

WRMP Program Updates and SFBRA Performance Metrics October 20, 2023

SF ESTUARY
Wetlands
Regional
Monitoring
Program



Talk Outline



- ❖ Program background and implementation updates
 - *Caitlin Crain, SFEI*
- ❖ Indicator Alignment and SFBRA Performance Measures
 - *April Robinson, SFEI*
- ❖ Potential Equity Metrics from the People & Wetlands Workgroup
 - *Alex Thomsen, SFEP*





WRMP Goals and Approach

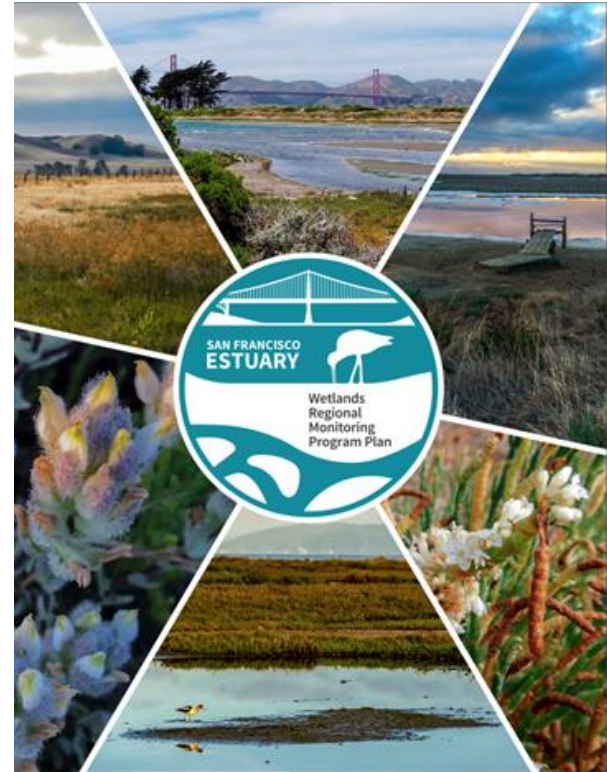
Deliver coordinated regional monitoring to improve efficiency of regulatory monitoring and inform restoration planning and adaptive management of San Francisco Estuary wetlands.

- Monitoring site network
- Open data sharing platform
- Comprehensive science framework to guide monitoring
- Communicate findings to a wide range of end users

Maintain an inclusive, collaborative, transparent process

Wetlands Regional Monitoring Program (WRMP)

- Program staffed by San Francisco Estuary Partnership and San Francisco Estuary Institute
- Convenes the region's stakeholders to develop a regional monitoring plan for wetlands
- Informs decision making around wetland restoration through collaborative approach to wetlands monitoring



Why Regional Monitoring?

- Tracks large-scale, regional change
- Fills critical information gaps
- Informs, optimizes, and can potentially alleviate project-specific monitoring
- Improves wetland restoration project design and success
- Centralizes data management and reporting

