

Science Update for Stakeholders
Forum
September 24, 2013

Laura Valoppi
Lead Scientist

Sediment

Key goal is salt marsh habitat development

Subsided areas require sediment for marsh to develop

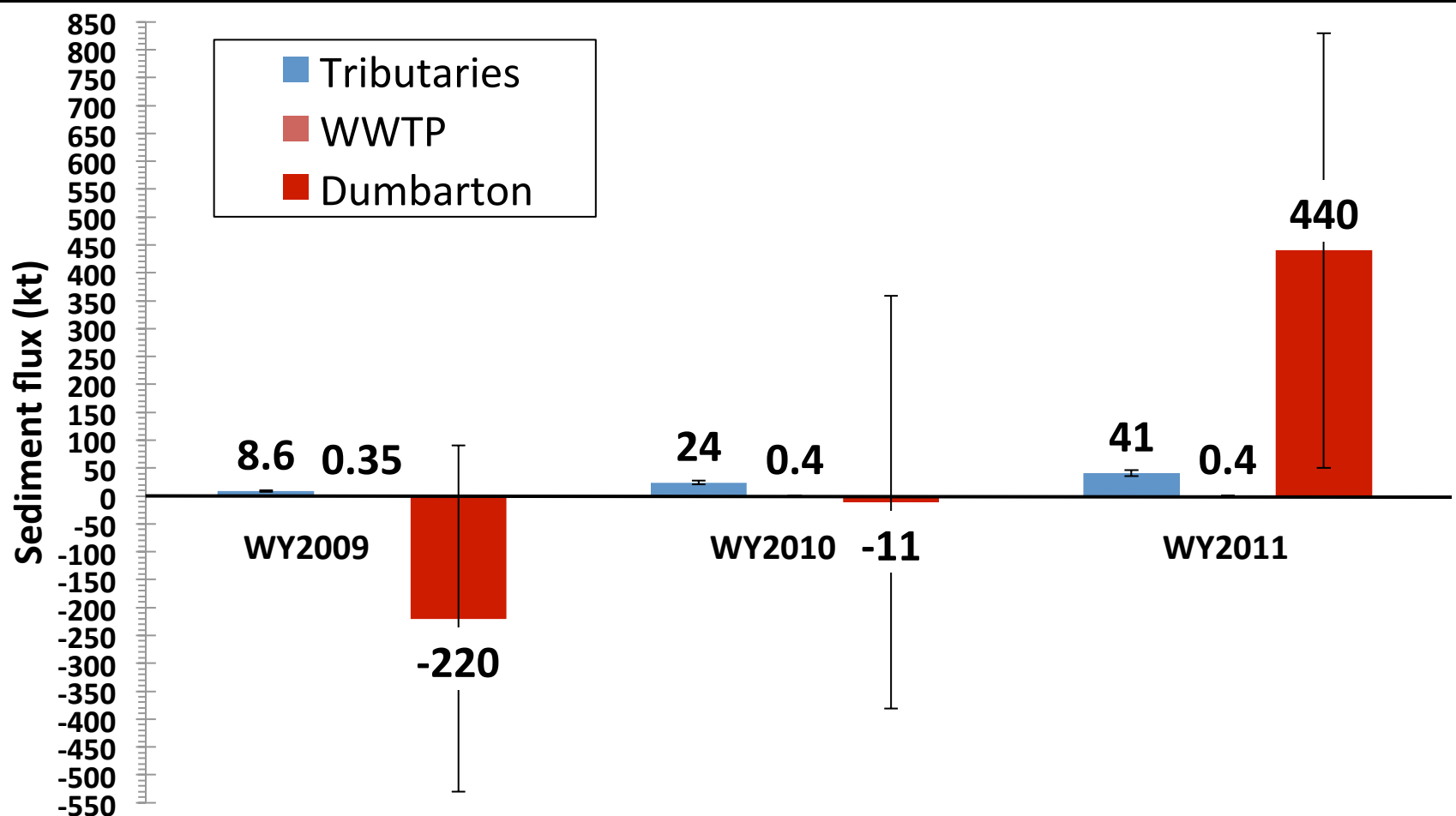
- Sediment supply coming into South Bay
- Sediment accumulation in breached ponds
- Restoration impacts on scour and mudflats

