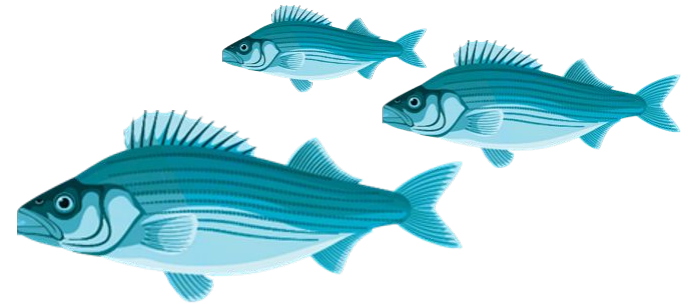


Workshop on Developing a San Francisco Bay Fish Consumption Survey Questionnaire

November 3, 2023
San Francisco Estuary Institute
Richmond, CA



We acknowledge the San Francisco Bay is the ancestral homeland of many indigenous people, including the Ohlone, Patwin, Coast Miwok, and Bay Miwok.

(acknowledgement developed by the native people of the SF Bay)



Item 1: Introductions and Review Goals for the Meeting

Led by Jenalyn Guzman, Facilitator

Desired outcomes:

- Understanding of meeting goals
- Agreement on guidance for inclusive conversation
- Get acquainted

SFEI Housekeeping Reminders

Gender diversity is welcomed here.
All are encouraged to use the restroom that best fits their identity.



Out the doors and to the right



**Password:
sfsfsfsfsf**

Please silence cell phones & laptops



Meeting Goals

1. Become acquainted with each other
2. Inform the group on background and overall plan for the project
3. Consensus on basic content of the questionnaire
4. Preliminary discussion of survey implementation
5. Inform the group on next steps

Guidelines for Inclusive Conversation

1. Release judgement
2. Actively listen to understand, not defend
3. Disagree with the idea not the person
4. Make space and take space
5. Avoid jargon

Zoom Guidelines

- Remote participants
 - Update your name and add your affiliation
 - Raise your hand if you have a comment or question
 - Unmute yourself and turn on video when you are speaking
 - Use the chat function if you have a comment, question, or technical issue
- In-person participants
 - Mute your microphone and the volume on your laptop
 - Turn off your camera
- We will record the meeting for note-taking purposes only

Introductions

- Name
- Affiliation
- How do you or your family cook fish?

Item 2: Project Background

The Water Board will provide background on why they are funding this project

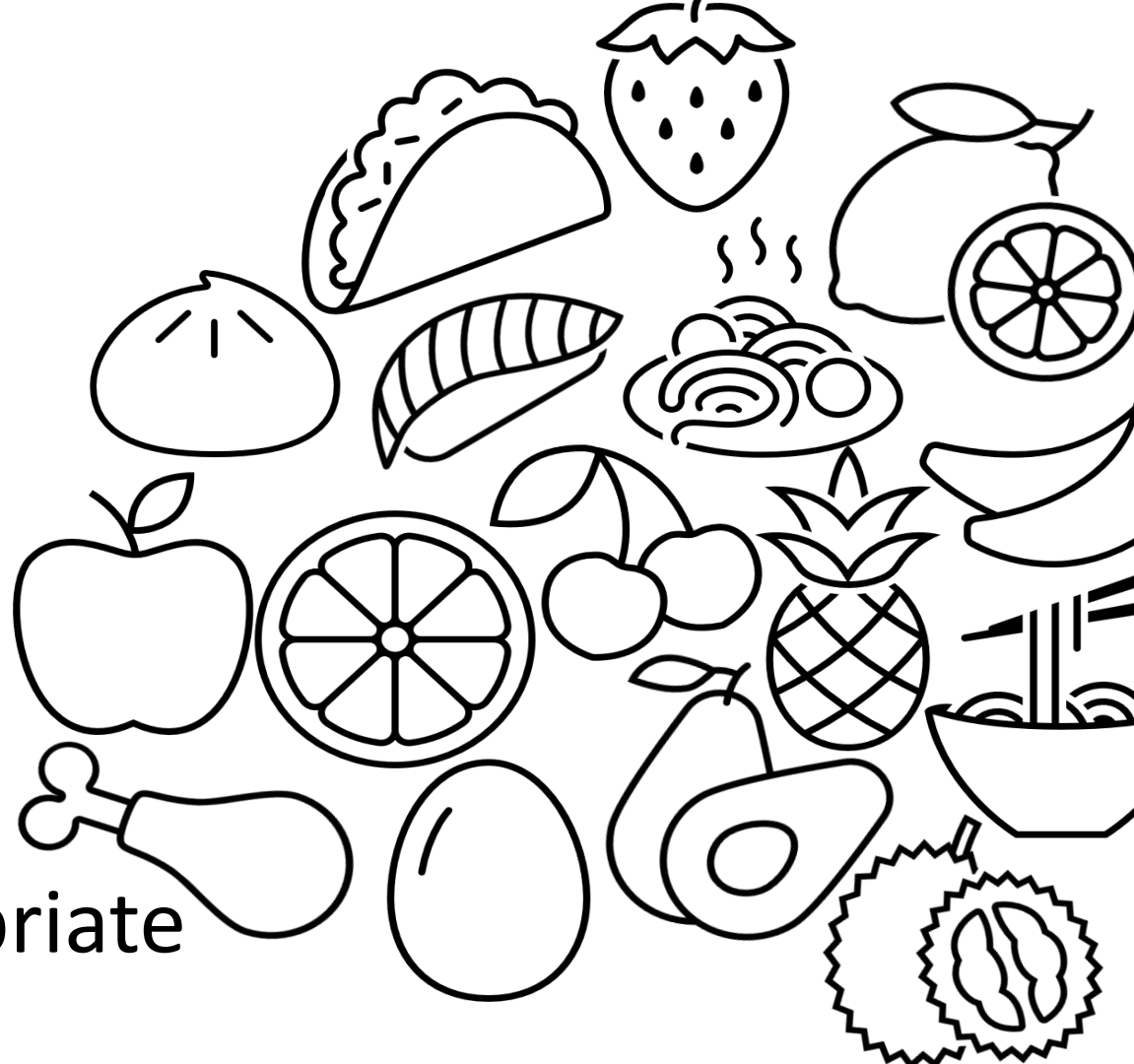
Desired outcome: Informed group



Item 2: Subsistence Fishing Background

Big Picture

Nutritious
Affordable
Culturally appropriate



Big Picture

Nutritious
Affordable
Culturally appropriate



Water Boards Mission and Responsibility

Regulate water quality

Environment

Public Health

Beneficial
Uses

Collect data on
a pollutant



Assess if
meeting
standards



Develop plan to
improve water
quality



Permit
discharges
and/or require
clean up

Water Boards Mission and Responsibility

Regulate water quality

Environment

Public Health

Beneficial
Uses

Water quality impacts...

