

# California Estuaries Monitoring Workgroup (CEMW)

Presentation to CA WQMC  
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# Overview

- What/Who is the CEMW?
- Why focus on the San Francisco Estuary?
- Initial Activities
- Next Steps
- Demo Workgroup Site (NOT a Portal)
- Questions? Comments? Coordination?

# What is the CA Estuaries Monitoring Workgroup?

- Formed in 2011
- Charter adopted June 2012
- Roles and Responsibilities adopted June 2012
- Initial focus on San Francisco Bay and Sacramento San Joaquin Delta

# Who Participates in the Monitoring Workgroup?

- Interagency Ecological Program (IEP)
- Department of Water Resources
- Department of Fish and Game
- SWRCB, CVRWQCB, SFBRWQCB
- Delta Science Program, Delta Conservancy
- SFEI, SCCWRP
- EPA, USGS
- The Bay Institute
- State and Federal Contractors Water Agency

# Governance

- Coordinated with IEP Coordinators
  - Co-facilitated by TBI and SFCWA
  - Voting members (local, state, federal, tribes)
  - Non-voting members (ngo's)
  - All decisions on agenda in advance
  - Seek Concensus “at the table”
  - “Worker Bees” do the heavy lifting
- 
- Currently funded by SFCWA

# Why Focus on San Francisco Estuary?

- Largest West Coast Estuary
- Estuary Ecosystem Health is a state-wide concern
- Dozens of Entities Monitoring
- Significant IEP Coordination, but NRC and DSC and DISB identify need for science integration.

## Adaptive Management and Performance Measures

- 2009 Water Legislation: Co-equal Goals
- Delta Stewardship Council – Delta Plan
- SWRCB Delta Plan Update
- Ecosystem Restoration Program
- Bay Delta Conservation Plan

# Initial Activities

- Gathering critical mass
- DWR Annual Report to SWRCB (D-1641)
- Develop Workgroup Site
- Develop Portal Approach –health defined by biology
- Incorporating Agency Performance Measures
- Support Delta RMP
- State of the Estuary Report?

State of California  
The California Natural Resources Agency  
Department of Water Resources  
Division of Environmental Services

# Water Quality Conditions in the Sacramento-San Joaquin Delta and Suisun and San Pablo Bays during 2010

Report to the State Water Resources Control Board in  
Accordance with Water Right Decision 1641



