Vessel Biofouling Management in California:

Current Practices and the Development of Comprehensive Policies

Chris Scianni
CSLC Marine Invasive Species Program
Prevention First 2014
Long Beach, CA
8 October 2014

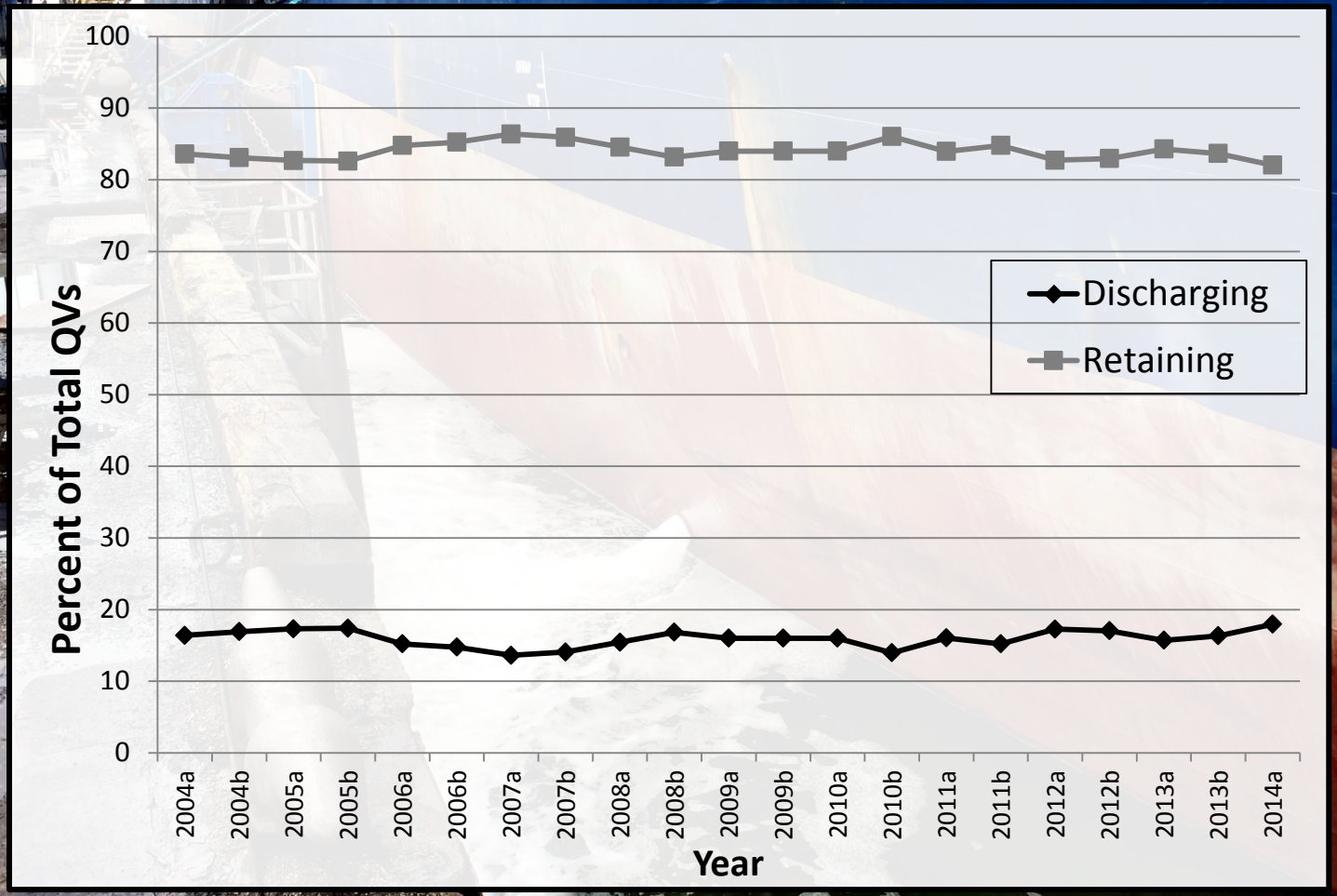
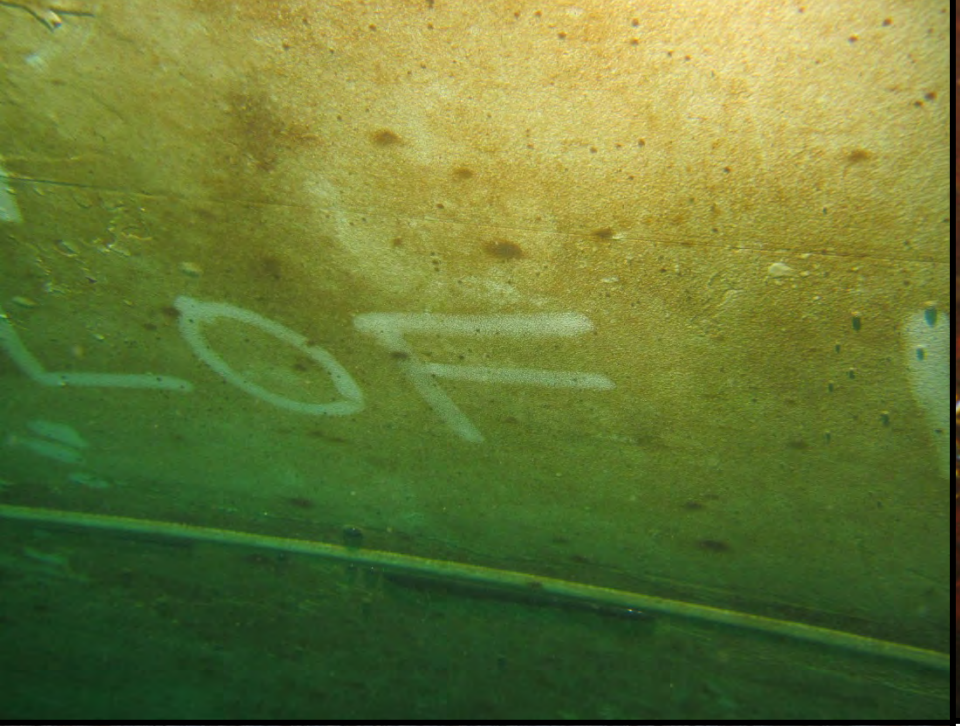
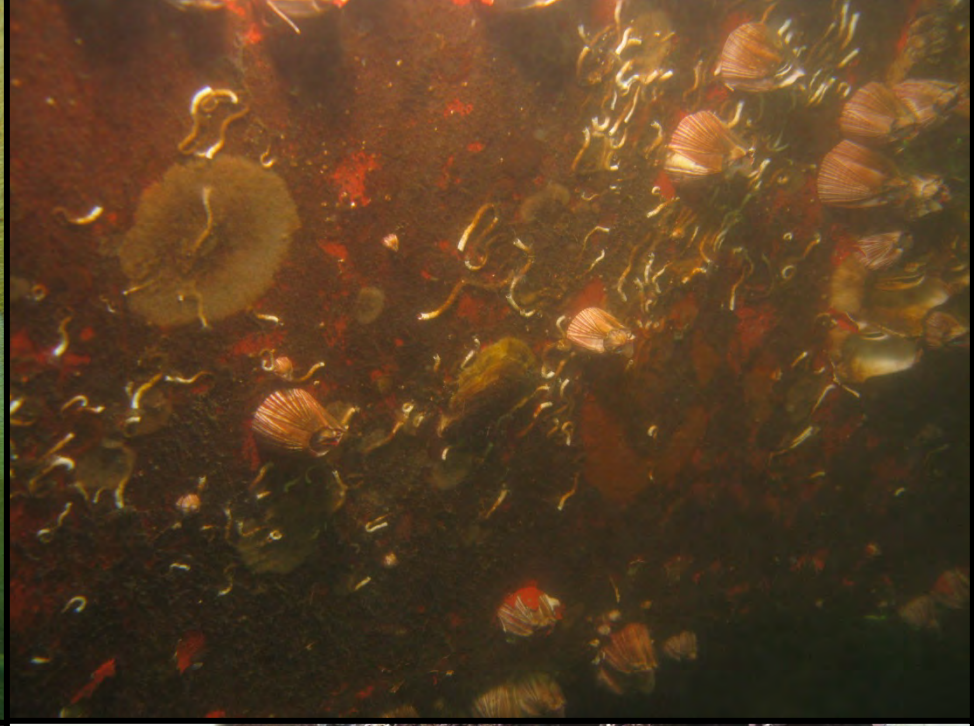


