



**New Science Developments
Proposed 2015 “Early Warning”
Monitoring to Manage Delta Smelt Salvage**

**Special Committee on Bay Delta
Item 3a
October 28, 2014**

New Science Developments

Board Briefings

- Mar 2011 – New Fishery Detection Methods
- Apr 2011 – Lifecycle Modeling
- Jun 2011 – Relevance of X2 to Fish Requirements
- Dec 2011 – Effects of Nutrient Imbalances on Food Web
- Dec 2012 – Estimating Fish Distribution & Abundance
- May 2014 – Characterizing Natural Delta Outflow
- Jul 2014 – Longfin Smelt Lifecycle Studies
- Oct 2014 – Proposed 2015 “Early Warning” Monitoring

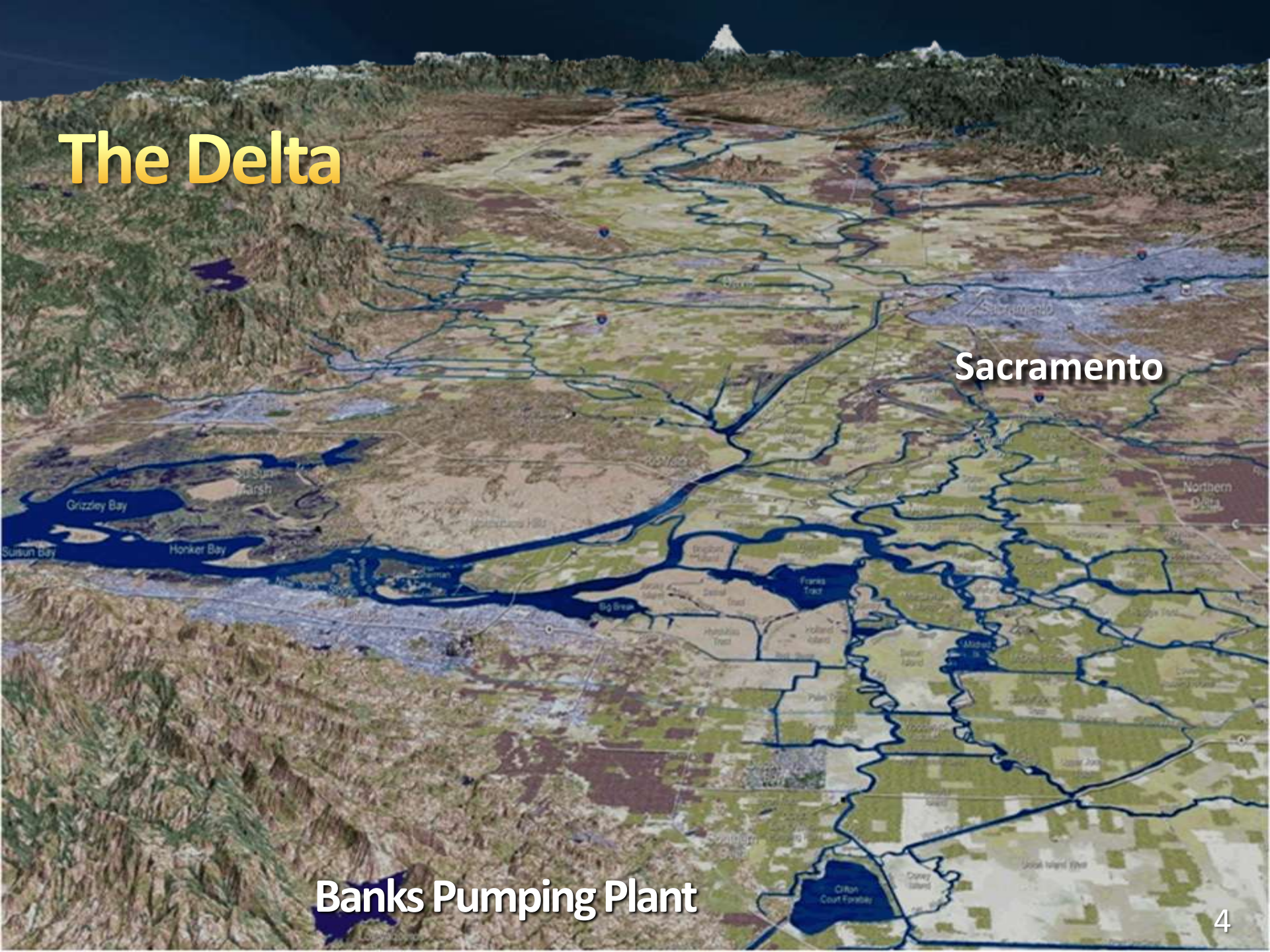
Outline of Presentation

- Biological Context
- Regulatory Context
- Operational Context
- Early Warning Monitoring Proposal