December 2011

Edmund G. Brown Jr.  
Governor  
State of California

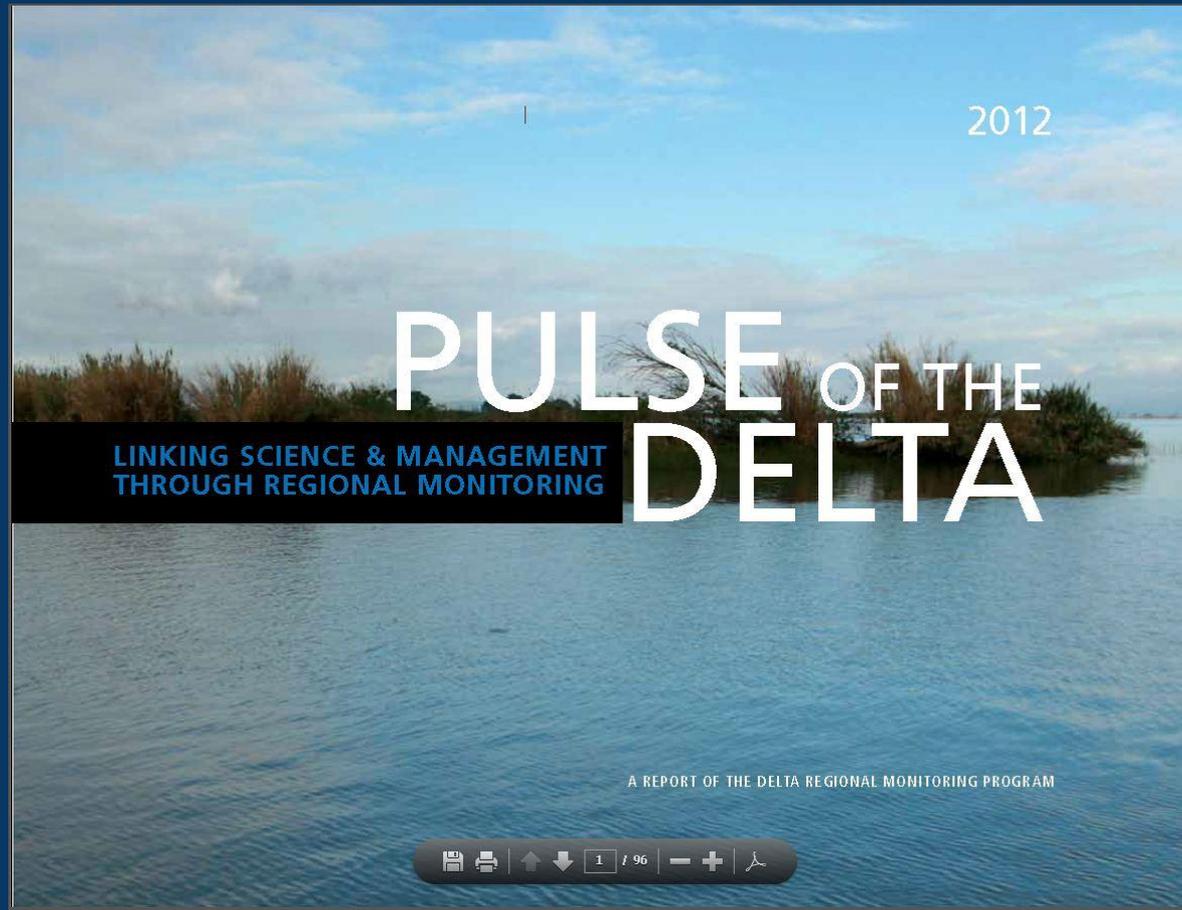
John Laird  
Secretary for Resources  
California Natural Resources  
Agency

Mark W. Cowin  
Director  
Department of Water Resources

