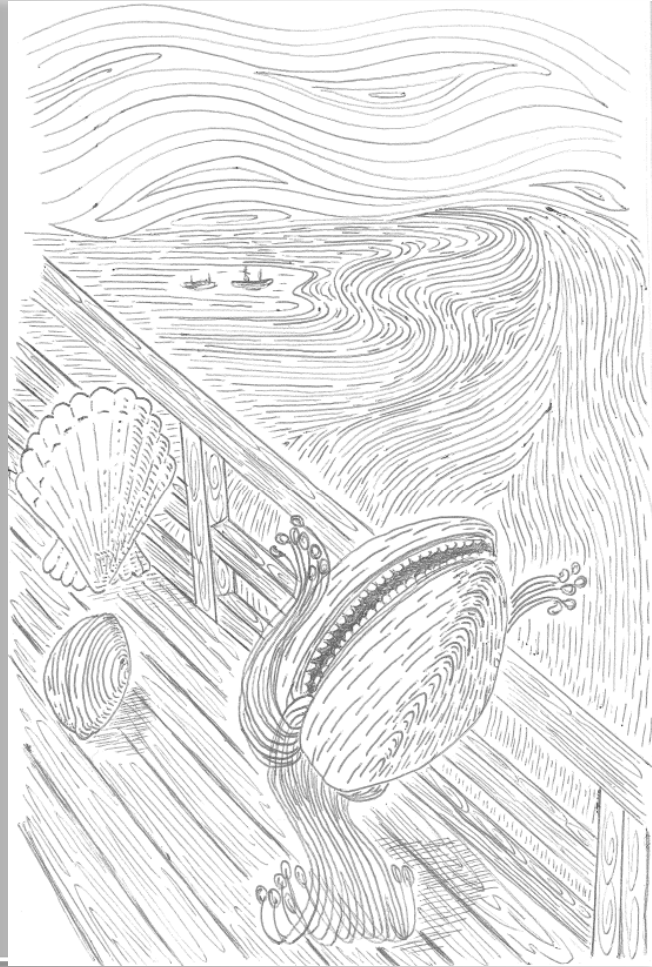


Biosecurity New Zealand

Tiakitanga Pūtaiao Aotearoa

Research update: In-water solutions for problem fouling.....

Dr Eugene Georgiades **et al.**
Science & Risk Assessment
(Animals & **Aquatic**)



Acknowledgements

• Service providers

- NIWA Ltd
- ES Link Services Pty Ltd
- Cawthron Institute
- Biofouling Solutions Pty Ltd
- Ramboll New Zealand Ltd

Moustaches
on lips –
NOT on ships!!!



• Collaboration and in-kind support!

- Dept. of Fisheries Western Australia (Dr Justin McDonald)
- Australian Dept. of Agriculture and Water Resources (Sonia Gorgula; Peter Wilkinson)
- California State Lands Commission (Chris Scianni)
- Dept. Land and Natural Resources, Hawaii (Jules Kuo)
- USA project team (Mario Tamburri, Matt First, Greg Ruiz)

• MPI

- MPI Operational Research Team!
- Facilities and Pathways Group
- Response Group & Surveillance and Incursion Investigation Team
- Recovery and Pest Management Group & Biosecurity Policy Team

Beards on
faces **NOT** on
boats!!!

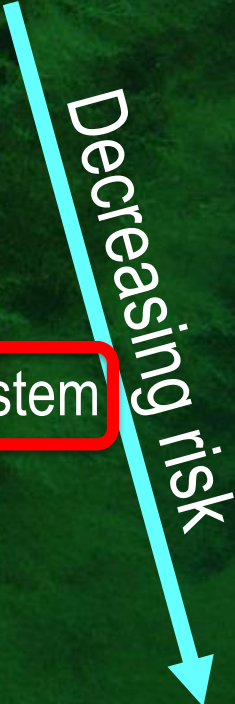


Fouled vessels – what are the options?

Scenarios of vessel biofouling risk and their management

<http://www.mpi.govt.nz/document-vault/7335>

Inglis et al. 2012

- No action
 - Provision of educational materials
 - Restriction of vessel itinerary
 - In-water cleaning/treatment using approved system
 - Haul-out or dry docking
 - Refusal of entry into recipient port
- 

Science advice

Testing in-water systems

- **Objectives**

- Develop robust and repeatable testing for in-water cleaning systems with respect to biosecurity risk

- External hull and niche areas (Morrissey et al. 2015)

- Literature review (Morrissey and Woods 2015)

NIWA
ES Link Services

- Internal seawater systems (Growcott et al. 2017)

- Literature reviews (Growcott et al. 2016/2017)

