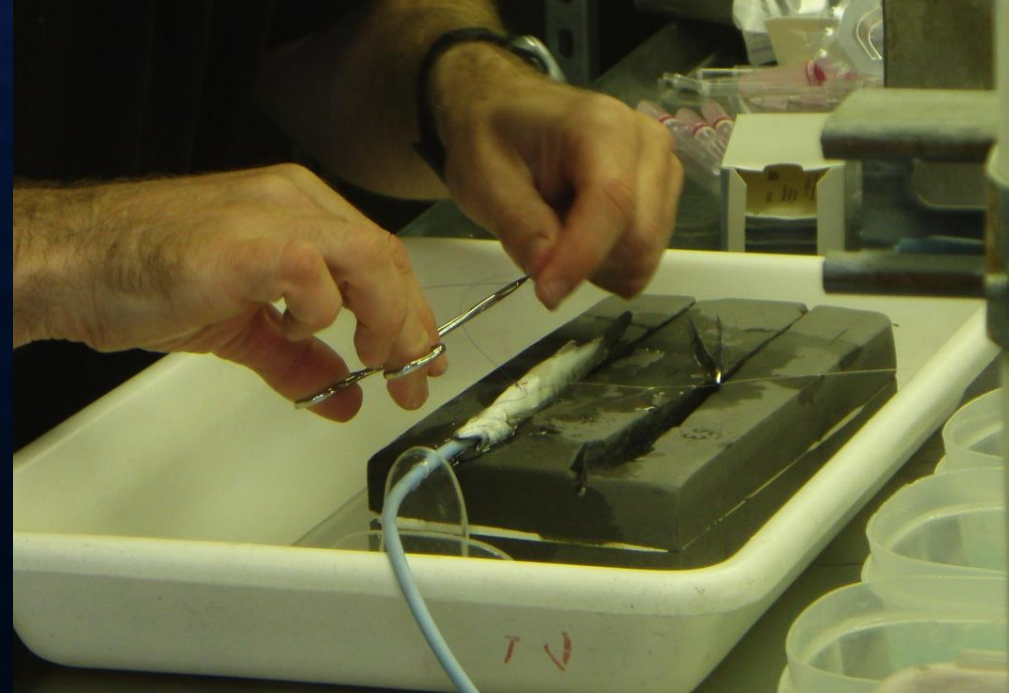
David Child

Competing Hypotheses

1. Low flows are causing abnormally high mortality between Roza Dam and the Naches-Yakima River confluence (“Roza Reach”).
2. Low mortality in the Roza Reach due to short residence time of emigrating smolts.