Health of the
fish

Health of fish
consumers



Zooming in...

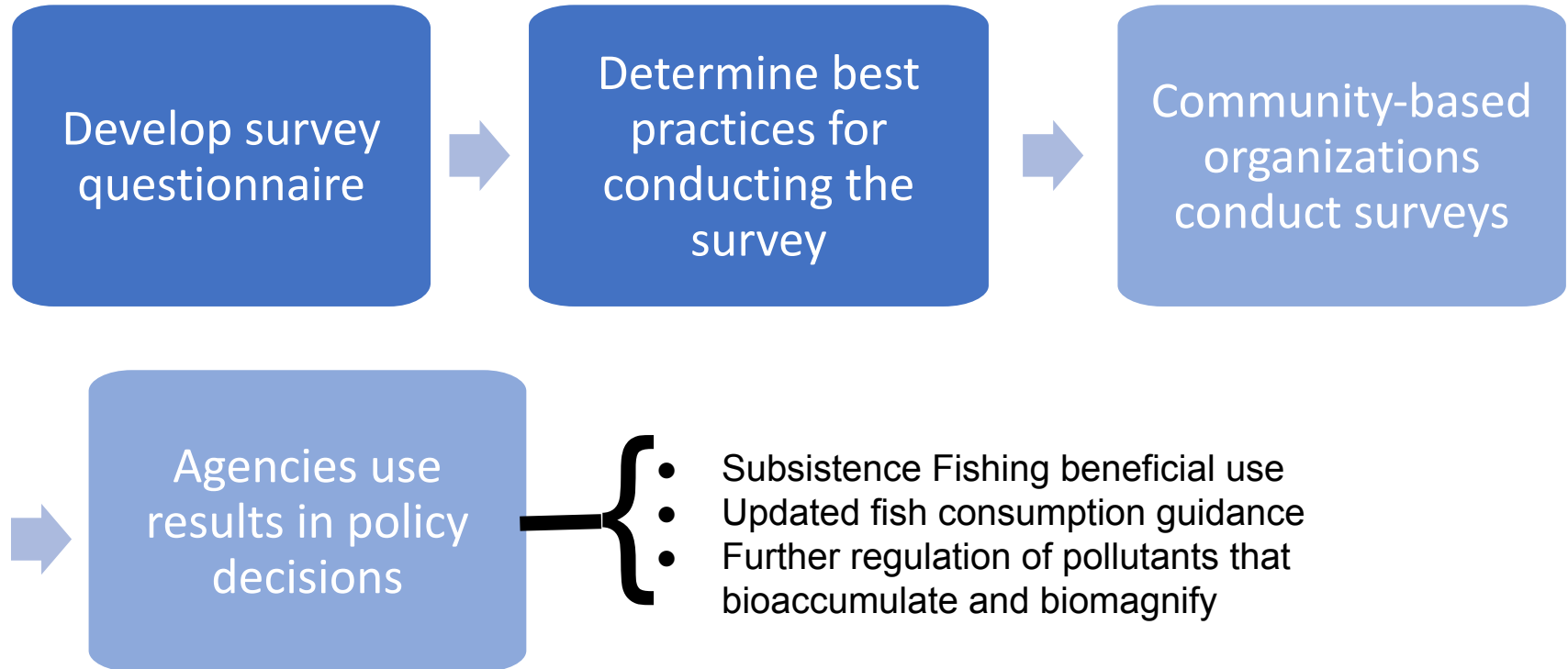
Project Title:

Development of a Subsistence Fishing Survey Questionnaire for the San Francisco Bay

Project Goal:

Better understand the subsistence fishing population, so they can safely consume fish and seafood

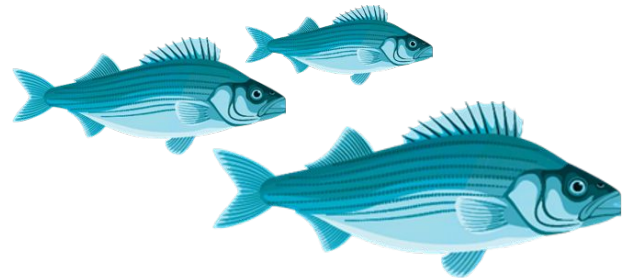
Project Outline



Commercial and Sport Fishing Beneficial Use

Definition: Uses of water for commercial or recreational collection of fish, shellfish, or other organisms, including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Description: To maintain fishing, the aquatic life habitats where fish reproduce and seek their food must be protected. Habitat protection is under descriptions of other beneficial uses.



Subsistence Fishing Beneficial Use

Uses of water involving the non-commercial catching or gathering of natural aquatic resources, including fish and shellfish, for consumption by individuals, households, or communities, to meet needs for sustenance.



Subsistence Fishing Water Quality Objectives

The fish consumption rate used to evaluate a subsistence fishing objective shall be derived from:

- Water body-specific data
 - Current focus on SF Bay
- Population-specific data
 - Rate of fish consumption
 - Form of fish consumption (e.g. whole, fillet with skin, skinless fillet)

What we know – the Science



1998-2001: Survey of SF Bay fishers

Most fishers ate 4 meals per year

Most “recent consumers” ate 2 meals per month

Is this true for subsistence fishers?



1997-Present: Regional Monitoring Program sport fishing data collection

Informs OEHHA SF Bay fish consumption health advisory



Challenges for eating any fish from the Bay (Mercury and PCBs)

Challenges for Eating Fish from the Bay:

Mercury

- Pollutant since at least the 1850s – the Gold Rush brought lots of mercury into the sediment of the SF Bay
- Even if we took away all known active sources...people still probably couldn't eat fish from the Bay very often because of Mercury in the sediment
- Mercury Regulation:
 - SF Bay Mercury TMDL
 - SF Bay mine cleanup program
 - Guadalupe River Watershed Mercury TMDL
 - Developing a region-wide mercury reservoir program for SF Bay 2024-2027

Challenges for Eating Fish from the Bay:

PCBs

- 1929 to 1979: Industrial chemical used in electrical equipment, pigments, caulk, paints, and many other applications
- Distributed in sediment across the Bay and difficult to remove completely
- Active sources may be easier to “turn off” than mercury
 - Could have a large impact on the PCB concentrations
- PCBs Regulation:
 - SF Bay PCB TMDL
 - Stormwater permit requirements
 - Site cleanup

What we don't know – the Community Expertise

- How are fish collected by your community?
 - Which species are preferred and caught? How much is caught? Where do they fish? When are people fishing? How to contact fishers?
- How big are the fish that are caught?
- How are fish prepared by your community?
- What parts of the fish are eaten?
- Who is eating the fish?
 - There are different advisories for women* of childbearing age and children

Partner Agencies

Agency	Role
Office of Environmental Health Hazard Assessment	Fish Consumption Advisories
California Department of Public Health	Monitoring accumulation of pollutants in humans
Local Health Departments	Public communication of risks

Goals for Today

1. Become acquainted with each other
2. ~~Inform the group on background~~ and overall plan for the project
3. Consensus on basic content of the questionnaire
4. Preliminary discussion of survey implementation
5. Inform the group on next steps

Item 3: General Plan for this Project

SFEI will provide an overview of the general goals, plan, and timeline for this project

Desired outcome: Informed group

Background on SFEI: Why Are We Leading this Project?