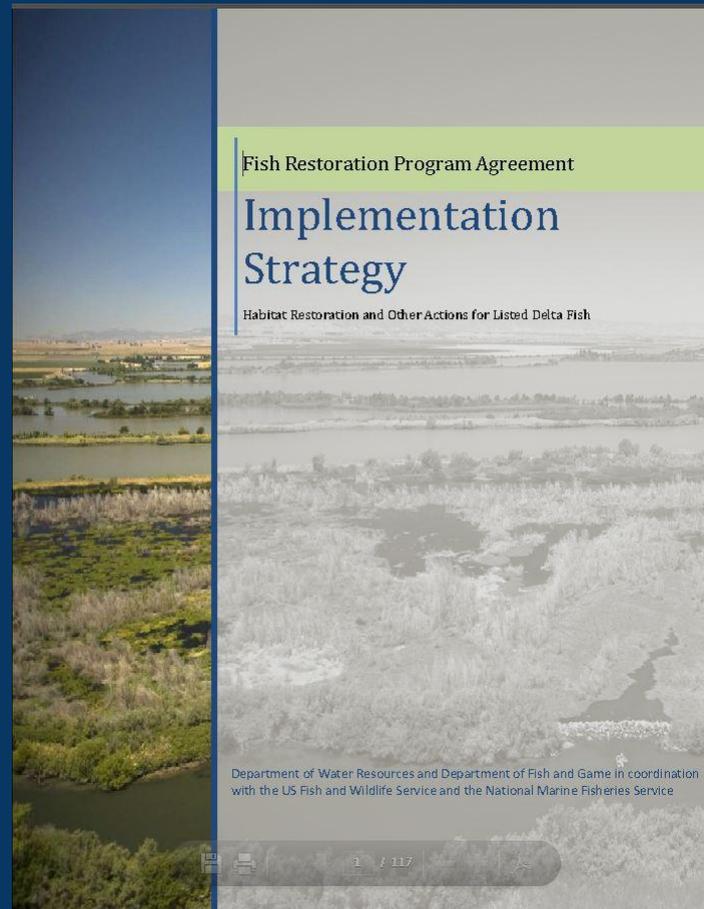
# Water Quality Conditions Report

- Hydrologic Conditions
- Water Quality Monitoring
- Phytoplankton and Chl A
- Zooplankton
- Benthic Monitoring
- Special Studies
- Continuous Monitoring

