



Where do delta smelt and longfin smelt spawn and how do they get there?

CALFED Science Program/USFWS

Workshop - November 15, 2007



Workshop purpose

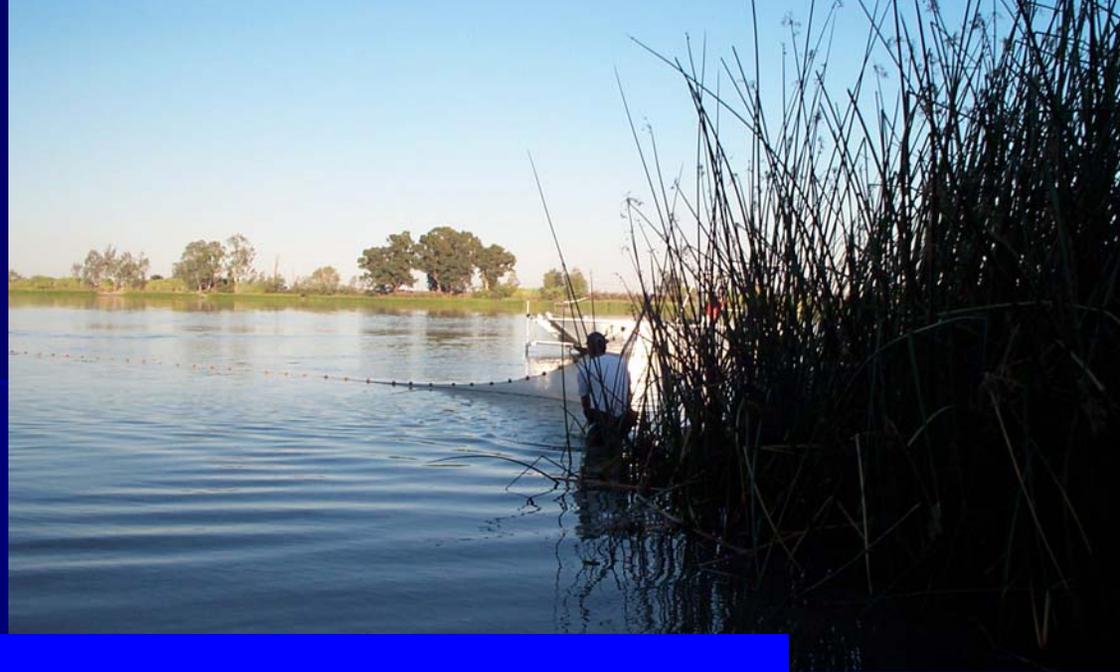
- 2006 EWA Science Review:
 - “A serious information gap that presents a barrier to the formulation of practical hypotheses is that the in-delta spawning migration behavior of delta smelt (timing, selection of spawning sites, etc.) is not well described.”
 - “The Panel is aware however that one major data gap does exist in this regard: we have no data pertaining to what spawning substrate delta smelt are using, and whether or not this substrate is limiting.”

Workshop goals

- Information exchange
 - Not much known locally
 - Historically lower priority than YOY
- Roadmap for study plan
 - Facilitated discussion this afternoon
 - Report next month

Key management issues

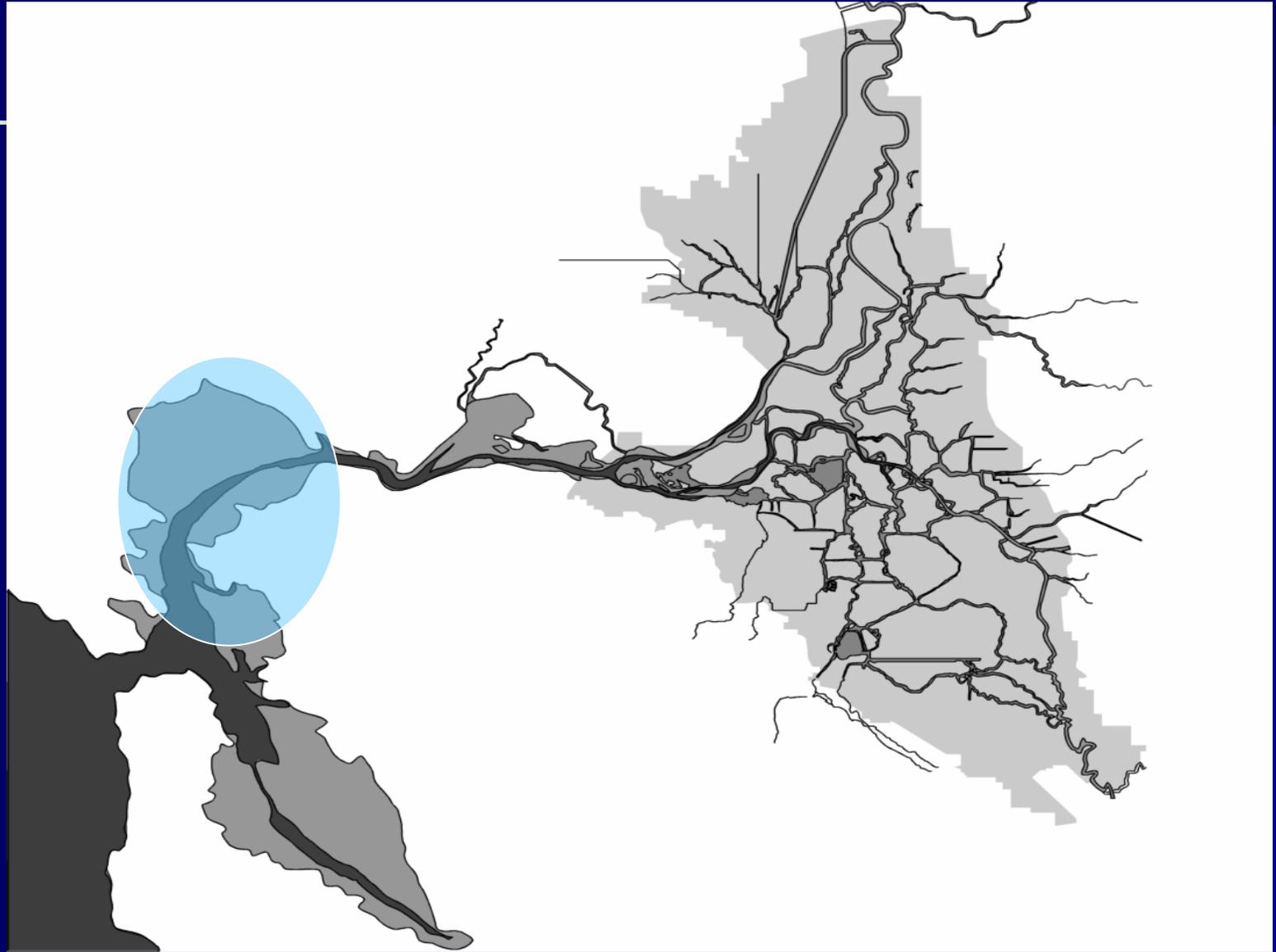
- Identify spawning habitat to protect/restore/enhance
- Mitigate water project impacts on spawners



