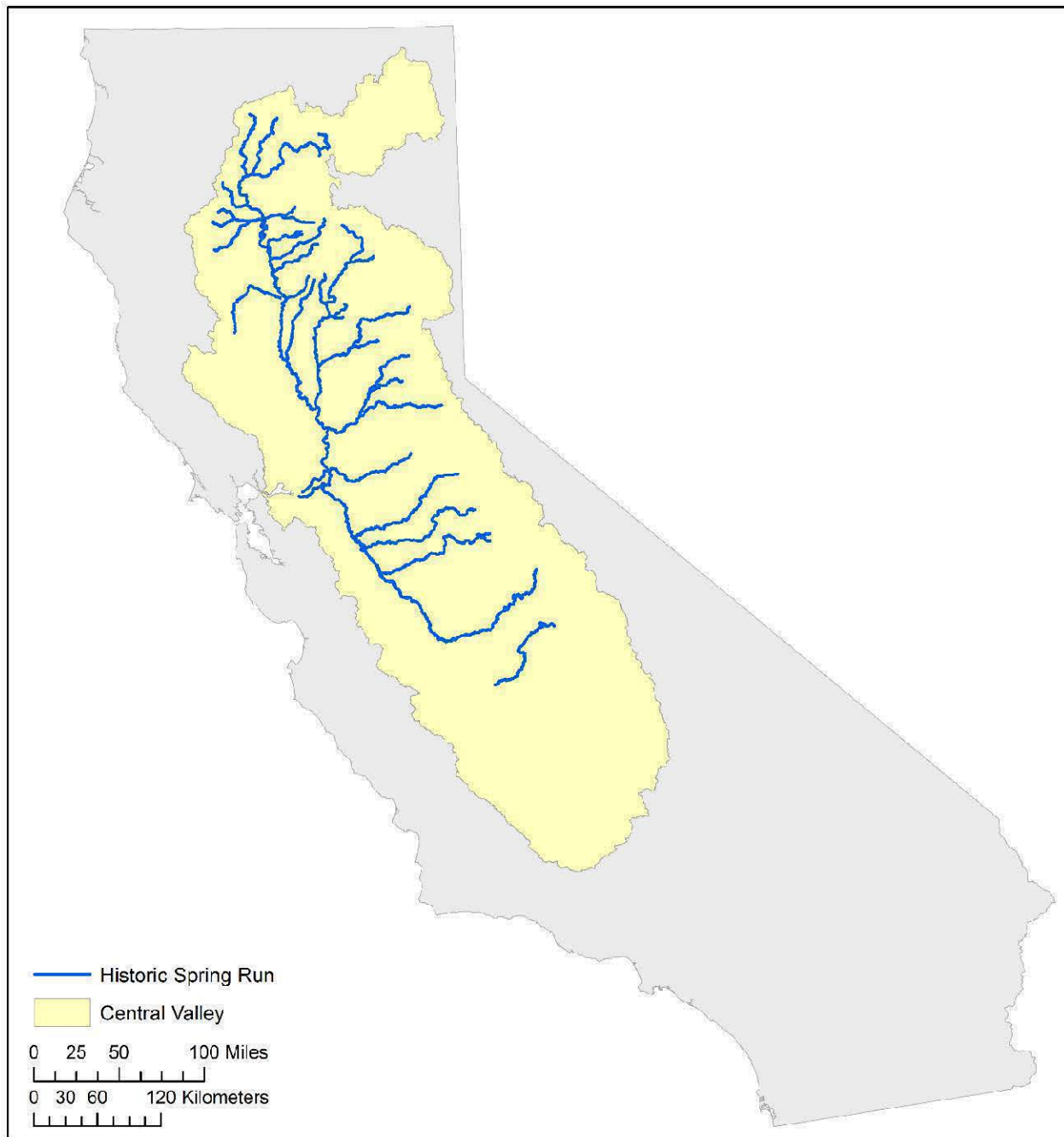




# Survival and Movement Rates of wild Chinook salmon smolts from Mill Creek 2013-2016



Jeremy Notch, Flora Cordoleani, Arnold Ammann, Matt Johnson, Alex McHuron

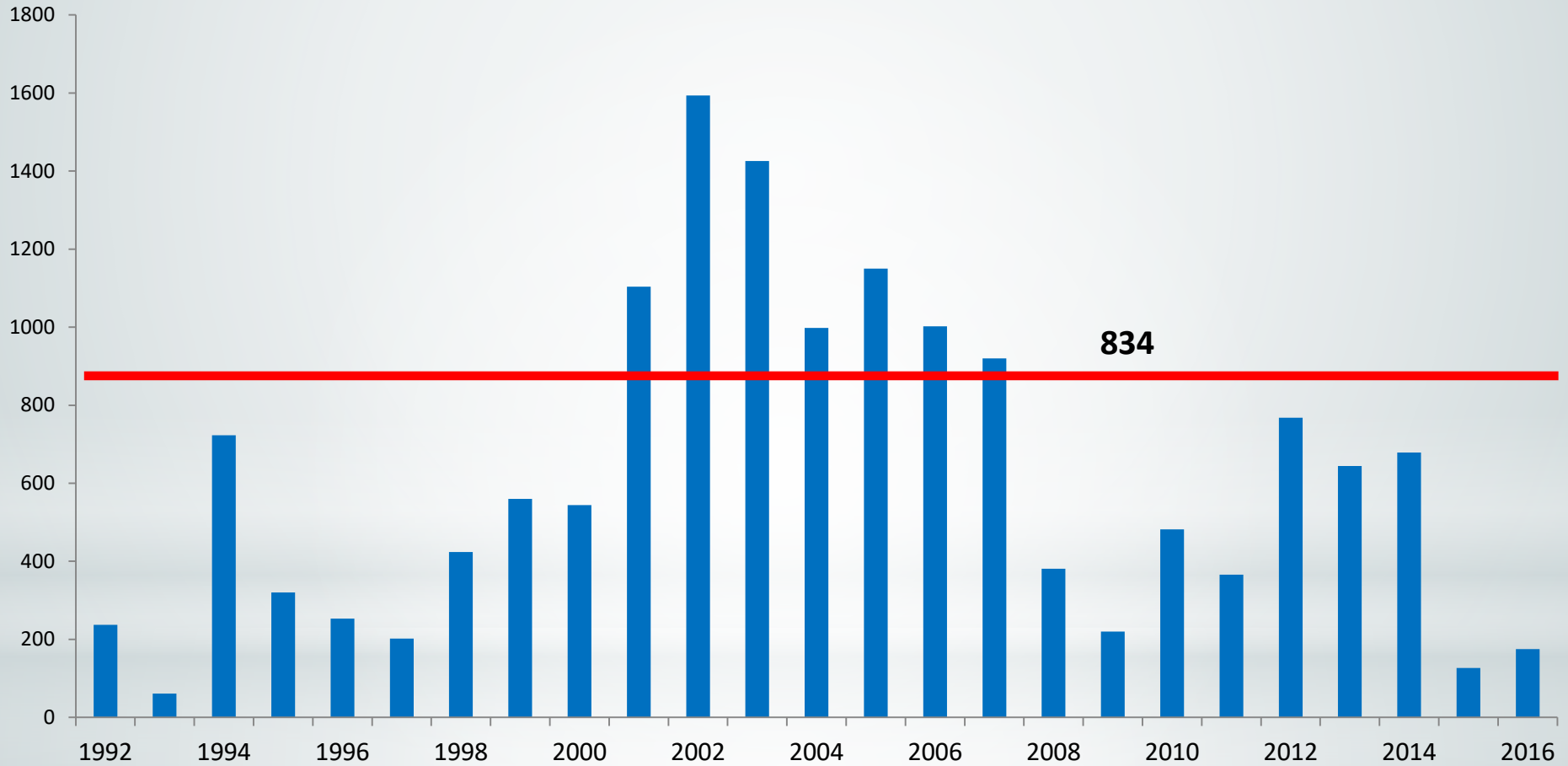




