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Restoring the Sacramento-San Joaquin Delta

Leo Winternitz – February 24, 2009

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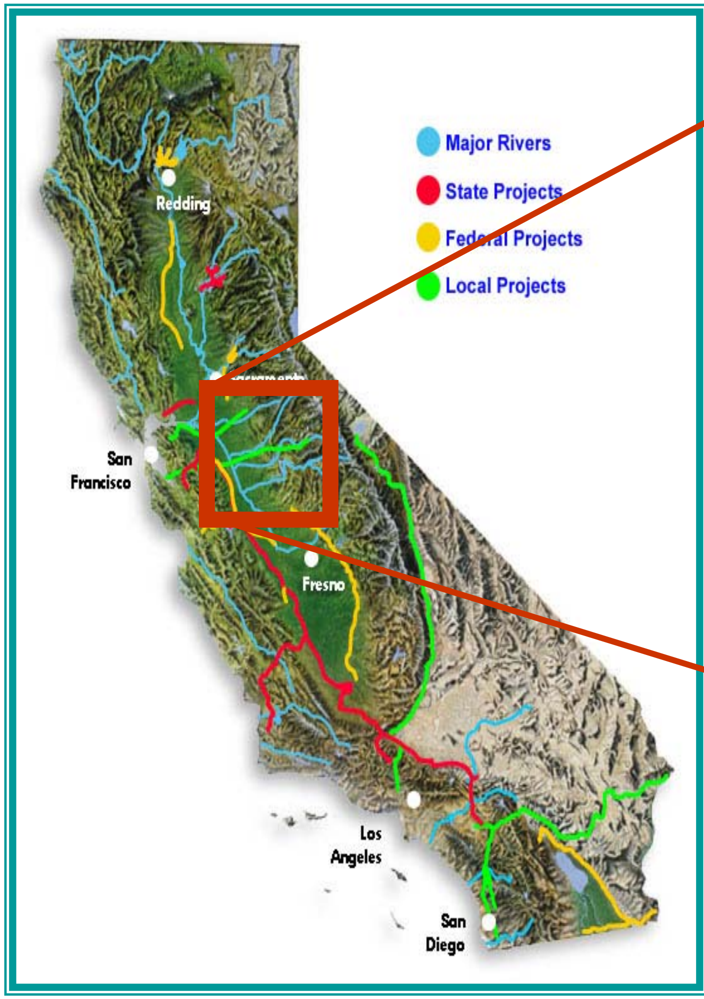
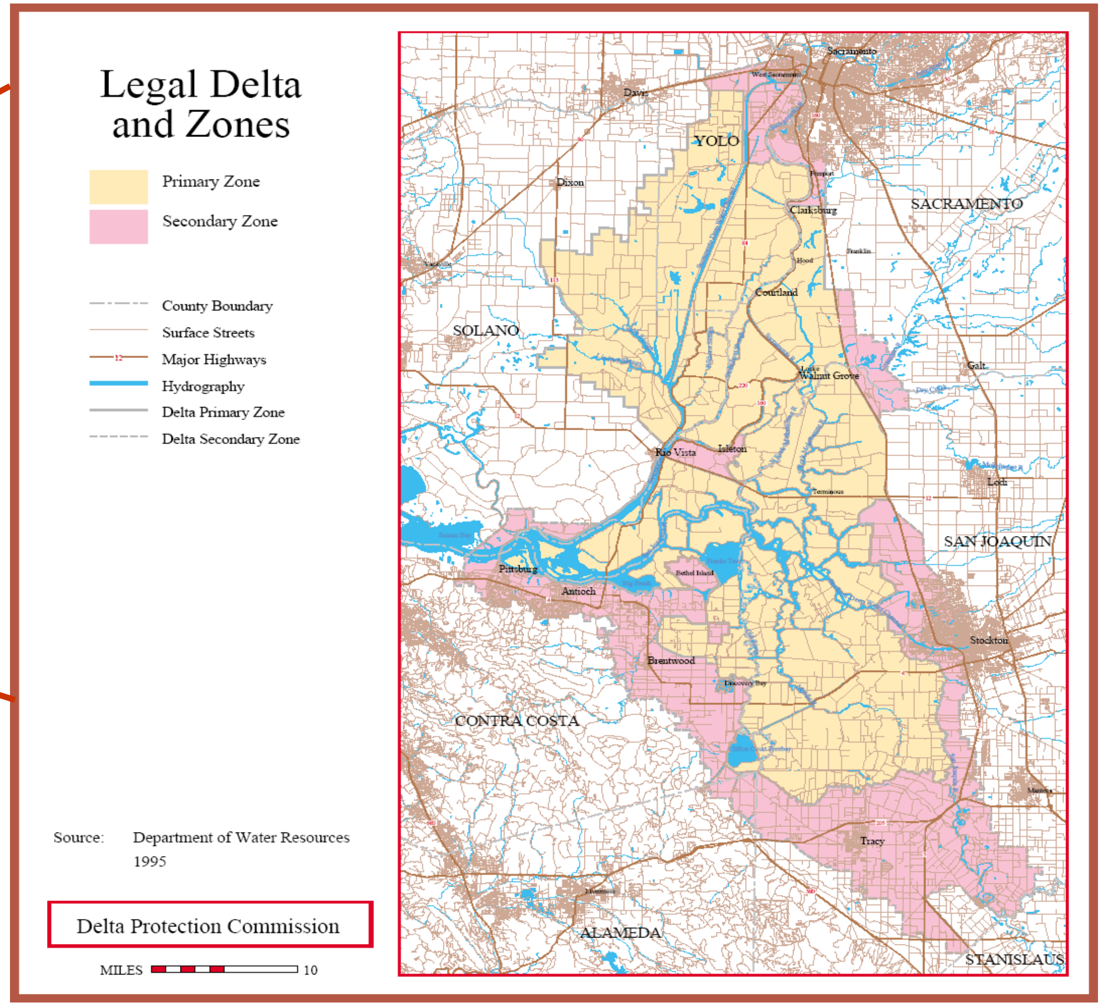
Context for Discussion

- **Significant planning efforts and studies**
  - **Delta Vision**
  - **Bay Delta Conservation Plan**
  - **UCD/ Public Policy Institute Report**
- **Water supply crisis**
- **Delta ecosystem is collapsing**
- **Major decisions will soon be made**
- **We can help shape the solution**

Sacramento-San Joaquin Delta





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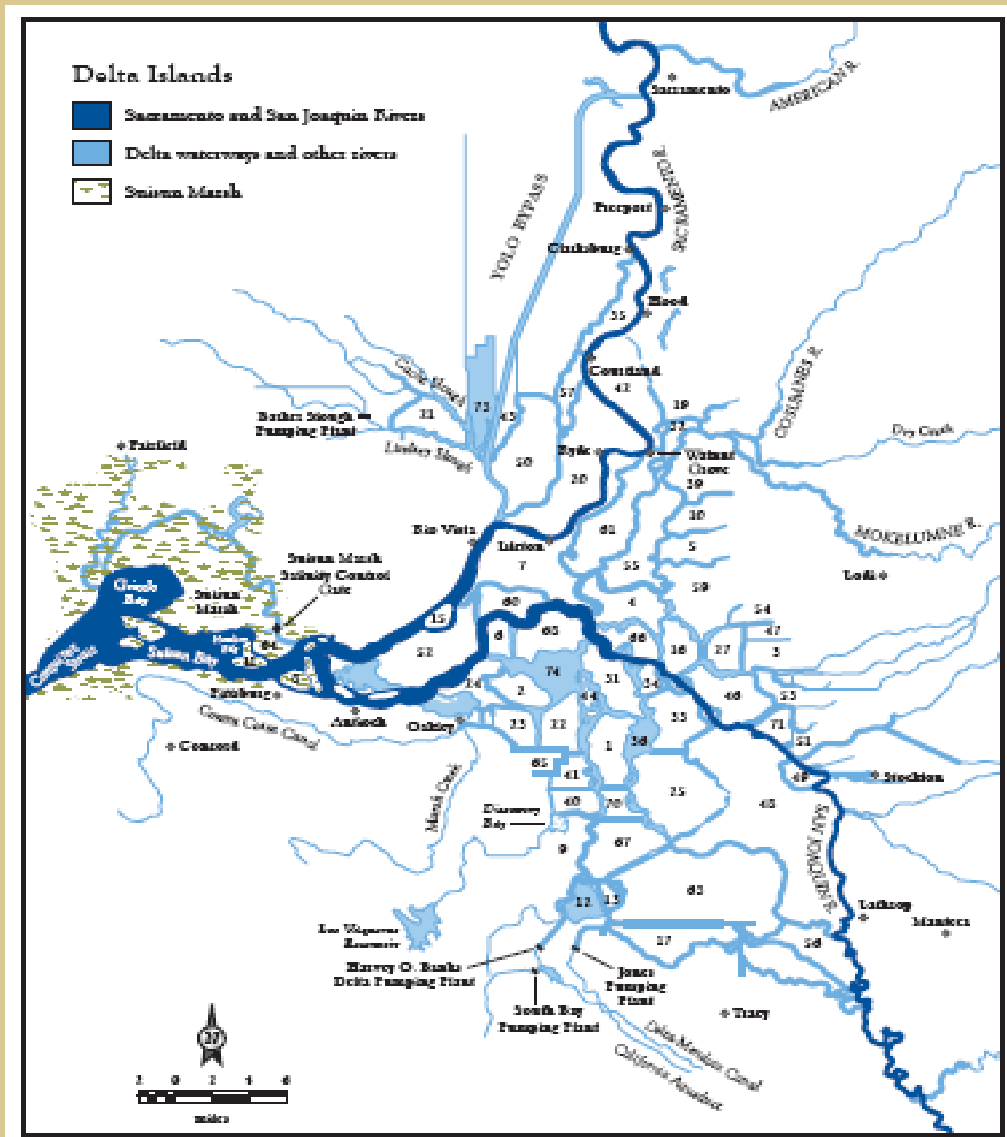
Delta Statistics



