

Oregon's Ballast Water Program



*PBWG
April 2017
Portland, OR*

Oregon Ballast Water Program

(Regulations established 2001 - Program activities since 2008)



Operations:
Pre-Arrival Screening
Vessel Inspections & Enforcement

Outreach & Coordination:
with Industry, other Stakeholders and Regional Partners

Policy Analysis & Development:
Data Analysis
Scientific Collaboration, and Regulatory Solutions

Regional Ballast Water Management Comparison*

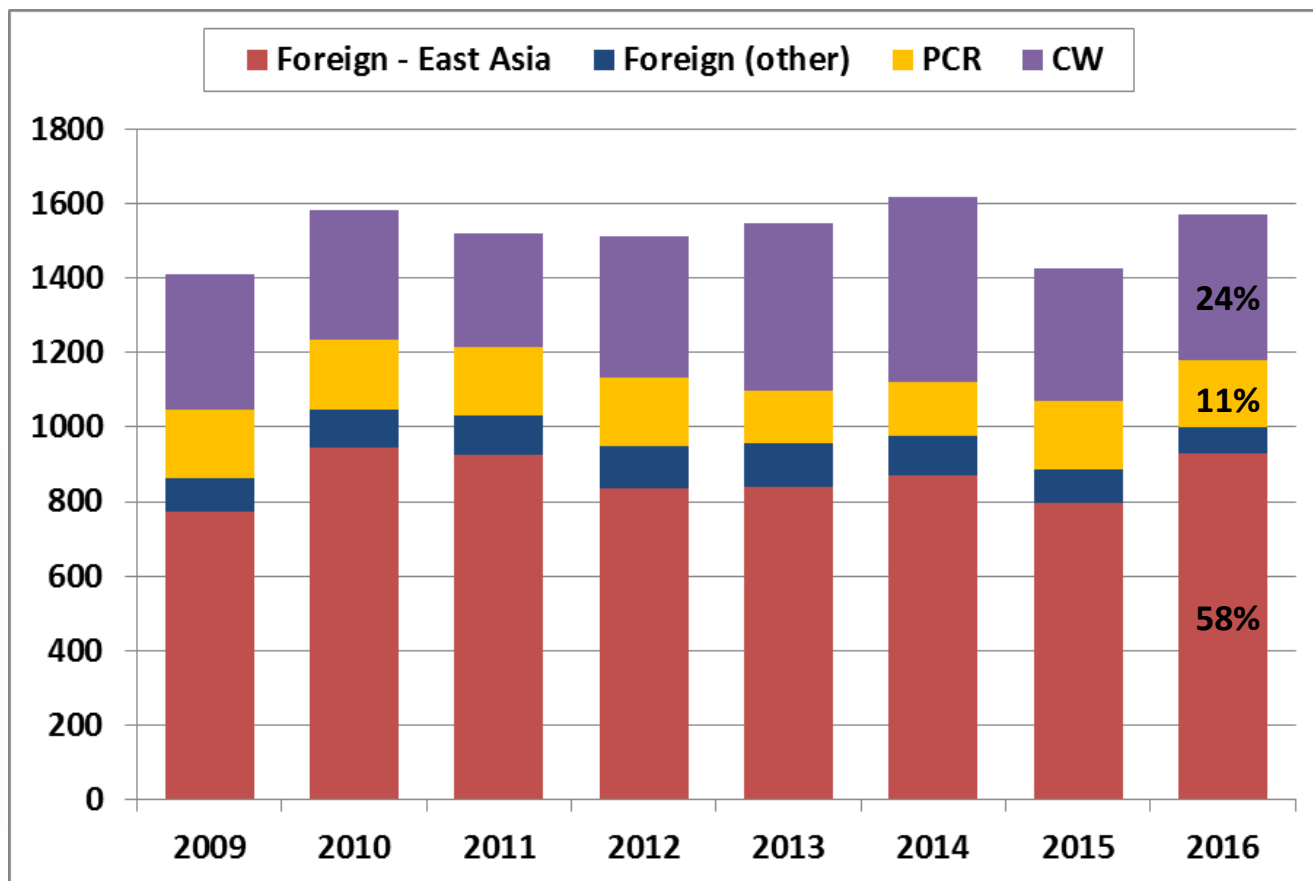
	Annual Arrivals	Annual BWD Volume	Percent Discharging	BWD per arrival	Port Environ. Conditions
Gulf of Alaska	785	9.7 M m ³	44%	12,400 m ³	Marine
Salish Sea (WA & BC)	6489	22.1 M m ³	28%	3,400 m ³	Marine
<i>Columbia River (OR & WA)</i>	<i>1541</i>	<i>12.9 M m³</i>	<i>61%</i>	<i>8,400 m³</i>	<i>Freshwater</i>
<i>Coos Bay</i>	<i>51</i>	<i>0.9 M m³</i>	<i>69%</i>	<i>13,900 m³</i>	<i>Brackish</i>
San Francisco Estuary	3495	7.5 M m ³	18%	2,100 m ³	Brackish
LA / Long Beach	4265	4.6 M m ³	16%	1,100 m ³	Marine
Hawaii	1026	0.7 M m ³	15%	682 m ³	Marine

(* - 2014 NBIC or most recent year available)

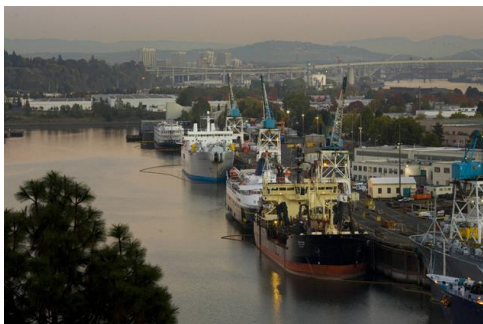
Oregon Qualifying Voyages (QV's) *by Last port of call (LPOC)*



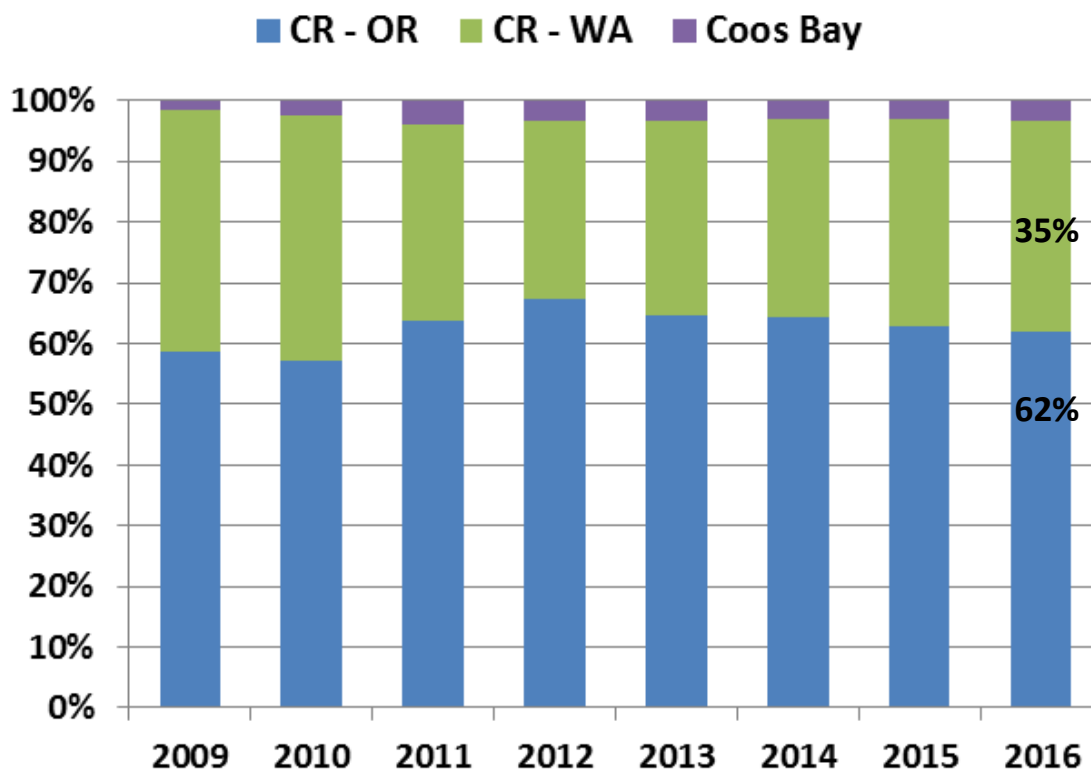
1592 QV's in
2016
(101% of 10-yr-avg)