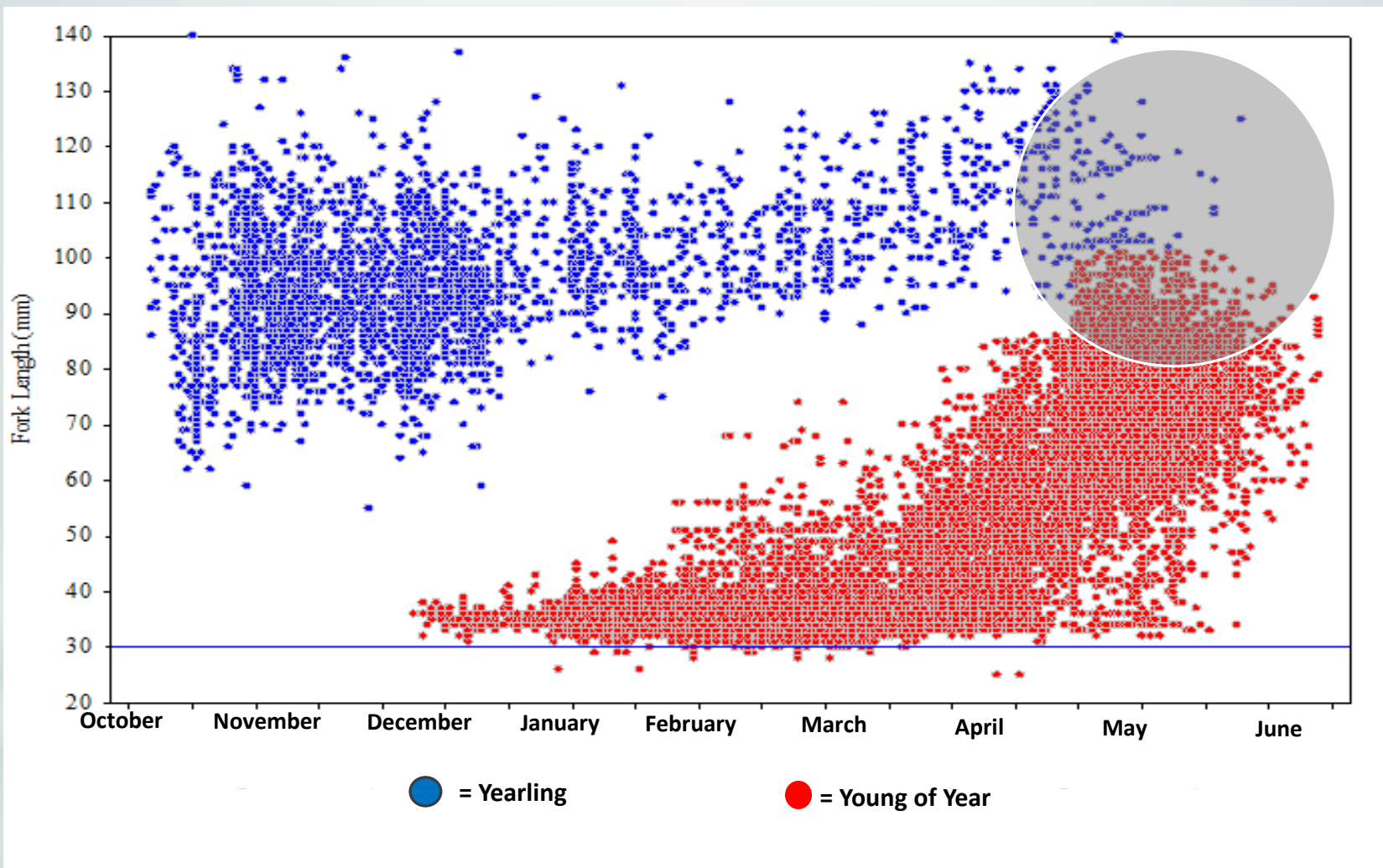




# Mill Creek Spring-Run Escapement 1992 - 2016



# 1995 – 2010 Mill Creek Rotary Screw Trap Data

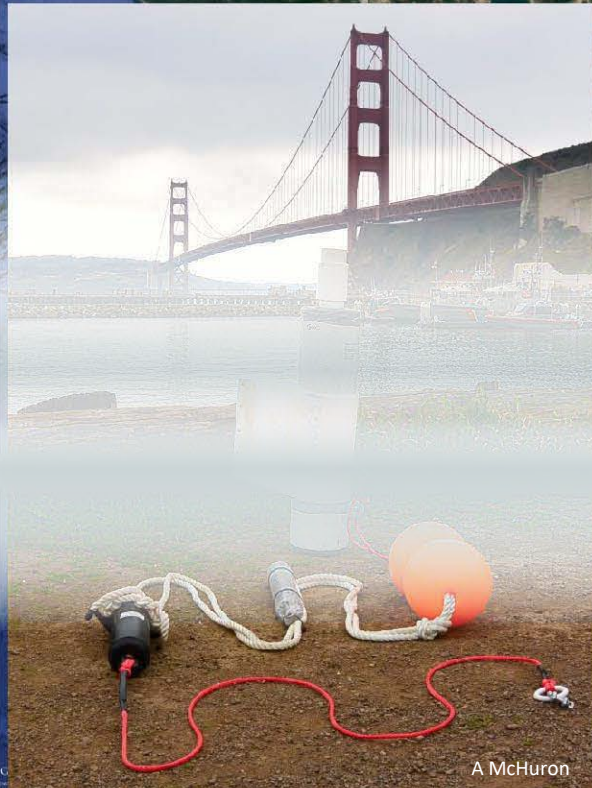


# Fish Collection and Tagging

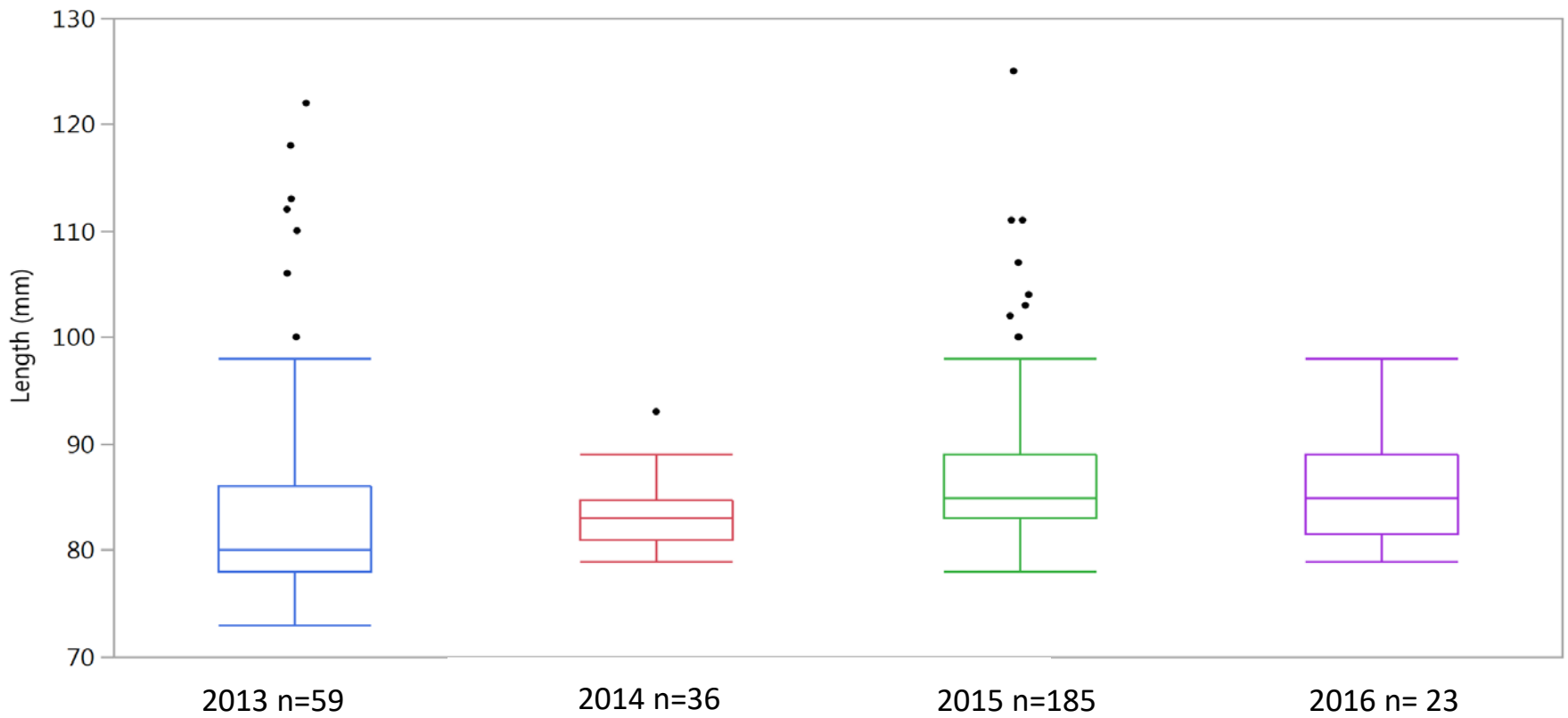




