

## INTERAGENCY CHARTER

### Biological Monitoring Survey Design Review

This charter documents an interagency effort initiated by the California Department of Fish and Wildlife (CDFW) and U.S. Bureau of Reclamation (USBR) to examine opportunities to improve the design of existing biological monitoring surveys in the Delta to address current management needs. The effort is focused on surveys administered by CDFW pursuant to a cooperative agreement with USBR, specifically the Spring Kodiak Trawl (SKT), Smelt Larval Surveys, 20mm Survey, Summer Towntnet Survey (STN) and Fall Midwater Trawl (FMWT). The California Department of Water Resources (DWR), U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS) and California State Water Resources Control Board (State Water Board) are participating in the process with CDFW and USBR.

#### Background

The California Department of Fish and Wildlife's Bay-Delta Stockton Office has been conducting a series of biological monitoring surveys in collaboration with USBR and DWR since 1970 to meet permit obligations to the State Water Board and USFWS-NMFS biological opinions for Delta Smelt and salmonids, and for incidental take permits issued by CDFW for operation of Central Valley Project (CVP) and State Water Project (SWP). The STN began in 1959, in part to provide a recruitment index for Striped Bass (38-mm in length) in Suisun Bay and Delta. Because the STN did not encompass the entire spatial distribution of Striped Bass juveniles and summer sampling was insufficient to fully assess recruitment, the FMWT) was implemented in 1967 to fill this data gap. Because the STN and FMWT only sample pelagic lifestages of specific fish species, missing the important shrimp and crabs that contribute to the estuarine foodweb, the San Francisco Bay Study (SFBS) began in 1980 to fill in the data gaps from STN and FMWT by documenting the relative abundance and distribution of pelagic and benthic fish, shrimp and crabs from South Bay to the Delta year-round. With the listing of Delta Smelt under ESA, the 20mm Survey (1995) and Spring Kodiak Trawl Survey (2002) were implemented to document larval and spawning adult Delta Smelt abundance and distribution to inform real-time operations at the CVP and SWP.

Current monitoring studies fulfill three broad management needs:

1. **Real-Time Operations** – Provide information for real-time operations decision making, including observations of biotic and abiotic conditions that inform weekly assessments and support evaluations of how different CVP and SWP operations may affect listed species and other important indicator species.
2. **Status and Trends** - Characterize the condition and rate of change of condition of species and communities in response to a suite of drivers, from natural to anthropogenic.
3. **Special Management Studies** – Provide Delta-wide and/or regional context for special studies designed to assess the impacts of specific management actions (i.e. summer-fall flow, Suisun Marsh Salinity Control Gate operations, habitat restoration, Yolo Bypass food action). More targeted sampling may be required to test efficacy of management actions.

The CDFW and USBR are advocating for an expedited review of the current survey designs to improve utility, increase efficiency and reduce redundancy. The CDFW and USBR expect this review and update to address concerns that the surveys only sample a subset of available habitats, target only a subset of species, do not provide sufficient statistical resolution to expand catch data for estimating population abundance, have overlapping spatial samplings, have data gaps in certain surveys, stations, and times, and do not in all cases provide metrics useful for current management needs

## Purpose

The purpose of this charter is to memorialize the process of evaluating the existing surveys conducted by CDFW in the Sacramento-San Joaquin Delta to improve biological monitoring data to meet the management objectives identified below.

## Objectives

The following are objectives for the revised biological monitoring surveys.

### Fundamental Objectives:

1. Provide data and analyses that support management decisions intended to promote a healthy estuarine ecosystem.
2. Improve understanding of drivers of ecosystem change (eg. climate change, habitat modifications and CVP and SWP operations).
3. Provide data and analyses that support management decisions intended to obtain a reasonable balance between fish and wildlife, water supply, and power generation in compliance with applicable laws.

### Means Objectives:

1. Assess the long-term status and trends of the ecosystem and recruitment patterns for fish and zooplankton assemblages of the Bay-Delta by region, across seasons, and over years in the context of existing data sets.
2. Determine the presence/absence, estimated abundance and spatial distribution of native and non-native fish species.
3. Support quantitative modeling and predictive tools, so efforts can be advanced to predict the outcome of future Delta management scenarios.
4. Avoid duplication, and complement surveys conducted by parties other than CDFW.
5. Provide flexibility to adaptively manage while preserving the utility of long-term data.