- 738,000 acres
- 520,000 acres farmed
- 700 miles of waterways
- 1100 miles of levees
- 255 birds, 54 fish
- Supplies water to more than 25 million Californians
- Irrigates 45% of the nation’s crops
- TNC Portfolio site

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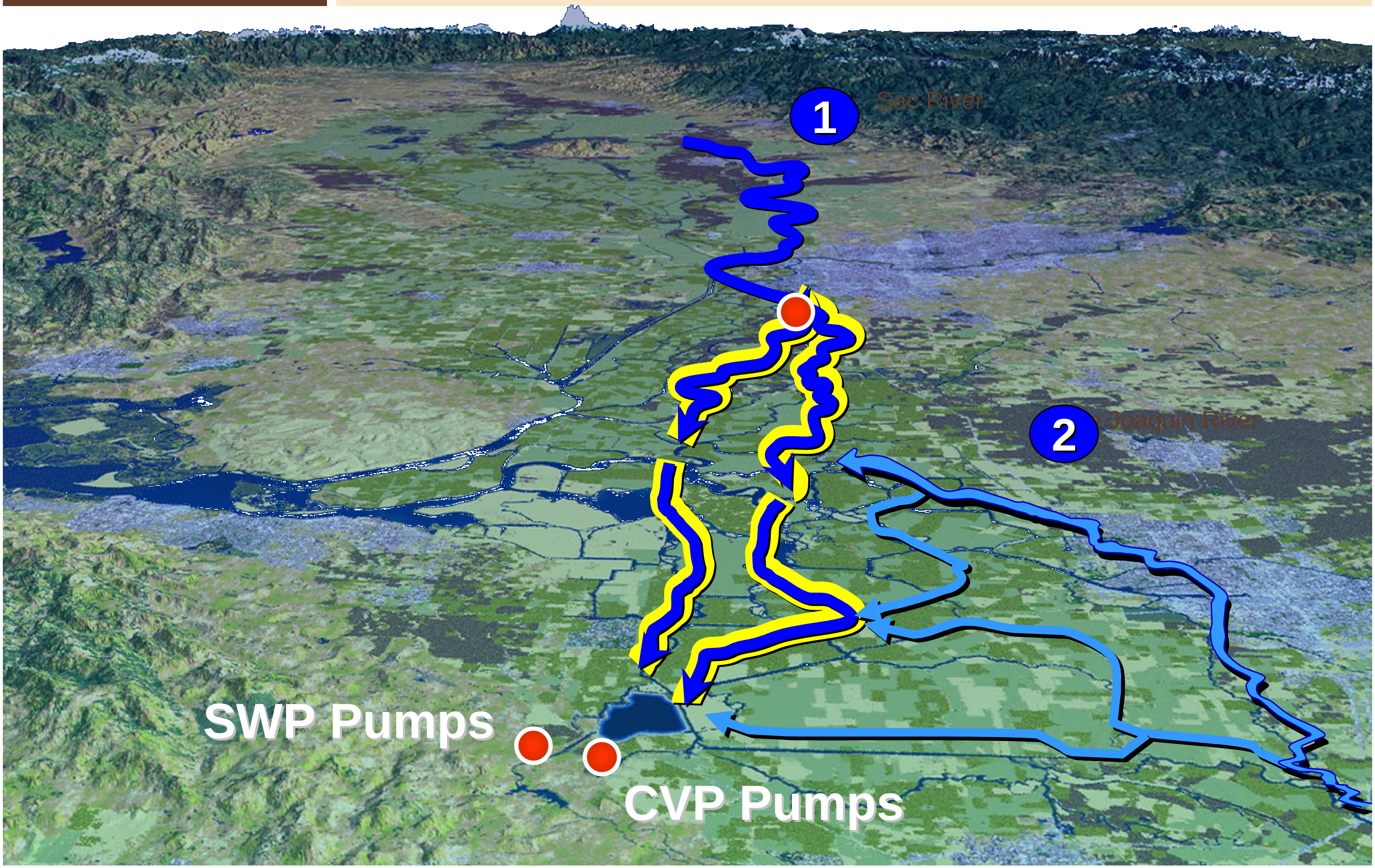
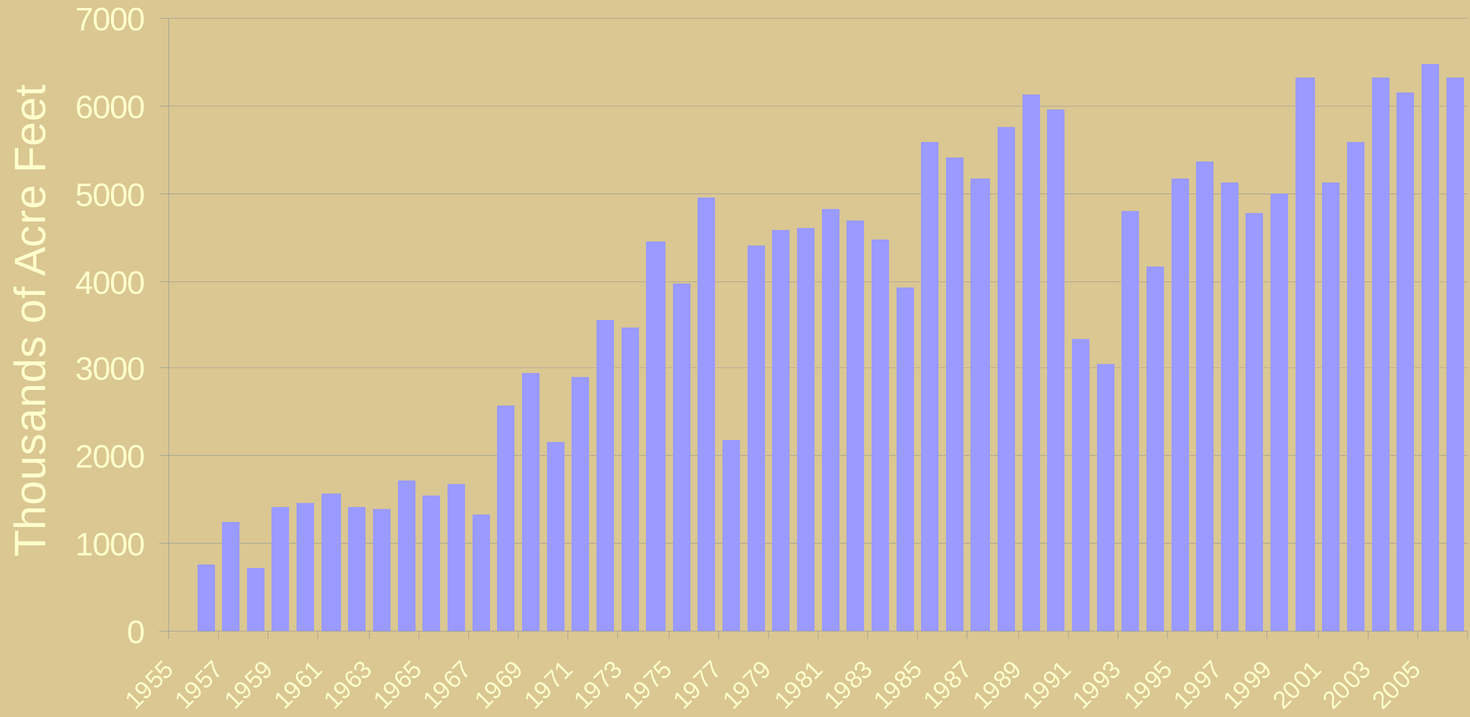
The Delta as Conveyance