Oregon Qualifying Voyages (QV's) by Destination Port

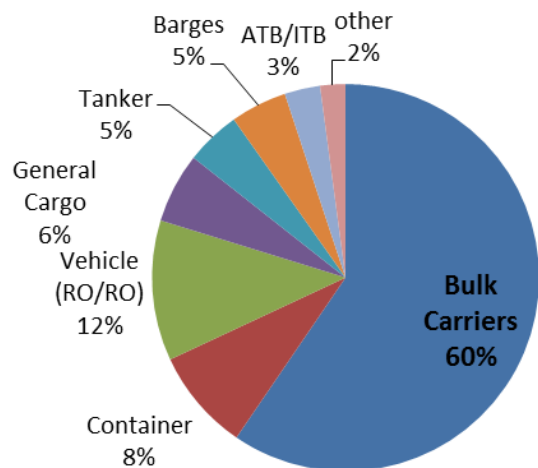


*Slight decrease
in proportion of
CR vessel
arrivals using
OR facilities*

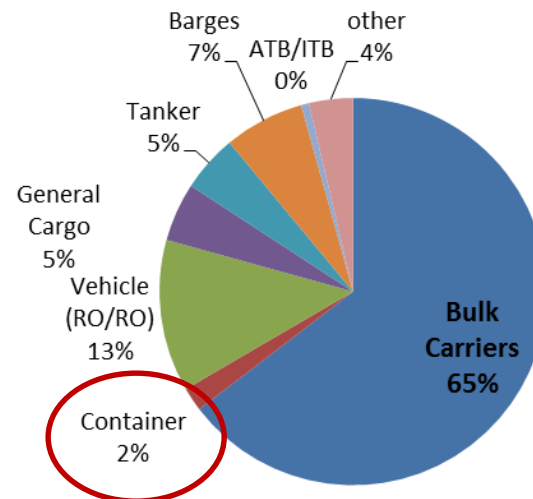


Oregon Qualifying Voyages *by vessel type*

09-14 Avg (1550 QV)



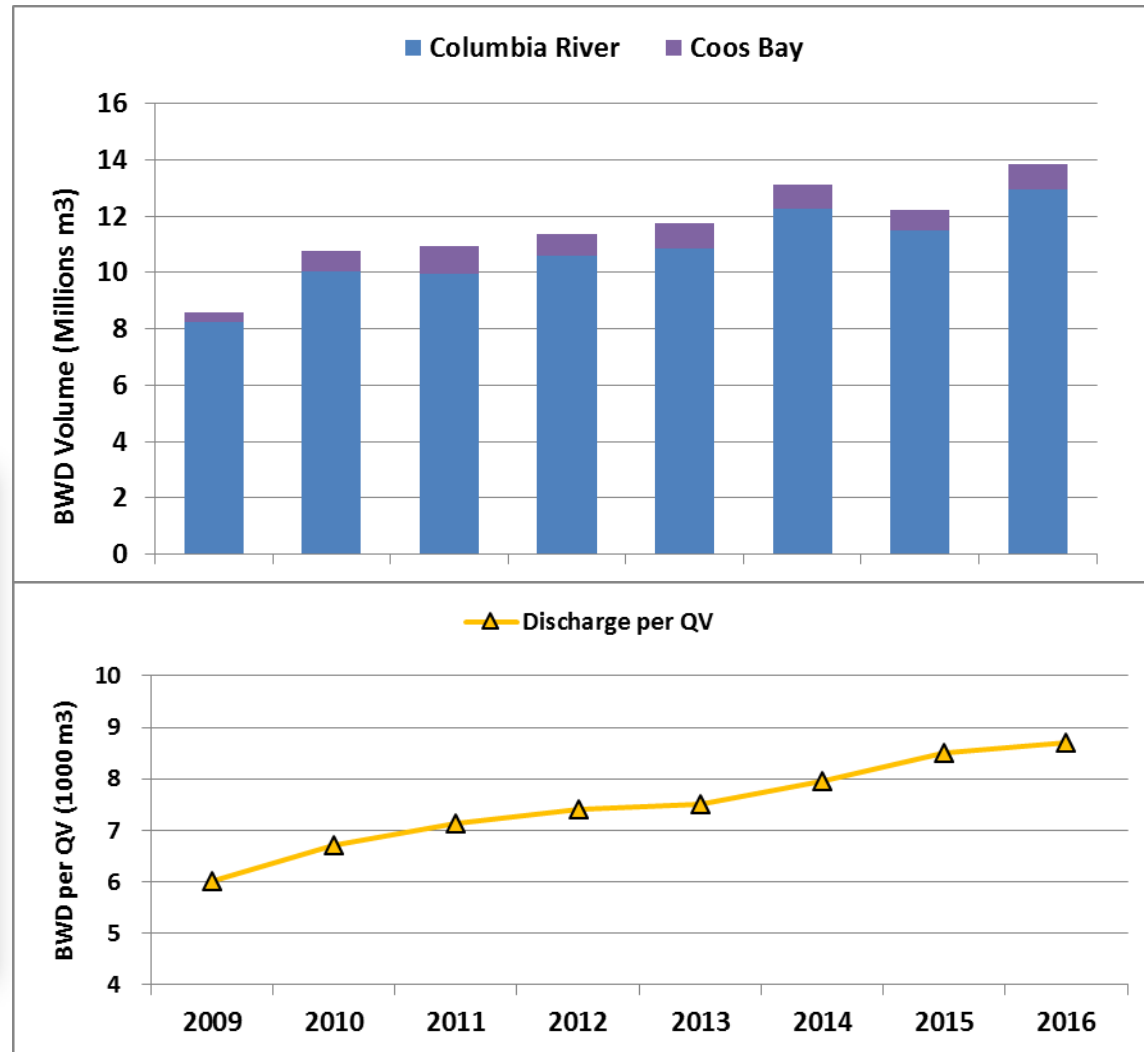
2016 (1592 QV)



