

# *Oh give me a floodplain!*



*Food web and  
juvenile salmon  
growth across four  
Central Valley  
floodplains*

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**2016 Bay-Delta Science Conference**

# Floodplains are Critical Habitat

**VS.**

## **Floodplain rearing of juvenile chinook salmon: evidence of enhanced growth and survival**

**T.R. Sommer, M.L. Nobriga, W.C. Harrell, W. Batham, and W.J. Kimmerer**

## **Hydrologic variability, water chemistry, and phytoplankton biomass in a large floodplain of the Sacramento River, CA, U.S.A.**

Laurence Edward Schemel, Ted R. Sommer, Anke B. Müller-Solger & William C. Harrell  
Water Resources Division, MS 439, U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025, U.S.A.  
E-mail: lschemel@usgs.gov

## ***Effects of flow variation on channel and floodplain biota and habitats of the Sacramento River, California, USA***

TED R. SOMMER<sup>a,\*</sup>, WILLIAM C. HARRELL<sup>a</sup>, ANKE MUELLER SOLGER<sup>a</sup>, BRAD TOM<sup>a</sup> and  
WIM KIMMERER<sup>b</sup>

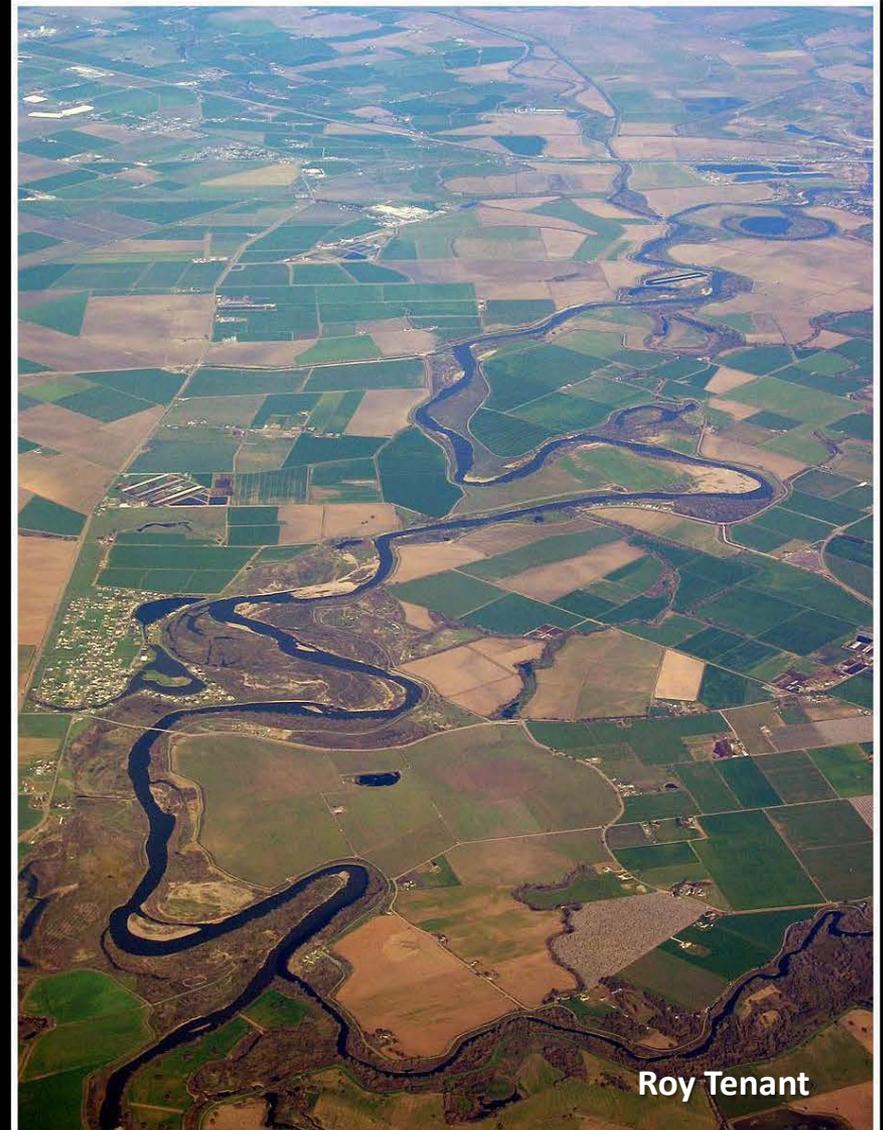
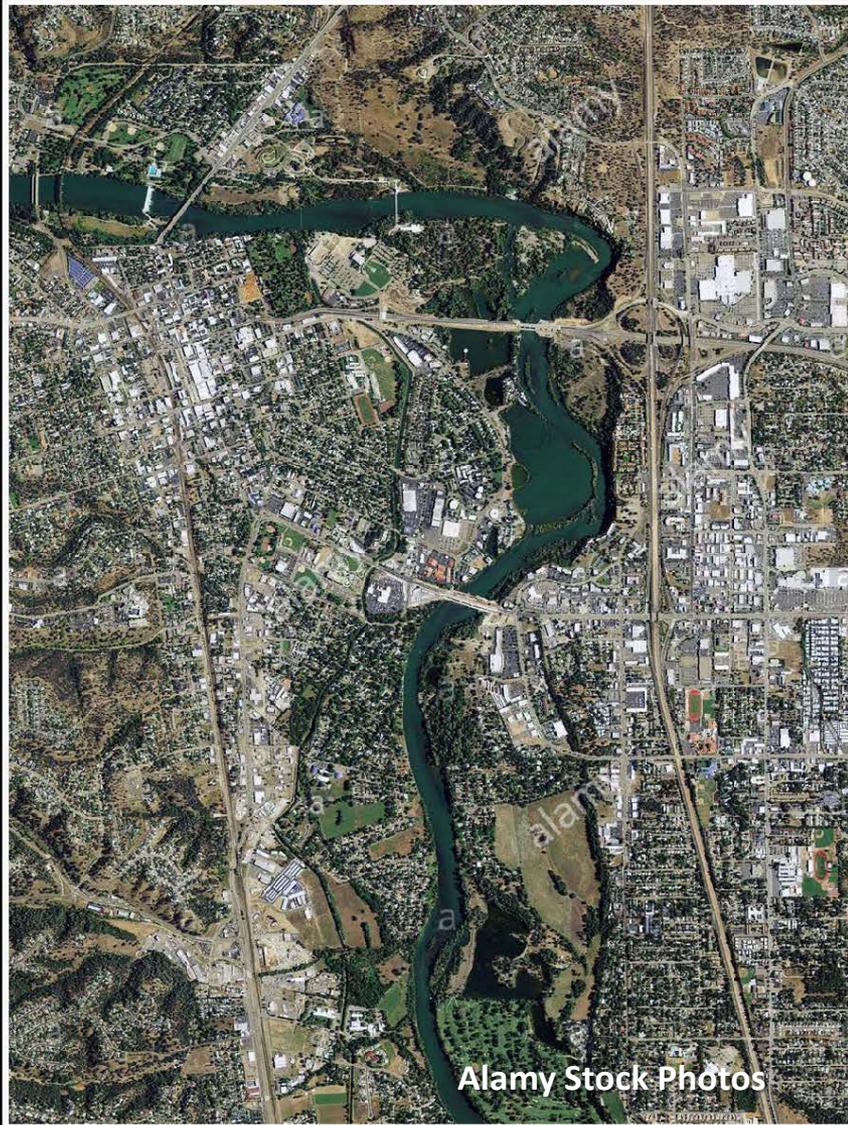
<sup>a</sup> California Department of Water Resources, Sacramento, CA 95816, U.S.A.