Sediment Supply - Study Locations



Sediment Supply tidal versus freshwater inflows

Positive values are seaward

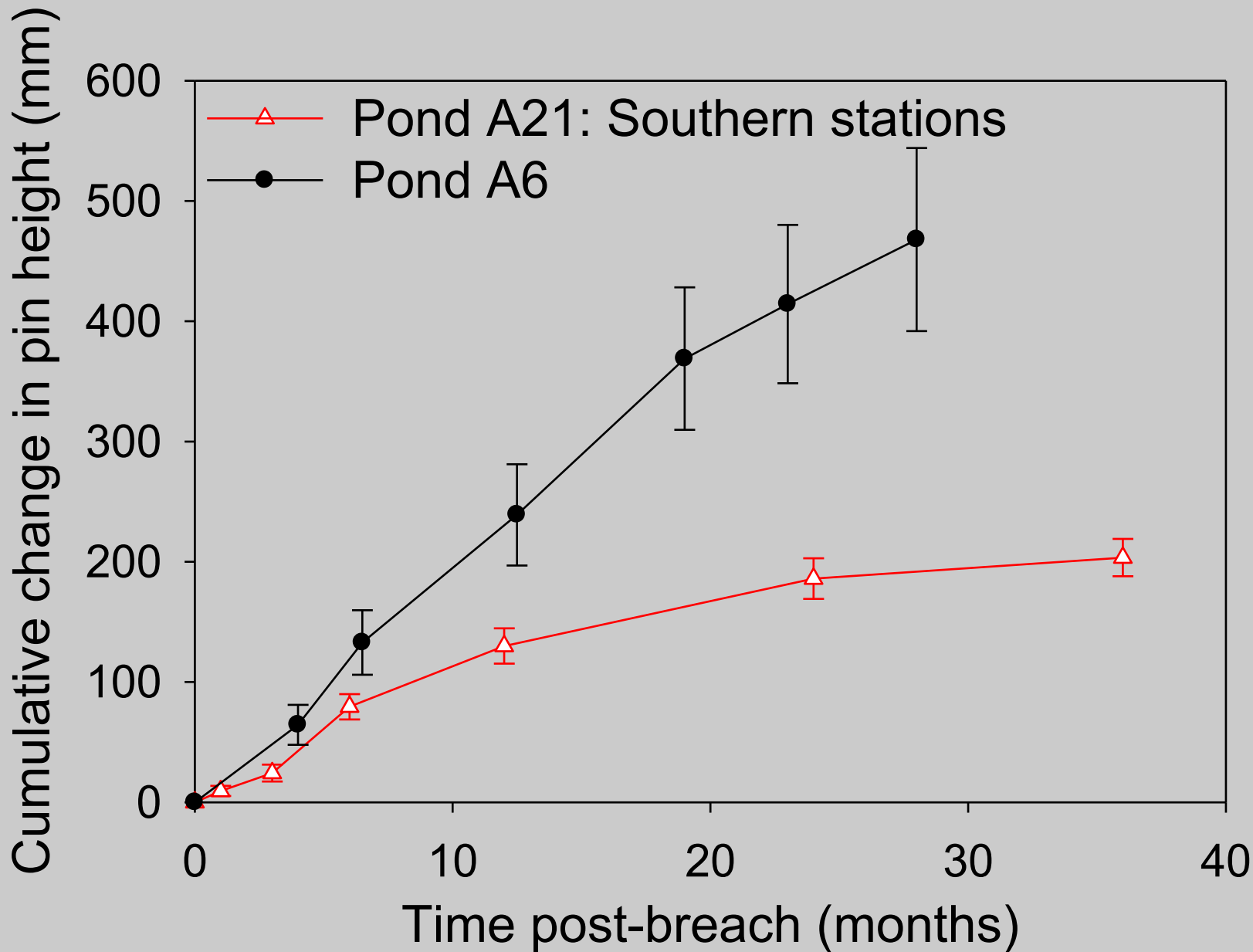


Sediment Accumulation in Breached Ponds

Island Ponds / A21
Breached in March 2006

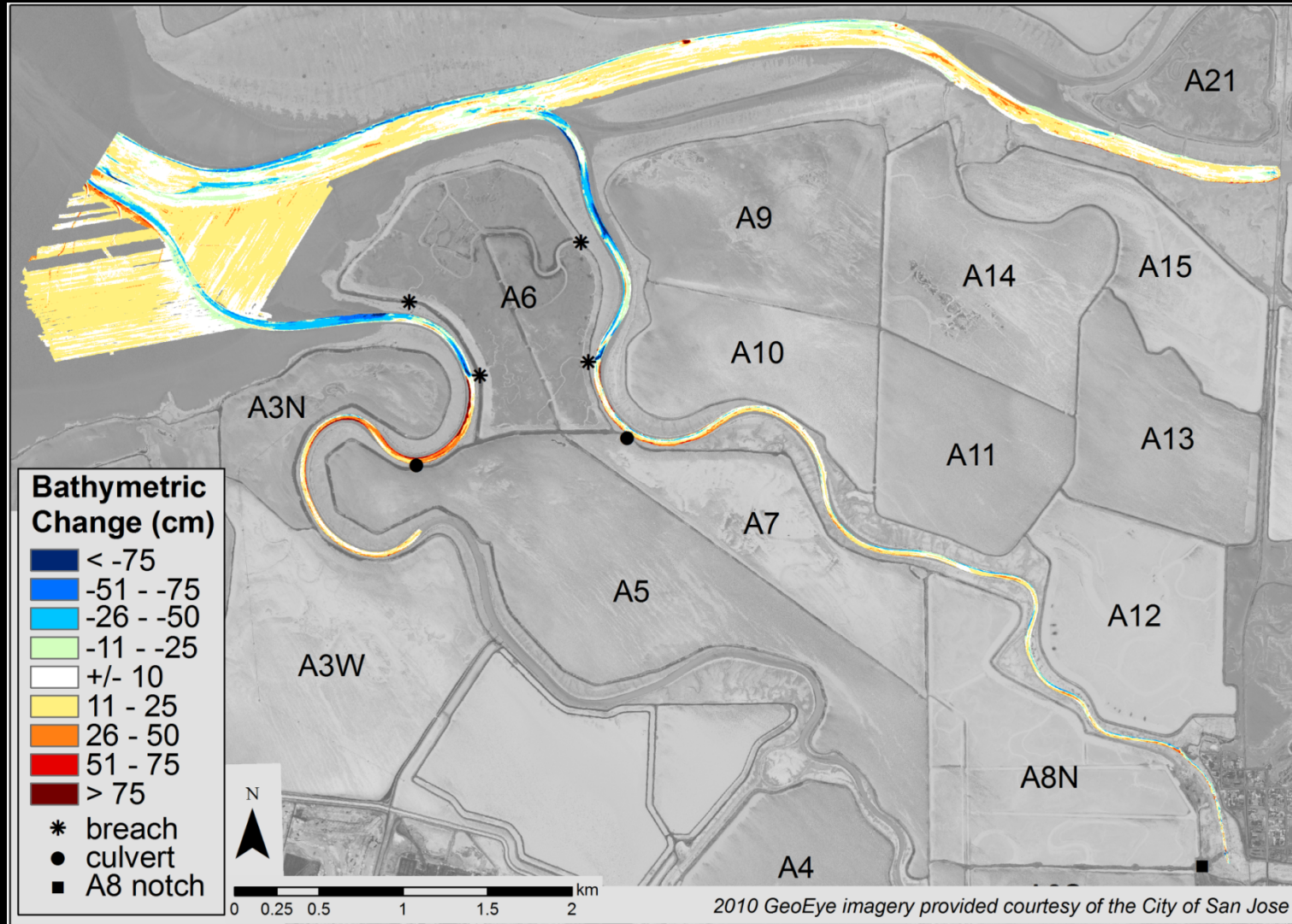
Pond A6
Breached in December 2010