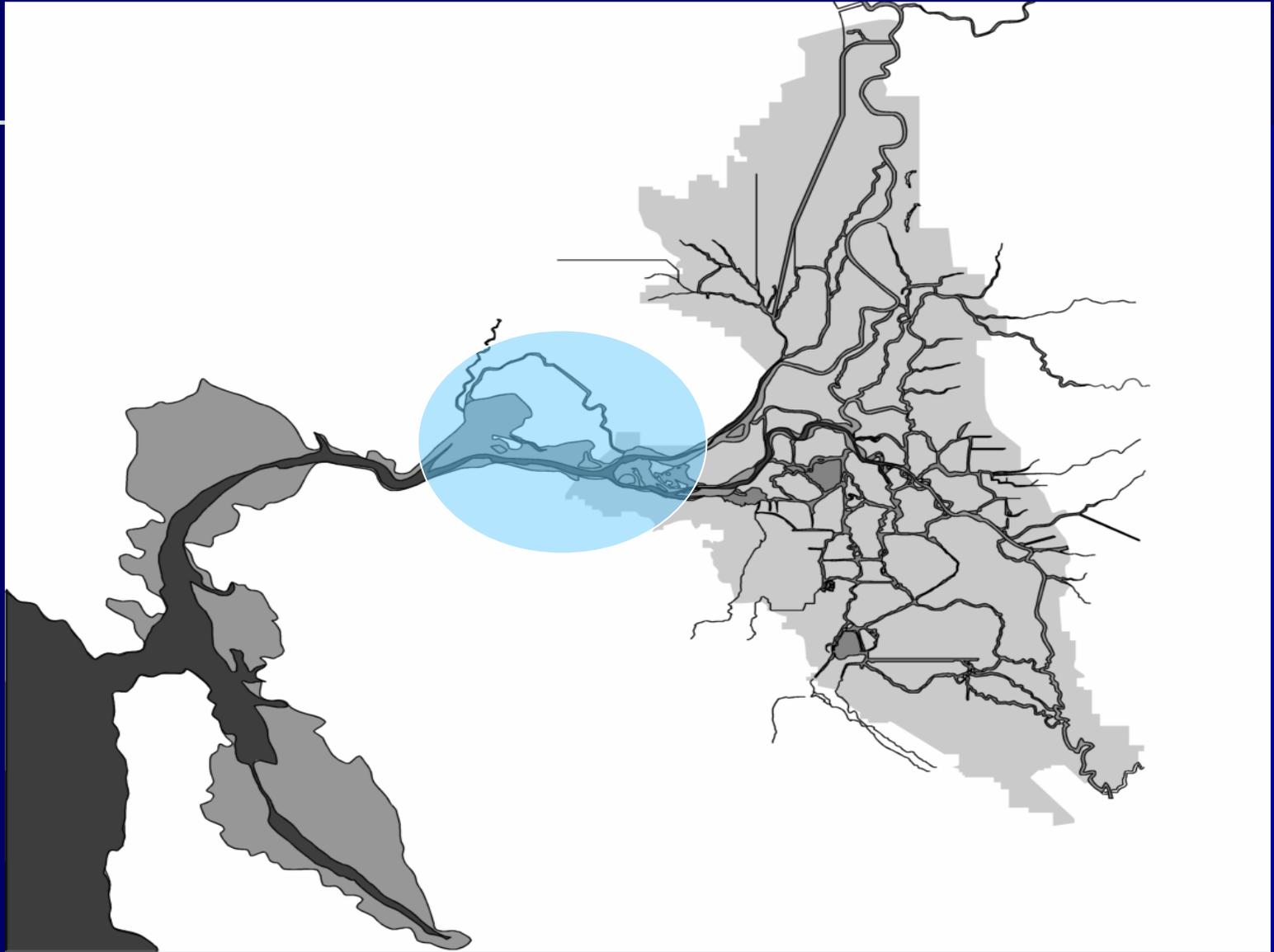
Background eco info



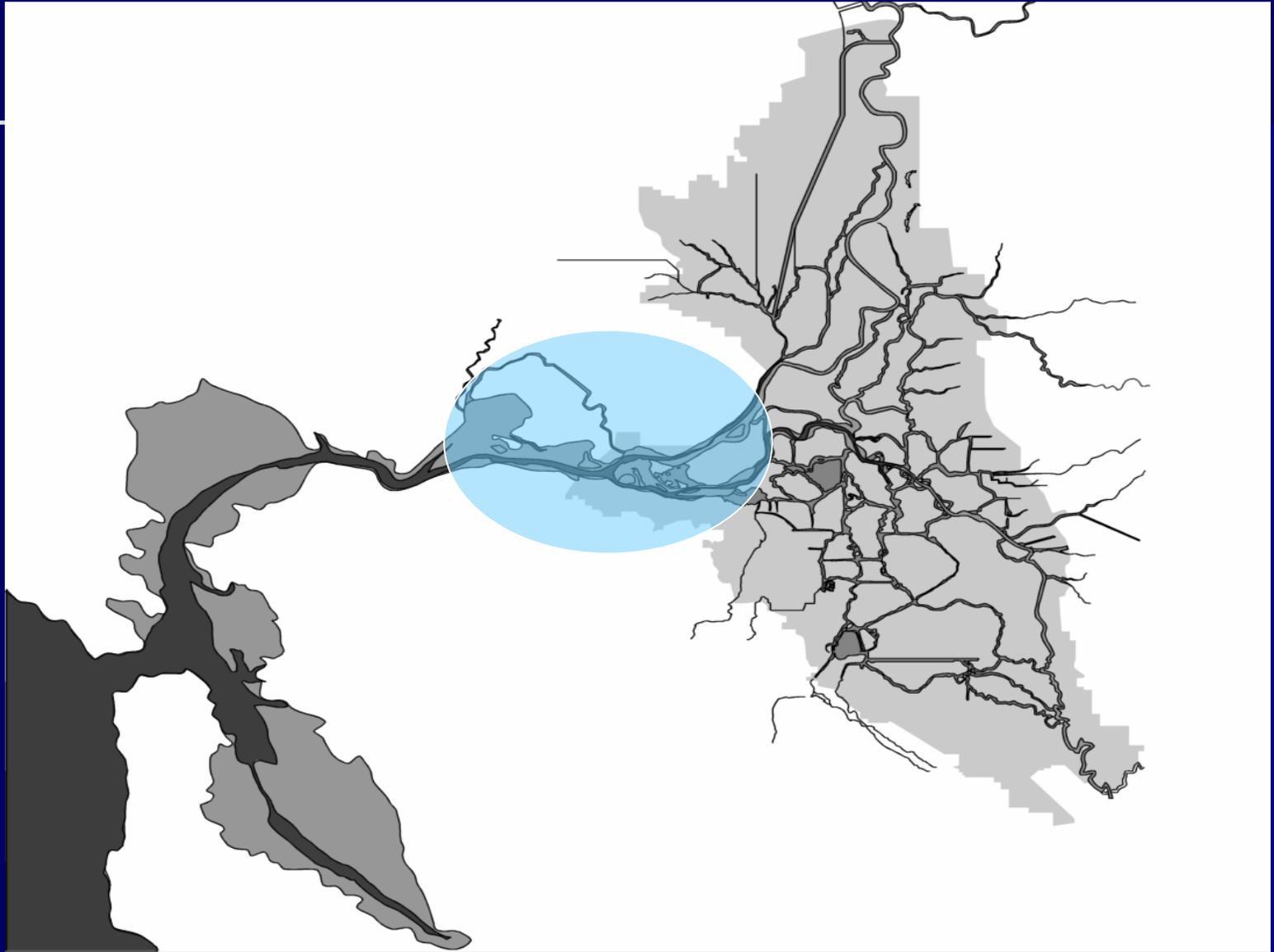
Longfin smelt



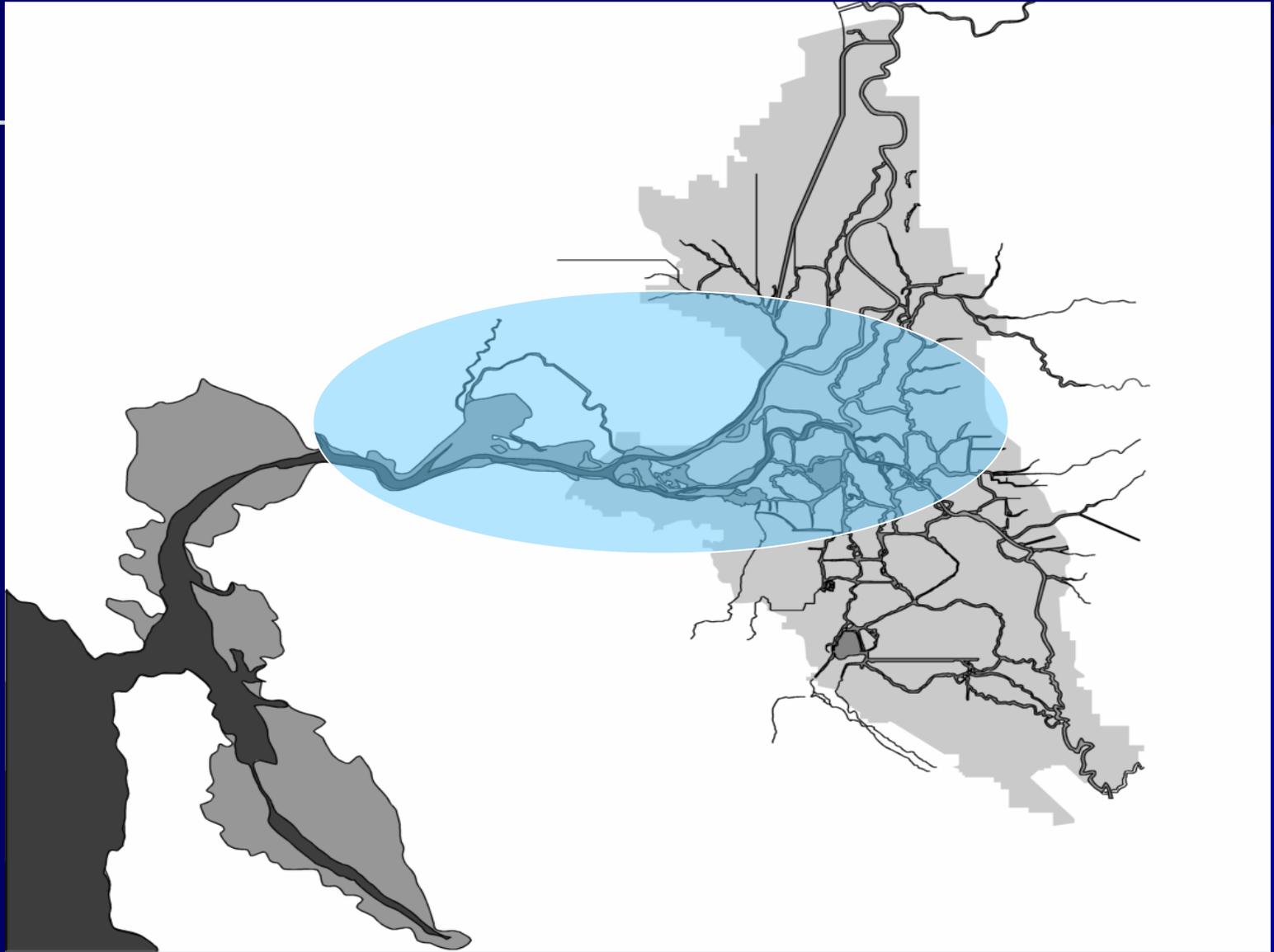
Longfin smelt



Delta smelt