# JSATS Receiver Locations

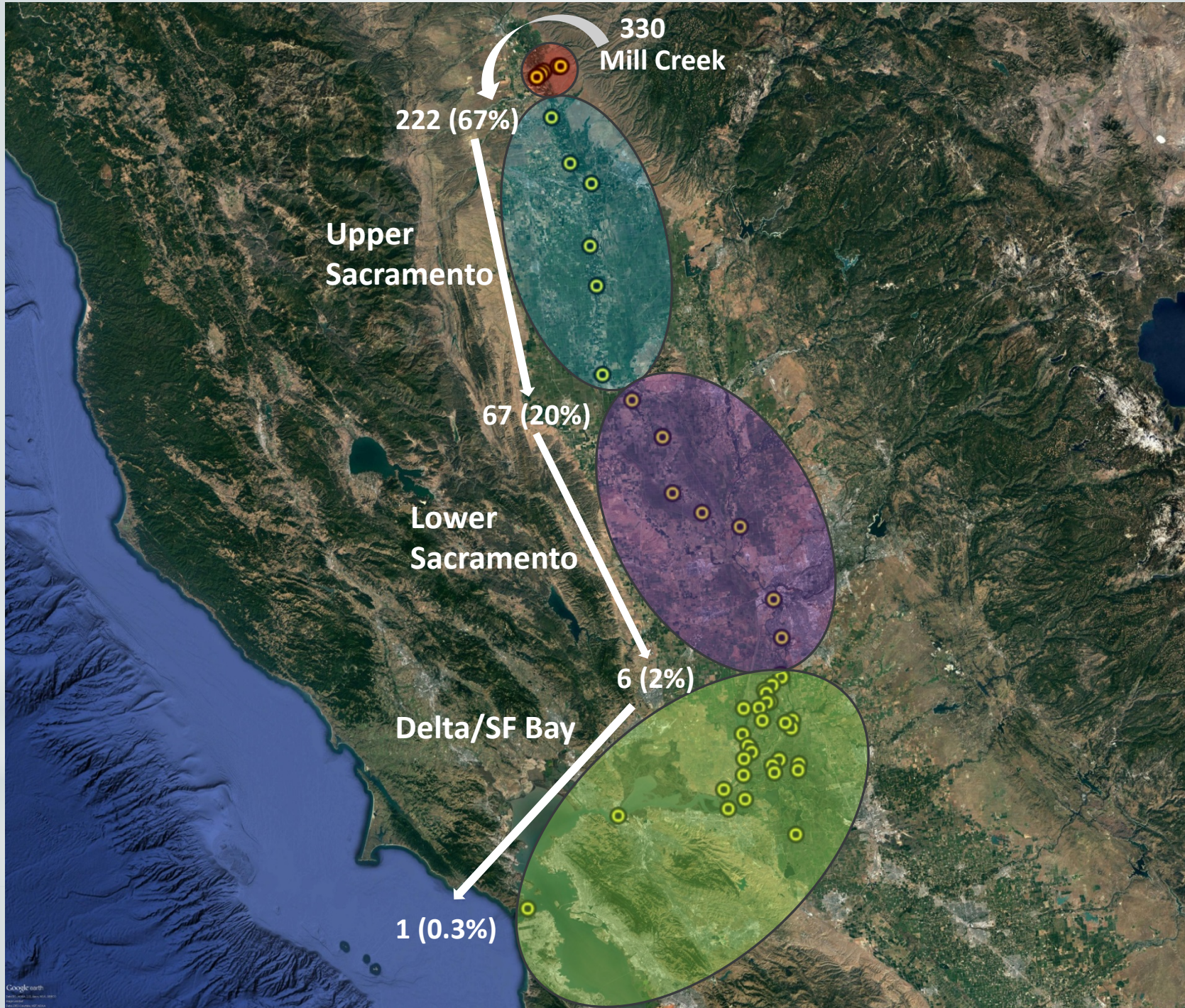


# Length of Tagged Mill Creek Smolts



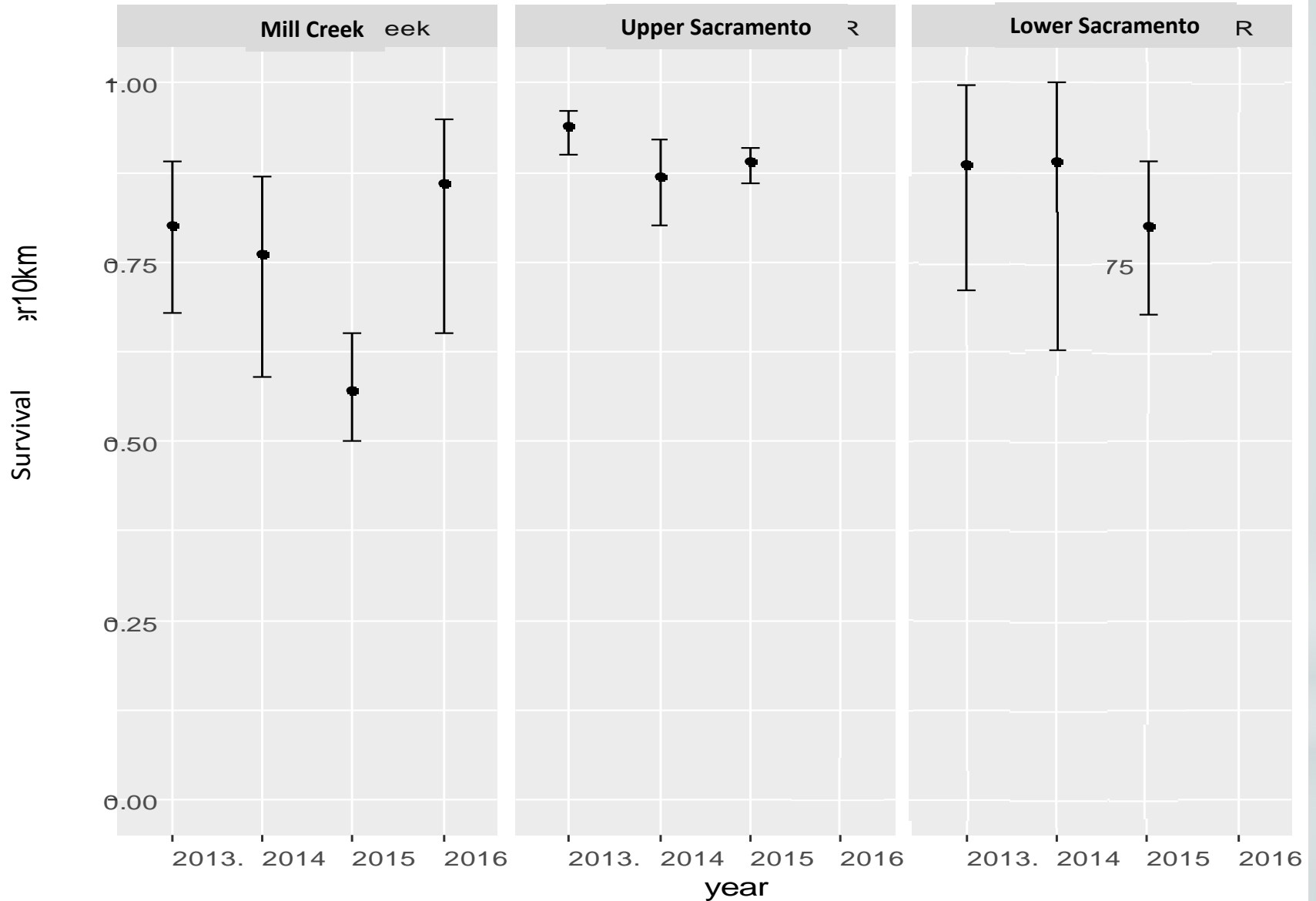
n=330







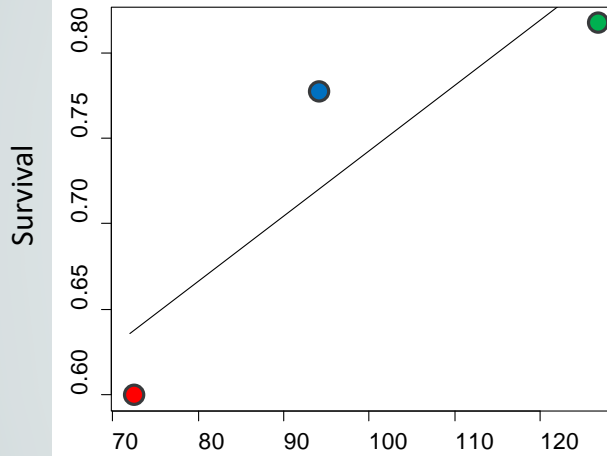
# Survival per 10km by Region



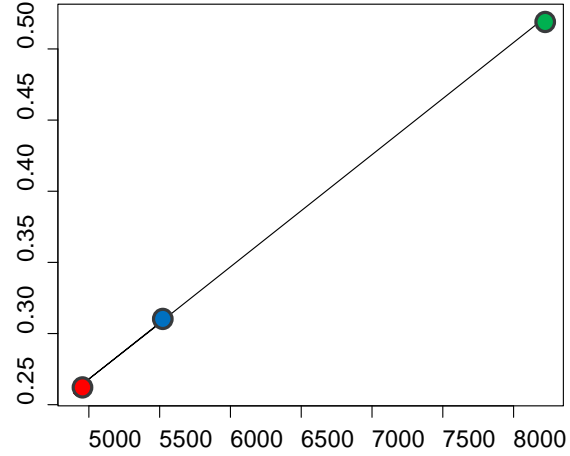


