Sacramento River Predation Rates on Juvenile Salmonids Among Native and Non-native Predatory Species

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Chinook salmon populations have significantly declined since the 1960's in California's Central Valley, partially due to predation by non-native striped bass[5]. In addition to predation by striped bass, out-migrating juvenile salmon must also contend with Sacramento pikeminnow, a species of predatory fish native to the Sacramento River[3]. Predation may be further compounded by flow altering man-made structures and hatchery domestication effects[1,2,3,4,6].

Research Questions

1.) Who eats more salmon, striped bass or pikeminnow?
2.) Are larger predators eating fewer salmon?
3.) Are hatchery salmon more susceptible to predation?
4.) Is predation higher near man-made structures?

Methods

Data and samples are collected by hook-and-line sampling, twice weekly, one year total. Fish are measured for length and weight, scale samples are taken, Floy tags are injected, and stomach content is collected. Stomach contents are analyzed visually and with genetic techniques.

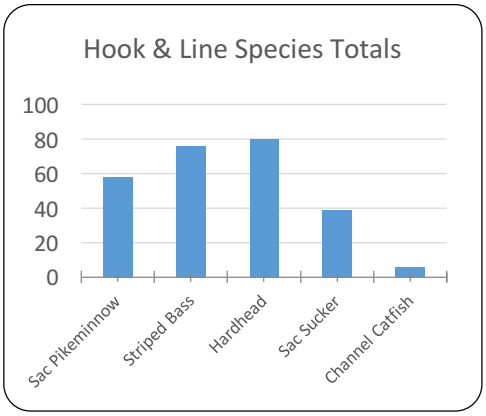

Figure 1.) Frequency distribution of top five most commonly caught species during survey. Sacramento pikeminnow and striped bass are target species, making up approximately 50% of fish caught.

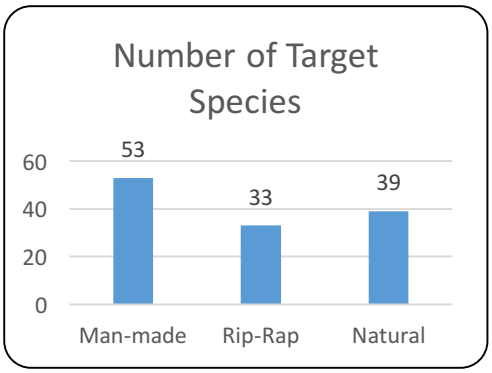

Figure 2.) Frequency distribution of target species captures by site-type. Preliminary data suggests that more predatory species are captured at "man-made" sites than at "rip-rap" or "natural" sites.

Preliminary Data

- 270 fish since March 2017
- ~50% target species
- ~55% target species contained stomach content
- Catch Per Unit Effort = 1.5 fish/hr

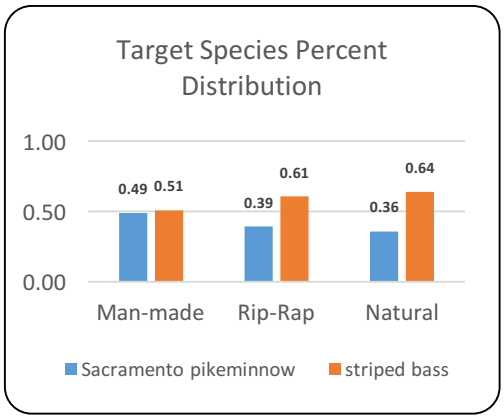

Figure 3.) Percent distribution of Sacramento pikeminnow versus striped bass by site-type. Preliminary data would suggest that proportionally more striped bass have been caught at "natural" and "rip-rap" sites than at "manmade" sites.

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6.) Sommer, T., Harrell, B., Nobriga, M., Brown, R., Moyle, P., Kimmerer, W., and Schemel, L. 2001. California's Yolo Bypass: Evidence that flood control can be compatible with fisheries, wetlands, wildlife, and agriculture. *Fisheries* 26(8):6-16.