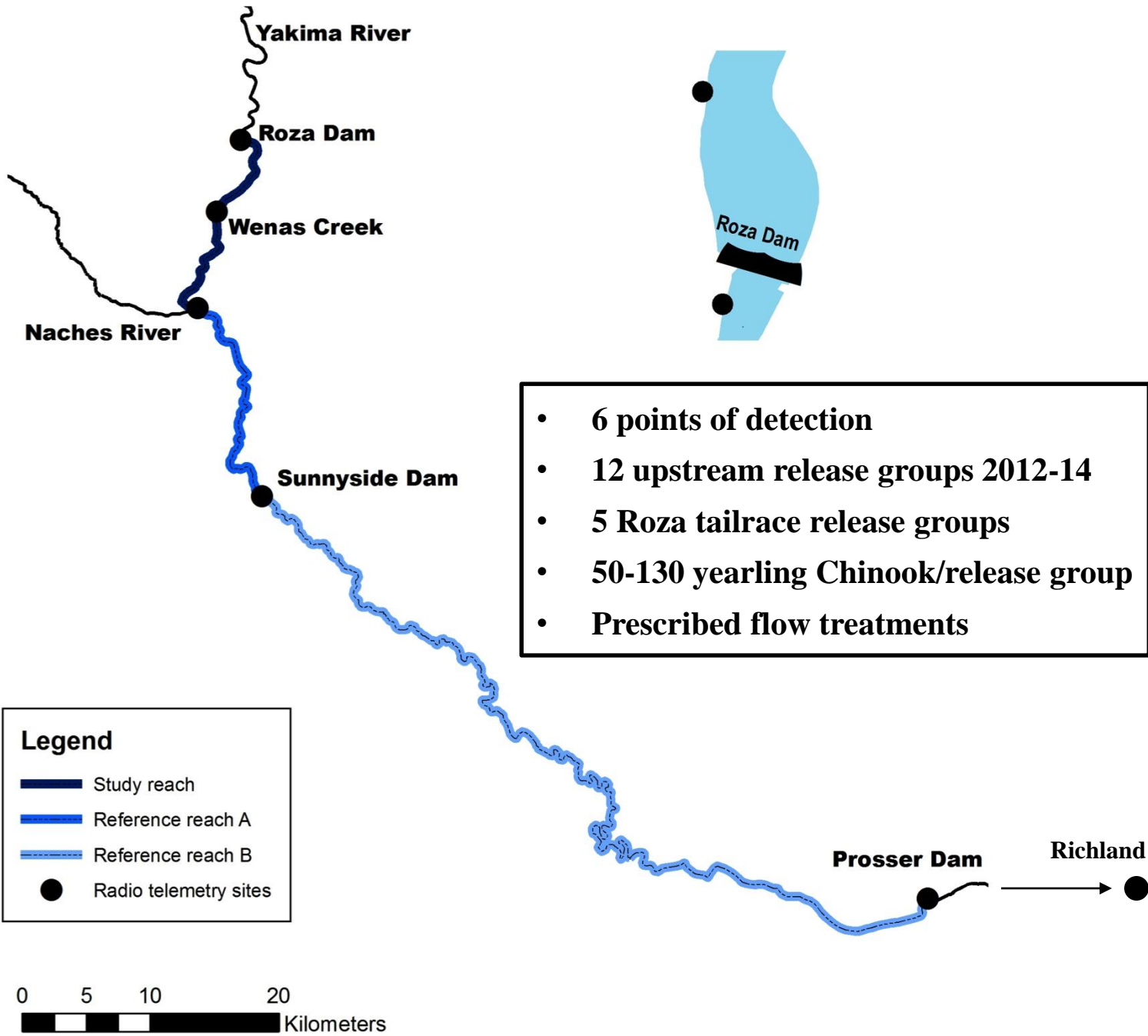
Study Objectives

1. Quantify flow effects on smolt survival in the Roza Reach.
2. Partition effects of Roza Dam passage mortality from migration survival estimates.



Progress Since 2014 Science Conf.

1. Comprehensive analysis of flow-survival for the entire length of the Yakima River.
2. Detailed evaluation of passage survival conditions at Roza Dam.



- 6 points of detection
- 12 upstream release groups 2012-14
- 5 Roza tailrace release groups
- 50-130 yearling Chinook/release group
- Prescribed flow treatments