Sediment Accumulation in Breached Ponds



Restoration Impacts on Scour and Mudflats

Change from Dec 2010 to Oct 2011

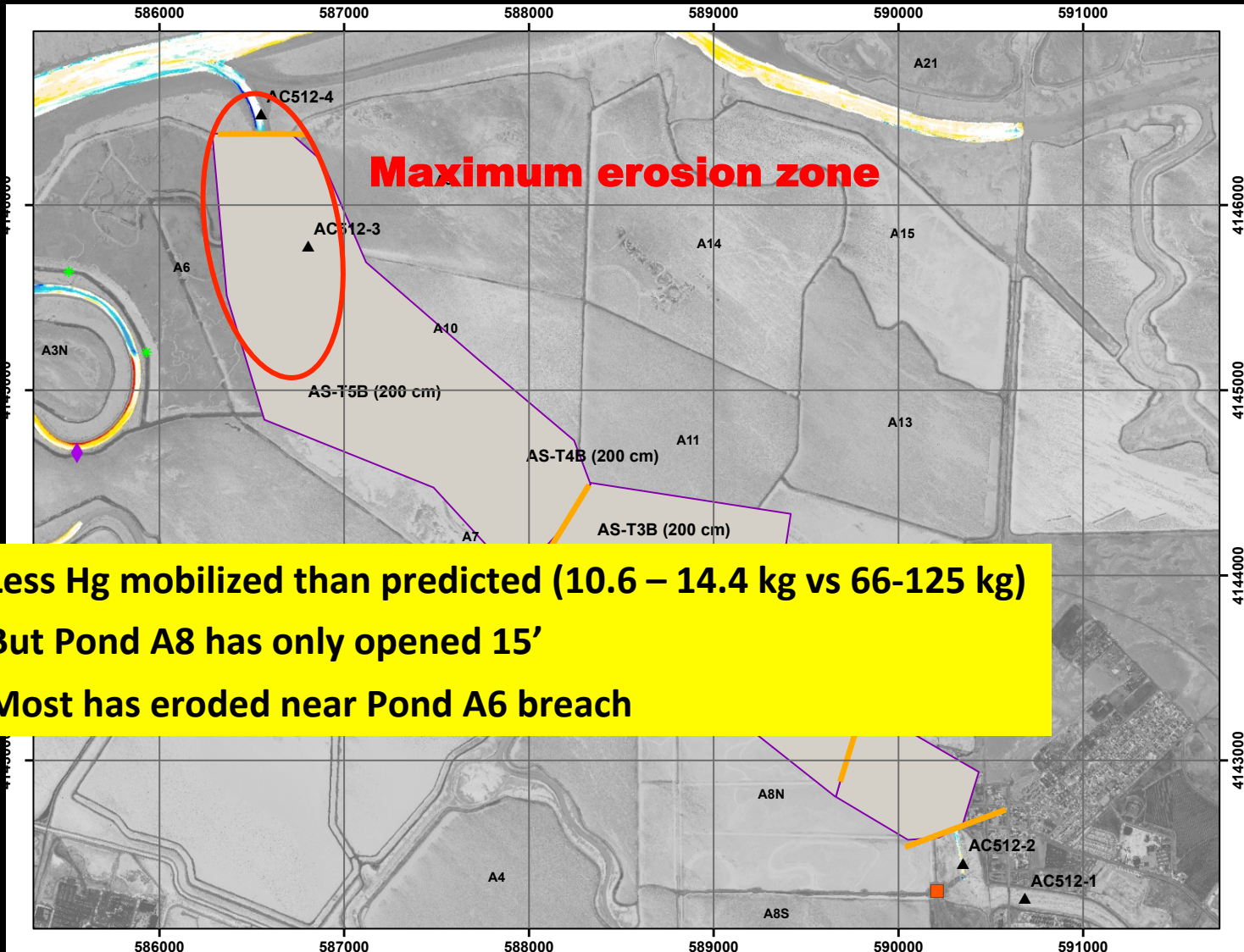


Mercury (Hg)

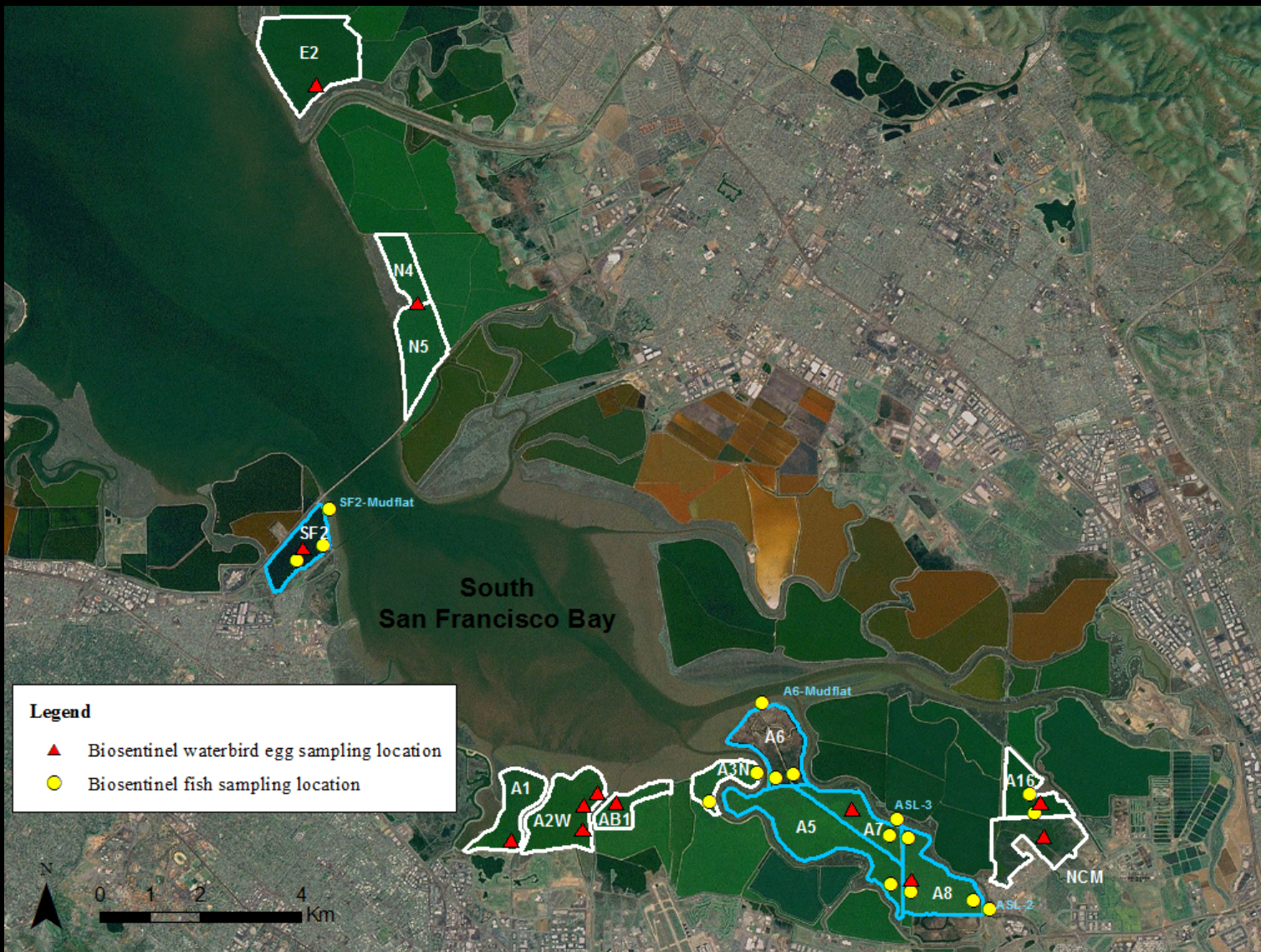
- Hg in Alviso Slough sediments
- Hg in bird
- Hg in fish – slough and pond
- Hg in water

