The First Year of Implementing Biofouling Management Regulations:
What Have We Learned and What's Next?

Pacific Ballast Water Group – Vallejo, CA | April 3, 2019

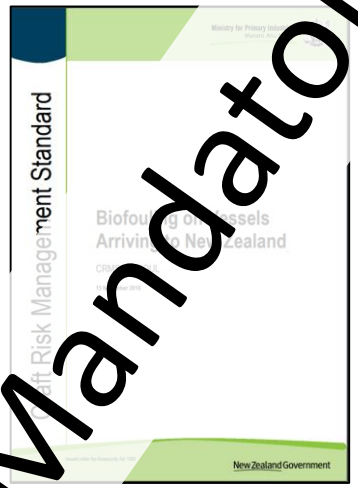
Chris Scianni
CALIFORNIA STATE LANDS COMMISSION

New Regulatory Regime:
Biofouling Management

IMO

Voluntary

Ministry for Primary Industries
Manatū Ahu Matua



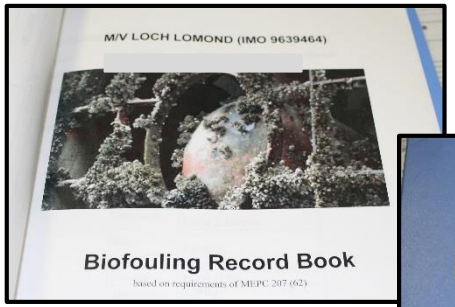
Mandatory

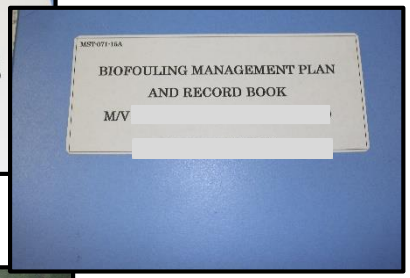
Mandatory

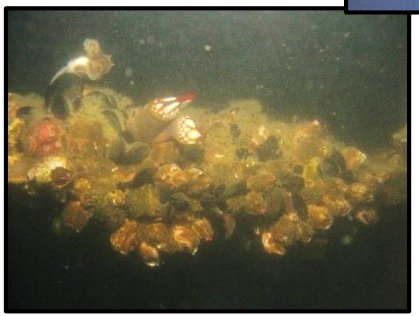
Theme: Steep learning curves all around

California's Biofouling Management Regulations

- Biofouling Management Plan and Biofouling Record Book
  - *International consistency*
- Annual Vessel Reporting Form
- Biofouling management for wetted surfaces
  - Hull and niche areas
- Extended residency periods
- Alternatives and safety exemptions







California's Biofouling Management Regulations

Theme: Steep learning curves all around

60-Day Grace Period
(no violation)