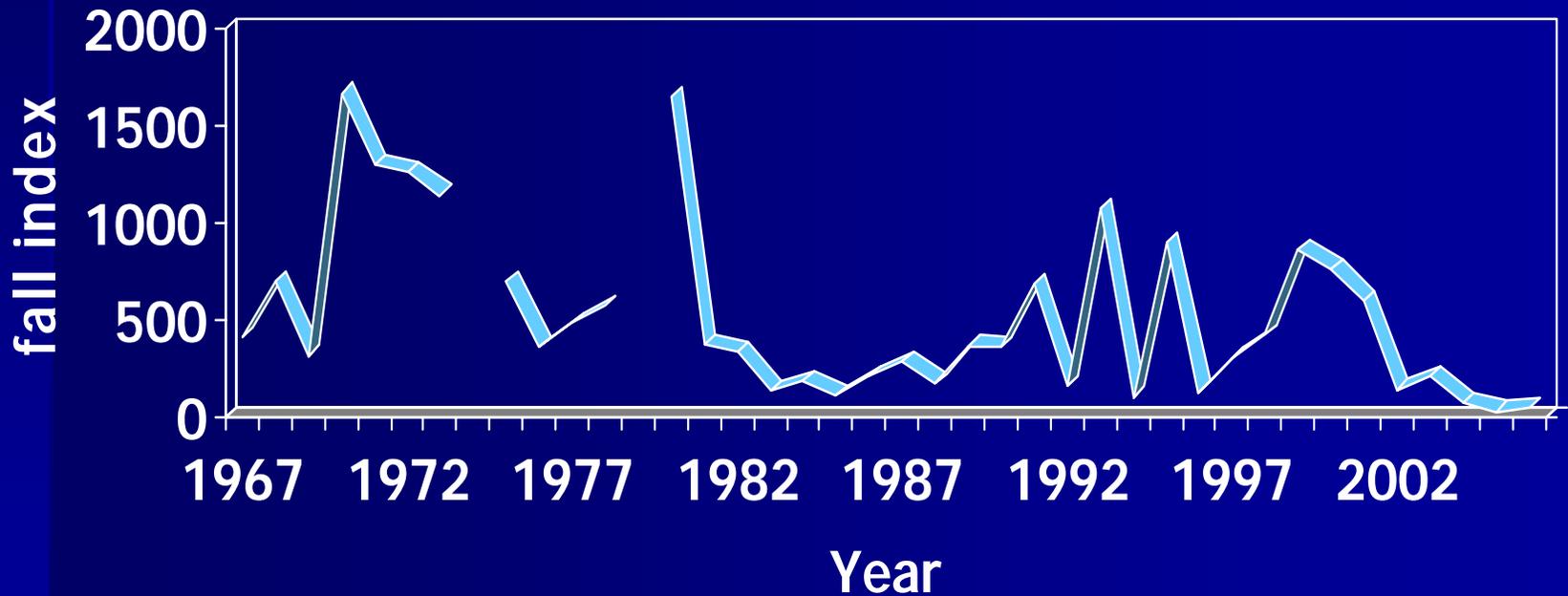
Delta smelt



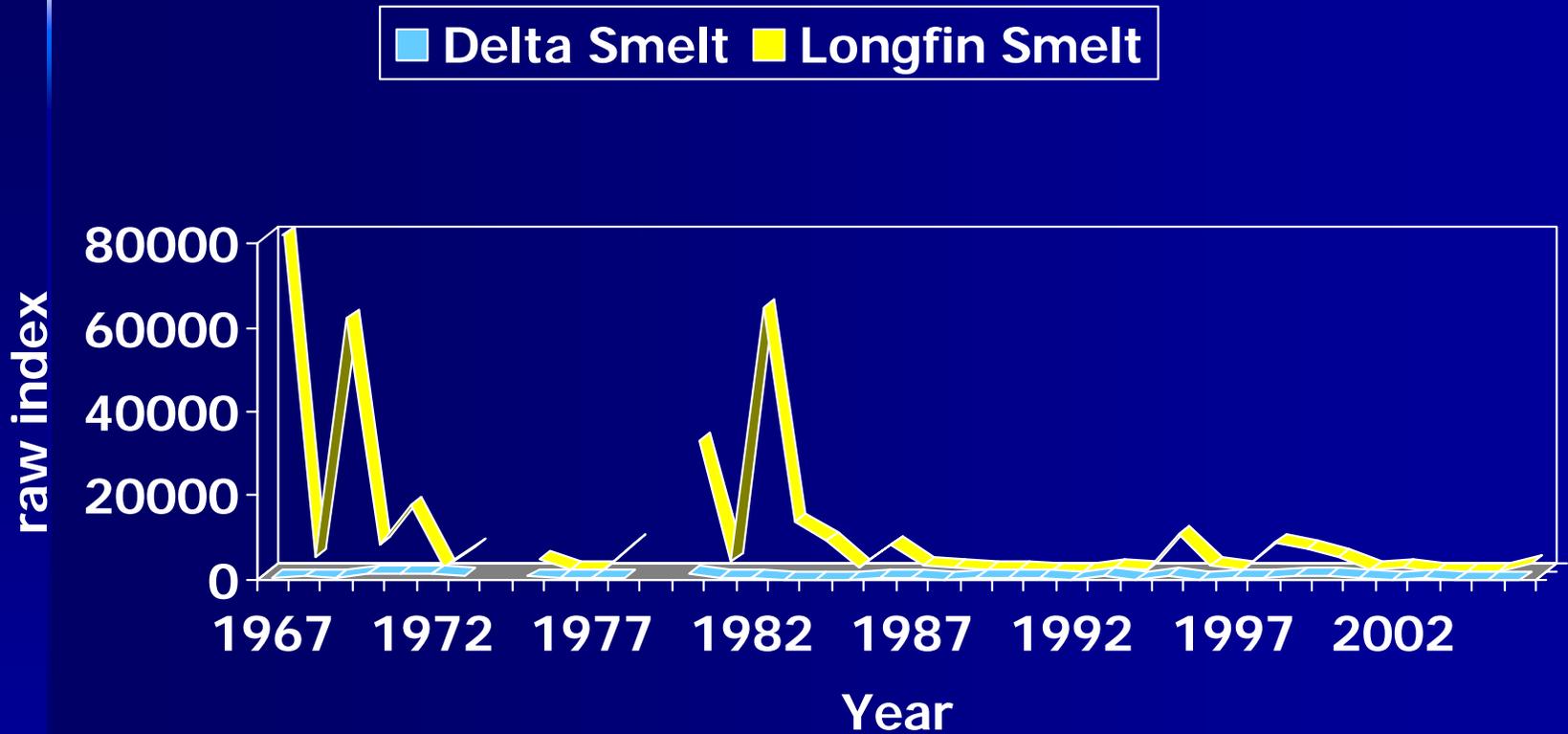
We do a lot of distribution and single location monitoring

- 20mm Survey
- Summer Townet Survey
- Fall Midwater Trawl Survey
- Spring Kodiak Trawl Survey
- Chipps Island Trawl
- Fish salvage facilities
- USFWS Beach Seine Survey
- Suisun Marsh Otter Trawl
- San Francisco Bay Study Trawling

