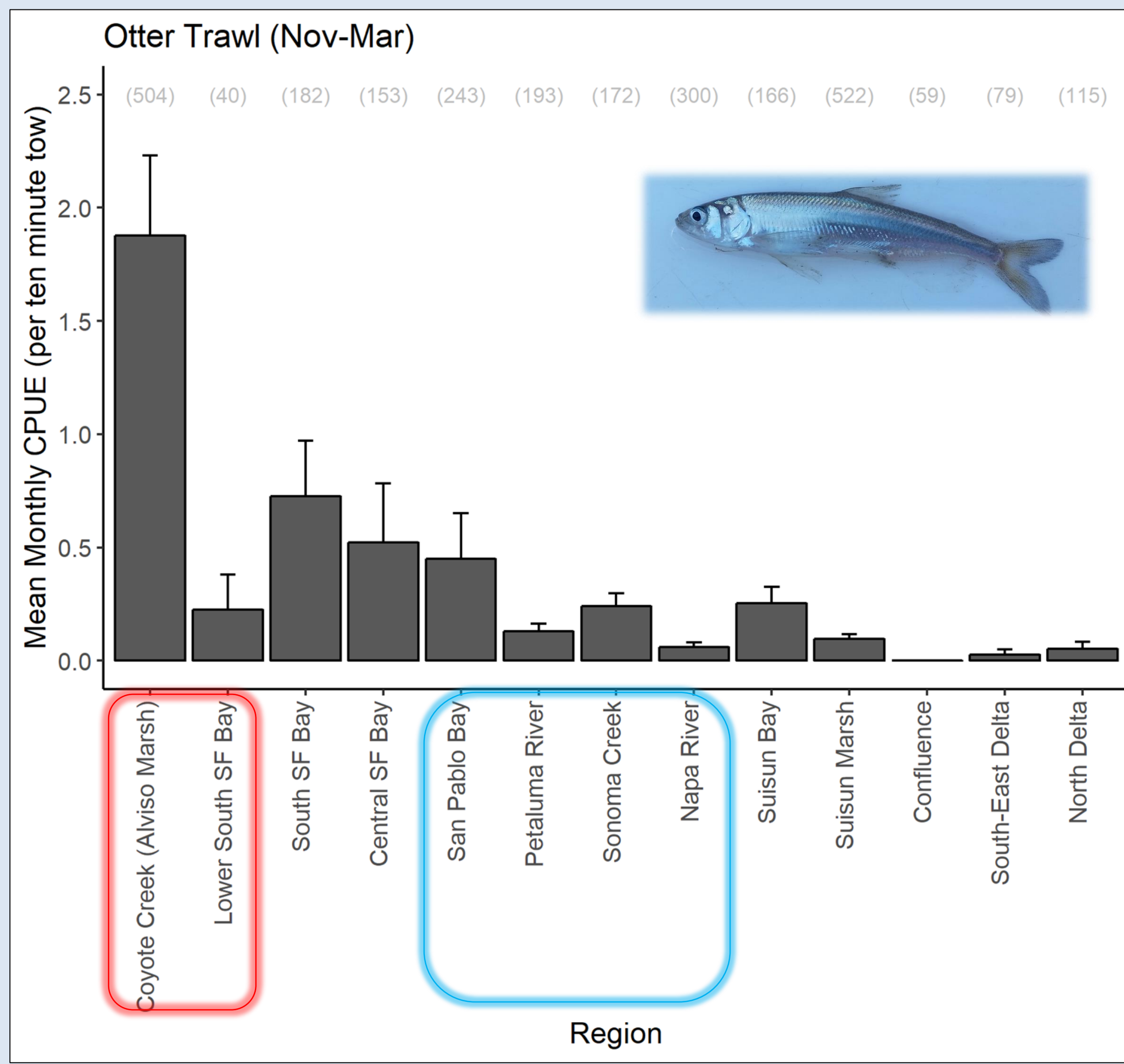


**Figure 1.** Tow-specific catches of sub-adult/adult Longfin Smelt in otter trawls conducted by UCD and CDFW during the spawning season (Nov-March) in Water Years 2015-2019.