Ballast Water Discharge Trends

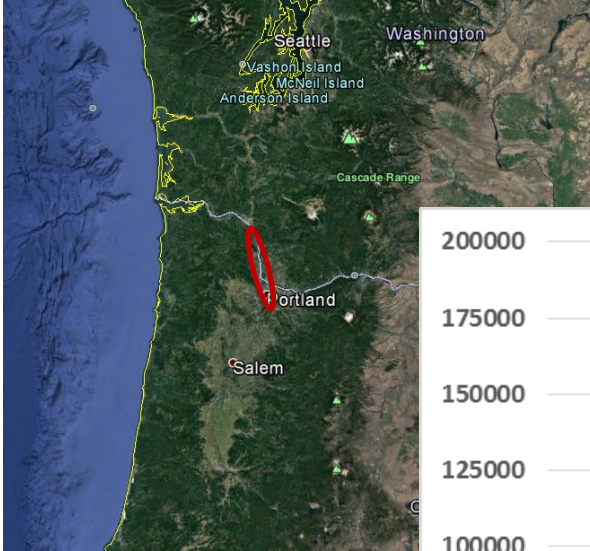


*13.9 M m³ BWD
to OR waters in
2016*



BWD Propogule Pressure 'pulses' in CR

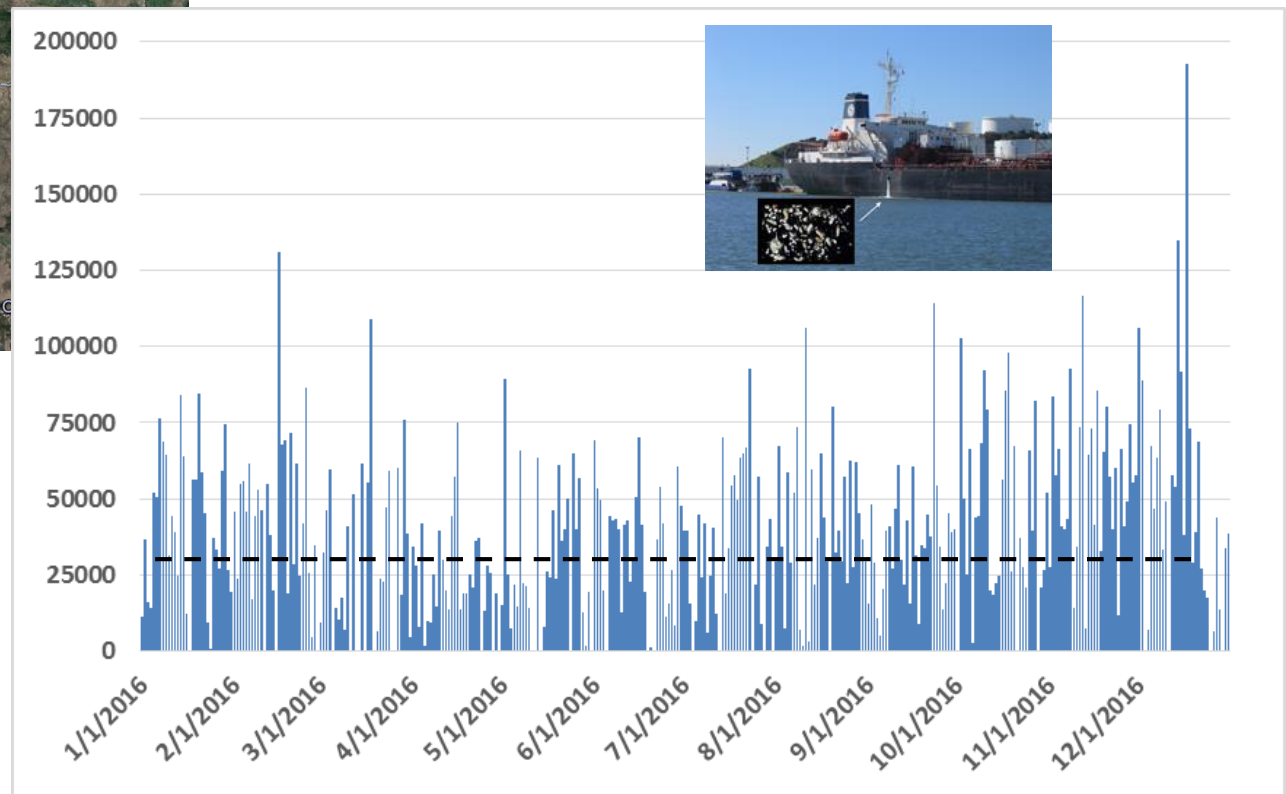
(45 river mile stretch LGV-PDX)



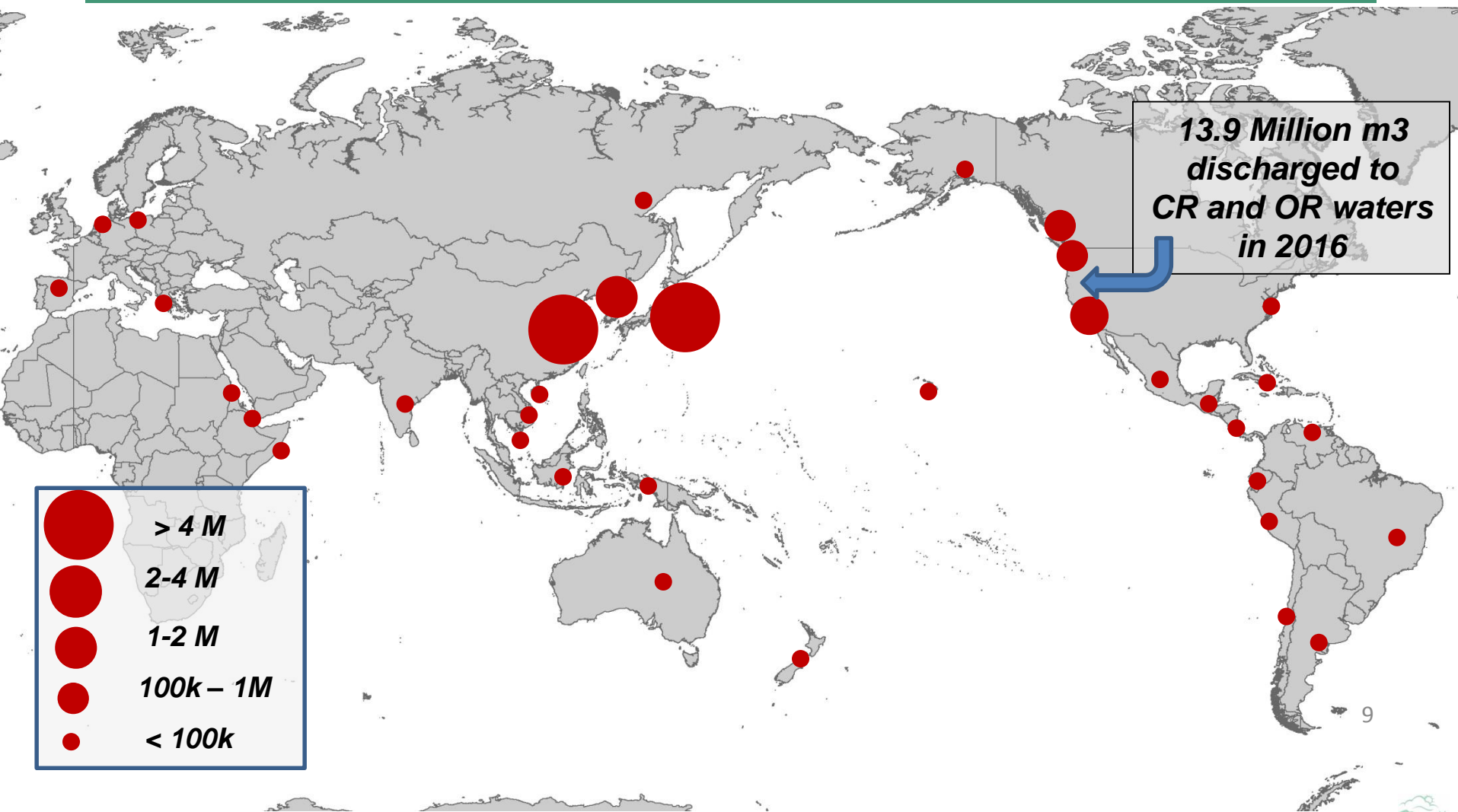
Daily Average BWD = 33k m³
(~650 Million zooplankton following BWE;
~330k zoops following BWT)

31% of days > 50k m³
(1 Billion/500k zoops)

9 days/year > 100k m³
(2 Billion/1 Million zoops)