Delta smelt carries a big stick

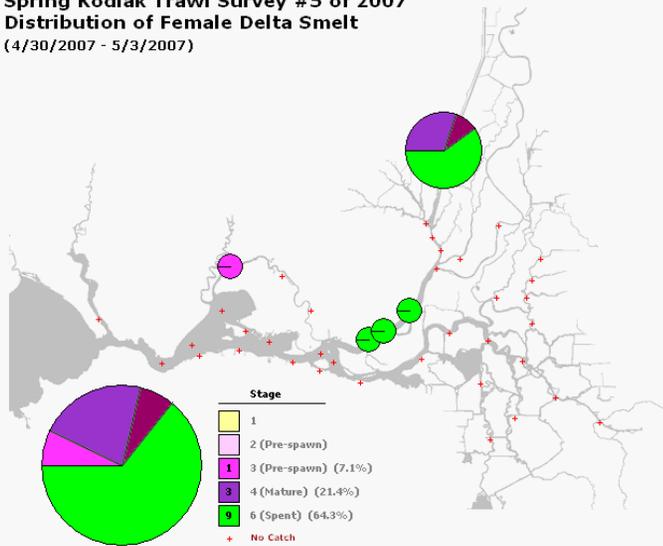


But both smelts are rare

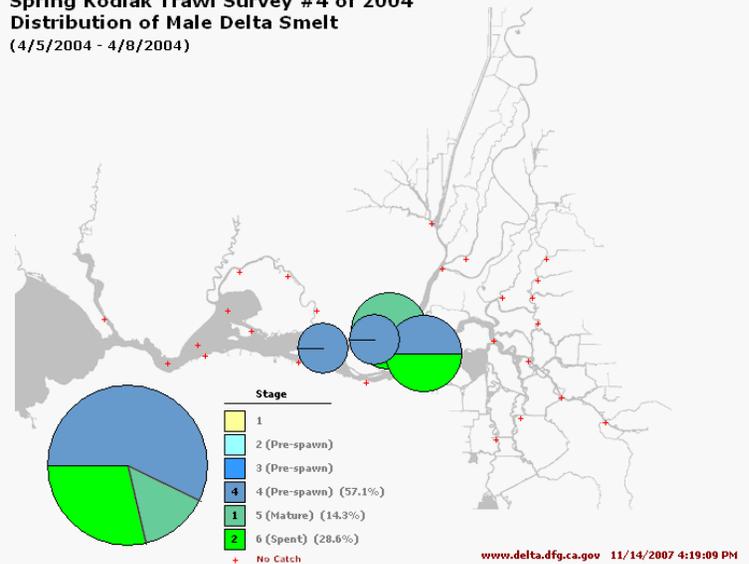


We almost always know roughly where the delta smelt are

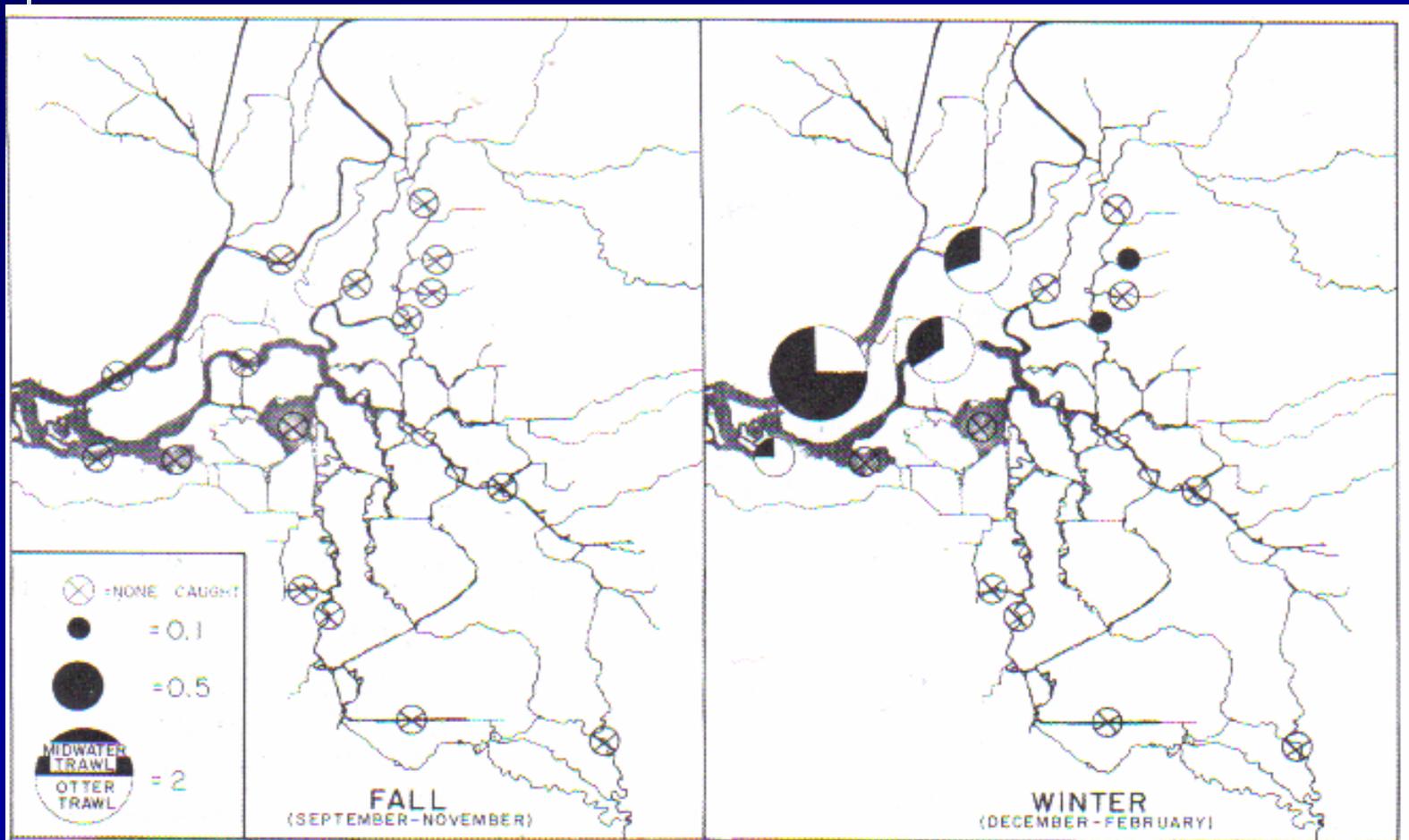
Spring Kodiak Trawl Survey #5 of 2007
Distribution of Female Delta Smelt
(4/30/2007 - 5/3/2007)

