San Francisco
ESTUARY PARTNERSHIP

SF Estuary Shoreline Visitation Data Needs Workshop

Summary Report
July 9, 2026

Photo credit (upper left to lower right): Alex Thomsen, Ben Botkin, Xavier Fernandez

Suggested Citation: Thomsen, Alexandra; Dan, Michelle; Harris-Lovett, Sasha. "*SF Estuary Shoreline Visitation Data Needs Workshop Summary Report*." San Francisco Estuary Partnership, 2026.

Executive Summary

The San Francisco Estuary Partnership convened the San Francisco Estuary Shoreline Visitation Data Needs Workshop to identify how standardized regional data on shoreline visitation can support equitable access, habitat and wildlife protection, and climate-resilient planning across the Estuary. Workshop participants linked priority data types -- including total visitation, demographics, timing, activities, visitor origins, transportation modes, amenity quality, and community perceptions -- to actionable management decisions such as siting infrastructure, targeting outreach, protecting wildlife, and prioritizing investments. A combined approach using regional-scale monitoring (e.g., cell phone-derived locational data), in-depth site-based methods (e.g., visitor surveys, amenity assessments), and interviews with both visitors and non-visitors is needed to generate reliable, decision-relevant insights.

The Wetlands Regional Monitoring Program (WRMP) is addressing some of these data needs, and will develop methods for data collection addressing additional needs, in the following ways:

1. Piloting a Wetland Access Amenities assessment in Summer 2026, which involves in-depth surveys of amenities and observations at wetland public access sites.
2. Partnering with educational institutions to conduct Community Interviews in 2026, which will gather information from community members about sense of belonging, access, and experiences around publicly-accessible open spaces at the Bay-Delta shoreline.
3. Developing methods for Regional-Scale Remote Data Collection, likely involving cell phone-derived locational data to gather total numbers of visitors, visitor origins, and estimated demographics across different subregions of the Bay Area and park/open space typologies.
4. Developing methods for On-Site Visitor Surveys that complement regional-scale data collection, likely involving partnerships with community-based organizations to survey visitors at a subset of the regional-scale data collection locations.

Through new efforts such as regional-scale data collection, on-site visitor and amenities surveys, and community interviews, the WRMP will provide consistent, comparable data to inform adaptive management, guide investments, and support regional reporting. Collectively, these efforts will enable more coordinated, data-driven decisions that balance public access with ecological health across the Estuary.

Table of Contents

Introduction

Public access to the San Francisco Estuary is a core component of the Estuary Blueprint, a collaborative regional roadmap which calls for providing equitable public access and recreational opportunities compatible with wildlife (Action 24). While a range of data on public access and recreation already exist, these data are collected by many different entities using a wide variety of methods. As a result, there is currently no coherent regional picture of where, how, and by whom the Estuary's shoreline is being visited, or how visitation patterns are changing over time. Consistent, region-wide data on shoreline visitation would strengthen the ability of agencies and partners to make science-based decisions that support both healthy ecosystems and equitable, wildlife-compatible and climate-resilient access.

Throughout the workshop and this report, we use the term "visitation" instead of "public access" or "recreation" to be inclusive of cultural access for Tribes and subsistence fishing.

The San Francisco Estuary Partnership (SFEP) is broadly interested in shoreline visitation data as a critical component of understanding how people interact with the San Francisco Estuary, and how those interactions can be sustained over time and supported in ways that are compatible with ecological health. SFEP is involved in several data collection, science communication, planning, funding, and on-the-ground project implementation efforts that can contribute to, benefit from, and broadly communicate shoreline visitation information. SFEP and the San Francisco Estuary Institute (SFEI) co-manage the Wetlands Regional Monitoring Program (WRMP), whose mission is to deliver coordinated regional monitoring of the Estuary's wetlands to inform science-based restoration and adaptive management while improving the cost-effectiveness of permit-driven monitoring. SFEP also manages the State of Our Estuary reporting, which synthesizes and communicates data on status and trends of indicators of Estuary health, with one emerging indicator of interest focused on regional shoreline visitation. In addition, SFEP implements the Adaptation and Resilience Technical Assistance program that facilitates and engages in science-based, on-the-ground implementation, where improved understanding of visitation patterns could inform the design and management of shoreline access, amenities, and nature-based adaptation strategies. SFEP also administers funding through the Priority Conservation Area (PCA) grant program, where shoreline visitation data could help guide investments toward projects that enhance equitable access while protecting sensitive habitats. Together, these opportunities highlight the value of developing consistent, comparable shoreline visitation data to support coordinated regional planning, funding, implementation, and reporting efforts.

