

Longfin Smelt Literature Review and Study Plan Development

Ben Greenfield
April Robinson

Wednesday, January 12, 2011



Background for Current Work

Longfin smelt state “threatened” in 2009



**Green sturgeon,
longfin smelt, 
and dredging operations
in the San Francisco Estuary**



SAN FRANCISCO ESTUARY INSTITUTE



Project Team

- **Science Leads:**

Ben Greenfield Environmental Scientist

April Robinson Environmental Analyst

Randy Baxter CDFG (Invited)

- **Science Review:**

Letitia Grenier Environmental Scientist

- **Project Management:**

Sarah Lowe Project Manager

Lawrence Leung Contracts Manager

- **Graphic Design and Data Visualization:**

Meredith Williams EDIT Program Manager

Linda Wanzcyk Art Director



Goals of the Longfin Smelt Project

- Provide the LTMS and CDFG with better information on which to manage longfin smelt
- Provide and synthesize scientific information upon which to base take assessments
- Develop a suite of potential studies to be carried out at a later time



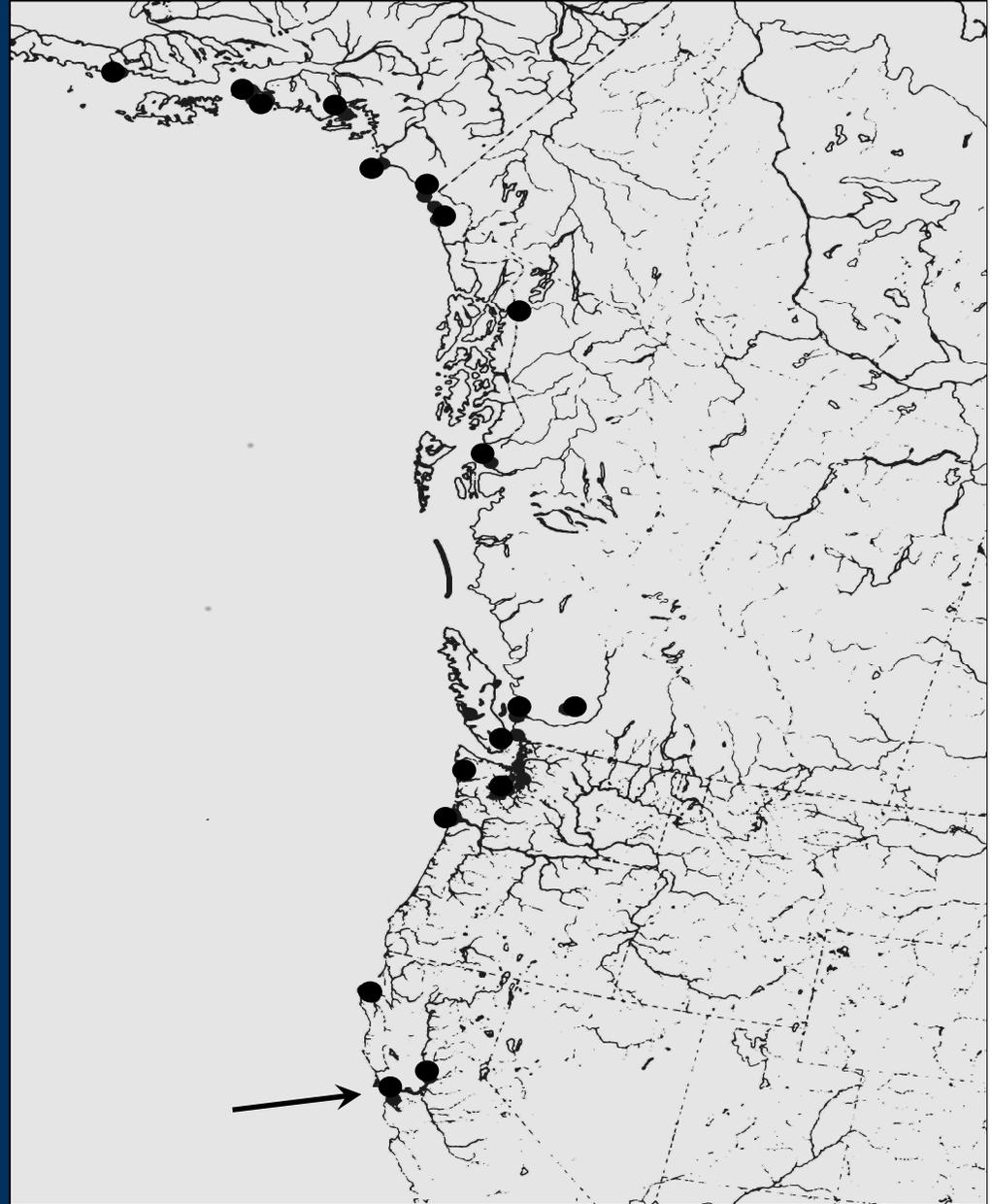
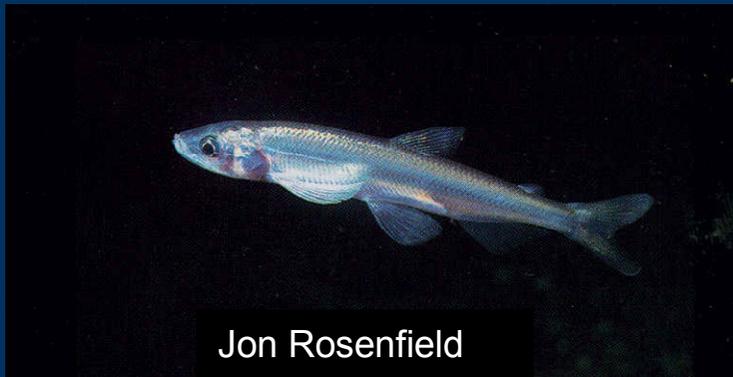
Desired Outcome