MPI
MPI

Science advice

Testing in-water systems

- General testing
 - Vessel testing using the full system
 - Simulation of intended use
 - Evaluation conducted by:
 - Approved
 - Independent
 - Scientist
 - Report all test failures



Current research



- In-water cleaning external hull – system testing
(US Govt research - MPI Technical Input)
- In-water cleaning external hull – system testing
(MPI – Ramboll NZ Ltd)
- In-water treatment of internal seawater systems – reviews
(NZ and Aus Govt collaboration)
- Treatment of internal pipework
of recreational vessels (MPI)

Testing in-water cleaning systems (external hull & niche areas)

- **Aim**

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- Suitably qualified and independent providers to test systems according to the science advice (Morrissey et al. 2015)*

- **Out of scope**

- Development of systems
- System developers testing their own systems
- Development of new testing procedures
- Testing of proactive systems (slime layer)

Testing in-water cleaning systems (external hull & niche areas)

- Objectives

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- Identify suitable systems (reactive)
 - large macro-fouled vessels
 - biocidal systems
- Independently test efficacy of systems
 - performance criteria and procedures
 - assess utility of advice (Morrissey et al. 2015)*
- Independently test and model potential for chemical contamination

In-water treatment of internal seawater systems

Australia (DAWR)
New Zealand (MPI)

• Objectives

- To assess options to treat internal seawater systems
 - Identify treatment priorities
 - Patterns of fouling
 - Distribution within / between systems
 - Characterise system components
 - Diversity, size and configurations
 - Similarity / differences, within / across classes
 - Identify suitable reactive treatment approaches and data gaps

Biofouling Solutions Pty Ltd
Cawthron Institute

USA Research

Evaluations of in-water cleaning technologies

- **Mario Tamburri** (Uni. Maryland, Center for Env. Science)
- **Matt First** (US Naval Research Laboratory, Key West)
- **Greg Ruiz** (Smithsonian Environmental Research Center)
- Funded by:
 - US Maritime Administration
 - Maryland Port Administration
- Coordinating institutions:
 - Coastal and Estuarine Science (CEES)

Third party test bed for
technology evaluation
Information
clearinghouse

Evaluations of fouling,
invasion risk and in-water
cleaning technologies

Background Image: Diving Services NZ

Evaluations of in-water cleaning technologies

- **2016** (Smithsonian Environmental Research Center)
 - Meeting (21 attendees -15 institutions - 4 countries)
- **Conclusions and recommendations**
 - Similar gaps and needs exist
 - Standardised procedures for testing and approving systems are needed
 - Independent third party assessments are critical

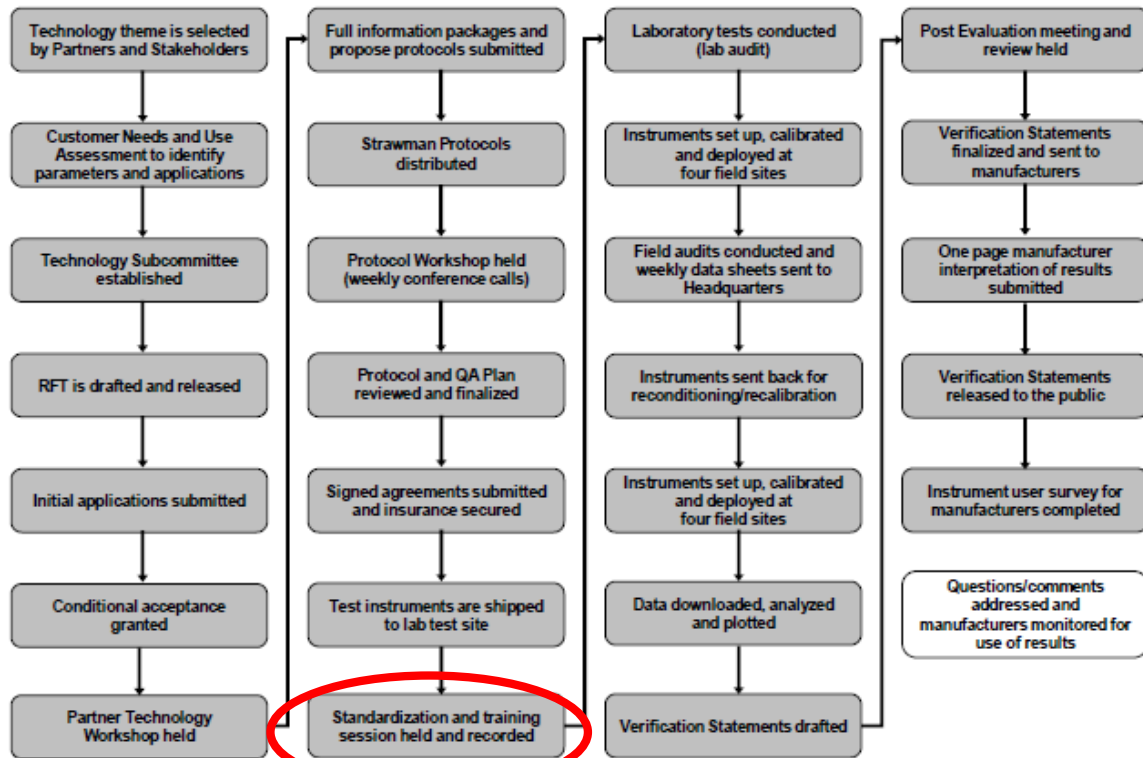
Evaluations of in-water cleaning technologies

