Patterns of Vessel Traffic and Ballast Water Management in California

By Raya Nedelcheva

Marine Invasive Species Program, California State Lands Commission

Prevention First 2014
October 8th, 2014
In California

Many vectors contribute to NIS introductions in the state, but by far ballast water and biofouling play the largest role

- Each ballast water discharge event has the potential to release over 21.2 million individual organisms (Minton et al. 2005).

(Ruiz et al. 2011)
Origin: 1999 Ballast Water Management for Control of Nonindigenous Species Act (AB 703)

- Ballast water management
- Reporting forms
- Vessel inspections

Renewal & Enhancement:
2003 Marine Invasive Species Act (AB 433)

- Coastal voyages
- Performance standards
- Non-ballast vessel vectors (biofouling)
Current State of Regulations

Reporting:
• Each Port

Management:
• BW management for vessels arriving from PCR ports and non-PCR ports

No exemption for deviation and delay of voyage

• Arrivals from within PCR, ballast water from within PCR: Exchange >50 NM
• Arrivals from within PCR, ballast water from outside PCR: Exchange >200 NM
• Arrivals from outside: Exchange >200 NM
**Ballast Water Reporting Form: Database**

- Forms contain information on source, exchange, and discharge locations
- Quality-controlled database extending back to 2002
  - Reporting requirements changed in 2004. Most consistent set of data available is from 2004 to 2014.
Ballast Water Reporting Form

IS THIS AN AMENDED BALLAST REPORTING FORM? YES □ NO □

1. VESSEL INFORMATION
   - Vessel Name:
   - Arrival Port:
   - IMO Number:
   - Arrival Date (DD/MM/YYYY):
   - Owner:
   - Type:
   - GT:
   - Call Sign:
   - Flag:

2. VOYAGE INFORMATION
   - Agent:
   - Last Port:
   - Country of Last Port:
   - Next Port:
   - Country of Next Port:

3. BALLAST WATER USAGE AND CAPACITY
   - Total Ballast Water on Board:
     - Volume:
     - Units:
     - No. of Tanks in Ballast:
   - Total Ballast Water Capacity:
     - Volume:
     - Units:
     - Total No. of Tanks on Ship:

4. BALLAST WATER MANAGEMENT
   - Total No. Ballast Water Tanks to be discharged: □
   - Of tanks to be discharged, how many: □
   - Underwent Exchange: □
   - Underwent Alternative Management: □
   - Please specify alternative method(s) used, if any: ______________________
   - If no ballast treatment conducted, state reason why not: ______________________
   - Ballast management plan on board? YES □ NO □
   - Management plan implemented? YES □ NO □
   - IMO ballast water guidelines on board (res. A.868(20))? YES □ NO □

5. BALLAST WATER HISTORY: Record all tanks to be deballasted in port state of arrival (enter additional tanks on page 2). IF NONE, GO TO #6
   - Tanks/ Holds
     - List multiple sources/tanks separately
     - Date: DD/MM/YYYY
     - PORT or LAT. LONG.
     - Volume (units)
     - Temp (units)
     - BW DISCHARGE
     - Date: DD/MM/YYYY
     - PORT or LAT. LONG.
     - Volume (units)
     - Salinity (units)

Ballast Water Tank Codes: Forepeak = FP, Aftpeak = AP, Double Bottom = DB, Wing = WT, Topside = TS, Cargo Hold = CH, Other = O

6. RESPONSIBLE OFFICER’S NAME AND TITLE:
   Dept Homeland Security USCG, CG-5662 (06-04)

BWRPForm.doc Previous edition may be used
Submission Compliance

2004-2014

- On average 97% submission compliance rate
- About 9,500-10,000 arrivals per year
Arrivals by Vessel Type

2012-2014

- Nearly half of all arrivals to California from July 2012 to June 2014 were container vessels.
Vessel Arrivals

2012-2014

- The Ports of LA-LB and Oakland accounted for 67% of all arrivals to the State.
- The Ports of LA-LB receives by far the most Non-PCR arrivals to the State.
- The Ports of LA-LB and Oakland received about the same number of PCR arrivals.
• The majority of arrivals come from other California ports.
• Second most common arrivals are from other PCR ports.
• Non-PCR arrivals are primarily from Asian ports (~20%).
Ballast Water Management

Management Options:
- Retention (84%)
- Ballast Water exchange
- Discharge to a reception facility*
- Alternative management methods

* Currently not available
Number of vessels discharging Per Vessel Type

- More Tank and Bulk vessels discharge than any other vessel type
- The percent of Tank vessels discharging has doubled since the previous two year period between June 2010 and July 2012
Discharge Volume 2004-2014

- Greatest volume of ballast water discharged in 2014a
Compliance of Discharged Ballast Water

2010-2014

- On average 90% of all discharged ballast water is managed in compliance.
- Pattern has been similar in previous years.
Noncompliant Discharge by Port

2012-2014

- Humboldt Bay
- Sacramento
- Stockton
- Carquinez
- Richmond
- Redwood
- Oakland
- San Francisco
- Hueneme
- El Segundo
- LA-LB
- San Diego

Total Noncompliant Volume Discharged (MMT)

- 15%
- 46%
- 32%
Breakdown of Noncompliant Discharges

2012-2014

Ballast Water that falls under the “No Exchange Conducted” category presents the most risk of NIS introductions.
Ballast Water Discharges

2004-2014

<table>
<thead>
<tr>
<th>Year</th>
<th>Ave. Volume (MT) Ballast Water Discharge Per Discharging QV</th>
<th># QVs Discharging</th>
<th>Number of QVs Discharging Ballast</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014a</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• The Ports of LA-LB and Oakland continue to be the most active ports in California in terms of vessel arrivals.

• Most arriving vessels retain their ballast water, those that discharge do so legally.

• Most non-compliant discharges are due to operational error (incorrect location).

• The greater volume of discharged ballast water per vessel (compliant or not) likely creates an increase in risk of NIS introductions.
Thank You!

Raya Nedelcheva
Raya.nedelcheva@slc.ca.gov