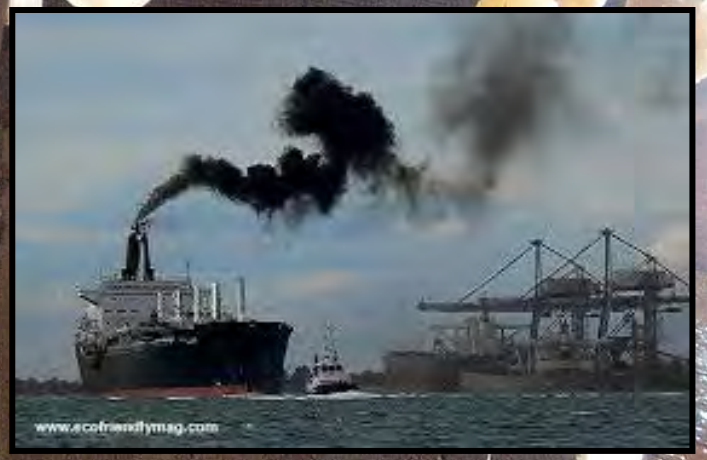
Photo courtesy of Tiong Gim Aw (MSU)





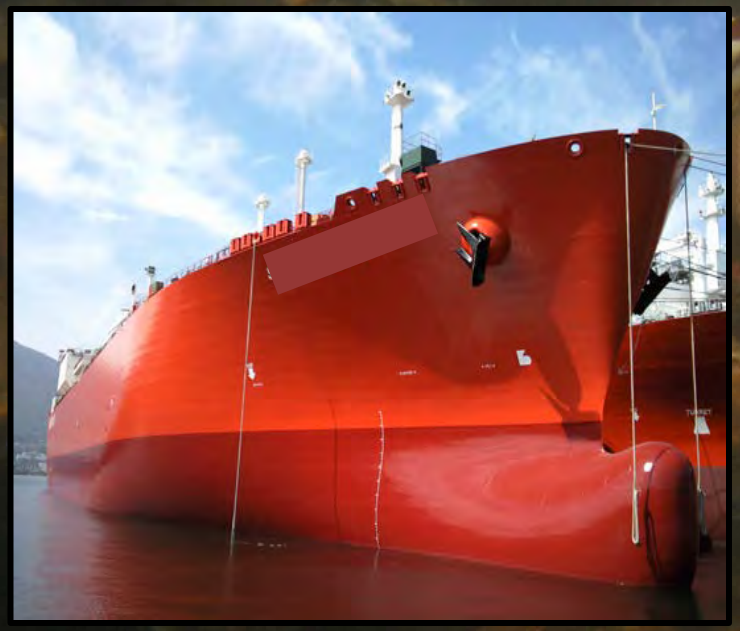
Location	% of NIS Associated with Biofouling	Reference
Global	42.6 %	Hewitt and Campbell 2010
★ California ★	up to 60%	Ruiz et al. 2011
Hawaii	74%	Eldredge & Carlton, 2002
North America (USA)	70%	Fofonoff et al., 2003
Japan	42%	Otani 2006
Brazil	90%	Farrapeira et al., 2011
New Zealand	69%	Cranfield et al., 1998
Port Phillip Bay, Australia	78%	Hewitt, et al., 1999, 2004
Australia (national port surveys)	59%–69%	Hewitt and Campbell 2010
North Sea	> 50%	Gollasch, 2002
Scotland	59%	Ashton et al. 2006