**Figure 2.** Mean  $\pm$  SE monthly regional catches of sub-adult/adult Longfin Smelt in otter trawls conducted by UCD and CDFW during the spawning season (Nov-March) in Water Years 2015-2019. Total number of tows shown in parentheses. Blue box = Northern SFE; red box = Southern SFE.

# An Estuary-Wide Synthesis of the Distribution of Larval and Adult Longfin Smelt

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## Introduction

The tributaries and marshes of San Pablo Bay and Lower South San Francisco Bay may serve as additional spawning and larval rearing habitats for San Francisco's genetically unique and severely threatened Longfin Smelt. However, long-term surveys have often omitted these "bay tributaries" and associated brackish wetlands, thus their use by Longfin Smelt has remained unknown, possibly limiting our understanding of Longfin Smelt population dynamics and effective conservation strategies.

## Methods

To address this, the Otolith Geochemistry & Fish Ecology Lab at UC Davis conducted surveys in wetland habitats of the northern and southern Estuary and combined results with on-going long-term CDFW surveys to provide a comprehensive assessment of the geographic distribution of Longfin Smelt across life stages, seasons, and years (2015-2019). Adult Longfin Smelt were sampled using an otter trawl fashioned after the Suisun Marsh Study and post-larval Longfin Smelt were sampled using IEP's 20mm net. Sampling occurred in bays, tributaries, and brackish marshes of the Northern and Southern SFE following standard protocols.

## Results/Discussion

In all years of the study period, which included both severe drought and extreme rainfall/outflow, adult Longfin Smelt were regularly observed in northern and southern SFE wetlands, with the highest catches consistently in Alviso Marsh (Figs. 1,2). Furthermore, many fish captured in these wetland habitats exhibited signs of recent or active reproduction. In drought years, larvae were mostly confined to upstream habitats in Suisun Bay and the Delta. In wet years (e.g., 2017 and 2019), however, relatively high densities of larval and post-larval Longfin Smelt were observed in wetland and bay habitats of the northern and southern estuary (Figs 3,4). These results suggest that Longfin Smelt can use brackish wetlands of the Northern and Southern SFE for spawning and rearing; the relative importance of these habitats, however, remains a key question for future research and management.