Photo credit: Javier Vicuna

The WRMP monitors human dimensions of wetlands as part of its mission to inform science-based adaptive management of wetlands. The WRMP Steering Committee has approved the

development of an indicator to measure wetland visitation as one area of human dimensions monitoring for the program. Visitation data are intended to help answer key WRMP Guiding and Management Questions, including:

- How do policies, programs, and projects to protect and restore tidal wetlands benefit and/or impact public health, safety, and recreation? *(WRMP Guiding Question 5)*
- What monitoring data and/or analyses are needed to improve the relationships between tidal marsh restoration, fish and wildlife support, mosquito and vector control, and public access? *(WRMP Management Question 5B)*
- How are the benefits of wetlands (such as flood risk reduction, water quality, public access, opportunities for community stewardship, knowledge production and transmission, and cultural and spiritual experiences) distributed regionally? *(WRMP Management Question 5C)*
- How does the provision of benefits (listed above) progress over time at existing and restored wetland sites? *(WRMP Management Question 5D)*

By providing consistent information on when, where, and how people visit wetlands, visitation data can directly inform analyses needed to address these questions and support more integrated, science-based management. While the WRMP's primary geographic focus is tidal wetlands, broader shoreline visitation data may, in some cases, be more cost-effective and informative than site-specific wetland data alone. If feasible, Estuary-wide shoreline visitation information could also support regional reporting through the State of Our Estuary.

SFEP convened the Shoreline Visitation Data Needs Workshop in April 2026 to better understand how different types of visitation data could be used for management and policy decisions, and to guide the next phase of WRMP indicator development. Workshop goals were to:

1. Identify concrete ways shoreline visitation data could inform decision-making to guide WRMP priorities and development of other SFEP projects;
2. Inform the design of WRMP visitation monitoring, including appropriate scales, locations, and coordination with other monitoring (such as species and habitat data); and
3. Prepare the WRMP team to procure a consultant to develop visitation monitoring methods.

Photo credit: Javier Vicuna

Prior to the workshop, the WRMP Steering Committee engaged in an interactive activity to identify specific management actions that shoreline visitation data could inform for effective wetland restoration and management that improves wildlife-compatible shoreline access. These included a

plethora of actions around managing programming/staffing (e.g., which days/times/seasons it might be most efficient to have rangers/docents onsite to help manage people); determining rules/regulations (e.g., determining seasonal access/activities for particular wetlands/locations); managing habitat & trail locations (e.g., where to place trails, overlook areas, and activity areas); and developing signage & amenities (e.g., signage that is accessible to different communities). Estuary Partnership staff used this discussion to shape the agenda and activities of the workshop.

Workshop attendees included eighteen invited participants from land management agencies, public access advocacy groups, regulatory agencies, scientific organizations, restoration implementation, shoreline and transportation planning, funding organizations, municipal government, and community groups. See Appendix 1 for a full list of participating organizations.

Shoreline Visitation Data Needs

Types of Data and Relevance for Decision-Making

Workshop participants reviewed and brainstormed different types of shoreline visitation data, and for each data type, shared specific management actions that could be taken in a more cost-effective, data-driven way if that information were available. Management actions included those shared by the WRMP Steering Committee as examples (primarily focused on wetland restoration, wildlife protection, and site management), as well as other actions that workshop attendees can take in their roles including planning for regional shoreline access infrastructure, advocacy for access improvements in areas of need, allocating funding for projects involving public access, and more. Data types, potential data collection methods, and relevant management actions are listed below. Potential data collection methods were mostly determined by the report authors based on literature review. Feasibility assessments are approximate, based on literature review and personal communication with expert users of the different methods, and incorporate cost, time, and effort considerations.

Photo credit: Alex Thomsen

Throughout the report, some types of data are described as being for the "shoreline," while other types of data or monitoring are described as being for "wetlands" or "shoreline/wetland sites." Most workshop discussion focused on data for the broader shoreline, while most of the monitoring related to the WRMP is focused on wetland sites. "Shoreline/wetland" indicates that data or management actions could be focused on wetlands and/or the shoreline more broadly, but the focus was not specified.

Total numbers of visitors

Data about total numbers of visitors at individual sites, as well as distribution of visitors across the Bay Area's shoreline, would be useful for informing

numerous decisions around infrastructure installation, staffing needs, and programming at publicly accessible shoreline sites.