Hull biofouling = ↑ Drag = ↑ Fuel consumption = ↑ $$$$



Solution: Biofouling Management

Proactive Management



Reactive Management

Hull Husbandry Reporting Form

Print

California State Lands Commission
Marine Invasive Species Program
Hull Husbandry Reporting Form
Public Resources Code – 71205(e) and 71205(f)
June 6, 2008
Part I: Reporting Form

Vessel Name:
Official / IMO Number:
Responsible Officer's Name and Title:
Date Submitted (**Day/Month/Year**):

Hull Husbandry Information

1. Since delivery, has this vessel ever been removed from the water for maintenance?
   Yes ☐ No ☐

   a. If Yes, enter the date and location of the most recent out-of-water maintenance:

Last date out of water (**Day/Month/Year**):	
Port or Position:	Country:

   b. If No, enter the delivery date and location where the vessel was built:

Delivery date (**Day/Month/Year**):	
Port or Position:	Country:

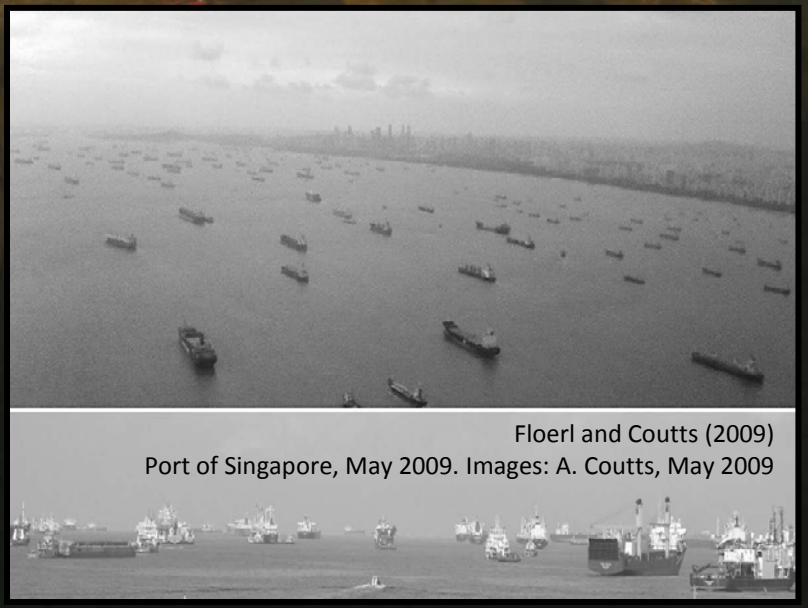
2. Were the submerged portions of the vessel coated with an anti-fouling treatment or coating during the **out-of-water** maintenance or shipbuilding process listed above?

Yes, full coat applied ☐	
Yes, partial coat ☐	Date last full coat applied (**Day/Month/Year**)
No coat applied ☐	Date last full coat applied (**Day/Month/Year**)

3. For the most recent **full coat** application of anti-fouling treatment, what type of anti-fouling treatment was applied and to which specific **sections** of the submerged portion of the vessel was it applied?

Manufacturer/Company:
Product Name:

Applied on (**Check all that apply**): Hull Sides ☐ Hull Bottom ☐ Sea Chests ☐
Sea Chest Gratings ☐ Propeller ☐ Rope Guard/Propeller Shaft ☐
Previous Docking Blocks ☐ Thrusters ☐ Rudder ☐ Bilge Keels ☐