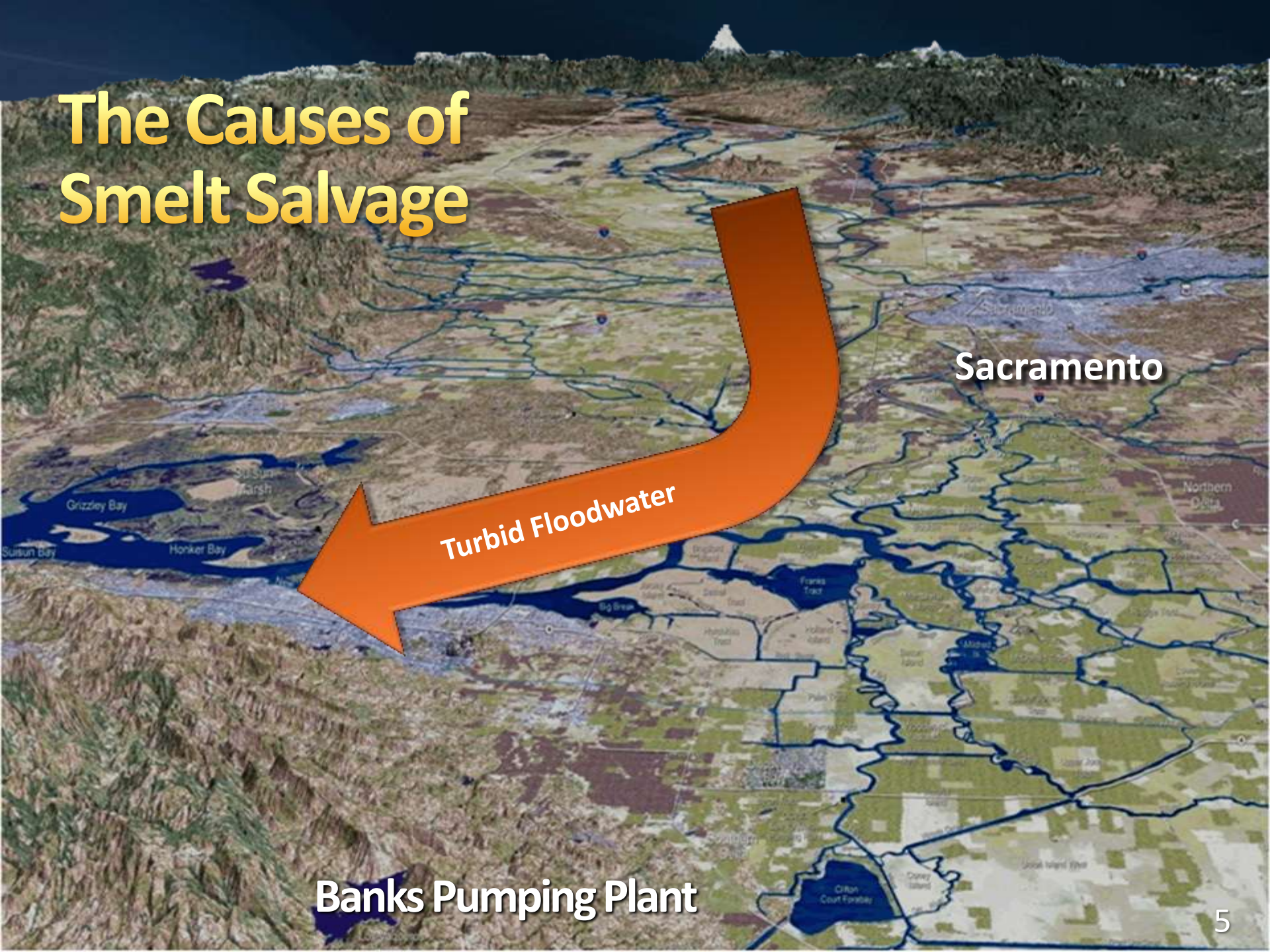
The Delta

Sacramento

Banks Pumping Plant



The Causes of Smelt Salvage



Sacramento

Turbid Floodwater

Banks Pumping Plant

The Causes of Smelt Salvage

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Turbid