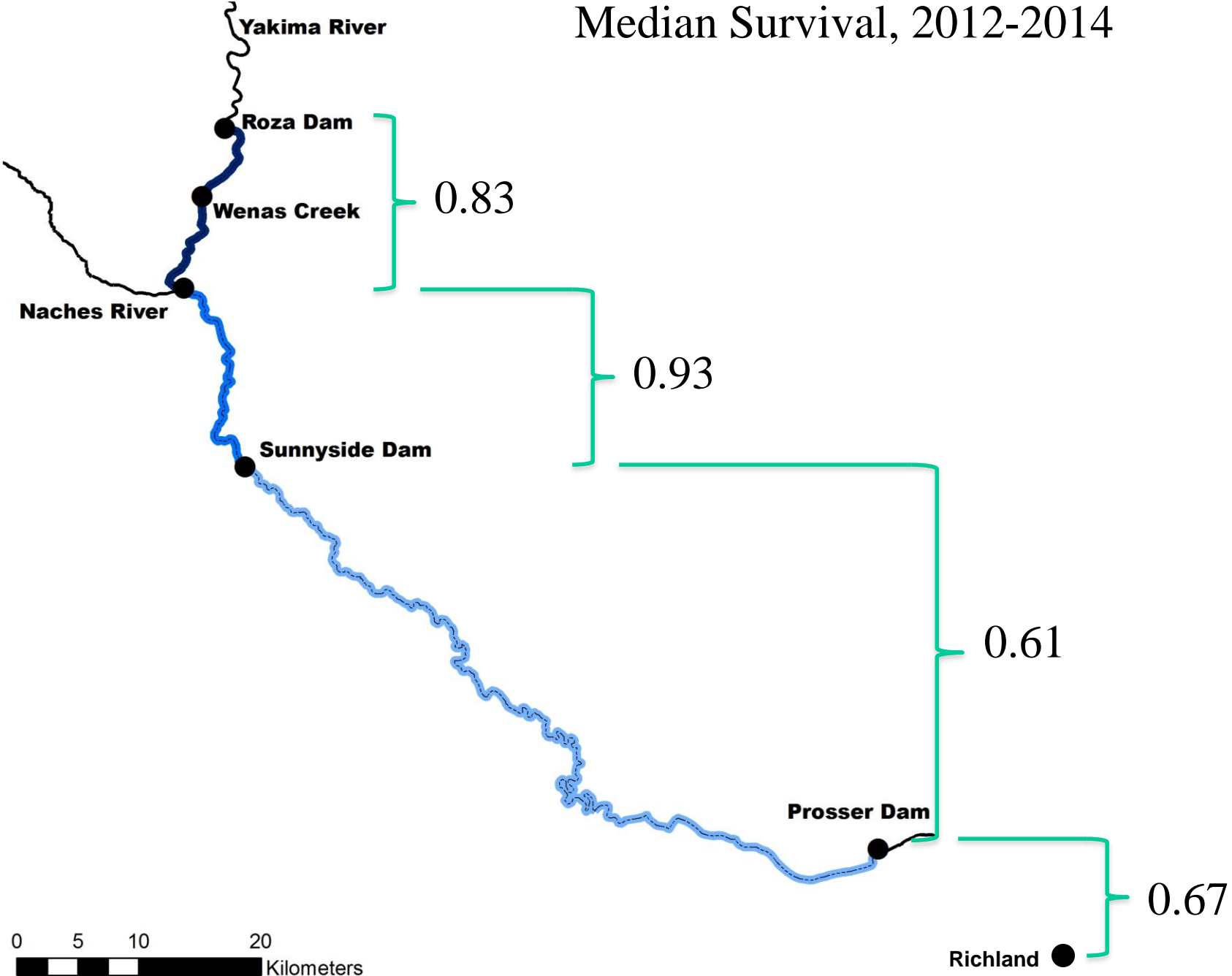
Treatment Groups

date	flow	
3/29-4/2, 2013	575	Low
4/7, 2012	588	
3/26-3/30, 2014	937	
3/21-3/27, 2013	1,317	Moderate
4/17-4/19, 2013	1,396	
4/4-4/9, 2014	1,778	
4/25-4/29, 2013	2,093	
4/18-4/25, 2014	2,487	High
4/29-5/4, 2014	2,718	
5/12-5/13, 2012	2,806	
4/5-4/8, 2013	3,351	
5/19-5/22, 2012	4,324	

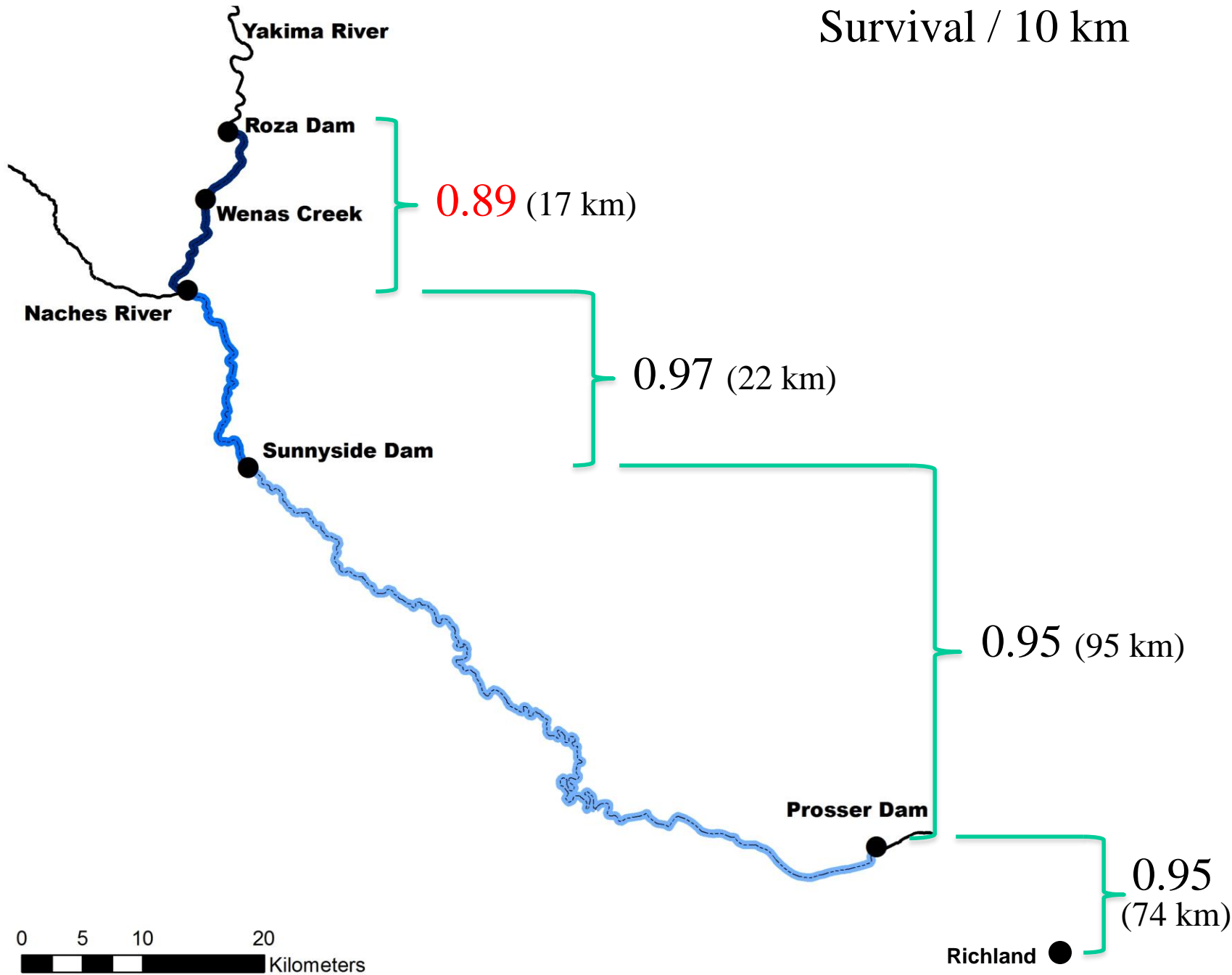
Travel Time

	Days From Release (Median)	
Roza Dam Tailrace	0.3	(0.1–1.7)
Wenas Creek	0.7	(0.1–2.7)
Naches River	1.0	(0.2–4.9)
Sunnyside	1.3	(0.6–6.1)
Prosser	8.8	(2.7–16.9)
Richland	9.9	(3.8–25.0)