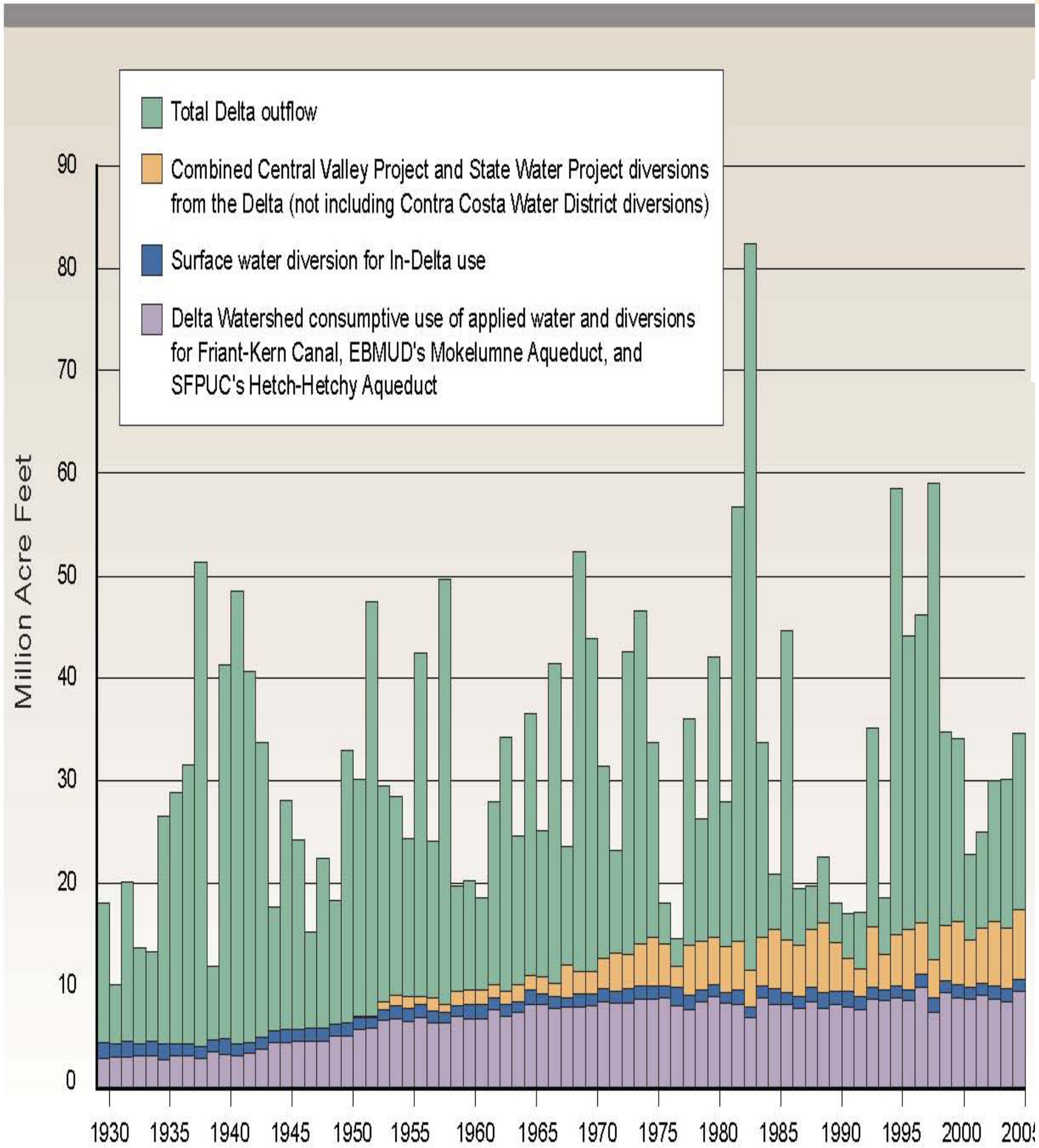


Delta Exports, 1956-2006



Source: Department of Water Resources

Diversions and Exports



Trends in Destinations and Uses

Period	Average Annual Total (MAF)	Outflow	in-Delta	Exports	Delta Watershed
1930 to 1949	25.80	81%	5%	0%	14%
1950 to 1969	31.71	67%	4%	4%	24%
1970 to 1989	34.34	51%	5%	15%	29%
1990 to 2005	32.85	48%	4%	17%	31%

Defining the Bay-Delta Conflict

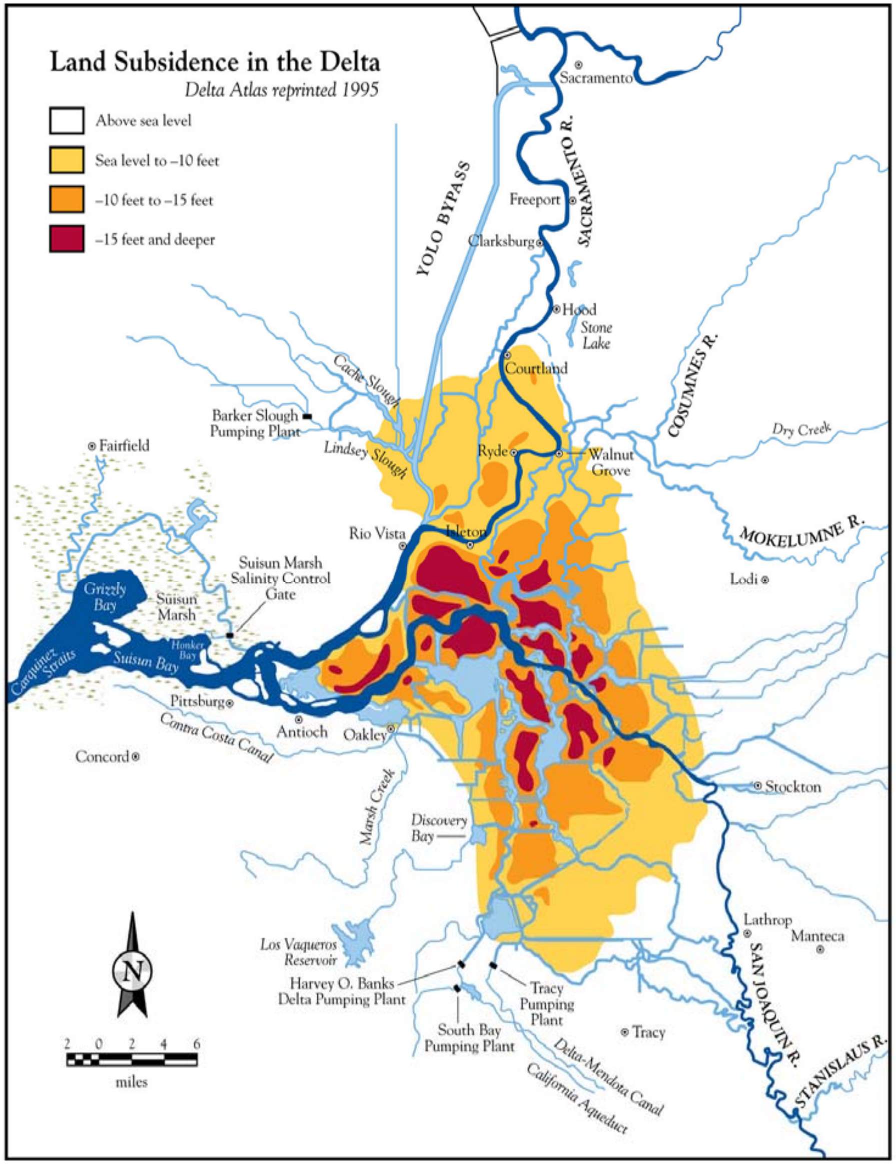
California Bay-Delta's ecosystem is at the center of competing demands.

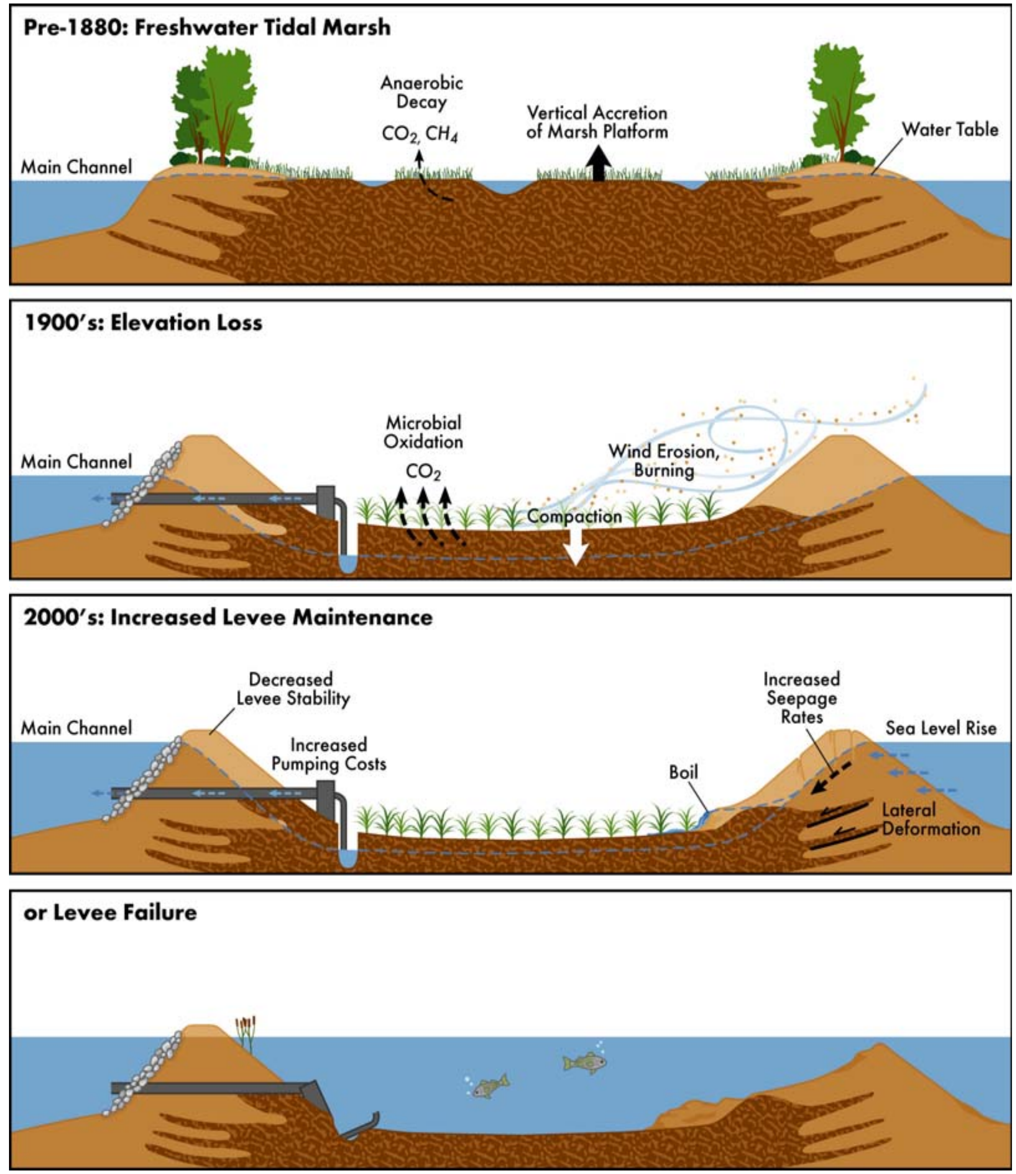
Water supplies are not fully reliable.

Water quality degradation makes it difficult and expensive to meet drinking water standards.