# Survival vs Flow

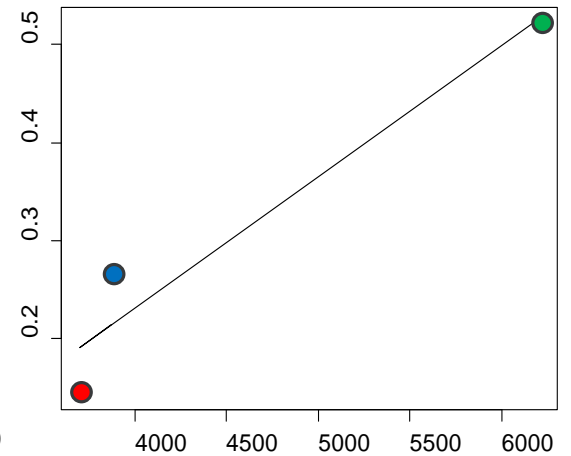
Mill Creek



Upper Sacramento



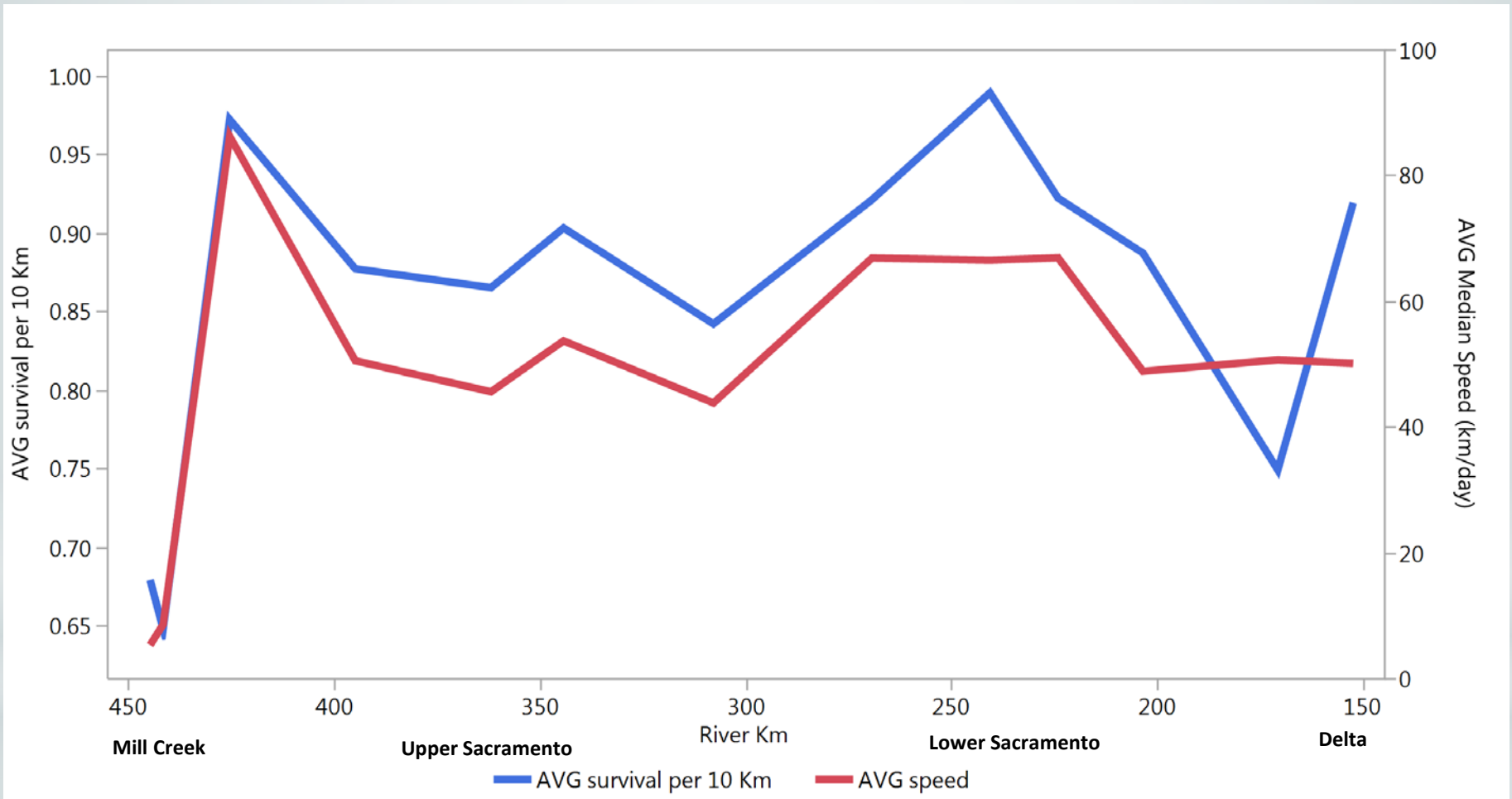
Lower Sacramento



● = 2013    ● = 2014    ● = 2015

Flow (CFS)

# 2013 – 2016 Mill Creek Survival vs Movement





2015



2016



# 2007 - 2015 Striped Bass CPUE in the Upper Sacramento River





# Conclusions

Low survival in Mill Creek and Sacramento River

- Associated with slower movement rates?
- Low flows = increased interaction with predators?

Movement rates highly correlated with survival

- Reaches where smolts move fast = higher survival rates

Late outmigration timing of Mill Creek smolts is unique, and not a successful strategy in recent years

High predator densities in Mill Creek and the Sacramento River coincide with smolt out-migration

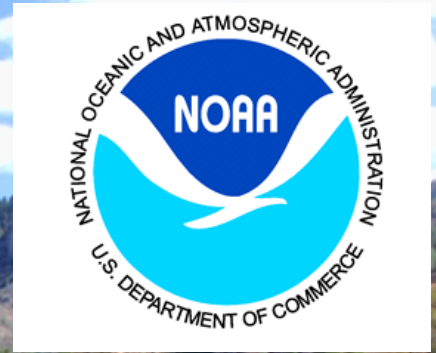
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# Acknowledgements

Funding – AFRP, NOAA Fisheries

Special Thanks to:

- CDFW Red Bluff Fisheries
- The Nature Conservancy
- Los Molinos Mutual Water District