WRMP Program Development and Implementation

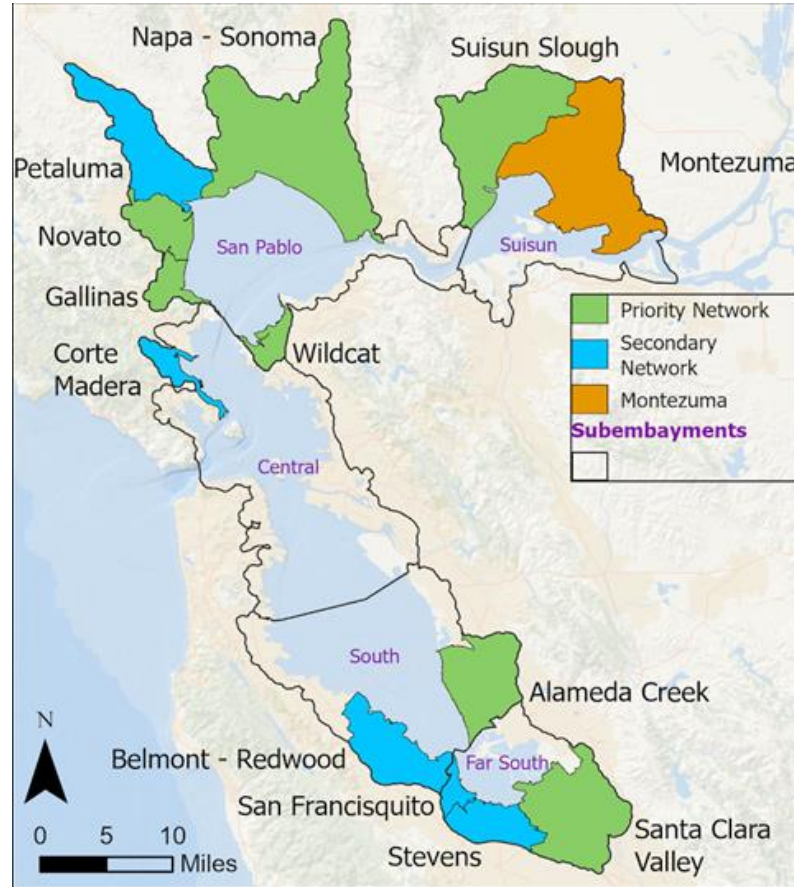
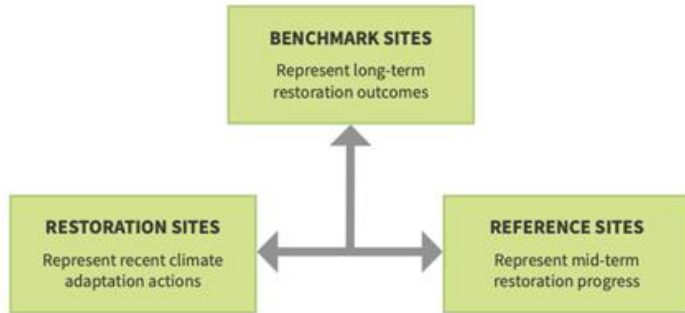
Timeline of Phases

Phase 1	Phase 2	Phase 3
2016-2019	2019-2022	3 Years
<p>Program Development</p> <ul style="list-style-type: none">• Program Administration• Governance• Science Framework• Outreach <p>Funding: USEPA and in-kind</p>	<p>Program Development</p> <ul style="list-style-type: none">• Program Administration• Governance• Science Implementation• Data Management• Outreach	<p>Program Development and Implementation</p> <ul style="list-style-type: none">• Program Administration• Operationalize Monitoring Site Network• Align Performance Measures and WRMP Indicators• Regulatory Coordination• CBO Engagement• Outreach and Training <p>Funding: USEPA, SFBRA, in-kind, other</p>

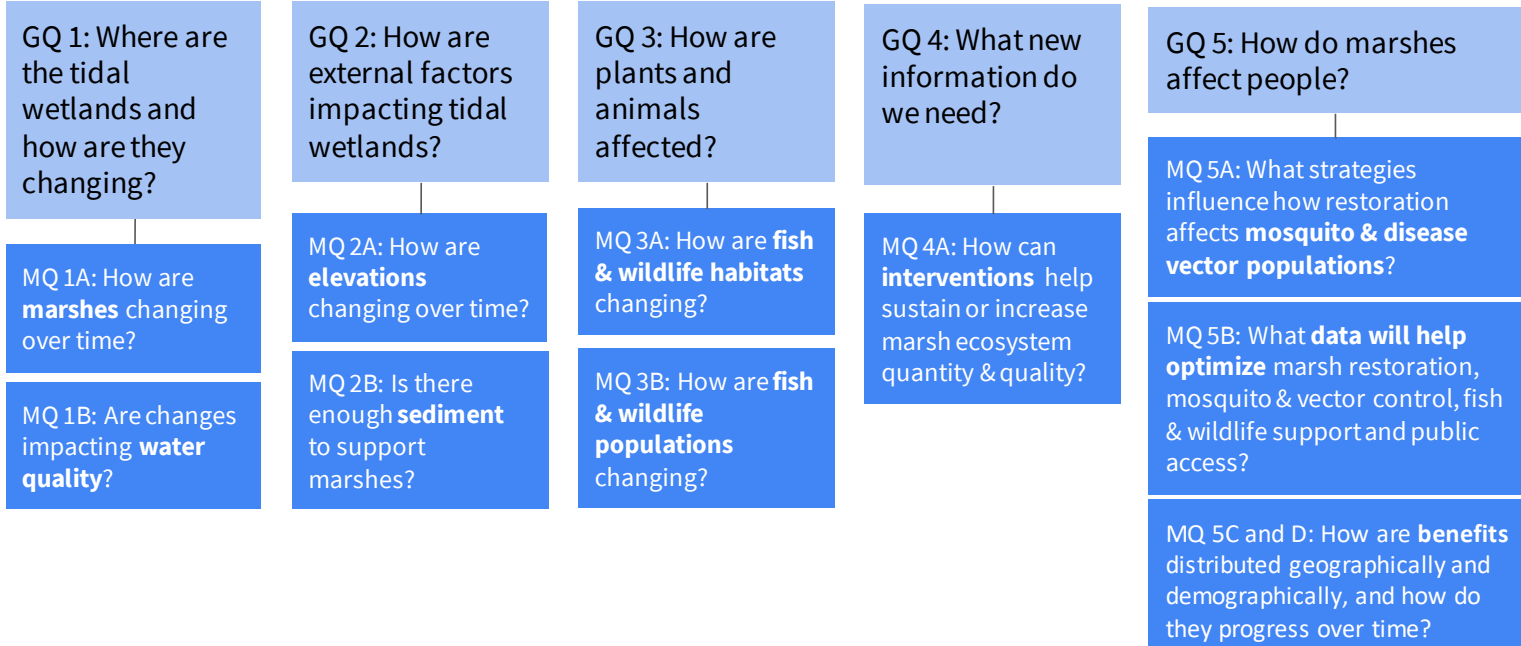
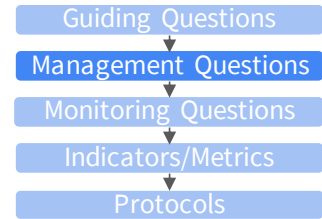
Progress Towards Program Implementation:

- Proposed WRMP Priority Monitoring Site Network
- Workgroups to develop Standard Monitoring Procedures for Indicators
 - Geospatial (Habitat Mapping)
 - Vegetation
 - Hydrogeomorphic (Physical properties such as water level, sediment, elevation)
 - Fish and Fish Habitats
- Approval of Near-term Monitoring Priorities
- Regional Monitoring Plan in progress
- Indicator Alignment
- Regulatory Engagement
- Equity and Engagement strategy development

WRMP Priority Monitoring Site Network



WRMP Monitoring Guidance and Management Questions



Near-term Monitoring Priorities

1. Landmark Baylands Change Basemap and Analyses of Wetland Characteristics
 - where are the regions wetlands (GQ1, MQ1)
 - restoration progress
1. California Rapid Assessment Method (CRAM)
 - what is the condition of the wetlands (GQ1, MQ1)
1. Regional network of Sediment Elevation Table (SETs)
 - are marshes keeping pace with sea-level rise (GQ2, MQ2A & B)

Indicator Alignment and SFBRA Performance Measures

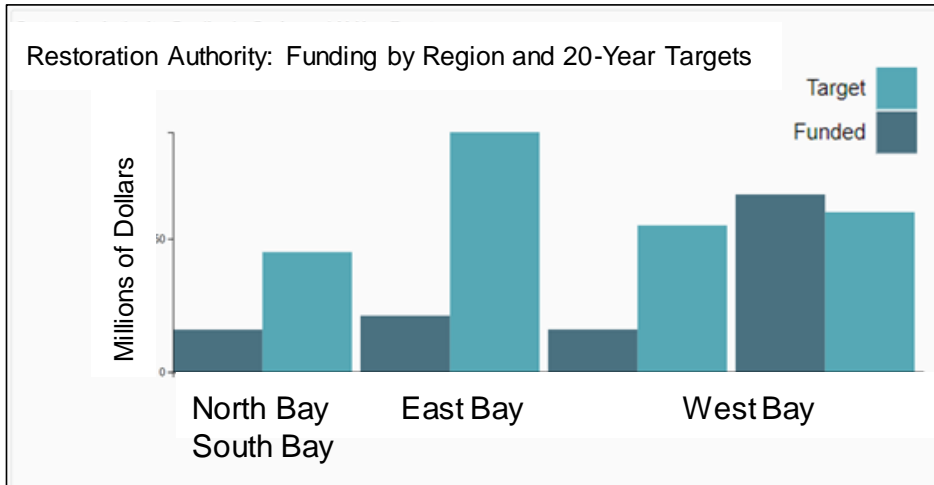
April Robinson, SFEI



SFBRA Performance Measures

- How are SFBRA sites functioning?
- How do they contribute to regional progress?
- How do we align with WRMP indicators to leverage planned near-term monitoring?