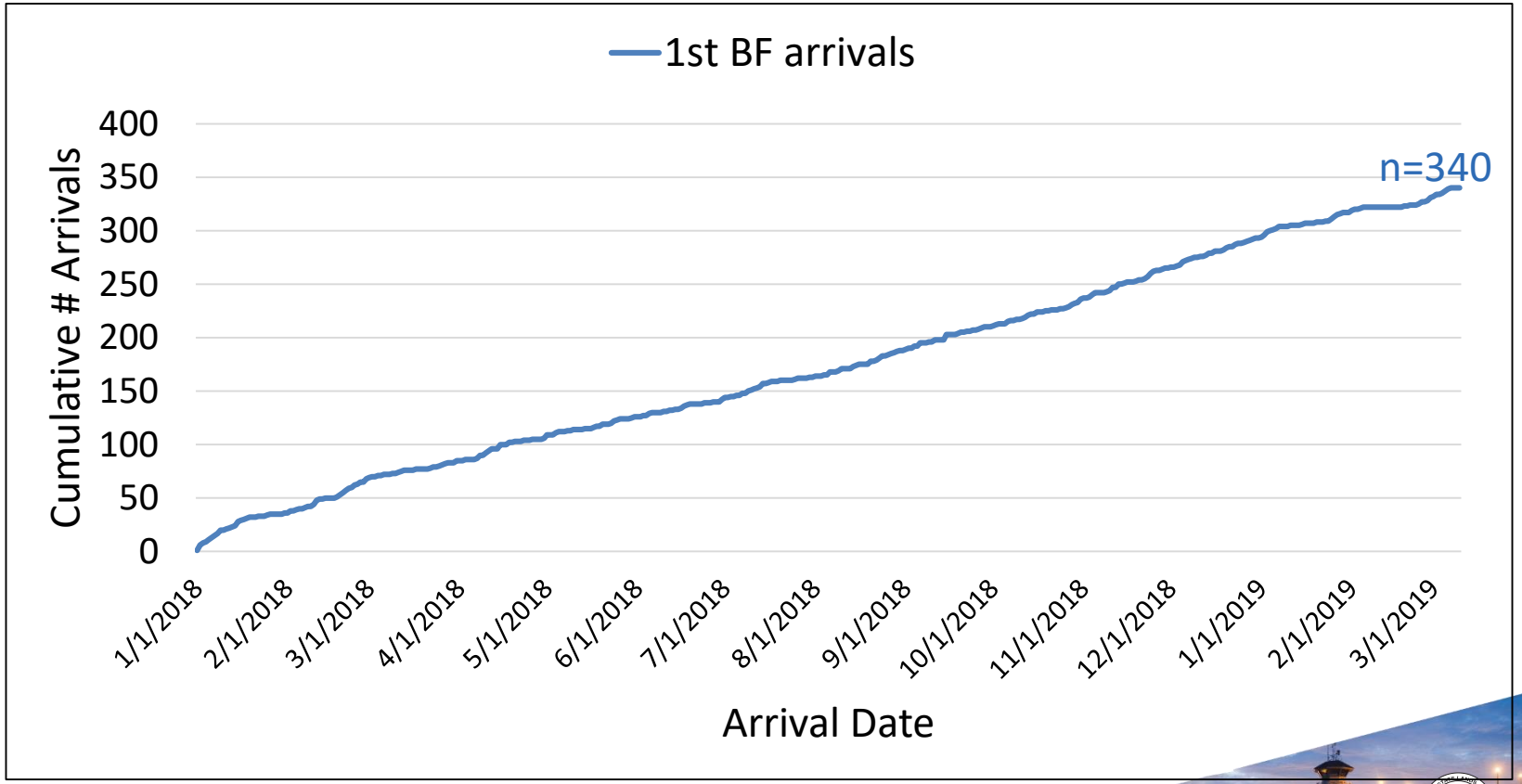
Implementation

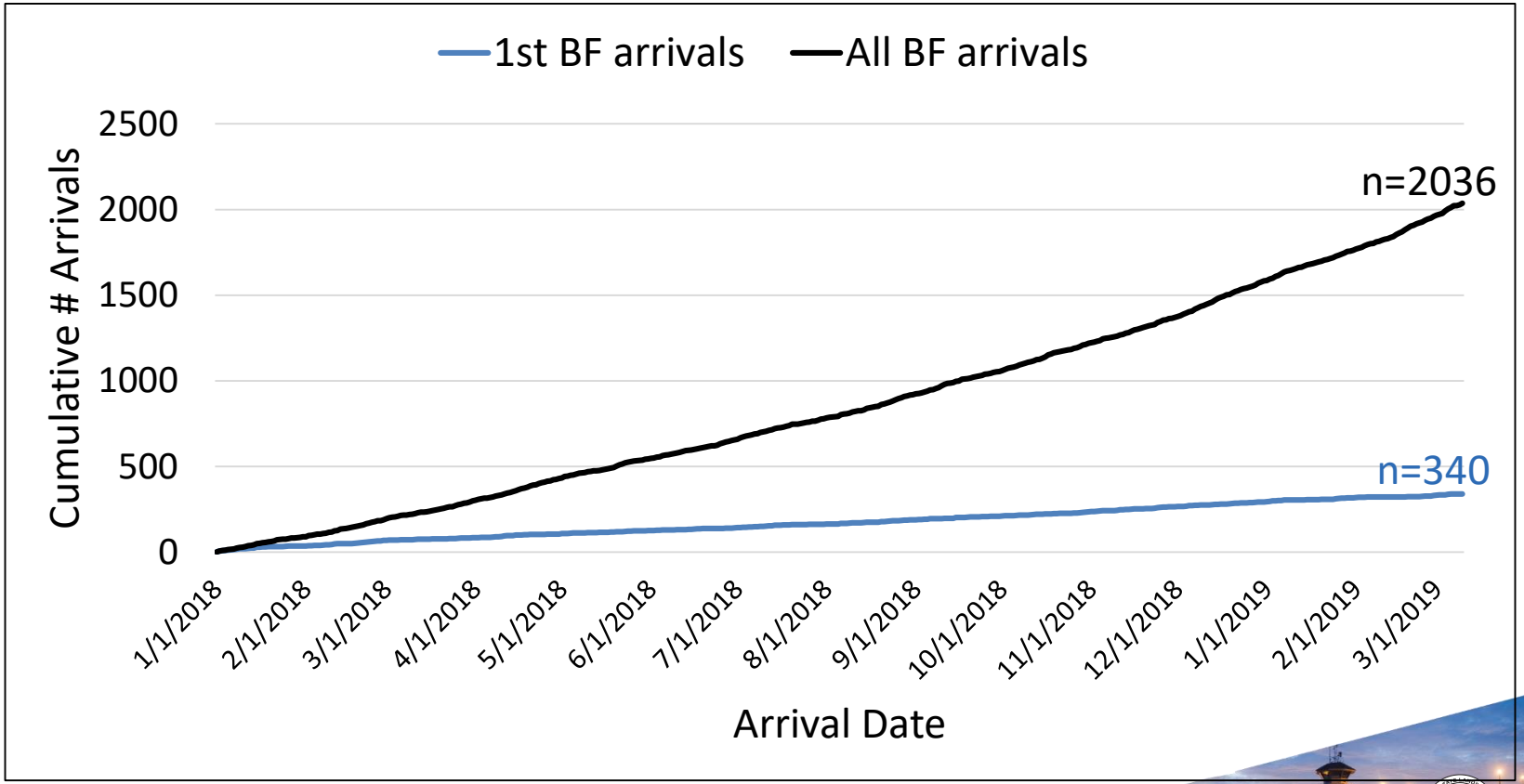
1 October 2017: Annual Vessel Reporting Form

1 January 2018: Remainder of the regulations became effective

- Phased-in implementation based on:
  - Regularly scheduled dry docking (or delivery) on or after 1 January 2018

- Why phased-in?
  - Effective biofouling management is dependent on Biofouling Management Plans and preventive practices best implemented in dry dock


1st BF arrivals
Cumulative # Arrivals
400
350
300
250
200
150
100
50
0
n=340
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018
8/1/2018
9/1/2018
10/1/2018
11/1/2018
12/1/2018
1/1/2019
2/1/2019
3/1/2019
Arrival Date


