**IEP Longfin Smelt Synthesis Project Work Team Meeting - NOTES**

**Friday December 9, 2016 from 13:00-15:00**

**DWR, West Sacramento, Room 119 (DWR-DES, 3500 Industrial Blvd, West Sacramento, 95691)**

**Attendees:** Randy Baxter, Lenny Grimaldo, Matt Nobriga, Mike Eakin, Jan Thompson, Larry Brown, Steve Slater, Vanessa Tobias, Felipe LaLuz, Lauren Damon, Bob Fujimura, Zair Burris, Peggy Lehman, Louise Conrad. On phone: Wim Kimmerer and Richard Connon.

It’s important to meet in person the first couple meetings, but just in case:

Call-in number: 866-764-1290  Passcode: 5000198

**Agenda:**

1. Introductions (All 5 min)
2. Review previous discussion (All, 5 min)
3. Life History Summary (Lenny, Randy, 60 min)
	* larval sampling, marshes and shoal; 20-mm Survey analyses; possibly proportional entrainment (Lenny, 45 min; see UCD Smelt Symposium\_LennyGrimaldo.pdf)
		1. CDFW monitoring (20-mm 1995-2016 March-July)
			1. Winter-Spring flow and fall LFS abundance are positively correlated
			2. But spring abundance based on 20-mm Survey data shows declining abundance with increasing outflow
				1. Are we not sampling where they are in wet years? [YES, larger proportion in San Pablo Bay and in some cases downstream]
			3. Compared abundance using GAM to water quality variables
				1. Positive response to electrical conductivity (EC) up to 20,000 µm/cm
				2. Fish shift upstream in drier years
			4. Bay Study captured yolk-sac larvae in E & L net
				1. Is 20-mm missing LFS in San Pablo Bay (SPB) in wet years?
			5. Zooplankton abundance may be a mechanism for LFS abundance in SPB (increased food availability downstream in wet years, LFS move to the food). May depend on Corbula, shrimp abundance (shrimp eat clams), and maybe jellyfish
				1. Potential research question: What are the food web dynamics in SPB? What is the zooplankton community structure?
				2. Zooplankton community driven by salinity, not physical location within estuary
		2. Tidal Marsh Study (2013-2014 Feb-June) sampled at 7 sites that were 6 or less feet deep
			1. Ryer island was very productive, caught more LFS larvae in 2013 than 2014
			2. LFS can spawn in LSZ and freshwater
				1. Larvae detected in sloughs on Browns and Ryer islands
				2. Available of marsh spawning habitat increases from east to west
				3. Sacramento River fish are transported quickly to brackish water and their otolith may not show a freshwater signal
	* review of entrainment relationships (Randy, 15 min) (see also LFS\_EntrainmentRelationsDec2016.pptx)
		1. Longfin Smelt entrainment (salvage) at south Delta fish facilities is inversely related to flow: entrainment is most likely in drier years when exports are occurring, not the driest years when exports are reduced.
		2. Two year old Longfin Smelt move upstream to spawn as water temperature decreases (this pattern is similar for one and three year olds as well; including some fish that will not spawn)
		3. Catch of age-1 and 2 LFS typically high in December peaks in January and then drops off through March
		4. Positive Qwest (flow measure calculating net flow at Jersey Point) represents net downstream transport, thus, can reduce the risk of entrainment to particles (emulating planktonic larvae) that are south and east of Jersey Point, by flushing them downstream
		5. Based on Particle Tracking Model runs where surface-oriented OR neutrally buoyant particles (separate runs) were inserted at four locations in the San Joaquin River from Jersey Point to Medford Island. Risk of entrainment increase for particles inserted at points successively farther east: they encountered successively more channels that might convey them south toward the pumps. Surface oriented particles traveled farther each tide than neutrally buoyant particles, so surface oriented particles inserted at the farthest east sites exhibited slightly increased rates of transport to Chipps Island than neutrally buoyant particles; whereas, surface oriented particles inserted at Jersey Point (adjacent to the farthest downstream channel to the export pumps) showed slightly higher rates of entrainment than neutrally buoyant particles.
4. Break (5 min)
5. Life History Conceptual Model (All, 45 min)
* Discuss draft L-H conceptual model and thoughts from Matt N (LongfinSmeltConceptualModels\_Nobriga.pdf)
	1. Knowns from published literature:
		+ Things that affect LFS abundance
			- Flow – large effect
			- Food – small effect, and maybe non-existent, especially in larval stage (Nobriga and Rosenfield 2016); Other species respond to food loss, so LFS probably do too.
		+ Distinct even and odd year classes exist in some Longfin Smelt populations (Lake Washington, Chigbu articles)
			- Maybe not as defined in the SFE since we didn’t see odd year classes increase in the 1970’s
			- Even year classes in the SFE respond to flow
			- Dominant year classes suppress each other, or no strict 2 yr old reproduction adherence
			- Maybe not all wet years are made equal due to ocean current and chemistry, or a puzzle piece is missing
* Develop ideas for revised model
	1. This was not covered
1. Wrap up:
	* Set next meeting date and time if possible.
		1. A doodle poll will be sent out soon.
		2. Action item: Please check your email and fill it out!