Information about total numbers of visitors would inform the following management actions:

- Actions to protect wildlife from visitors (e.g., install fencing, educational signs about how to interact appropriately with wildlife, install animal-proof trash receptacles)
- Actions to provide appropriate amenities for visitors (i.e., determine sizing of parking lot, number of bathrooms, width of trails)
- Actions to focus educational, operational and enforcement resources where visitation is relatively higher (i.e., determine priority locations for programming and for on-site staff)

Potential regional data collection methods for total numbers of visitors, in likely order of feasibility for the WRMP or State of Our Estuary:

- Cell phone-derived locational data
- Scraping eBird, iNaturalist, AllTrails, and/or other public databases to estimate numbers and locations of contributors
- Trail counters
- Parking lot cameras

Photo credit: Ben Botkin

Demographics of visitors

Data about visitor demographics (e.g., race/ethnicity, income, age, language spoken, disability status, disability/access needs) linked to visitation patterns can inform equitable outreach, culturally relevant programming, and investments that better serve systemically excluded communities at shoreline/wetland sites.

Information about demographics of visitors would inform the following management actions:

- Actions to determine and target outreach/marketing efforts for specific communities (e.g., conducting outreach to underrepresented groups; tailoring outreach by language and community preferences)
- Actions to inform culturally relevant amenities and programming (e.g., aligning interpretive content, programming focus (birds/wildlife/history) and amenities with community needs and interests)

- Actions to assess equity in visitation and benefits/identify gaps in equity (e.g., identifying which sites lack visitors from systemically excluded communities; helping funders evaluate whether investments benefit DACs/SDACs/EJ[1] communities)
- Actions to improve accessibility and inclusivity (e.g., planning multilingual wayfinding/interpretive signage, identifying transportation-related accessibility needs and informing land acknowledgement/interpretive approaches)

Potential regional data collection methods, in likely order of feasibility for the WRMP or State of Our Estuary:

- Visitor surveys
- Interviews with visitors from underrepresented groups about where / how often / for what purpose they go to the shoreline (potentially captured by the WRMP Community Interviews project, described in the 'Potential for the WRMP to Address Visitation Data Needs' section of this report)
- Cell phone-derived locational data
- Social media data

Photo credit: Ben Botkin

Timing of / amount of time people are spending at shoreline sites

Information on timing of visitation, and the amount of time people spend at sites, supports decision-making to adapt site rules (hours), staffing, programming, and amenities; determine appropriate investment/stewardship levels; and protect sensitive wildlife populations (the latter being possible when visitation data are combined with wildlife data). Participants reported different detailed data types (i.e., hourly, daily, monthly, or seasonal visitor data; length of visits; or repeat vs. new visitor numbers) depending on the management action. Hourly and seasonal visitor data were the most common types of timing data reported as useful across the relevant management actions.

Information about timing of / amount of time people are spending at shoreline sites would inform the following management actions:

[1] Economically disadvantaged communities, severely economically disadvantaged communities, and environmental justice communities, which are often defined in specific ways by funding agencies.

- Actions to adapt visitation hours (e.g., for parking and facilities operation)
- Actions to adapt staffing or funding (e.g., allocating trail maintenance staffing/budget, increasing seasonal staffing during busy times of year, determining investment level for maintenance/upgrades)


Photo credit: Ben Botkin

- Actions to manage amenities (e.g., adding amenities that support longer visits, managing waste services)
- Actions to determine new or ongoing programming (i.e., continuing programming that attracts repeat visitors, or starting new programming to attract new visitors)
- Actions to protect wildlife (i.e., identify ways to mitigate disturbance when high visitation periods overlap with sensitive wildlife activities)

Potential regional data collection methods, in likely order of feasibility for the WRMP or State of Our Estuary:

- Cell phone-derived locational data
- Visitor surveys
- Parking lot cameras, trail counters, or other onsite data collection (for adapting staffing seasonally, managing impacts on wildlife)

Information on what activities people do at wetlands/the shoreline

Information on what activities visitors are doing (and want to do) at shoreline/wetland sites, paired with inventories of amenities already present, supports decisions about amenity design, programming, signage, and management actions that reduce wildlife impacts.