Hg Remobilized in Alviso Slough

December 2010 – October 2012



Hg - Locations of Fish and Bird Egg Sampling 2010 and 2011



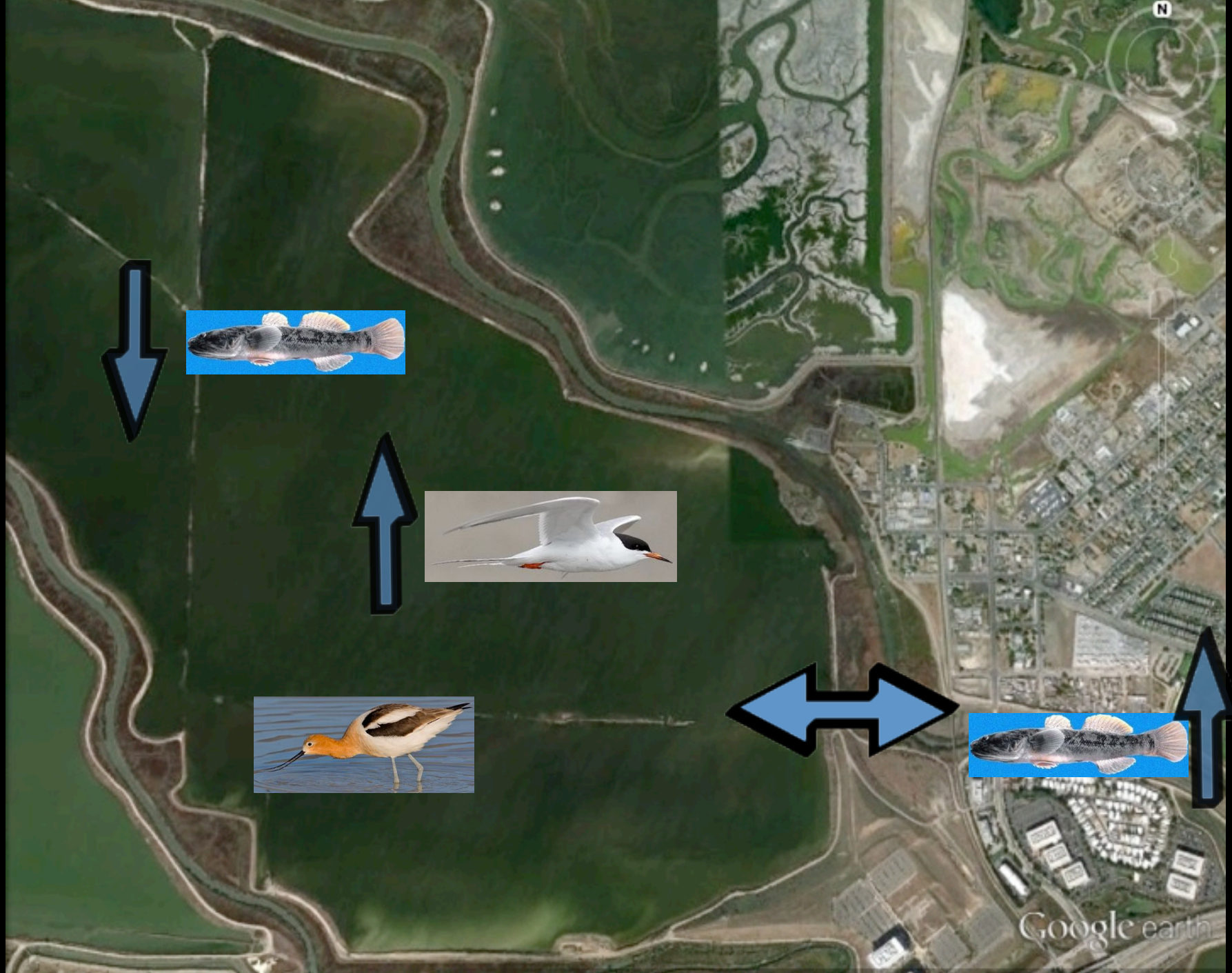


Google earth



Pond A8 Notch:

- Opened 1 out of 8 gates (5'/40')
June 1, 2011





Google earth

Bird Use of Ponds

- California Gulls
- Snowy Plover
- Waterbird abundance
- Nesting bird response to Islands

Summary:

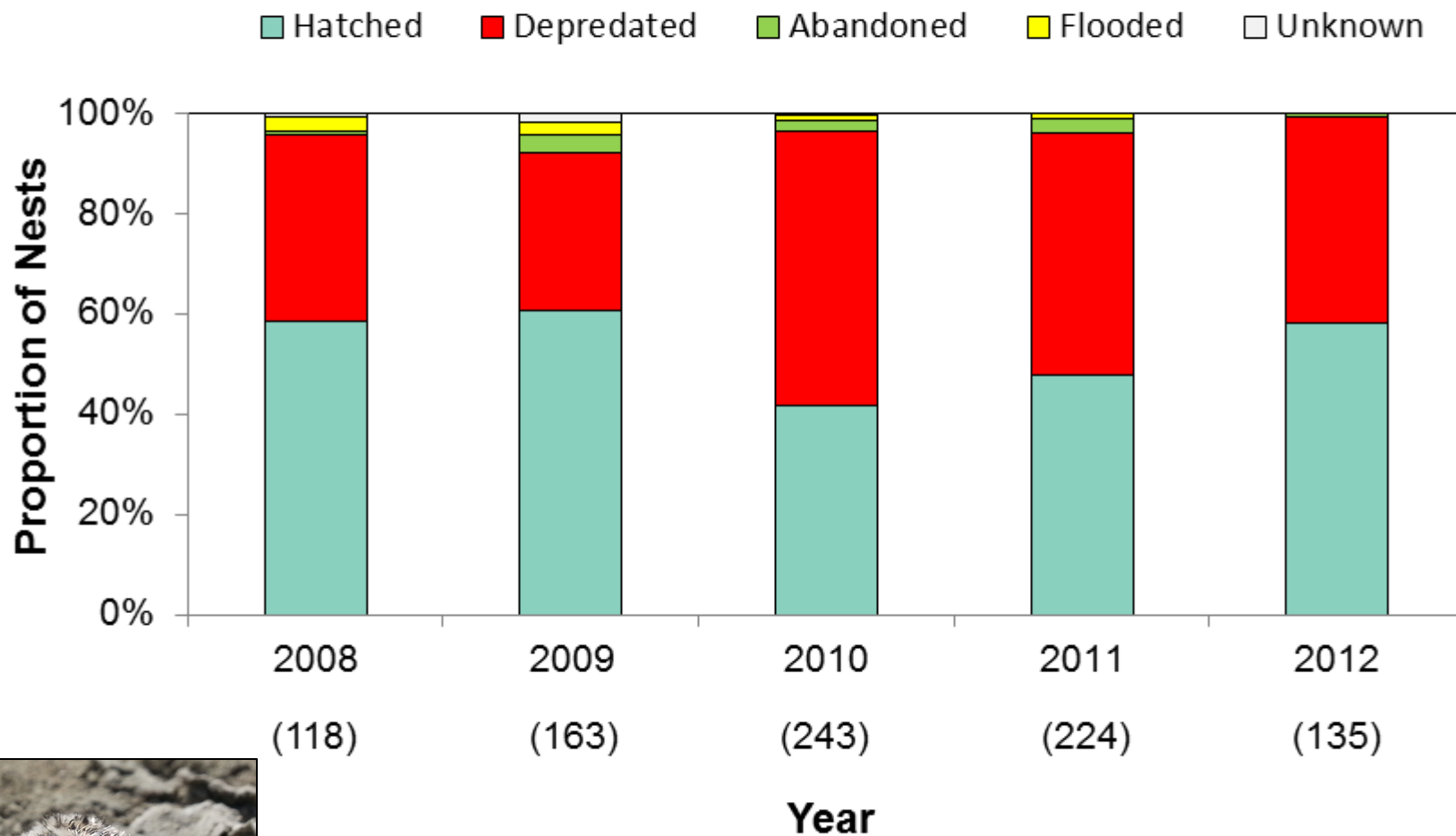
Gull response to A6 breach

- Birds found at A6 prior to the breach were resighted all over the west coast during 2011-2013
- The majority of sightings were at a nearby location in Alviso
- Growth at this colony was rapid in the years following the breach
- In the year following the breach (2011), growth of the gull population slowed, but rebounded with a nearly 40% increase in 2012