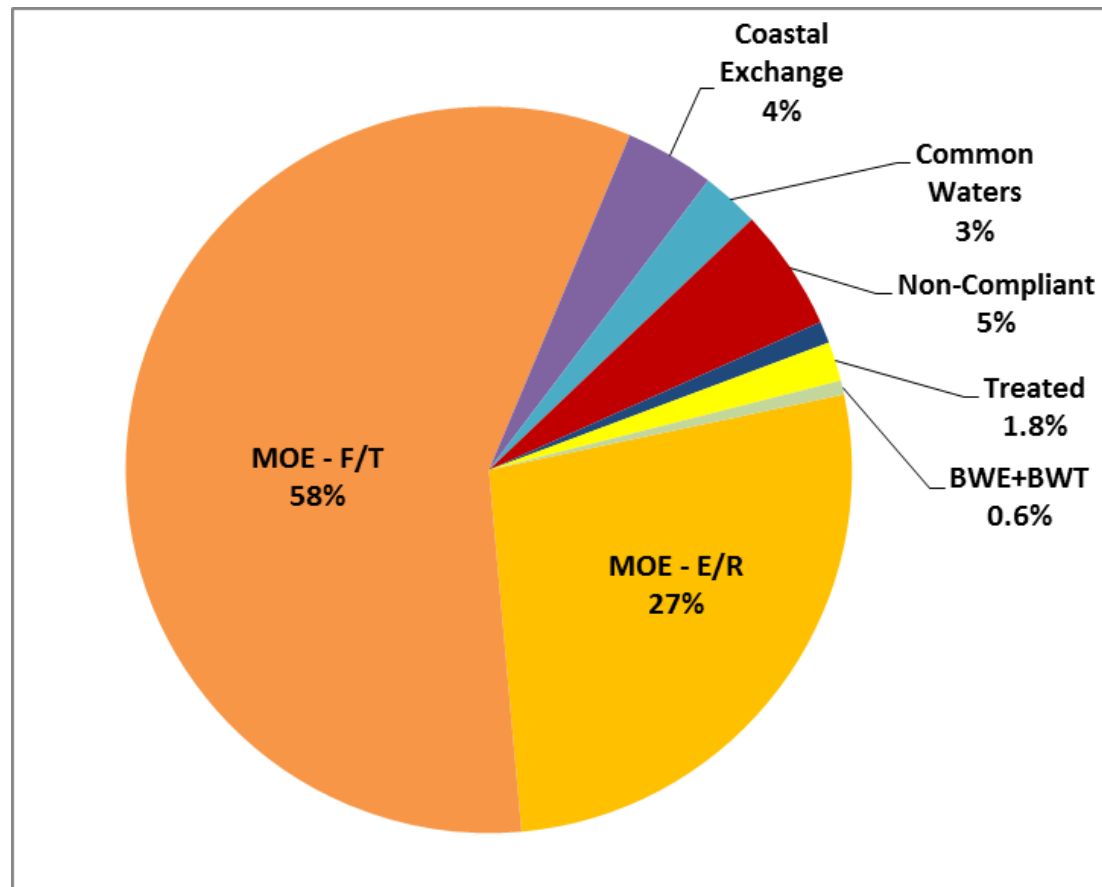
Source of Ballast Water Discharged to OR (pre-management)



Reported Ballast Management

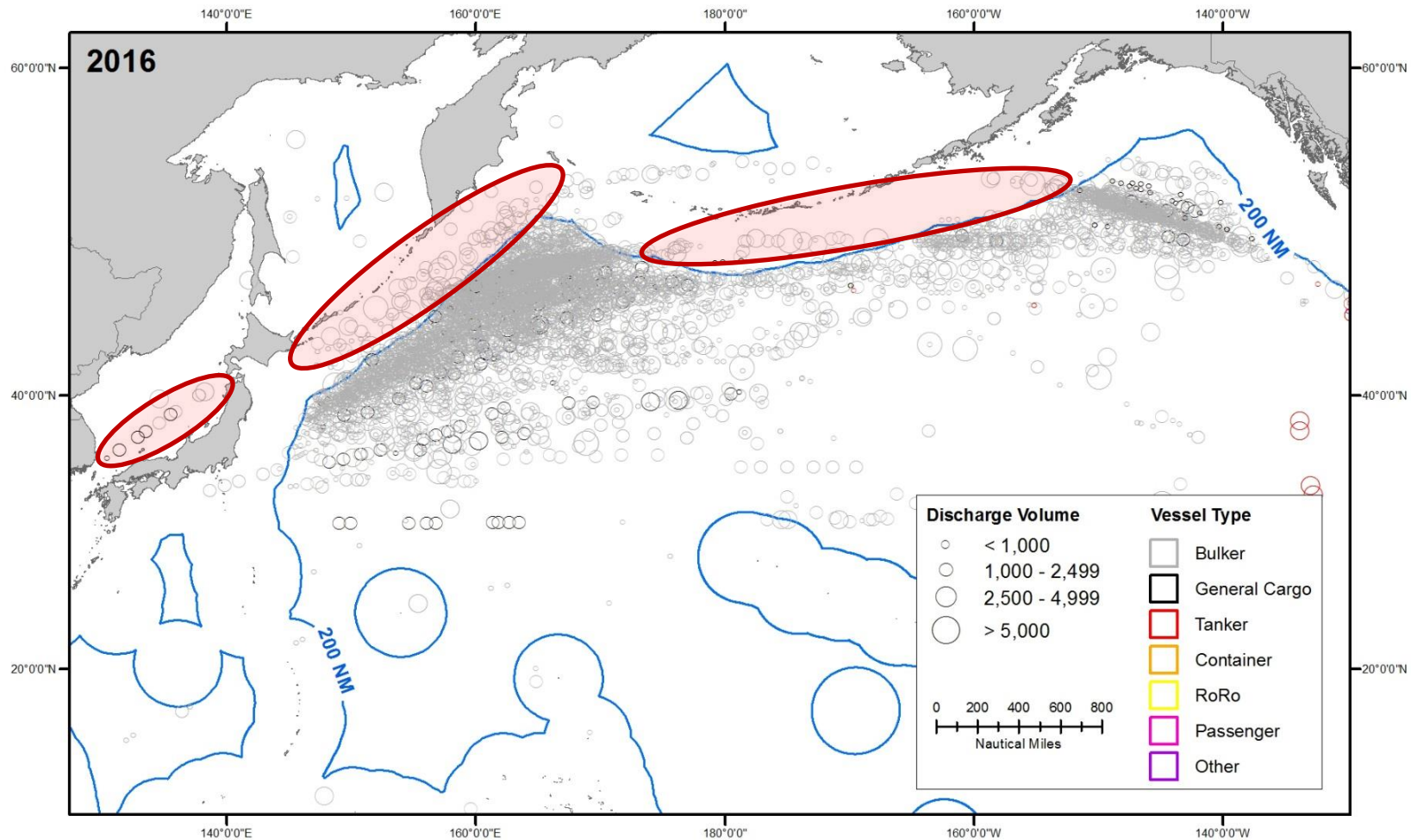
of 13.9 Million m³ discharged in 2016

~95% managed
with ballast water
exchange (BWE)