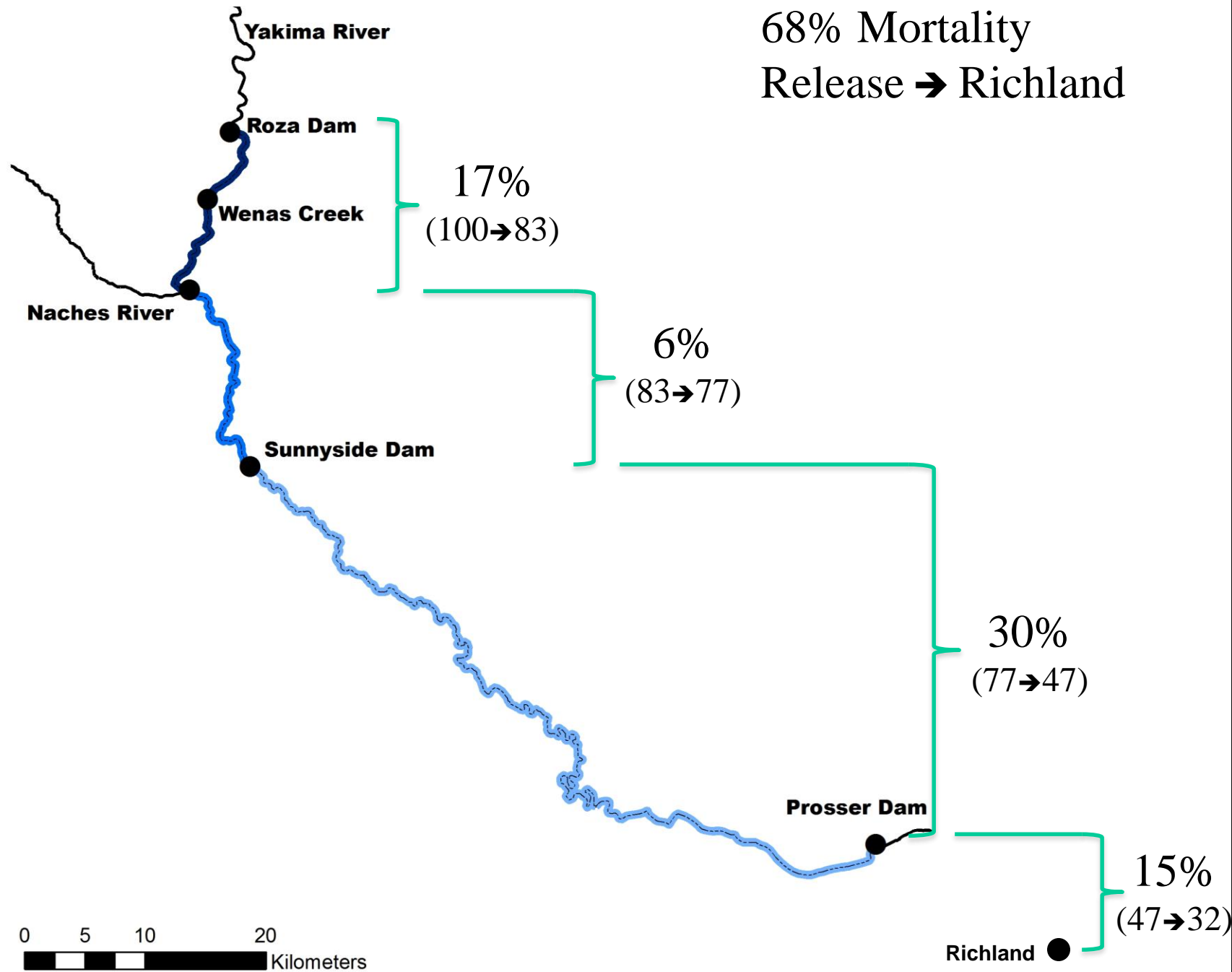
Median Survival, 2012-2014



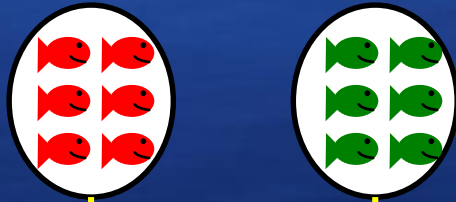
Survival / 10 km



68% Mortality Release → Richland



