BDCP CM2, Yolo Bypass Fishery Enhancement: A Brief History

Yolo Bypass Fishery Enhancement Planning Team

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Goal of Habitat Restoration for BDCP

• Identify physical habitat restoration opportunities in the Plan Area to reduce covered fish species stressors:
  – Reduced rearing habitat
  – Reduced spawning habitat
  – Passage impediments
  – Food limitation
Four Types of Physical Habitat Restoration

• Tidal habitat (shallow subtidal, intertidal marsh, mudflats)
• Seasonal floodplain
• Channel margin
• Riparian forest and scrub
Seasonal Floodplain vs. Tidal Habitat

• Many overlapping functions
  – rearing habitat for juvenile salmonids and splittail

• Each provides unique benefits for different fish species
  – Tidal habitat – rearing habitat for juvenile sturgeon, smelt, and lamprey; **continual** food production and export to adjacent pelagic habitat
  – Seasonal floodplain – spawning habitat for splittail; **pulsed** food production and export to adjacent pelagic habitat

• Therefore, BDCP decided to restore/enhance both types
Floodplain Restoration vs. Enhancement

- **Restoration** – Bringing flooding back to an isolated historical floodplain; generally more costly and difficult; multiple opportunities in the Delta
- **Enhancement** – Improve an existing floodplain habitat function; generally less costly and easier; limited opportunities
- Therefore, BDCP decided to pursue both
Selection Factor Considered

Looked for opportunities in hydrologic zones based on:

- Location (fish, tidal habitat, flood control)
- Connectivity with existing waterways
- Elevation
- Existing natural communities
- Ecosystem Restoration Program (ERP) habitat suitability
- Conservation land ownership
- Existing infrastructure and crop types
Hydrologic Zone 1: Surface Elevation and Bathymetry

Elevation suitable for floodplain

Elevation suitable for intertidal habitat
Hydrologic Zone 1: Natural Communities (based on DFG vegetation classification)
Hydrologic Zone 1: ERP Habitat Suitability

- Floodplain
- Intertidal
Hydrologic Zone 1: Conservation Ownership
Hydrologic Zone 1: Infrastructure and Permanent Crops

Urban (outside of zone)

Diversions

Permanent Crops (outside of zone)
Floodplain Restoration and Enhancement Opportunities Considered in/near the BDCP Plan Area

- Sutter Bypass (North of Delta) (discarded)
- North Delta (kept)
- South Delta (kept)
- South of Delta (discarded)
Floodplain Restoration and Enhancement Opportunities in the BDCP Plan Area

• Benefits to fish depend on geography
  – Different salmonid populations would benefit from restoration and enhancement north or south

• So floodplain opportunities in both the north and south Delta were explored further
Floodplain Restoration Opportunities in the South Delta

San Joaquin, Old, and Middle rivers (now part of CM5, Seasonal Floodplain Restoration)
Floodplain Restoration and Enhancement Opportunities Considered in the North Delta

- Yolo Bypass Enhancement
- Deep Water Ship Channel Bypass Restoration
- Stone Lakes Bypass Restoration
Floodplain Restoration and Enhancement Opportunities Considered in the North Delta

- Yolo Bypass retained because:
  - Existing floodplain, not developed, already floods
  - Large and scientifically well-supported benefits to multiple species

- Other North Delta floodplain opportunities were challenged by:
  - Cost effectiveness
  - Existing infrastructure
  - Potential to exacerbate fish straying between watersheds
Initial Focus of CM2 Yolo Bypass Fishery Enhancement

- Initial focus on the modification of Fremont Weir to increase inundation of the Yolo Bypass
- Followed a long history of fish conservation proposed in the Yolo Bypass:
  - CALFED ERP
  - NHI Habitat Improvement for Native Fish
  - NMFS Biological Opinion RPA
CM2 Development

• Inundation modeling
• Subject of multiple biological evaluations
  - DRERIP
  - Preliminary BDCP Effects Analyses
• Periodic presentations to stakeholder groups
• Scientific input from agency staff, local experts, and outside experts
CM2 Development

- Specified YBFEP planning process to develop project-specific actions
- Added fish passage actions:
  - Putah Creek, Lisbon Weir, Tule Canal, multi-species Fremont Weir fish passage structure, Sacramento Weir
- Will consider actions to reduce fish entrainment and benefit terrestrial wildlife management
- Reconsidered:
  - Alternate timing ranges
  - Alternative acreage ranges