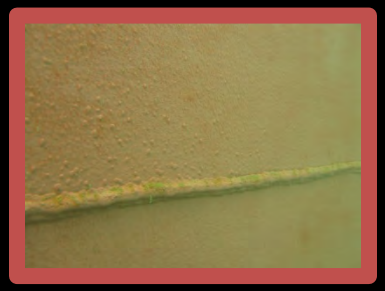


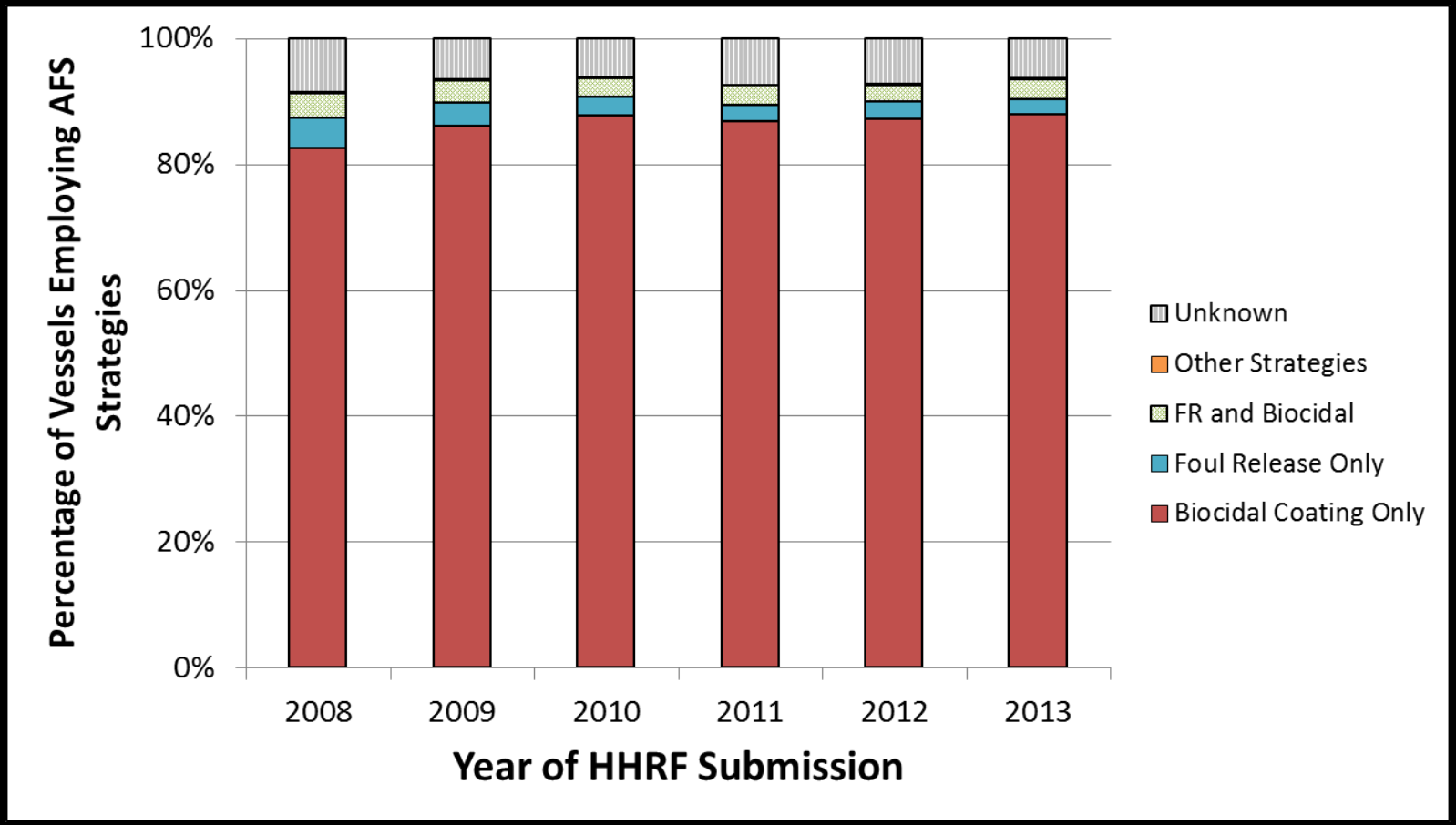
Floerl and Coutts (2009)
Port of Singapore, May 2009. Images: A. Coutts, May 2009