Information about what activities people do at wetlands / the shoreline would inform the following management actions:

- Actions to determine feasibility and prioritization of activity-related amenities (e.g., water access/kayak launches, fishing-related infrastructure, fish washing stations, bike rentals/boating concessions, overnight parking considerations)
- Actions to guide site design, operational planning, and interpretive/signage needs based on observed activities (e.g., where informational signage is needed; whether story walks would align with existing use)
- Actions to manage wildlife impacts and visitor regulations (e.g., ensuring secure trash where eating/picnicking occurs; assessing dog management needs (on-leash/off-leash) relative to wildlife and public safety)
- Actions to identify which activities are popular in some locations and could be expanded elsewhere, and to inform funding/program decisions for activities

- Actions to understand shoreline use patterns for systemically excluded communities (e.g., how specific communities are using shoreline sites and what activities they prioritize)

Potential regional data collection methods, in likely order of feasibility for the WRMP or State of Our Estuary:

- Inventories of amenities and observed activities (potentially captured by WRMP Wetland Access Amenities project, described in the 'Potential for the WRMP to Address Visitation Data Needs' section of this report)
- Visitor surveys on activities pursued and activities desired but not currently supported by amenities
- Land manager/site manager surveys for rules and restrictions (potentially captured by WRMP Wetland Access Amenities project)
- Program reports/activity attendance tracking

Visitor origins

Data on visitor origins (e.g., ZIP code/city people traveled from, distance traveled) can help guide equity-focused outreach, investment targeting, and access improvements in places with low visitation. This could also help determine whether shoreline sites primarily serve nearby communities or function as regional destinations.

Information about visitor origins would inform the following management actions:

- Actions to improve access and outreach in locations with low visitation (e.g., identifying nearby communities with low visitation; targeting outreach accordingly)
- Actions to evaluate who benefits from shoreline investments (e.g., funder assessment of percent of visitors from adjacent communities vs. regional visitors; pre/post changes in visitor origins)
- Actions to identify underrepresented origin locations and understand barriers (e.g., determining what places people are not coming from and why; pairing origin data with qualitative barrier information)
- Actions to prioritize investments that reach equity priority communities (e.g., overlaying visitor origins with equity indices/priority geographies)
- Actions to inform transportation needs based on origins/distances (e.g., assessing shuttle/transit needs relative to where visitors are traveling from)

Potential regional data collection methods, in order of likely feasibility for the WRMP or State of Our Estuary:

- Cell phone-derived locational data
- Visitor surveys
- Targeted community surveys/outreach in underrepresented origin areas to understand barriers to access (potentially captured by WRMP Community Interviews project)

Information on how people are getting to wetlands/the shoreline

Information about how people are arriving at wetlands/shoreline (e.g., percent arriving by car, transit, bike, walk, boat) supports decisions about transportation access, parking and bike infrastructure, inclusive project planning, and regional prioritization of safe bike/pedestrian connections to shoreline access points.

Information about how people are getting to wetlands / the shoreline would inform the following management actions:

- Actions to improve transit access (e.g., determining need for transit stops and improved headways; assessing shuttle needs; planning inclusive/public project tours based on transit/walking/ADA access)
- Actions to size and locate parking (e.g., determining parking staging areas; understanding peak/overflow demand; aligning infrastructure with percent arriving by car)
- Actions to plan bicycle and pedestrian infrastructure (e.g., determining bike rack locations/numbers; prioritizing safe bike/pedestrian improvements within ¼–½ mile of access points; prioritizing Bay Trail segment investments based on access mode demand)

Photo credit: Ben Botkin

- Actions to evaluate accessibility and equity in access (e.g., identifying barriers for people who cannot drive/bike/walk; evaluating whether projects are actually accessible to nearby communities; informing funders about overall accessibility)
- Actions to plan for seasonal/peak use and special access modes (e.g., understanding seasonal fisheries peaks and arrival modes; assessing percent arriving by boat to locate boat-rinse infrastructure)

Potential regional data collection methods, in order of likely feasibility for the WRMP or State of Our Estuary:

- Visitor surveys (some observations recorded through WRMP Wetland Access Amenities project will provide snapshots)
- Cell phone-derived locational data combined with transportation context
- Parking counts and trail counters
- Assessment of proximity to transit locations, identification of barriers near access points
- User-submitted app data, e.g. Strava

Quality of shoreline public access amenities

Data about the quality of public access amenities can inform decisions around regional allocations of funding for shoreline parks and enhance safe access to the shoreline for all communities. This information can also guide decisions that can help protect wildlife from human activities, because inadequate maintenance of trash at shoreline sites can attract animals like gulls, crows, cats, rats, and raccoons that can prey on or disturb sensitive bird species.