- Summarize the current knowledge of the longfin smelt
 - Information resource for agencies involved with the permitting process
- Provide a Study plan which suggests potential studies of various lengths and costs to be conducted at a future time



Current State of Knowledge

- Distinct population in SF Bay?

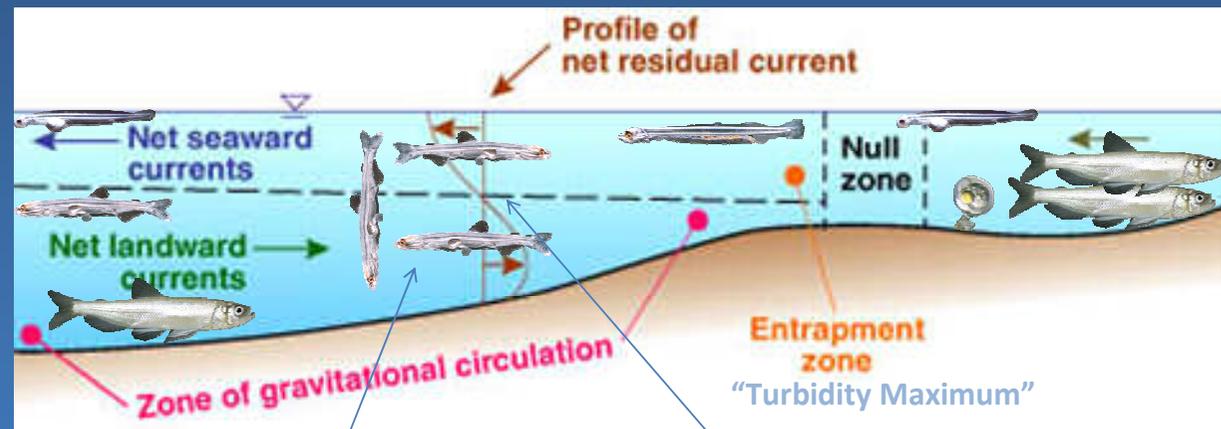


Life History

- Adults mainly between Suisun and Central Bays
- Abundance correlated with freshwater flows, salinity, turbidity