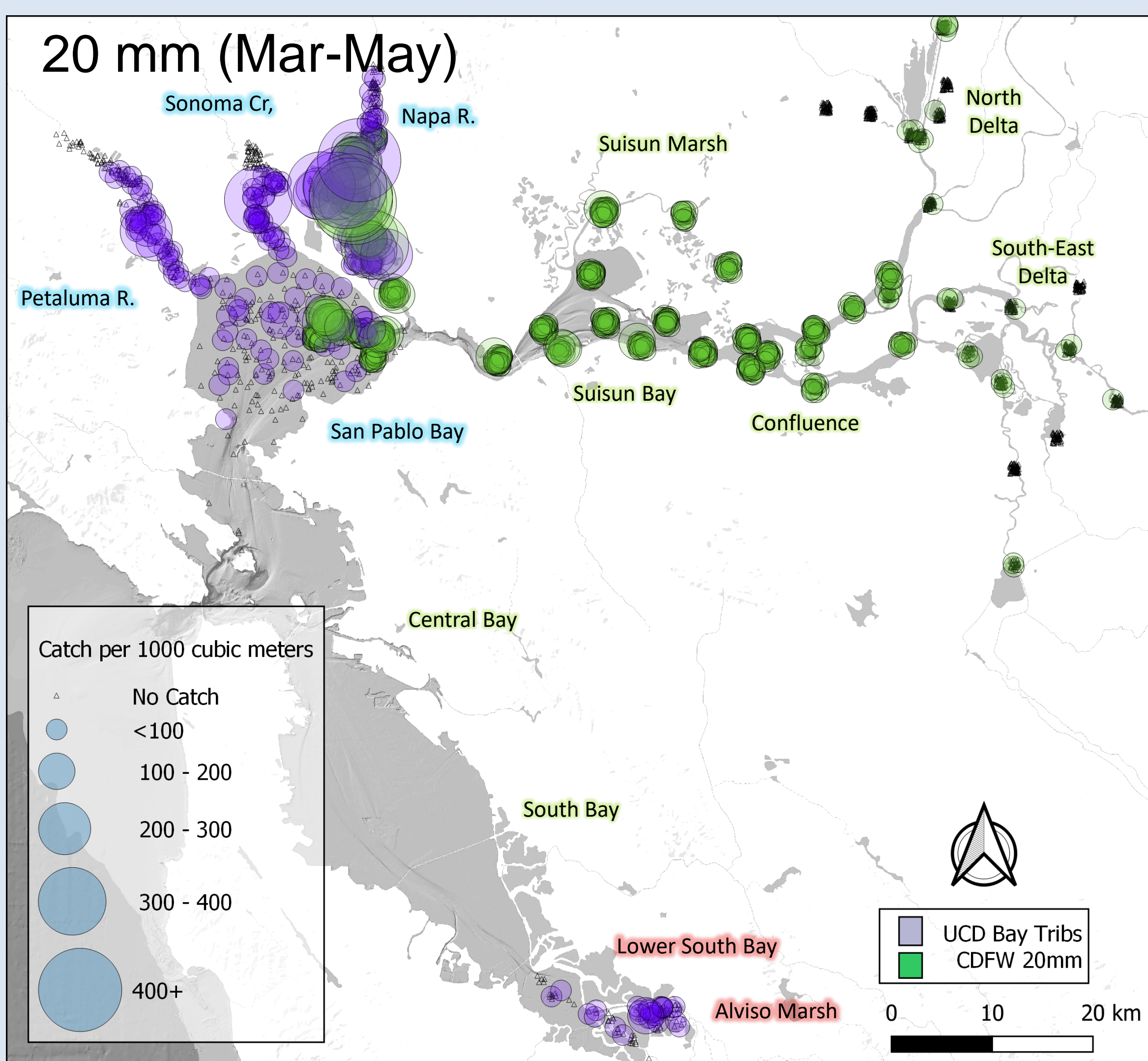
## Acknowledgements

We thank the many members of the Otolith Geochemistry & Fish Ecology Laboratory at UC Davis as well as the Departments of Wildlife, Fish, and Conservation Biology, Earth and Planetary Sciences, the Genomic Variation Laboratory, Fish Conservation and Culture Laboratory, and Center for Aquatic Biology and Aquaculture. Long-term data were provided by the UCD Suisun Marsh Study and CDFW Bay Study. This work was supported in part by funding from the Department of Water Resources, the City of San Jose, and the Delta Stewardship Council administered through CA Sea Grant.