1st BF arrivals
All BF arrivals
Cumulative # Arrivals
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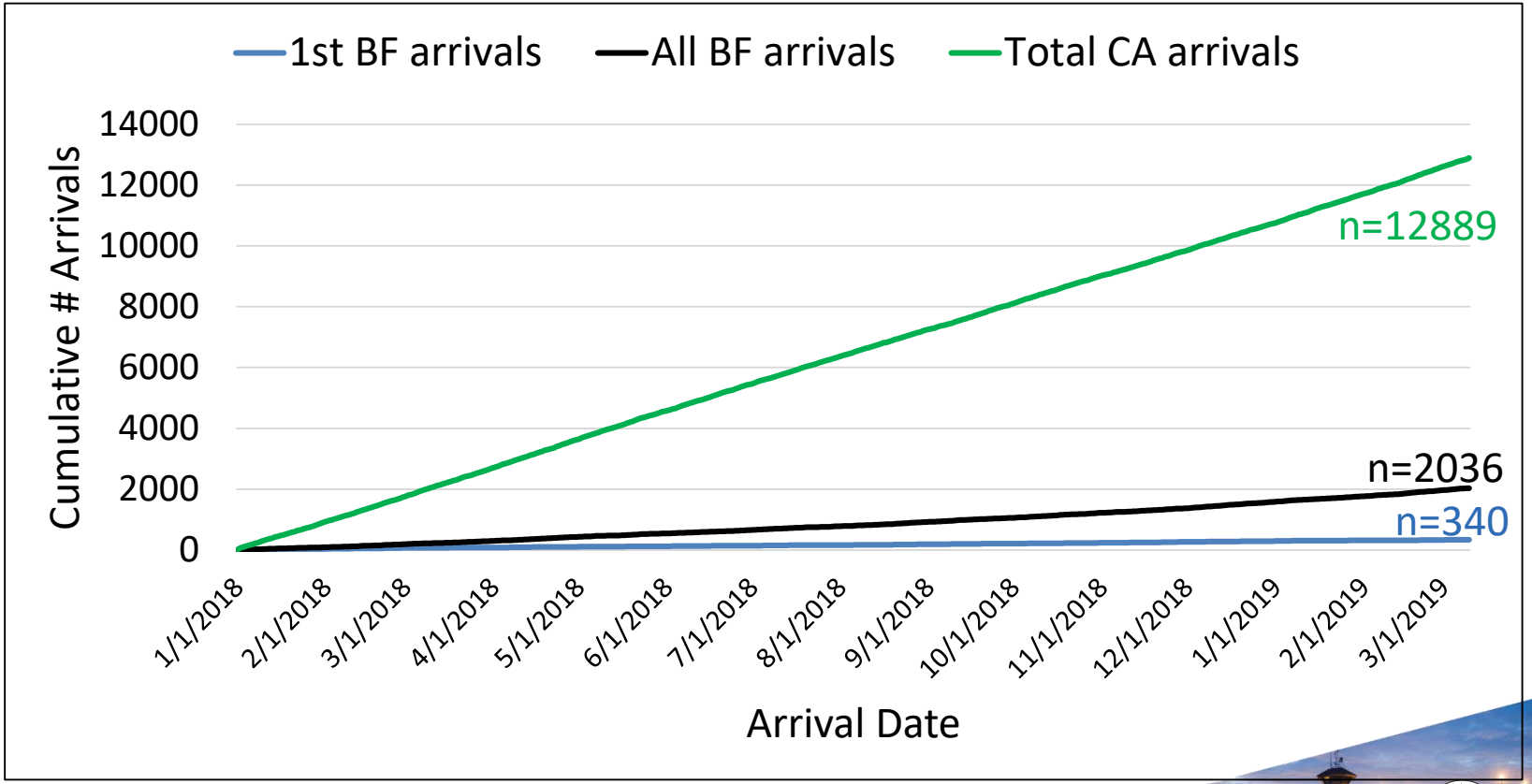
2000
1500
1000
500
0
n=2036
n=340
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018
8/1/2018
9/1/2018
10/1/2018
11/1/2018
12/1/2018
1/1/2019
2/1/2019
3/1/2019
Arrival Date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All BF arrivals
Total CA arrivals
Cumulative # Arrivals
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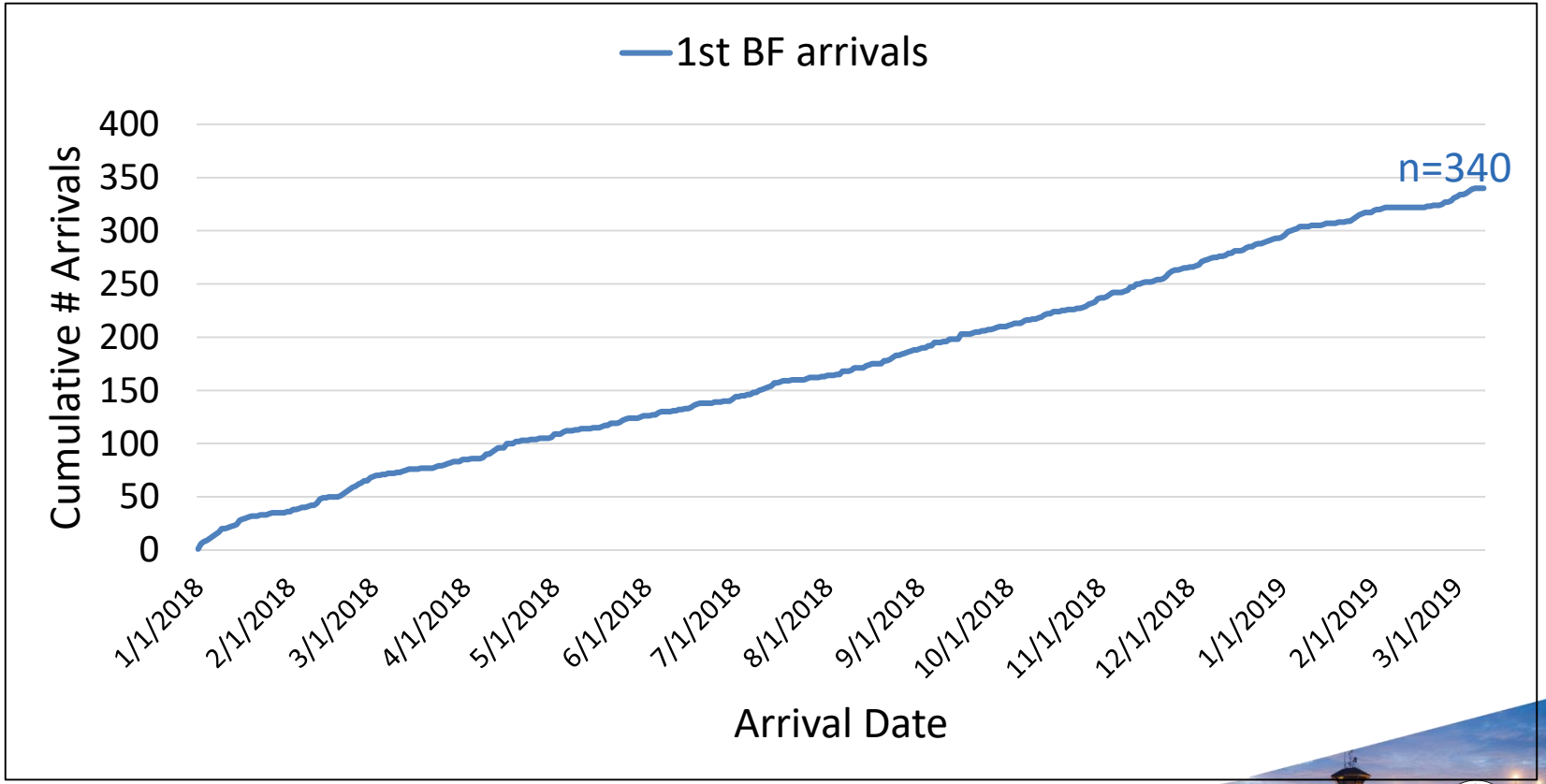
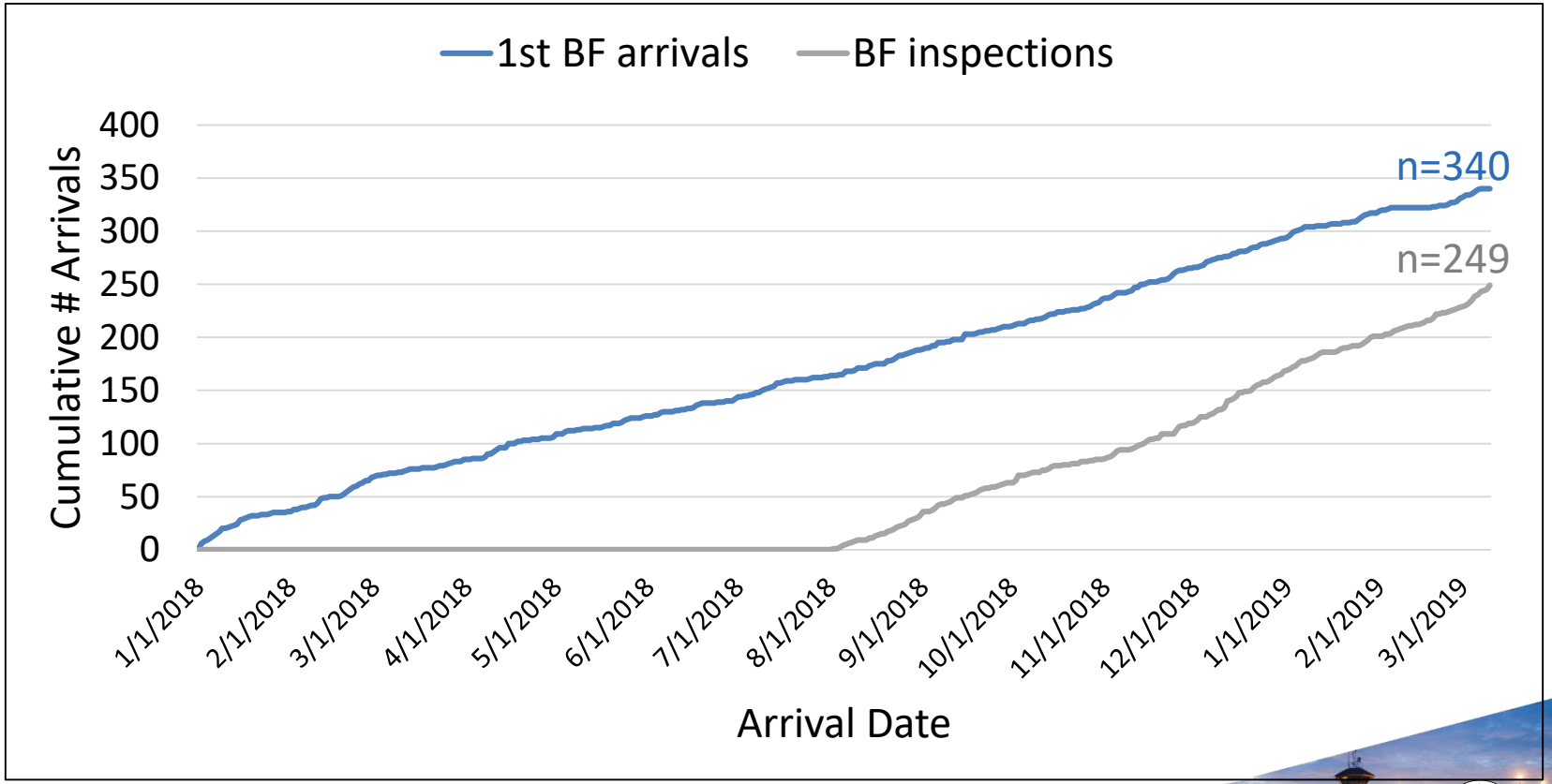
12000
10000
8000
6000
4000
2000
0
n=12889
n=2036
n=340
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018
8/1/2018
9/1/2018
10/1/2018
11/1/2018
12/1/2018
1/1/2019
2/1/2019
3/1/2019
Arrival Date