Longfin Smelt Life-Cycle Conceptual Model

Saltwater-Ocean-Estuary → Freshwater



Vertical Migration

Salinity Stratification

f_x = flow, tidal energy and depth

Jim Hobbs

Listing

Two major requirements:

Take permit

Mitigation

Federal ESA provides

Broader definition of “take”

Consultation



Positive Effects of Dredging

Increased turbidity
Channel deepening
(good for vertical
migration)
Invasive species
capture



Negative Effects of Dredging

- Entrainment in hydraulic dredges
- Possibly indirect impacts (e.g. mobilized contaminants, invasive species)

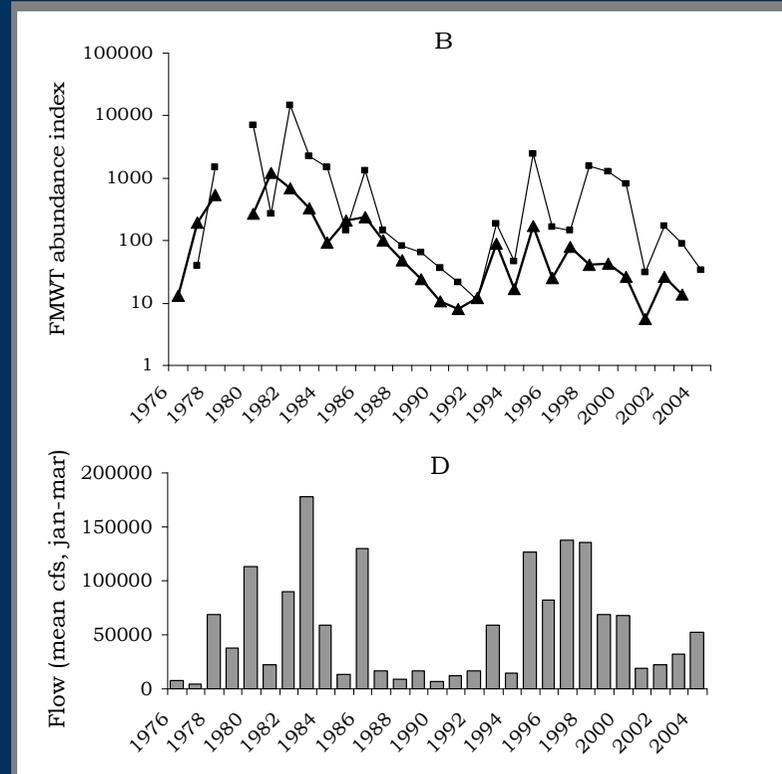


Zentner
& Swedberg

10/31/2006

Other Potential Threats

- Loss of flow due to drawdown
- Shrimp trawling by-catch
- Invasive species
- Contaminants



