California's
Marine Invasive Species Program

Prevention First
September 13, 2006
Lynn Takata

Nonindigenous Species (NIS): Why The Concern?

Fisheries ● Aquaculture ● Ecology ● Human Health ● Municipalities ● Agriculture ● Recreation ● Tourism

Ontario Ministry of Natural Resources

Zebra Mussel

- Clogs municipalities

- Smothers other organisms

- Infests approx 50% of U.S. waterways ~$1 billion/yr.

A U.S. Export: The Atlantic Comb Jelly

- Accounts for over 90% of biomass in the Black Sea

- Consumes fish eggs, fish young & zooplankton

- Wiped out fisheries: $350 million/18 years

Ballast Water and Nonindigenous Species

- Purpose: Vessel trim and stability

- One of the most important marine transport vectors

- Ballast water exchange is primary management tool

http://globallast.imo.org
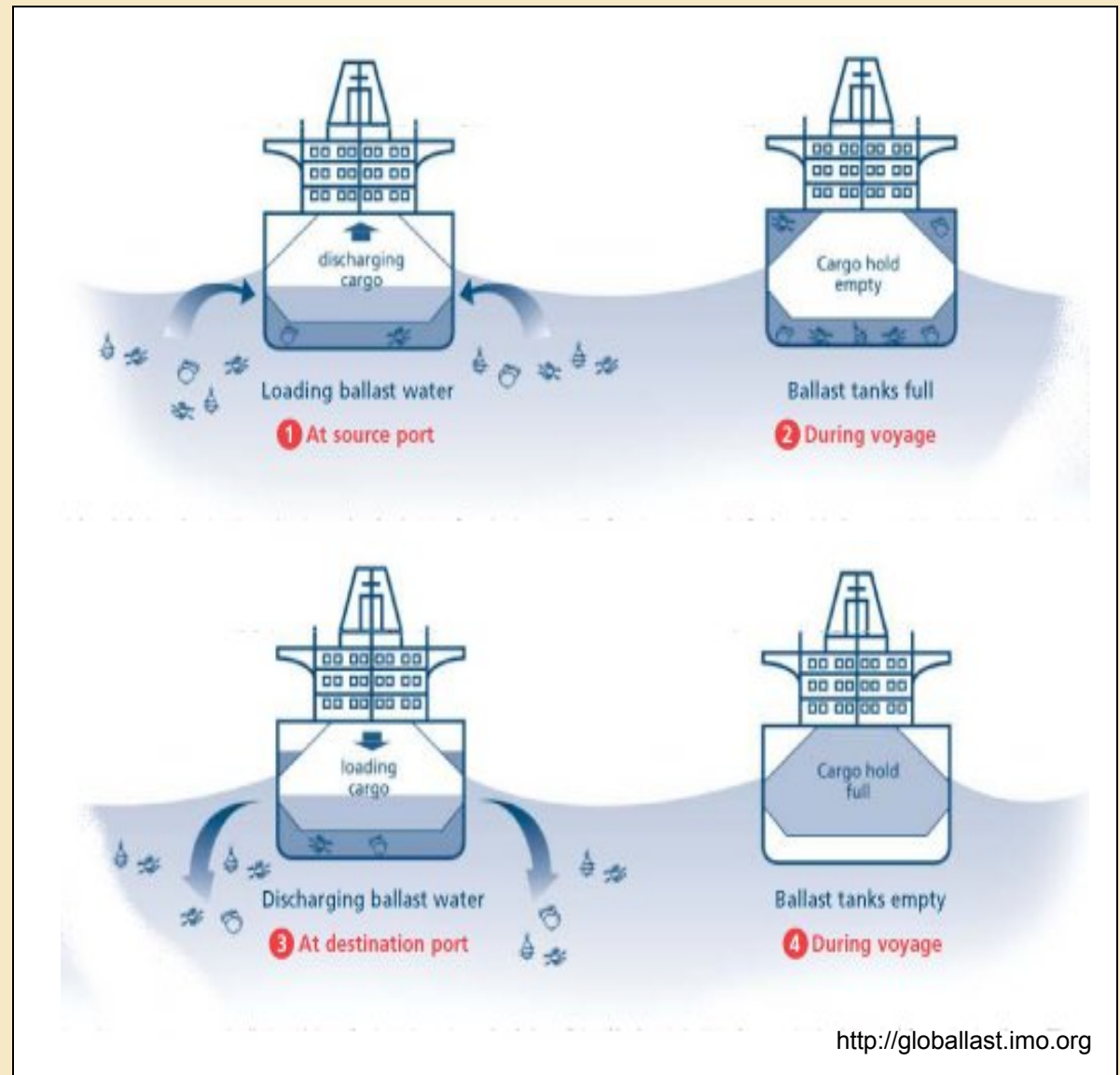
California's Marine Invasive Species Program: Legislative Origins and Directives

Ballast Water Management For Control of Nonindigenous Species Act (1999)