Reported Ballast Exchange

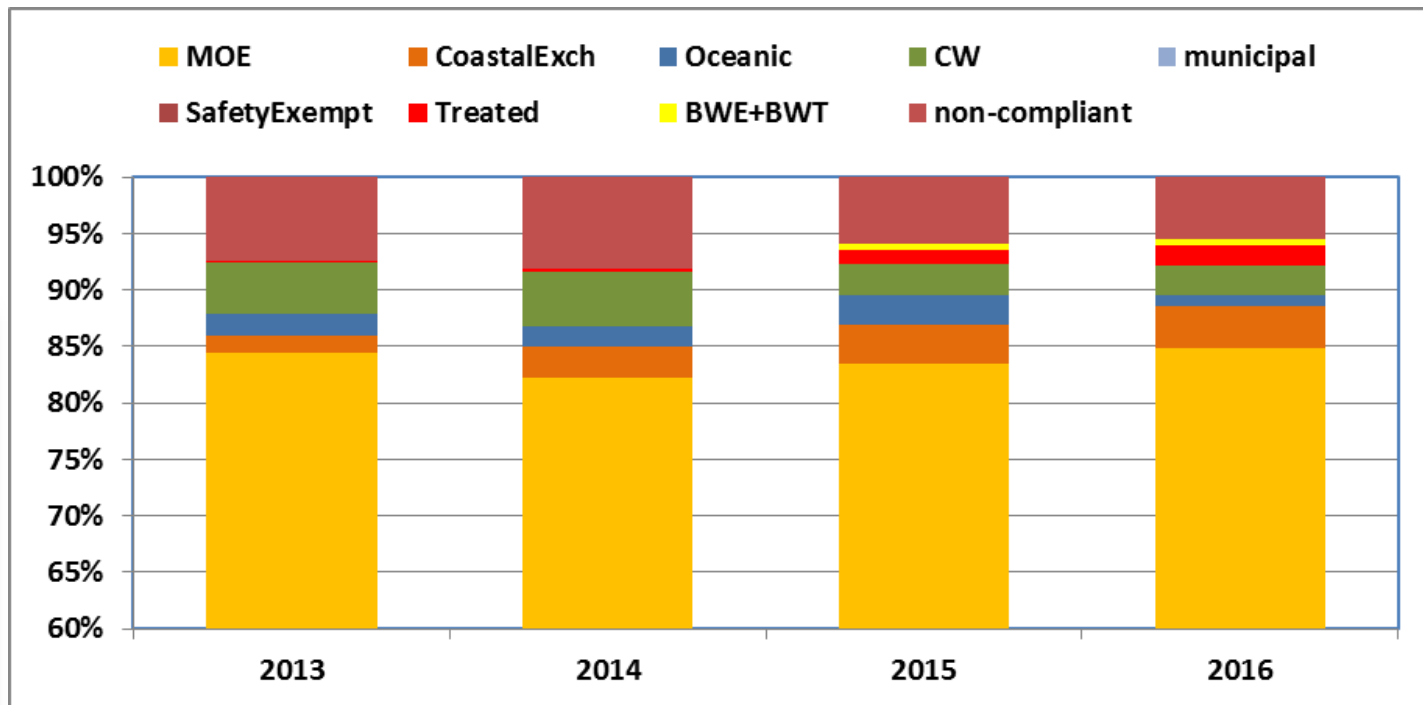
5% 'non-compliant' in 2016 (756k m³)



Reported Ballast Management Trends



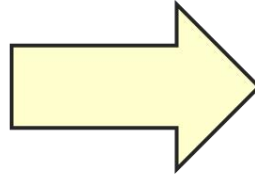
*20x increase in
treated BWD
volume in past
3 yrs.*



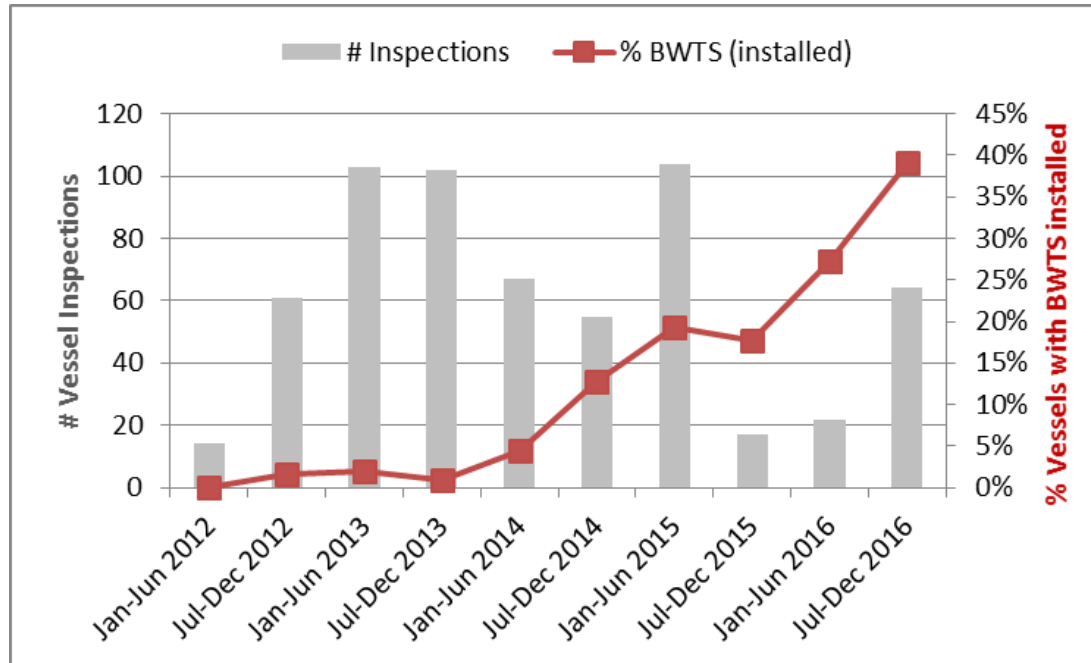
Management Shift Underway

(BWE → BWT)

Oceanic Ballast Water Exchange (BWE)

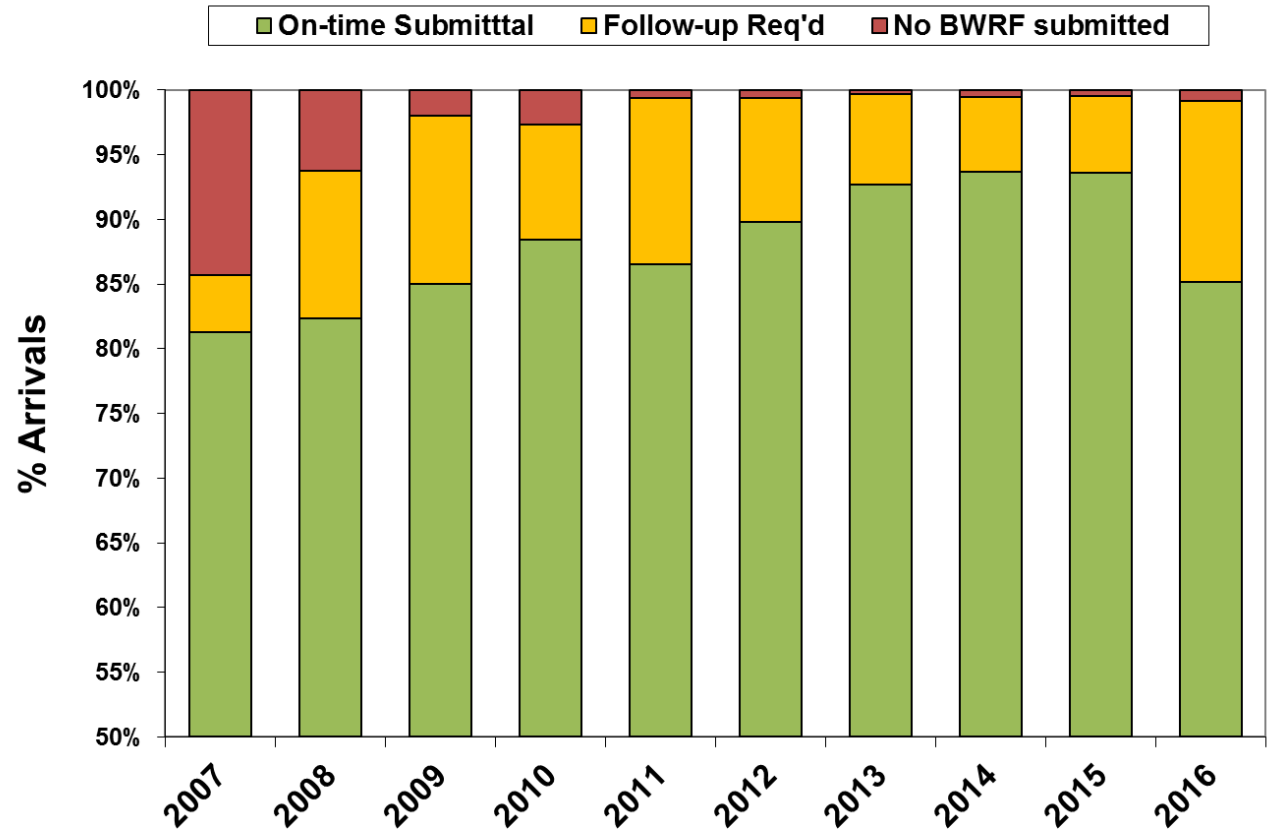


Standards limiting the number of viable organisms per unit volume (BWT)



