Asian Clam populations in Emerald Bay: Ecological results and future investigations

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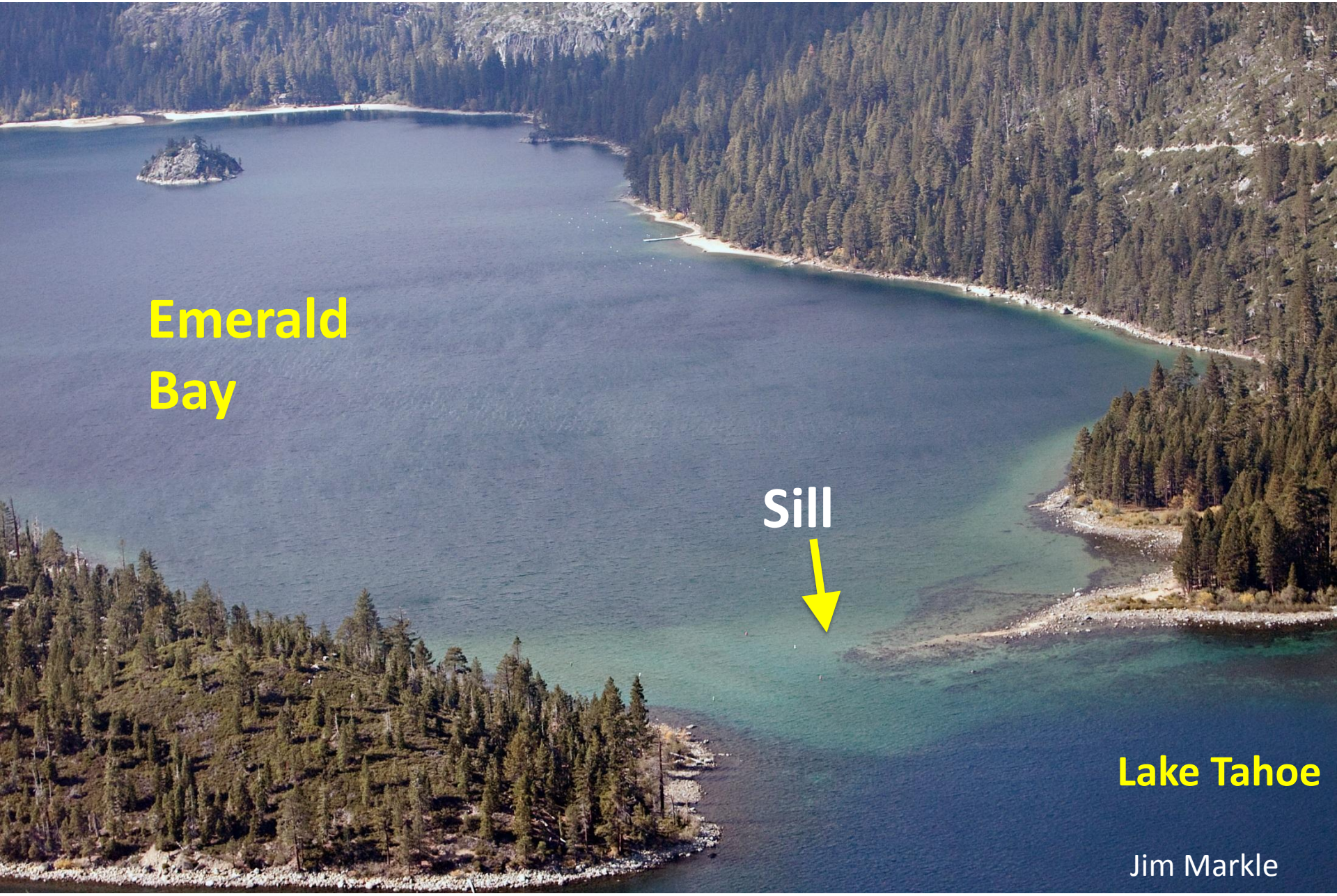
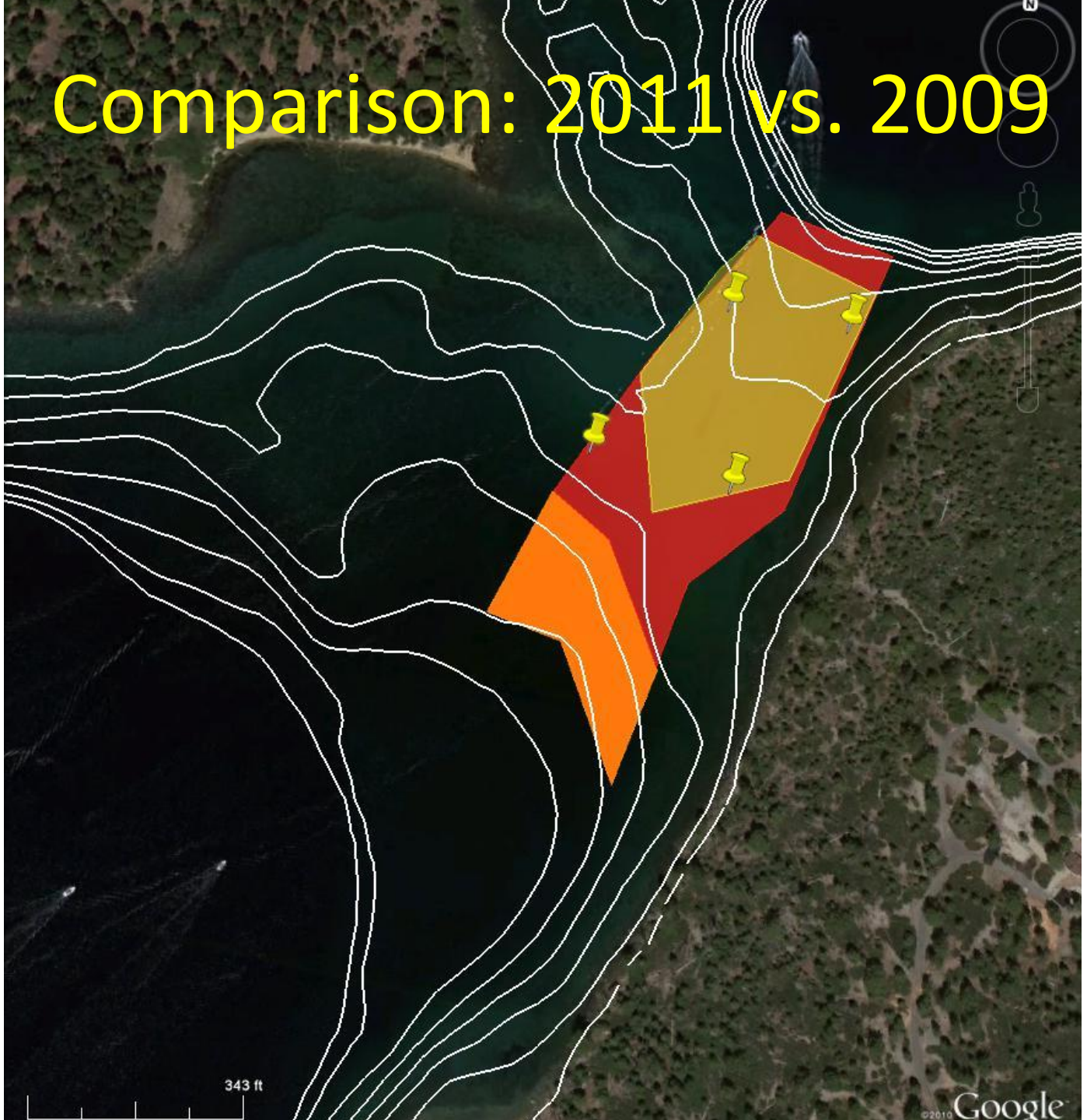
Asian clam discovery in Emerald Bay