Information about quality of shoreline public access amenities would inform the following management actions:

- Actions to improve visitor safety and experience (e.g., have bathrooms serviced more frequently, repair water fountains, add or improve wayfinding signage)
- Actions to protect wildlife from human visitors (e.g., ensure waste receptacles and servicing are adequate for the amount of trash generated by visitors, ensure waste receptacles have lids, ensure educational signs about wildlife or regulations are still legible)
- Actions to prioritize public access funding across the region (e.g., ensure that areas with amenities in worse condition are prioritized for near-term investment)

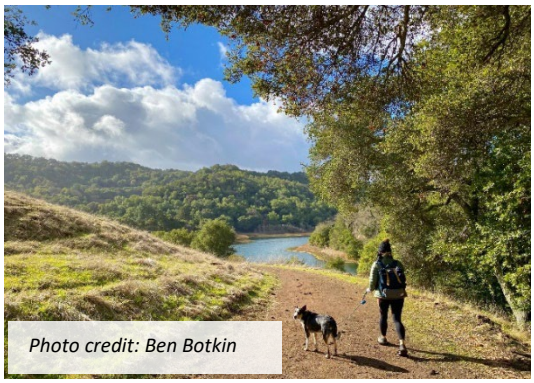

Photo credit: Ben Botkin

Potential regional data collection methods, in order of likely feasibility for the WRMP or State of Our Estuary:

- Regional in-person observational survey and assessment of amenities (included in WRMP Wetland Access Amenities project)
- Scraping publicly accessible databases, such as AllTrails, Google Reviews, Google Maps, Instagram, and others for information about the quality of amenities at shoreline public access locations

Community perceptions and visitor experiences of shoreline spaces

Qualitative information about the factors that contribute to a sense of belonging and connection to the shoreline, about barriers to public access, about the mental health and other benefits people perceive they get from visiting, and about why people visit were all raised by workshop attendees as being useful for decision-making. This information can be helpful for designing and targeting outreach and programming efforts, as well as for transportation planning.

Management actions:

- Inform regional and transportation planning (e.g., determine locations and frequency of transit stops, create safe walking and biking routes)
- Inform outreach and programming efforts (e.g., create programming to enable more people to feel a sense of belonging and connection)

Potential regional data collection methods, in likely order of feasibility for the WRMP or State of Our Estuary:

- Interviews with community members (both shoreline visitors and non-visitors) (included in WRMP Community Interviews project)

Photo credit: Caitlin Sweeney

Economic spending patterns at shoreline sites

Quantitative information about how much money people spend when they visit the Bay's shoreline, including information about locals and tourists, can help inform decisions about zoning and promoting businesses at the shoreline.

Management actions:

- Inform zoning plans
- Identify locations for concession stands and promoting shoreline businesses

Potential regional data collection methods, in likely order of feasibility for the WRMP or State of Our Estuary:

- Interviews with shoreline visitors and business owners

Scale and Locations for Visitation Monitoring

Workshop participants highlighted the value of both regional data collection of shoreline visitation (i.e. using cell phone-derived locational data, eBird user data, or interviews of the general public and non-

visitors) as well as local, site-based data collection efforts. For site-based data collection efforts, workshop participants mentioned several factors that should guide site selection:

- **Collect visitation data proximate to other data of interest.** Workshop participants expressed the importance of monitoring shoreline visitation nearby to where WRMP and other environmental monitoring data are being collected, for example water quality, birds, and CRAM. Co-location of these kinds of data collection sets the foundation for future analyses to examine how these different factors correlate with each other. Participants also mentioned the possibility of gaining cost-efficiencies in monitoring by taking advantage of field days to have crews collect different types of data at each site (i.e. WRMP vegetation field crews could also collect information about the presence of social trails).