Ballast Water Reporting Form Submittal/Compliance

*~15% of reports
submitted
incomplete or with
errors in 2016*



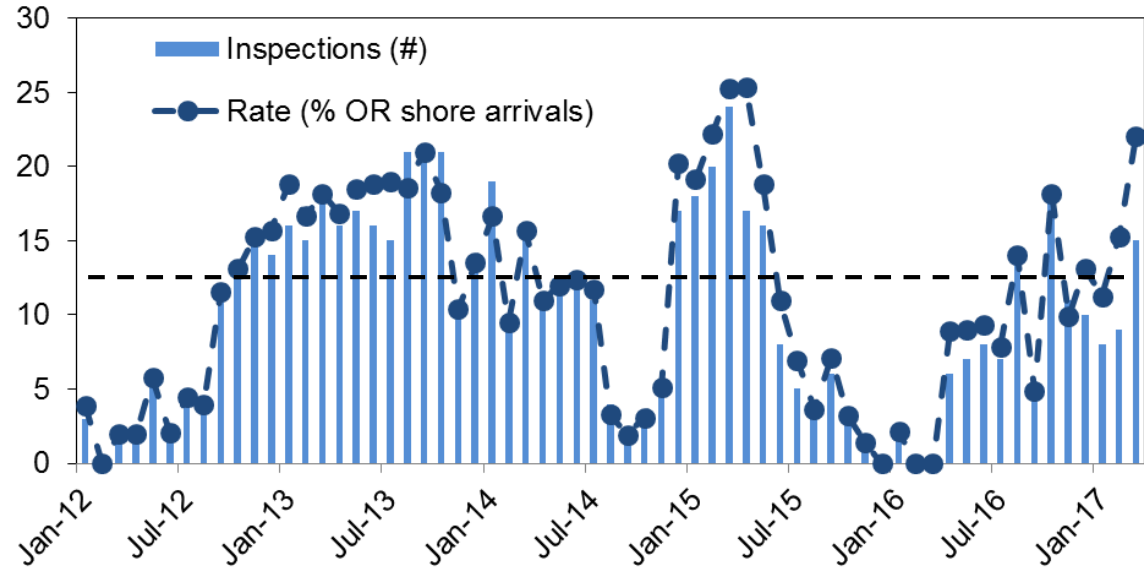
Vessel Inspections

1. Outreach & Technical Service

2. Audit of Shipboard Records

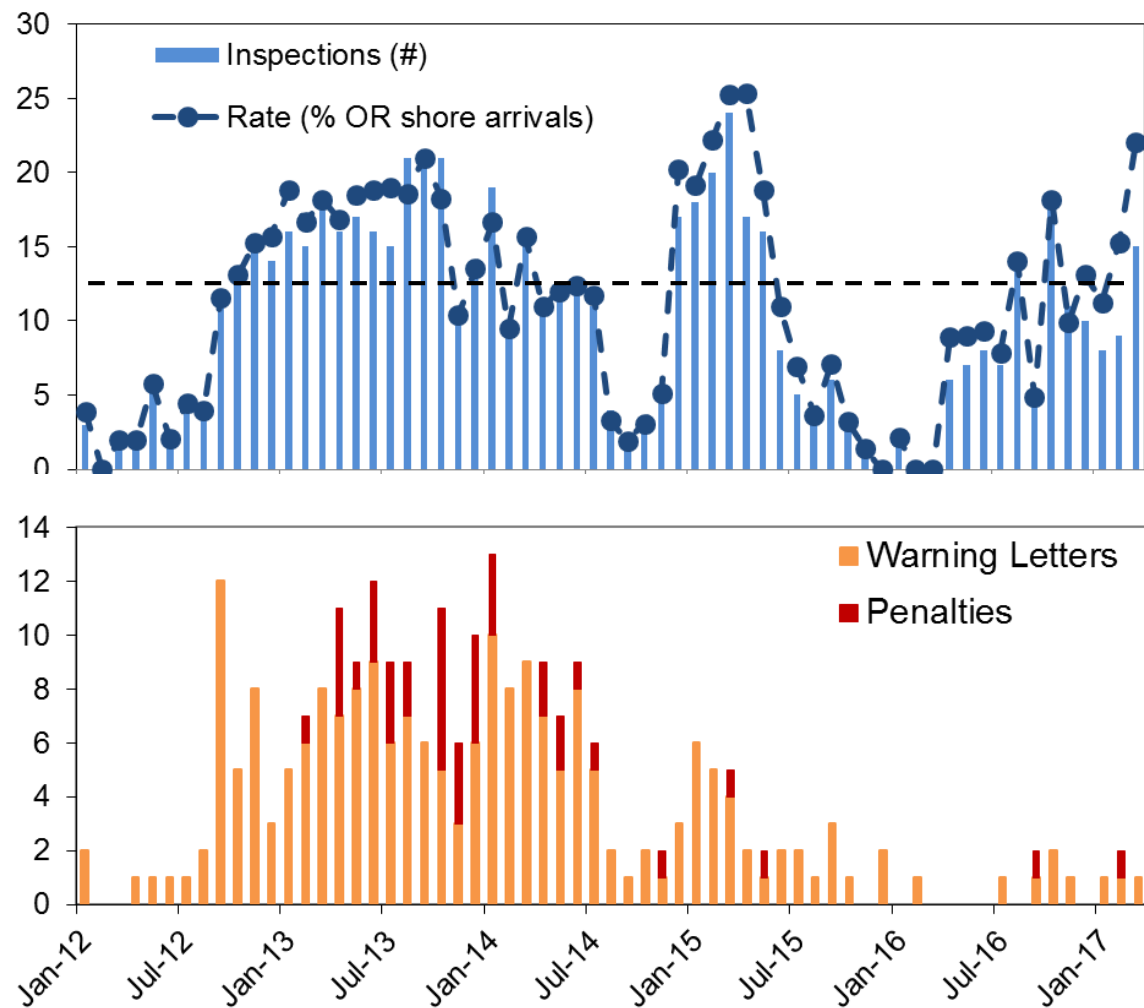
3. Compliance Verification via Sampling of Ballast water salinity

4. Assist with Corrective Action



Inspections & Enforcement Response

*Target
inspection rate:
≥ 12% arrivals
≥ 15% vessels*



'Exchange plus Treatment' (BWE+BWT)