Current SFBRA Performance Measures



- Funding Authorized vs Requested
- Funding by Region and 20-Year Targets
- Funding by County
- Measure AA Campaign Goals Progress
- Habitat Types
- Community Engagement

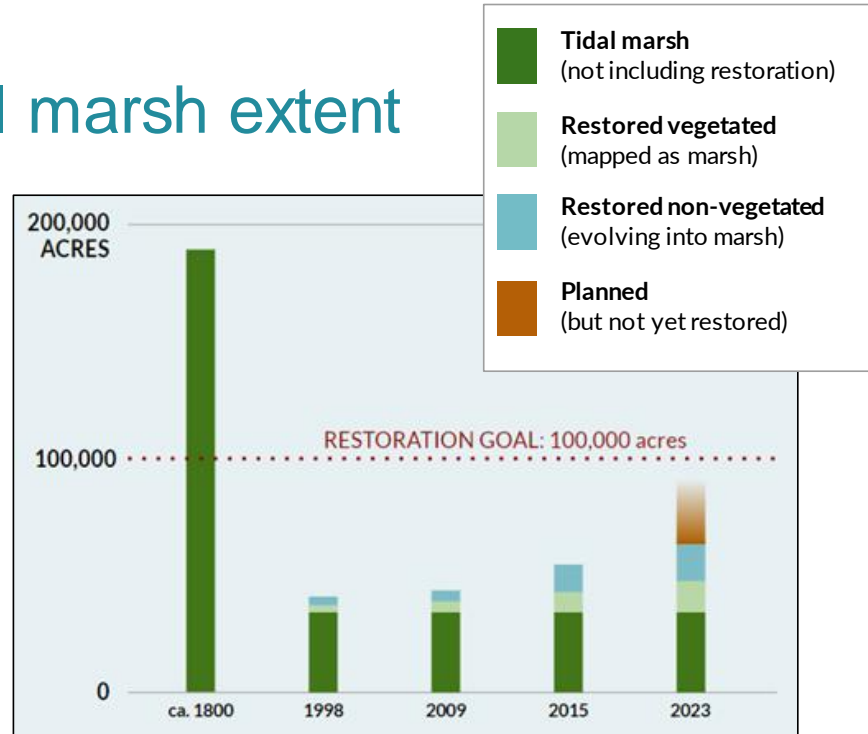
Proposed Additional Performance Measures

- **Baylands Change Basemap (BCB) metrics** will show the impact of restoration projects regionally
- **California Rapid Assessment Method (CRAM)** will show how healthy restored wetlands are
- *Future Metrics TBD*

BCB: Vegetated tidal marsh extent

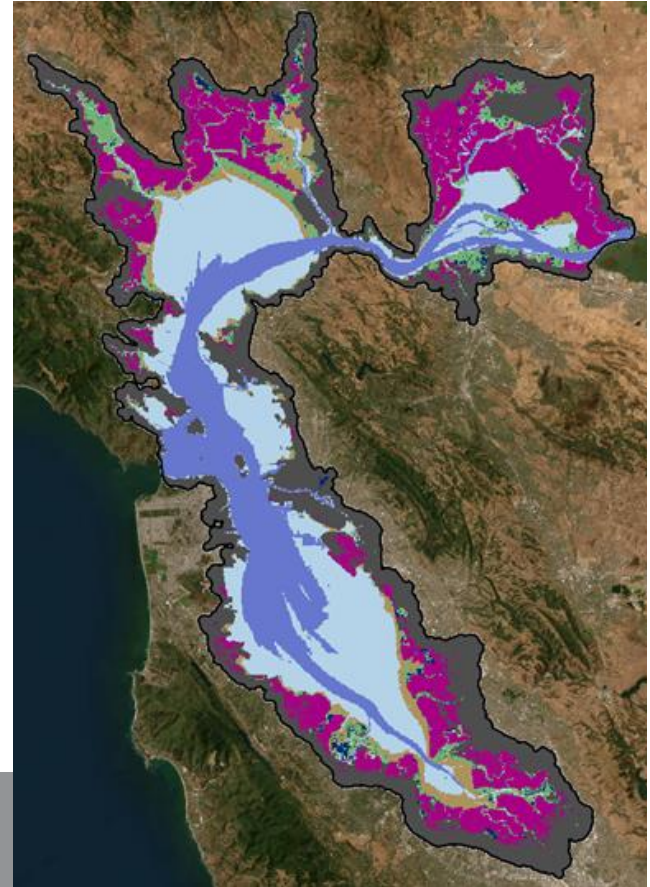
Metric would show:

- Overall: How projects have changed the amount of baylands habitat in the region
- SFBRA: How SFBRA funded projects contribute to regional goals

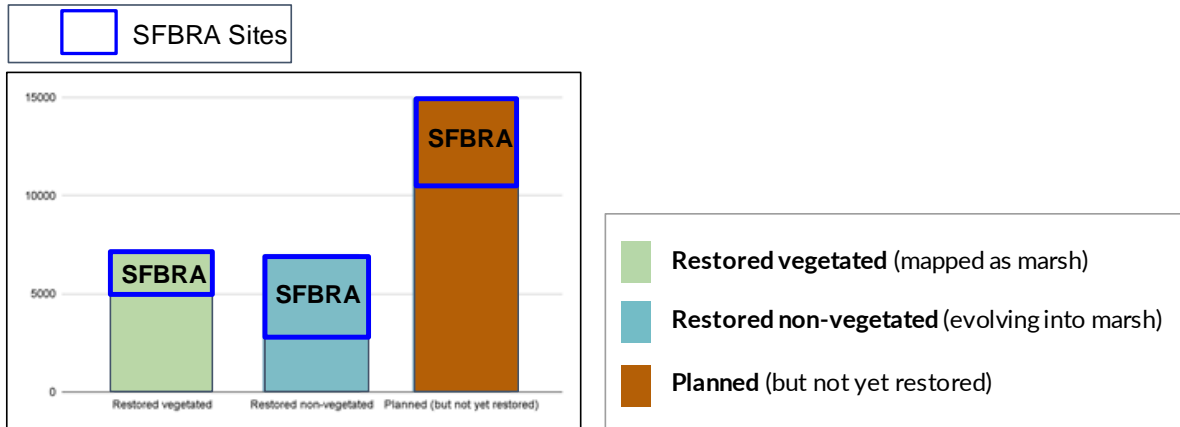


Baylands Change Basemap (BCB)

- Updated map to be completed Winter 2023-24
 - Uses machine learning
 - Map based metrics under development to analyze BCB
- BCB Metrics:
 - Vegetated Tidal Marsh Extent
 - Marsh Patch Configuration



BCB: Tidal marsh extent in SFBRA Projects

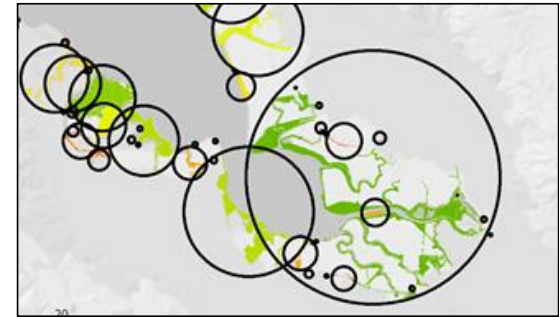
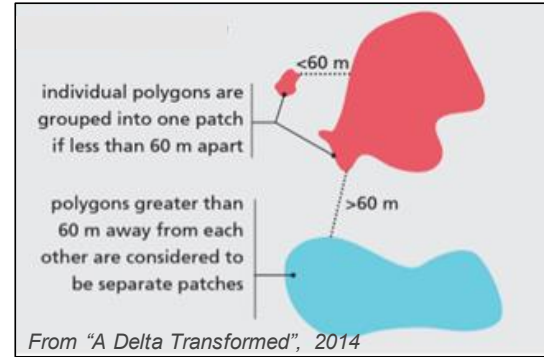


Mocked up numbers for demonstration purposes only

BCB: Marsh Patch Configuration

Metrics would show:

- Increased support for wildlife (through larger, more complex, more connected marsh habitat patches)
- SFBRA funded projects contribute to that increased support

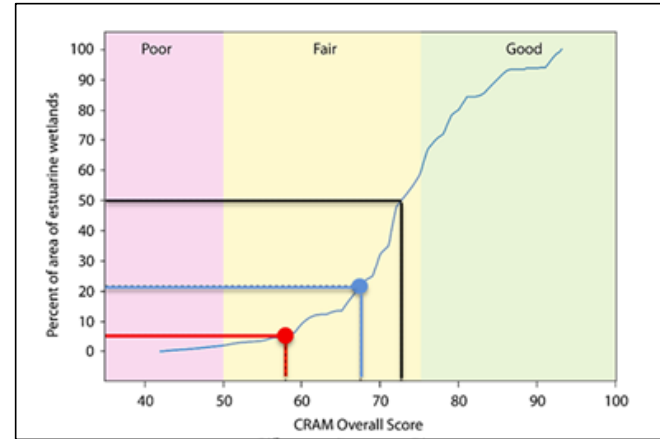


California Rapid Assessment Method (CRAM)

