

RECLAMATION

Managing Water in the West

OCAP RPA Actions I.6 & I.7: Restoration of Floodplain rearing habitat and fish passage



U.S. Department of the Interior
Bureau of Reclamation

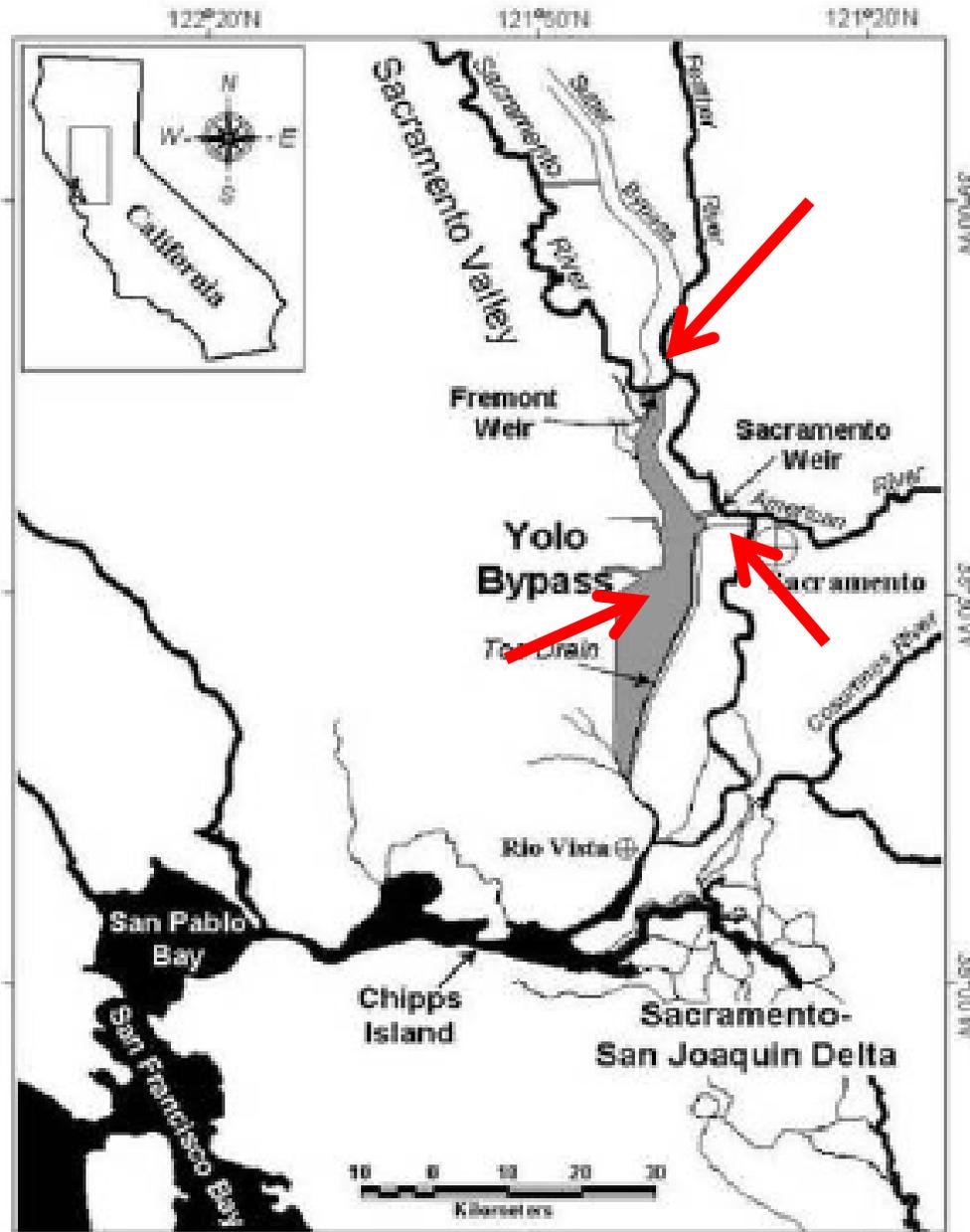
Overview

- Introduction
- OCAP RPAs
- BDCP Conservation Measures
- Challenges and Opportunities
- Future Direction



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Map



Existing Uses

- Flood management
- Agriculture
- Waterfowl management
- Recreation
- Outdoor education
- Fish and Wildlife



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OCAP RPA Actions: Fish enhancement measures

- **I.6: Salmonid Rearing Habitat Improvements**
 - Floodplain rearing habitat in lower Sac R basin
 - Tidal marsh rearing habitat in Cache slough area
 - Lower Putah Creek enhancements
 - Lisbon Weir improvements
- **I.7: Reduce migration delay at Yolo Bypass barriers**

OCAP RPA Action: Floodplain habitat enhancement measures

- I.6.1: In cooperation...Reclamation and DWR shall, to the maximum extent of their authorities (excluding condemnation authority) ***provide significantly increased acreage of seasonal floodplain rearing habitat, with biologically appropriate durations and magnitudes,*** from December through April, in the lower Sacramento River basin, on a return rate of approximately one to three years, depending on year type...

