Synthesis

- Delta Smelt is the most important fish not called salmon. Set up for conflict - T. Sommer
- Both species have collapsed and are near monitoring detection limits.
- Existing protections for smelt clearly are not recovering the species
- Dead, but don’t know it yet - B. Bennett
How did we get here?

• Failure to develop and implement a viable recovery plan
• An over-emphasis on Salvage
• “Death from a thousand cuts”
• Lack of scientific and political will to stay the course
More Science ≠ More Fish

Trends in Delta Smelt Publications

State ESA-Endangered

State ESA-Threatened
Where do we go from here?

- Upper Colorado Native Fishes
  - Humpback Chub
    - *Gila cypha*
  - Bonytail
    - *Gila elegans*
  - Colorado Pikeminnow
    - *Ptychocheilus lucius*
  - Razorback Sucker
    - *Xyrauchen texanus*

- Pecos Bluntnose Shiner

- Oregon Chub
• Instream flow Protections
• Habitat Restoration
• Nonnative Fish Management
• Propagation and Stocking
• Research & Monitoring
• Education and Outreach

http://www.coloradoriverrecovery.org
• Research & Monitoring
  – Habitat Requirements
  – Reservoir Flows
  – Nonnative fish effects
• Propagation and Stocking
• Education and Outreach
• Enforce State and Federal laws
• Protect, Restore & Enhance
• Propagation and Stocking
• Research and Monitoring
• Education & Outreach
• February 18, 2015, the USFWS removed the Oregon chub from the list of Endangered and Threatened Species, the first fish ever to be delisted due to recovery.

Fisheries, Dec 2015. Lessons learned from the greater sage grouse and Oregon Chub. Thomas Bigford AFS Policy Director.
Smelt Recovery Plan

- Cont. Manage Freshwater Flows
- Cont. Minimize Salvage
- Cont. Research and Monitoring
- Habitat Restoration *in progress*
- Nonnative species???
- Propagation and Stocking???
Where do we go from here?

Jachowski et al. 2015; The Journal of Wildlife Management
Artificial Propagation

- Both species currently in culture at the Fish Conservation and Culture Lab.
- Both can complete lifecycle in FW.
- Both are sensitive to summer temps

- BUT many issues to contend with to do this
Historic Landscape Had Ponds

Conceptual models of historical landscapes

North Delta: where flood basins flank rivers
- 360,000 acres

Central Delta: where tides dominate
- 300,000 acres

South Delta: where floodplains meet tides
- 120,000 acres

Legend:
- waterway
- pond/lake
- seasonal pond/lake
- tidal freshwater emergent wetland
- non-tidal freshwater emergent wetland
- willow
- valley foothill riparian
- wet meadow/seasonal wetland
- vernal pool complex
- alkali seasonal wetland complex
- inland dune scrub
- grassland
- woodland/savanna
Twitchell Island?
Yolo Bypass ?
Where do we go from here?

Jachowski et al. 2015; The Journal of Wildlife Management