<sup>b</sup> Romberg Tiburon Center, San Francisco State University, Tiburon CA 94920, U.S.A.

Carson Jeffres

Car

# Central Valley today: A mosaic of habitats; but mostly *not* floodplains



# Partnership for Managed Agricultural Floodplain Studies



Louise Conrad  
Ted Sommer  
Lynn Takata  
Brian Schreier  
Danika Tsao  
Josh Martinez



Bjarni Serup  
Rob Titus  
Mark Clifford  
Anna Kaestner



Carson Jeffres  
Eric Holmes  
Miranda Bell-Tilcock



Mike Hall  
Maya Kepner  
Steve Thompson



Jacob Katz

*Cal Marsh & Farm  
Venture, LLC*  
John Brennan



Andrew Rayburn

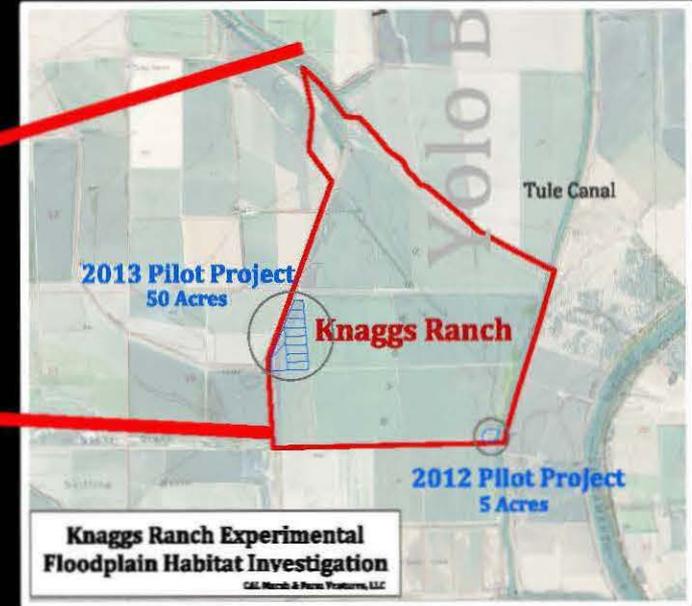
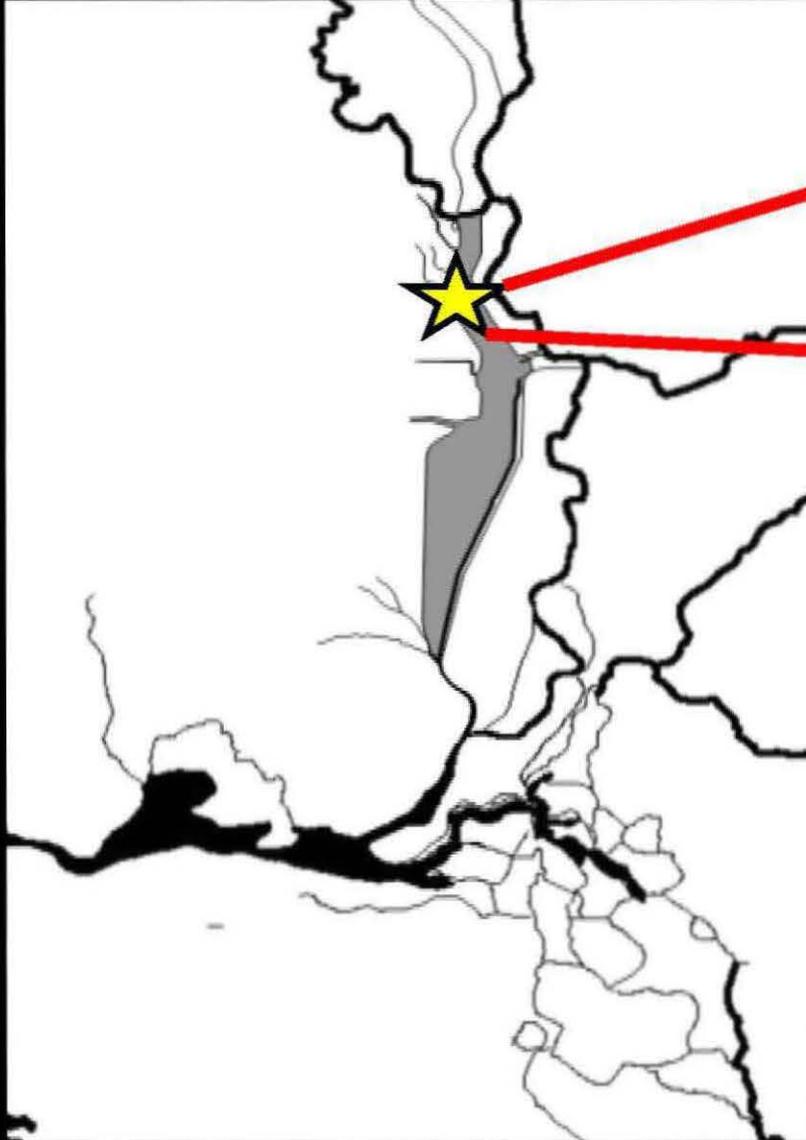