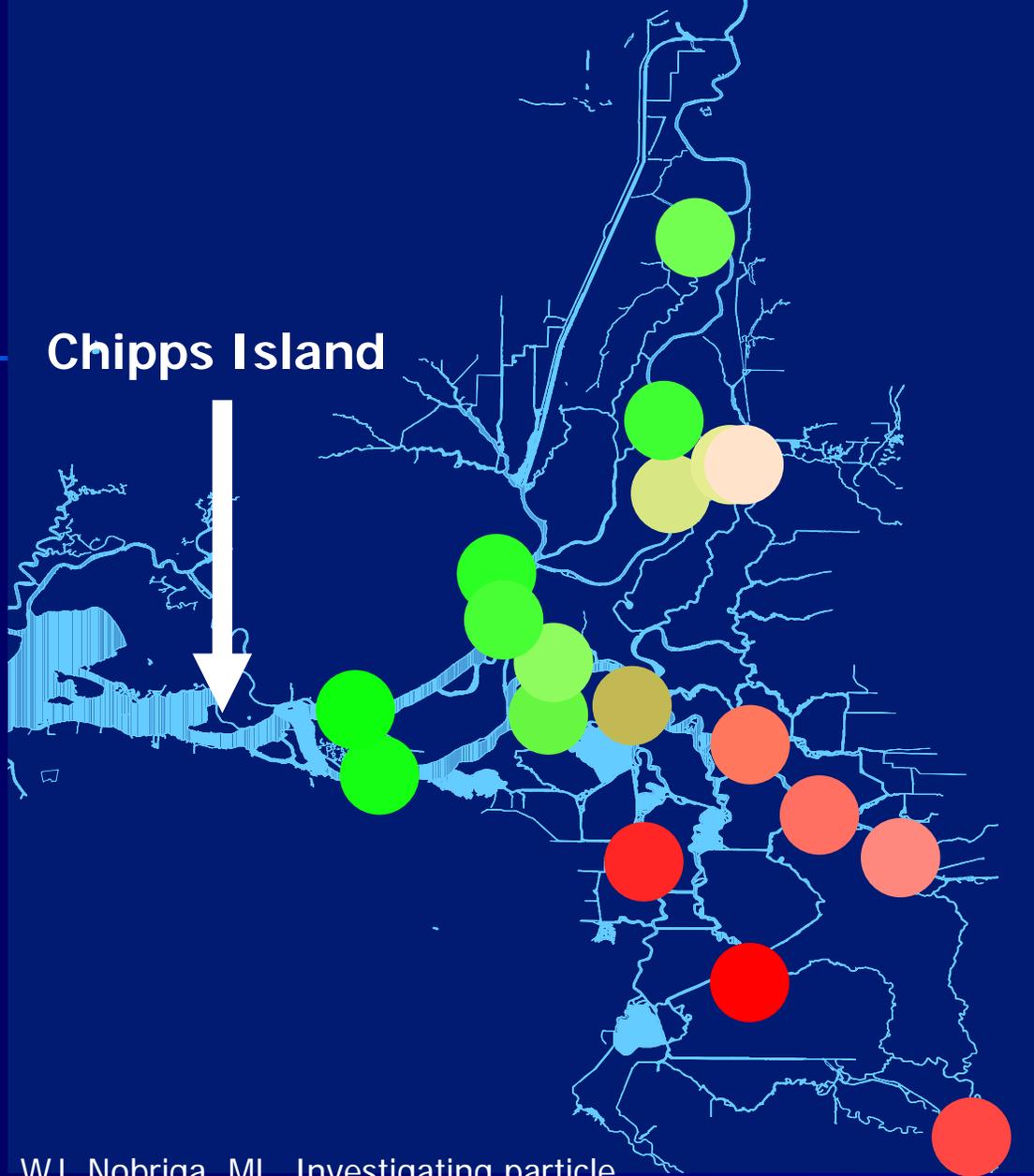


Spring Kodiak Trawl Survey #4 of 2004
Distribution of Male Delta Smelt
(4/5/2004 - 4/8/2004)



Do longfin smelt spawn in deep water?