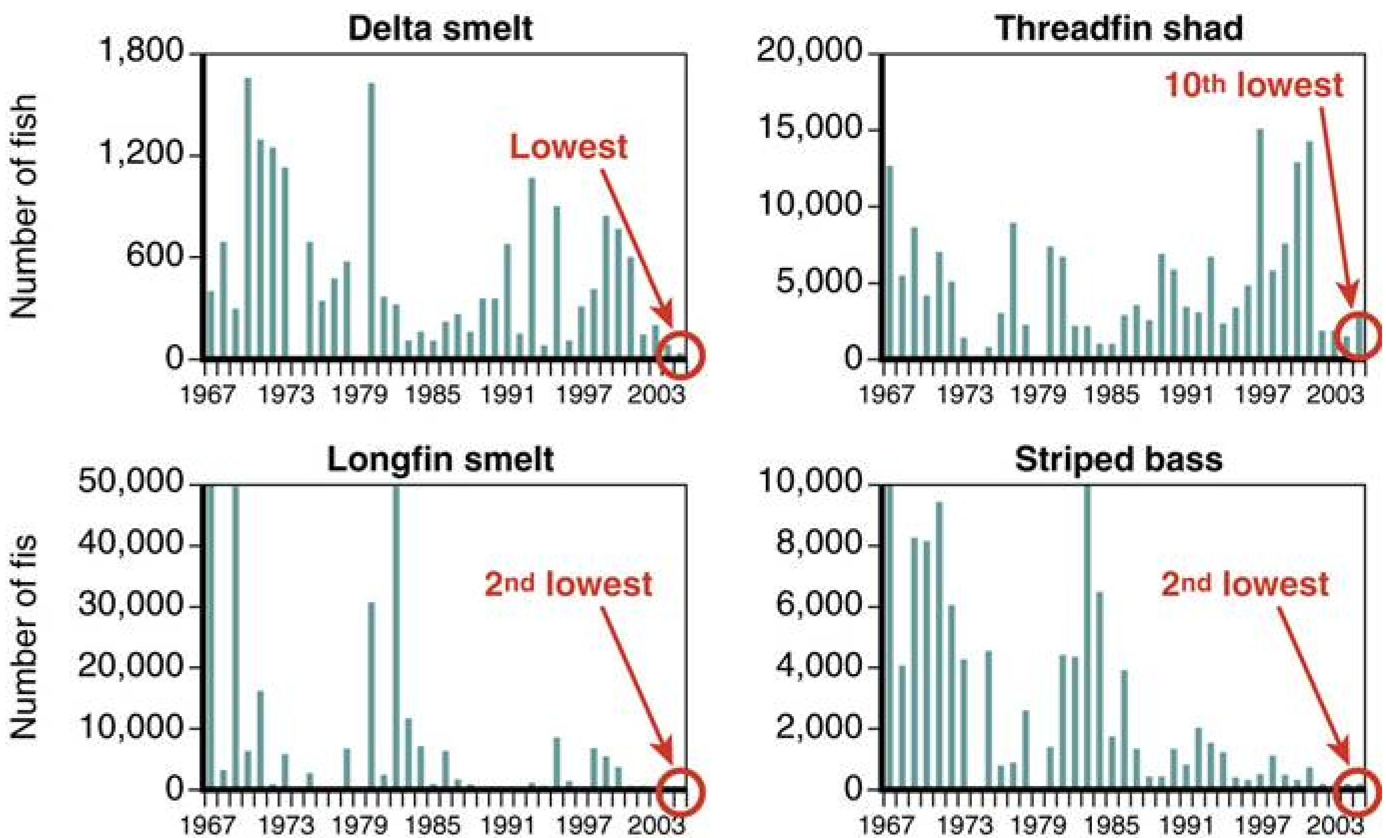
Delta levee failures threaten agricultural, urban and environmental uses.

Subsidence: Past and Future





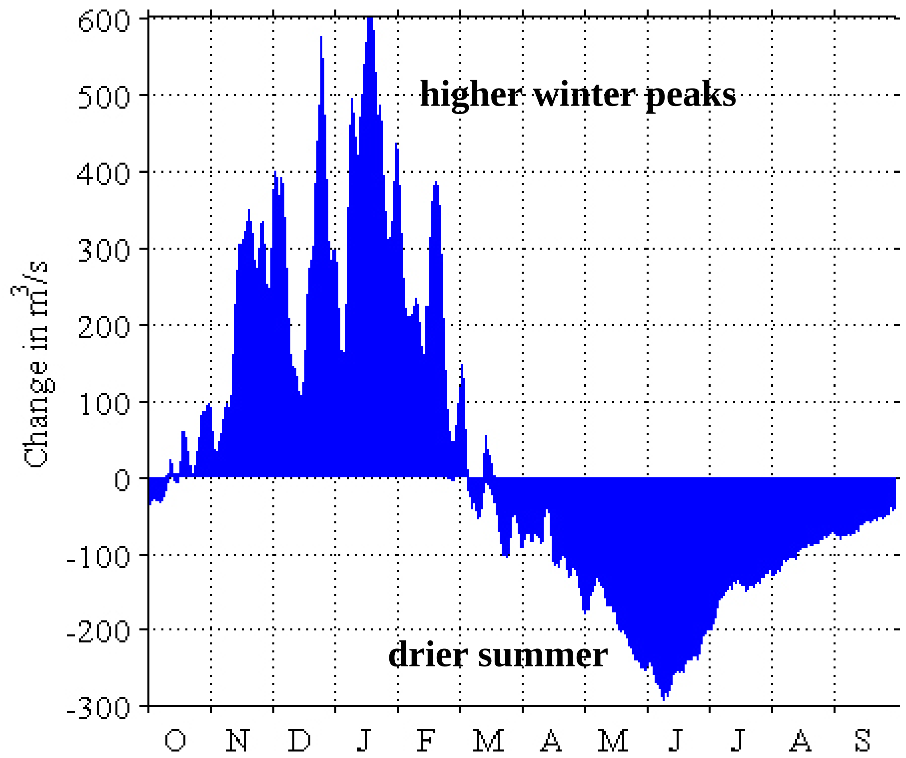
An Ecosystem in Crisis



SOURCE: California Department of Fish and Game.

NOTES: Graphs report the indices for the fall midwater trawl. Circles indicate the rank of indices in 2005. For delta smelt, longfin smelt, and striped bass, the recent indices represent low points in long-term declines of their populations.

Climate Change

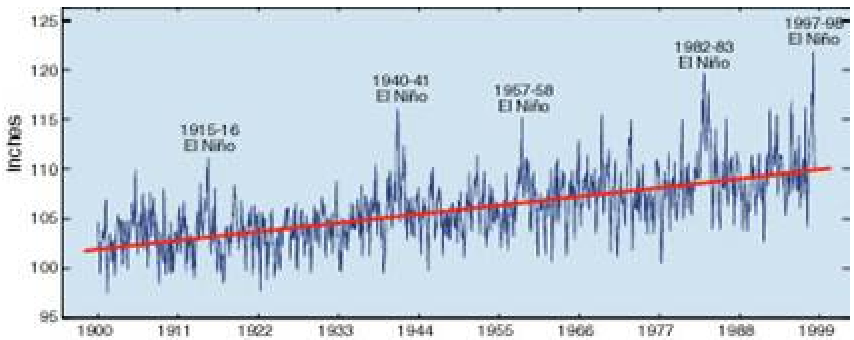


On-going shift in runoff timing toward winter, extending low-flow periods

Increase in intensity and frequency of winter runoff events

Compounded by increasing sea level (tides)

