Established 2009

Geographic Area of responsibility includes the legal Delta, Suisun Marsh and Yolo Bypass.

Responsible for fish and wildlife resource issues within the legal Delta area, including endangered species, and habitat and species conservation.

Assumed responsibility for the 2008 delta smelt Biological Opinion from the Sacramento Fish & Wildlife Office.
Outline for Today

- Delta smelt 101-Matt Nobriga
- USFWS 2008 Biological Opinion and status of litigation and remand-Jennifer Norris
- Reasonable & Prudent Alternative (RPA) elements and Smelt Working Group-Erin Gleason
- All the information you’ll need on delta smelt, our BiOp and the Smelt Working Group can be found at http://www.fws.gov/sfbaydelta/cvp-swp/cvp-swpcfm
Delta smelt 101

Matt Nobriga
Fish & Wildlife Biologist
The intersection of the contemporary human environment with the one the native fishes evolved in...

- Shasta Dam
- Oroville Dam
- Folsom Dam
- Goodwin Dam
- Friant Dam
- Pumping plants
The intersection of the contemporary human environment with the one the native fishes evolved in...
The intersection of the contemporary human environment with the one the native fishes evolved in...

- Shasta Dam
- Oroville Dam
- Folsom Dam
- Goodwin Dam
- Friant Dam
- Delta “inflow”
- “Outflow” to the Bay
- Pumping plants
The story starts with surf smelt
The evolution of the Bay-Delta

15,000 Years Ago
(End of last Ice Age -- sea level approximately 400 feet below present level; rivers not shown)

10,000 Years Ago
(Formation of Farallon Islands and intrusion into the "Golden Gate")

5,000 Years Ago
(Formation of Bay and Delta Basins)

125 Years Ago
(Landward edge of undiked tidal marsh)

Today
(Includes changes due to hydraulic mining sediment deposition, land reclamation, and filling of wetland areas)

Figure 1.4. The invading estuary. Holocene transgression of the San Francisco Estuary and current extent of tidal waters as influenced by modern land use. (adapted by San Francisco Estuary Project from Atwater 1979 and Atwater et al. 1979, reprinted in TBI 1998)
“Charismatic megafauna”
Delta smelt are not charismatic megafauna

12 inches
Delta smelt: one of many declining native species
Delta smelt habitat today
This is what delta smelt habitat looks like when you’re in it.
Example spawner distributions

Wet spring

Dry spring
Example larval distributions

Wet spring

Dry spring
WHY ARE DELTA SMELT DECLINING?
Fish decline means mortality is greater than production
The number of young fish per adult has declined

![Graph showing the decline in juveniles per adult over time from 1960 to 2020.](Image)
Egg predators?

Young fish not getting enough to eat?

Entrainment too high and outflow too low given the above?
The USFWS State & Federal Water Projects biological opinion: An overview

Jennifer Norris
BDFWO Deputy Field Supervisor
Endangered Species Act 1973

- Federal actions may not jeopardize listed species or adversely modify critical habitat (Section 7)
- Take of listed species is prohibited (Section 9)
- Federal agencies must consult with the Services on their actions
- NMFS or FWS issues a biological opinion
  - Jeopardy/adverse modification determination and RPA, if necessary
  - Incidental take permit and reasonable and prudent measures to minimize take
  - Intended to allow federal actions and ensure protection of listed species
Why a CVP/SWP Biological Opinion

- Delta smelt listed as threatened under ESA (USFWS)
- Salmon, steelhead, sturgeon listed under ESA (NMFS)
- Central Valley Project is a federal activity
- Reclamation consults on coordinated operations of the state and federal water projects with NMFS and FWS
- CVP/SWP BiOp
  - Determines whether project operations avoid jeopardy
  - Provides incidental take authorization
Project operations determined likely to jeopardize delta smelt and adversely modify critical habitat

- Reduced numbers and increased stressors mean higher risk of extinction
- Pumps lead to direct mortality due to entrainment
- Reduced flows leading to reduced habitat quality and quantity at key times of year
2008 Smelt Reasonable and Prudent Alternative

- Designed to ensure that operations of the state and federal water projects do not jeopardize delta smelt or adversely modify its critical habitat

- Five Components
  1. Protection of adults
  2. Protection of larvae and juveniles
  3. Improve rearing habitat
  4. Habitat restoration
  5. Monitoring and reporting
### Litigation History

<table>
<thead>
<tr>
<th>State and federal water project BiOps</th>
<th>Litigated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995 (No Jeopardy)</td>
<td>No</td>
</tr>
<tr>
<td>2004 (No Jeopardy)</td>
<td>Yes – NRDC</td>
</tr>
<tr>
<td>2005 (No Jeopardy)</td>
<td>Yes – NRDC</td>
</tr>
<tr>
<td>2008 (Jeopardy)</td>
<td>Yes – DWR, water contractors</td>
</tr>
</tbody>
</table>
USFWS sued in district court by DWR and state and federal water contractors