Brycen Swartz

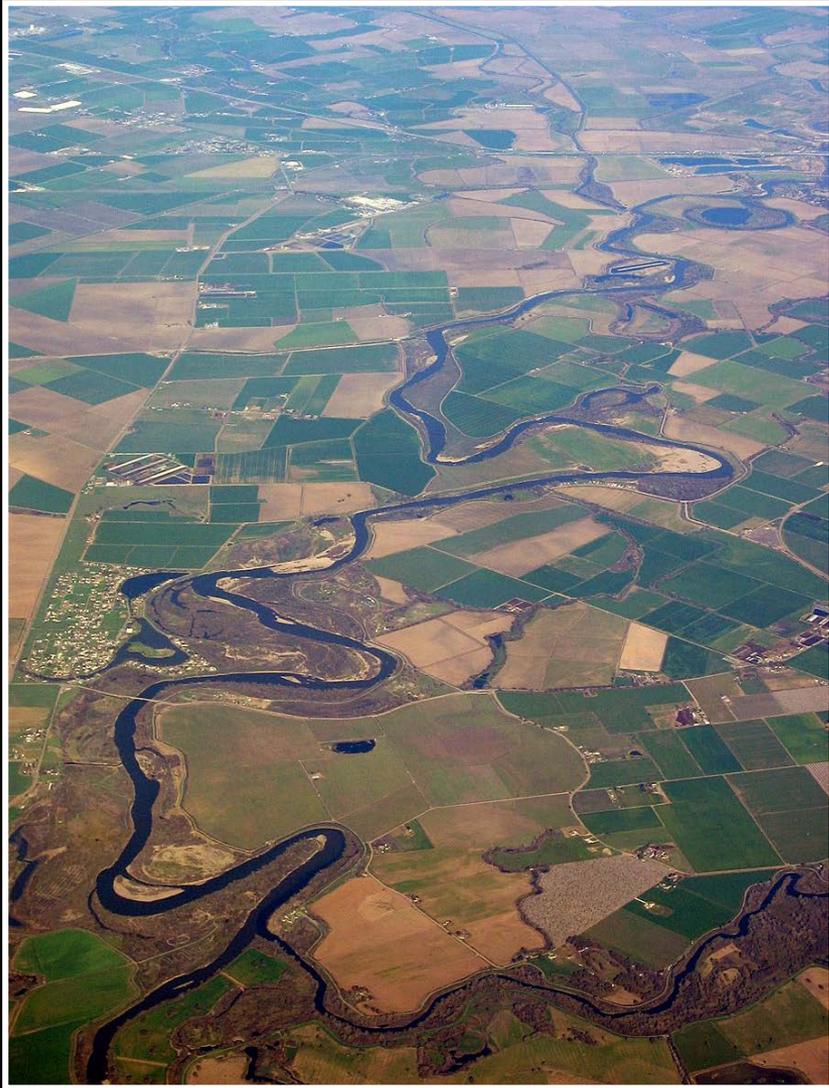


Josh Israel

# 2012 -2014: Excellent growth at Knaggs Ranch, Yolo Bypass



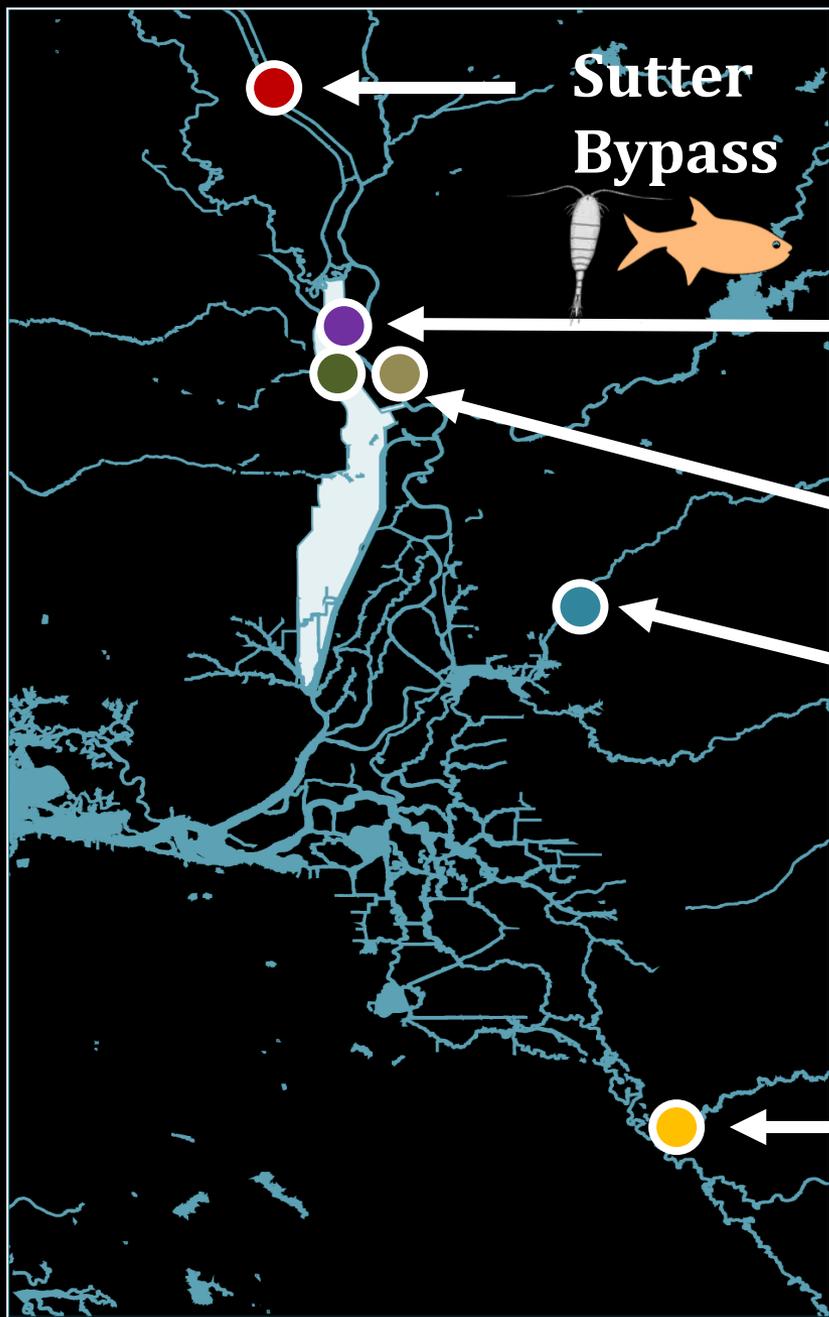
# Does a mosaic of habitats mean variable floodplain benefits?