Sea Level Rise



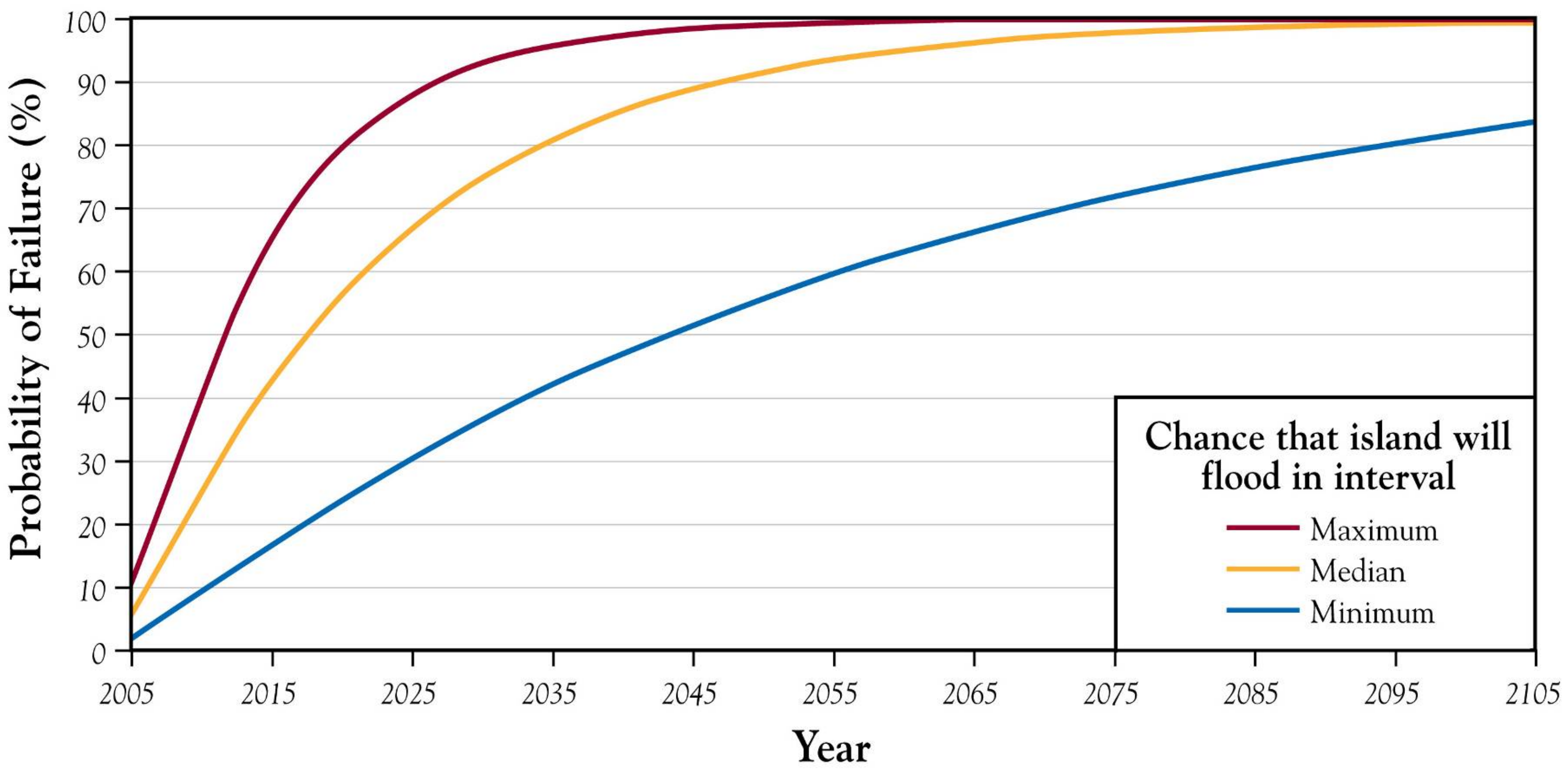
Ryan et al., 2005

All hydrodynamics, habitat conditions, levee heights tied to sea level

Rate of sea level rise increasing

A modest rise overwhelms current Delta levee network

Flooding Inevitable



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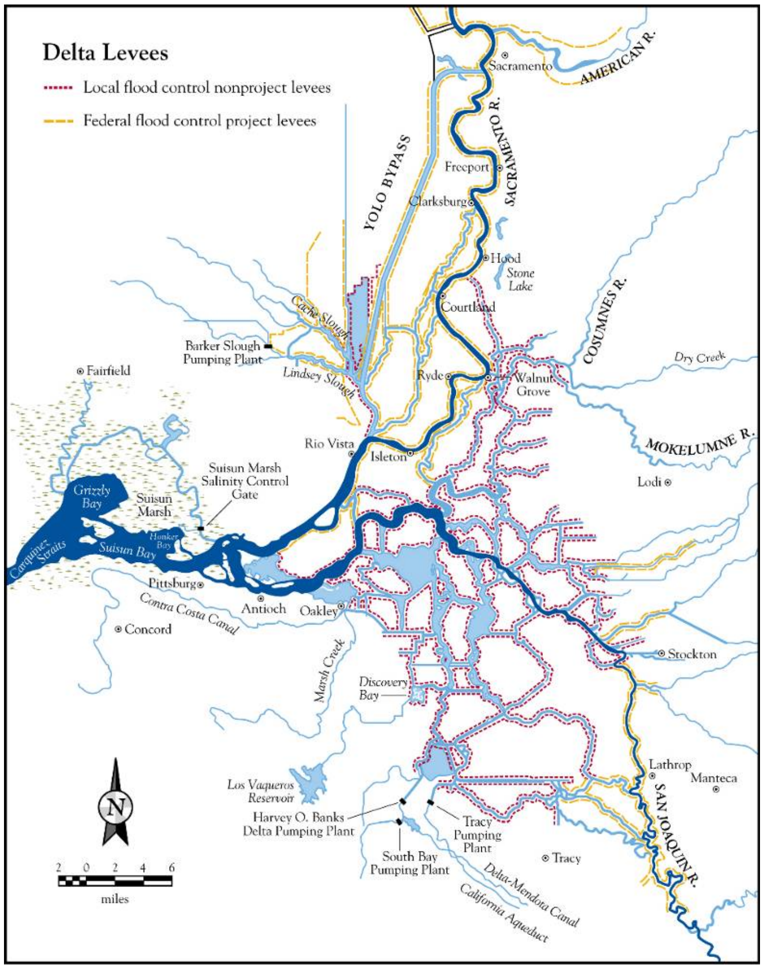
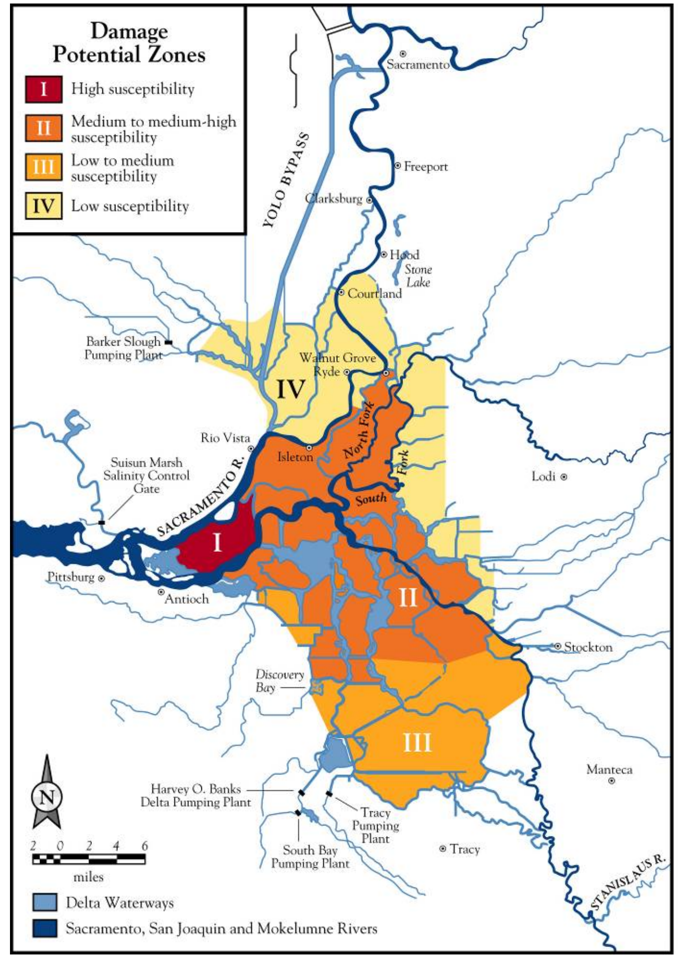
Increasing likelihood and consequences of levee failure/island flooding





Our Delta Engagement

Delta Vision

Bay Delta Conservation Plan (BDCP)

PPIC/UCD Delta II

Shape the Delta Solution:

Engage in Delta planning processes to ensure conservation and recovery objectives are included in final plan.

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Bay-Delta Conservation Plan

- Steering Committee driven
- A plan to restore and protect water supply, water quality, and ecosystem health within a stable regulatory framework.
- FESA/CESA Compliance through HCP/NCCP
- Long-term Incidental Take Permits for water project operations

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Delta Vision

- Identify a strategy for managing the Delta as a sustainable ecosystem that would continue to support environmental and economic functions critical to the people of California
- Blue Ribbon Task Force
- Stakeholder Coordinating Group
- Vision completed in 2007 and Strategic Plan in 2008

PPIC/UCD Delta II

- “Comparing Futures for the Sacramento – San Joaquin Delta”
- Follow-up to their previous report
- Requested by DV to provide scientific and technical evaluation
- Hydrodynamic modeling; economic and statistical analyses

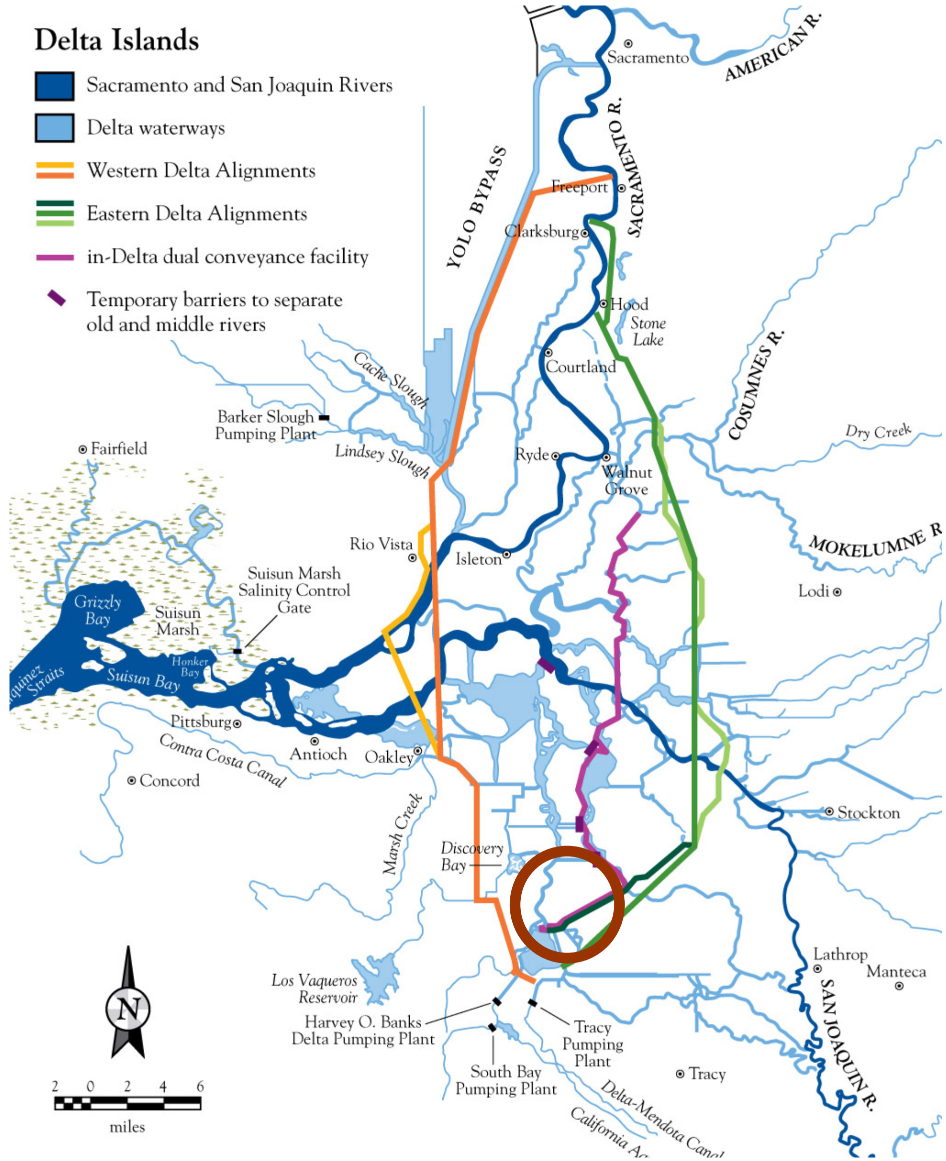
Comparing Water Export Strategies Long-Term