- SFEI leads the big water quality monitoring program for the Bay: the Regional Monitoring Program (RMP)
- The RMP has been monitoring Bay fish since 1997
- In 1998/99 the RMP funded a major Bay consumption survey - SFEI partnered with the Department of Public Health
- SFEI has strong expertise in fish monitoring and some experience with surveys and risk communication...
- But we are not authorities on doing surveys
- The Water Board had funds in a contract with SFEI that they wanted to apply to this issue
- \$50K - not enough for actually doing a survey - but enough for developing a questionnaire

Project Tasks Specified in the Contract

- Host a **first workshop** to design a questionnaire with WB, community representatives, and technical experts
- **Questionnaire** will be adapted from the previous Bay consumption study and other more recent surveys
- **Draft report** documenting the questionnaire and the rationale for the survey questions
- Host a **second public outreach workshop** to show community-based organizations and other interested parties how to use the questionnaire. This should include an example survey study design that discusses key elements such as timing, how to target locations, and the target number of surveys to provide a robust characterization of the population.
- **Final report**

After this Project

- Community organizations will use the questionnaire to conduct consumption surveys in communities around the Bay Area
- The timing for this is good - federal funding for Bay water quality studies has increased substantially and is likely to continue
- Understanding risks from contaminants in fish is an important topic - a central driver of water quality regulation

Project Timeline Specified in the Contract

Survey questionnaire development workshop	November 3, 2023
Draft survey questionnaire report	By March 8, 2024
Public outreach meeting	By May 31, 2024
Final report	By May 31, 2024

Item 4: Previous Consumption Surveys and Fish Monitoring

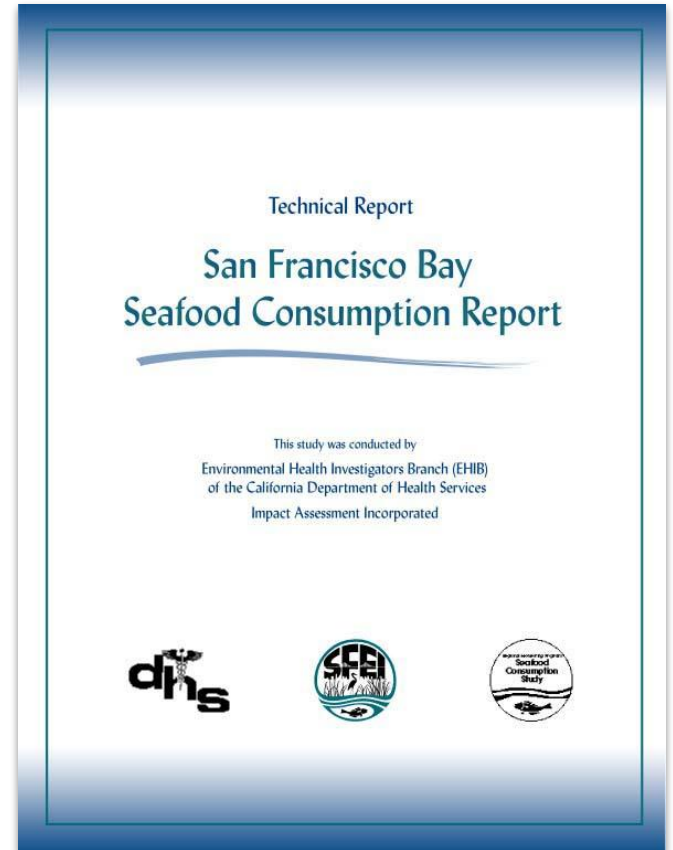
SFEI will provide a brief review of:

- 1) prior consumption surveys
- 2) Bay fish monitoring

Desired outcome: Informed group

The “2000” Bay Consumption Survey

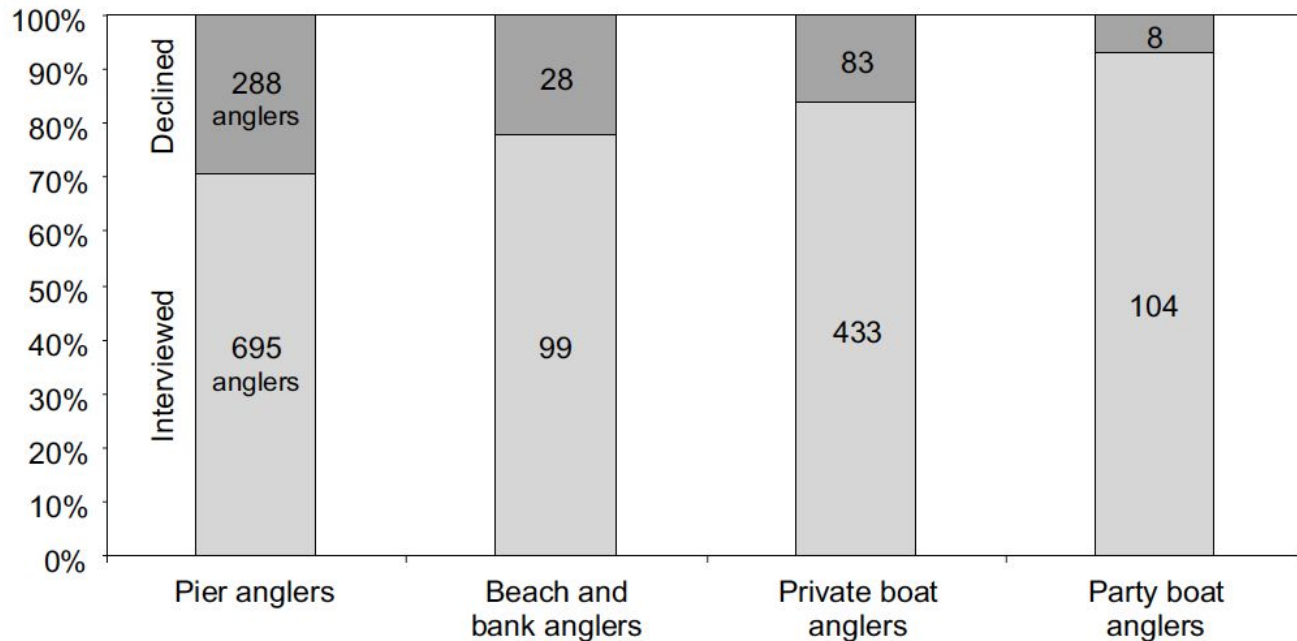
- BIG study: over 150 fishing site visits and approached over 1,700 Bay anglers
- Strong review process
- A great study
- Widely cited in California
- Good foundation for the present work
- **But** this survey was not focused on subsistence