Antifouling System Strategy

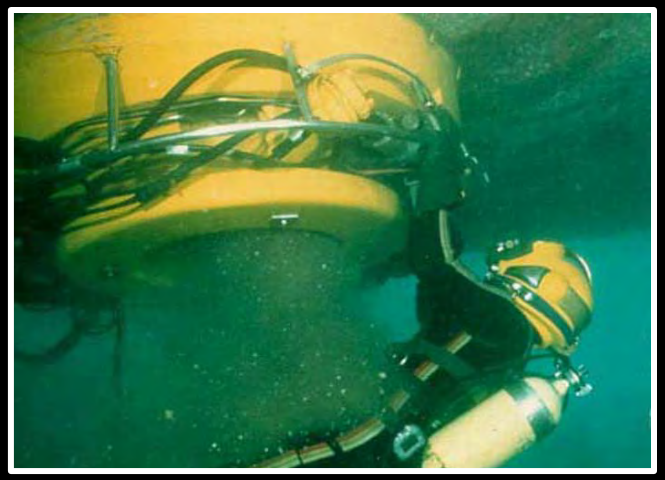
Disclaimer: No Endorsement Implied

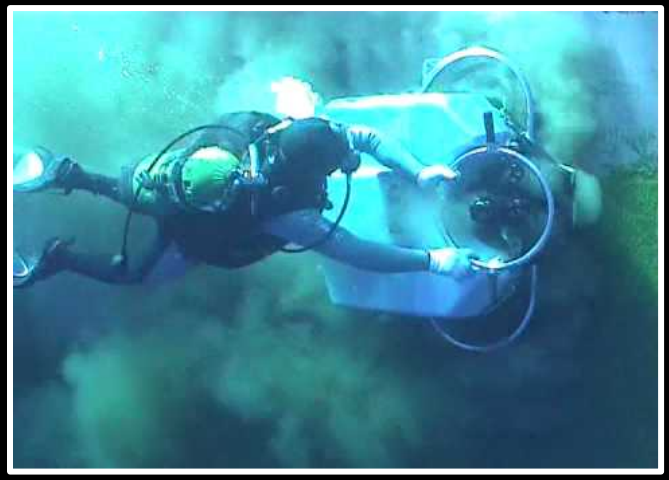
Antifouling System Strategy

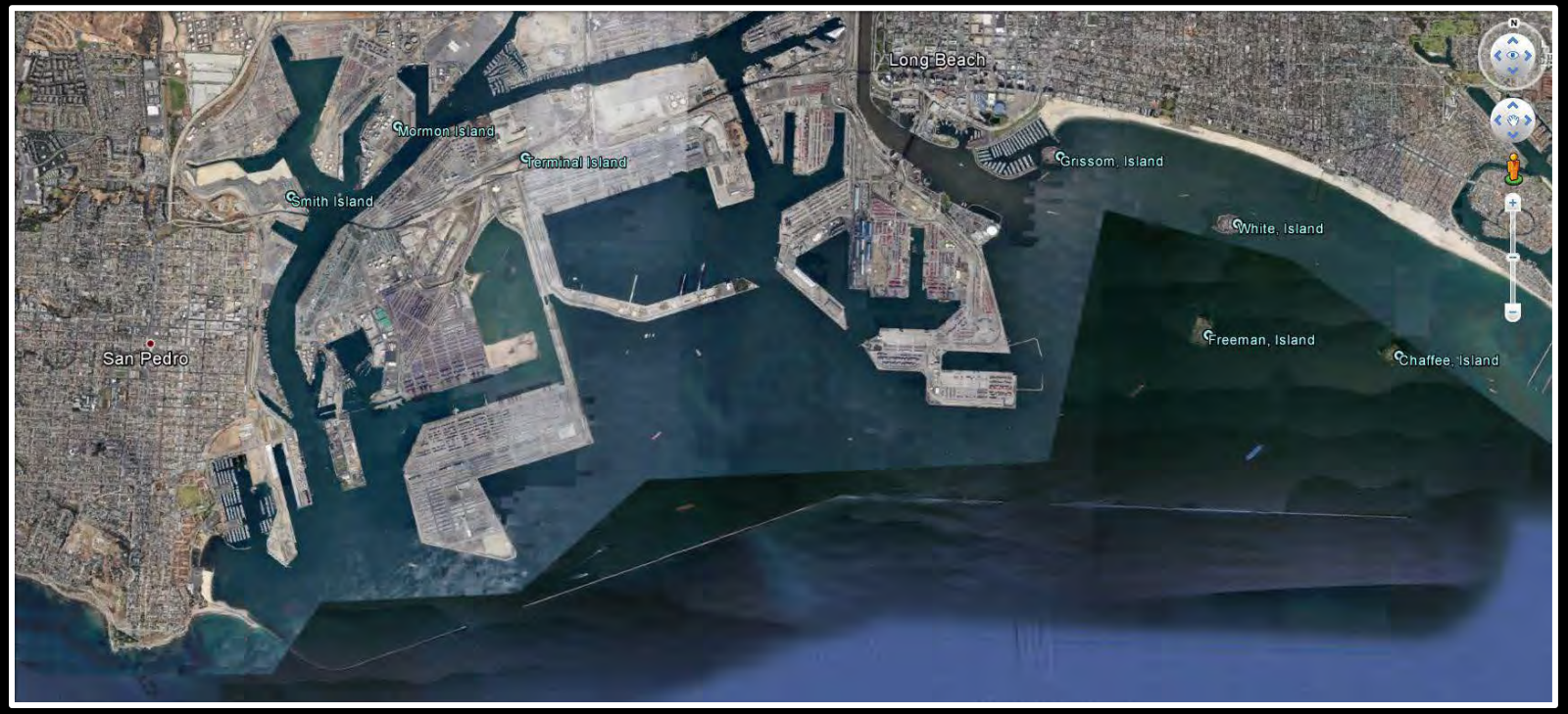




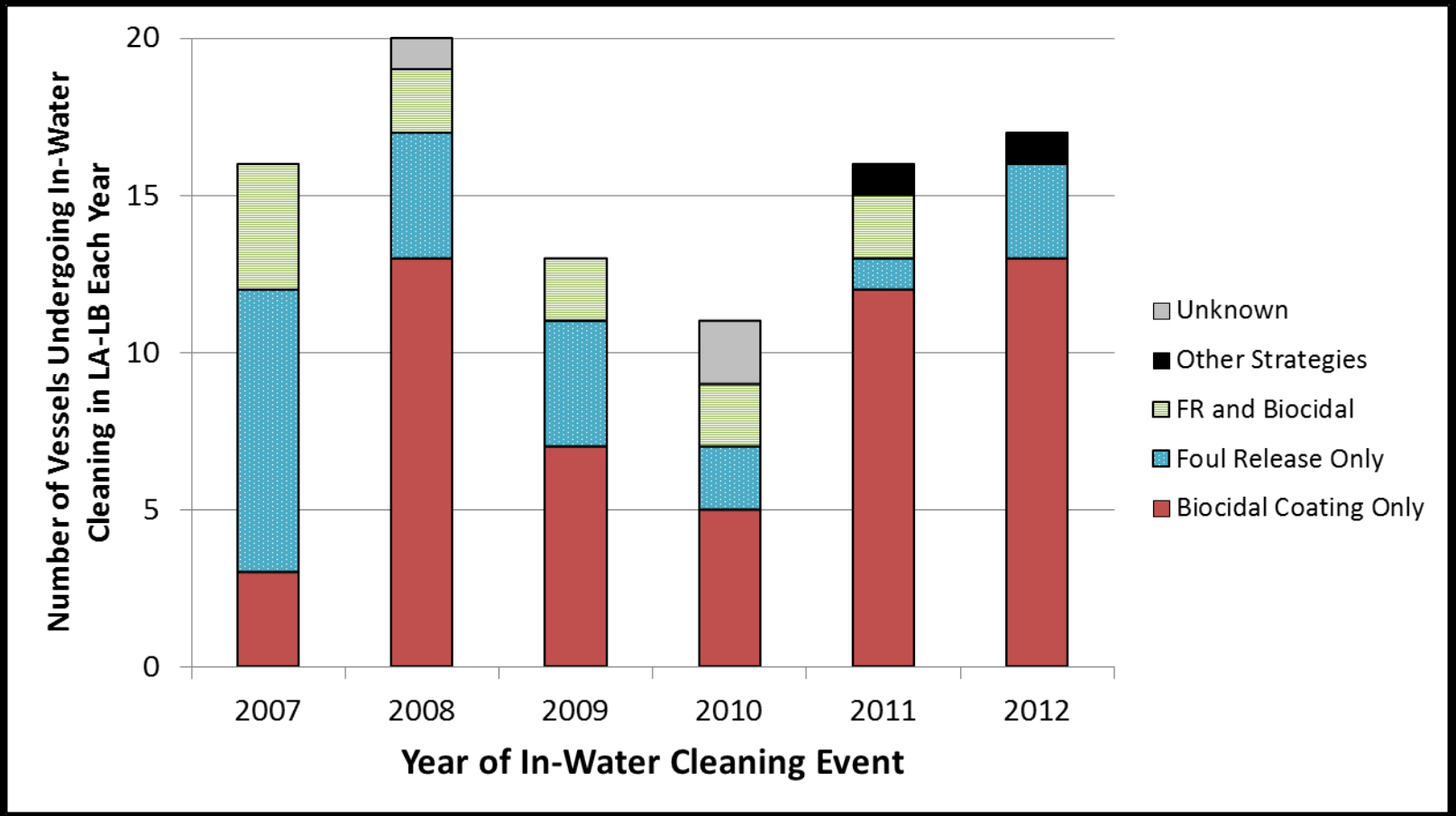
In-Water Cleaning