CRAM is a rapid field based assessment of overall wetland condition

Metric would show:

- How successful projects are in restoring high quality habitat that supports a wide range of functions
- How successful SFBRA sites are in restoring high quality habitat



CRAM scores for project sites can easily be compared to regional scores

Future Indicator Alignment

- Other WRMP indicators may be considered as performance measures in the future
- Also working to align WRMP indicators with other regional efforts (e.g., State of the Estuary Report, Baylands Goals Project)
- WRMP indicators that don't directly align with SFBRA Performance Measure still support SFBRA goals

Potential Equity Metrics from the People & Wetlands Workgroup

Alex Thomsen, SFEP





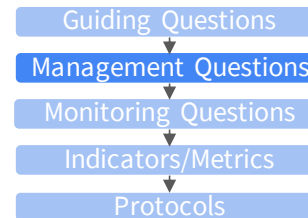
People & Wetlands Workgroup: Objectives & Timeline

Develop ways to monitor key benefits of wetlands to people

- Emphasize community and Tribal values
- Align with information needs of decision-makers
- Enable evaluation of equity questions, and
- Incorporate diverse ways of understanding wetland health

Timeline: Fall 2022 – Spring 2024

Monitoring Guidance and Management Questions



GQ 1: Where are the tidal wetlands and how are they changing?

MQ 1A: How are **marshes** changing over time?

MQ 1B: Are changes impacting **water quality**?

GQ 2: How are external factors impacting tidal wetlands?

MQ 2A: How are **elevations** changing over time?

MQ 2B: Is there enough **sediment** to support marshes?

GQ 3: How are plants and animals affected?

MQ 3A: How are **fish & wildlife habitats** changing?

MQ 3B: How are **fish & wildlife populations** changing?

GQ 4: What new information do we need?

MQ 4A: How can **interventions** help sustain or increase marsh ecosystem quantity & quality?

GQ 5: How do marshes affect people?

MQ 5A: What strategies influence how restoration affects **mosquito & disease vector populations**?

MQ 5B: What **data will help optimize** marsh restoration, mosquito & vector control, fish & wildlife support and public access?

MQ 5C and D: How are **benefits** distributed geographically and demographically, and how do they progress over time?

People & Wetlands Workgroup

Expertise in:

- Social science/human dimensions,
- Environmental justice & community priorities,
- Wetland adaptive management,
- Regulatory agencies,
- Tribal engagement/traditional knowledge integration

★ SFBRA Advisory Committee members and staff

	Name	Affiliation
WRMP staff / science coordination	Alex Thomsen (WRMP staff lead), Sasha Harris-Lovett, Taylor Pantiga, Karen Verpeet	WRMP staff, SFEP and SFEI
	Caitlin Crain, Donna Ball, Christina Toms	WRMP science leads, SFEI and SF Bay Regional Water Quality Control Board
	Tony Hale, Cristina Grosso	WRMP data management leads, SFEI
Workgroup members	Keta Price (co-facilitator) ★	Hood Planning Group
	Denise Walker (co-facilitator)	SFEI
	Ben Botkin	SFEP
	Camille Antinori	SF State University
	Cory Copeland, Lita Brydie	Bay Conservation & Development Commission
	Devani Santos ★	Shoreline Leadership Academy
	Erica Johnson ★	State Coastal Conservancy/SF Bay Restoration Authority
	Erika Castillo	Alameda County Mosquito Abatement District
	Jessie Olson, Jesse McKeen-Scott	Save the Bay
	Maria Katticaran ★	Shoreline Leadership Academy
	Matt Ferner	SF Bay NERR
	Morgan Chow, Xoco Shinbrot	Delta Science Program
	Nadine Heck	East Carolina University
	Selena Pang	SFEI
	Shalini Kannan	State Coastal Conservancy/South Bay Salt Pond Restoration Project
	Shy Walker	Shoreline Leadership Academy; Ninth Root
Sid Narayan	East Carolina University	
Stephanie Bergman	US Army Corps of Engineers	