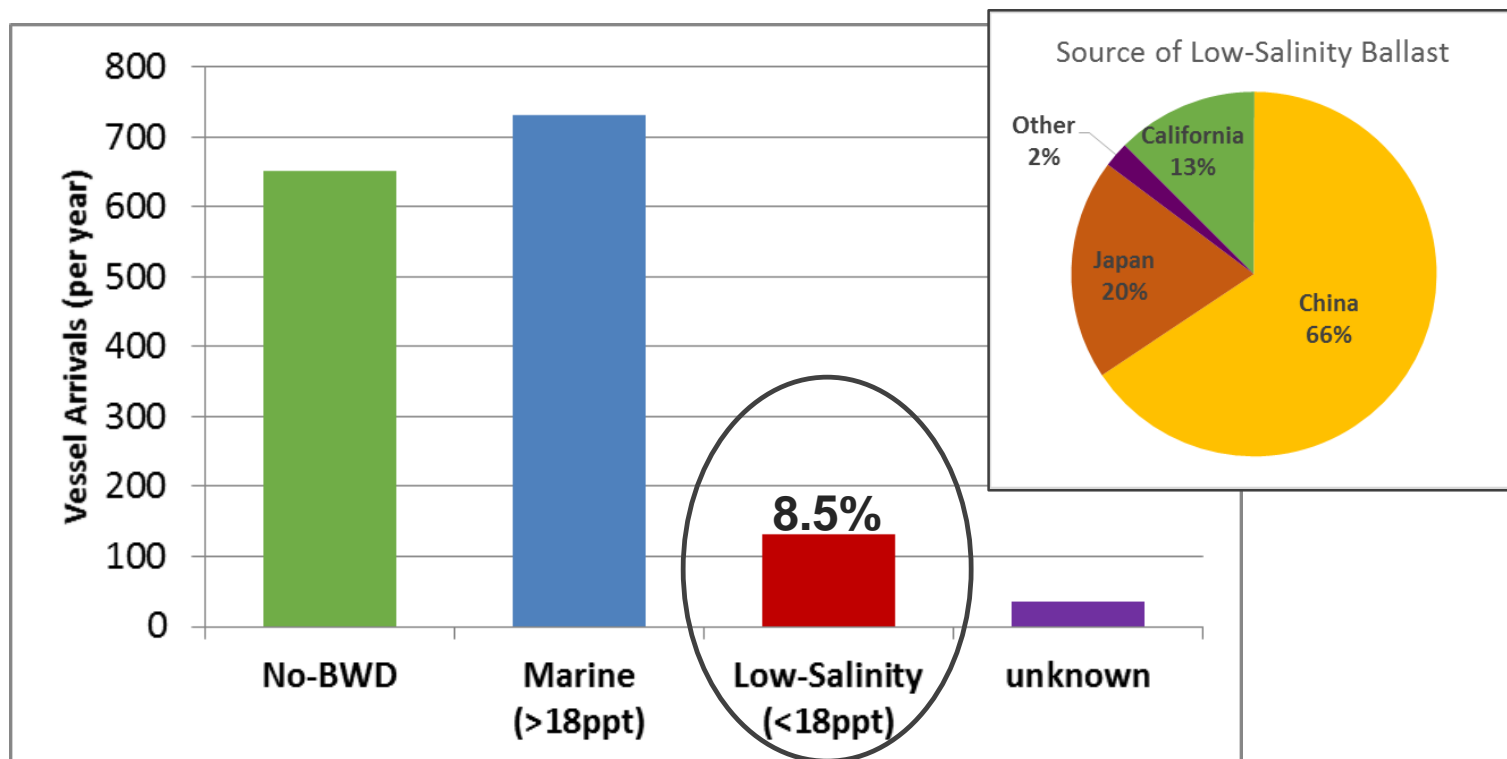
Elements of recently adopted rule (OAR 340-143-0050):



- Effective March 2017.
- Applies only to vessels discharging to low-salinity ports of Oregon (Columbia River, Coos Bay, and Yaquina Bay).
- Applies only to ballast tanks sourced with water salinity < 18 ppt.
- Exemptions included for:
 - BWT system configurations that cannot accommodate BWE with BWT.
 - Circumstances when voyage duration and BWT system configuration would not allow for adequate holding time between BWE and anticipated discharge.
 - Vessels that have invested in BWT systems that meet higher discharge standard.
- Rule set to be repealed December 2023.

'Exchange plus Treatment' (BWE+BWT)

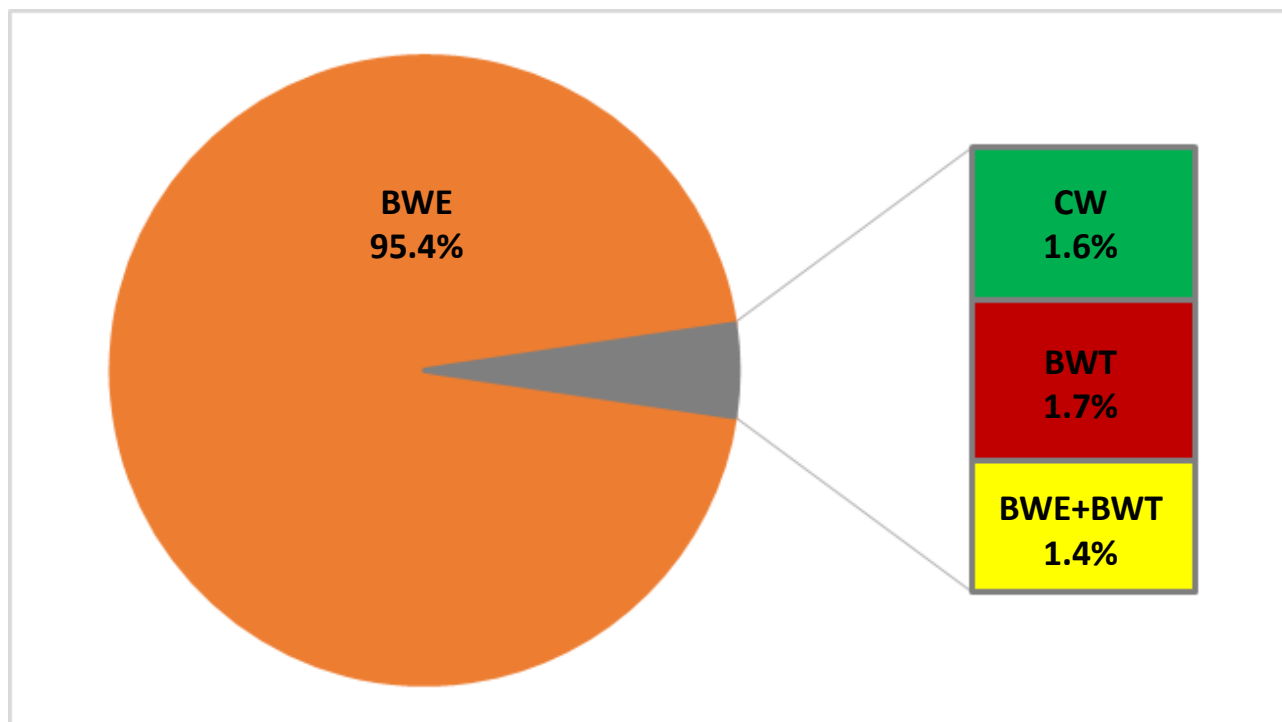
Anticipated affect of adopted rule on Oregon vessel traffic:



< 9% of vessel arrivals to state waters
(~ 135 per year) may be subject to BWE + BWT rule proposal

'Exchange plus Treatment' (BWE+BWT)

Reported BWM for March 2017:



Risk Assessment

Environmental Similarity

(source port to receiving ports)