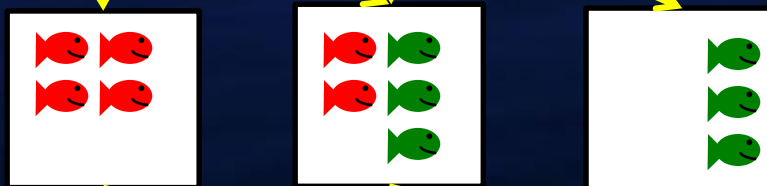
Release



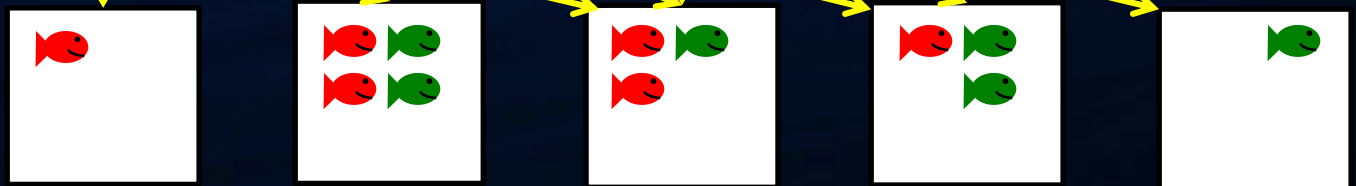
Roza



Naches

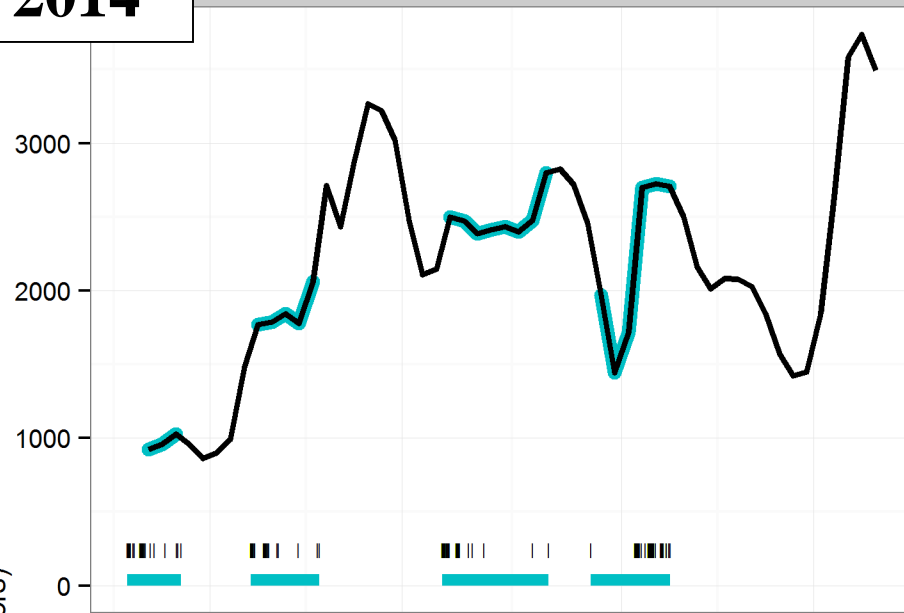


Sunnyside