Floodwater

High pumping draws turbidity & Smelt to south Delta



Delta Smelt Biological Opinion

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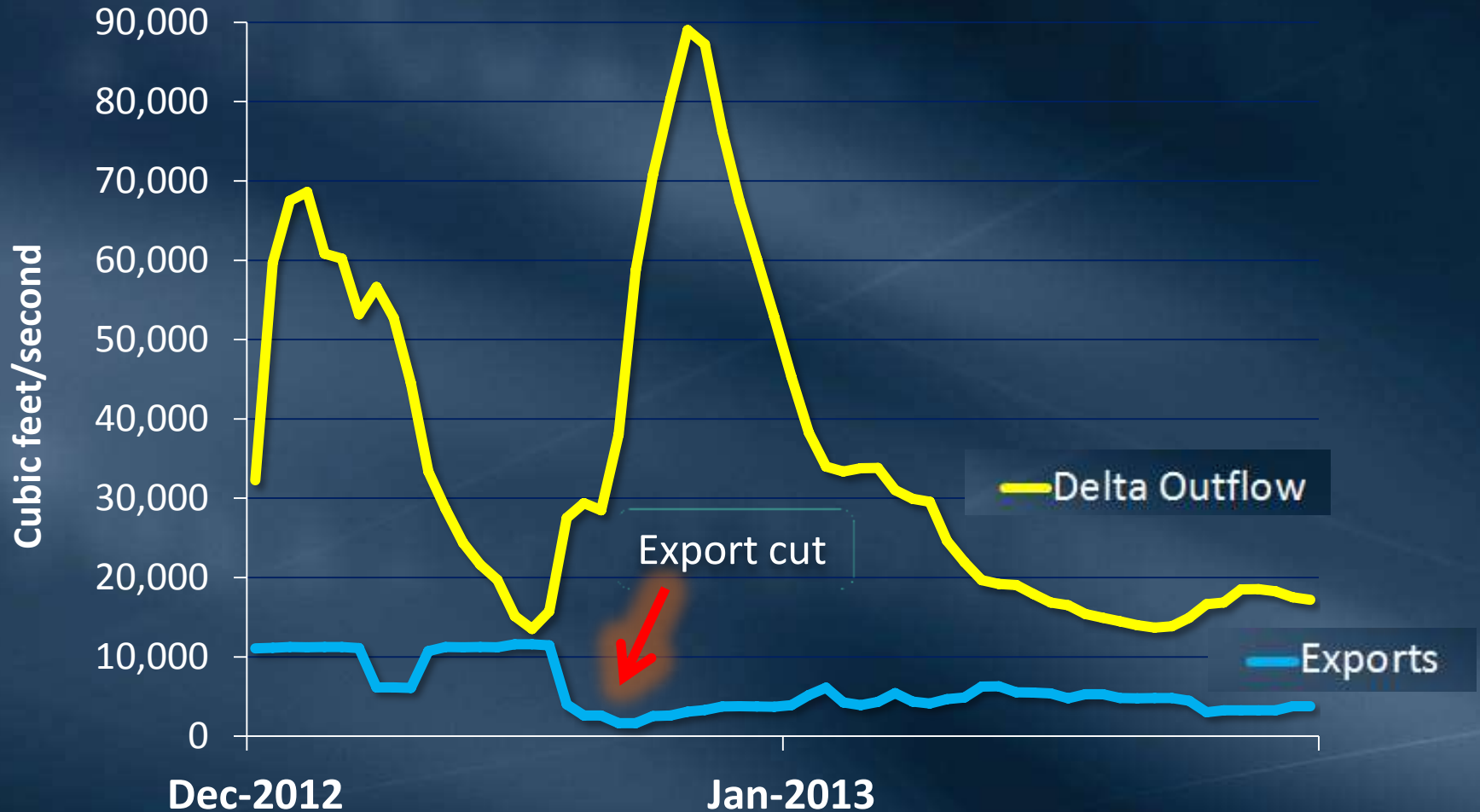
Turbid Floodwater