**February 2015**

**Food web & growth study**

*4 weeks Managed Flooding*



**Sutter  
Bypass**



**Knaggs Ranch**

**Conaway Ranch**

*(2 sites)*

**Cosumnes River Preserve**

**Dos Rios Ranch**





## ***Rice Fields:***

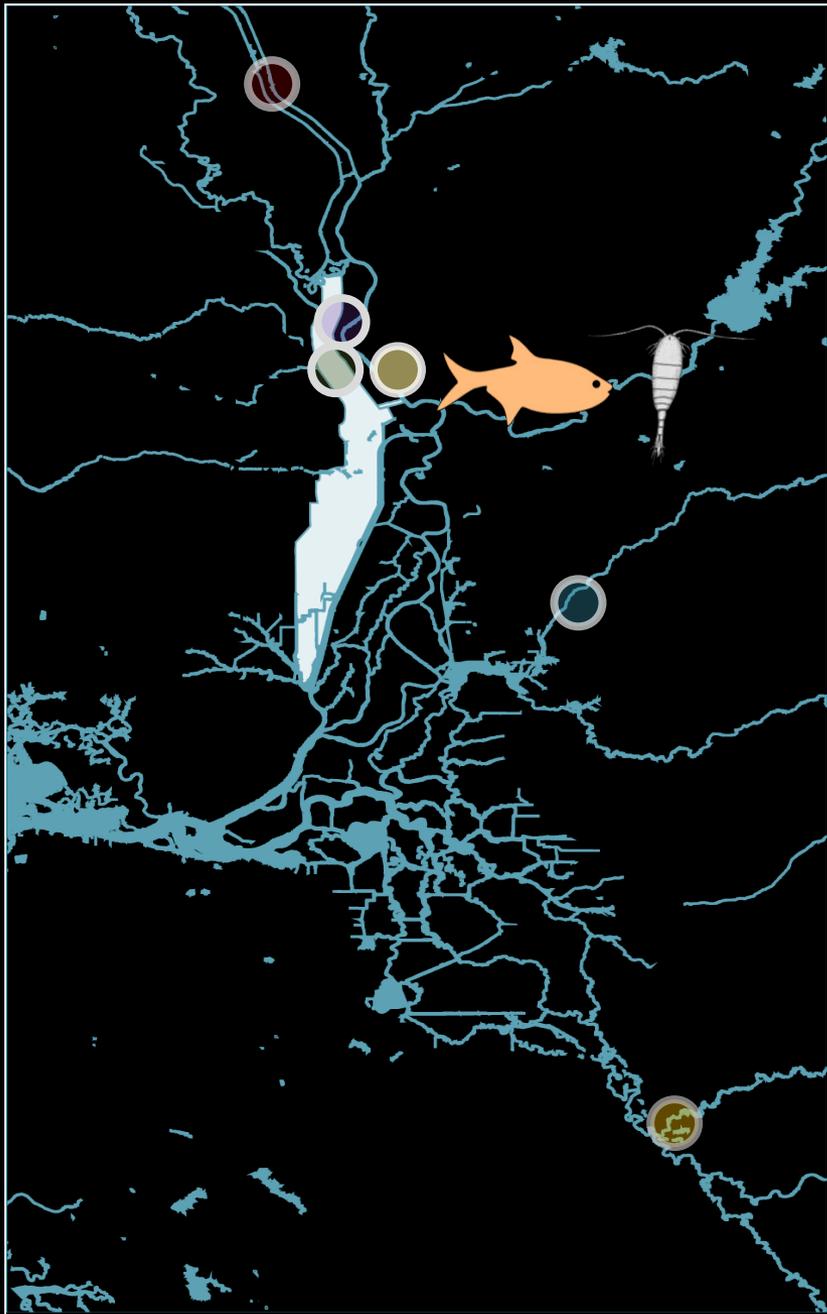