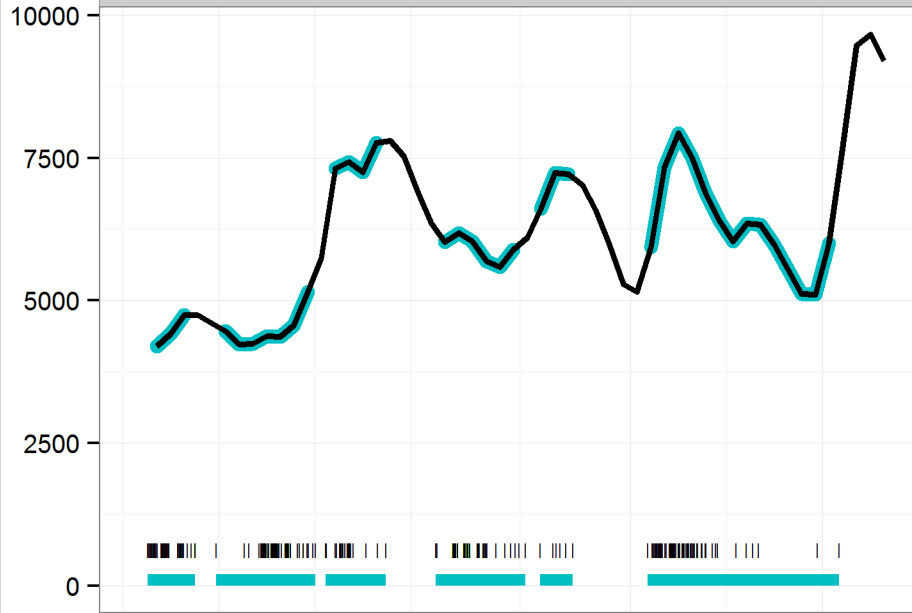


2014

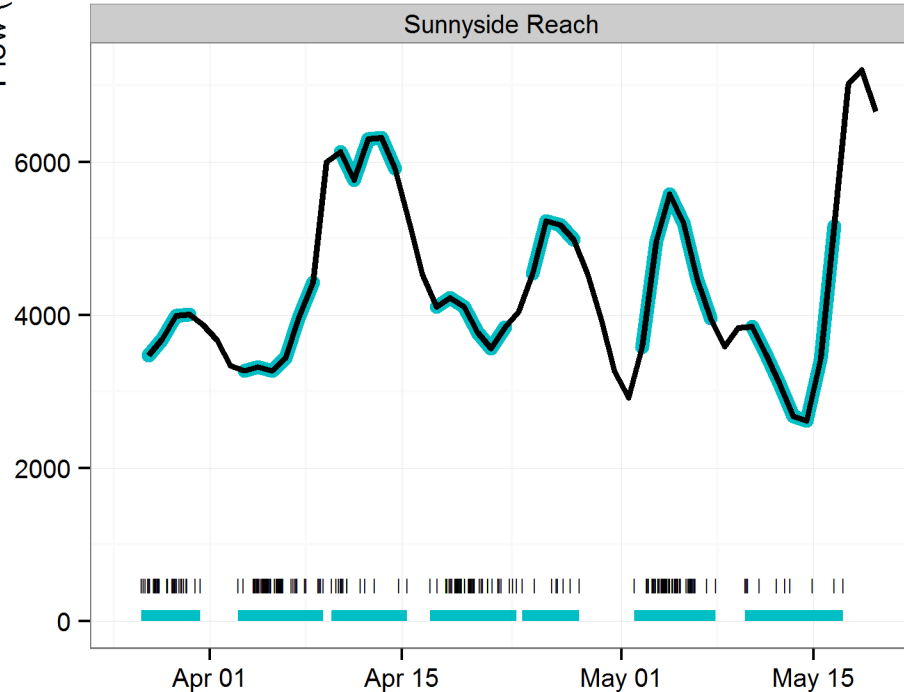
Roza Reach



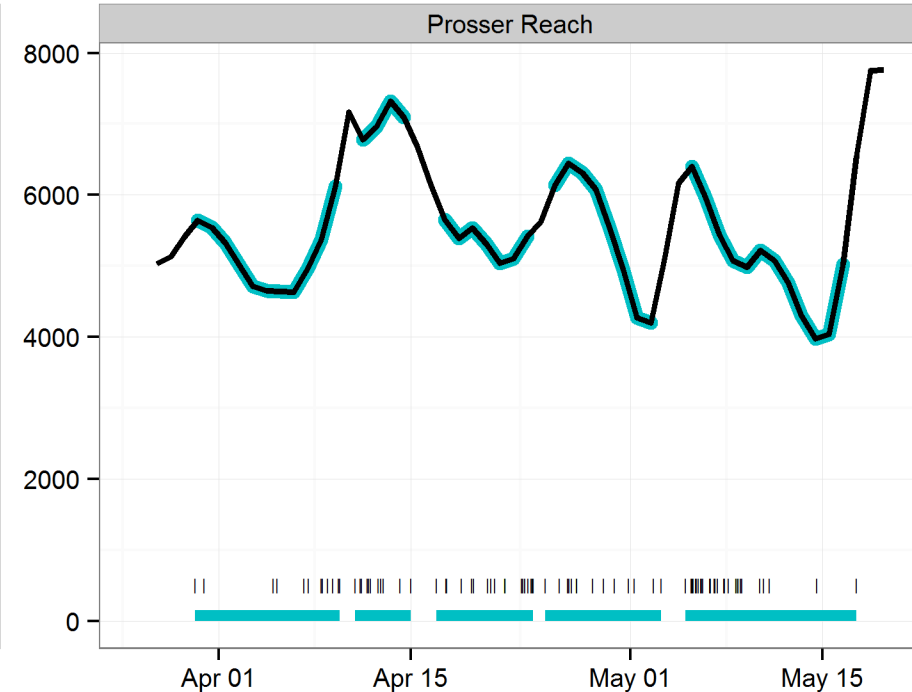
Naches Reach



Sunnyside Reach