Primary focus was on pier and boat based fishers

Figure 5

Proportion of interviews by fishing mode



Not adjusted for avidity bias.

When I talk about the San Francisco Bay, I mean this area here: (SHOW MAP). I will mainly be referring to fish and shellfish from the Bay. When I say shellfish, I am referring to crab, mussels, or clams.

Q3a. Is this the first time you have ever fished in the SF Bay?

Yes (SKIP TO Q5) DK Refuse

No **Q3b.** When was the last time you fished in the Bay? (m/y) / DK

Q4. Not including today, in the last 4 weeks, what is the total number of times you have gone fishing in the San Francisco Bay?

DK
 Refuse

Q5. What do you usually do (plan to do -FOR FIRST TIME FISHERS) with the fish or shellfish you catch from the SF Bay?

(CHECK ALL THAT APPLY)

Eat it Give it to family or friends Trade or sell it Use for bait Catch and release it DK Refuse

Other (specify)

For the next few questions, I am asking about eating fish that you or someone you know has caught from San Francisco Bay. This can be fish that's fresh, or fish from the Bay that you have frozen, dried, canned, or smoked after being caught to eat at a later time.

Q6a. Do you eat fish that you or someone you know catches from the SF Bay?

Yes DK Refuse

Used to, but don't anymore **Q6b.** stopped when:m/y / DK

No (SKIP TO Q10)

Q7. How many years have you been eating fish that you or someone you know has caught from the SF Bay?

Less than 1 year 6-10 years 21-30 years DK

1-5 years 11-20 years more than 30 years Refuse

Q8a. In the last 4 weeks, did you eat fish that you caught or someone you know caught from the SF Bay?

Yes DK

No (SKIP TO Q9) Refuse

2000 Study
questionnaire is a
good starting point

- Well thought-out
- Being able to compare now and then is a plus

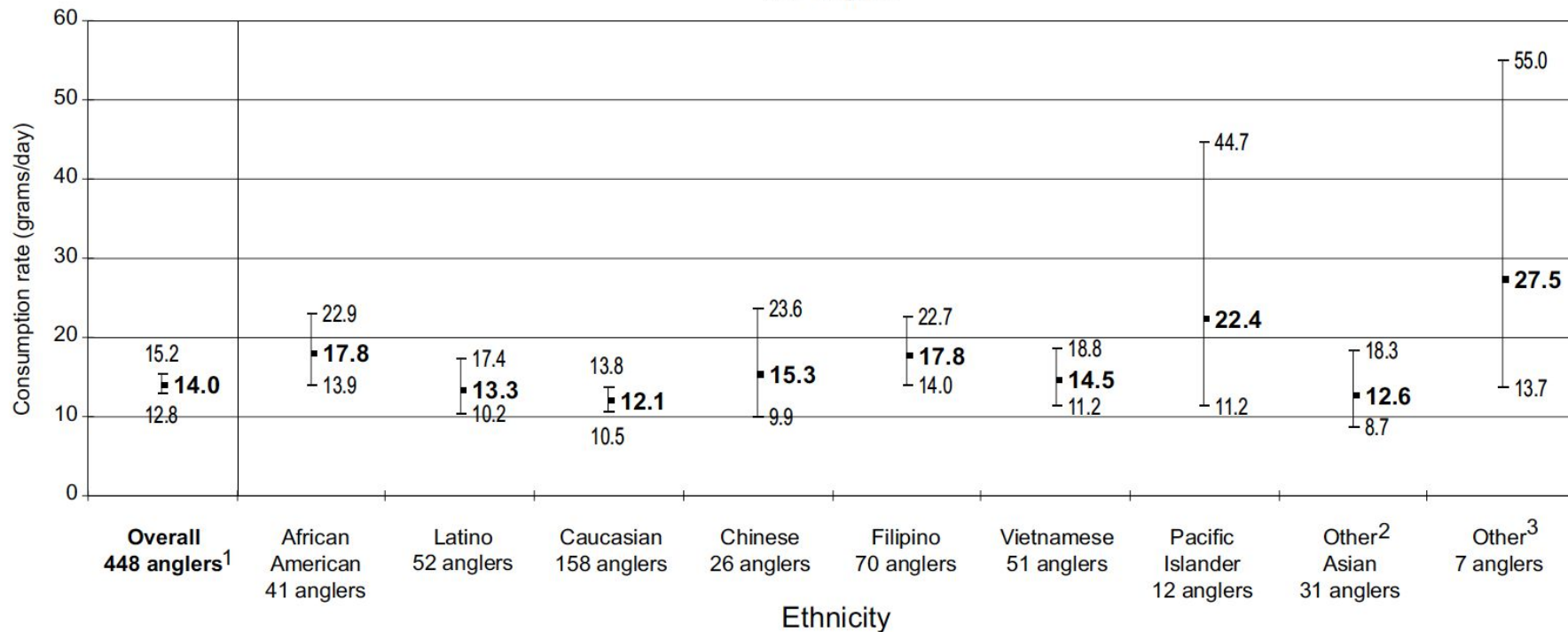


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Figure 27

Geometric mean consumption rate by ethnicity (including Asian subgroups) among recent consumers

448 anglers



Adjusted for avidity bias. Error bars represent 95% confidence intervals.

¹ "Overall" excludes 17 recent consumers with missing ethnicity data.

² "Other Asian" includes Korean, Japanese, Southeast Asian (other than Vietnamese), and individuals of mixed Asian or unspecified Asian ethnicity.

