

The Carquinez Strait Fish and Preservation Project

Mercury, PCBs,
and PFAS in Fish



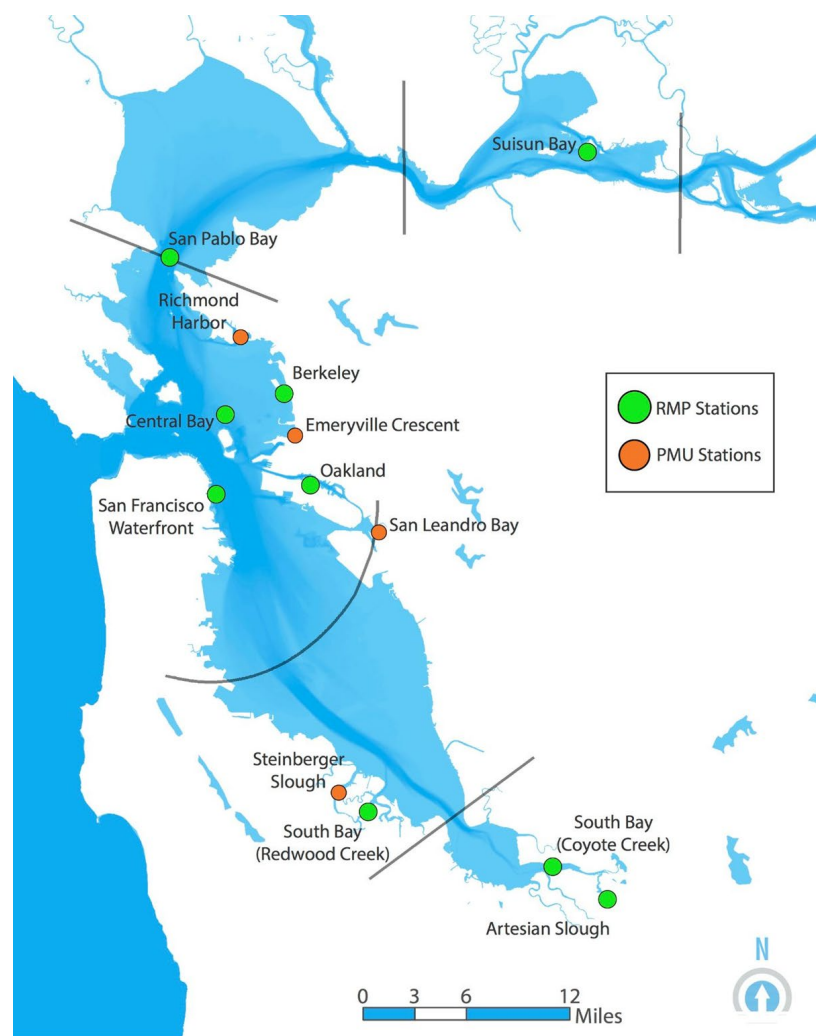
SFEI

SAN FRANCISCO
ESTUARY INSTITUTE

Martin Trinh and Jay Davis, SFEI
2025 State of the Estuary

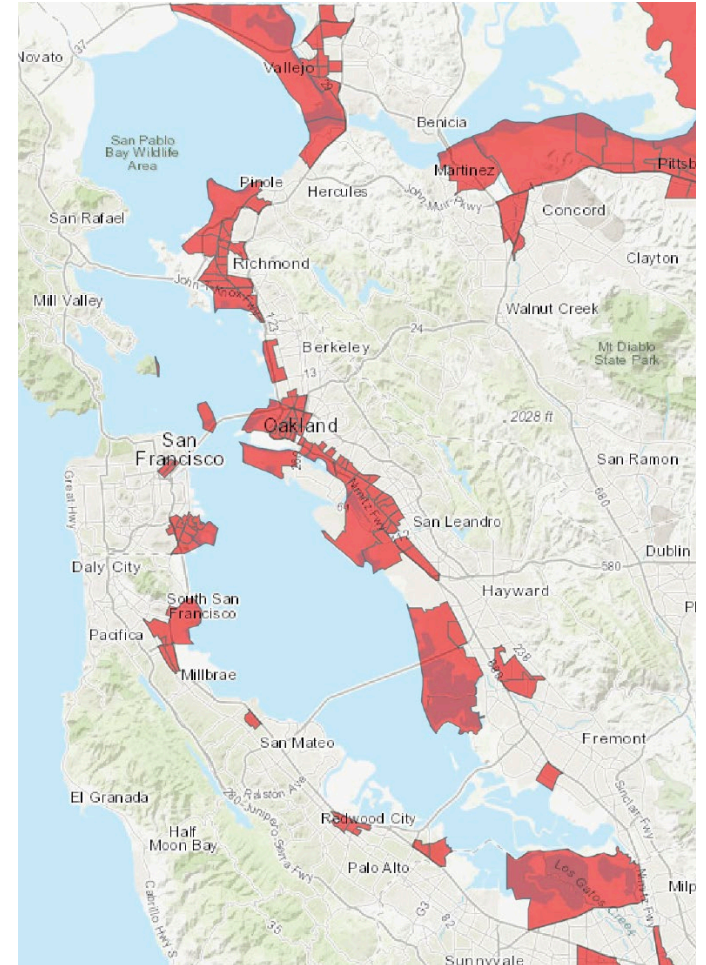
Background: RMP Fish Monitoring

- Once every 5 years
- 13 stations in 2019, four were just PCBs
- A major effort but there are still gaps
 - Carquinez Strait



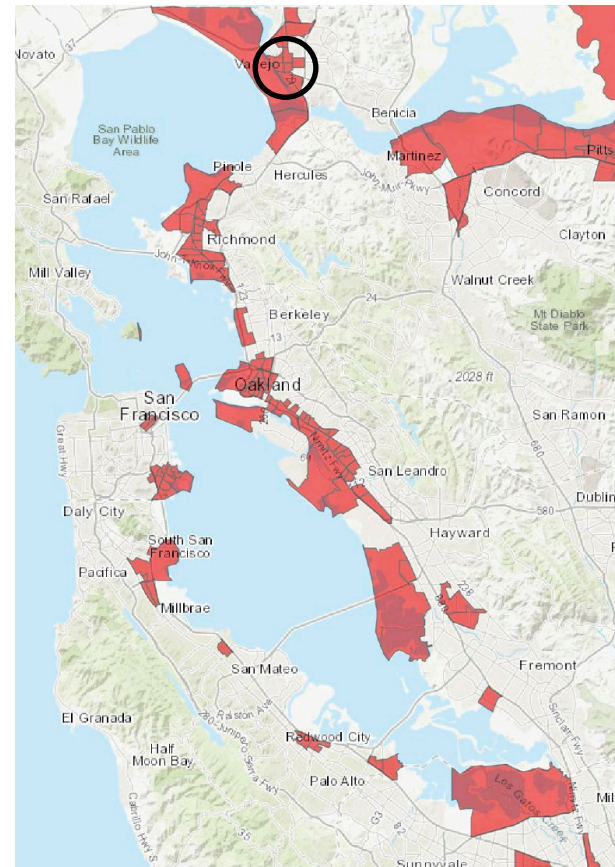
Carquinez Strait

- Map shows SB 535 Disadvantaged Communities