Photo: K. Vylet

Western Snowy Plovers in South Bay – Nest Fates

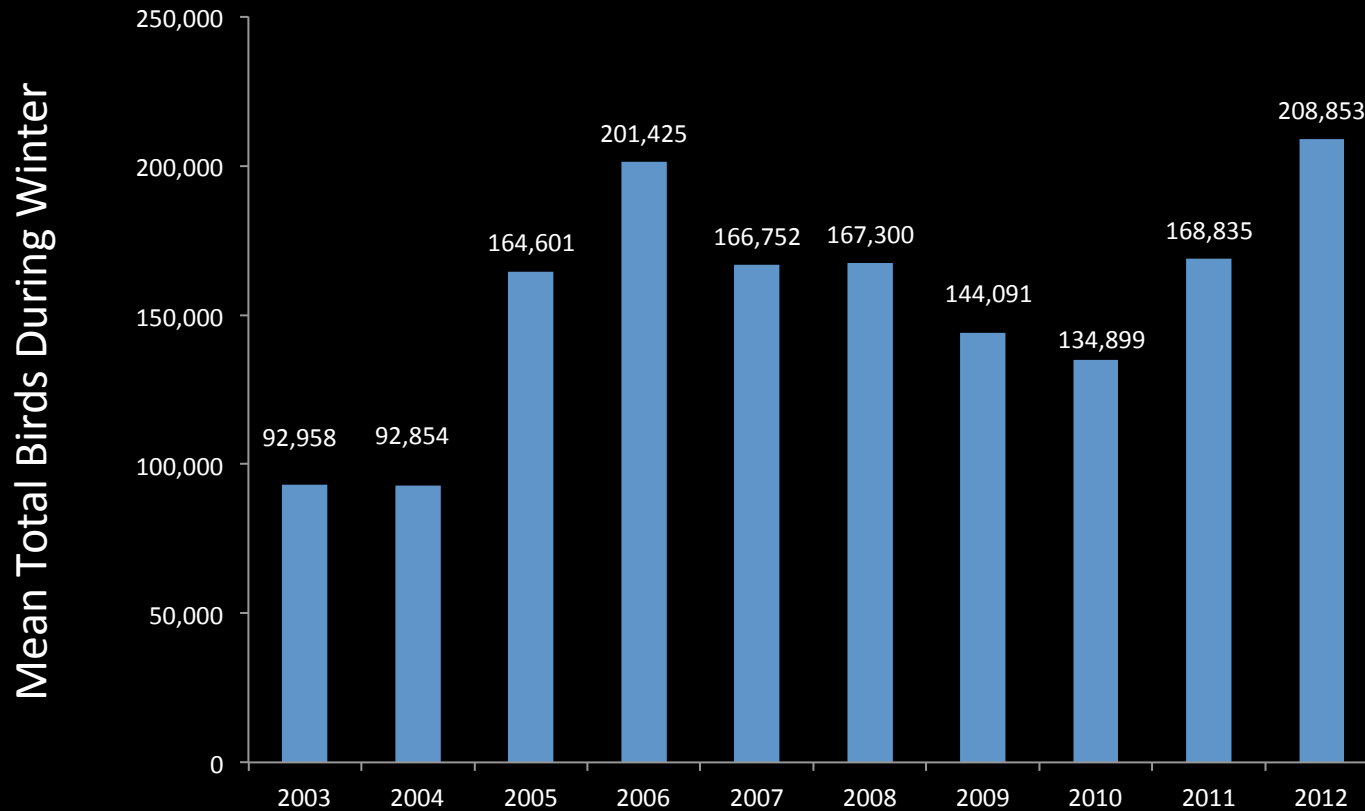


Donehower and Tokatlian



SAN FRANCISCO BAY
BIRD OBSERVATORY

Waterbird Abundance



Birds increased 245 from Winter 2011 to 2012
Birds increased 125% from Winter 2003 to 2012

Recipe for Island Nesting Habitat

- Spread out islands among more ponds: 3-5 islands per pond, 30 built in SF2
- Place islands away from levee boundaries
- Small- to medium-sized islands (<2 ha), SF2 or smaller
- Linear islands better than round islands, SF2 too round
- Long-term nest monitoring is critical, SF2 nests tapered off



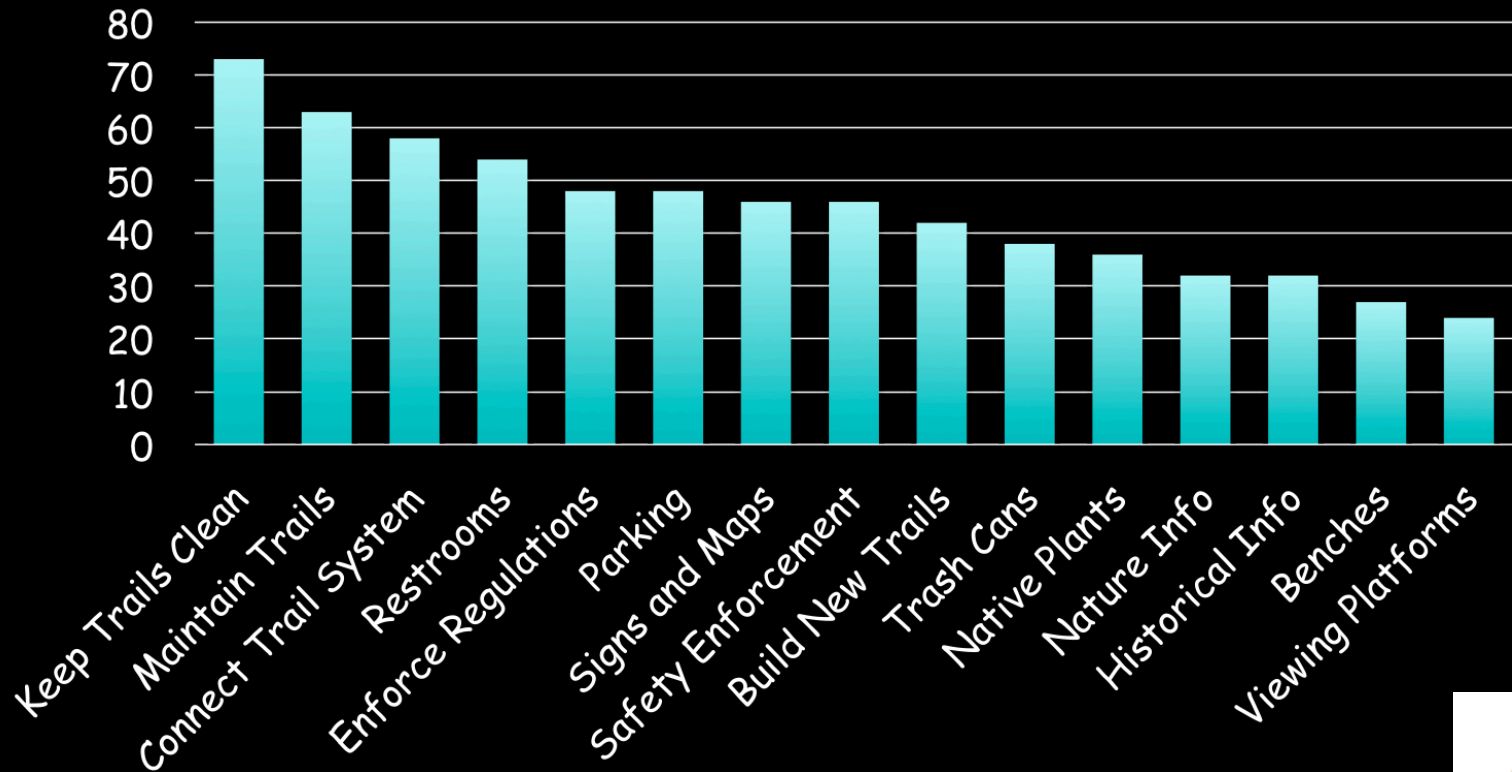
Trail Buffers

- Wintering Shorebirds -
25 to 33 m
- Wintering Waterfowl –
100 to 150m
- Nesting Plovers – 150m