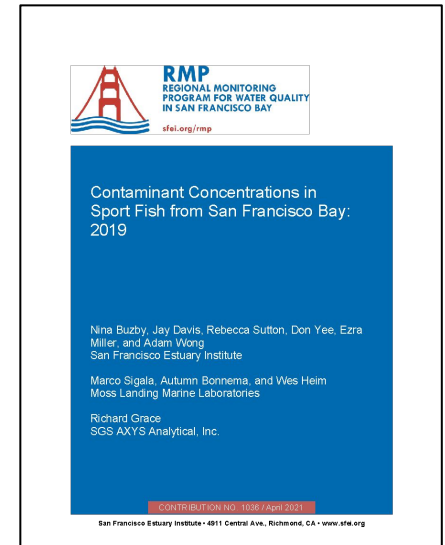
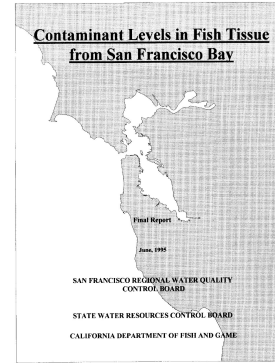
³ "Other" includes Russian, Middle Eastern, and individuals of unspecified mixed ethnicity.

Other Consumption Surveys

- APEN. 1998. A Seafood Consumption Survey of the Laotian Community of West Contra Costa County, California
- Sierra Fund. 2011. Gold Country Angler Survey
- Steinberg and Moore. 2017. San Diego Bay Fish Consumption Study
- CIEA. xx. Eating Fish Safely: Past, Present, and Future Survey in California
- DPH. xx. Asian/Pacific Islanders Community Exposures (ACE) Project

Bay Fish Monitoring Background

- 2019 was 8th round of Bay sport fish monitoring
- 5 year cycle - next round in 2024