- DACs depend more on the Bay for food and other benefits of access to nature
- Vallejo is one of these communities
- RMP covers them pretty well, but not Carquinez



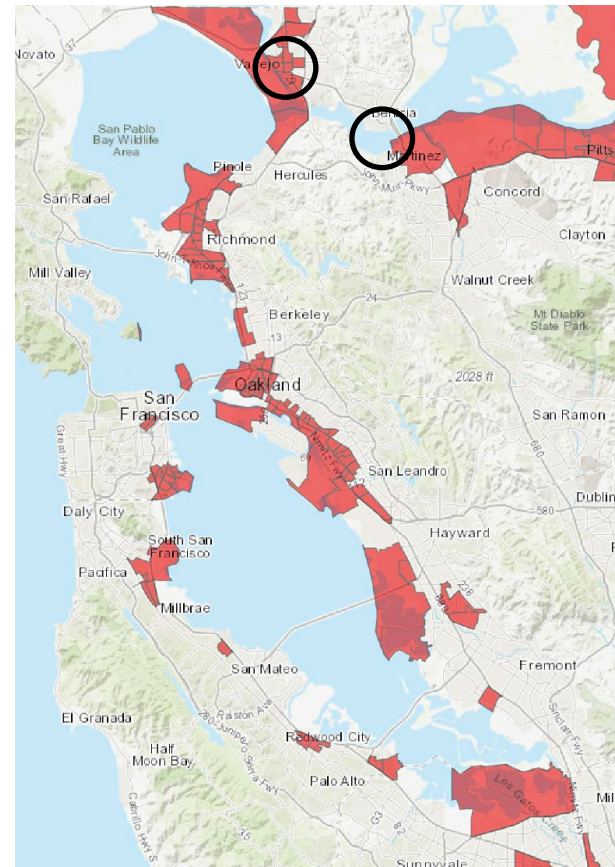
Past Carquinez Strait Monitoring

- First Bay-wide fish contaminant study in 1994
 - 13 stations
 - “Vallejo-Mare Island is the sampling location from which fish most often exhibited high levels of chemical contaminants”
 - PCBs in white croaker: 259-567 ppb
 - PCBs in striped bass: 127 ppb