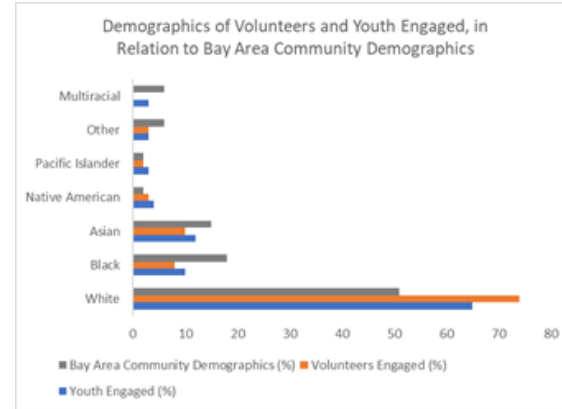
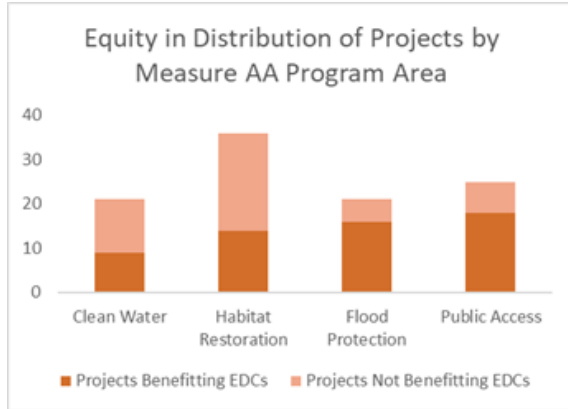
Major Areas of Interest

- Shoreline (flood) protection
- Water quality
- Inclusive access
- Community involvement in stewardship
- Knowledge production & transmission (e.g. education)



*Images: Shira Bezael
(top), SFEF photo library
(right, bottom)*

Example Products & Metrics (mockup data)



Thank you!

Questions?

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April Robinson, SF Estuary Institute - april@sfei.org

Alex Thomsen, SF Estuary Partnership - alexandra.thomsen@sfestuary.org

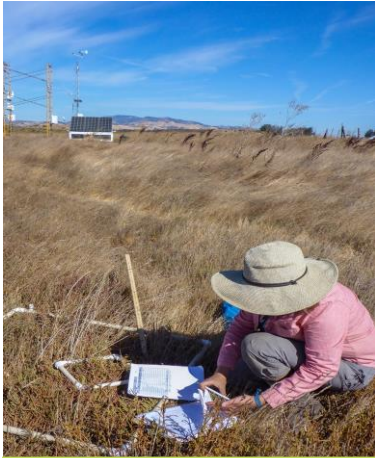
Sasha Harris-Lovett, SF Estuary Partnership - sasha.harris-lovett@sfestuary.org





China Camp Marsh. Photo - Michael Vasey

Wetlands Regional Monitoring Program (WRMP) 2023 Update



Vegetation monitoring at Rush Ranch Flux Tower. Photo - Anna Deck

What is the WRMP?

The San Francisco Estuary restoration community is working rapidly to protect and restore wetlands that can provide flood protection, recreation, water quality improvement, habitat, and other benefits for surrounding communities. The Wetlands Regional Monitoring Program (WRMP) will collect, synthesize, and communicate regional

data to inform stewardship and adaptive management for conserving, restoring, and enhancing the San Francisco Bay's wetlands.

Once in place, the WRMP will be a robust, science-driven, and collaborative regional monitoring program that includes:

- Monitoring site network
- Open data sharing platform
- Comprehensive science framework to guide monitoring.

The WRMP supports the health, diversity, and resilience of tidal wetlands in the San Francisco Estuary by informing science-based management actions that enable wetlands to adapt and evolve into the future while providing essential ecosystem services and equitable benefits to communities.

The WRMP is led by a diverse Steering Committee and supported by a Technical Advisory Committee. The WRMP Plan and Program Charter provide the foundation for this program. The WRMP is staffed through a co-management partnership between the SF Estuary Institute and SF Estuary Partnership.

Why do we need it?

Tidal wetlands in the San Francisco Estuary are threatened by climate change, continued development pressure, and other drivers of change. Accelerating sea level rise and decreased sediment supplies threaten to drown and erode existing tidal wetlands and undo restoration progress that has been made to date. Currently, there is a lack of standardized, coordinated, and shared monitoring for tidal wetlands. Coordinated monitoring can inform the science needed for effective decisions about wetland restoration and stewardship, and provide information to efficiently guide wetland projects to protect shoreline communities from disasters such as sea level rise. Having a cohesive regional monitoring system can aid in reducing this flooding risk, provide habitat for wildlife, and create access to recreation. The WRMP's coordinated, regional monitoring data will inform decision-making about effectively responding and adapting to these challenges and help support a more resilient Estuary.