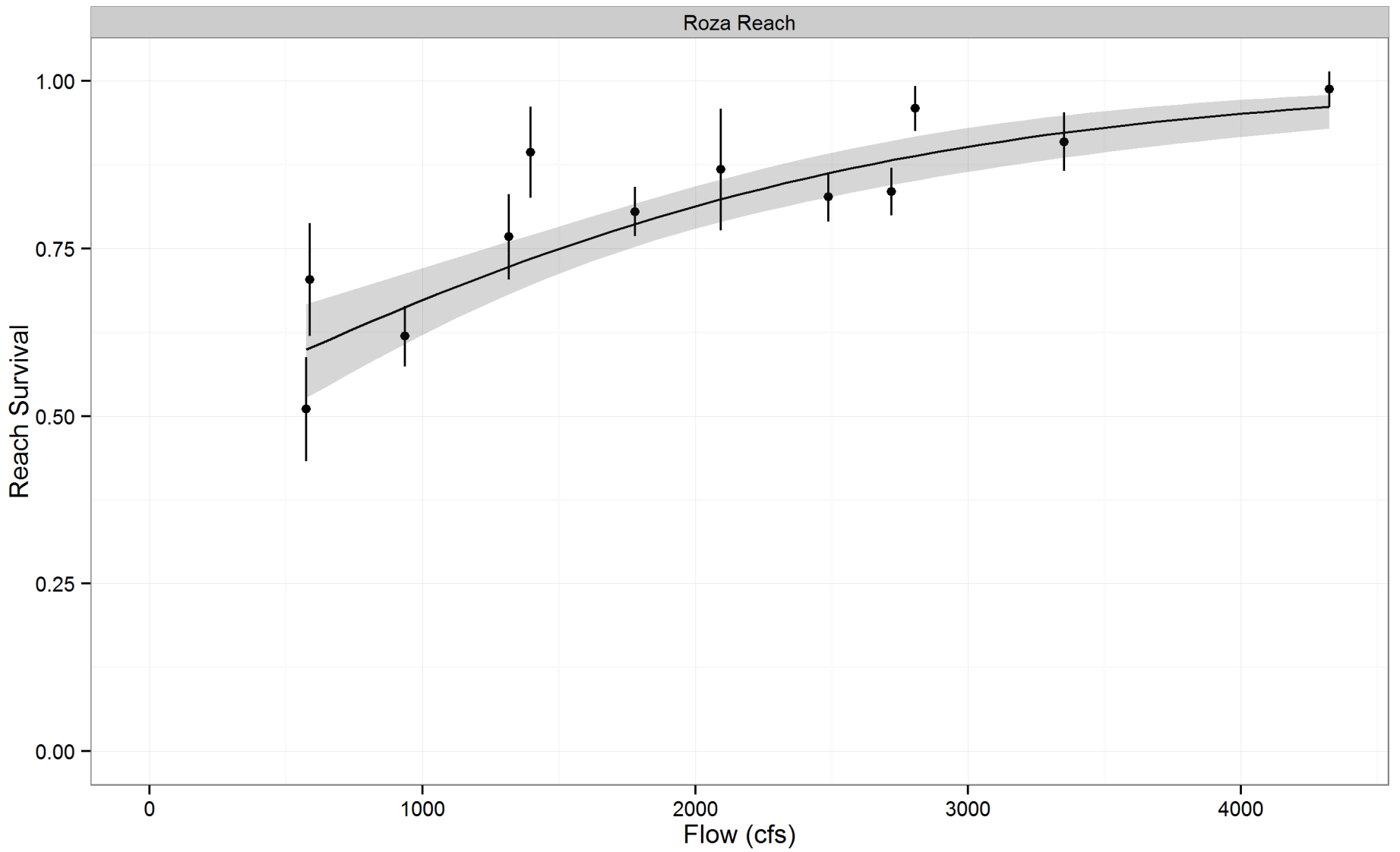


Prosser Reach

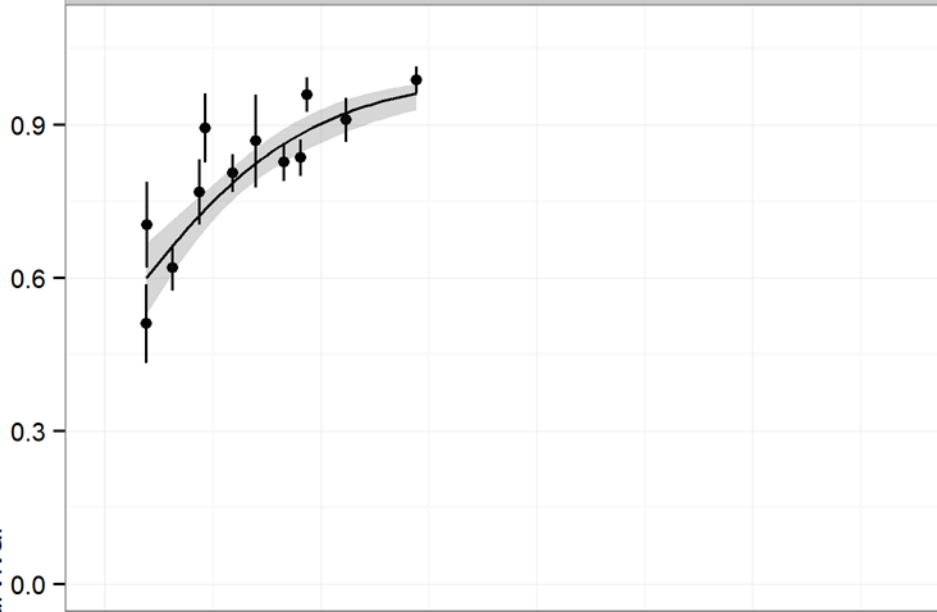


Date

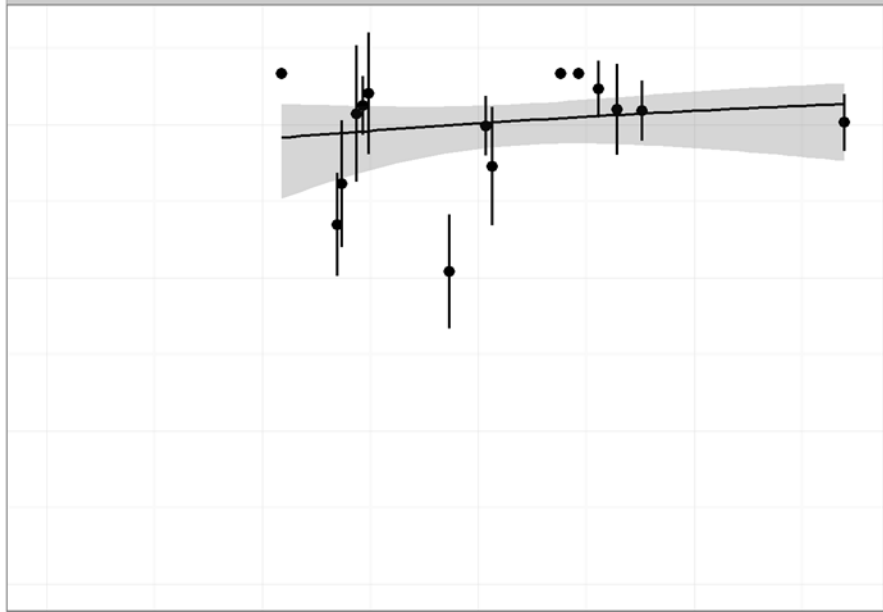
Roza Reach



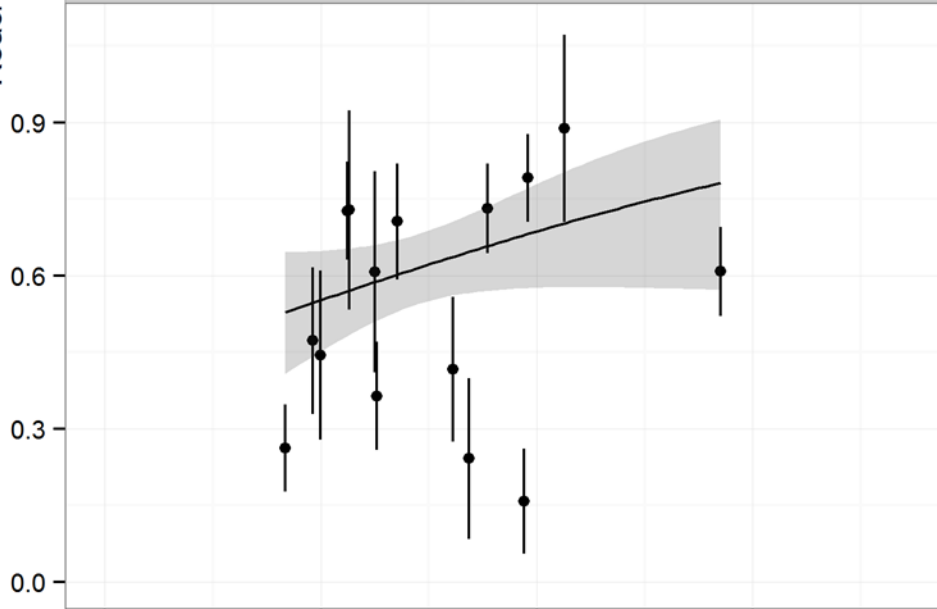