- Discovered in 2008
- Potential problem because of aesthetics, nutrient excretion, further spread in to the bay


Emerald
Bay
Sill
Lake Tahoe
Jim Markle

Comparison: 2011 vs. 2009

- 3.5 acres (yellow) in 2009
- 5.5 acres (red) in 2011
- Low density (1-100 clams/m^2)



Asian clam control: Pilot study

Pilot study: Methods

May 2011-May 2012:

Two 10x100 foot bottom barriers

Pilot study: Data collected

- Dissolved oxygen
- Clam mortality, reproduction
- Currents, velocities, temperature
- Sediment porosity, permeability
- Effect of biological supplementation of the barriers

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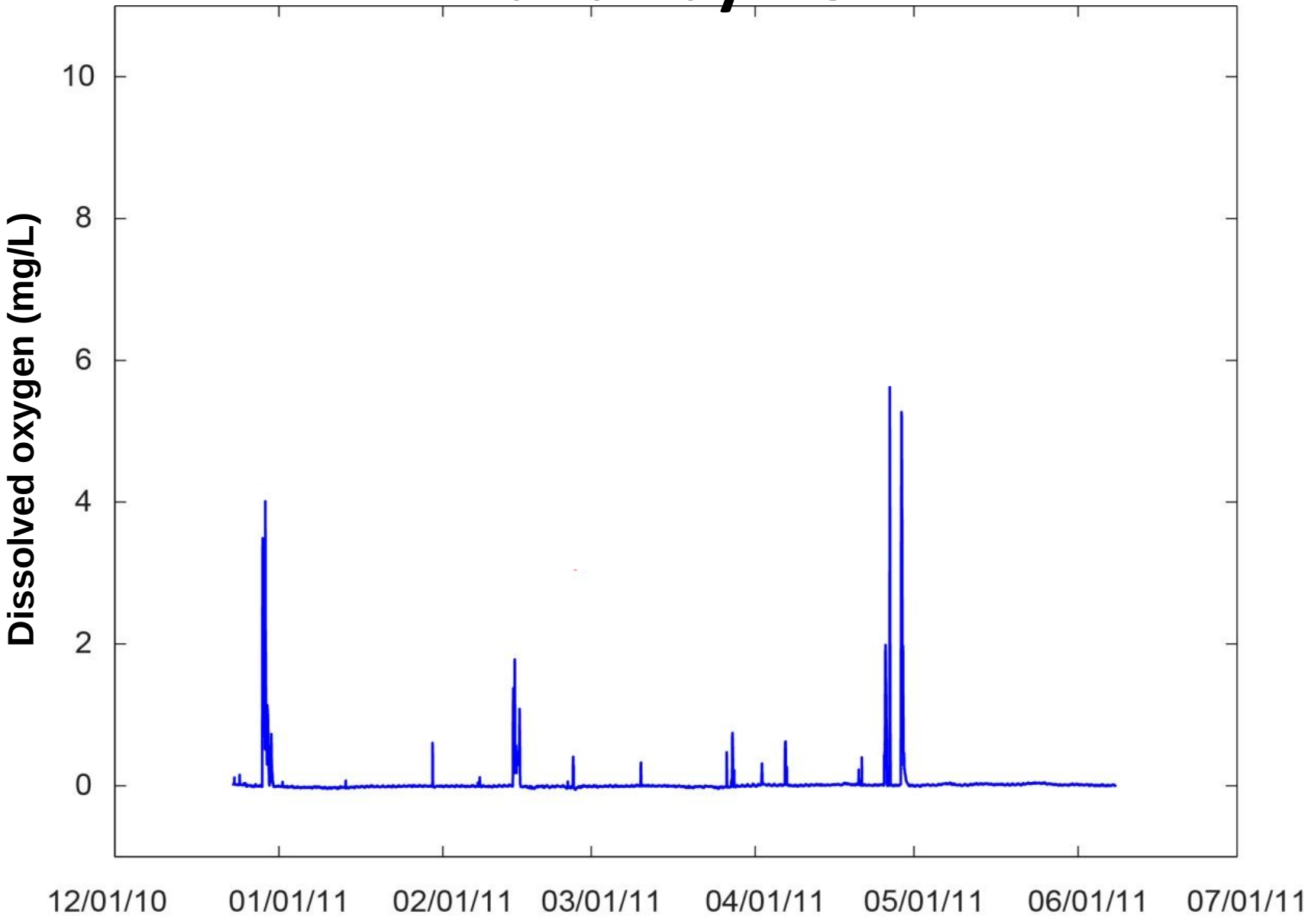
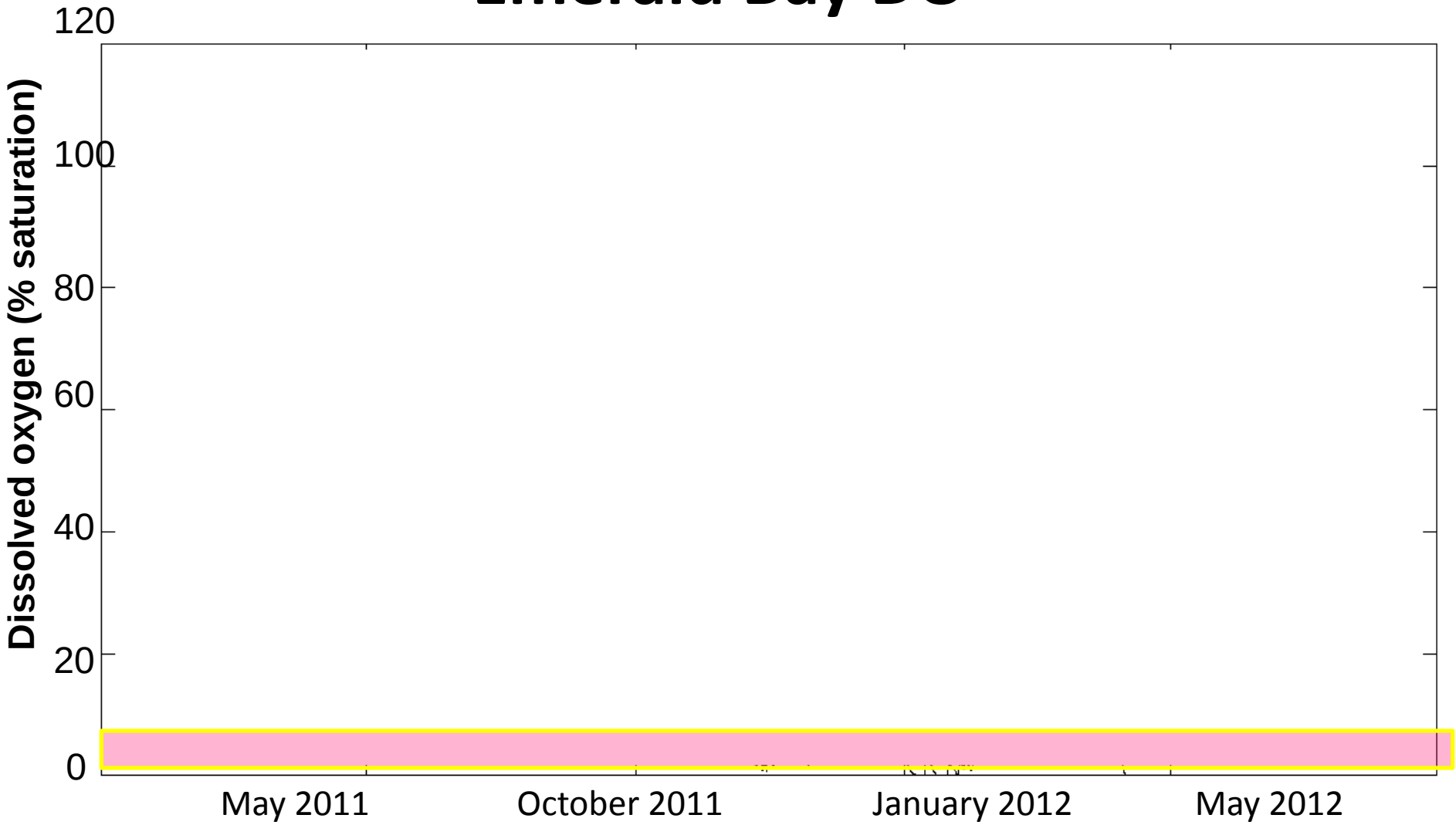
Dissolved oxygen