R. P. Keller et al.

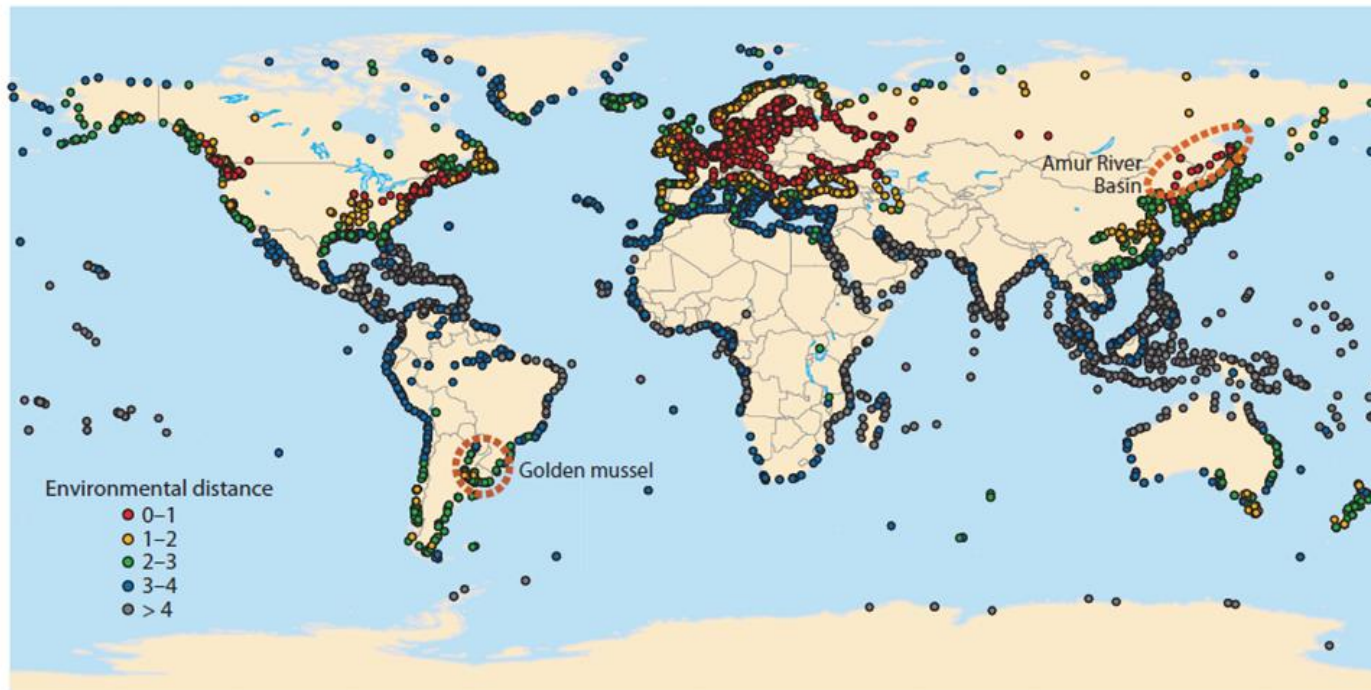


Figure 3 Environmental distance of global ports from the Greater Great Lakes Ecosystem. This index is based on salinity and temperature, with lower numbers indicating ports that are more similar. As examples of high-risk ports, the locations of South American ports invaded by the golden mussel, and ports along the Amur River, are indicated.

Risk Assessment

Environmental Distance/Similarity of Global Ports to Oregon

Example FW Ports

PCR

Sacramento, CA
Stockton, CA
Kitimat, BC

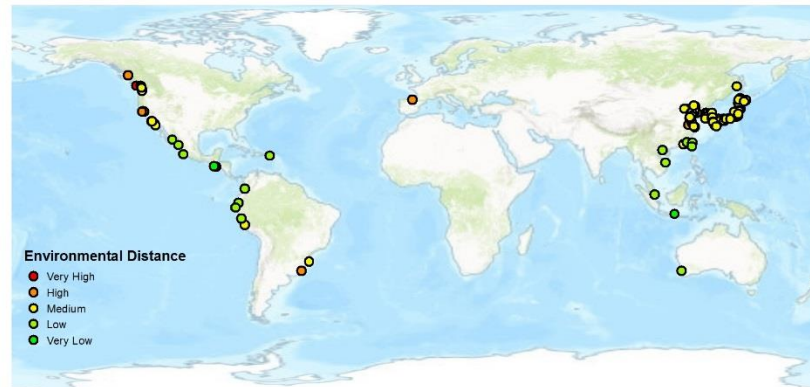
East Asia

Nantong, CHN
Taizhou, CHN
Zhangjiagang, CHN
Jiangyin, CHN
Yangzhou, CHN
Changshu, CHN
Taixing, CHN
Nanjing, CHN
Da Feng, CHN
Kagoshima, JPN
Tokyo, JPN
Chiba, JPN
Kawasaki, JPN
Masan, KOR

Other

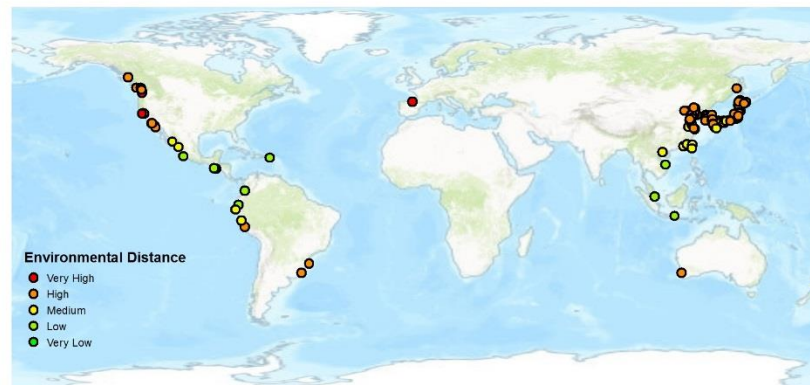
Rio Grande, BRZ

Similarity to CR Freshwater Conditions



17% Very High or High (22 of 126 ports)

Similarity to CR Estuarine Conditions



72% Very High or High (91 of 126 ports)

Example Estuarine Ports

PCR

Richmond, CA
Crockett/Pitt., CA
Fraser R., BC

East Asia

Vanino, RUS
Bayuquan, CHN
Dalian, CHN
Taicang, CHN
Longyan, CHN
Shanghai, CHN
Rizhao, CHN
Qingdao, CHN
Hachinohe, JPN
Kushiro, JPN
Kobe, JPN
Matsunaga, JPN
Donghae, KOR
Incheon, KOR
Ulsan, KOR

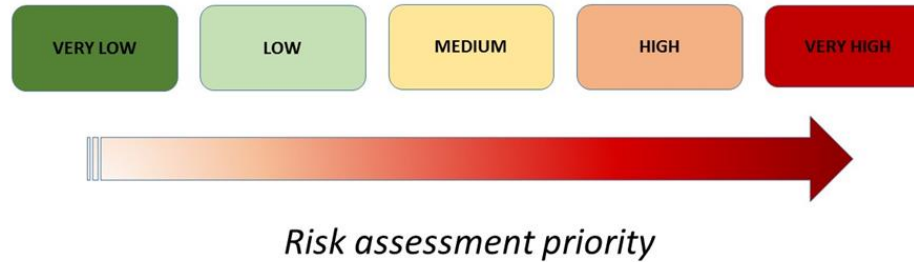
Other

Bilbao, ESP
Callao, Peru
Imbituba, BRZ
Kwinana, AUS
Tauranga, NZ

Risk Assessment

Automated Screening Tool for Vessel Arrivals

Environmental Similarity Risk Category



*Use Environmental
Similarity Risk
'Score'
&
Ballast Volume/Age
Risk 'Score' to
prioritize candidate
vessels for
inspection*

		Ballast volume risk category		
		High	Medium	Low
Ballast age risk category	High	High risk	High-Med risk	High-Low risk
	Medium	High-Med risk	Medium risk	Med-Low risk
	Low	High-Low risk	Med-Low risk	Low risk

Oregon Ballast Management and Invasive Species Prevention

Questions or Comments?



DEQ BW Program webpage:

<http://www.deq.state.or.us/lq/cu/emergency/ballast.htm>