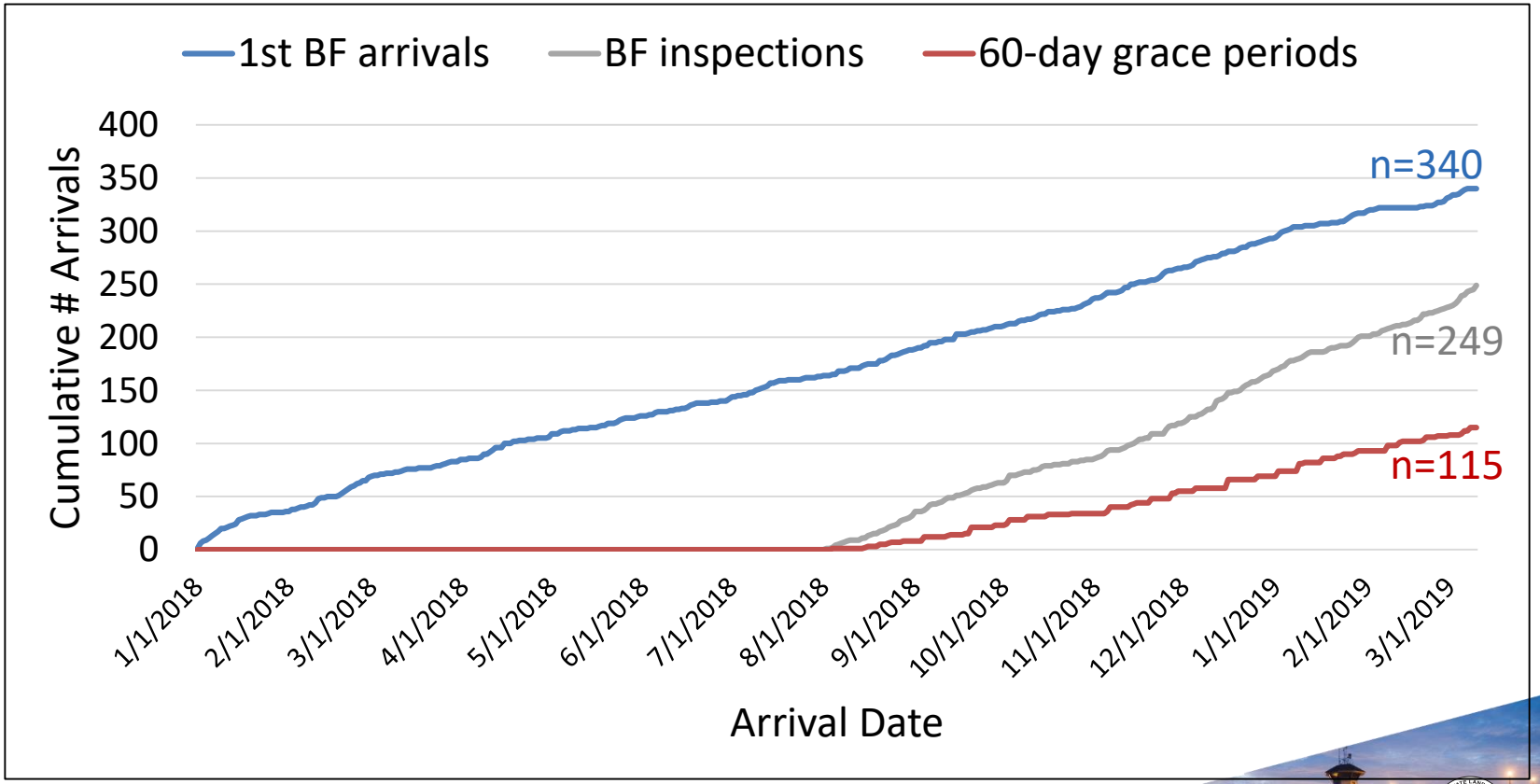
How are California Biofouling Regulations Being Implemented Across the Fleet?

Inspections

- What are we seeing?
- How often are we issuing 60-day grace periods?
- How steep is the learning curve?


1st BF arrivals
Cumulative # Arrivals
400
350
300
250
200
150
100
50
0
n=340
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018
8/1/2018
9/1/2018
10/1/2018
11/1/2018
12/1/2018
1/1/2019
2/1/2019
3/1/2019
Arrival Date


1st BF arrivals
BF inspections
Cumulative # Arrivals
400
350
300
250
200
150
100
50
0
n=340
n=249
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018
8/1/2018
9/1/2018
10/1/2018
11/1/2018
12/1/2018
1/1/2019
2/1/2019
3/1/2019
Arrival Date

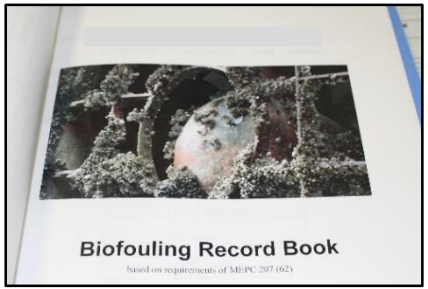

1st BF arrivals
BF inspections
60-day grace periods
Cumulative # Arrivals
400
350
300
250
200
150
100
50
0
n=340
n=249
n=115
1/1/2018
2/1/2018
3/1/2018
4/1/2018
5/1/2018
6/1/2018
7/1/2018
8/1/2018
9/1/2018
10/1/2018
11/1/2018
12/1/2018
1/1/2019
2/1/2019
3/1/2019
Arrival Date

Reasons for 60-Day Grace Periods (115 total)

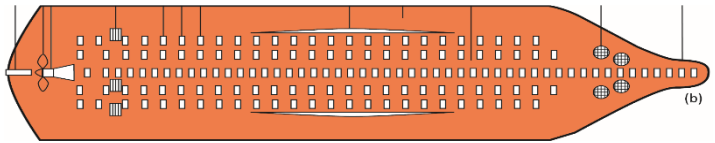
- Missing Expected Coating Lifespan
  - 70% of 60d periods

A/F thicknesses shown for vessel trading at approx. 12 knots sailing approx. 237 days per year (65%) for 60 months under normal trading conditions in an average seawater temperature of approx. 25 °c and assumes the existing coatings are in a sound condition