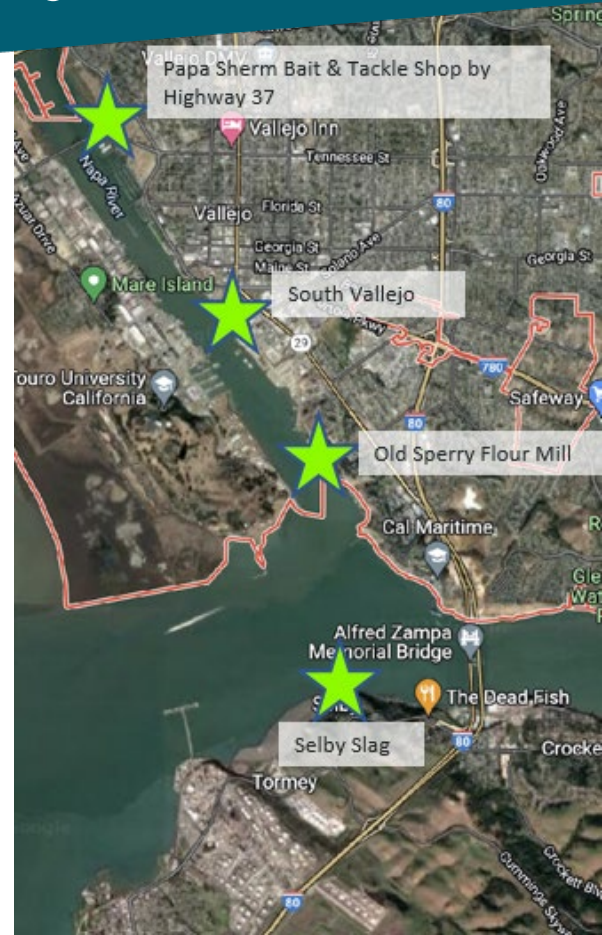
Past Carquinez Strait Monitoring

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 - “Vallejo-Mare Island is the sampling location from which fish most often exhibited high levels of chemical contaminants”
 - PCBs in white croaker: 259-567 ppb
 - PCBs in striped bass: 127 ppb
- 2014
 - Benicia: PCBs in shiner surfperch: 22 ppb
 - Martinez: PCBs in staghorn sculpin: 10 ppb



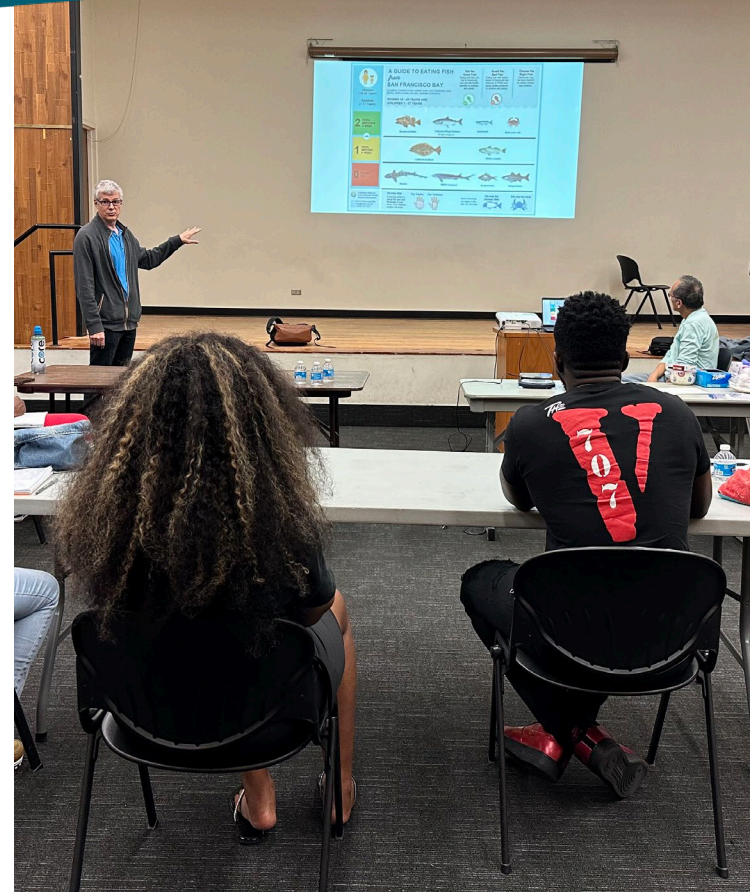
APP's Carquinez Strait Study

- APP and SFEI set out to address this important gap in Bay fish monitoring
- Intensive effort in the Vallejo area
- Four sites that are most used by community members
- Extension of RMP fish monitoring adding to the Bay-wide dataset