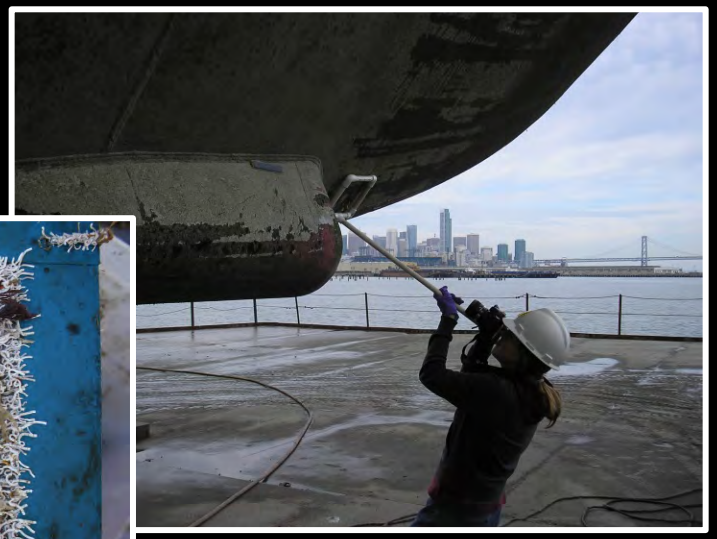


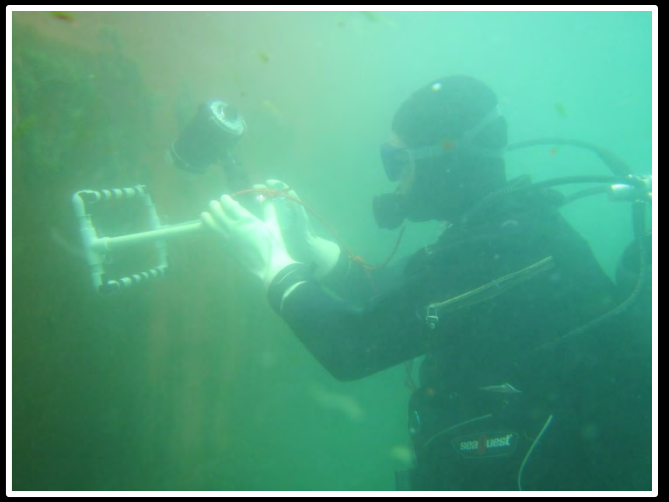


In-Water Cleaning In and Around LA-LB



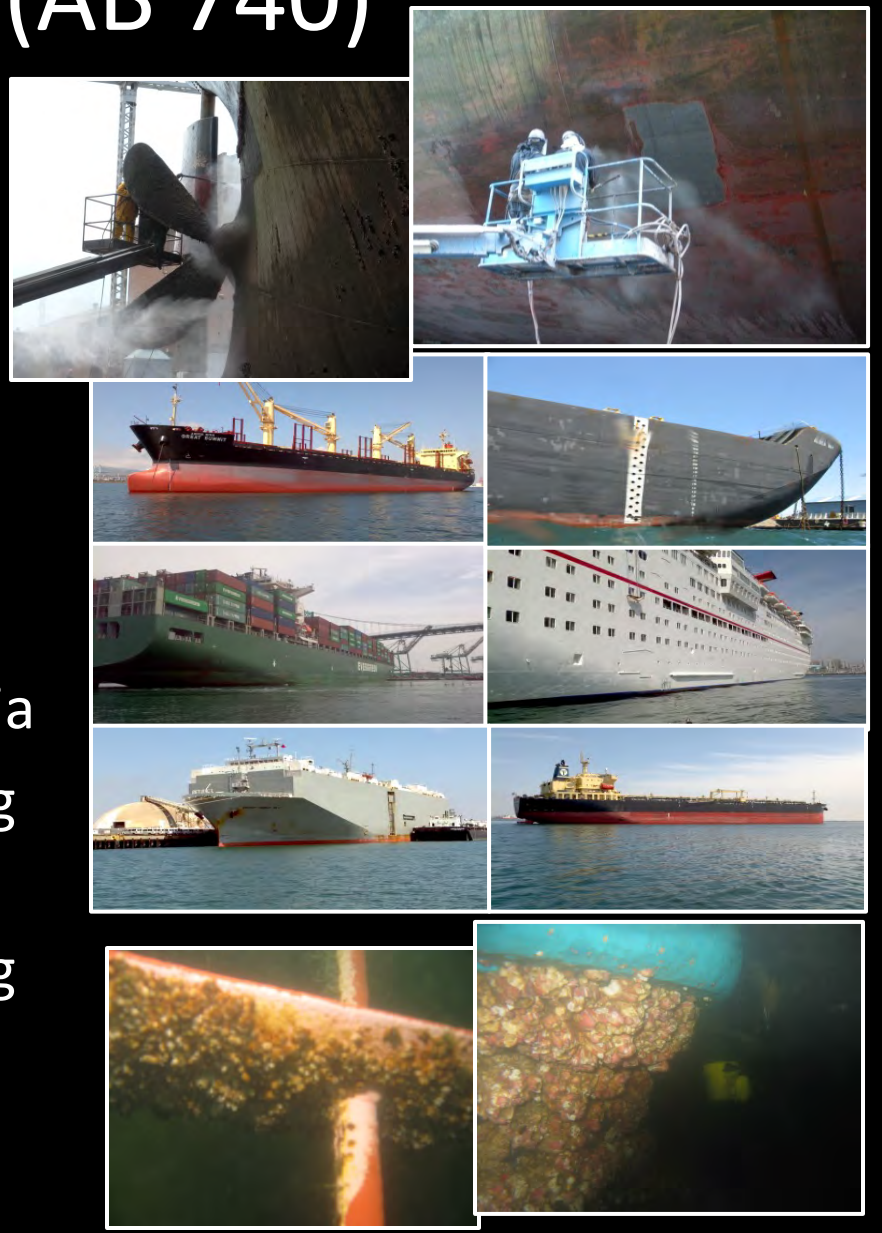
Biofouling Research



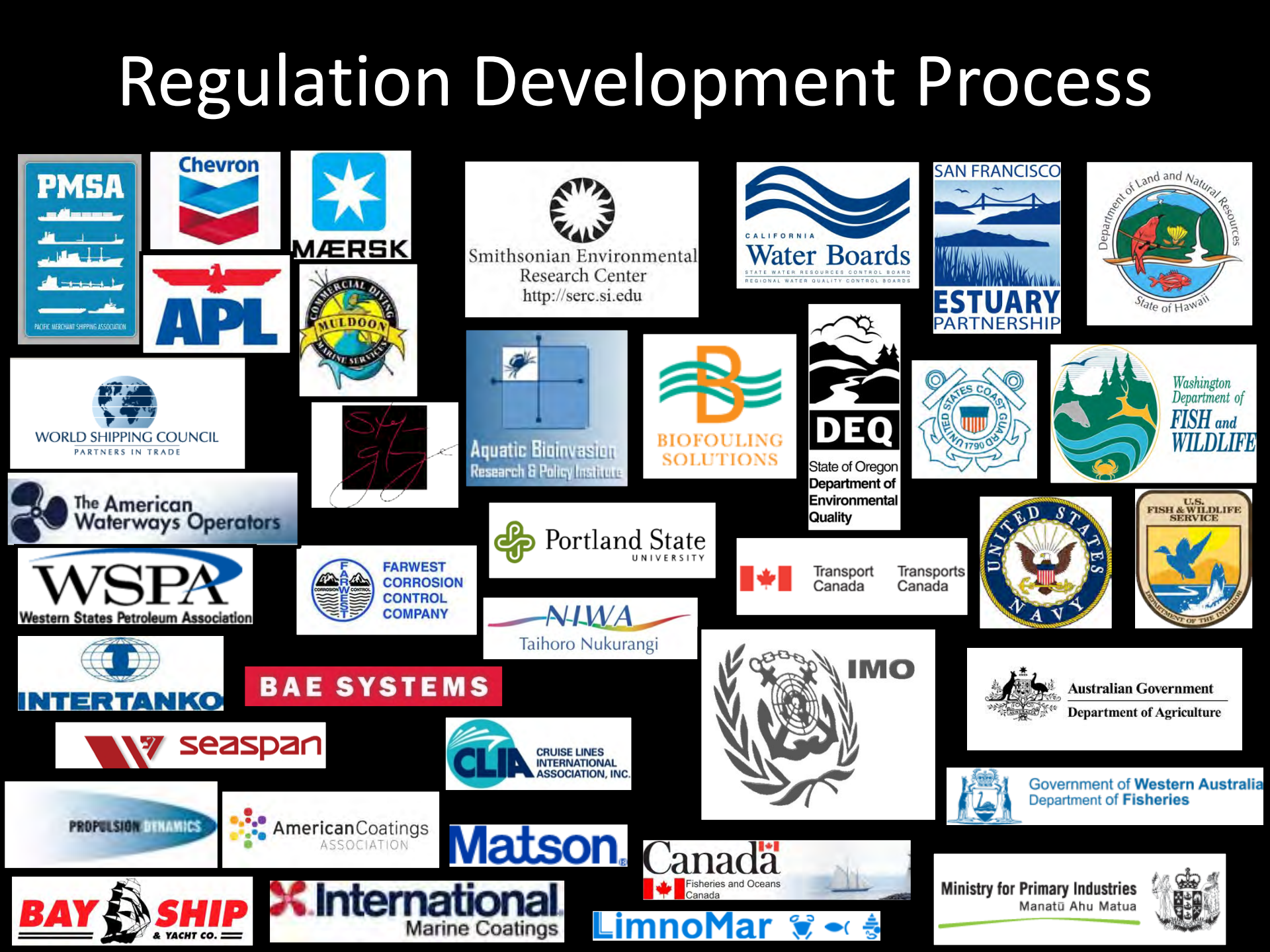


2007 Amendments to CA Marine Invasive Species Act (AB 740)

- Statutory mandate to develop biofouling management regulations
- Fill information gaps
  - Hull husbandry practices of vessels operating in California
  - Patterns of biofouling among ships and ship types
  - Patterns of biofouling among different surfaces of a ship