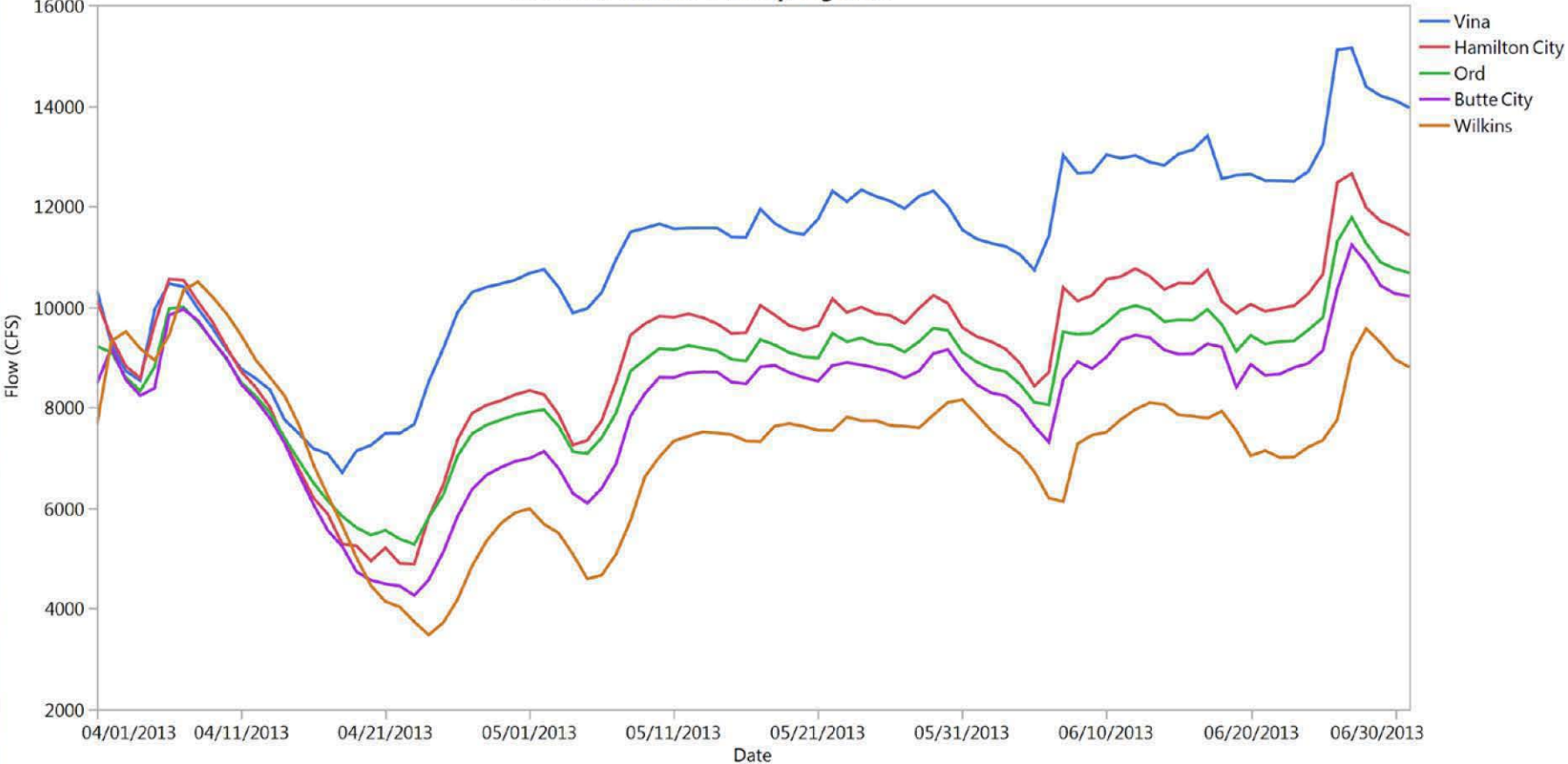


**Sutter Bypass**



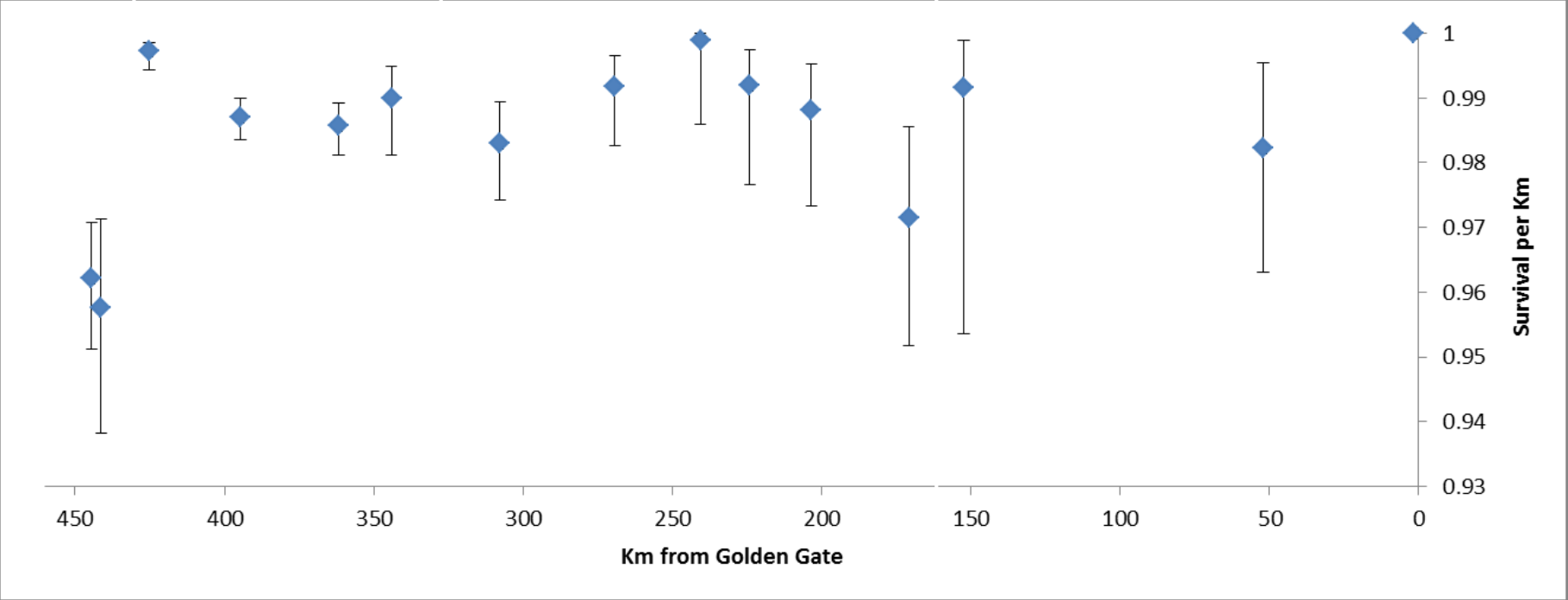
**Mill Creek**

Sacramento River Flow Spring 2013





# 2013-2016 Mill Creek Survival per Km



# Mill Creek Tag Effect Study

- 50 RST/Dummy Tag
- 50 RST/No Tag
- 50 Control



### Tag Shed Rate