- Missing BFMP and/or BFRB
  - 43% of 60d periods

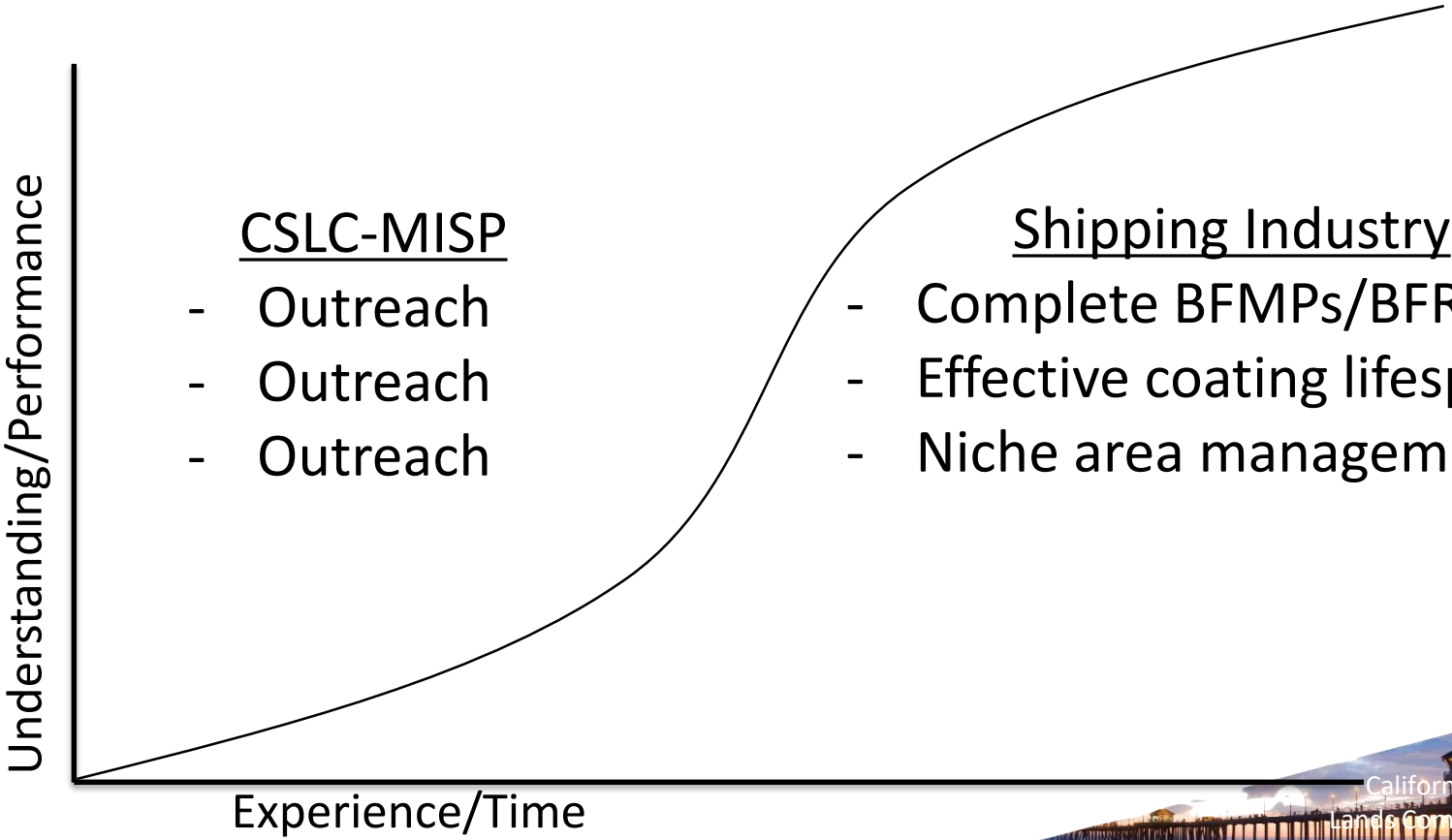


- Missing niche area descriptions
  - 14% of 60d periods



Davidson et al. 2016 [Biofouling 32(4): 411-428]

Learning Curve



CSLC-MISP

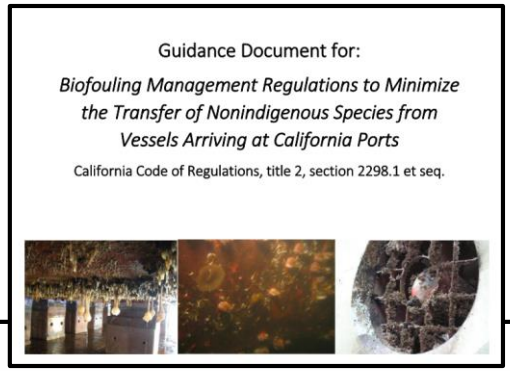
- Outreach
- Outreach
- Outreach

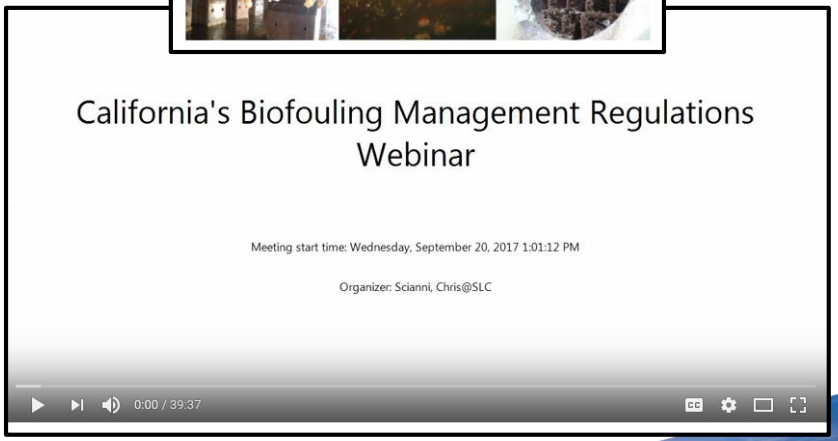
Shipping Industry

- Complete BFMPs/BFRBs
- Effective coating lifespans
- Niche area management

Outreach: What Have We Already Done?

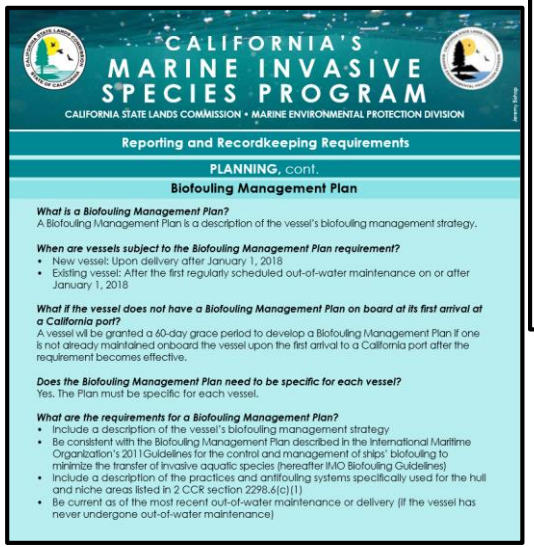
- Guidance Document: http://www.slc.ca.gov/Programs/MISP/4_8_GuidanceDoc.pdf
  - Summary, FAQ, Example Biofouling Management Plan
- Webinar: https://www.youtube.com/watch?v=4r6Bi3Bfolc&feature=youtu.be
- Customer Service Meetings:
  - Southern and Northern CA
  - Shipping agents





Outreach: What Have We Already Done?

- Information sheets
  - Vessel crews
  - Management requirements: http://www.slc.ca.gov/Programs/MISP/InfoShts/BiofoulingBallastWater_Management.pdf
  - Reporting and Recordkeeping: http://www.slc.ca.gov/Programs/MISP/InfoShts/Reporting_RecordKeeping.pdf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Reporting and Recordkeeping Requirements

PLANNING, cont.

Biofouling Management Plan

What is a Biofouling Management Plan?
A Biofouling Management Plan is a description of the vessel's biofouling management strategy.

When are vessels subject to the Biofouling Management Plan requirement?
- New vessel: Upon delivery after January 1, 2018
- Existing vessel: After the first regularly scheduled out-of-water maintenance on or after January 1, 2018

What if the vessel does not have a Biofouling Management Plan on board at its first arrival at a California port?
A vessel will be granted a 60-day grace period to develop a Biofouling Management Plan if one is not already maintained onboard the vessel upon the first arrival to a California port after the requirement becomes effective.

Does the Biofouling Management Plan need to be specific for each vessel?
Yes. The Plan must be specific for each vessel.

What are the requirements for a Biofouling Management Plan?
- Include a description of the vessel's biofouling management strategy
- Be consistent with the Biofouling Management Plan described in the International Maritime Organization's 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (hereafter IMO Biofouling Guidelines)
- Include a description of the practices and antifouling systems specifically used for the hull and niche areas listed in 2 CCR section 2298.6(c)(1)
- Be current as of the most recent out-of-water maintenance or delivery (if the vessel has never undergone out-of-water maintenance)


CALIFORNIA'S MARINE INVASIVE SPECIES PROGRAM

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California's Management Requirements for Ballast Water and Biofouling

Niche Area Management

What are niche areas?