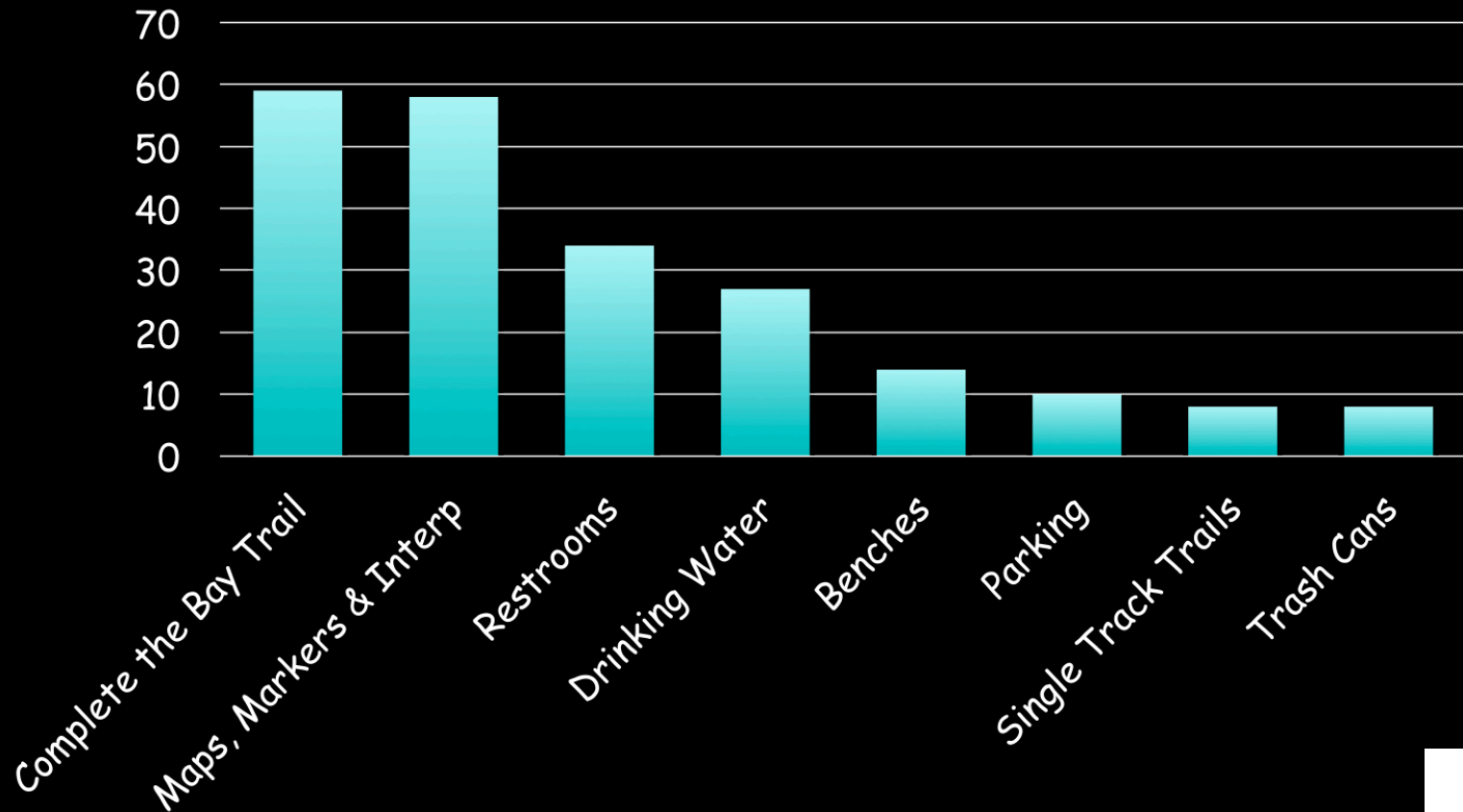
Trail Users Survey - \$ Priorities

Percent of Respondents Identifying Topic as Most Important



Trail Users Survey - Request

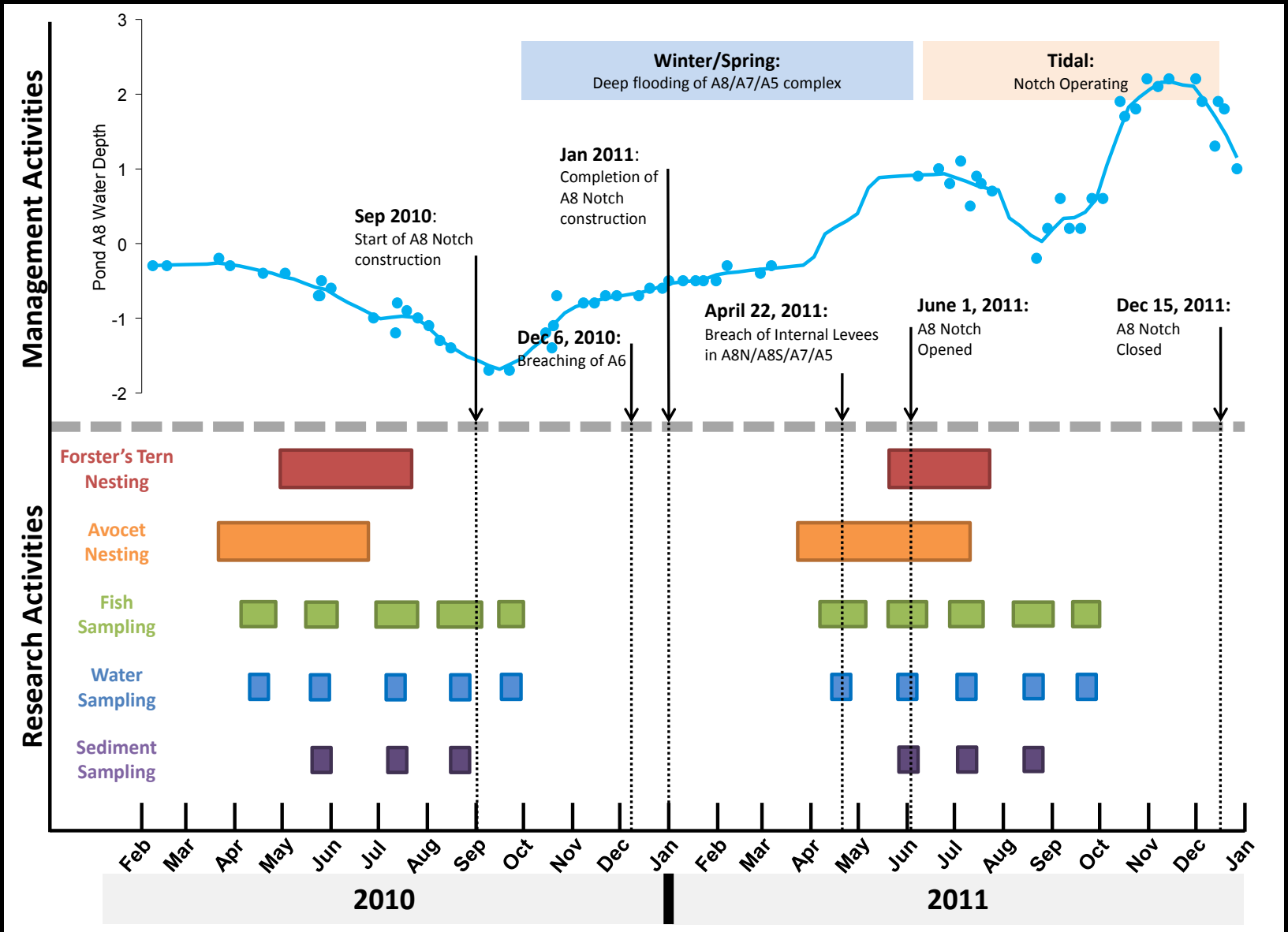
Number of Qualitative Comments (n = 339)