What can I expect from the WRMP this year?

- Developing a baseline habitat map of conditions of tidal wetlands throughout the region
- Developing a monitoring plan
- Continuing workgroup activities and developing Standard Operating Procedures (SOPs) focused on hydrogeomorphology, vegetation, indicators of how wetlands benefit humans, and birds; the SOPs provide detailed instructions for standardized data collection
- Aligning WRMP's work with that of the San Francisco Bay Restoration Authority, State of the Estuary Report, and other related efforts
- Assessing how the WRMP can best meet regulatory needs and effectively communicate results for decision makers
- Developing strategies for equitable community and tribal engagement



What else does the WRMP have planned in coming years?

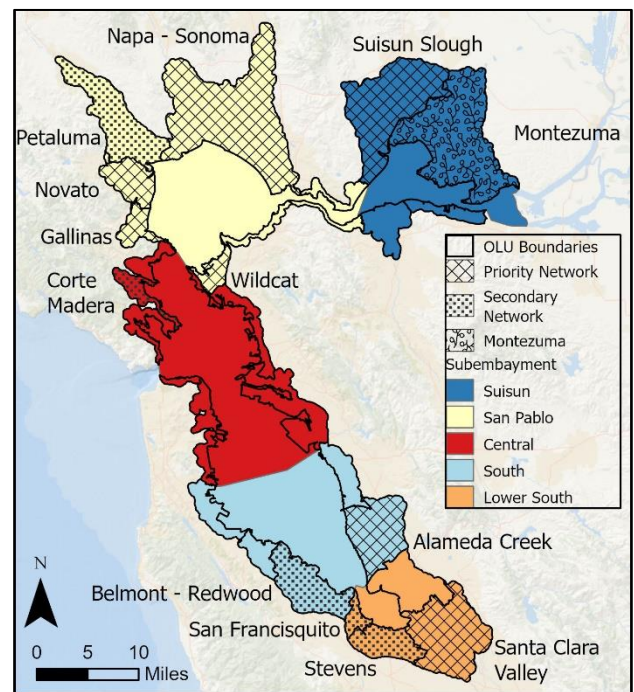
- Conducting surveys of conditions of tidal wetlands throughout the region
- Conducting repeated surveys of living organisms and their habitats across various wetlands and project types
- Analyzing data to understand wetland resilience to climate change
- Assessing the broad range of interactions between people and wetlands that could be monitored, such as flood control, mosquito and disease vector control, cultural resources, public access, and community benefits of restoration.
- Developing a comprehensive data-sharing and data-visualization platform

WRMP Science Framework

The WRMP is intended to grow over time. Accomplishments to date include:

- Establishing the WRMP Regional Monitoring Site Network. The Network includes:
 - **Project Sites** – Restoration projects implemented over roughly the past 20 years that improve understanding of restoration designs and management.
 - **Reference Sites** – Marshes at mid- to late stages of evolution that help forecast the rate of project development as habitat.
 - **Benchmark Sites** – Mature marshes that indicate the likely long-term conditions of existing and restored marshes.
- Development of Guiding Questions, Management Questions, and Monitoring Questions to structure data collection
- Development of scientific indicators to guide monitoring
- Development of SOPs to coordinate data collection
- Organization of existing data sets related to the region's wetlands in a Geospatial Data Catalog

Regional Monitoring Site Network



Additional Resources

Do you have more questions about the latest work of the WRMP? Please consult the program's website to discover:

- Frequently Asked Questions (FAQ): <https://www.wrmp.org/faqs/>
- Committees and Workgroups: <https://www.wrmp.org/about/committees-and-workgroups/>
- Meetings: <https://www.wrmp.org/meetings/>
- Engagement Opportunities: <https://www.wrmp.org/engage/>
- Other Resources: <https://www.wrmp.org/resources/>

How do I get involved?

To get involved, check out the project website (wrmp.org) and [sign up for the Newsletter](#). Contact us at info@wrmp.org with additional questions. Thank you to our funders, US Environmental Protection Agency Region 9 and the SF Bay Restoration Authority.



SAN FRANCISCO BAY
RESTORATION AUTHORITY