Novel Approach

- Novel: Community fish collection
 - APP coordinated community member fishing activities, collection, and transfers to SFEI
- Standard approach: Contractor fish collection
 - ICF



Community Fish Collection

- Community fish collection for a rigorous study is breaking new ground
- Advantages
 - Monitor the fish that the community is catching and at the locations where they are caught
 - Learning opportunity for community members
 - A good environmental justice approach
- Can serve as a model for other efforts in the Bay Area and beyond



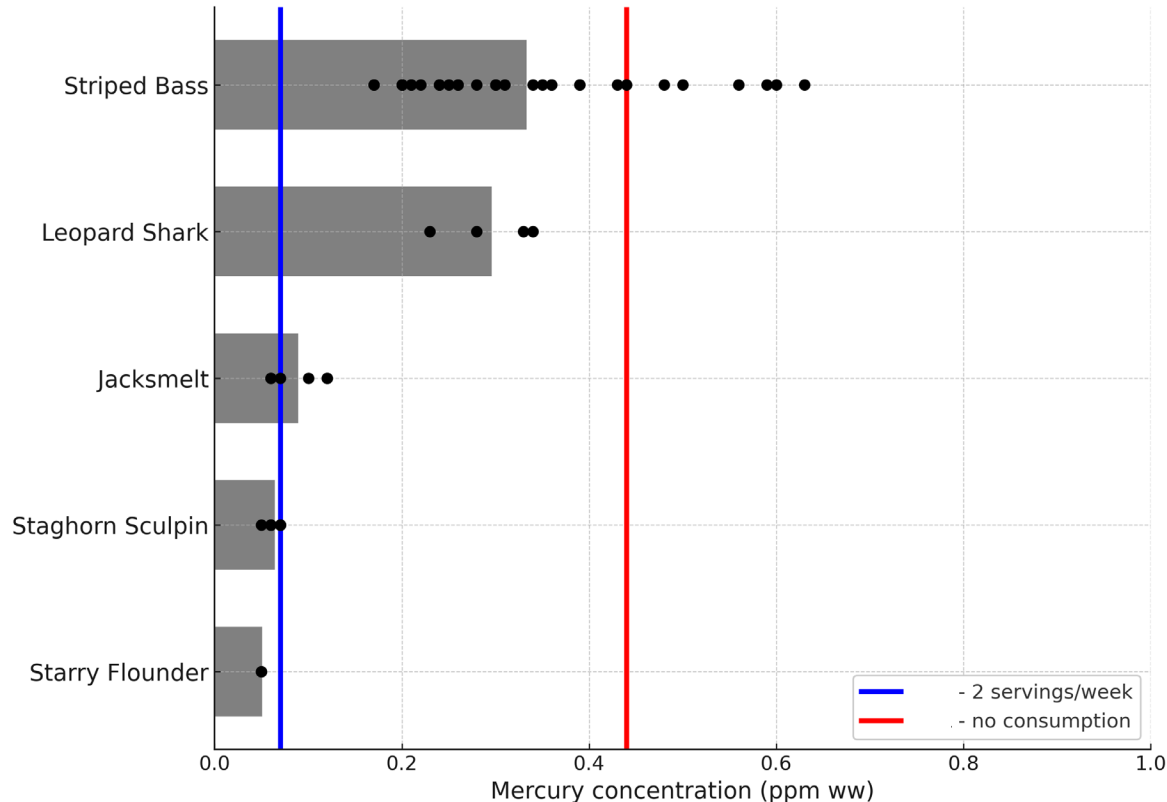
Targets

Species	Target Number of Fish
Striped Bass	15
Shiner Surfperch	240
Staghorn Sculpin	240
Jacksmelt	60
White Surfperch	60
Starry Flounder	15
California Halibut	8