Brant Allen

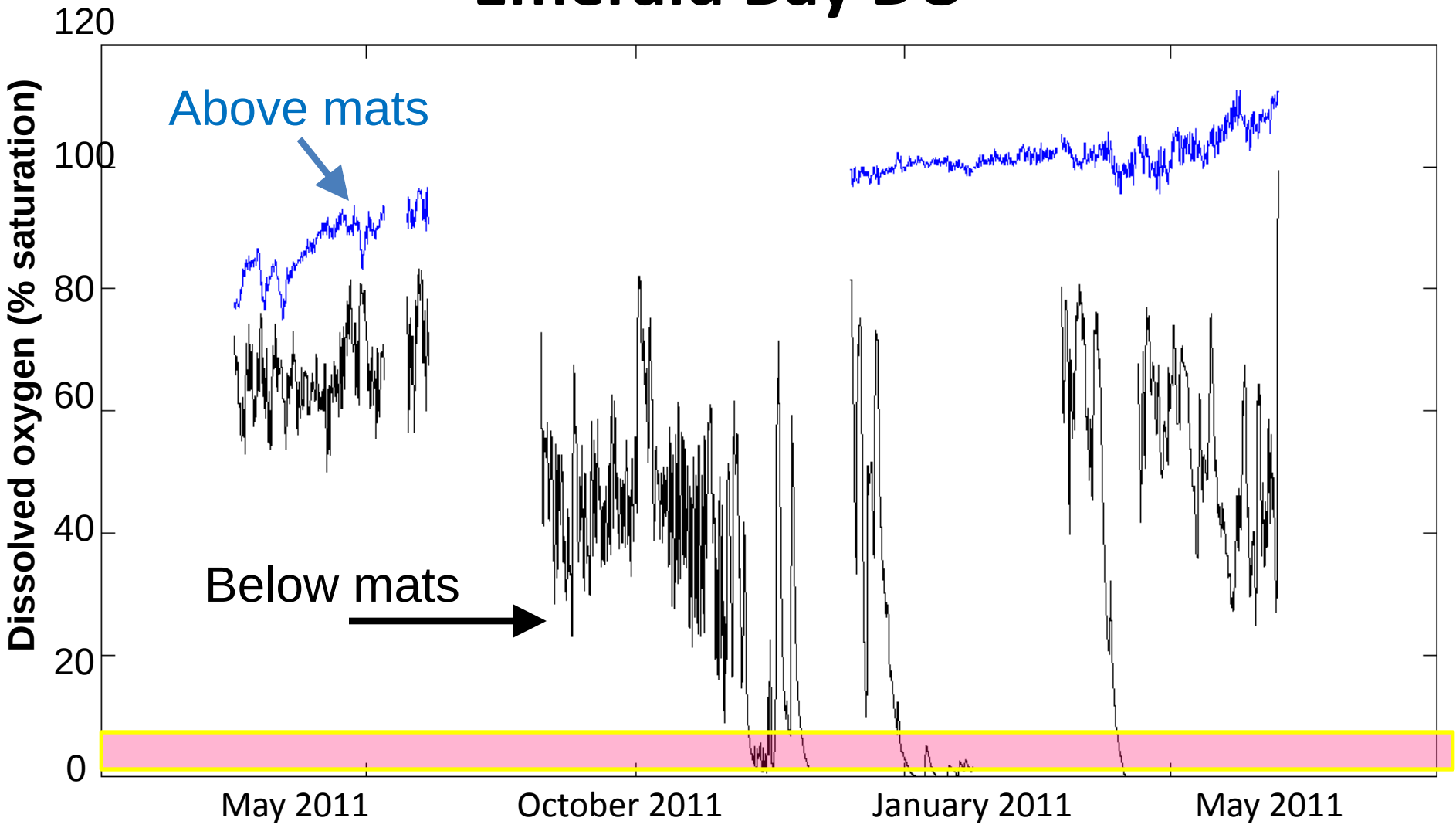
Marla Bay DO


Dissolved oxygen (mg/L)
10
8
6
4
2
0
12/01/10
01/01/11
02/01/11
03/01/11
04/01/11
05/01/11
06/01/11
07/01/11

Emerald Bay DO

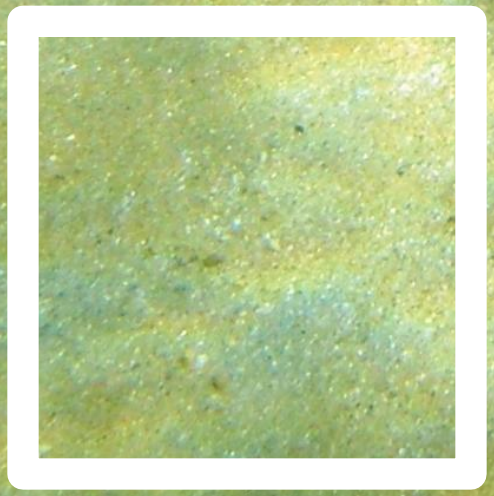


Emerald Bay DO

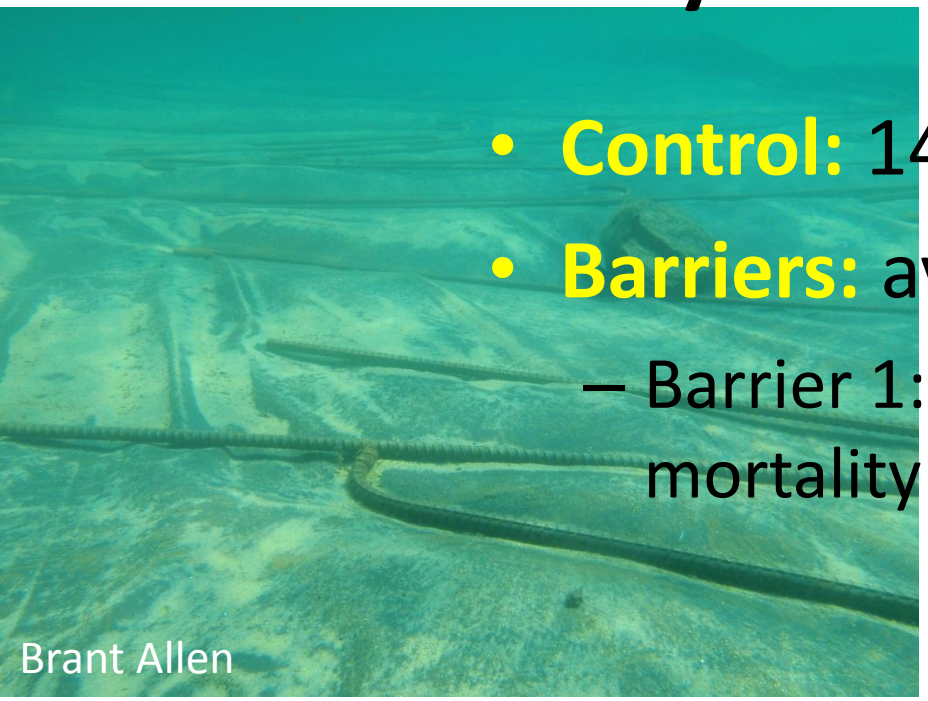


Monitoring of Barriers for Clam Dynamics

- Ponar, 1 m^2 quadrats
- Analysis at UNR (Chandra lab)