# Delta Regional Monitoring Program

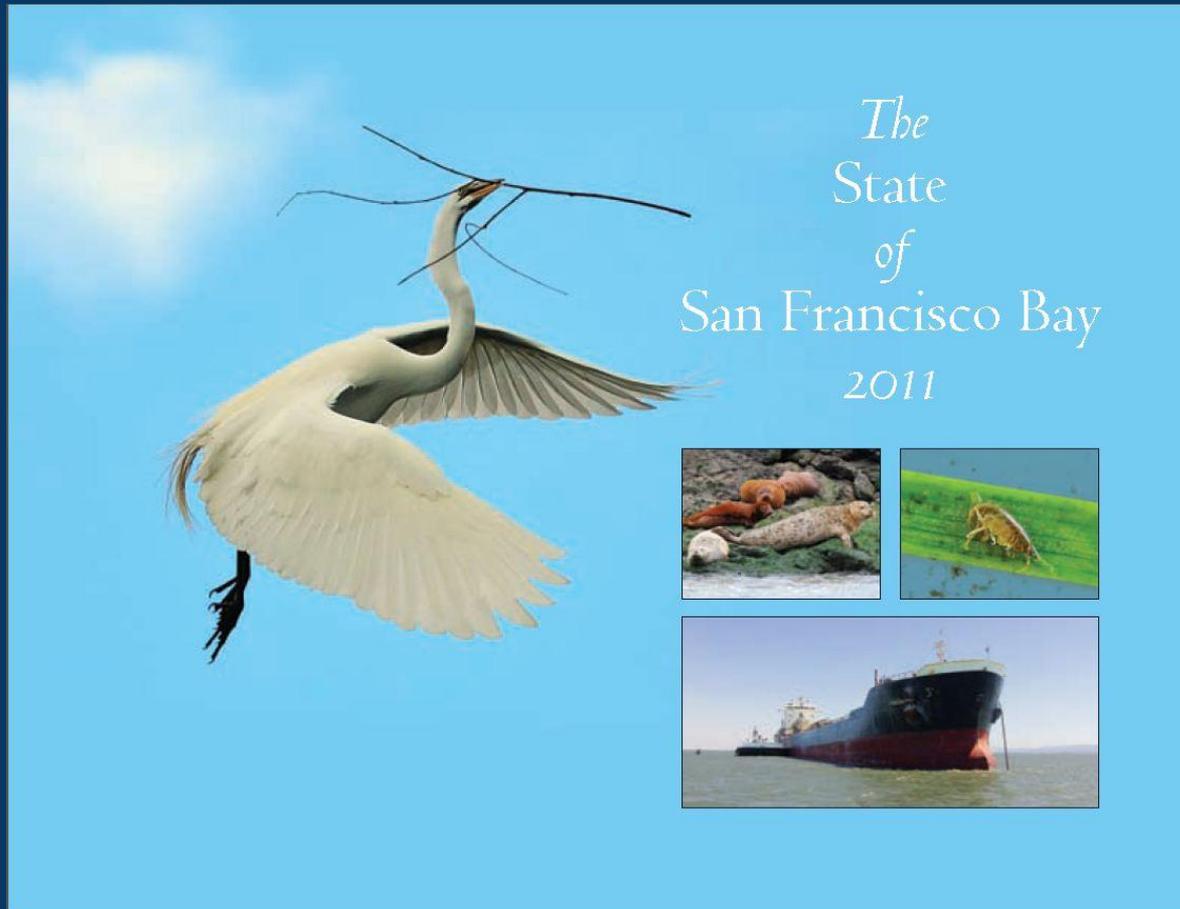


# Department of Fish and Game



Category	Metric	Pre- and Post- Project Comparison	Regional Comparison	Adjacent Channel Comparison	Comments
Physical and Chemical	Inundation regime	X			Gauges, ADCP's, model output
	Tidal excursion	X			Gauges, ADCP's, model output
	Residence time	X		X	ADCP's, modeling
	Temperature	X	X	X	Continuous loggers
	Turbidity, salinity	X	X	X	Continuous loggers
	DO	X	X	X	Continuous loggers, discrete sampling
	pH	X	X		
	Nitrogen (NH <sub>3</sub> , NH <sub>4</sub> , NO <sub>3</sub> )	X	X		Discrete sampling
	Chlorophyll a and/or b	X	X	X	Discrete sampling
	Pesticide levels	X	X	X	Discrete sampling
MeHg	X	X	X	Bioaccumulation	
Vegetation	Area of emergent vegetation by species	X	X		Aerial imagery & ground-truthing
	Area of SAV by species	X	X		Aerial imagery & ground-truthing
	Terrestrial habitat area by type	X			Aerial imagery & ground-truthing includes seasonal wetlands, agriculture, grasslands, riparian
Fish	Use of restored habitat	X		X	Can use a combination of sampling and telemetry methods. Sampling methods are dependent on the target species. Possible methods include: trawl, fyke, RSTR, gill net, seining, ichthyoplankton nets
	Number and size of fish by species	X	X	X	
	Growth		X		
	Residence time	X	X	X	
	Seasonal % alien	X			
Food Web	Chlorophyll a	X	X	X	Continuous, discrete
	Phytoplankton species	X	X	X	Discrete, includes <i>Microcystis</i>
	Primary production	X	X	X	DO or C14 method? Discrete
	Zooplankton species & density	X	X	X	Discrete
	Mesozooplankton species & density	X	X	X	Discrete Food Web
	Benthic invertebrate species & density	X	X		Discrete

