Antifouling coatings used on vessels arriving at California ports.
Biofouling

- Well known for quite sometime, but not until recently studied as a vector for nonindigenous species (NIS) introductions.

- Responsible for up to 60% of currently established NIS in California’s coastal and estuarine waters (Ruiz et al. 2011).
Economic Incentive

Fouled Hull

Clean Hull

Vessel Biofouling ➔ Drag ➔ $$$

Through Antifouling Coatings
Treatment Technologies

- 56 Alternate Management Systems
- About 320 different antifouling coatings on ships arriving since 2008
Why so many coatings?

REVIEW

Mini-review: Assessing the drivers of ship biofouling management – aligning industry and biosecurity goals

Ian Davidson*, Christopher Scianni*, Chad Hewitt*, Richard Everett*, Eric Holm*, Mario Tamburri† and Gregory Ruiz*
California Hull Husbandry Reporting Form (HHRF)

- Eleven question form on overall hull husbandry practices
- Questions specific to the type of coating used, date of application and area of application
- Submitted Annually
- Form currently due 60 days after Commission’s request that is triggered by the vessel’s first arrival
The percentages indicate total HHRF Submission compliance.
Coating Age

- On average 35% of vessels have coatings that are less than a year old.
- About 63% of the vessel in CA have coatings that are less than 2 years old.
Different Antifouling Coatings

- About 87% of vessels use biocidal coatings
- About 3% use both biocidal and Fouling Release

Note: FR = Fouling Release
Biocides

- On Average 90% of the vessels that use biocidal coatings are using Cu as a biocide (Cu only + Cu and Zn)
Risk Assessment

- Vessels with expired coatings
  - In 2012, 284 arrivals
  - In 2013, 211 arrivals
Next Steps

- Analyzing the antifouling coatings data for 2014 and 2015
- Completing the data set for the effective speeds and effective ages
- Begin assessing risk ahead of the vessel’s arrival and prioritizing inspections based on the level of risk.
- More outreach
Thank you!

Raya.Nedelcheva@slc.ca.gov