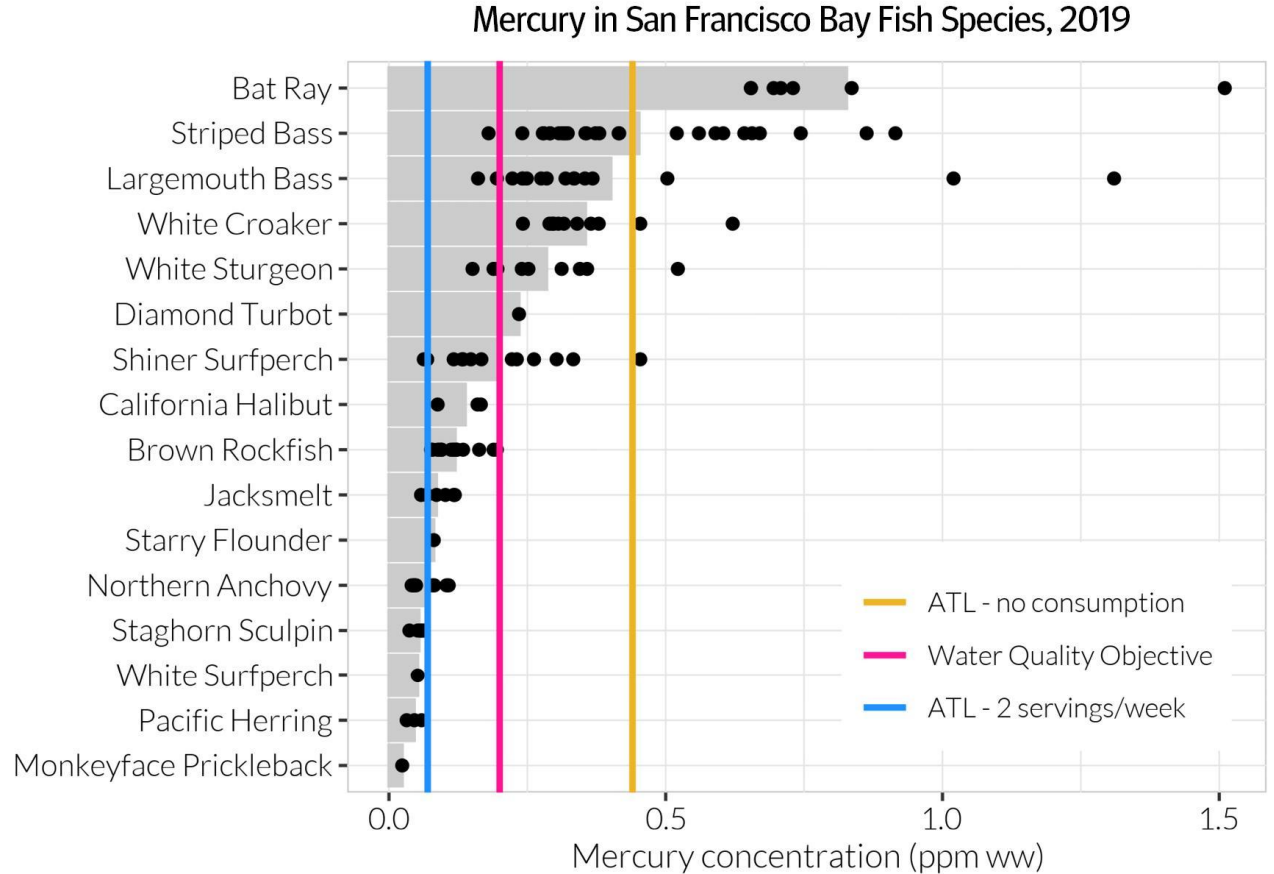
RMP Sampling Stations

- 13 stations
- Gaps remain



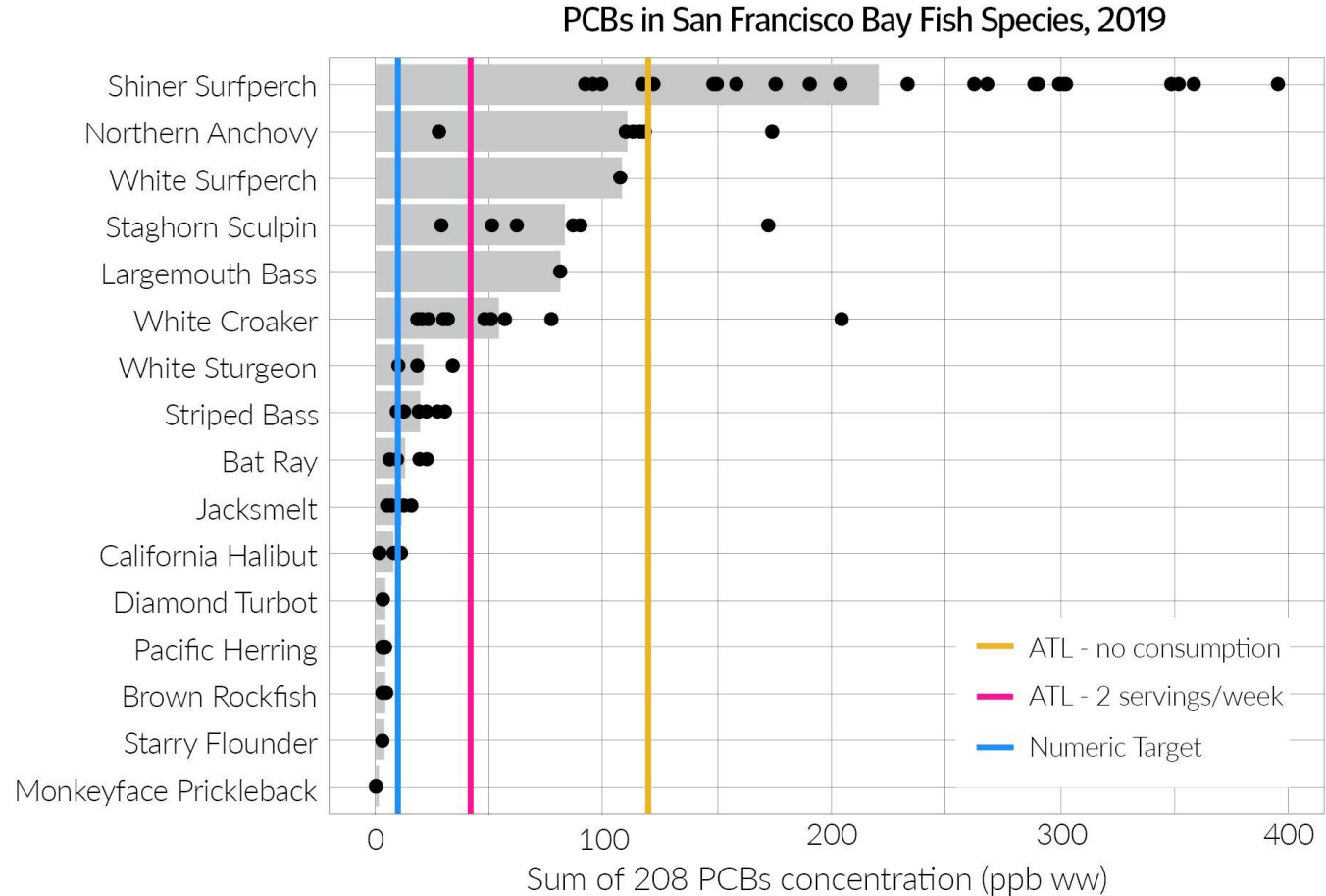
Mercury

- *Many species have average concentrations well above thresholds*
- *Striped bass concentrations haven't budged in 50 years*
- *Improvement will be slow due to regional nature of the problem*



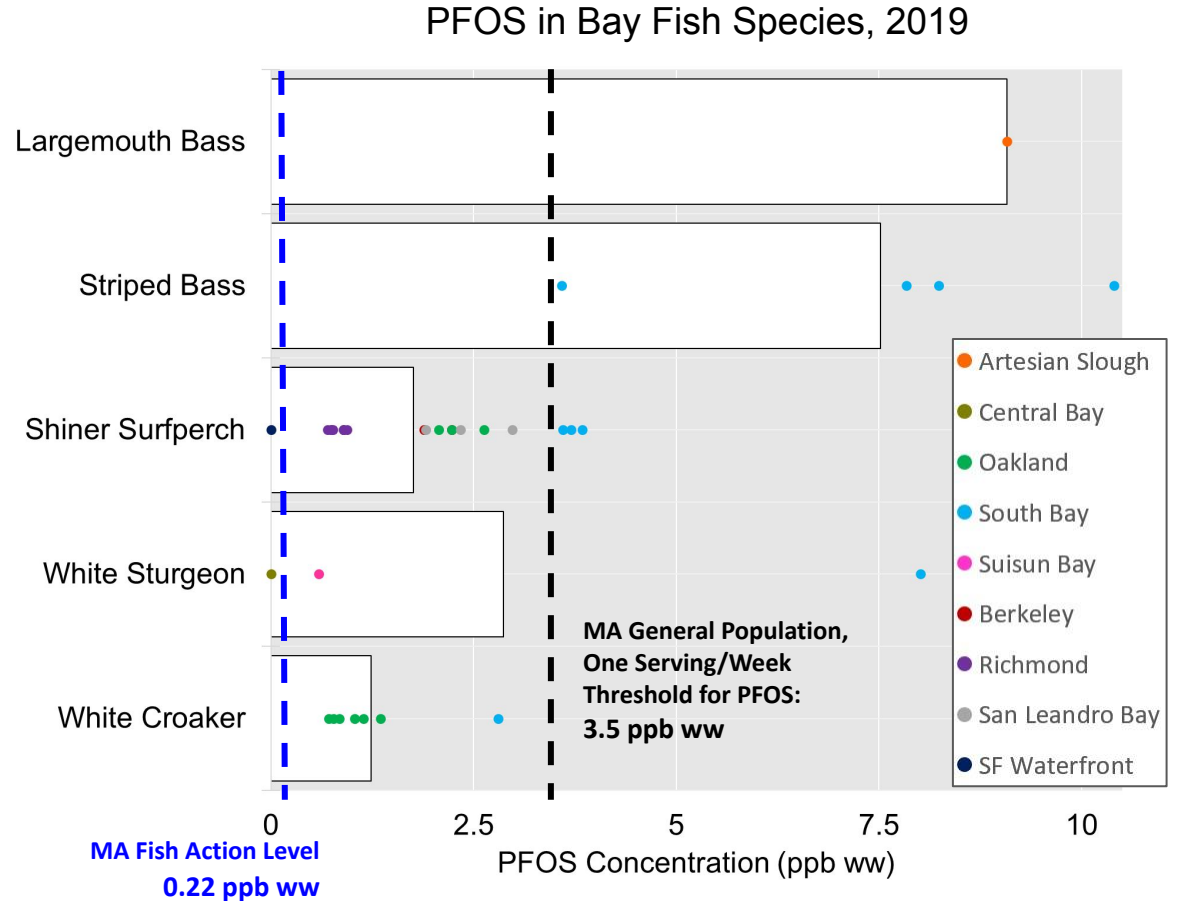
PCBs

- *Many species have average concentrations well above thresholds*



PFOS

- *One of the PFAS “forever chemicals”*
- *Relatively limited dataset*
- *Persisting over time at levels near or above thresholds established by other states*





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.