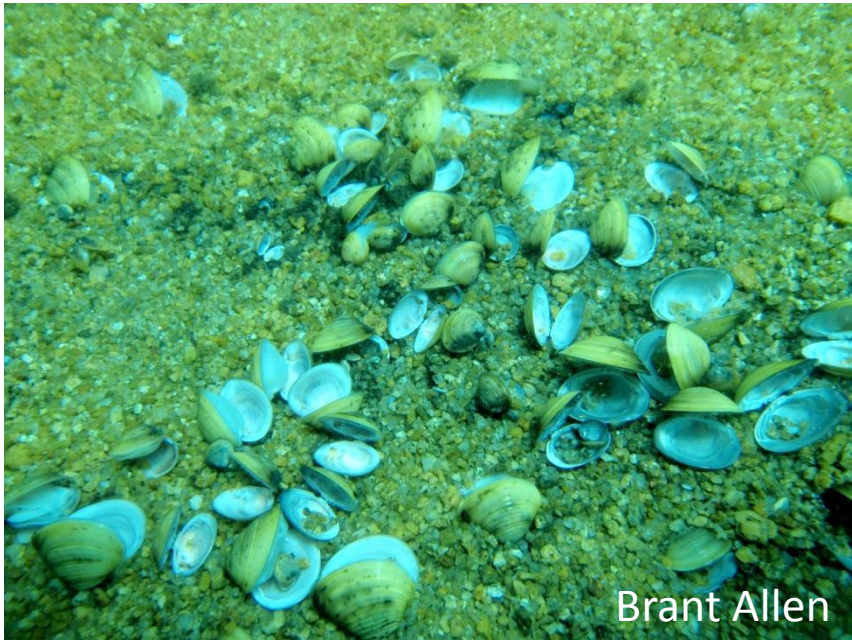


Monitoring of Existing Bottom Barriers for Clam Dynamics: Final Results



- **Control:** 14% mortality
- **Barriers:** average 80% mortality
  - Barrier 1: 88% mortality, Barrier 2: 71% mortality

- No significant difference between egg numbers of live clams in barriers vs. controls