- **Goals**

- Independent evaluations of technologies
 - Support industry
 - Prevent spread of non-indigenous species
- Facilitate transition into routine operations
- Increase application of in-water cleaning technologies
- Provide rigorous, third party data on system performance
- Support the approval of commercial use

Evaluations of in-water cleaning technologies

ACT Technology Evaluation Process



In-water cleaning – *What are we protecting?*

- **Considerations**

- Biosecurity
- Chemical contamination
- In-water cleaning technology

Potentially
permanent
&
widespread
effects

Short-term
local effects

Rapid
improvements

- **Approach**

- Act now?

Wait

We are all connected

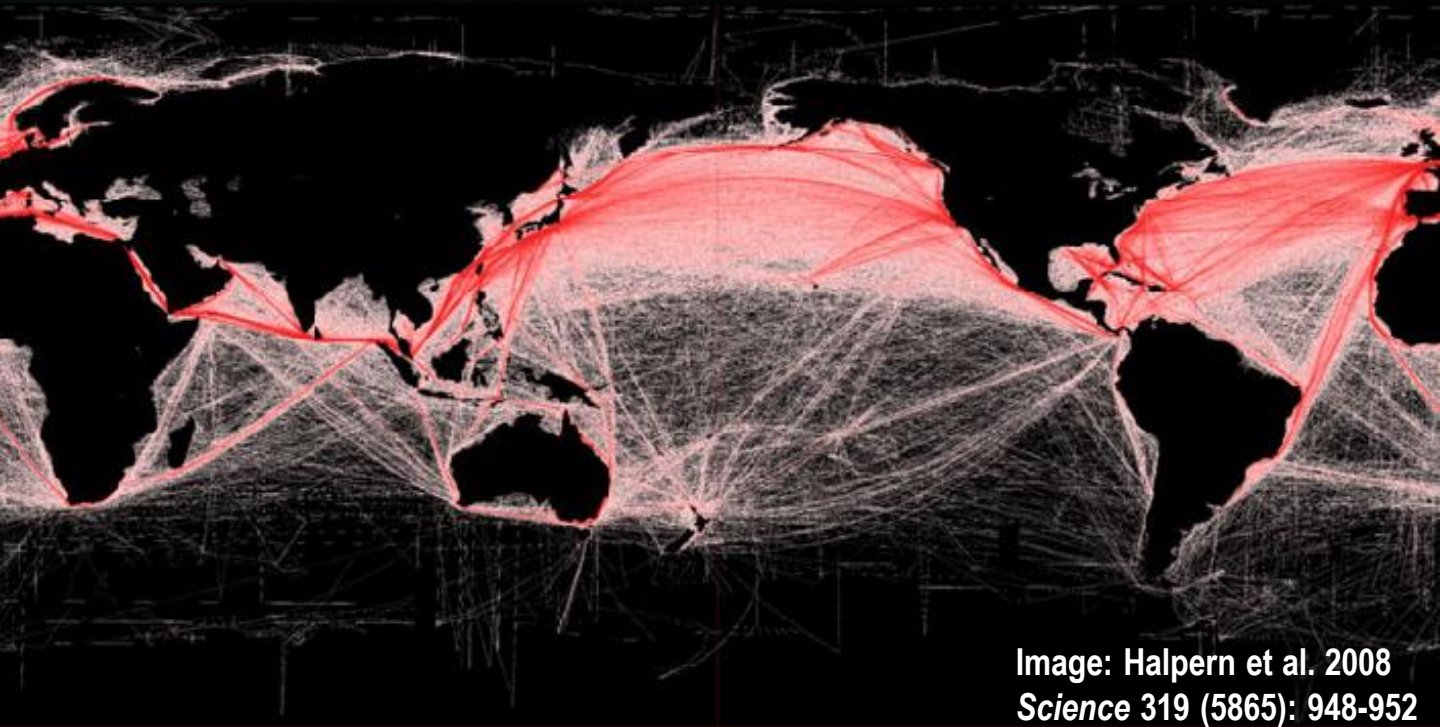


Image: Halpern et al. 2008
Science 319 (5865): 948-952

Thank you!