Brown rockfish



Chinook (King) Salmon

♥ high in omega-3s



Jacksmelt



Red rock crab



California halibut



White croaker



Sharks



White sturgeon



Surfperches



Striped Bass

Serving Size

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

For Adults



For Children



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

Eat only the skinless fillet



Eat only the meat





Women
(50+ Years)

Men
(18+ Years)

7 TOTAL SERVINGS A WEEK

OR

5 TOTAL SERVINGS A WEEK

OR

2 TOTAL SERVINGS A WEEK

OR

1 TOTAL SERVING A WEEK

0 DO NOT EAT



California Office of Environmental Health Hazard Assessment

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WOMEN 50 YEARS AND OLDER AND
MEN 18 YEARS AND OLDER

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.



Chinook (King) Salmon

♥ high in omega-3s



Brown rockfish



Red rock crab



California halibut



Striped Bass

♥ high in omega-3s



Jacksmelt



Sharks



White sturgeon



White croaker



Surfperches

Serving Size

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

For Adults



For Children



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

Eat only the skinless fillet



Eat only the meat



Item 5: Draft Questionnaire (Part 1)

SFEI will lead a discussion of the goals of the survey and the **list of questions to include in the survey** (not the details of each question)

Desired outcome: Inform the group and agree on the list of questions to include



Consumption Survey Goals

- Primary

- Generate the information needed by the Water Board to evaluate whether to designate a subsistence beneficial use for San Francisco Bay. Types of information needed include:
 - Fish: Species, size, location, parts eaten
 - Fishers: Consumption rate (meals per week, how much per meal), how many years of consumption, who is eating the fish (gender, age, ethnicity, income), preparation methods, reasons for fishing

- Secondary

- Assess awareness of risks, awareness of Bay advisory
- Possibly gather other information
- Raise awareness of the Bay advisory and health benefits of fish

Consumption Survey - General Items

- The goal is for CBOs to target fishers or other community members with the highest consumption rates and to have some knowledge of where they can be found, and to have a good chance of being able to engage with them.
- Will have a protocol for approaching people.
- Will have pre-coded answer boxes of all questions which we have established through prior experience and practice runs. Will give ranges for hard-to-estimate figures.
- Keep track of any “survey” data collected at meetings, and record separately, because the process of sampling is completely different.

Draft Survey Questions - Introductory Statement

Hello, my name is Martin. I am doing a survey for the [Community Group Name]. We are gathering information about how much fish and shellfish people catch and eat from San Francisco Bay. The survey will support efforts to promote safe consumption of Bay fish. I am not checking fishing licenses or checking your catch. Your answers will be kept confidential and you don't have to answer all the questions. You will also receive a small gift at the end of the survey (SHOW ITEM).

Draft Survey Questions - Introduction

1. May I talk to you for a few minutes?
2. Have you been interviewed before for this study?
3. Do you or others consume the fish you catch?
 - a. If no) What do you usually do with your catch? --> end of survey
 - b. If yes) If you couldn't eat fish from the Bay, how hard would it be for you to afford replacing that food with food bought from stores or restaurants? (choices: ranging from not hard to very hard)
 - c. If yes) Why do you eat fish from the Bay? (choices: to help make ends meet; prefer to eat fish I catch myself; family or cultural tradition; enjoy fishing; other)
4. Not including today, in the last 4 weeks, what is the total number of times you have (alternative: how many days have you) gone fishing in the Bay?
5. Why do you go fishing on the Bay? (open-ended with post-hoc categorization)

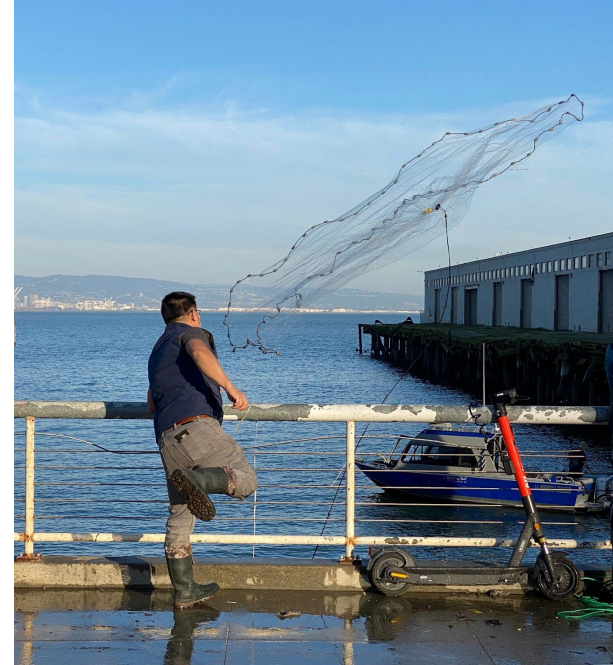
Draft Survey Questions - Consumption

6) Do you eat fish that you or someone you know catches from the Bay?

7) How many years have you been eating fish that you or someone you know has caught from the Bay?

8) In the last 4 weeks, how many times did you eat fish that you or someone you know caught from the Bay?

9) This is a model of 8 ounces (half pound) of raw fish fillet [SHOW MODEL]. When you eat a meal that includes fish from the Bay, is the amount that you eat: about this size, more, less



Draft Survey Questions - Species

10a) I have some pictures of fish that can be caught from the Bay [USE THE ADVISORY POSTER]. Looking at these pictures, please show me which fish you have eaten in the last 4 weeks. Again, these are the fish you ate in the last 4 weeks which you caught or someone you know caught from the Bay. The fish could have been fresh, frozen, dried, canned or smoked.

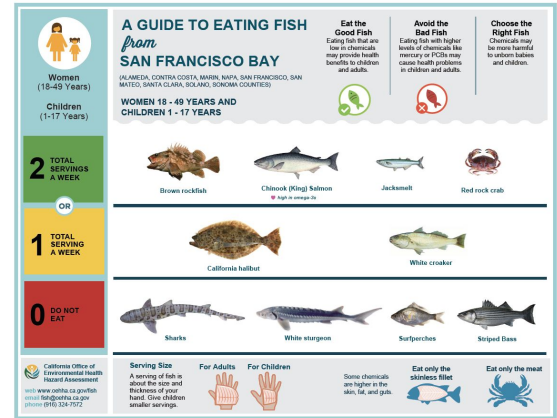
10b) How many times have you eaten this fish in the last 4 weeks?

10c) What do you call this?

10d) What is the approximate length in inches of the fish of this species that you eat?

10e) Which parts of this species do you eat?

10f) How do you prepare and cook this species?



Draft Survey Questions - Species Cont.

10g) Are there any other fish from the Bay that you or someone you know catches that you ate in the last 4 weeks for which I don't have pictures?