Effect of biological supplementation of bottom barriers

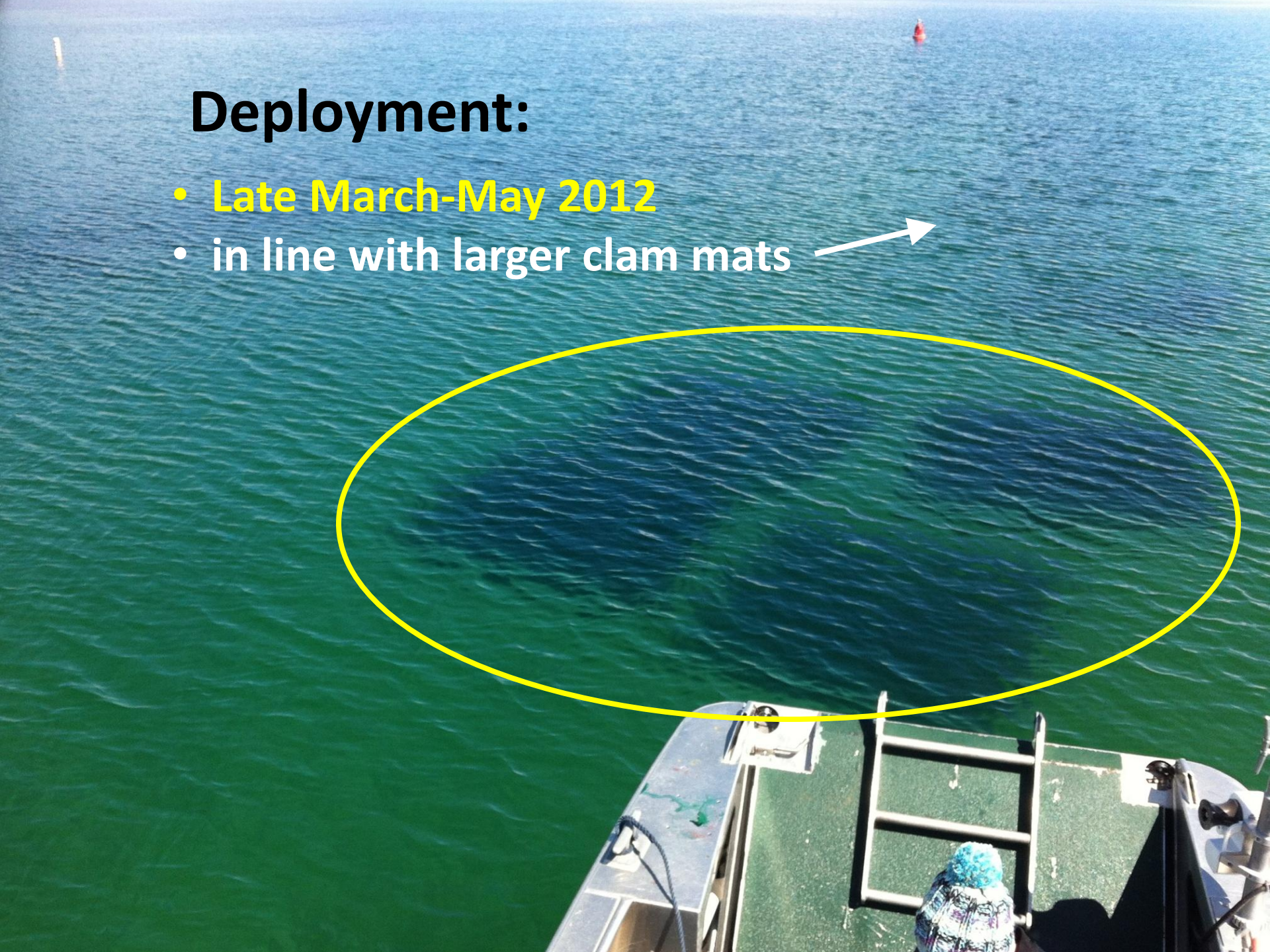