Niche areas are hotspots for extensive communities of biofouling organisms. Niche areas that need to be managed include: Sea chests, sea chest gratings, bow and stern thrusters, bow and stern thruster gratings, fin stabilizers and recesses, out-of-water support strips, propellers and propeller shafts, and rudders.

How must biofouling in niche areas be managed?

Biofouling in the niche areas (see list above) must be managed using one or more practices that are appropriate for the vessel and its operational profile as determined by the owner, operator, master, or person in charge of the vessel. Niche area management practices must be described in the Biofouling Management Plan and completed actions must be documented in the Biofouling Record Book.

Figure 1. Vessel Niche Areas that are required to be managed.

Requirement for Vessels that Experience Extended Residency Periods

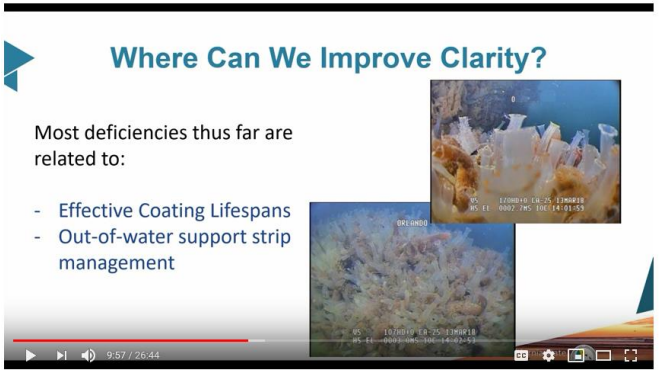
What is an Extended Residency Period?

Outreach: How to Address Gaps?

What were we missing?

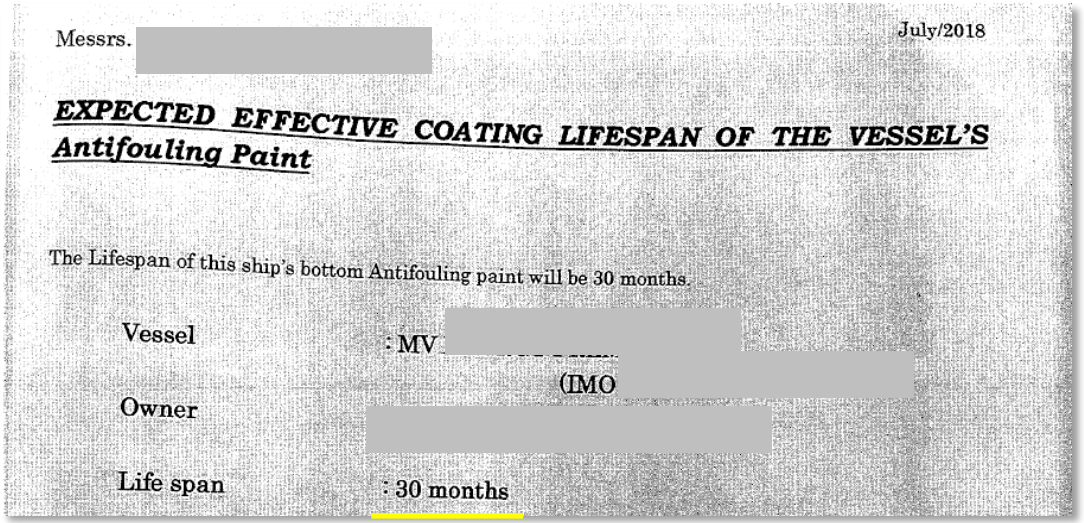
- Outreach to Vessel ownership/management
- Crews aren't the ones developing Biofouling Management Plans

https://www.youtube.com/watch?v=CpRjRNED8yM&t=7s



Is Expanded Outreach Working?

# Vessels arriving after grace period expired	39
- Compliant	38
- Noncompliant	1



Messrs. [redacted] July/2018

EXPECTED EFFECTIVE COATING LIFESPAN OF THE VESSEL'S Antifouling Paint

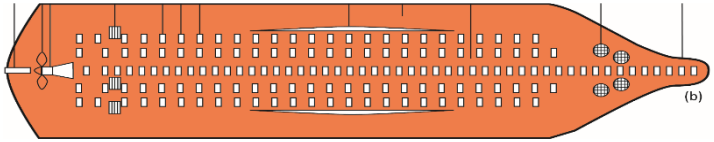
The Lifespan of this ship's bottom Antifouling paint will be 30 months.

Vessel : MV [redacted]

(IMO [redacted]

Owner [redacted]

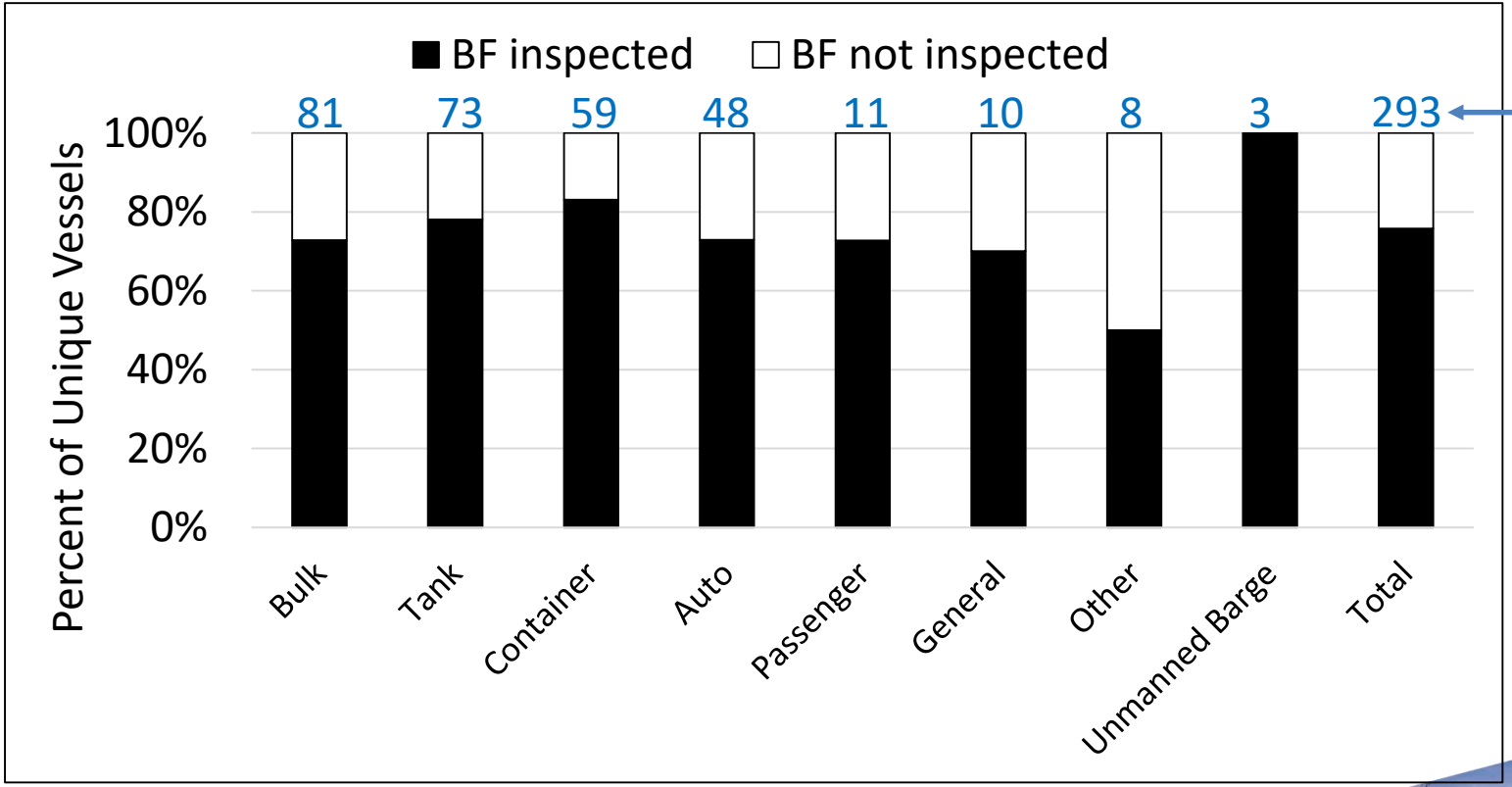
Life span : 30 months



Davidson et al. 2016 [Biofouling 32(4): 411-428]