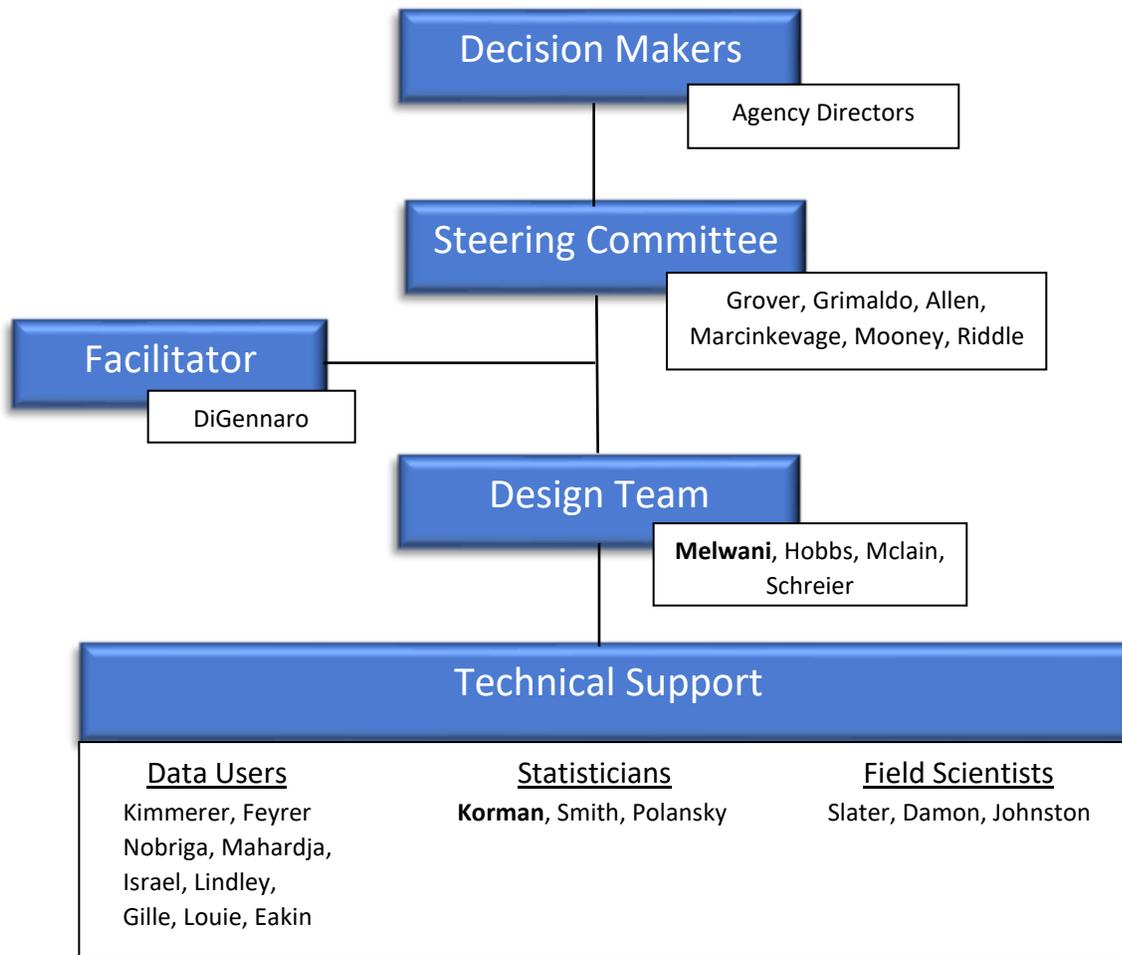
## Scope

The scope of this charter includes reviewing, and updating, if appropriate the existing CDFW administered surveys. The scope also includes consideration of other fish surveys occurring in the Delta such as the Enhanced Delta Smelt Monitoring (EDSM) and the Delta Juvenile Fish Monitoring Program (DJFMP) to provide a holistic evaluation.

## Organizational Structure

The proposed organizational structure for the update is based on “A road map for designing and implementing a biological monitoring program” (Reynolds 2016). Figure 1 shows the proposed structure and team members that would be assigned to the update process. The function of each team is briefly described following Figure 1.