***Sutter, Knaggs, Conaway, Cosumnes***

***Conaway Rice field  
Mid summer***



***Conaway: same rice field after flood drains***





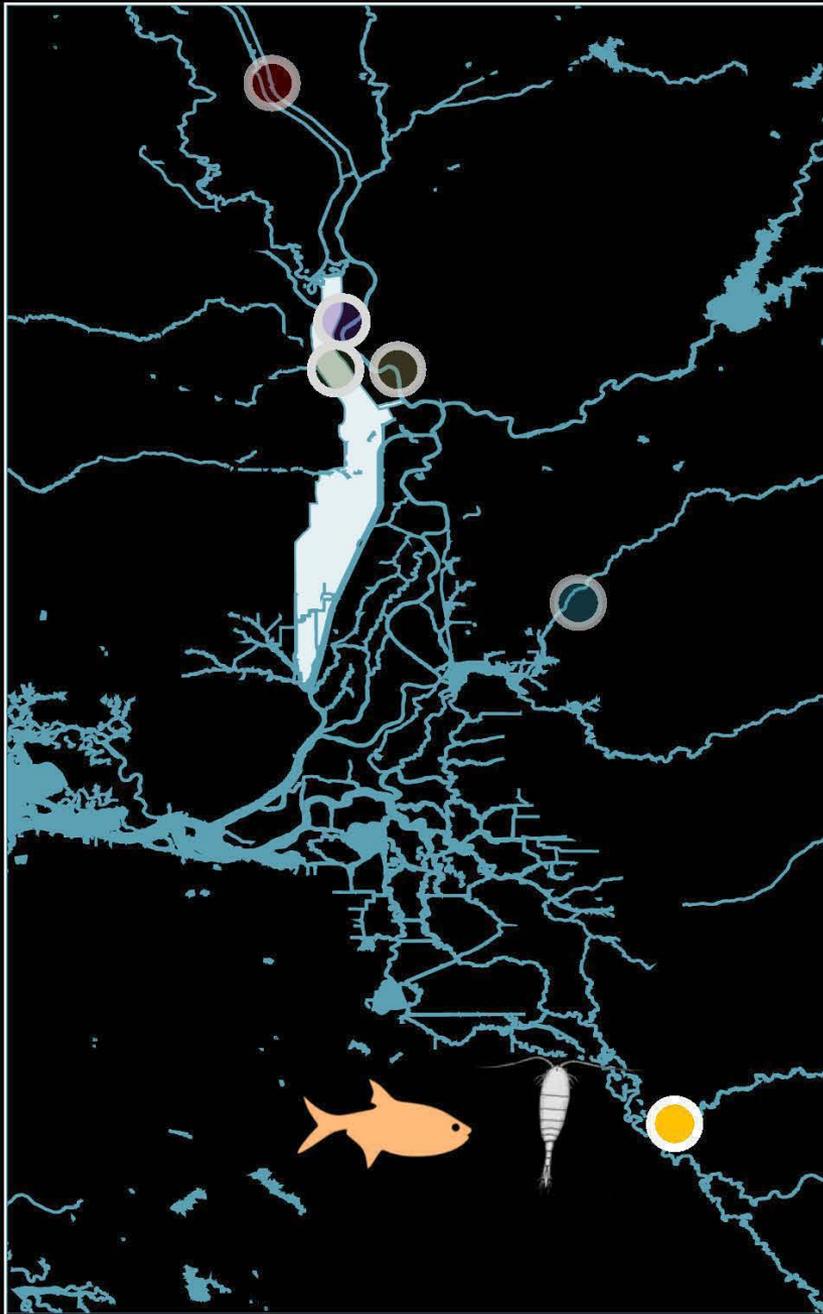
## *Fallow Field: Conaway Ranch*



### *Mid-summer*



# Wheat field: Dos Rios Ranch





***Food web sampling  
1x/week for four wks***