In 2011, BiOp found unlawful

BiOp remanded without vacatur

New BiOp required by December 2013

Reclamation must conduct NEPA on the RPA

Request for 3 year time extension to focus on BDCP and collaborative science
Questions?
RPA AND THE ROLE OF THE SMELT WORKING GROUP

Erin Gleason
Fish and Wildlife Biologist
RPA Component 1: Protection of Adult Delta Smelt
RPA Component 2: Protection of Larval & Juvenile Delta Smelt
RPA Component 3: Improve Habitat for Delta Smelt Growth and Rearing
RPA Component 4: Habitat Restoration
RPA Component 5: Monitoring and Reporting
Protection of Delta Smelt: RPA Components 1 and 2

- RPA Component 1: Adult Delta Smelt Entrainment Protection
  - Action 1-Spawning movement during winter pulse
  - Action 2-Spawning movement after winter pulse

- RPA Component 2: Larval & Juvenile Delta Smelt Entrainment Protection
  - Action 3-Entrainment of larval delta smelt
Adaptive Process Decision Parameters
Smelt Working Group Considers:
Flows, T, Distribution, Salvage,
Entrainment Modeling, Seasonal
Timing and Abundance, among
other data

Adaptive Process Start—Convene Smelt Working Group

December 1

Increased risk Of Entrainment

no

yes

Continue SWG Process

Pre-spawning Adult Protection: Action 1
OMR - 2,000
For 14 days

≥ Dec 20?

yes

no

≥ 14 NTU turbidity?

yes

no

≥ Dec 20? (Part 1B)

Daily Salvage index ≥ 0.5?

yes

no

Spawning Adult Protection
Action 2 start:
OMR held to 14 day avg. Between -1,250 and -5,000 cfs; based on SWG process

Sac R > 90K
And SJR > 10K?

Suspend Action 2

SwG Process continues

Onset spawning?

yes

no

Hold Action 2?

yes

no

Temp 12°C
Or Spent ♀

Larval/Juvenile Protection Spring
Action 3 start:
OMR held to 14 day avg. Between -1,250 and -5,000 cfs based on SWG process

≥ Dec 20

yes

no

≥ 12

yes

no

≥ NTU turbidity?

Temp 12°C

≥ Dec 20?

yes

no

June 30

End Action 3

June 30 or Temp 25°C?

yes

no

End Action 3

June 30 or Temp 25°C?

yes

no

End Action 3

End Action 3

End Action 3

End Action 3

End Action 3
Smelt Working Group

The SWG consists of representatives from:

- California Department of Fish and Wildlife
- U.S. Fish and Wildlife Service
- California Department of Water Resources
- U.S. Bureau of Reclamation
- U.S. Environmental Protection Agency
- National Marine Fisheries Service
SWG Recommendation

SMELT WORKING GROUP
Monday, January 14, 2013

Meeting Summary:
The Working Group recommended that OMR flow should be set at a 14-day average flow of no more negative than -2,500 cfs with a corresponding 5-day average flow of no more negative than -3,125 cfs. Implementation of Action 2 began January 2, 2013, following immediately the end of Action 1. The Working Group will continue to monitor salvage, turbidity, and other conditions, and will reconvene Tuesday January 22.

Reported Data:
1) Current environmental data:
   - Water temperatures are as follows:

   ![Delta Temperature Graph]

   - OMR: USGS tidally-averaged daily OMR flow and 5-day average OMR flow on January 11 was -2,189 cfs and -2,405 cfs, respectively. CDEC 5-day OMR flow and 14-day average OMR flow as of January 13 is -2,777 cfs and -2,057 cfs, respectively.

   ![OMR Flow Graph]

   - Flow: Sacramento River inflow is 23,990 cfs and San Joaquin River is 1,850 cfs. Yolo calculation from CDEC is at 63kms. The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group. Of special note is the fact that during the period 1/8 through 1/13 CVP exports were kept at low levels due to facility maintenance; however, the average daily combined export level remained fairly consistent between 4,000 and 5,000 cfs.
• **December 17, 2012:** Initiate Action 1
• **December 31, 2012:** Maintain Action 1 flows
• **January 4, 2013:** Allow increased water exports
Back to Jennifer . . . .
Action 4: the Fall Action

- Designed to increase access to high quality habitat in fall
- Designed to increase fall flow variability
- Implemented in above normal and wet years only
- Requires adaptive management to review and potentially modify the action
Action 4: the Fall Action

- During September and October set X2 position at an average of
  - 74 km following wet years
  - 81 km following above normal years
- During November pass inflow through reservoirs to augment outflow
- Implemented in 2011*
- FLaSH studies
Closing thoughts

- 2008 Biological Opinion designed to allow project operations while protecting delta smelt
- Implemented in real time to allow flexibility
- Remains in effect until a new opinion is in place
- FWS committed to working with our partners and developing collaborative science