- Management of ballast water originating from outside the EEZ
- Ballast water management reporting
- Vessel inspections
- Biological survey (CDFG)
- Treatment technology evaluation (SWRCB)
- Exotic Species Control Fund (BOE)

Marine Invasive Species Act of 2003

- All the above…plus
- Regulations & reporting coastal voyages
- Treatment technology performance standards
- Non-ballast water vessel vectors

Components of the Marine Invasive Species Program

Program Management (4 Staff)

- Policy development
- Stakeholder coordination (regulators, scientists, sister agencies, environmental organizations, etc…)
- Technical Advisory Group facilitation

Data Management & Field Office Coordination (4 Staff)

- Ballast water reporting forms
- Field office coordination
- Vessel & agent point of contact
- Outreach

Field Offices (6 FT Positions)

- Vessel inspections
- Scientist facilitation
- Outreach
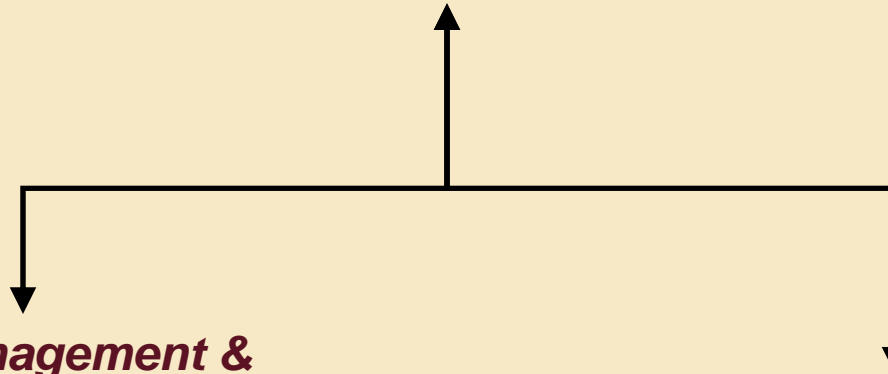
Marine Invasive Species Program:
Recent Activities

- Coastal regulations

- Performance standards

- Vessel fouling

- Research

Photo by: C. Simkanin

Ballast Water Management in the Pacific Coast Region

PRC§71204.6: Adopt regulations for ballast water management for vessels arriving from the Pacific Coast Region

Where?

• Cooks Inlet (AK) to ¾ down the Baja Peninsula

Why?

• Short voyages = better organism survival

• Prevent spread of established species

> ➤ 203 NIS in SF Bay that are not yet in Humboldt Bay

PACIFIC COAST REGION
North America Albers Equal Area Conic

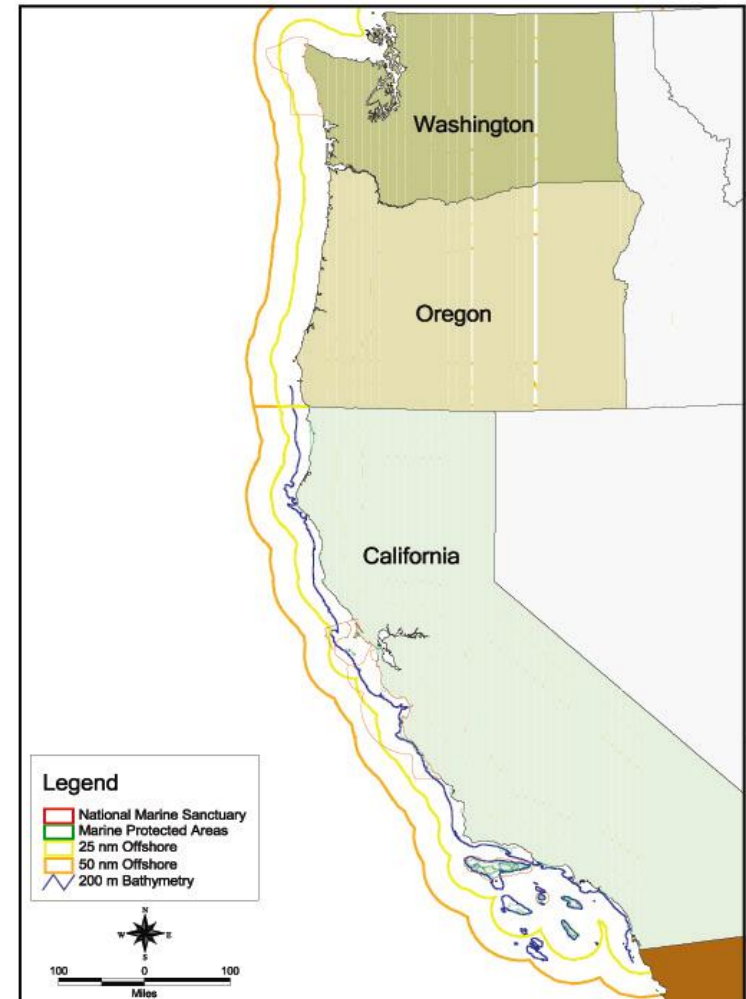East of 154° W

North of 25° N

DFG OSPR GIS

Ballast Water Management in the Pacific Coast Region

Developing the Regulation

- 2002 West Coast Oceanography Workshop (Scientists)