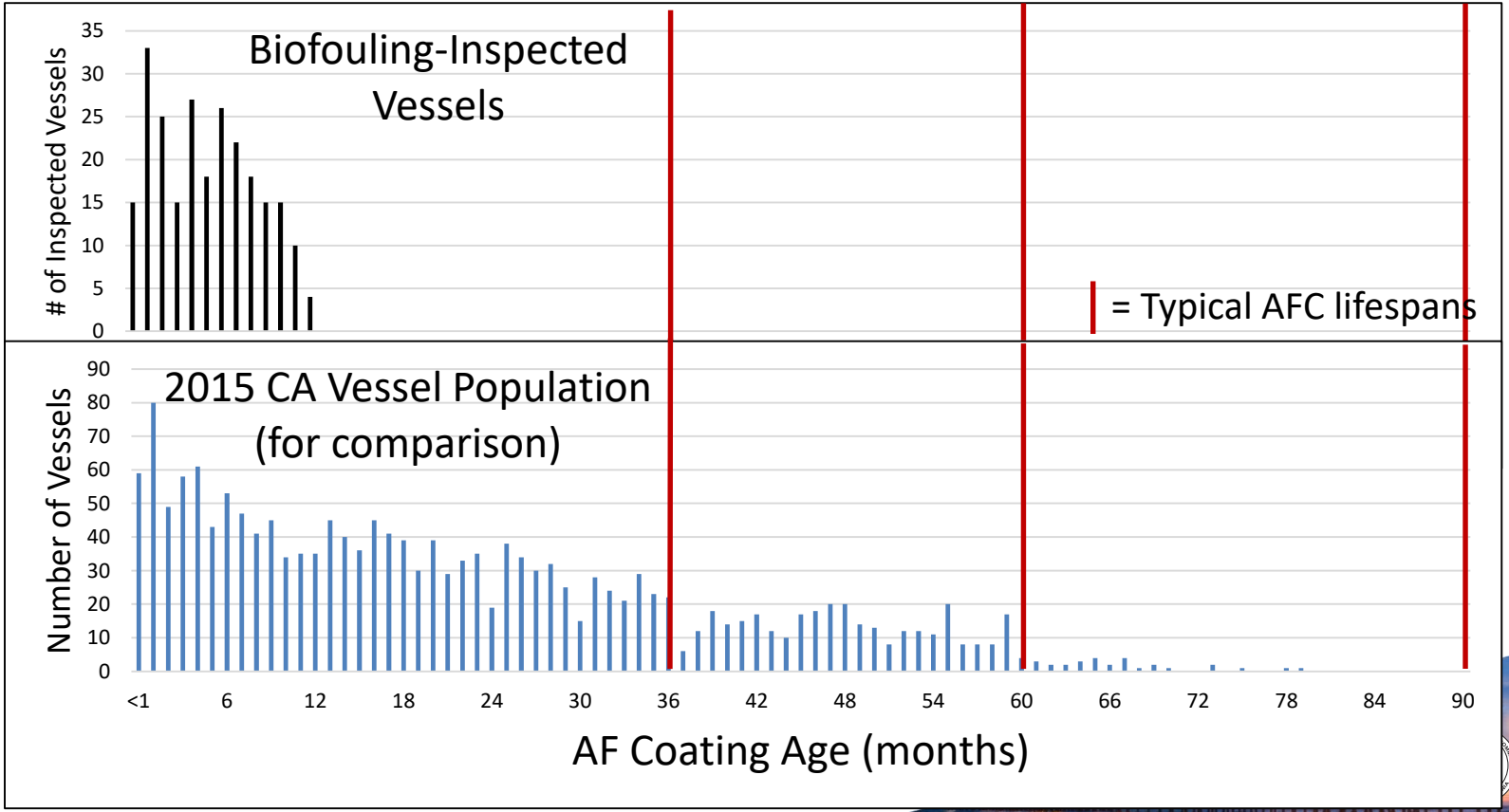
Inspected Vessel Population: Background Data