Current Strategy:
through the Delta

Peripheral Canal:
around the Delta

Dual Conveyance: both
through and around
the Delta

No Exports: use other
water sources and
use less



Evaluation Criteria: “Co-Equal” Goals

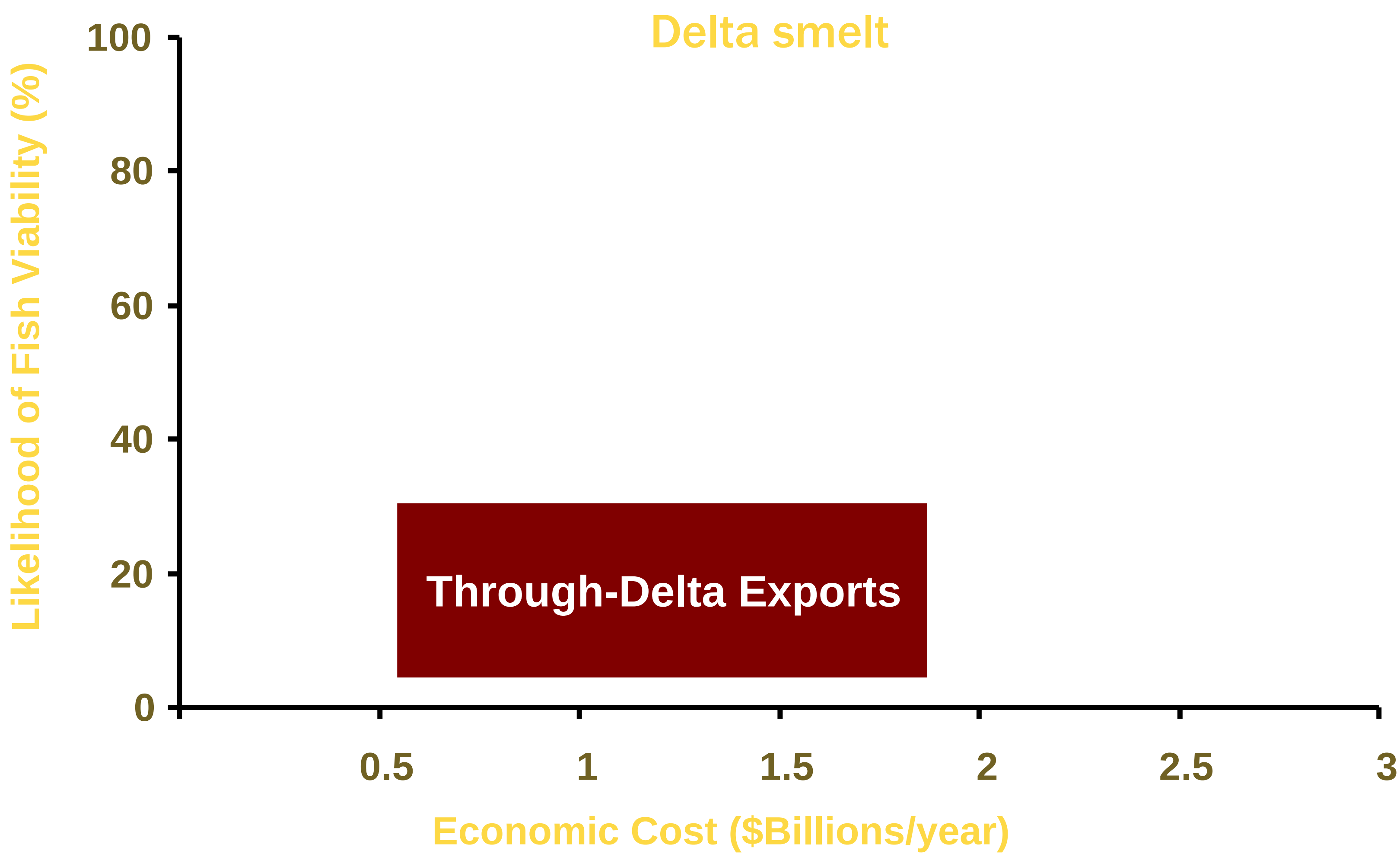
Delta ecosystem

- viability of native fish populations
- based on studies to date
- expert judgment of 30+ fish experts

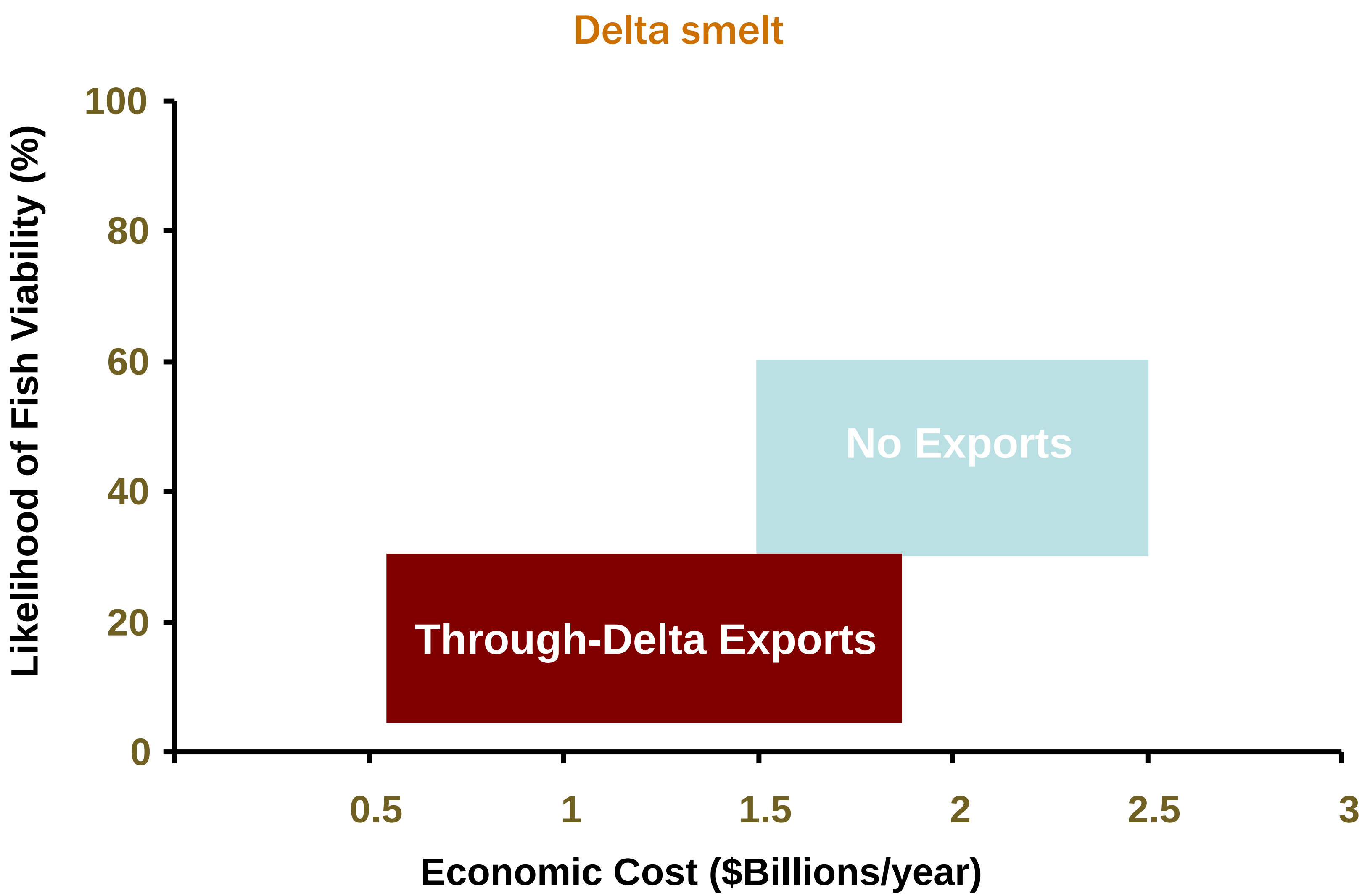
Water supply

- performance based on statewide economic costs and benefits
- construction & operations, water quality, supply cutbacks