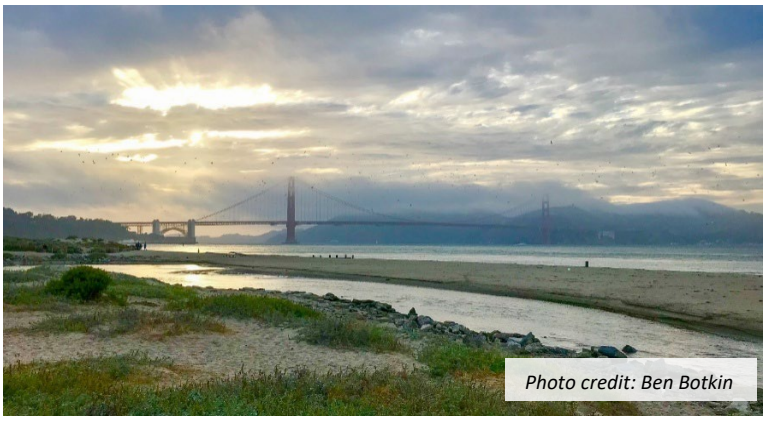

Photo credit: Ben Botkin

- **Stratify sampling.** Workshop participants emphasized the importance of a targeted, stratified sampling approach for any on-the-ground data collection about wetland visitation. This stratification would enable evaluation of disparities in access, identification of correlations to community and ecological features, and provide additional insights to shoreline planners and public access advocates that would be useful for their decision-making. Participants mentioned that sampling should be stratified to capture differences between shoreline sites across these factors:
    - Socio-economic (i.e. shoreline sites near both vulnerable and privileged communities, sites proximate to a range of demographically distinct communities)
    - Density of development (i.e. shoreline sites near urban, suburban, and rural communities)
    - Ecological restoration history (i.e. access near WRMP Benchmark, Reference and Project wetland restoration sites)
    - Designated site use (i.e., including a mix of natural/wildlife-viewing oriented sites, community-based shoreline parks designed for picnics or playgrounds, active/sport-oriented sites for biking, swimming, kayaking)
    - Site access (whether the site is accessible to visitors by land, water, or both)

- **Collect data about both sanctioned and unsanctioned shoreline visitation.** While data about visitation to publicly accessible shoreline parks is vital, workshop participants emphasized the utility of also collecting data about unsanctioned visitation to the shoreline. This information can

help land managers understand where there might be needs for new parks or prioritization of areas where improvements to amenities can help make visits safe for both people and wildlife.

Research Questions and Other Information Needs

The Shoreline Visitation Data Needs Workshop also served to gather research questions, and other information/data synthesis needs expressed by workshop participants and WRMP Steering Committee members, which could be addressed by future intern/fellow projects, academic collaborations, or other efforts. Specific questions are included in the Appendix section. Questions ranged across the following themes:

Photo credit: Alex Thomsen

Human-wildlife interactions
Example: How effective are design features to keep people a safe distance from wildlife?

Equity
Example: What are opportunities for local workforce development for careers in the shoreline restoration sector?

Shoreline use patterns
Example: Why do people use unsanctioned shoreline areas for access?

Ecopsychology
Example: What are the mental health benefits of big extensive wetlands with public access? How close to the wetland does someone have to be to receive those benefits?

A literature review is needed to understand which questions are addressed by existing data/resources that could be shared with participants, and which questions require new studies.

Next Steps

The WRMP has high potential to address some of the data needs identified by workshop participants. The Metropolitan Transportation Commission/Association of Bay Area Governments' (MTC/ABAG) Bay Trail team is also collecting data that addresses some data needs identified by workshop participants. Details of WRMP visitation monitoring will be determined by WRMP staff, in collaboration with consultants and partners, and subject to approval by WRMP workgroups and committees. The following section describes potential approaches for the WRMP to address shoreline visitation data needs, as identified by the report authors, who are staff of the WRMP. The report authors are also coordinating

with partners, including Bay Trail and Bay Conservation and Development Commission staff, about ways we can collectively address data needs.

Potential for the WRMP to Address Visitation Data Needs

The WRMP collects data on human dimensions of wetlands, with the intention to develop an indicator on visitation to wetland sites. Generally, WRMP visitation monitoring will address the following monitoring question in the WRMP Science Framework: "At wetland sites where public access is allowed, what are levels, types, and demographics of usage?" Plans for new WRMP visitation monitoring will be designed to generate data applicable to the management actions shared by workshop participants, to the extent possible within the WRMP's scope (currently focused on tidal wetlands across the San Francisco Bay including Suisun Bay, with an interest in coordination with and possible future expansion to the Sacramento-San Joaquin Delta). While the WRMP is focused on long-term data collection to track and analyze change over time, the program also conducts special studies as needed to address specific questions.

We identified potentially suitable data collection methods for the different types of data needed, and found a range of methods required: surveys of amenities at wetland public access sites, qualitative information from both visitors and non-visitors, high-frequency regional-scale remote data collection (e.g., cell phone-derived locational data) and on-site data collection (e.g., visitor surveys). Data collection methods were informed by a literature review of peer-reviewed research on measuring visitation to public open spaces; additional methods not mentioned in this report may still be considered. Some of these methods (surveys of amenities, qualitative information from visitors and non-visitors) are being implemented through current WRMP projects, and we have made additions/modifications to these projects to address additional information needs identified through the workshop. WRMP staff are proposing to use the two other data collection methods (regional-scale remote data collection, on-site data collection) to collect data that addresses the WRMP's monitoring question and aligns with information needs identified by workshop participants. Regional-scale remote data collection and on-site data collection methods will be designed in collaboration with partners and consultants, and will be subject to review and approval by WRMP workgroups and committees.