CAUTION

Bio Op limits flows, turbidity & smelt toward pumps

Endangered Species Act Consequences

Winter 2012-13



Options for Increasing Reliability of Exports While Minimizing Salvage

- New north of Delta intakes
- Manage turbidity distribution
- Fish monitoring near export pumps

Value of Intensive Monitoring

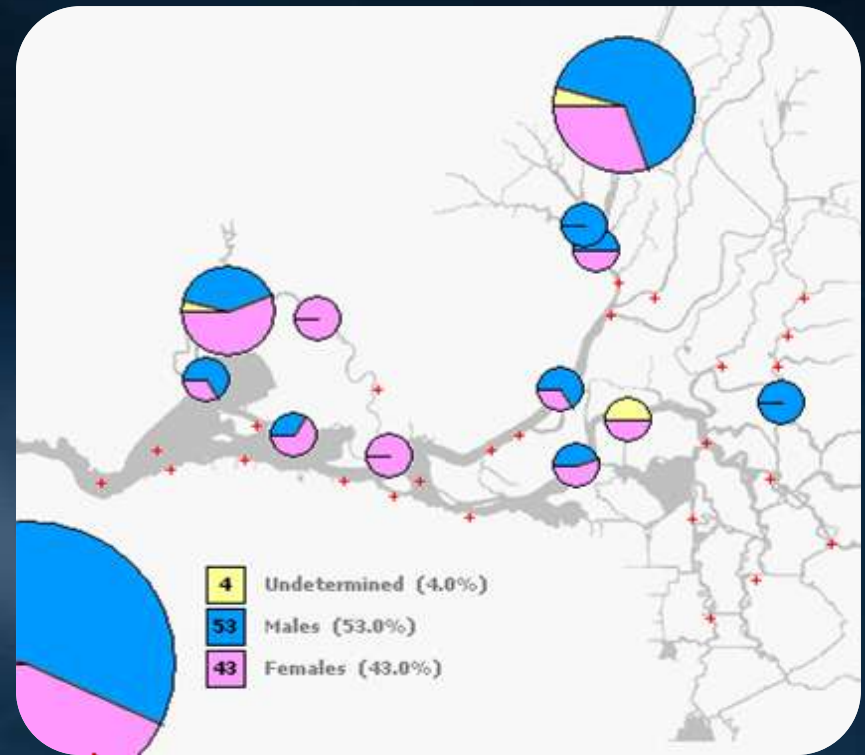
2013 Salvage Patterns



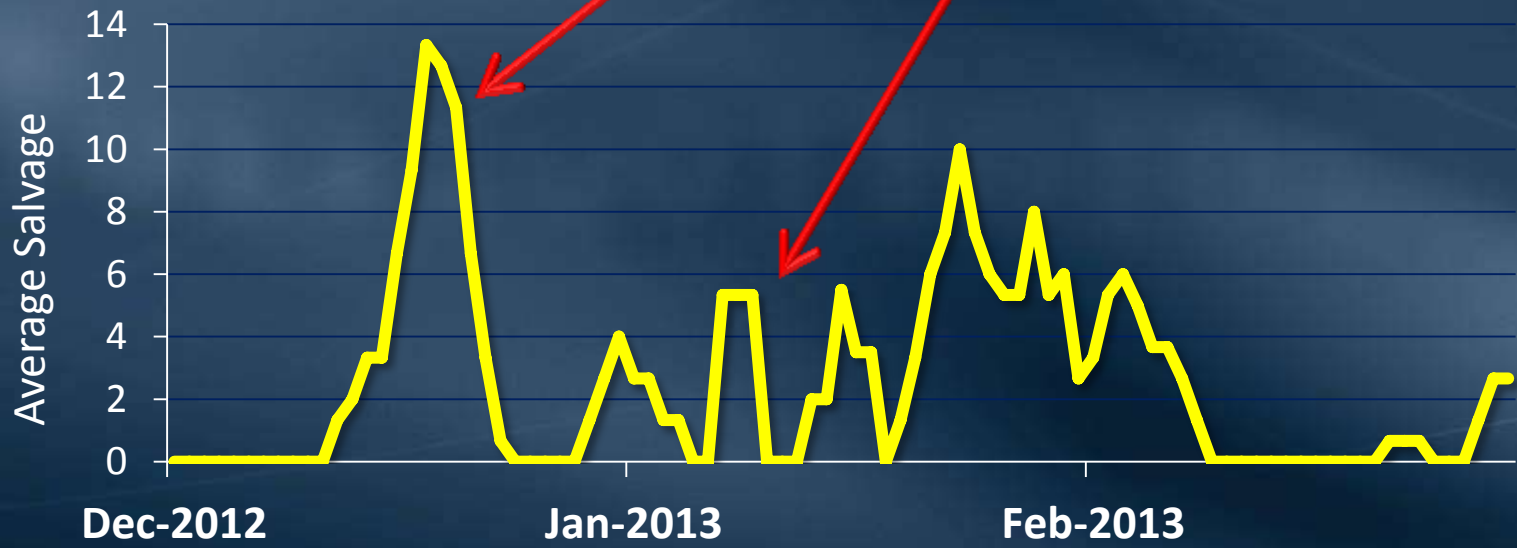
The Kodiak Trawl



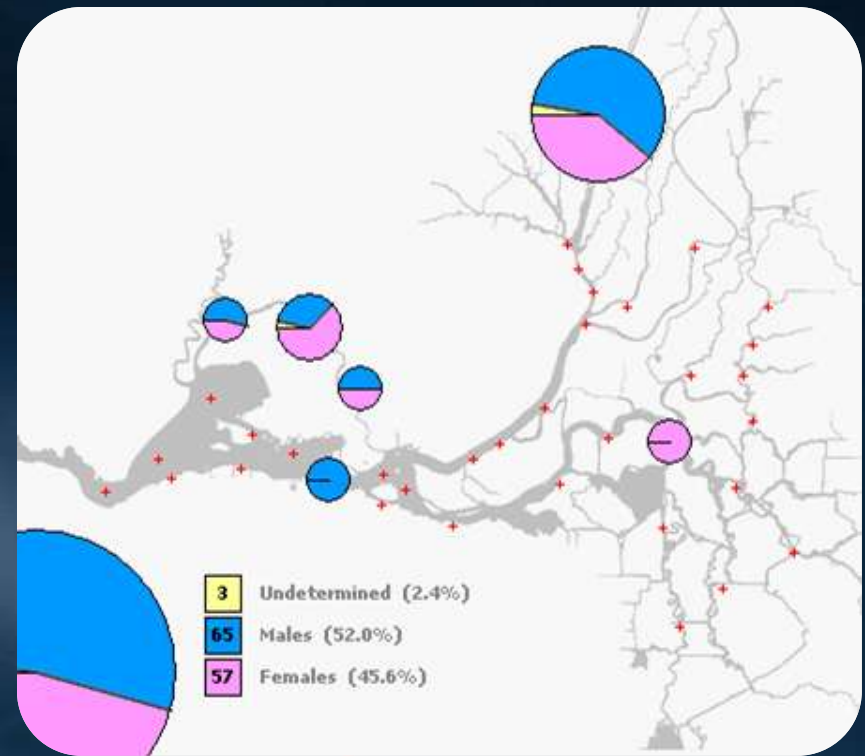
Spring Kodiak Trawl 2013 Fish Survey January



