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# The Yolo Bypass Floodplain: A Decade of Discovery



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## WHAT IS THE YOLO BYPASS?

The 59,000 acre Yolo Bypass floodplain protects the Sacramento Valley by carrying flood flows from the Sacramento River, Feather River, American River, Sutter Bypass and west side tributaries. The system seasonally floods approximately one-in-three years and can almost double the wetted area of the Delta. When flooding occurs, most flow enters the Bypass via Fremont and Sacramento Weirs (see map at right). The Toe Drain, a perennial tidal channel along the east side of the Bypass, drains adjacent fields during low flow and agriculture periods and serves to connect west side Bypass tributaries with tributaries of the north Delta.

The Bypass not only provides flood conveyance but is used extensively for agriculture and wildlife. Farming activity is concentrated in late spring and summer, when flooding is uncommon. Wildlife habitat types include seasonal wetlands, uplands, perennial wetlands and riparian forest.

## DES INVOLVEMENT

Since 1997 we have been conducting aquatic monitoring and research. Our research emphasis has focused on floodplain ecology and improving understanding of native species use of the floodplain.

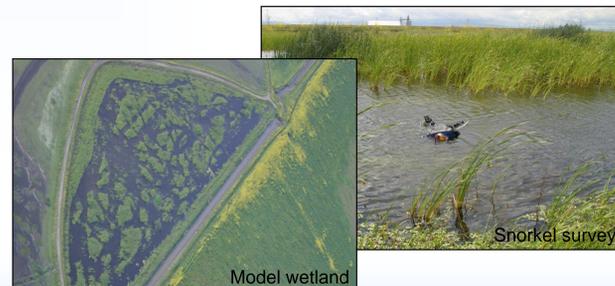
## RECENT RESEARCH STUDIES

### Cache Slough Complex (CSC) Study

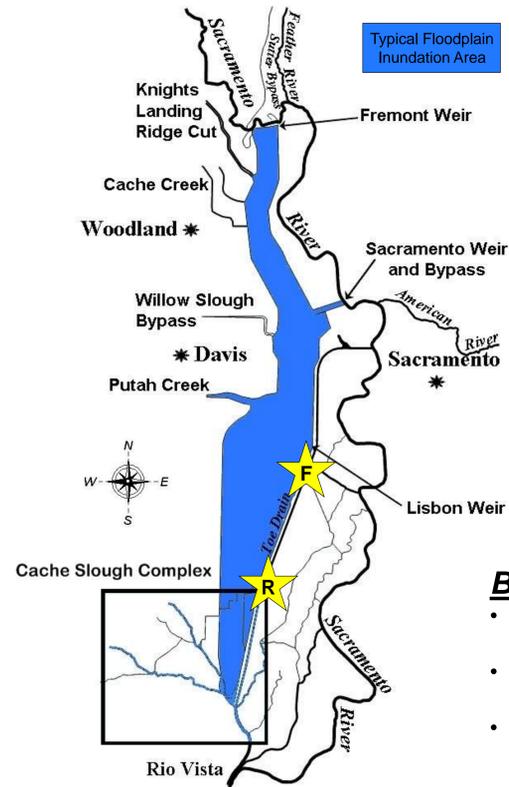
- A multi-seasonal 24 hour study conducted in the lower reaches of the Bypass. CSC is hypothesized as being productive delta smelt habitat.
- Mysids, zooplankton, phytoplankton, and a suite of physical parameters were collected at intervals over 24 hours.
- Designed to expand our understanding of factors influencing delta smelt use of the north Delta

### Splittail Wetland Study

- Wild adult Sacramento splittail were placed in a model wetland in the Yolo Bypass
- Snorkel surveys were conducted to observe diel behavior of juvenile progeny.
- Study demonstrated the importance of floodplain habitat as a nursery for native fishes.



## THE YOLO BYPASS FLOODPLAIN



## LONG-TERM FIELD SAMPLING

### Fyke Trap

- Situated just below Lisbon Weir in the Toe Drain, the fyke trap has captured adult fishes since 1999.
- The trap is generally checked on a daily basis from October through June.
- The data is a valuable source of information about both resident and migratory fishes (e.g. salmon, sturgeon, and steelhead trout).

### Rotary Screw Trap

- The screw trap, located in the Toe Drain, catches both juvenile fishes as they emigrate from the floodplain along with small resident fishes.
- Generally sampled from January through June to coincide with juvenile emigration.
- The screw trap has been key in furthering our knowledge of small bodied fishes and their floodplain habitat use.



### Beach Seine

- Year-round beach seining monitors seasonal changes in fish assemblages.
- Seines indicate species presence, timing of out migration, and duration of floodplain usage.
- Sites include tidal reaches of the perennial Toe Drain channel and floodplain ponds.



### Lower Trophic Level Sampling

- Zooplankton, egg and larval, and drift samples are taken in the Yolo Bypass and adjacent Sacramento River.
- Sampling typically takes place biweekly between January and June.
- Data is used to verify planktonic assemblages in the two aquatic habitats to better determine habitat quality and productivity.



### Tagged Salmon Releases

- Since 1998, juvenile Chinook salmon have been coded wire tagged and released in separate groups into the Yolo Bypass and adjacent Sacramento River.
- Releases generally occur each year in early February.
- Fish are recaptured in traps and trawls during downstream migration, and as adults in the ocean salmon fishery.
- The data and samples have been used for comparative studies of river and floodplain survival, growth rates, migration rate, feeding success, and contaminant accumulation.



## RESULTS

Twelve years of research has greatly expanded our knowledge of floodplain ecology and its importance to various native fishes. Example publications are provided below.