Wetland Access Amenities Project

The WRMP is piloting a Wetland Access Amenities assessment, which involves in-depth surveys of amenities and observations at wetland public access sites[2]. The pilot surveys will be conducted by summer interns starting in 2026. Several additions have been made to the amenities assessment to inform needs identified during the workshop, including:

[2] For this project, we define wetland public access sites as designated shoreline parks or open space identified as open access according to the California Protected Areas Database (plus all WRMP monitoring sites open to the public, excluding sites only accessible by boat) within a half mile of a tidal wetland as defined in the Baylands Habitat Map 2020 (WRMP 2025). The viewpoint must be accessible via a half mile or less on foot from a designated public parking area, staying on designated trails/paths.

- Observations about family-friendliness of parks/open space, including numbers of families seen and activities they were doing
- Detailed waste management information, such as locations of waste receptacles, presence of food/litter and scavenging around receptacles and other amenities (benches, picnic tables)
- Levels of crowding of parks/open space overall and specific areas/amenities (e.g., parking, bike racks, picnic tables and benches)
- Observations about types of uses/activities, posted rules and regulations, and social trails

Other information to be collected during the assessment includes presence, and in some cases, specific location and condition of amenities/features; overall noise and smell; fishing access/use; and path types and accessibility. The information can inform actions related to managing amenities, staffing, and rules/regulations; decisions about programming for different user types; regional assessment of parks/areas in need of investment/improvement; and more. The MTC/ABAG Bay Trail team is also conducting a regionwide assessment of trail quality and amenities, and is coordinating with the WRMP team to identify opportunities to collect complementary data using comparable methods.

Community Interviews

The WRMP is partnering with educational institutions and programs (primarily community college classes) around the Bay-Delta region and training students to interview their community members about sense of belonging, access to, and experiences with publicly-accessible open spaces around wetlands and at the Bay-Delta shoreline. The project will gather qualitative information from both visitors and non-visitors of the shoreline. This project is designed as a one-time study, to be conducted in Summer/Fall 2026. It addresses several information needs identified during the workshop, including:

- Types of amenities and programming of interest to current or potential users
- Modes of transportation
- Barriers to access
- Factors that contribute to feelings of safety and belonging for different demographic groups
- Qualitative information about how people benefit from visiting the shoreline

Other information to be collected through the interviews includes knowledge and perceptions of wetlands, context about people's shoreline visits, where they tend to go, why they visit or feel connected to those areas, and their demographics. The information can inform management of shoreline/wetland areas and programming to target user groups; public outreach and education about wetlands; and more.

Regional-Scale Remote Data Collection

Based on findings from the workshop, WRMP staff are proposing to collect a pilot set of regional-scale data on total numbers of visitors, along with visitor origins and estimated demographics. A variety of methods can provide regional-scale data, including cell phone-derived locational data and user-

submitted app data (e.g., Strava, eBird). Cell phone-derived locational data may be most appropriate for WRMP needs, because it covers a broad set of users and high-frequency data are available. Locations for the pilot dataset will be determined with consultant support based on cost and feasibility, but at minimum, will include shoreline parks with wetlands across different subregions of the Bay Area and park typologies, in alignment with the WRMP monitoring site network. Plans for repeated data collection will be determined based on cost, feasibility, replicability, and utility of the pilot data. Cell phone or alternative regional-scale data collection can address the following information needs:

- Regional and temporal (particularly hourly and seasonal) variation in total visitor numbers
- Visitor origins
- Visitor demographics (estimated based on demographics of cell phone home area) and comparison to regional and nearby community demographics

This information will prove valuable for informing the planning of amenities, staffing, programming, and future investments at wetland sites; identifying demographically or geographically underrepresented visitor groups; and understanding the degree to which access is benefiting adjacent communities.

On-Site Visitor Surveys

WRMP staff are also proposing to collect on-site data to complement regional-scale data collection based on workshop findings. On-site collection through visitor surveys is more appropriate for certain types of data and can also be used to ground-truth cell phone (or other regional-scale) data. On-site data collection could be conducted by in-person observation and survey enumerators, using QR code flyers/installations, or other methods, to be determined with consultant support. There is high potential for on-site visitor surveys to involve partnerships with community-based organizations for community-engaged monitoring. Locations for WRMP pilot on-site data collection will cover a subset of regional-scale data collection locations to enable ground truthing. Plans for repeated data collection will be determined based on feasibility and utility of the pilot data. On-site visitor surveys can address the following information needs raised during the workshop:

- Frequencies of different modes of transportation at particular sites
- Transportation barriers and ways to address them (particularly for bike/pedestrian/public transit access)
- Draws for first-time vs. repeat visitors
- Visitor activities
- Effective methods of outreach and desired amenities and programming for different visitor groups

Photo credit: Graham Prentice

- Visitor demographics and comparison to regional and nearby community demographics

On-site data will be particularly useful for managing amenities, outreach, programming, and future investments at the sites selected for on-site data collection. Much of the information can also be applied to management of other sites across the region (particularly for sites with similar park typologies, user groups, or nearby communities). For example, information on the kinds of outreach or programming that attract new and repeat visitors at the surveyed sites could also be used by managers of parks that were not surveyed directly.