# State of the Estuary Report



**SUMMARY OF BAY HEALTH, 2011**

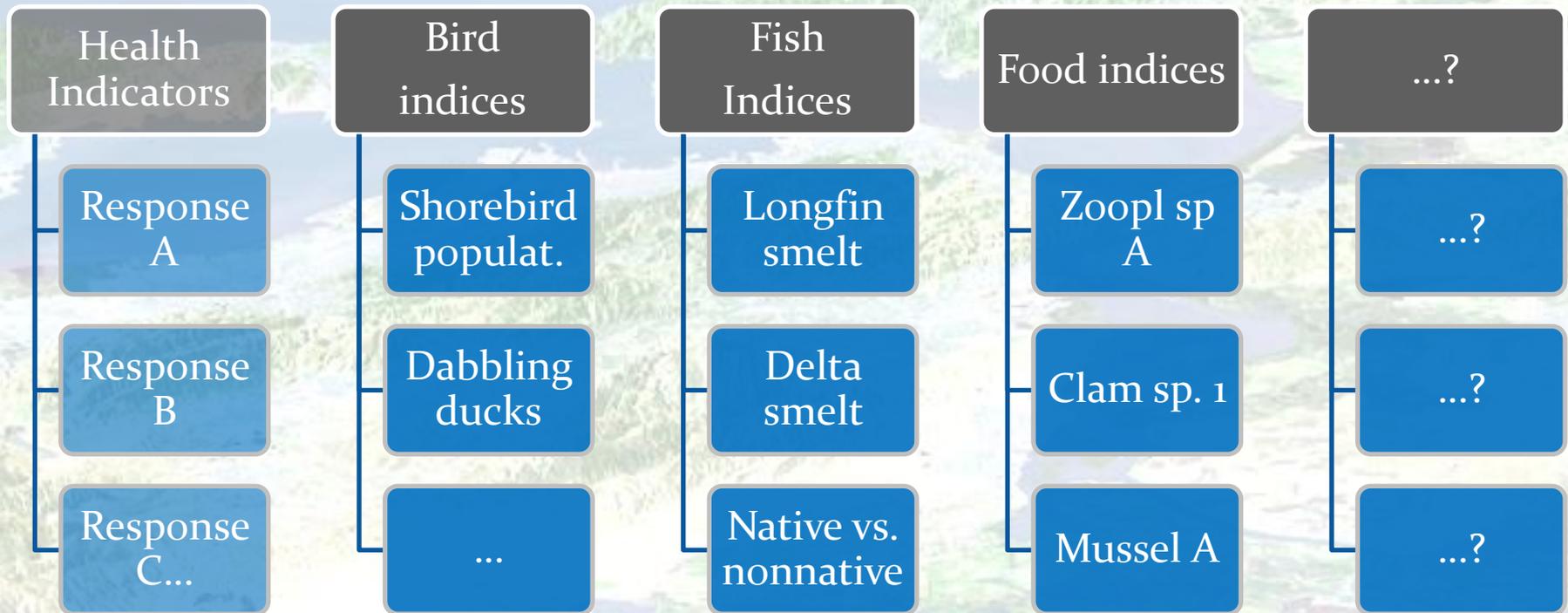
	STATUS	TREND	DETAILS
<b>WATER</b>			
Safe for aquatic life	Fair	Improving	Bay water quality is better than 40 years ago, but the rate of improvement has slowed. Mercury, exotic species, toxic sediments, and trash are still problems, with improvement expected for exotics and trash. Many potentially harmful chemicals have yet to be assessed.
Fish safe to eat	Fair	No change	Limited consumption of most popular Bay fish species is advised due to contamination from legacy pollutants. No signs of improvement since 1994.
Safe for swimming	Good	No change	Most Bay beaches are safe for swimming in summer, but bacterial contamination is still a problem at most beaches in wet weather.
Freshwater inflow	Poor	No change	Amounts and variability of freshwater inflows have been reduced, resulting in chronic drought conditions for the Estuary. Flow conditions have been predominantly poor for the last 10 years, with the Freshwater Inflow Index at a record low level in 2010.
<b>HABITAT</b>			
Estuarine open water	Fair to poor	Deteriorating	Quantity and quality of springtime habitat is declining. Since the 1980s, habitat conditions have generally been poor in all but wet years.
Baylands	Fair	Improving	Historic decline has ended; gradual restoration underway; there is a long way to go.
Watersheds	Fair	No change	Watersheds are largely stabilizing after damage from historical land use changes; monitoring in more watersheds is needed to improve assessment of status.
<b>LIVING RESOURCES</b>			
Fish	Mixed, mostly fair	Deteriorating	Fish abundance and diversity are declining in all regions of the Bay except near the Golden Gate. The fish community is in poor condition in Suisun Bay.
Shrimp/Crab	Good	Improving	Most shrimp and crab populations are increasing, but ocean species dominate in the Bay. The abundance of Dungeness crab juveniles fluctuates widely, but Bay shrimp are generally stable.
Birds	Mixed, mostly fair	Trends mixed	Some populations are increasing, some are static, and some are declining, with some earlier increases recently reversed. Tidal marsh birds are below desired levels. Reproductive success is generally low or has decreased since 1993.
<b>ECOLOGICAL PROCESSES</b>			
Flood events	Poor	Deteriorating	Dams and water diversions have cut frequency and duration of floods by more than half, reducing freshwater inflow variability and transport of sediment and nutrients to the Bay.
Food web	Fair	Deteriorating	Declines in reproduction of fish-eating birds suggest that less food is available.
<b>STEWARDSHIP</b>			
Individual/Community action	Fair	Improving	Active stewardship could be greater, but regional efforts appear to be increasing. Bay Area citizens are using water more efficiently, and we are gradually expanding our use of recycled water.
Management action (example)	Good	Improving	In-Bay disposal of dredged material has been greatly reduced since the Comprehensive Conservation and Management for the Estuary was adopted in 1993.