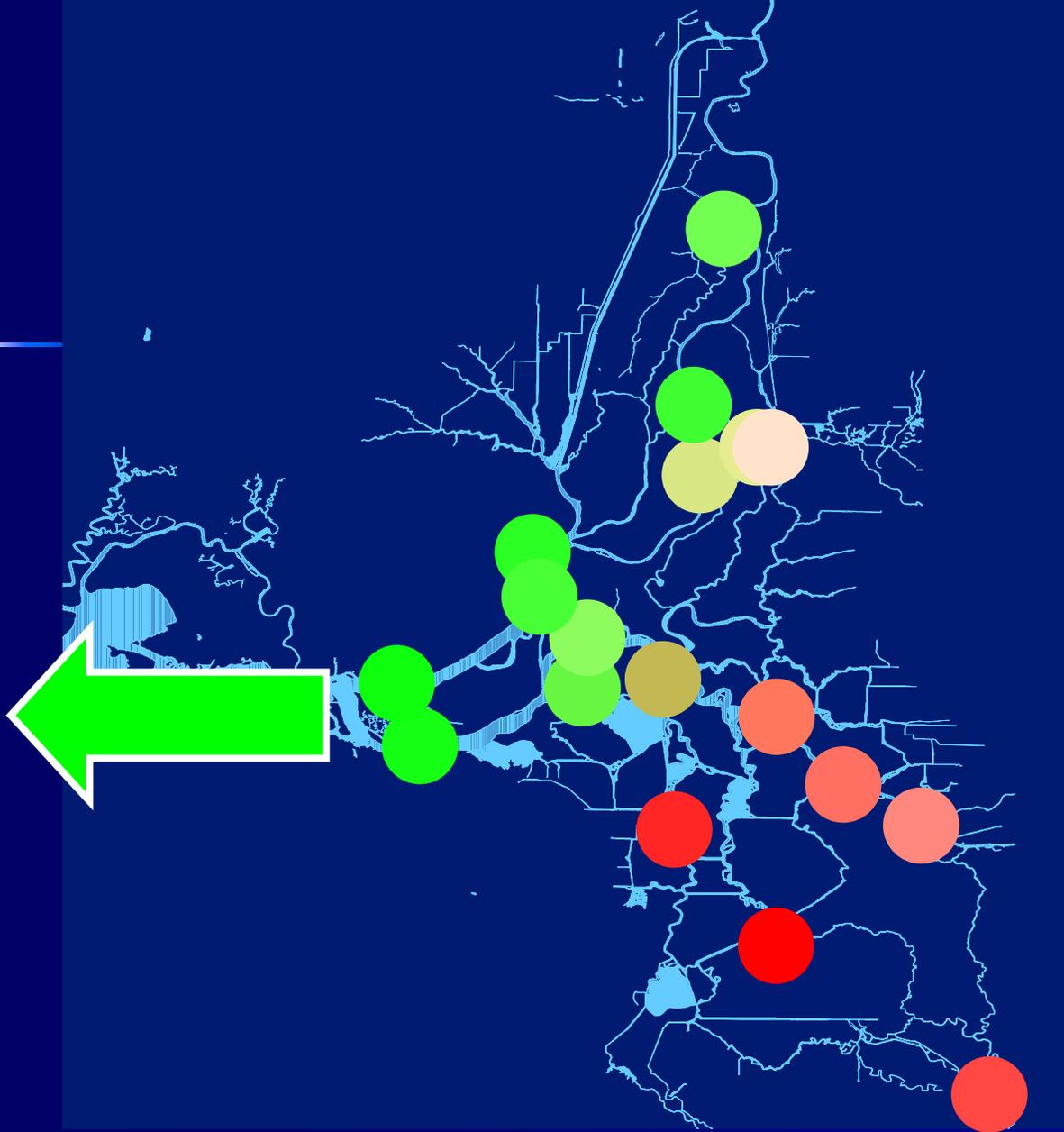


Chipps Island

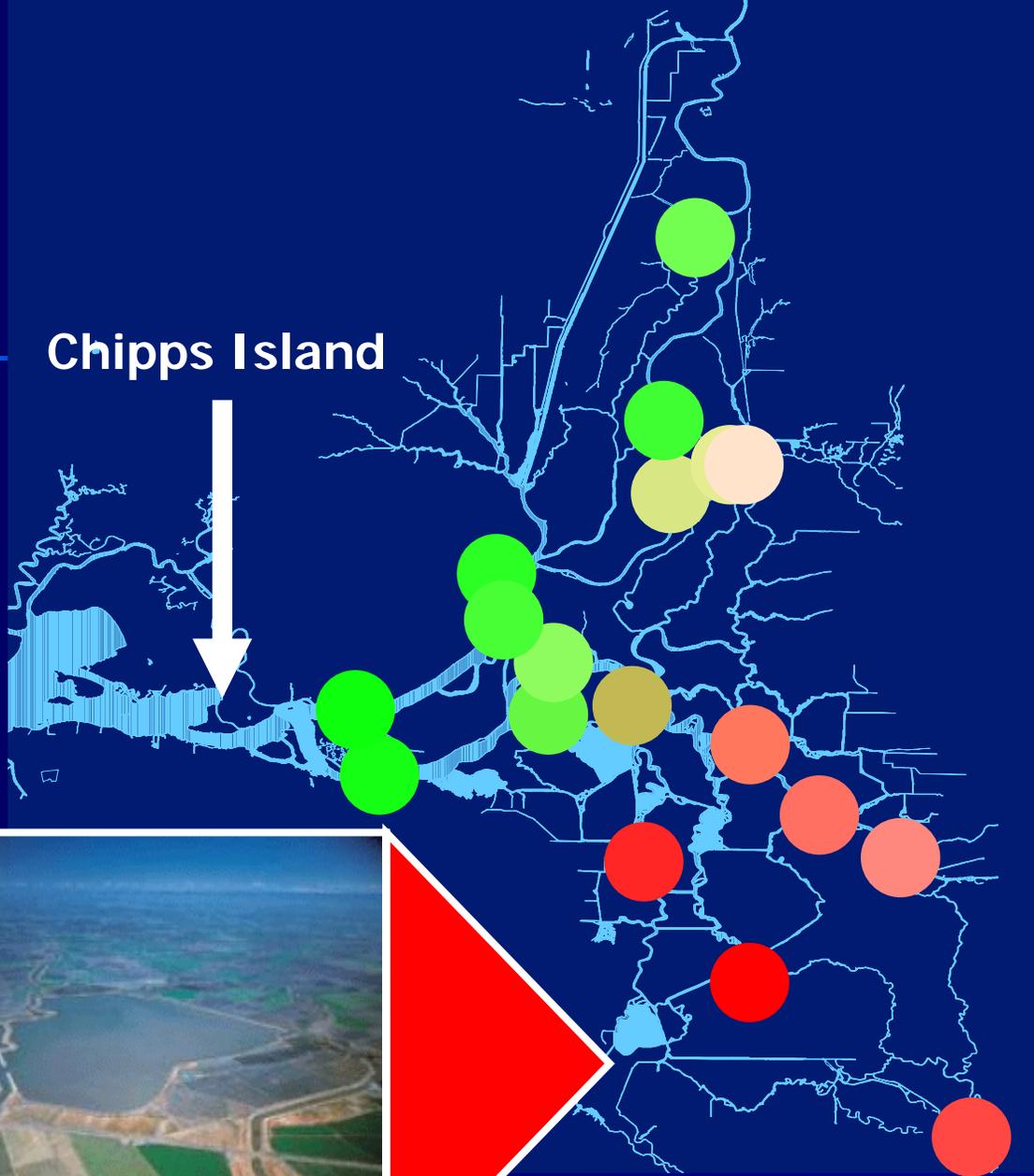
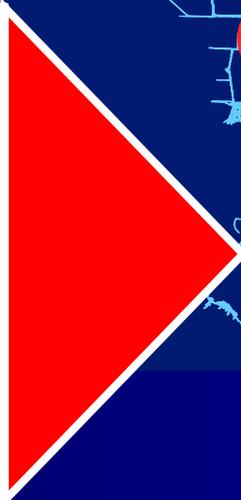


From: Kimmerer, WJ, Nobriga, ML. Investigating particle transport and fate using a particle tracking model for the Sacramento-San Joaquin Delta. San Francisco Estuary and Watershed Science. In press.