10h) How many times have you eaten this fish in the last 4 weeks?

10i) What do you call this?

10j) What is the approximate length in inches of the fish of this species that you eat?

10k) Which parts of this species do you eat?

10l) How do you prepare and cook this species?

Item 6: Break

Item 7: Draft Questionnaire (Part 2)

SFEI will lead a discussion of the goals of the survey and the questions to include in the survey

Desired outcome: Inform the group and obtain input



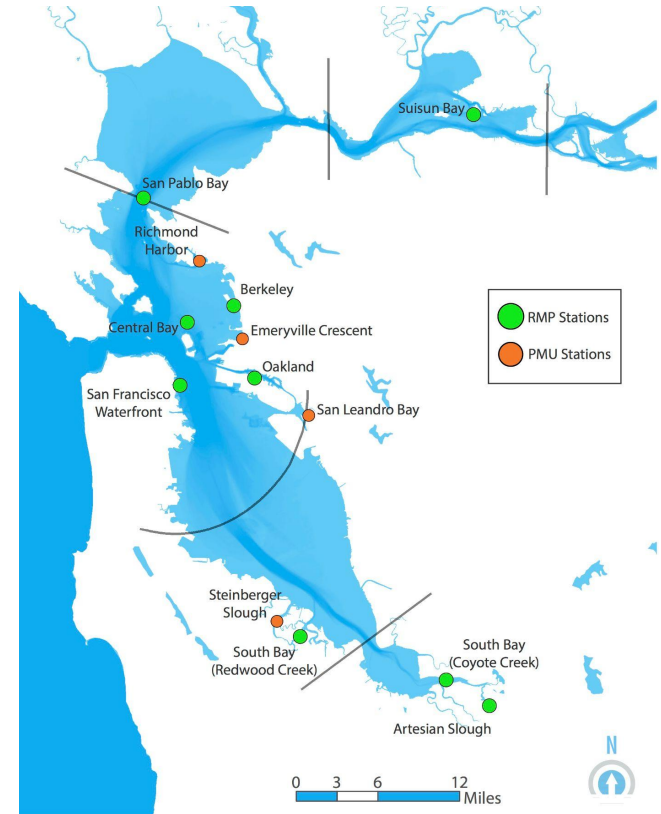
Draft Survey Questions - Locations

11) How often do you fish at this location?

12) At what Bay location do you fish the most?
How often do you go there?

13) Second most? How often do you go there?

14) Third most? How often do you go there?



Draft Survey Questions - Information on Household Members and Others Who Consume the Fish

15) Who in your household eats the fish that you or someone you know catches from the Bay? (check all that apply: yourself, women age 18-45, etc.)

15a) Do the women aged 18-45 eat similar amounts of Bay fish as you? If not, how is their consumption different?

15b) Do the children aged 1-17 years in your household eat similar amounts of Bay fish as you? If not, how is their consumption different?

16) How many people altogether, including yourself, are in your household?



Draft Survey Questions - Information on Household Members and Others Who Consume the Fish

17) Who in your household usually cooks or prepares the fish you catch and eat from the Bay? (check all that apply: yourself, family member [specify], etc.)

18) Who outside of your household eats the fish that you or someone you know catches from the Bay? (check all that apply: yourself, women age 18-45, etc.)

18a) Do the women aged 18-45 eat similar amounts of Bay fish as you? If not, how is their consumption different?

18b) Do the children aged 1-17 years in your household eat similar amounts of Bay fish as you? If not, how is their consumption different?



Draft Survey Questions - Risk Communication

19) Have you heard or seen any information or health advisories about the pros and cons of eating fish from the Bay?

What did the information say about fish from the Bay?

20) Has the information you have heard or seen about eating fish from the Bay caused you to change your fish eating habits?

20a) If yes, how have you changed your fish eating habits? If no, why not?

21) What is the best way for you to get information about catching and eating fish from the Bay? (check all that apply: friend/family, sign, fishing regulations, etc.)



Draft Survey Questions - Fisher Characteristics

- 22) What is your racial or ethnic background?
- 23) What year were you born?
- 24) What is the highest grade in school you have completed?
- 25a) Is your total yearly household income greater than \$XX,000 per year?
- 25b) greater than \$XX,000?
- 26) Gender of respondent
- 27) Where do you live? What is your zipcode?



Some Questions for Discussion

- Should we do pilot testing of the questionnaire with focus groups? If yes, how should we do it (a second workshop)?
- Should we also include questions regarding species consumed over the past year (species availability may vary seasonally)? What is the best recall period to use for the purposes of this study? 4 weeks for consistency with 2000?
- Do we want to gather information on fishing mode? shoreside structure [no license required], shoreline, private boat, charter boat
- Do we focus on interviewee's consumption of Bay-caught seafood v. consumption of seafood that angler catches from the Bay and consumes? SFEI suggestion: the former
- Include a separate section of questions on product forms consumed? (fresh, frozen, dried, canned or smoked)

Item 8: Preliminary Discussion of Survey Implementation

SFEI will lead a preliminary discussion of plans and considerations for implementation of the survey

Desired outcome: Inform the group and obtain input

Survey Implementation Considerations

- Paid core training for surveyors
- Languages
- Build in flexibility
- Community-specific introductions - be a human being in conversation - ask a fishing question
- Type of survey to reach subsistence fishers? People actively fishing (intercept survey)? People at community meetings? Written survey? All of the above?
- Type of incentive gift? Safeway gift card? Cash? Yes - should be fairly compensated
- How long should the survey be? 15 minutes? 20 minutes max?
- How should the responses be captured? Use tablet or phones with an app?
- Can/should we avoid the phrase “subsistence fishing” during the survey, and instead use the collected data to determine subsistence?
- Who provides the fillet model?
- Wear t-shirts
- How to fold different types of data together into one dataset? From different survey modes
- Sample sizes needed
- Survey metadata

Item 9: Next Steps

SFEI will review the timeline for the rest of the project

Desired outcome: Informed group

Next Steps

Additional feedback on the list of questions	Deadline November 10
Followup email to ask for groups for pre-testing	
Find funding for the pre-testing	
Focus group testing?	By Meeting #2
Meeting #2	Early January?
Draft survey questionnaire report	February 28, 2024
Public outreach meeting: focus on implementation guidance, connecting CBOs to funding	Early May, 2024
Final report	By May 31, 2024

Item 10: Feedback on Today's Workshop

Led by the Facilitator

Desired outcome: Obtain feedback on the Workshop from Workshop participants

Implementation of Survey

Second meeting

Connecting folks to funding

Instructing on how to collect usable information