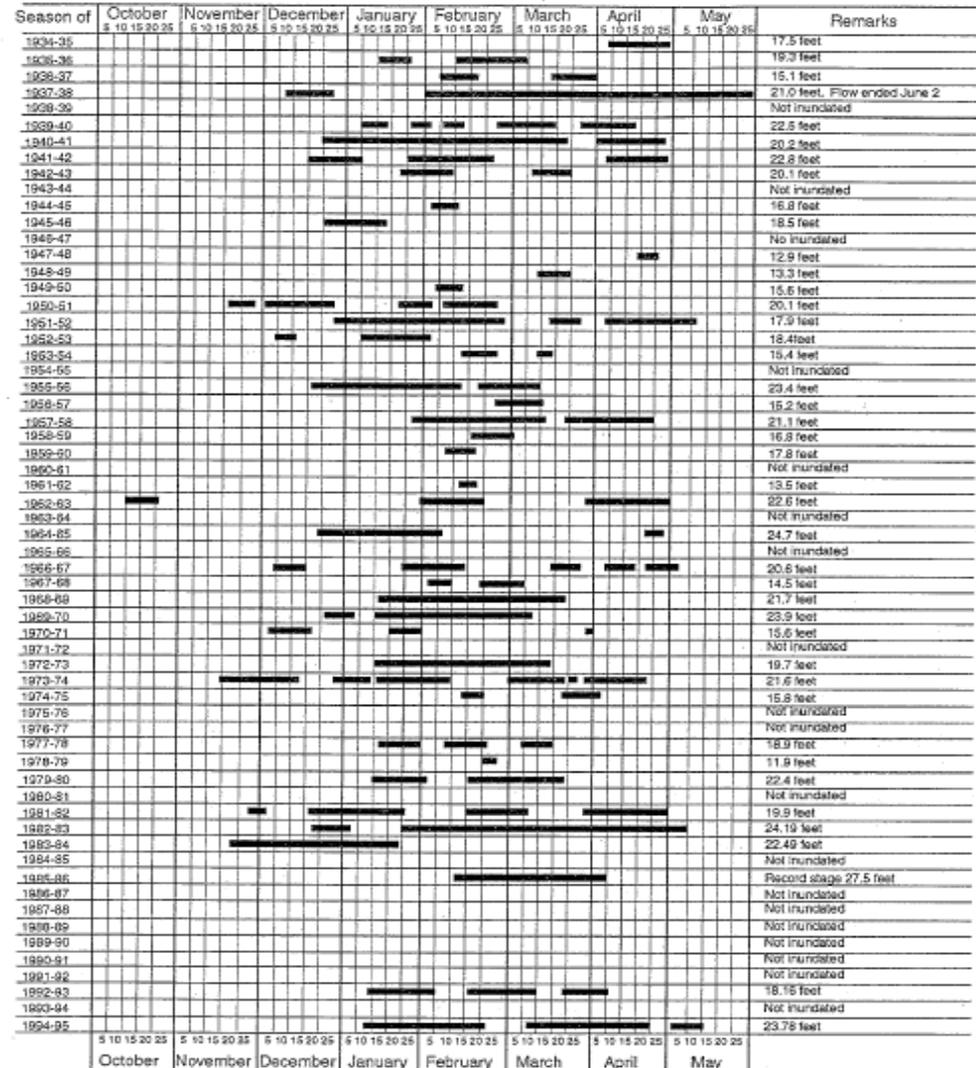
Floodplain habitat enhancement measures

Connectivity of floodplain

- Duration
- Magnitude
- Frequency
- Timing
- Rate of change

33-95

Figure 70. Period of Record of Yolo Bypass overflow



Note: Data compiled from records of DWR stream gaging station, Yolo Bypass near Lisbon
Datum: 0+0' U.S.E.D. Period of Record: 1935 to 1995 Assumed overflow of bypass at stage above 11.5 feet on the Lisbon gage
█ Designates period of flow over weir