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Jon Rosenfield



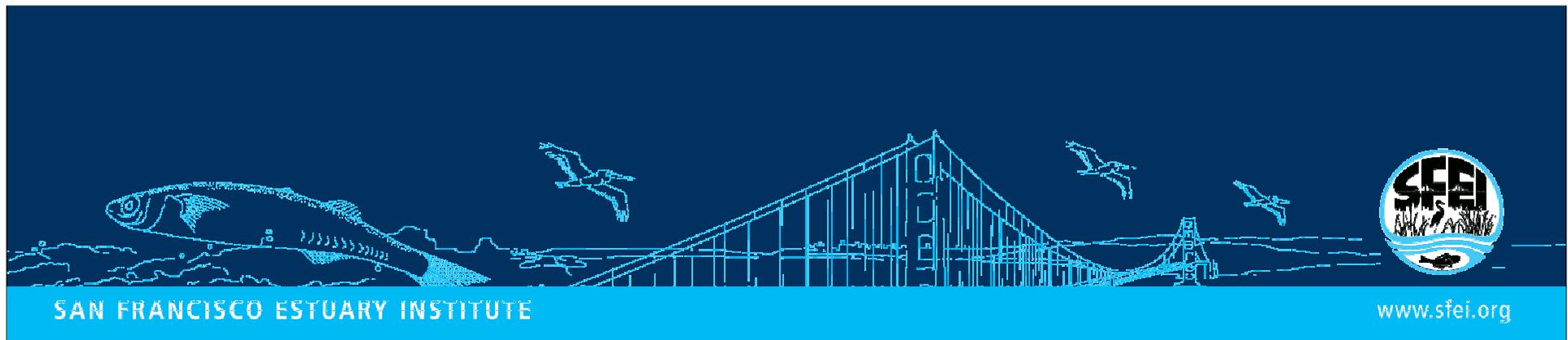
Longfin Smelt Project Overview

- Step 1: Stakeholder Meeting
- Step 2: Detailed Work Plan
- Step 3: Literature review and information gathering
- Step 4: Report
- Step 5: Presentation



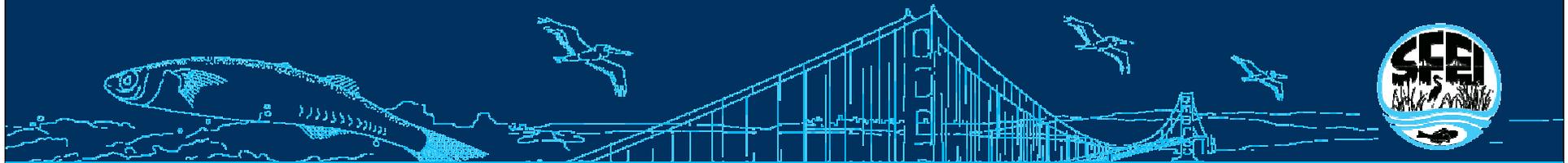
Longfin Smelt Project Timeline

Tasks and Deliverables	2010		2011					
	Nov	Dec	Jan	Feb	Mar	Apr	May	June or later
1. Onboard Meeting								
Schedule and Hold Onboard Meeting	5-Nov							
Provide a Summary of on Board Meeting	15-Nov							
2. Stakeholder Meeting								
Schedule Stakeholder Meeting		15-Dec						
Hold Stakeholder Meeting/Present Draft Plan			12-Jan					
3. Detailed Work Plan								
Submit Detailed Work Plan			26-Jan					
Approval of Detailed Work Plan				26-Feb				
4. Literature Review and Report Writing								
Literature Review and Report writing								
Submit Draft Report						7-Apr		
Review of Draft Report by US ACE/LTMS							7-May	
Submit Final Report							31-May	
Review of Final Report by US ACE/LTMS								30-Jun
5. Presentation								
Presentation at LTMS Science Symposium								2011/2012