- 2003 West Coast Exchange Workshop (Multidisciplinary)

- 2004 CSLC Technical Advisory Group Meeting (Multidisciplinary)

Article 4.6 - Effective March 2006

- Ballast Water Exchange 50nm Offshore

- Shared Waters Provision

- Safety Provision

- Alternatives Through Petition

Washington

Oregon

California

Legend
- National Marine Sanctuary
- Marine Protected Areas
- 25 nm Offshore
- 50 nm Offshore
- 200 m Bathymetry

100   0   100
Miles

w:\projects\Mashe\ballast_2004

Performance Standards

PRC§71204.9: Recommend specific performance standards for the discharge of ballast water into waters of the state

Why?

Drawbacks to ballast water exchange

- Variable efficiency (~50%-90%)
- Time consuming
- Safety

Need for a numerical "target"

Marine Invasive Species Act (2003)

- Consult with State Water Resources Control Board (SWRCB) & Technical Advisory Group

- Protect beneficial uses

- Economic achievability
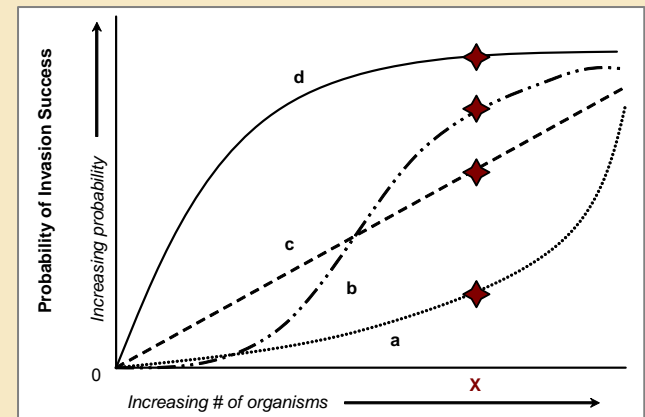
- Best available technology

Performance Standards
Technical Advisory Group Meetings (2005)

March 7 ● April 27 ● June 22 ● July 13 ● August 8

Major Considerations

- Biological questions

- Efficacy of ballast water exchange

- Prototype technologies

- Economic Achievability

- Standards adopted/considered by others

Major Findings and Challenges

- What is "protective enough"? No concrete biological guidance.

- Long term goal should be "zero discharge"

- Should be significantly better than status quo.

- Standard should drive technologies.

Performance Standards

Organism Size (units)	Performance Standards
> 50 μm (/m^3)	No detectable living organisms
10 - 50 μm (/mL)	10^{-2} organisms
< 10 μm(/100 mL)	10^3 for bacteria 10^4 for viruses Public health protective limits

Final Discharge Standard:

Zero detectable living organisms by January 2020

Status:

Report submitted to the Legislature in January 2006

Senate Bill 497 (2006)

Non-Ballast NIS Vectors: Vessel Fouling

PRC§71210.5: Recommend actions to reduce release of NIS from non-ballast commercial vessel vectors (essentially vessel fouling)

Why?

North America: At least 36% of shipping introductions due to fouling (Fofonoff et al. 2003)

Marine Invasive Species Act (2003)

- Consult with SWRCB, U.S. Coast Guard & Technical Advisory Group

- Analyze risk for NIS release

- Report for State Legislature

Non-Ballast NIS Vectors: Vessel Fouling
Technical Advisory Group Meetings (2005)

May 11 ● August 3 ● October 13 ● December 19

Major Considerations

- Vessel behavior

- Vessel maintenance practices

- Management strategies elsewhere

Suisun Bay
Reserve Fleet

Major Findings and Challenges

- Limited scientific research

- Majority of fleet regularly maintained. Risk unknown.

- Case Studies: Exaggerated fouling factors = High risk

Non-Ballast NIS Vectors: Vessel Fouling
Major Recommendations

• Authorize/Broaden state program to develop and adopt regulations, especially for high risk situations

• Expand biological research – NIS & "fouling risk factors"

• Collect information on vessel behavior and maintenance

• Address fouling & NIS on vessels under 300 GRT

Fouling on the barge *Steel Mariner*

Report submitted to the Legislature in April 2006

Funded Technology Development and Research

Matson Navigation
(next talk)
Installation of treatment technology on the ITB *Moku Pahu*

Smithsonian Environmental Research Center
(tune in around 9:35)
Ballast water exchange verification

Aquatic Bioinvaisons Research and Policy Institute
(After the break)
Wetted surface area analysis of vessels coming to west coast ports

APL (Pending)
Installation of treatment technology onboard the *APL Japan*

On the Horizon

Biennial Report 2007

Senate Bill 497

Fouling Legislation

More Research

For more information

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