

HAWAII INVASIVE SPECIES COUNCIL FINAL REPORT FY18

Project Title: Ballast Water and Hull Fouling

Project Period: January 2018 – March 2019

Content area: Prevention

Applicant: Julie Kuo, Ballast Water and Hull Fouling Coordinator
DLNR, Division of Aquatic Resources in c/o PCSU

Abstract: Through §187A-32 Hawaii Revised Statutes, Hawaii Department of Land and Natural Resources (DLNR) has been designated the lead state agency for preventing aquatic alien species introductions by regulating vectors of transfer including ballast water and vessel biofouling. DLNR uses the Hawaii Interagency Biosecurity Plan (HIBP) as a guide for developing Hawaii's BW and BF Program project and initiatives.

A list of accomplishments in reference to the HISC FY18 Ballast Water and Hull Fouling Project proposal is provided below:

- 1. A revised draft of the vessel biofouling regulations with stakeholder input from the Aquatic Alien Organism Task Force (AAOTF)**
 - a. A revised draft of Hawaii's vessel biofouling rules provided incorporates biofouling regulations/policies and guidelines developed by New Zealand Ministry for Primary Industries, California State Lands Commission, and Australia Department of Water Resources, and the International Maritime Organization. Input on the rules was provided on an individual basis via stakeholders within the AAOTF including members of the government, industry, and scientific research community.
 - b. See attachment titled: *Draft_HI BF Rules 2018*
- 2. A summary of AAOTF stakeholder meetings related to BW, BF, and in-water hull husbandry**
 - a. April 2018 – to establish a working group to address the inter-jurisdictional issue of vessel biofouling management (also known as in-water cleaning) in Hawaii commercial harbors
 - b. Dec 2018 – to discuss implementation of VIDA with the AAOTF as well as the 2019 Aquatic Biosecurity Bill that would support Hawaii's Ballast Water and Biofouling Program needs
- 3. A revised draft of vessel biofouling and hull husbandry best management practices (BMPs)**
 - a. See attachment titled: *WRPCC Biofouling BMPs*
- 4. A summary of the commercial vessel biofouling risk assessment matrix and ranking system**
 - a. Provided below are the criteria that will be used to assess a vessel's biofouling biosecurity risk (ranking system is not yet established but will look similar to the ballast water risk assessment matrix):

<input type="checkbox"/> Travel itinerary since last dry dock	<input type="checkbox"/> Biofouling Management Plan and Logbook
<input type="checkbox"/> Operational profile	

-lay-up periods -average travel speed <input type="checkbox"/> Niche areas <input type="checkbox"/> Vessel size <input type="checkbox"/> Average port residency <input type="checkbox"/> Expected residency when visiting a Hawaii port	-niche area maintenance -antifouling paint type and age -marine growth prevention system -regular maintenance and inspections of submerged/wetted areas of the vessel -how close logbook mirror plan
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5. A summary of the demographics of commercial vessel arrivals in 2018

a. See attachment titled: *2018 HI Vessel Demographics*

6. A summary of vessels inspected in 2018 for ballast water compliance and the implementation of reactive measures (if any)

a. No vessels were inspected this year due to efforts allocated to unforeseen projects were prioritized by the BW and BF Steering Committee.

7. A draft of the ballast water compliance inspection checklist

a. See attachment titled: *Hawaii BW Inspection Checklist_Draft*

8. A summary on vessels inspected in 2018 for biofouling risk and the implementation of reactive measures (if any)

a. A biofouling survey was performed on the Training Ship Golden Bear (TSGB) moored off Lahaina. The purpose of the survey was to collect biofouling data in collaboration with a UCSF graduate student to identify the biofouling community on a vessel that has a unique operational profile. The student was interested in describing recruitment and/or stress on the community throughout the vessel's journey from northern California to Southern California, to Hawaii, to Washington, to Oregon, and then back to Vallejo. Besides being interested in the data, I was also interested in using the opportunity to understand the logistical and environmental challenges for conducting a 'secondary' biofouling risk assessment of a large vessel moored offshore on a neighboring island.

9. Local outreach/educational opportunities and presentations given regarding BW and BF.

Purpose	Event	Presentation or activity
Mobilize adoption of HISC 18-1 IWC resolution	HISC Council Meeting (Jan 2018)	<i>Addressing Vessel Biofouling in Hawaii</i>
Networking & education	Hawaii Biosecurity Legislative Briefing (Jan 2018)	<i>Addressing the Top Two Aquatic Alien Introductions into Hawaii</i>
Networking & education	Hawaii Legislator's Biosecurity Pau Hana (Jan 2018)	Provided a demonstration of aquatic organisms in microscopic larval stage
Education	Haunama Bay Seminar (Feb 2018)	Preventing the Introduction and Spread of Aquatic Alien Species in Hawaii
Education	Waikiki Aquarium Seminar	<i>Preventing the Introduction and Spread of Aquatic Alien Species in Hawaii</i>