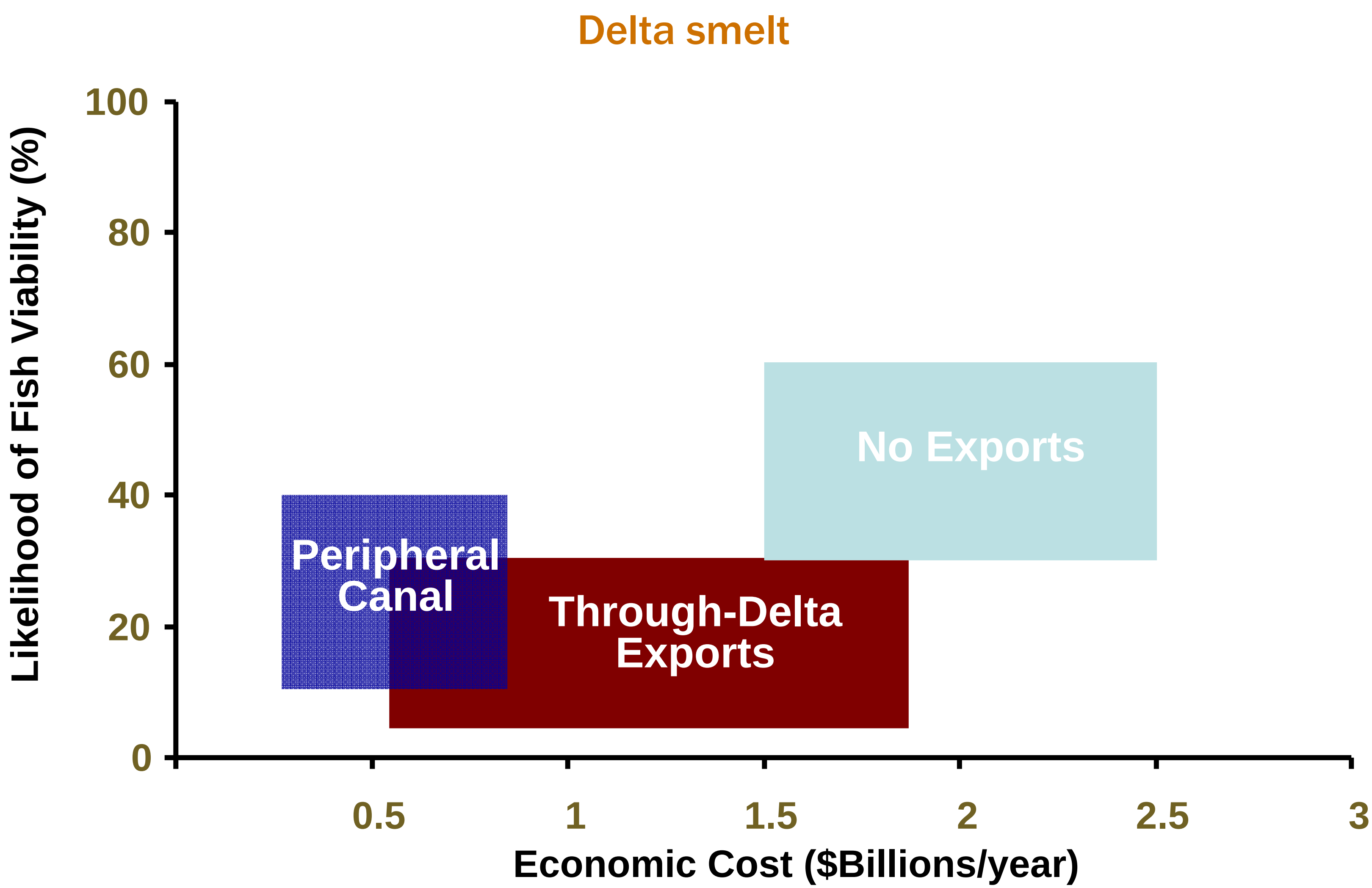
Through-Delta Pumping: Low Chance of Restoring Fish, High Costs



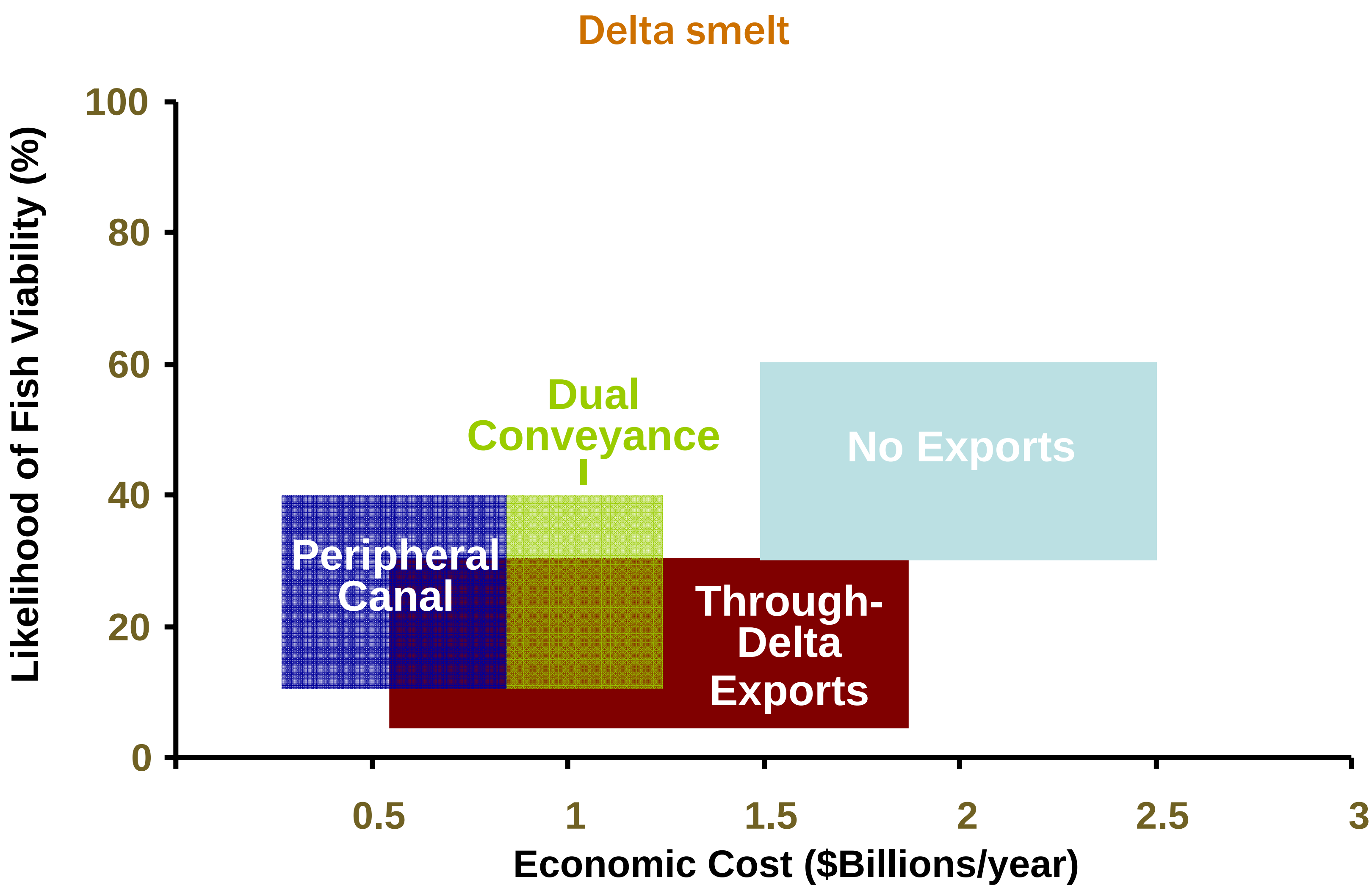
Ending Exports: Better for Fish, But Even More Costly



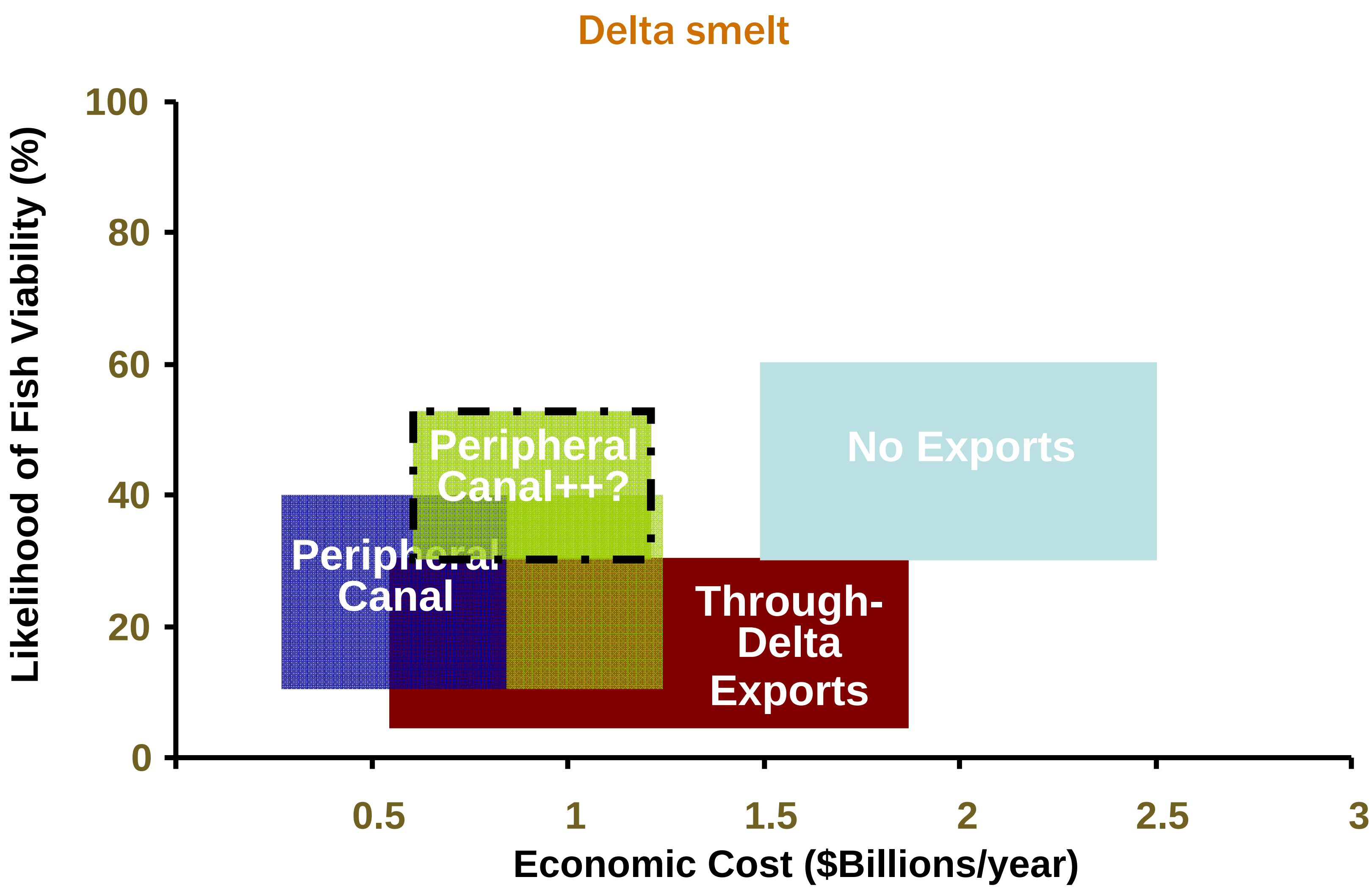
Peripheral Canal: Mid-range for Fish Viability, Least Costly