Bulletin 69-95: California High Water

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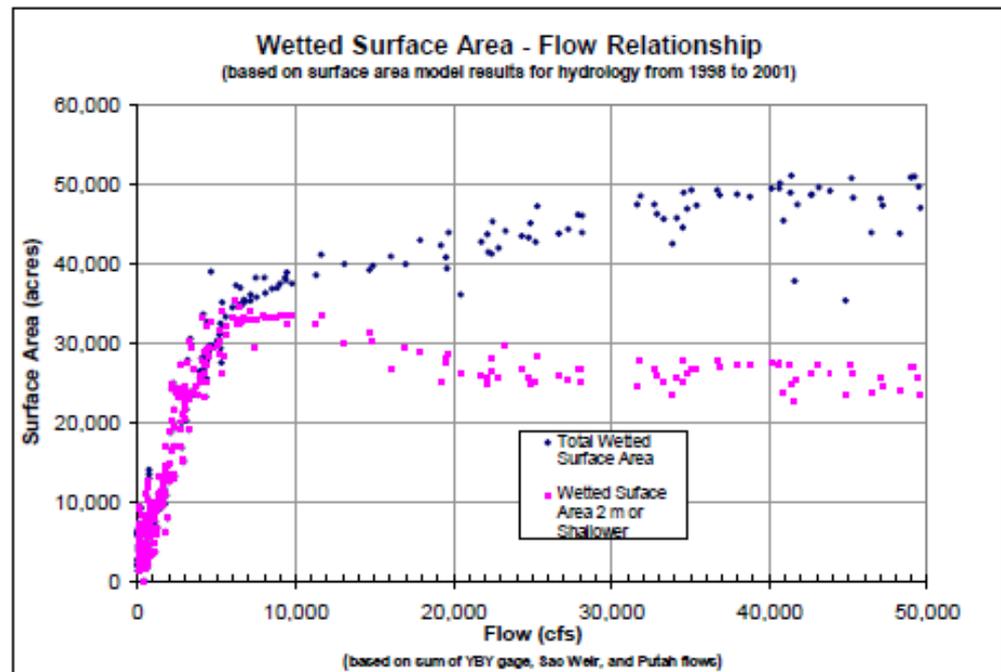
OCAP RPAs: Floodplain habitat enhancement measures

Intensive research effort

Lots of results

Well-documented
relationships between
flow and physical habitat
and floodplain biota

Somer et al. 2004



DRERIP Draft Boundary Conditions CM

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OCAP RPAs:

Near Term Actions at ...Lower Cache Slough

- **I.6.2: ...Reclamation and DWR shall take all necessary steps to *ensure that an enhancement plan is completed and implemented for Liberty Island/Lower Cache Slough...* This action shall be monitored for the subsequent five years, at a minimum...This action shall be designed to avoid stranding or migration barriers for juvenile salmon.**

OCAP RPAs: Lower Putah Creek Enhancements

- **I.6.3: ...Reclamation and DWR shall *develop and implement Lower Putah Creek enhancements... including stream realignment and floodplain restoration for fish passage improvement and multi-species habitat development on public lands...* This action shall not result in stranding or migration barriers for juvenile salmon.**

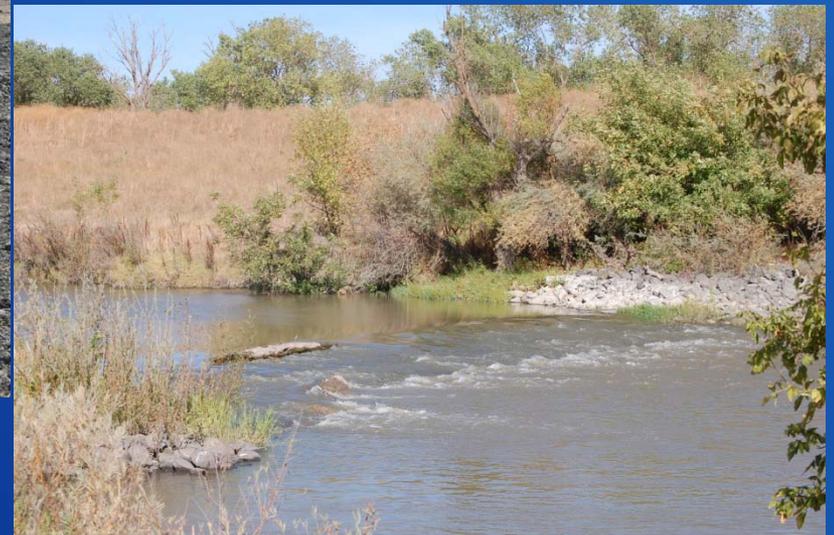
Current Putah Ck alignment



Newly restored tidal marsh
in Yolo Bypass Wildlife Area



Tidally flooded
Lisbon Weir



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OCAP RPAs:

Floodplain habitat enhancement measures

- I.6.4: Reclamation and DWR shall, to the maximum extent of their authorities ***assure that improvements to the Lisbon Weir are made that are likely to achieve... fish and wildlife benefits...*** If neither Reclamation nor DWR has authority to make structural or operational modifications to the weir, they shall work with the owners and operators of the weir to make the desired improvements...and...assure that this action does not result in migration barriers or stranding of juvenile salmon.

OCAP RPA I.6

Deadlines: Sacramento basin rearing habitat improvements

- **Sept 30, 2010: Liberty Island/ Lower Cache Slough Enhancement Plan**
- **Dec 31, 2011: [Floodplain] Action Implementation Plan**
- **Dec 31, 2013: Restoration of significant [floodplain] acreage**
- **Dec 31, 2015: Lower Putah Creek Enhancement Plan**
- **Dec 31, 2015: Improvements to Lisbon Weir**
- **2016: Reclamation and DWR shall reconsult if not implementing to performance measure standard**

OCAP RPA Action: Reduce Migratory Delays

- **I.7: ...Reclamation and/or DWR shall submit a plan to NMFS to *provide for high quality, reliable migratory passage for Sacramento Basin adult and juvenile anadromous fishes through the Yolo Bypass...* [and] shall begin implementation of the plan, including any physical modifications....Reclamation shall request in writing that the Corps take necessary steps to alter Fremont Weir and/or any other facilities or operations requirements of the Sacramento River Flood Control Project or Yolo Bypass facility in order to provide fish passage...**

Fremont Weir



Fremont Weir fish ladder



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Sacramento weir & bypass



Weir and
floodgate

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OCAP RPA Action I.7:

Reduce migratory delays and loss of salmon, steelhead, and sturgeon at Fremont Weir and other structures

- **Sept 30, 2009: Request ACOE modify Fremont weir and/or other facilities or operations**
- **June 30, 2010: Submit status report**
- **Dec 31, 2011: Submit Fish Passage Plan**
- **June 30, 2012: Begin to Implement Passage Plan**

Bay Delta Conservation Plan

- **OCAP BiOp stated BDCP anticipated completion
Dec 2010**
- **Draft CM - Fremont Weir/Yolo Bypass**
- **Draft CM - Tidal Habitat Restoration**

Bay Delta Conservation Plan

- **Conservation Measures undergoing revision**
- **Tidal Habitat Restoration includes**
 - Restore at least 5,000 acres of freshwater tidal habitat in the Cache Slough Complex
- **Fremont Weir/Yolo Bypass Improvements include:**
 - Fremont Weir improvements
 - Sacramento Weir improvements
 - Lisbon Weir improvements
 - Other improvements to structures in the low flow channel
 - Putah Creek improvements

Bay Delta Conservation Plan

- Fremont Weir/Yolo Bypass Improvements
- Project components
 - Move water in and out of the Bypass
 - Direct water within the Bypass
 - Provide upstream and downstream multispecies fish passage
- Other options to achieve these functions?
 - West side inflow location?
 - Field by field application of flow?

BDCP and OCAP RPA similarities

- Enhanced seasonal floodplain fish rearing habitat
- Improved fish passage at structures and weirs on Yolo Bypass



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OCAP RPA and Draft BDCP similarities

- **Acreage**
17,000-20,000 acres vs. 11,000-21,500 acres
- **Period of inundation**
Dec through April vs. Dec 1-March 31 + occasionally to May
- **Reporting**
Annual until 5 years after implementation vs. TBD
- **Implementation deadlines**
2013-2015 vs. 4-7 years after permit

Additional information needs:

Daily flow modeling at Fremont and Sacramento Weirs

**2D modeling of floodplain elevations: depths,
velocities**

**Comparison of inundation from westside tributary
inflow vs. notched weir inflow**

**Quantifying foodweb linkages and salmonid travel
times**

Salmonid habitat suitability index

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Challenges for implementing agencies undertaking Yolo Bypass Fish Enhancement

- **Definition of Project**
 - How best to move water in and out of the Bypass?
 - Where will water go in the Bypass?
 - Upstream and downstream fish passage
- **Achieving stakeholder support**
- **Legal & regulatory issues**
- **Technical Issues**
- **Resources**
- **Timeline**