Roza Reach



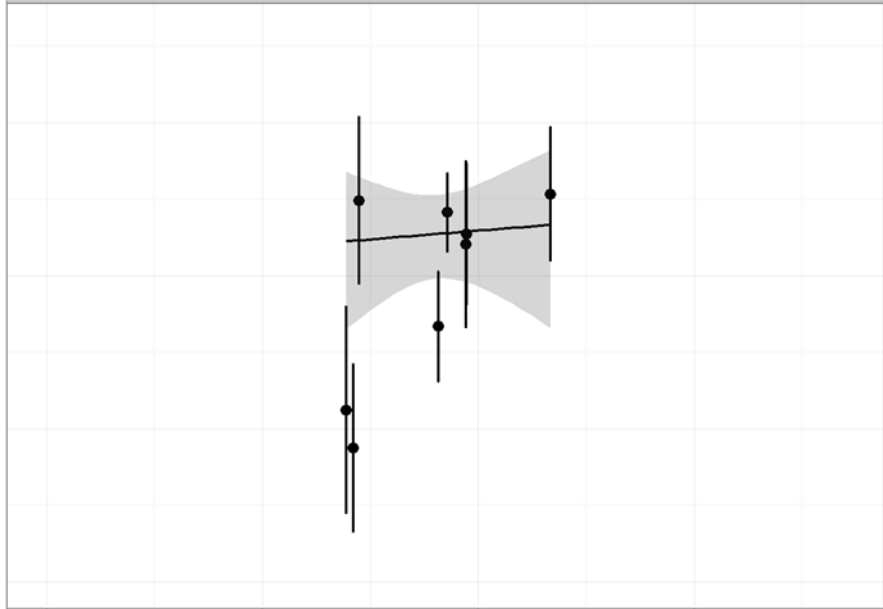
Naches Reach



Sunnyside Reach



Prosser Reach



Flow (cfs)



Photo Credit: WA Dept. of Ecology