Dual Conveyance: Similar to PC for Fish, Probably More Costly



Increasing Viability Through Investment



PPIC Conclusions

- No perfect solutions
- Strategies have wide range of costs and fish viabilities
- Peripheral canal best for “co-equal” fish and water supply
- No exports best for fish alone
- Move expeditiously from levee-dependent Delta policy
- These conclusions are more robust than expected

Our Delta CAP - Targets

- **Brackish tidal marsh**
- **Freshwater tidal wetlands**
- **Riparian/Floodplain**
- **Northern clay pan vernal pools**
- **Native resident and anadromous fishes**
- **Migratory birds**

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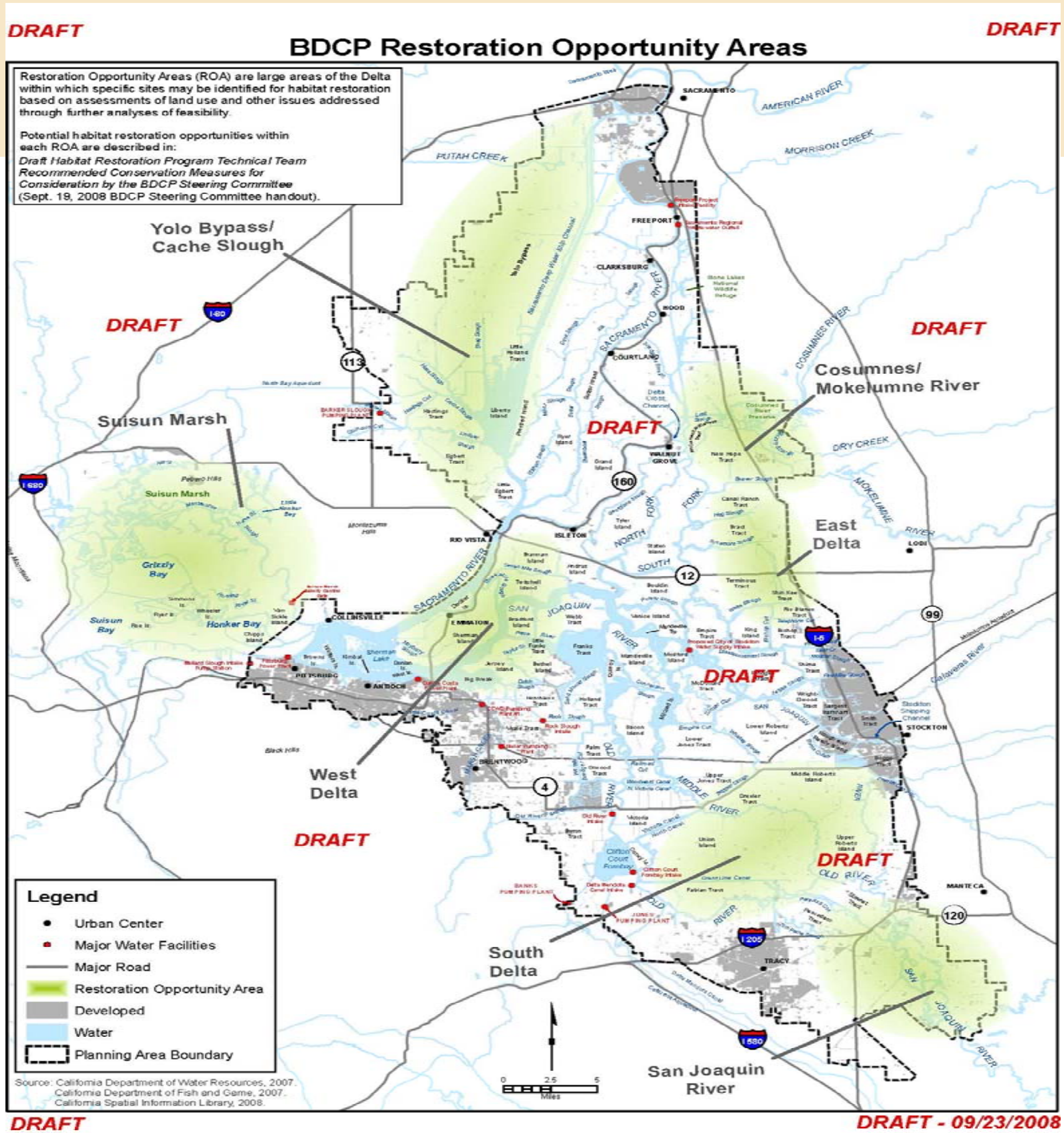
DRAFT DRAFT



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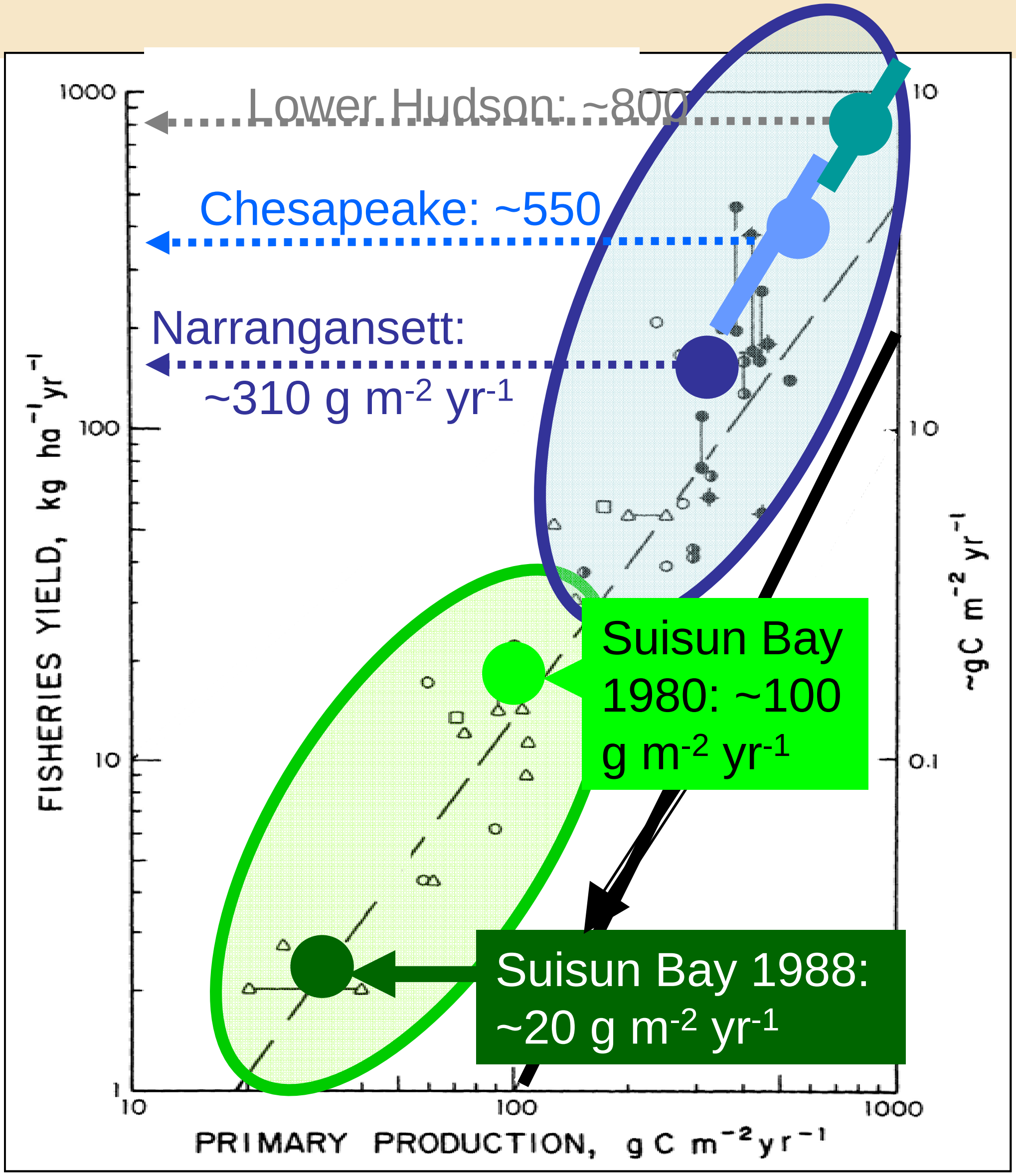
Better habitat = more growth

Phytoplankton production in estuaries typically is very high



Sources: J. Cloern (USGS) & A. Jassby (UCD): Oral presentations at the 2007 Annual IEP Workshop, Asilomar, CA

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TNC Recommendations

Restoration of the Delta to achieve biodiversity conservation benefits will require five primary components:

- Restoration of key habitats
- A peripheral canal to help restore natural aquatic processes while providing a more reliable water supply
- Land use change
- Financing mechanism
- Effective governance structure


Questions?

Delta CAP - 9 Strategies

1. Improve North Delta Floodplain (Yolo Bypass) Function
2. Suisun Marsh Restoration
3. Seasonal and Managed Wetlands Augmentation
4. Freshwater Tidal Wetlands Restoration
5. Central and South Delta Floodplain Habitat and/or Bypass Facilities
6. Abate Urban and Commercial Development
7. Improve In-Delta Flows for Multiple Environmental Objectives
8. Ensure a Comprehensive Science Program
9. Develop Effective Governance Structure