Conclusion

The half-day SF Estuary Shoreline Visitation Data Needs Workshop revealed decision-makers would use numerous types of visitation data if it were available, including for improving planning and programming at shoreline sites, adjusting staffing and maintenance levels, determining appropriate amounts and locations of amenities, and more. Overall, the workshop discussions highlighted that visitation data would be useful for making shoreline and wetland public access safer and more comfortable for both people and wildlife, more cost-effective, and more inclusive; therefore, it is of high interest to the San Francisco Estuary Partnership and its associated programs to pursue the provision of more shoreline visitation data. We identified ways that the WRMP and MTC/ABAG Bay Trail teams may help address data needs expressed by workshop participants, as well as ways that new WRMP monitoring could address data needs in the future. New WRMP monitoring will be developed in collaboration with partners and consultants, and subject to WRMP approval processes. While many of the immediate next steps from the workshop are focused on monitoring, participants also highlighted key information and/or research gaps related to wetland visitation throughout the event (see Appendix II). Further work is needed to address these questions, including a literature review to gather and share information on the questions that have already been studied, and possibly new research to address questions that have not adequately been studied.

Appendices

Appendix I: Participating Organizations

Audubon California
Bay Conservation and Development Commission
California Department of Fish and Wildlife
California State Coastal Conservancy
Community ally
East Bay Regional Parks District
Hood Planning Group
Marin County Free Library
Member of Latinas in Science Network – Bay Area
Metropolitan Transportation Commission – Association of Bay Area Governments: Active Transportation Section
San Francisco Bay Joint Venture
San Francisco Bay Restoration Authority
San Francisco Estuary Institute
San Francisco Estuary Partnership

Appendix II: Research Questions and Other Information Needs

The following questions were posed by workshop participants or WRMP Steering Committee members, either as information needs they have related to their work or as broader research questions:

Research and information questions	**Overarching theme**
How effective are design features to keep people a safe distance from wildlife? -Do we know what is a "safe distance" from different wildlife species? -How does effectiveness vary with time of day, time of year? -How can amenities "shield" people from wildlife? -Is distance the most meaningful factor, or is it noise, type of activity, dogs, or some other?	human-wildlife interactions
What are the barriers people are experiencing to accessing public spaces at the shoreline?	equity
Are people extracting resources from wetlands (i.e. hunting, fishing, mining)? -If so, where? Why (i.e., recreation, subsistence, livelihood)?	shoreline use patterns
What are opportunities for local workforce development for careers in the shoreline restoration sector?	equity
How do we address anti-access disguised as pro-conservation? -How frequently are pro-conservation stances masking anti-access beliefs?	equity
What policies would support more cultural uses of the shoreline, such as concerts and festivals? Current policy doesn't allow amplified music at the shoreline which prohibits certain groups from using it in a way that would bring them back more than once. -Are there times when there can be concerts w/ less wildlife impacts at MLK Shoreline?	equity, human-wildlife interactions
Are there specific landmarks that draw people to wetland or shoreline sites?	ecopsychology

What are the mental health benefits of big extensive wetlands with public access? -How close to the wetland does someone have to be to receive those benefits?	ecopsychology
Why do people use unsanctioned shoreline areas for access?	shoreline use patterns, equity
How does perceived aesthetics tie into visitation?	ecopsychology
How does shoreline visitation to the Hwy 37 area vary before+after renovation?	shoreline use patterns
Are there fewer dogs off-leash if there is a leash-free park in the neighborhood of a wetland to provide an alternative open space for dog owners?	human-wildlife interactions
Are wildlife already habituated to human disturbance in this highly urbanized estuary?	human-wildlife interactions
What is the rate and efficacy of the dog ranger certification to be a wildlife friendly dog/dog owner?	human-wildlife interactions
How to respond to individual wildlife advocates' concerns about trail proximity to wetland restoration?	human-wildlife interactions
What sub-bay brief factsheet-type resources are available to inform wildlife advocates about design elements that protect wildlife when access is adjacent to a restoration project?	human-wildlife interactions
Are kid-drawn signs more effective in getting adults/all people to abide by rules like sensitive habitat restrictions? Has this been widely found or studied at the regional scale?	human-wildlife interactions
How to address seasonal wildlife needs and human interactions?	human-wildlife interactions