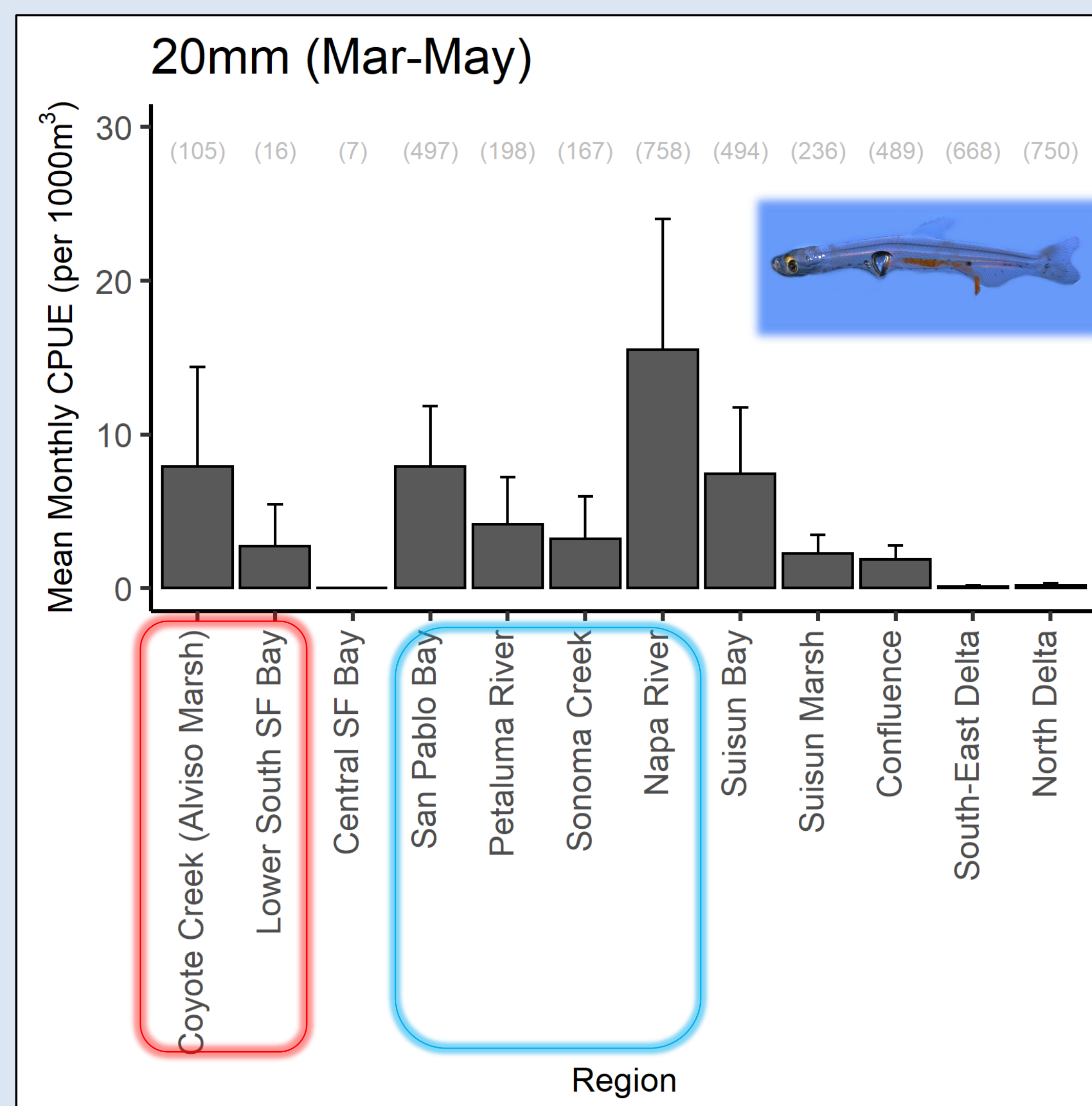
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**Lewis, LS**, M Willmes, A Barros, P Crain, J Hobbs. 2019. Newly discovered spawning and recruitment of threatened Longfin Smelt in restored and under-explored tidal wetlands. *Ecology*. <https://doi.org/10.1002/ecy.2868>  
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# Longfin Smelt Use Wetland Habitats Throughout the SFE for Spawning and Rearing (In Wet Years)



**Figure 3.** Catches of post-larval and juvenile Longfin Smelt in 20mm net surveys (March-May). Catch per unit effort of tows conducted by UCD and CDFW from March-May 2016-2019.



**Figure 4.** Mean  $\pm$  SE monthly regional catches of post-larval and juvenile Longfin Smelt in UCD and CDFW 20mm surveys conducted in March-May in 2016-2019. Total number of tows shown in parentheses. Blue box = Northern SFE; red box = Southern SFE.