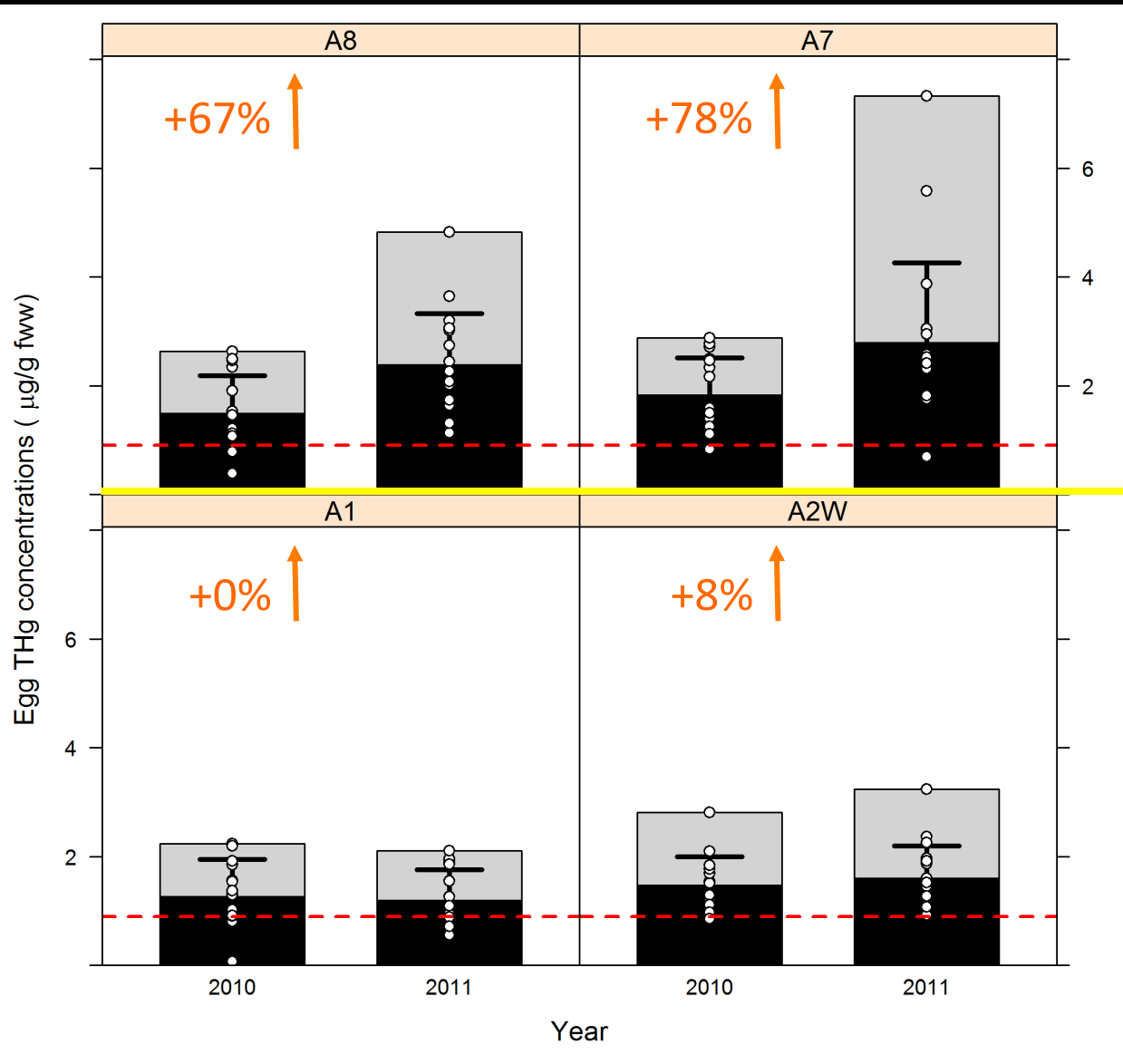
[http://
www.southbayrestoration.org/
science/2013symposium/](http://www.southbayrestoration.org/science/2013symposium/)