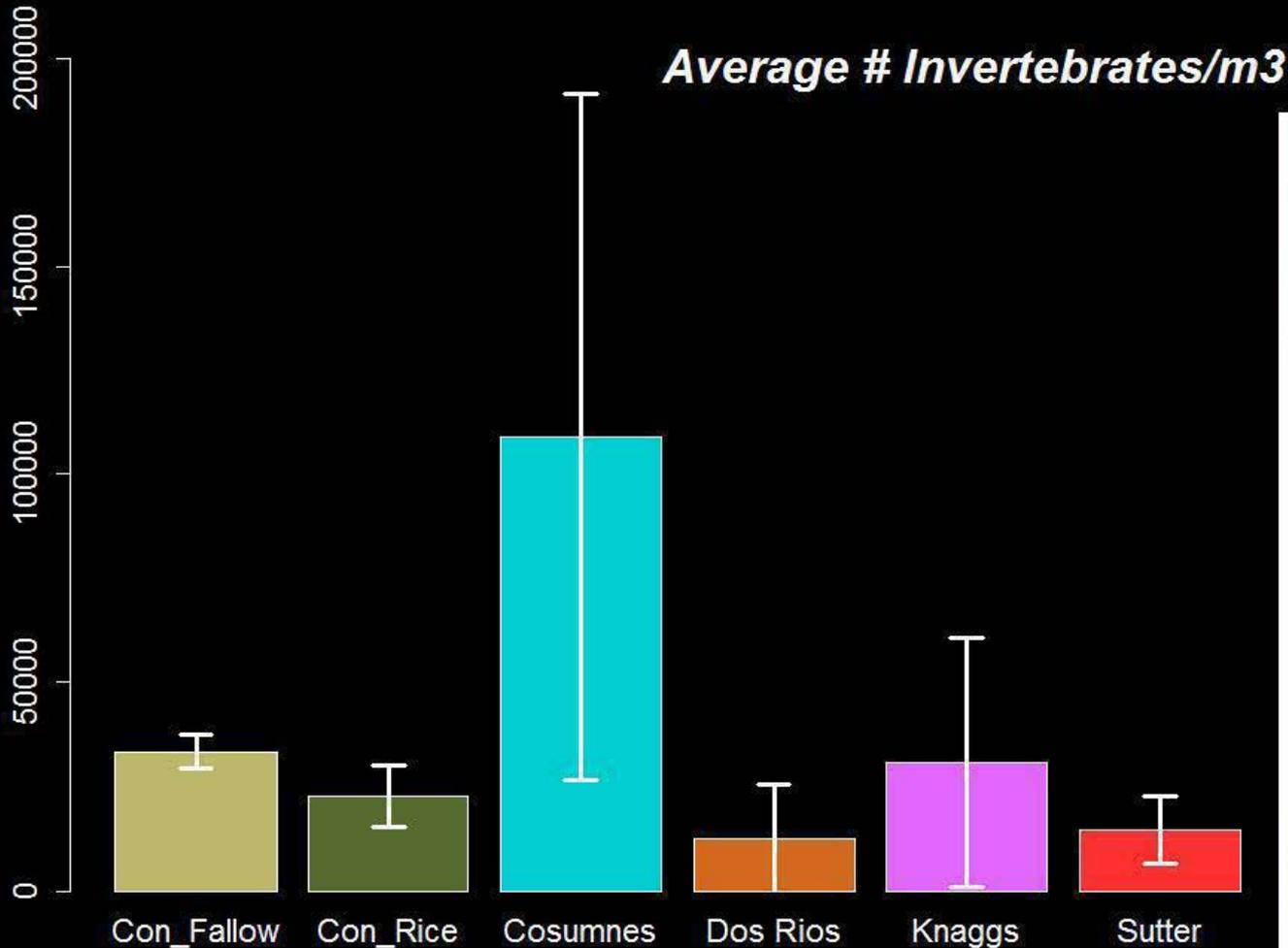


***3 enclosures @ 40 fish each at  
Sutter, Conaway fields, Dos Rios***

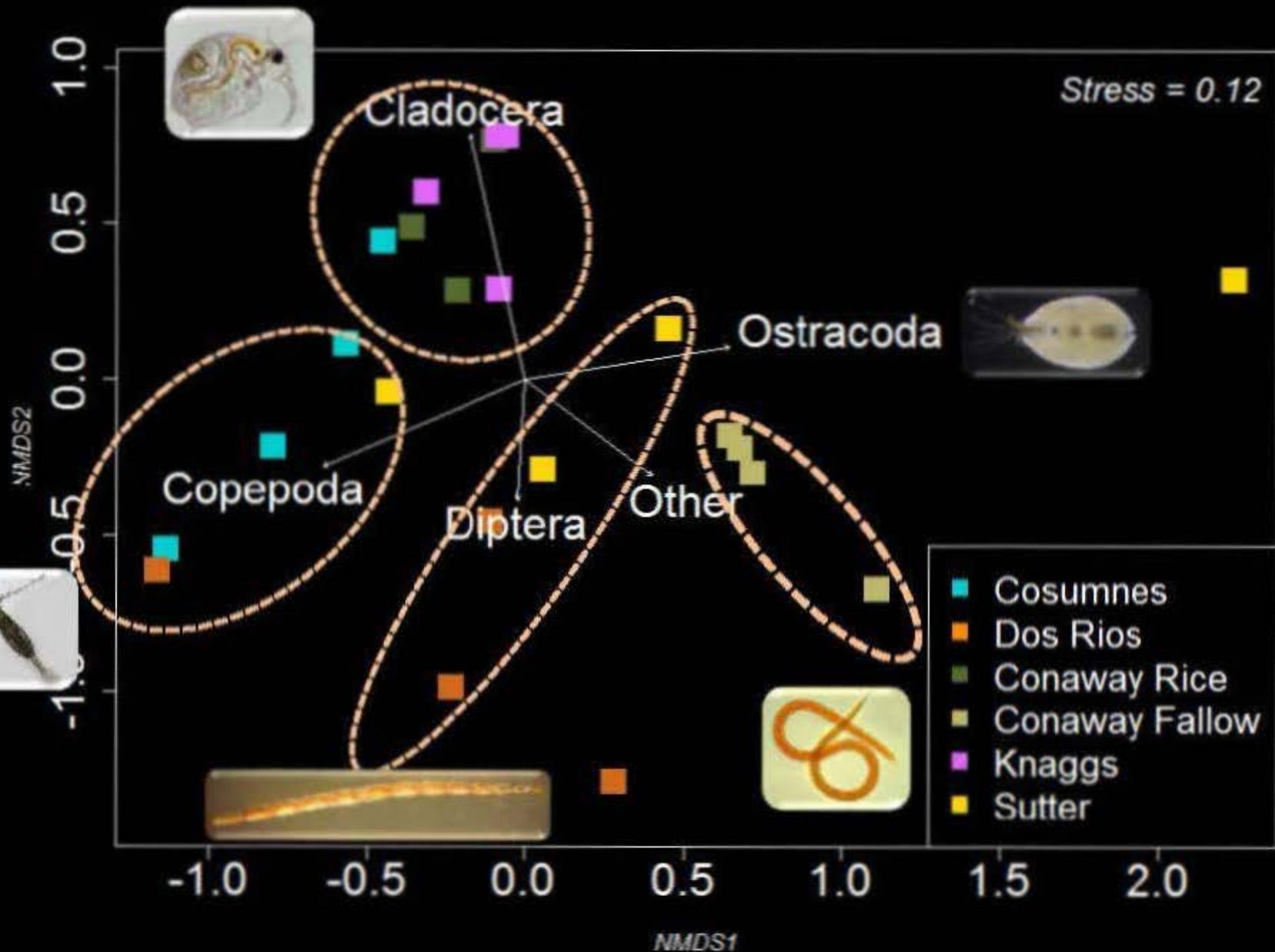


***Chinook Salmon from  
Feather River Hatchery***

# Food webs: variable productivity



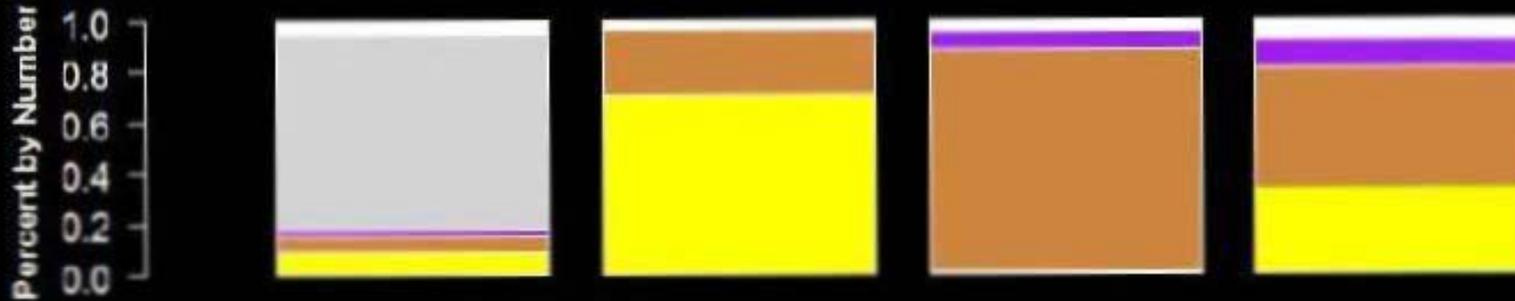