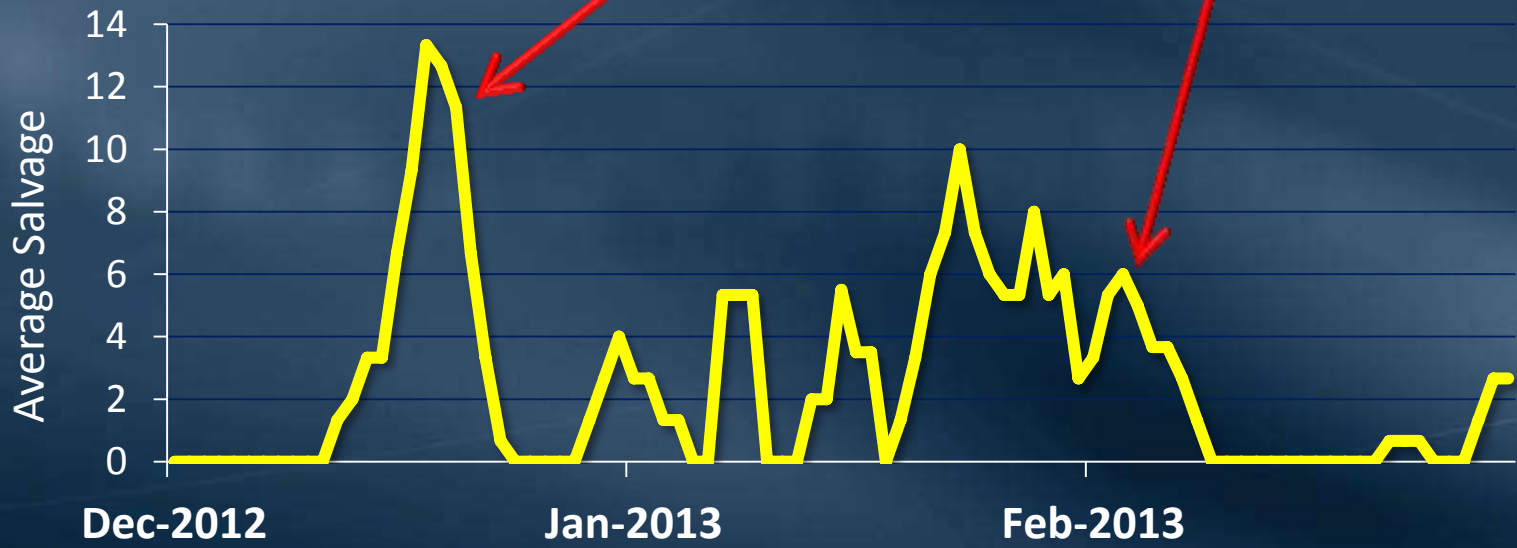
Export Cut



Spring Kodiak Trawl 2013 Fish Survey February



Export Cut





2013 - 14 Early Warning Monitoring Program

10 – 15 trawls/day
Jersey Point



Sacramento

Banks Pumping Plant

2014 - 15 Monitoring Objectives

- Are smelt near the export pumps?
- If so, what fraction of the population is at risk?
- Are smelt moving toward pumps in large numbers?

2014 - 15 Early Warning Monitoring Program

10 – 15 trawls/day at Jersey & Prisoners Point on alternate days

1. Intensive daily monitoring to detect presence & movement

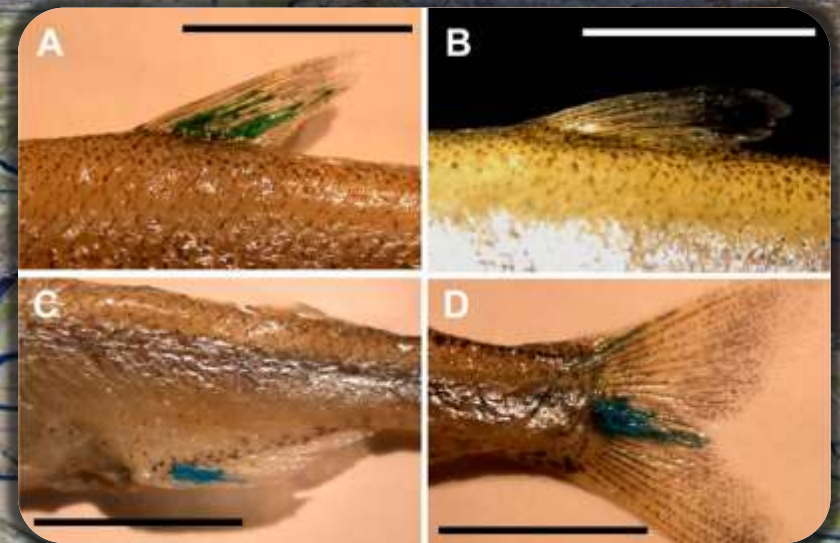
2014 - 15 Early Warning Monitoring Program

2. Intensive monthly monitoring to test gear efficiency

2014 - 15 Early Warning Monitoring Program

3. Full December Kodiak trawl to
define starting distribution of Smelt

2014 - 15 Early Warning Monitoring Program



4. Mark recapture test to identify Smelt behavior

2015 Agency Participation

- US Fish and Wildlife Service
- California Dept. of Fish and Wildlife
- US Bureau of Reclamation
- California Dept. of Water Resources
- Metropolitan Water District

Conclusion

- Improved cooperation
- Achieves reliable exports consistent with smelt protection
- Advances monitoring as an operational tool

The Delta

Sacramento

Suisun Bay

Stockton

**State & Federal
Pumping Plants**

California's Bay-Delta