Restoration & Sampling Timeline for A8 Pond Complex



Hg - Tern Egg

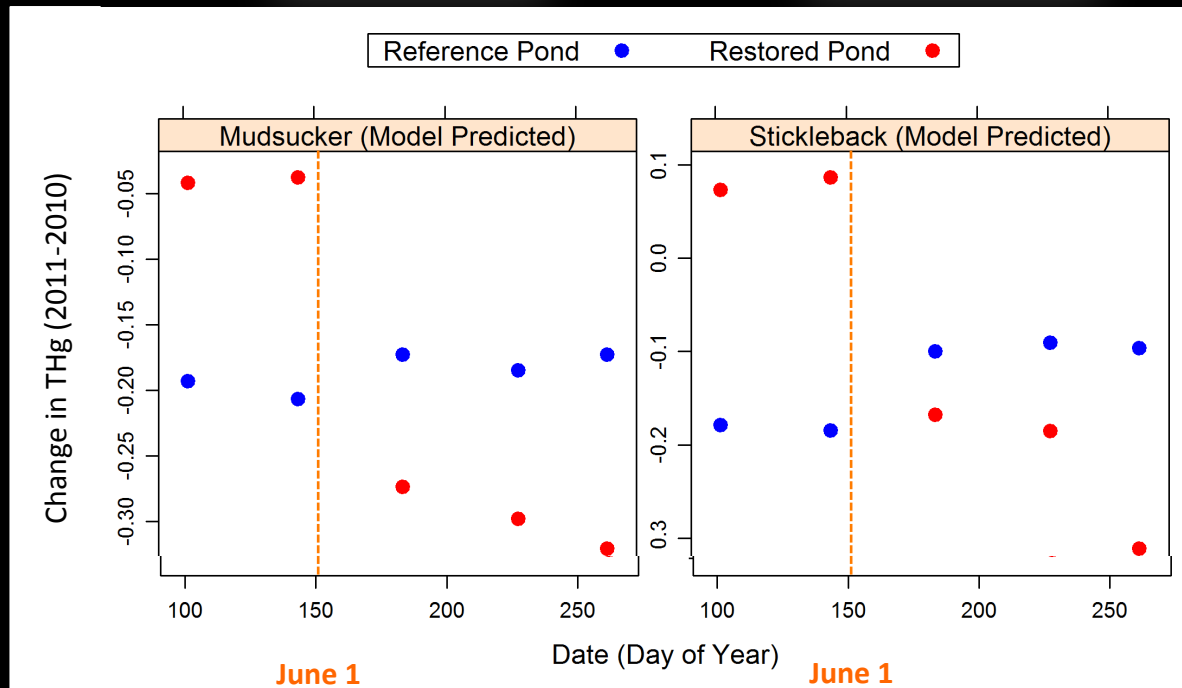


**Ponds A8
and A7**

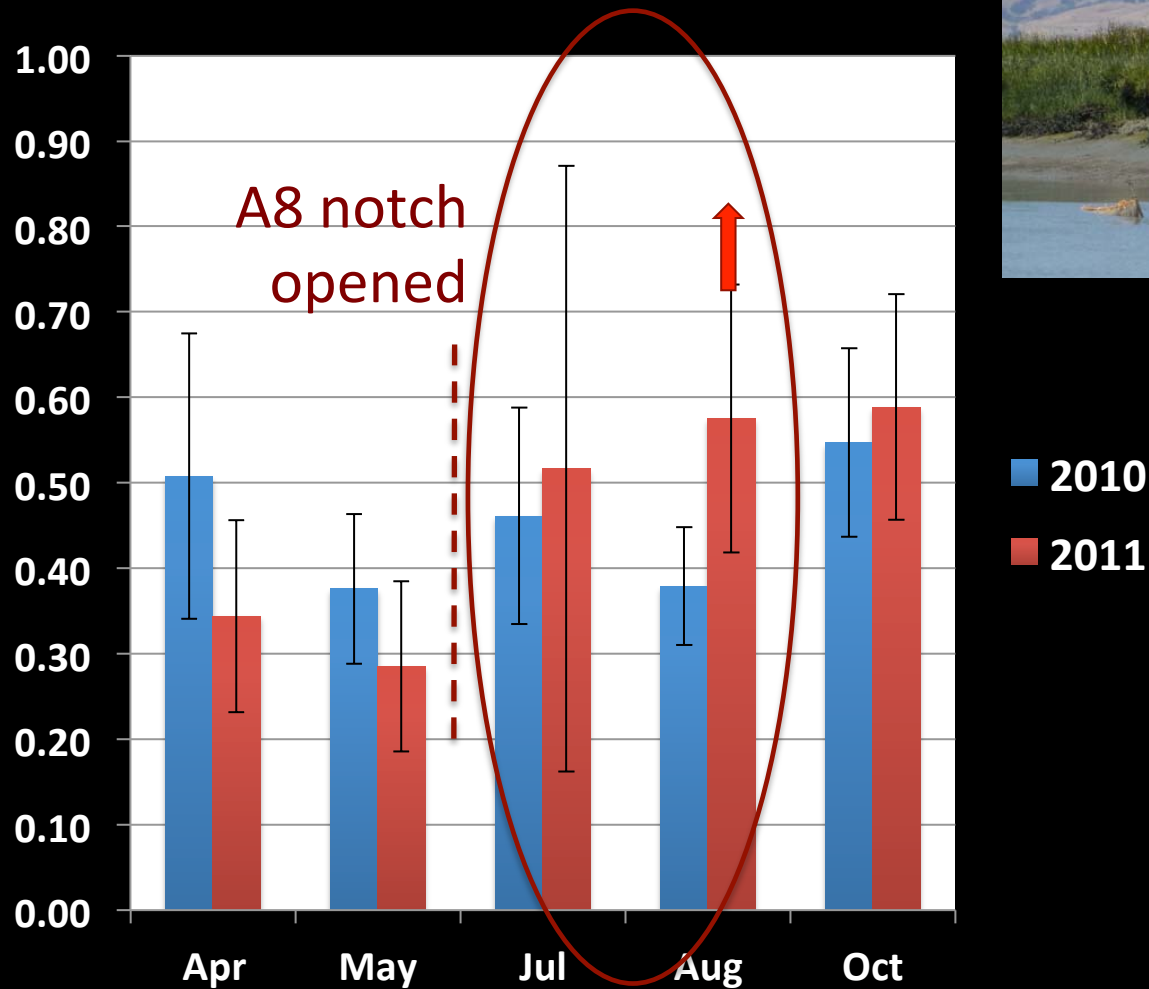
**Control
Wetlands**

----- Toxicity
threshold = 0.9

Hg – Pond Fish Mercury Response



Hg – Slough Fish



ALSL3
'Mid' Alviso Slough



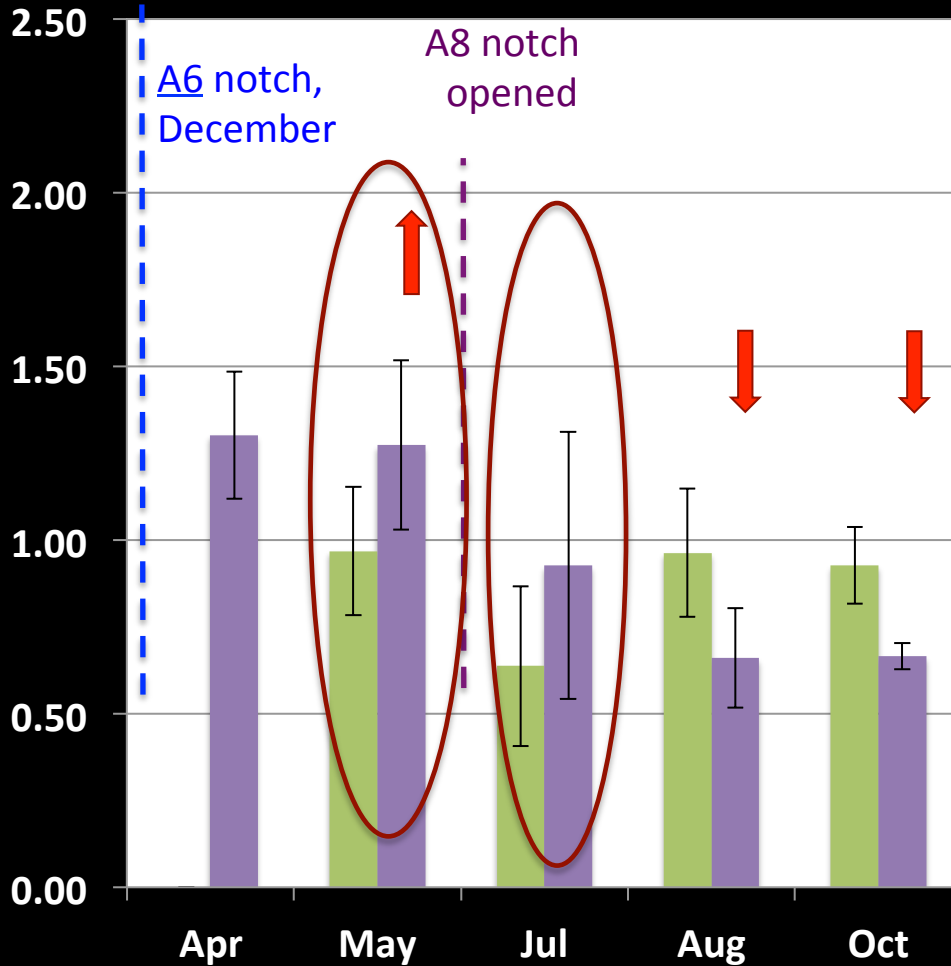
**Threespine
Stickleback**

- Higher in Jul-Aug, vs 2010

Slotton



Hg – Slough Fish



ALSL3
 'Mid' Alviso Slough



**Mississippi
 Silverside**

■ 2010
 ■ 2011

Slotton

• But also higher in May, pre-notch

• Higher in July, vs 2010



Changing Water Chemistry from Opening Pond A8 notch



Threespine Stickleback



Longjaw Mudsucker

A5/A7/A8 Complex

- Fish [Hg] decreased after opening of Pond A8 Notch (June 1, 2011)
- Coincident with an increase in THg and MeHg partitioning onto particles
- Suggesting less bioavailable Hg

Alviso Slough

- Fish [Hg] increased during 2011 (peak in July) relative to 2010 and Mallard Slough
- Coincident with a decrease in MeHg partitioning (off of particles) in upper Alviso Slough
- Suggesting more bioavailable Hg



Threespine Stickleback



Mississippi Silverside