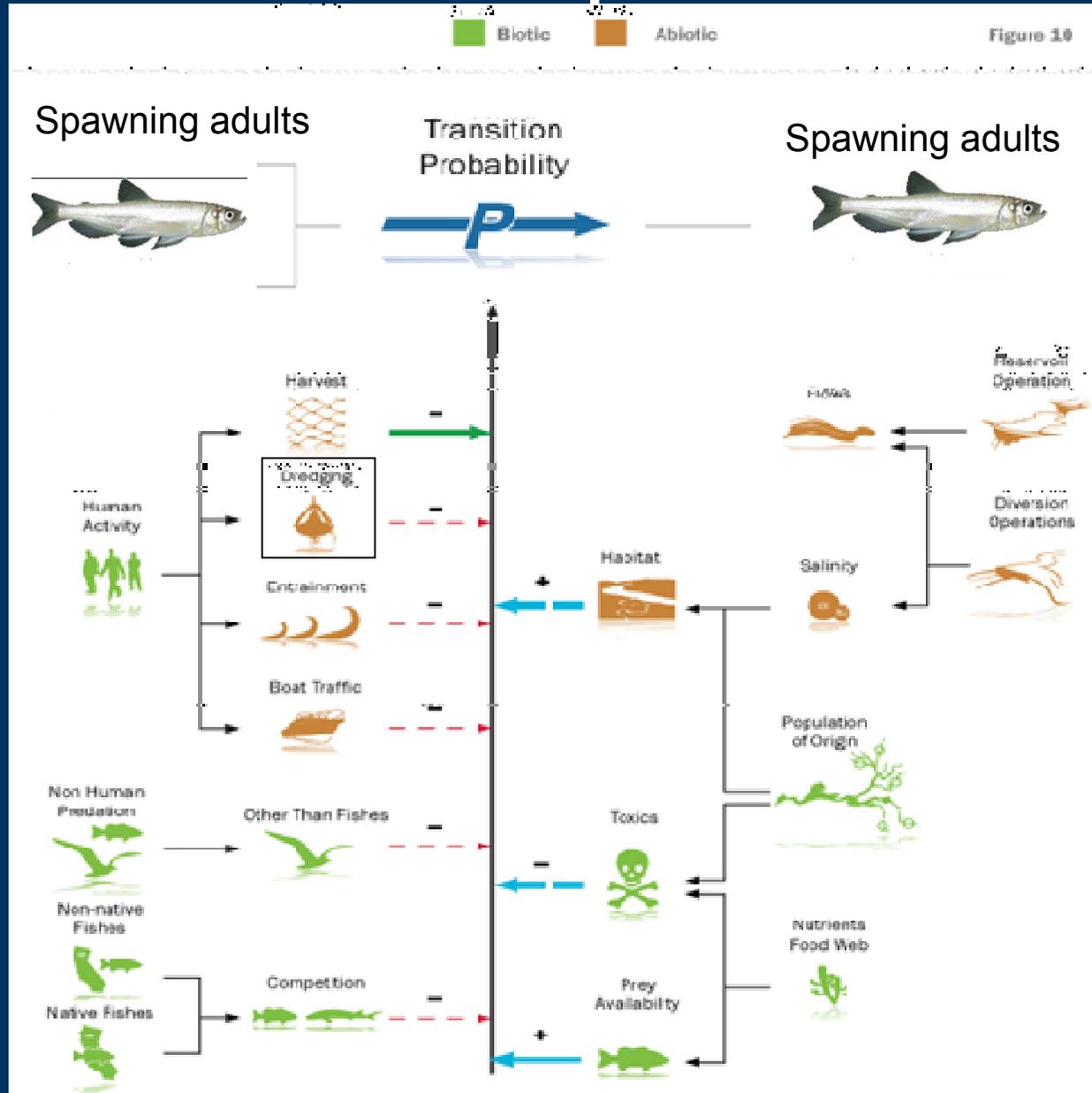


Step 3: Literature review

- Peer review journal publications
- Technical reports
- Permitting documents
- Unpublished data
- Meeting with experts