Targets and Catch

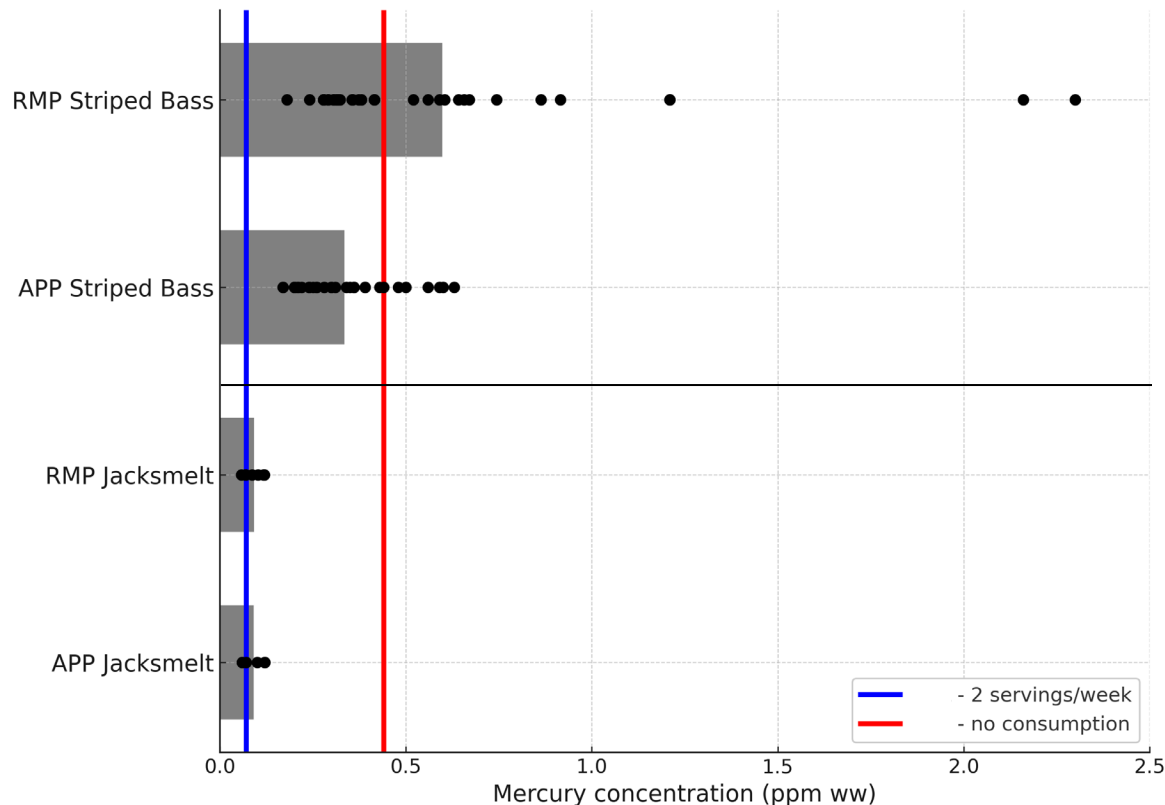
Species	Target Number of Fish	APP	ICF
Striped Bass	15	✓	✓
Shiner Surfperch	240		
Staghorn Sculpin	240		✓
Jacksmelt	60		✓ *
White Surfperch	60		
Starry Flounder	15	✓ *	
California Halibut	8		

Mercury at Levels of Concern



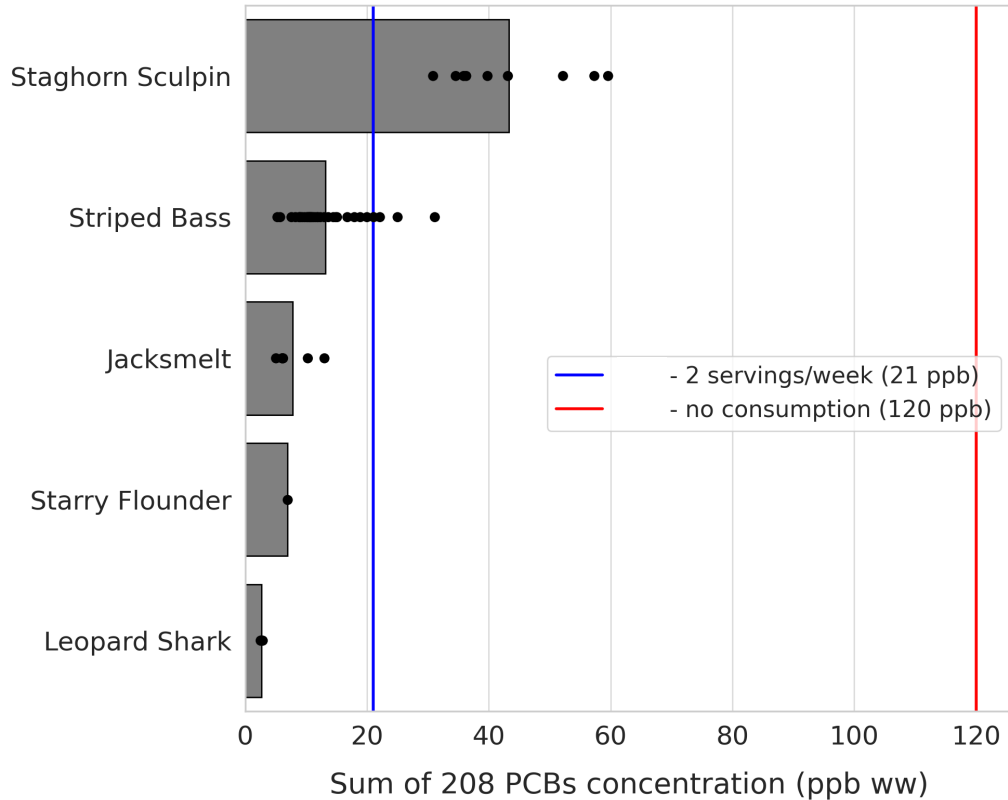
- Striped bass high: 7 of 32 over the no consumption level
- Leopard shark also relatively high
- Other species much lower

