

## **Persistence of Delta Smelt DNA in the Gut of Mississippi Silversides and Other Preliminary Experiments for Detecting Prey in Non-Native Fish Stomachs Using Real-Time PCR**

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The Bay-Delta Conservation Plan has identified predation by non-native piscivores as a major stressor to threatened native fish in the delta. Our primary objective is to investigate the frequency of predation by non-native bass and the native Sacramento pikeminnow on larval and sub-adult threatened and endangered species using quantitative PCR. The data on incidence of predation will be used to identify locations non-native piscivores prey heavily on at-risk species. With this data habitat restoration efforts can focus on areas that minimize danger to at-risk species.

Genetic gut content analysis offers two notable advantages over visual gut contents studies. The sensitivity of the method allows us to identify prey species for a longer time post-ingestion and species composed of soft tissue, namely larval fish, can be identified. Our current objective is to characterize the genetic assay and optimize the methods to be used in the primary study. We conducted a series of preliminary experiments in which we fed delta smelt larvae to Mississippi silverside and striped bass in a controlled environment. Three questions were addressed during these experiments: How long is DNA of a prey fish detectable in the stomach of a predator? Can we detect multiple prey of a given species in a stomach using microsatellite DNA? Lastly, what method of preservation keeps the most usable DNA intact during field sampling?

DNA barcoding and qPCR will be introduced and the results from our preliminary experiments will be discussed.

**Keywords:** predation, qPCR, delta smelt, silverside, chinook salmon bass, genetics

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