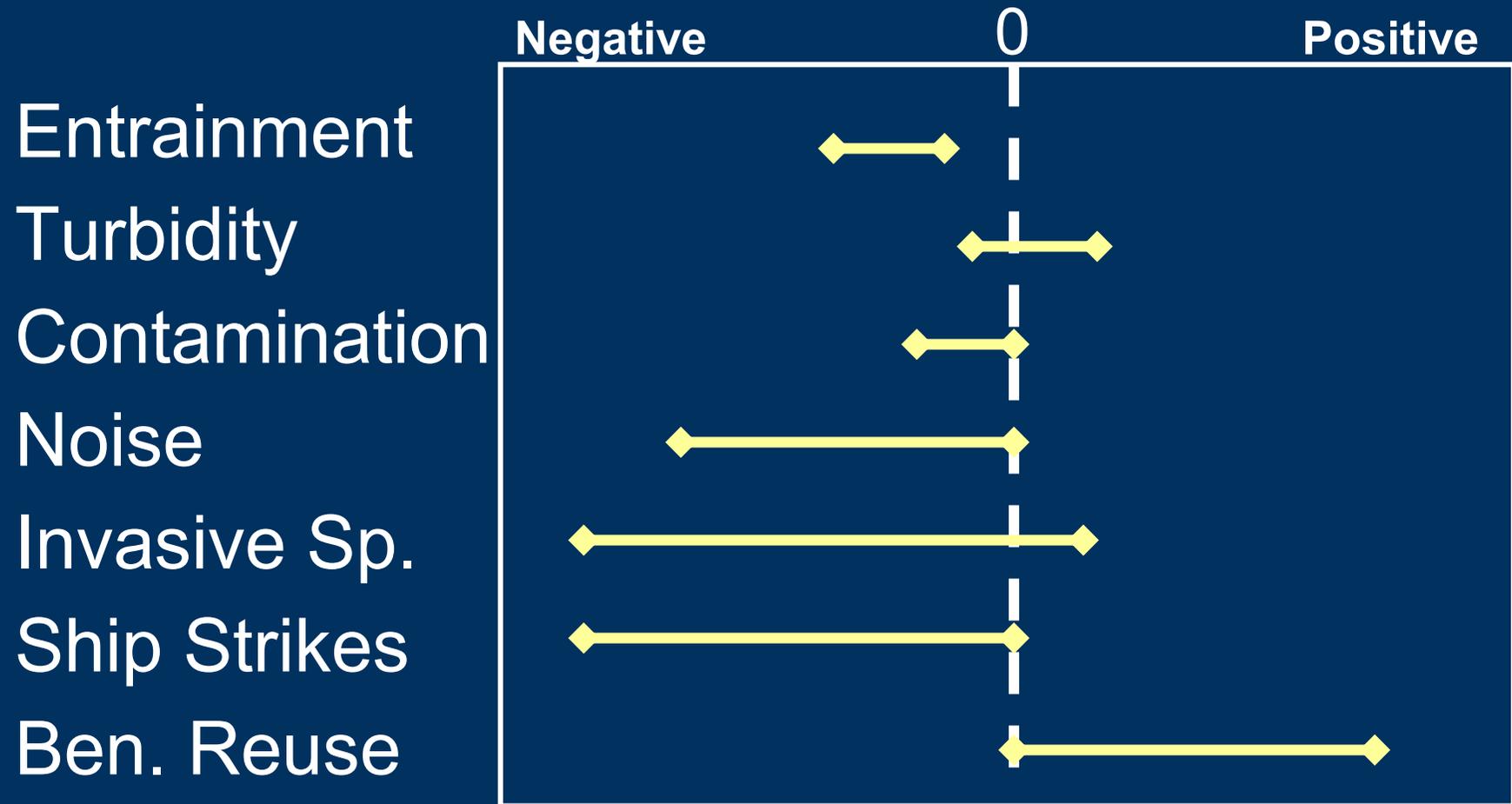


Conceptual models



DRERIP Conceptual Models

Possible effects of dredging



Topics and concepts

- Area of influence of dredging
 - Attractive nuisance of turbidity?
- Entrainment risks and possible modifications to reduce risk?
- Distribution and environmental factors
 - E.g., X2 salt wedge, temperature, season
 - How much do depth and temperature preferences reduce risk in shallow areas?
 - How far up the rivers?
- Other factors (pumping, habitat, invasive sp.)
 - Review habitat restoration activities that have been conducted