# Next Steps – Portal Development

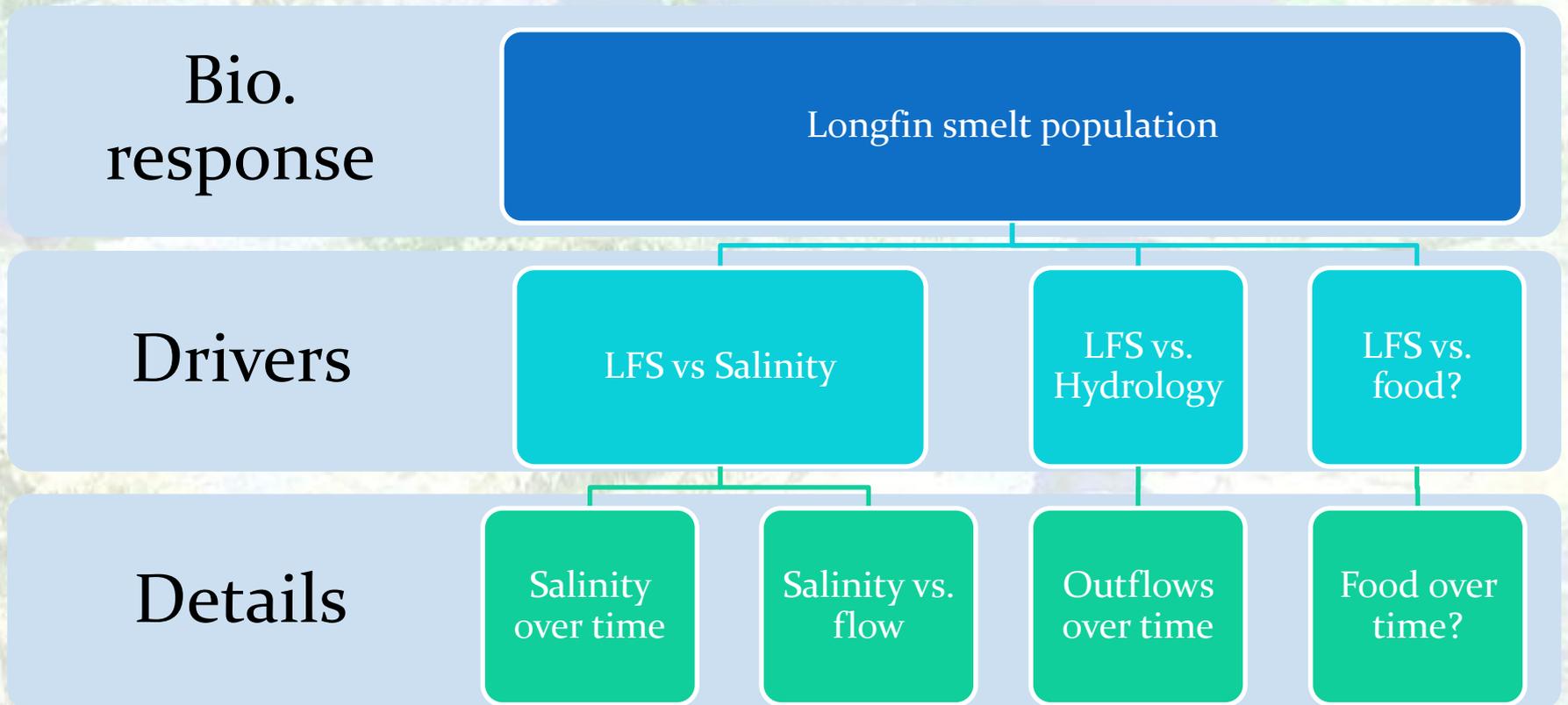
- D-1641 Story Board
- Focus on biota status and trends
- Relate to environmental drivers
  
- Performance Measures

# Main principle explained

Show biological responses ( $\equiv$ “health”)  $\rightarrow$  then drivers of those responses  $\rightarrow$  then driver details



Example for one bio. response (*longfin smelt*, “LFS”);  
Main principles setup 2



## Estuary monitoring portal: **guidance needed**

- Spatial extent; purpose
- Approach (condition as biological response)
- Ecosystem condition indicators (species; metrics; other)
- Key drivers for each condition indicator
  - Criteria for “credible hypothesis” status
- The details: what is behind the drivers
  - Usually, driver/time, but other possibilities (?)
- Relationship to other portals

An aerial photograph of a coastal estuary system. The image shows a winding river or stream that flows from the lower right towards the upper left, eventually emptying into a larger body of water. The surrounding landscape is characterized by rolling green hills and valleys, with some areas appearing more developed or agricultural. The water is a dark blue-grey color, contrasting with the green of the land. The overall scene is a natural, scenic view of a coastal waterway.

**Estuary Monitoring Portal**

**Thank you!**