**Figure 1 – Organizational Structure**



**Decision Makers:** Agency directors from CDFW, USBR, DWR, FWS and State Water Board. Responsible for resolution of any policy issues emerging from Steering Committee discussions, and final acceptance of any proposed revisions to the survey designs. Although this charter envisions a cooperative and consensus-driven process, all agencies recognize that they each have statutory and regulatory responsibilities that cannot be delegated, and that this document does not, and is not intended to abrogate any of those statutory responsibilities.

**Steering Committee:** Provides management direction and accountability for the design review process. The Steering Committee will receive recommendations from the Design Team regarding potential modifications to the existing surveys and will seek cooperative, consensus-driven decisions. Any disputes will be elevated to the Decision Makers. The Steering Committee will also manage outreach to ensure transparency. Potential modifications to the surveys will be considered based on their ability to meet the following needs:

- Continued operation for project purposes (fish and wildlife, water supply and power generation);
- Regulatory compliance;
- Compliance with State Water Board Water Rights Decisions 1641 and 1485;
- CDFW trustee responsibilities, including recommendations to the State Water Board;
- Amendment of the CDFW Incidental Take Permit (ITP); and
- Take authorization provided by existing permits.

The Steering Committee will be comprised of one representative from CDFW, USBR, DWR, FWS, NMFS and State Water Board. Assigned representatives are listed below along with alternates where identified.

- CDFW: Josh Grover
- FWS: Kaylee Allen/Jeff McClain
- DWR: Lenny Grimaldo
- NMFS: Cathy Marcinkevage
- USBR: Dave Mooney
- State Water Board: Diane Riddle/Erin Foresman

**Facilitator:** Responsible for overall coordination of the process, including facilitating discussions of the Steering Committee and Design Team. The Facilitator will also coordinate scheduling of meetings and tracking of action items. The facilitator will be supported by a note taker who will keep notes on the project record, as outlined in Reynolds (2016).

**Design Team:** Responsible for integrating management objectives from the Steering Committee into conceptual models, guiding technical discussions and working with the Technical Support teams to develop analytical approaches and updated monitoring plans. The Design Team will also be responsible for preparing a draft and final report. The Design Team will work with the facilitator to organize tasks and schedule meetings with the Technical Support teams. The Design Team will consist of the following individuals:

- Aroon Melwani, Applied Marine Sciences – Lead Investigator
- Jim Hobbs, CDFW
- Jeff McClain, FWS
- Brian Schreier, DWR

**Technical Support:** Resources available to the Design Team to assist them in evaluating surveys and exploring potential updates. Technical Support will be organized into three teams, Data Users, Statisticians and Field Scientists as outlined below. The Design Team, working with the Facilitator will determine when and how best to employ the expertise of the Technical Support teams.

**Data Users:** Agency experts with direct experience working with the historical fish survey monitoring data. The Data Users will consist of the following individuals who may coordinate with additional staff within their agency:

- Wim Kimmerer, SFSU
- Fred Feyrer, USGS
- Matt Nobriga or Matt Dekar, FWS
- Brian Mahardja and Josh Israel, USBR
- Mike Eakin or Felipe LaLuz, CDFW
- Steve Lindley or Rachel Johnson, NOAA Fisheries Southwest Fisheries Science Center
- Daphne Gille (DWR)
- Steve Louie (SWRCB)

**Statisticians:** Responsible for supporting the Design Team with expertise in statistical design and modeling. Statisticians assigned to the effort will include:

- Josh Korman, Consultant – Lead Statistician
- Leo Polansky or Will Smith, FWS

**Field Scientists:** Responsible for supporting the Design Team with expertise in the operations, logistics and costs associated with running the existing fish surveys. Field Scientists assigned to the effort will include:

- Steve Slater CDFW - Summer Towntnet (STN) and Fall Midwater Trawl (FNWT) Surveys
- Lauren Damon, CDFW - Smelt Larval Survey (SLS), Spring Kodiak (SKT) and 20mm (20mm) Surveys
- Catherine Johnston, FWS – Enhanced Delta Smelt Monitoring (EDSM)

## Timeline

The following table provides a general timeline for the evaluation.

<b>Task</b>	<b>Schedule</b>
Charter and Stakeholder Outreach	January - February
Quantitative Analyses and Study Evaluations	February - June
Preliminary Findings	July
6 Agency Discussions	July
Technical Memo	August
Implement Changes	September
Adapt	Ongoing