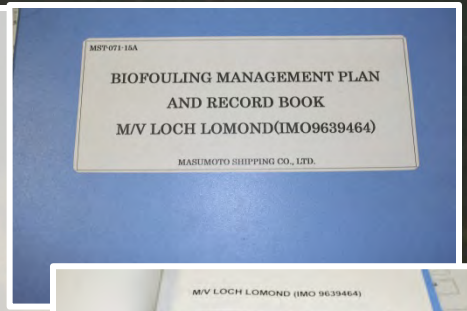


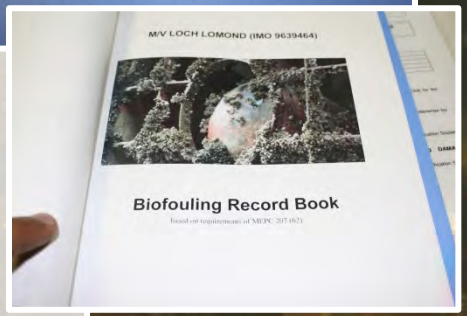
Regulation Development Process



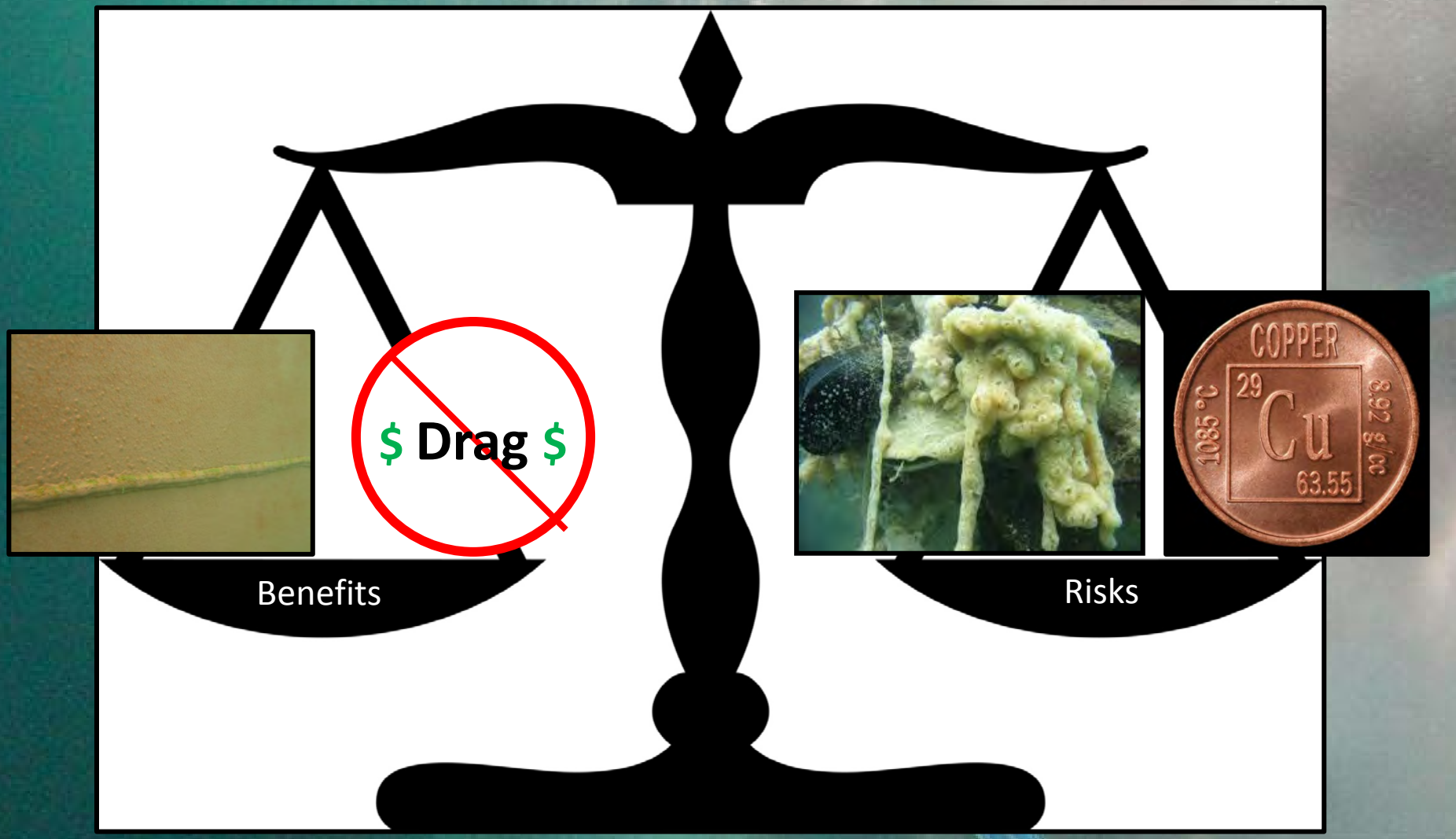
Draft Regulations – Main Components

- Biofouling Management Plan
- Biofouling Record Book
- Hull and Niche Area Management
  - Technology-based, best practices
- Provision for excessive biofouling
- Extended Residency Periods





In-Water Cleaning



Come Back After Lunch

11:30 -	1:00	BUFFET LUNCH
1:00 -	3:00	AFTERNOON BREAKOUT SESSIONS

1E

A Collaborative Panel Discussion on
The Present and Future of Regulating In-Water Hull Cleaning in California

Moderator: Chris Scianni, *California State Lands Commission*

Paul Hann, *California State Water Resources Control Board*

Jenny Newman, *Los Angeles Regional Water Quality Control Board*

David Elias, *San Francisco Bay Regional Water Quality Control Board*

Dylan Porter, *Port of Long Beach*

Richard Barta, *Muldoon Marine Services*

Kathryn Kelley, *U. S. Environmental Protection Agency*

Eugene Georgiades, Ph.D., *New Zealand Ministry for Primary Industries*

3:00 -	4:00	DOOR PRIZE DRAWING IN TECHNOLOGY EXHIBITION

Thank You

chris.scianni@slc.ca.gov

California's Marine Invasive Species Program
Website:
www.slc.ca.gov
Click "Divisions" Tab,
"Marine Facilities Division" link, and
"Marine Invasive Species Program" link