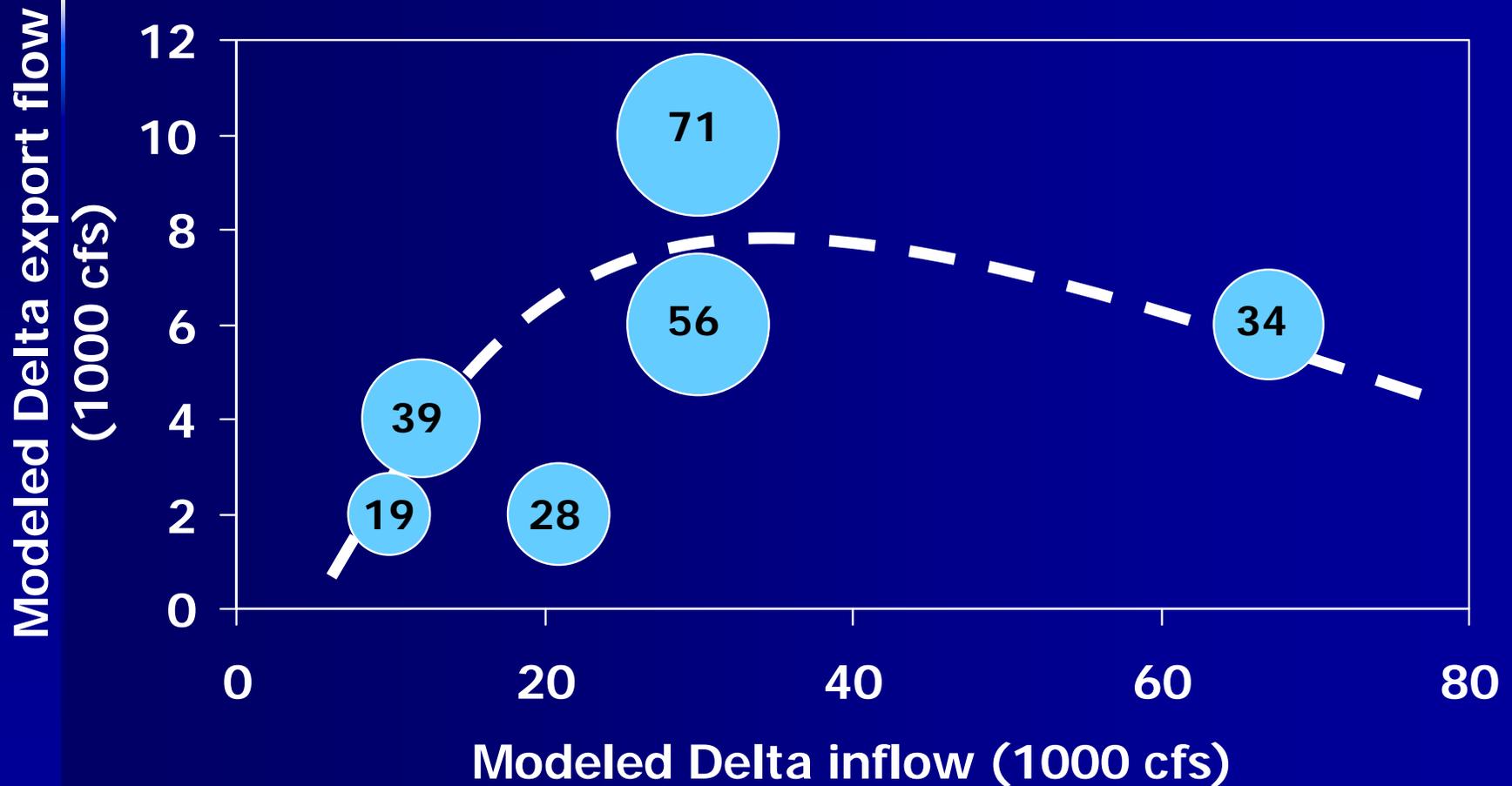




Chippis Island



Migratory behavior matters





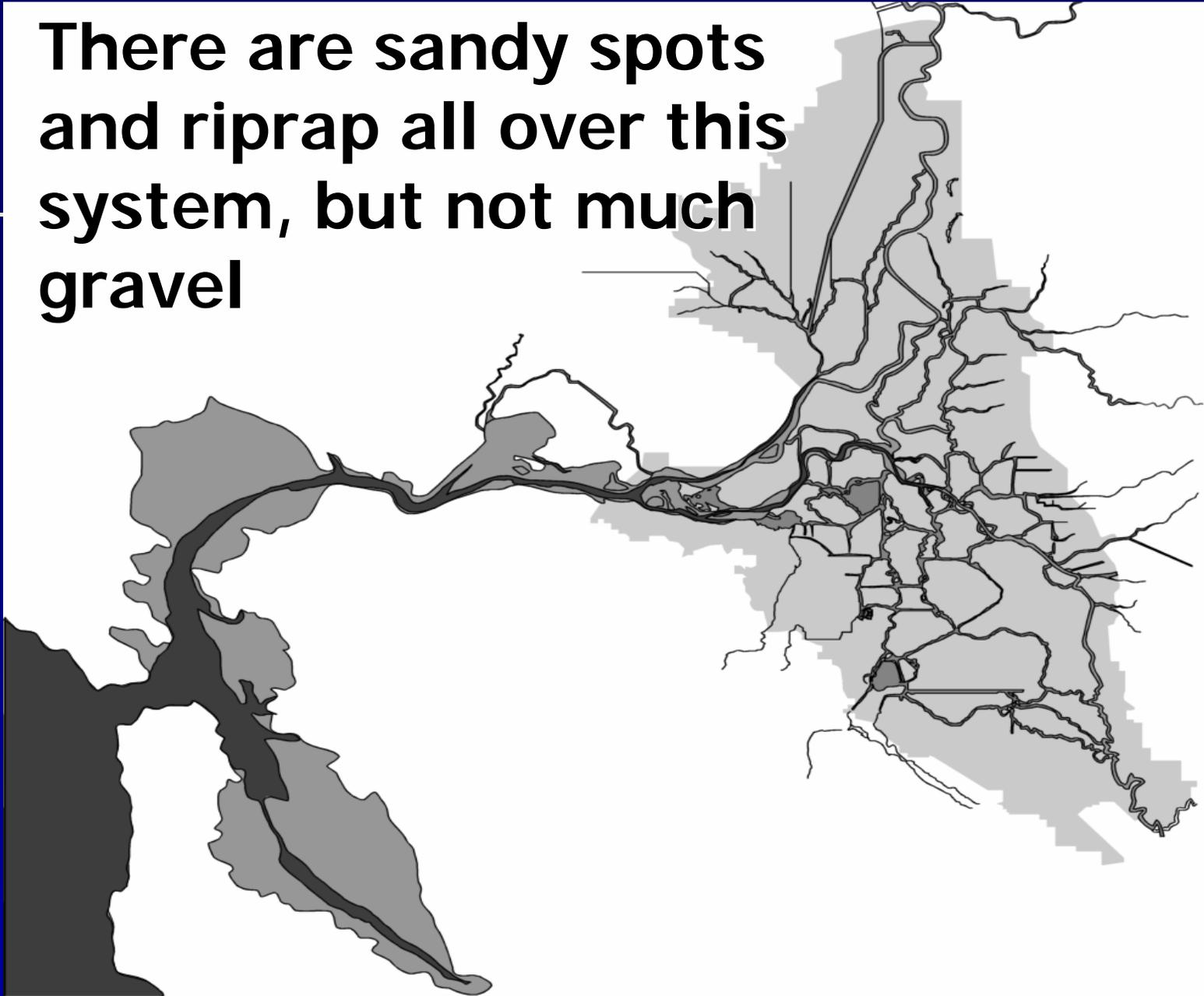
There is a clear need for coupling hydrodynamics, water quality and fish behavior in a modeling context



But I stiiiiiiilllll haven't
found what I'm
looking for!



**There are sandy spots
and riprap all over this
system, but not much
gravel**

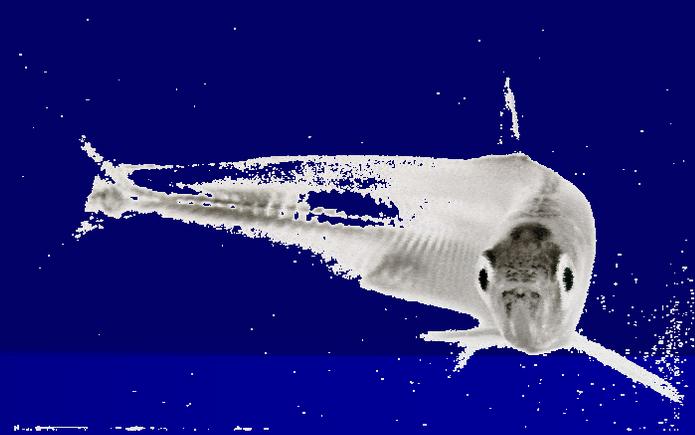




**There is also a clear need
to define spawning
microhabitats**



Schedule



- Salvage facilities
- Lake Washington longfin smelt
- Eulachon
- Contaminant effects on migration
- Discuss study plan elements



1. What is known about the physical and chemical cues that influence osmerid spawning migrations, mate detection, and spawning site selection?

**2. Do other osmerids
migrate and then stage
like delta smelt and
longfin smelt seem to?**

3. Are there obvious insights that we might stumble upon by analyzing existing data?

4. What new approaches should be tried to learn more about the spawning migrations of these rare fishes in a large system?

- Otolith microchemistry?
- Large field enclosures with egg transplants?
- Tagging options?
- Lab experiments?

5. What data are needed for delta smelt modeling? What spatial and temporal resolutions are desired?