BOD barriers

- Rubber + Jute

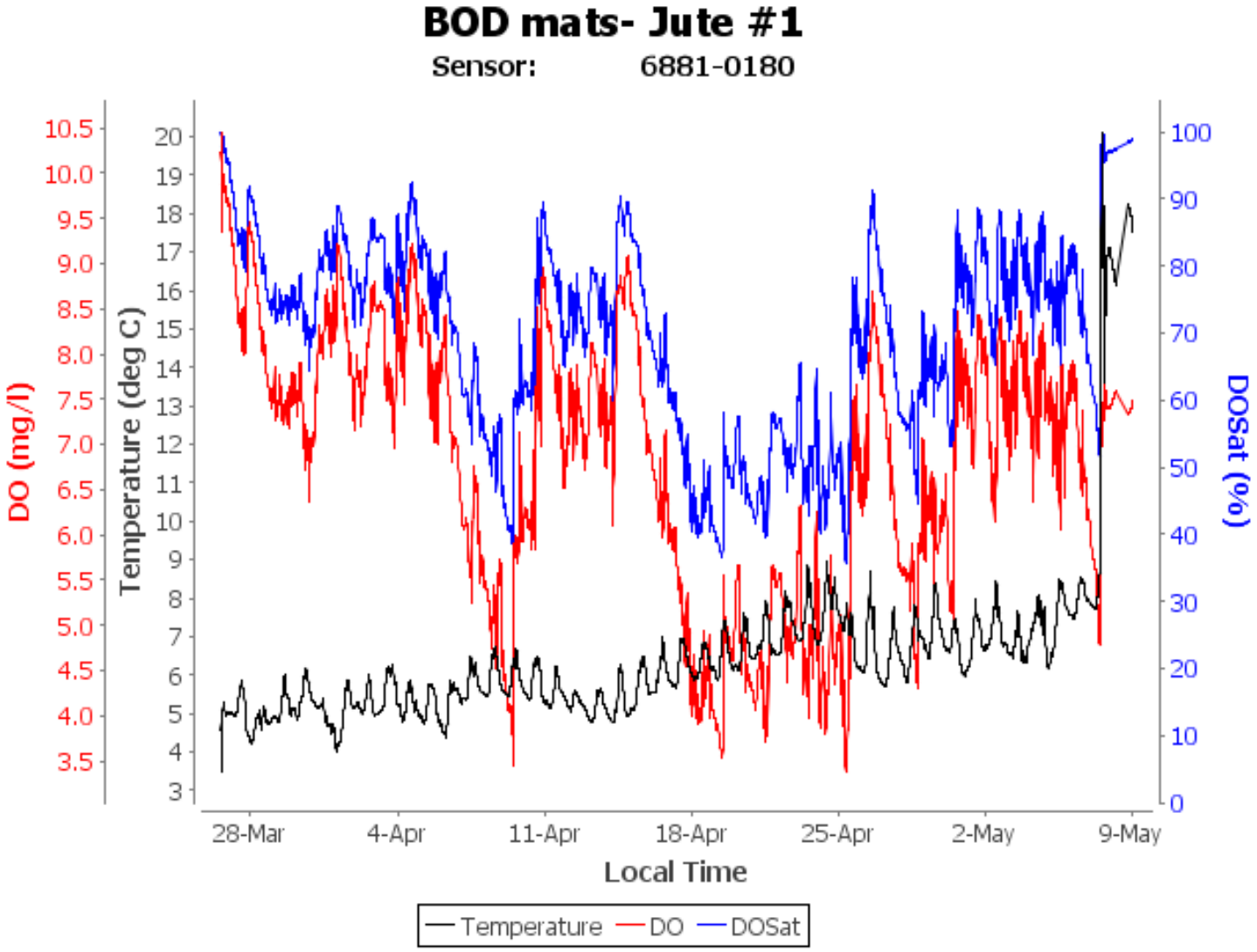
- Rubber + Jute & Straw

Deployment:

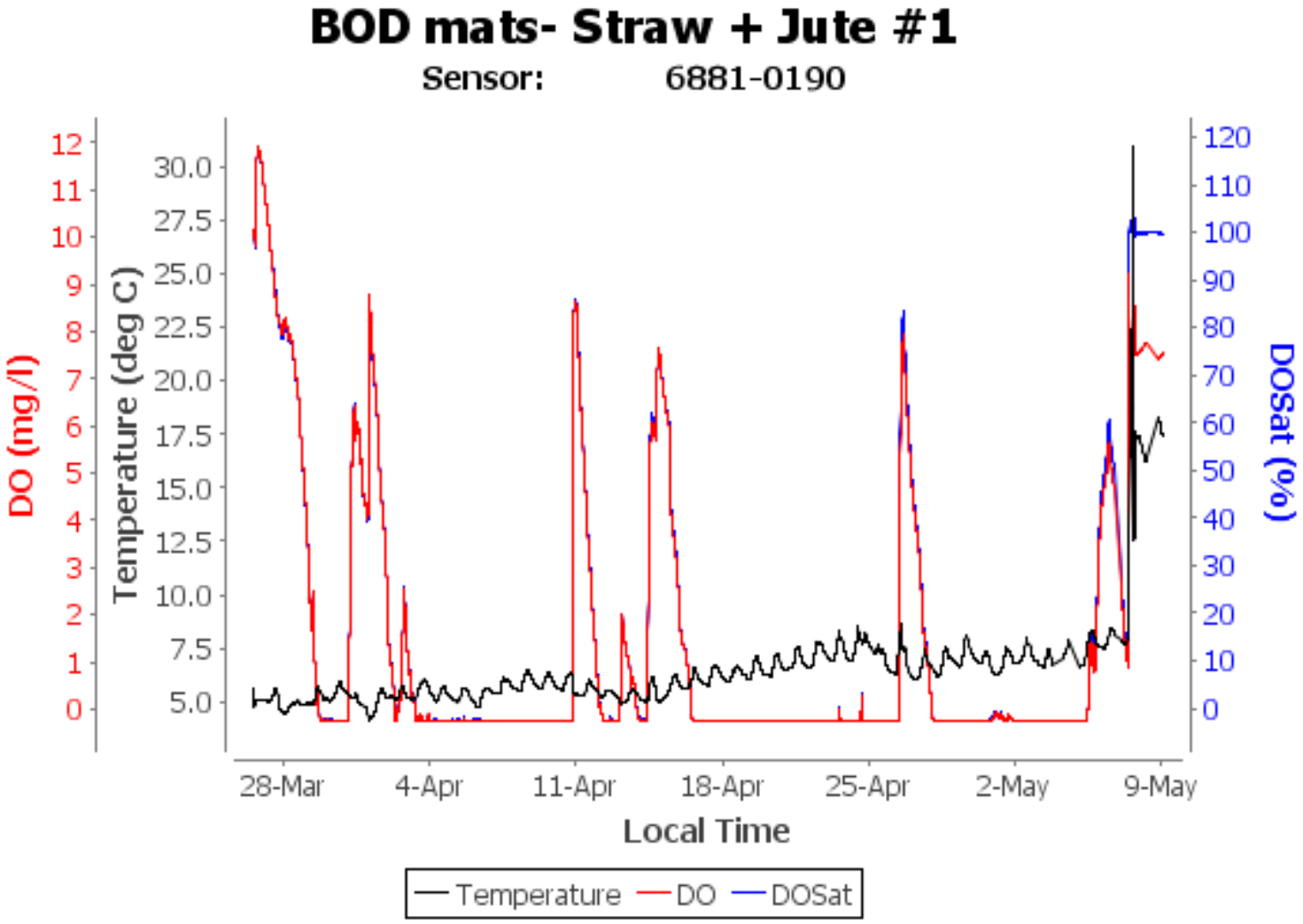
- **Late March-May 2012**
- **in line with larger clam mats**



BOD barriers: Jute Results



BOD barriers: Jute + Straw Results



- Continue: Interpretation of pilot study results
- Continue: Research on causes of patterns in DO fluctuations, biological mechanisms causing clam mortality under the large barriers
- BOD barriers: larger scale, materials

All leading to larger scale management efforts

Acknowledgements

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- CA State Lands Commission, Army Corps of Engineers, NV Division of State Lands