	(Mar 2018)	
Networking & education	NOAA IRC Seminar (May 2018)	<i>Hawaii Ballast Water and Biofouling Program</i>
Recruit UH students and education	Global Environmental Studies (Sep 2018)	<i>Hawaii's Top Two Vectors of Aquatic Alien Species Introductions</i>
Recruit UH students and education	Global Environmental Studies (Sep 2018)	<i>Hawaii's Top Two Vectors of Aquatic Alien Species Introductions + Activity</i> Provided a demonstration of how to use a dissecting scope to observe zooplankton and phytoplankton
Networking and education	Hawaii Conservation Conference (July 2018)	<i>Hawaii Invasive Species Council Resolution on Vessel In-water Cleaning Operations</i>
Education	Waikiki Rotary Club talk (Jun 2018)	<i>Forest, Oceans, Water, Life</i>
Networking and education	DAR Aha Pilina (Nov 2018)	<i>Hawaii Ballast Water and Biofouling Program</i>
Networking and education	Western Governor's Association Biosecurity Workshop (Dec 2018)	<i>Hawaii Ballast Water and Biofouling Program</i>

10. Deliver presentations at conferences including, though not limited to, Pacific Ballast Water Work Group/WRP Meeting, Marine Bioinvasions Conference, and Ballast Water Management Conference.

Destination/Cost	Purpose	Event/Travel Cost	Presentation Title
Tacoma, WA (\$1,784)	Regional decision making on Vessel Incidental Discharge Act, BMP planning, collaboration & networking	Pacific Ballast Water Group Meeting (Apr 2018)	<i>Development in Hawaii's Ballast Water and Biofouling Program</i>
Annapolis, MD (combined with above trip)	Participate in developing a protocol for testing vessel in-water cleaning systems and networking	Alliance for Coastal Technologies In-water Cleaning Capture Technology Efficacy Testing (Apr 2018)	No presentation: I provided input on the protocol as well as acquired insight for testing systems in Hawaii in addition to regulators and scientists who are interested in assisting in the process

Fort Lauderdale, FL (\$2,617)	Networking & collaboration with international and national government partners, strengthening communication/partnerships	International Conference on Marine Corrosion and Fouling (Jun 2018)	<i>Hawaii Invasive Species Council Resolution on Vessel In-water Cleaning Operations</i>
Patagonia, Argentina (\$3,375)	BW reporting form database collaboration with SERC, networking with a global community of scientists specializing in marine alien species prevention, monitoring and control efforts	Marine Bioinvasions (Oct 2018)	<i>Hawaii's Ballast Water and Biofouling Program: Managing the Top Two Vectors of Aquatic Alien Species Transfer</i>

11. A summary of any unforeseen major projects related to BW & BF.

- a. Optimized vessel BW biosecurity risk assessment matrix
 - i. See attachment titled: *2018 HI Vessel Demographics*
- b. Alliance for Coastal Technologies In-water Cleaning Capture system efficacy testing project
- c. Participate in identifying/researching lab equipment to purchase for supporting the BW and BF Program using DAR end of the year funds
 - i. Microscope DSLR camera, MilliQ ultrapure water filtration system, labware dishwasher
- d. Deployed autonomous reef monitoring structures (ARMS)
 - i. With the help of the DAR AIS Team, Autonomous Reef Monitoring Structures (ARMS) were deployed at a depth of 10-15ft inside five heavily trafficked commercial harbors in the State of Hawaii (Honolulu Harbor, Barber Point Harbor, Nawiliwili Harbor, Kahalui Harbor, and Hilo Harbor) to monitor for aquatic non-indigenous species (NIS) recruitment over the period of about 1 year. ARMS were also deployed on adjacent coral reefs directly outside of the commercial harbors. The purpose of this project is to monitor the presence of newly established aquatic alien species and invasive behavior of new and previously established aquatic alien species.
- e. Recruit Honolulu Harbor and DOCARE officers to assist with vessel boardings during “secondary” and “tertiary” biosecurity risk assessments
 - i. Met with division chief/administrators to request assistance with boarding vessels. Both division heads were receptive to providing some assistance for safety during vessel boardings.
- f. Hired two full-time personnel to support Hawaii Ballast Water and Biofouling Program initiatives and projects
 - i. Scott Godwin was contracted to strategize and orchestrate the deployment of ARMS and provide taxonomic expertise. Nick Jernack was hired as a full-time employee to focus on developing Hawaii’s ballast water database, flagging risky vessels, participating in invasive species monitoring and eradication fieldwork, and constructing a biofouling surveying tool.
- g. Developed a 4-year strategic plan and a 2-page outreach document for the 2019 Hawaii legislative session, in order to promote the proposed 2019 Aquatic Biosecurity Bill for supporting Hawaii’s Ballast Water and Biofouling Program requirements
 - i. See attachment titled: *BW and BF Leg 2019 Outreach*