Mercury in Carquinez Strait Lower Than Rest of Bay



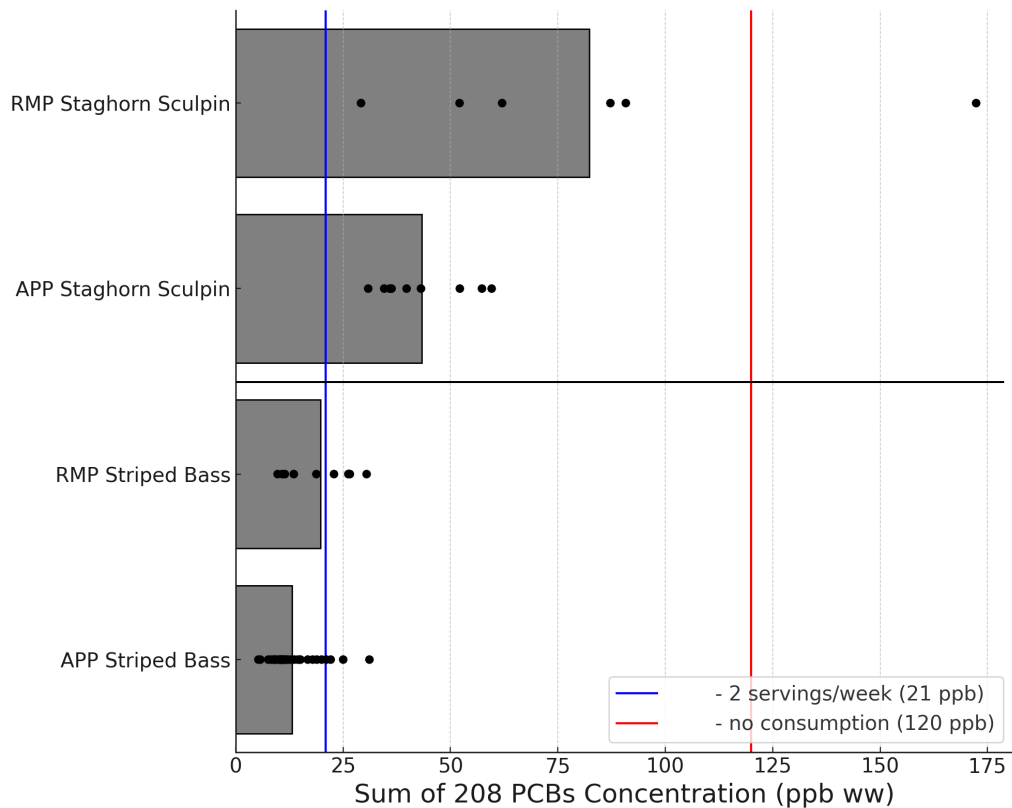
- Striped bass in Carquinez lower than other parts of the Bay
- Jacksmelt about the same