Inspected Vessel Population

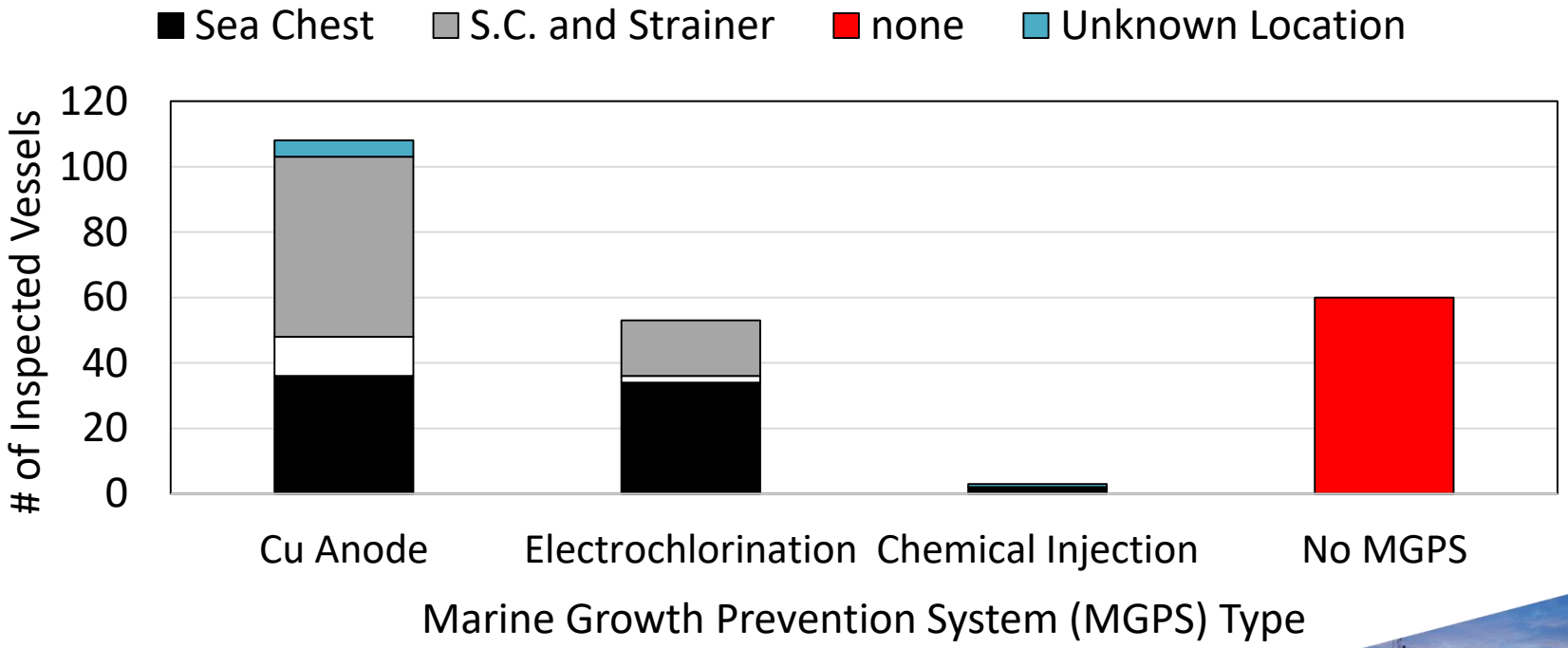


- Arrivals between 08/1/18 and 03/10/2019

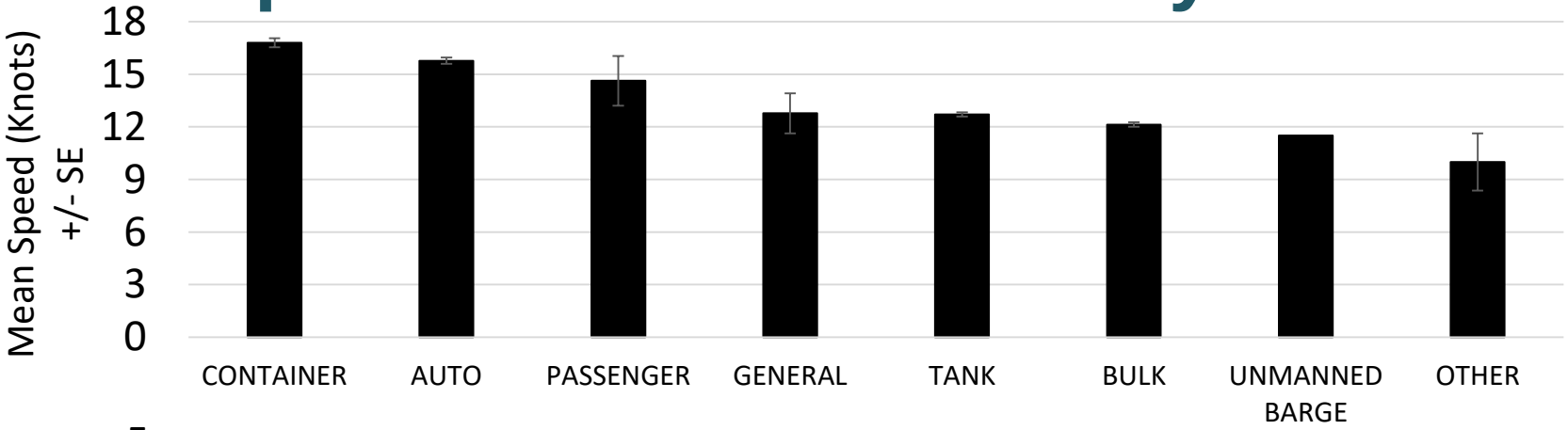
Inspected Vessel Population: Coating Age

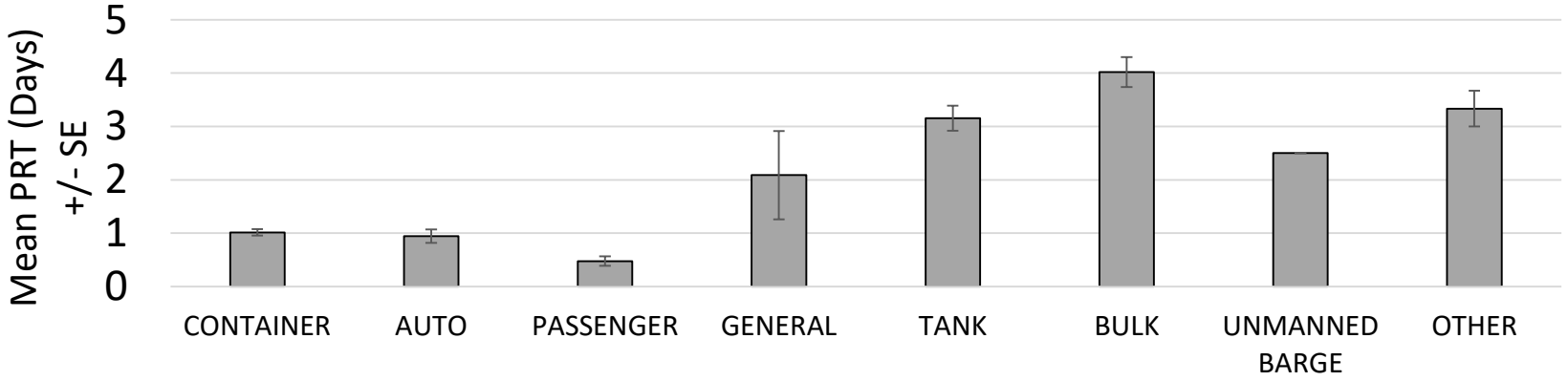


Inspected Vessel Population: Marine Growth Prevention System Use



Inspected Vessel Population: Speed and Port Residency Time





Inspected Vessel Population: Long Residency Periods

		Number of Residency Periods per Duration			
	Inspected Population	10-19.9 days	20-29.9 days	30-39.9 days	40+ days
Auto	34	1	0	0	0
Bulk	57	38	3	1	0
Container	54	8	3	0	1
General	5	2	0	0	0
Other	4	1	2	1	2
Passenger	8	0	0	1	0
Tank	61	44	6	1	3
Unmanned Barge	1	1	0	0	0

Inspected Vessel Population: Waterline Evaluation

	Clean	Green	Animals
			
n =	169	1	1

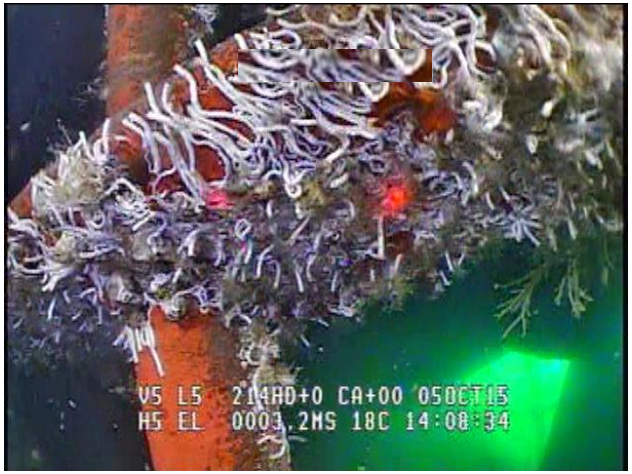
Next Steps

- Summer intern project
  - Deeper dive into Biofouling Management Plan data
  - Pair with ROV surveys

- Continue Outreach

- Implement weighted risk assessment for prioritization

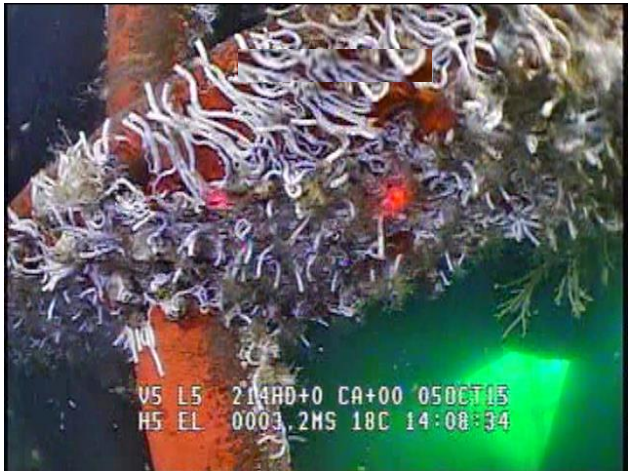
- Data comparison with New Zealand



Lessons Learned

Different paradigm than ballast water

- Ballast Water:
  - Crew is responsible for BW Management actions
- Biofouling
  - Ownership/management is responsible for developing BF Management Plan



www.slc.ca.gov

THANK YOU & QUESTIONS

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California State Lands Commission