# Food Webs: the menu varies



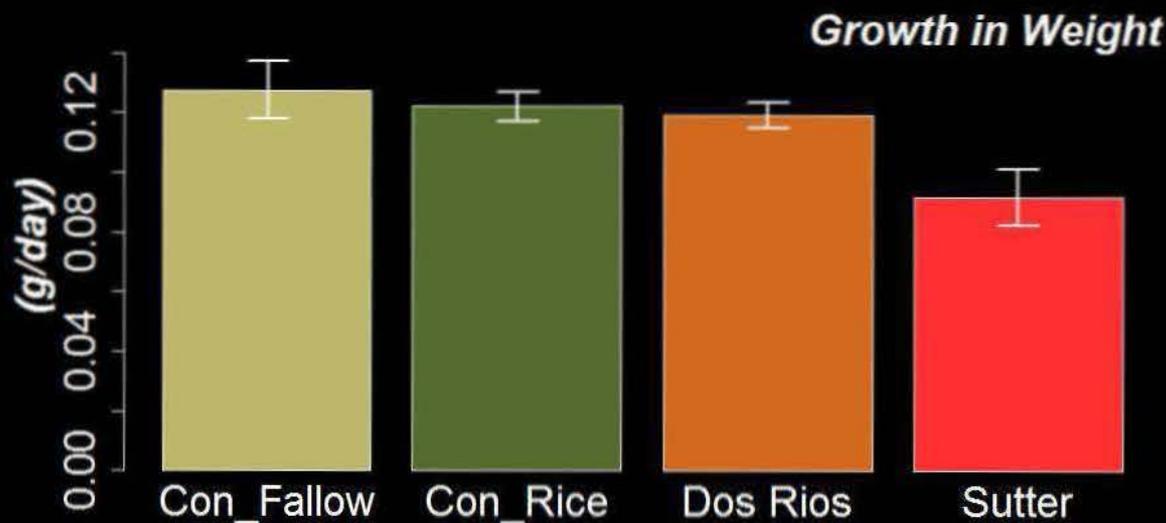
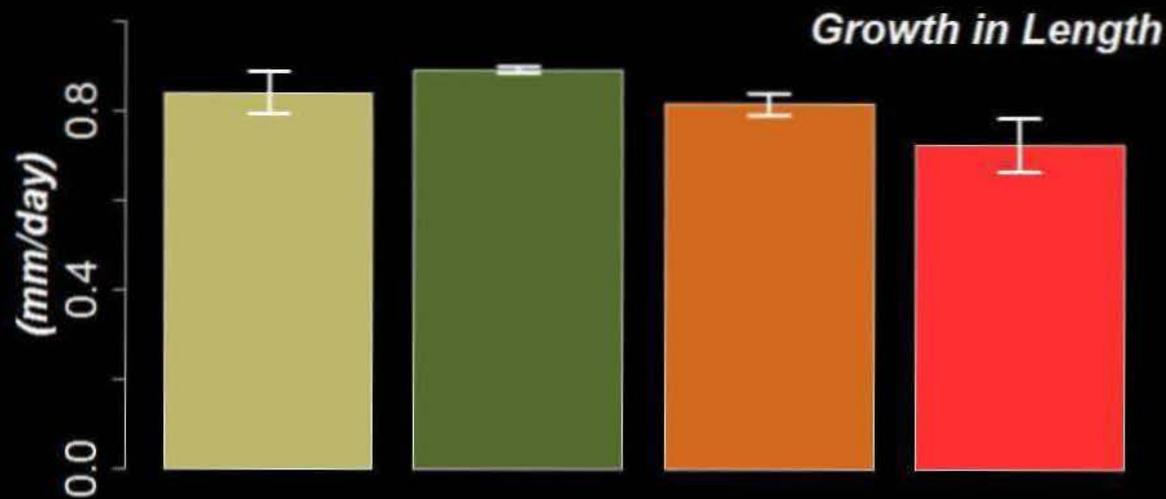
# Diets reflect choices

- Other
- Ostracoda
- Diptera
- Copepoda
- Cladocera
- Amphipoda

*Food Web Sample (at study end)*



# Similar Growth Rates Despite Variable Food Webs



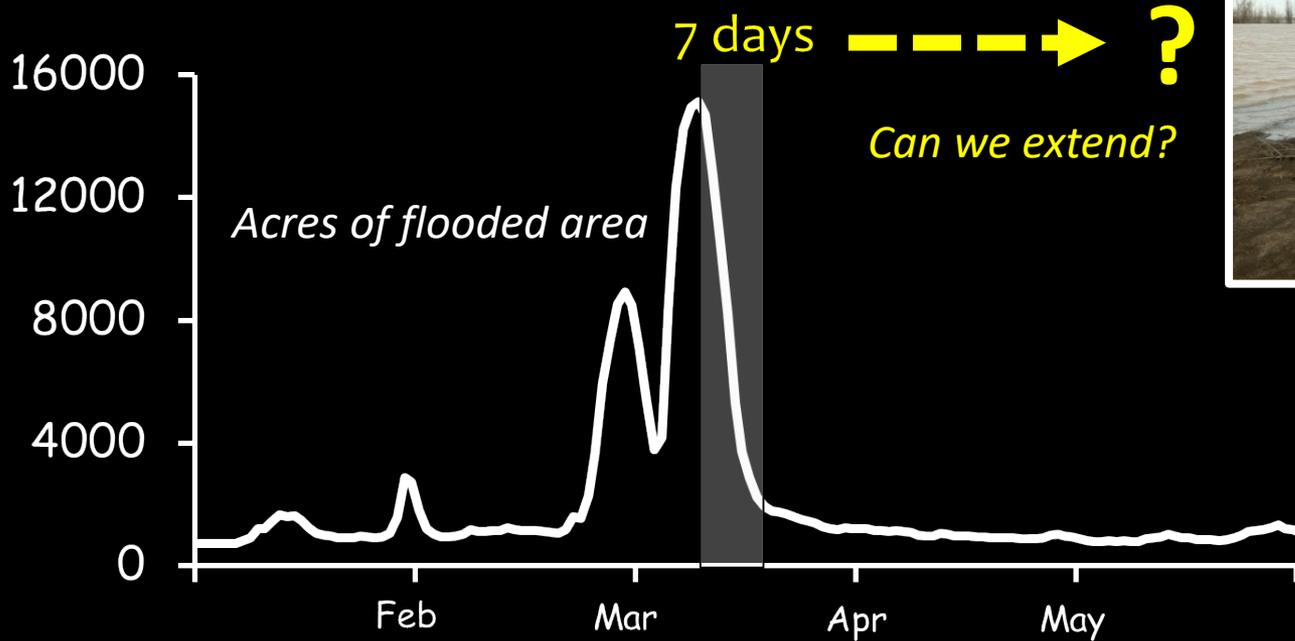
# *A diversity floodplains can support growth*



Photo: Carson Jeffres

# Next steps: more floodplain opportunity for wild fish

Challenges: Yolo Bypass drains very quickly



From Ted Sommer

Preliminary 2014 BiOP TUFLOW Hydraulic Modeling Source: CBEC & HDR

*Questions?*