PCBs Of Some Concern



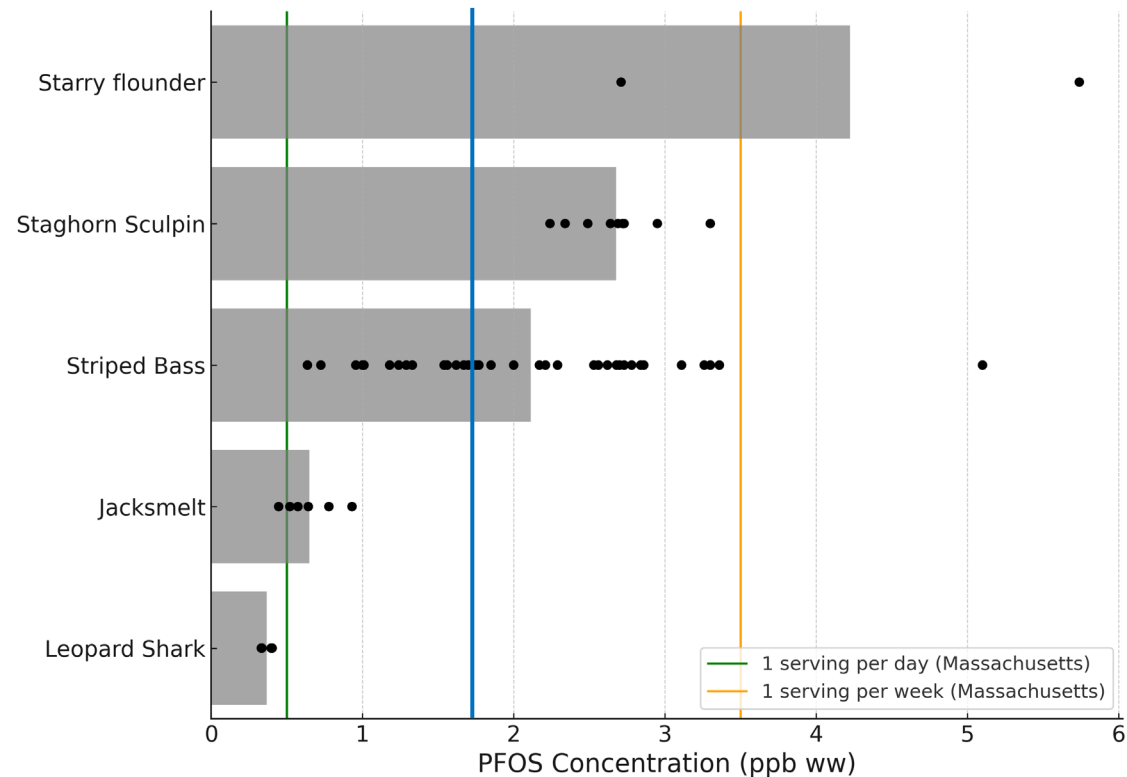
- Below the no consumption level
- Still of some concern, especially in sculpin
- Sculpin are a good PCB indicator species
- Note striped bass! (remember: 127 ppb in 1994)

PCBs in Carquinez Strait Lower Than Rest of Bay



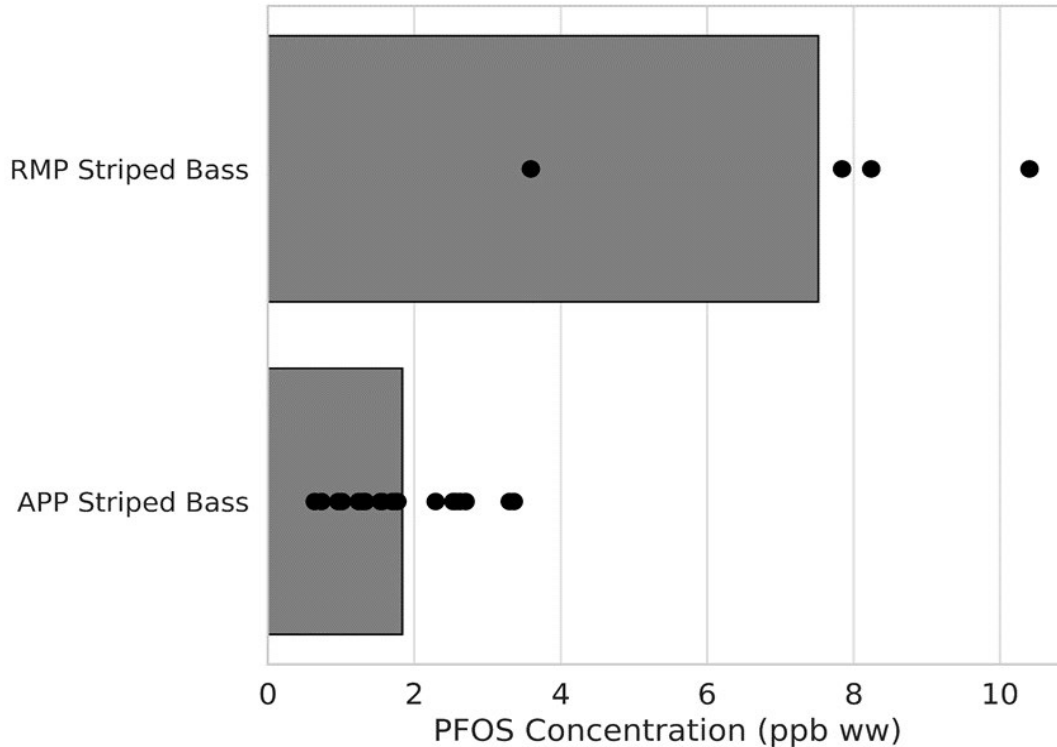
- Staghorn sculpin lower in Carquinez
- Striped bass also lower

PFOS in Carquinez Strait Fish



- PFOS was the predominant PFAS found
- At levels of some concern

PFOS in Carquinez Strait Lower Than Rest of Bay

[illegible]

Highlights

- Community fish collection was a success
- Fish caught by the contractor on boats had similar levels of contaminants as those caught by community members on the shoreline
- Concentrations are still at levels of some concern, but Carquinez Strait now has the **lowest** levels across Bay stations
- Relatively good news for fishers in this area
- For PCBs, appears to be an unusual and encouraging example of recovery of a contaminated margin area

State of the Estuary Session

- Tuesday, October 28: 1:15 PM
- Same presenters, more in-depth
- Panel discussion with more community members

Coming Soon: Project Reports

- Fishing and fish consumption: William Ware
- Fish monitoring results: Martin Trinh and others
 - Draft report in November
- Final reports in December

Other Fish News: RMP 2024 Results Coming Soon

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Other Fish News: Subsistence Fisher Consumption Survey

- Subsistence fishing is a priority topic for the San Francisco Bay Water Board (WB)
- The WB funded development of a subsistence fishing consumption survey questionnaire in 2024
- Bay Area Clean Water Agencies have funded SFEI to conduct a survey with in-kind contribution from the WB

Acknowledgements

- All Positives Possible's Carquinez Strait Fish and Preservation Project
- All Positives Possible: Especially LaDonna Williams, Joe Clark
- Funding provided by USEPA's San Francisco Bay Water Quality Improvement Fund
- ICF for fish collection, Moss Landing Marine Labs for fish processing and mercury analysis, SGS Axys for PCB and PFAS analysis
- SFEI Data Services for QA and data management
- William Ware



Women
(18 – 49 Years)

Children
(1 – 17 Years)

2 TOTAL
SERVINGS
A WEEK

OR

1 TOTAL
SERVING
A WEEK

0 DO NOT
EAT



California Office of
Environmental Health
Hazard Assessment

web www.oehha.ca.gov/fish
email fish@oehha.ca.gov
phone (916) 324-7572

A GUIDE TO EATING FISH *from* SAN FRANCISCO BAY

(ALAMEDA, CONTRA COSTA, MARIN, NAPA, SAN FRANCISCO, SAN
MATEO, SANTA CLARA, SOLANO, SONOMA COUNTIES)

**WOMEN 18 – 49 YEARS AND
CHILDREN 1 – 17 YEARS**

Eat the Good Fish

Eating fish that are
low in chemicals
may provide health
benefits to children
and adults.



Avoid the Bad Fish

Eating fish with higher
levels of chemicals like
mercury or PCBs may
cause health problems
in children and adults.



Choose the Right Fish

Chemicals may
be more harmful
to unborn babies
and children.



American Shad
♥ high in omega-3s



Chinook (King) Salmon
♥ high in omega-3s



California Halibut



Jacksmelt



Barred Surfperch



Black Perch



Walleye Surfperch



Northern Anchovy
♥ high in omega-3s



Rubberlip Surfperch



White Surfperch



White Croaker



Shark species



Striped Bass



Topsmelt



Mississippi Silverside



Pacific Sardine



Shiner Perch



White Sturgeon

**Do Not Eat Any
Fish from
Lauritzen Channel**



Serving Size

A serving of fish is
about the size and
thickness of your
hand. Give children
smaller servings.

For Adults



For Children



**Eat only the
skinless fillet**



Some chemicals are higher in the skin, fat, and guts.

Eat only the meat



SCAN ME

Updated 04/2023



Women
(50+ Years)

Men
(18+ Years)

7 TOTAL
SERVINGS
A WEEK

OR

5 TOTAL
SERVINGS
A WEEK

OR

3 TOTAL
SERVINGS
A WEEK

OR

2 TOTAL
SERVINGS
A WEEK

OR

1 TOTAL
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0 DO NOT
EAT



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Updated 04/2023