



Managing Biofouling at the International Level: Challenges and Opportunities

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OVERVIEW

1. Summary of the issues
2. What's happening in New Zealand
3. What's happening at IMO
4. Summary of Challenges & Opportunities



MARINE INVASIVES

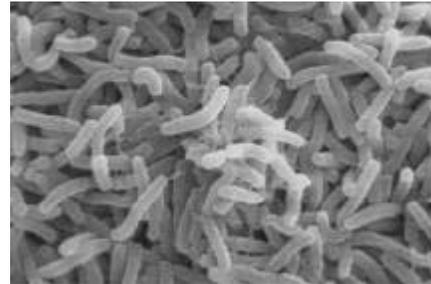
- One of the five greatest threats to our Marine Ecosystems
- Impacts from marine invasions are almost always irreversible



IMPACTS



- **Ecological:** Competition, Predation, Altering trophic dynamics, biodiversity or nutrients
- **Economic:** Impacts on fisheries and aquaculture, Infrastructure damage, Impacts on tourism, Costs of management
- **Human Health:** Toxic species, pathogens
- **Socio-cultural:** Amenity, employment, damage to culturally important species or food sources



VECTORS

- Biofouling
- Ballast water
- Aquarium Trade
- Intentional introductions
- Natural dispersal
- Aquaculture feed & stock
- Bait fish
- Solid ballast



BIOFOULING ON VESSELS

- Thought to be a diminishing risk but:
 - Faster vessel speeds increase survival of some species
 - Fouling of niche areas recognised as a significant issue
 - Phase-out of TBT limits the available antifouling tool box
 - Mounting evidence of biofouling as the primary vector for invasion

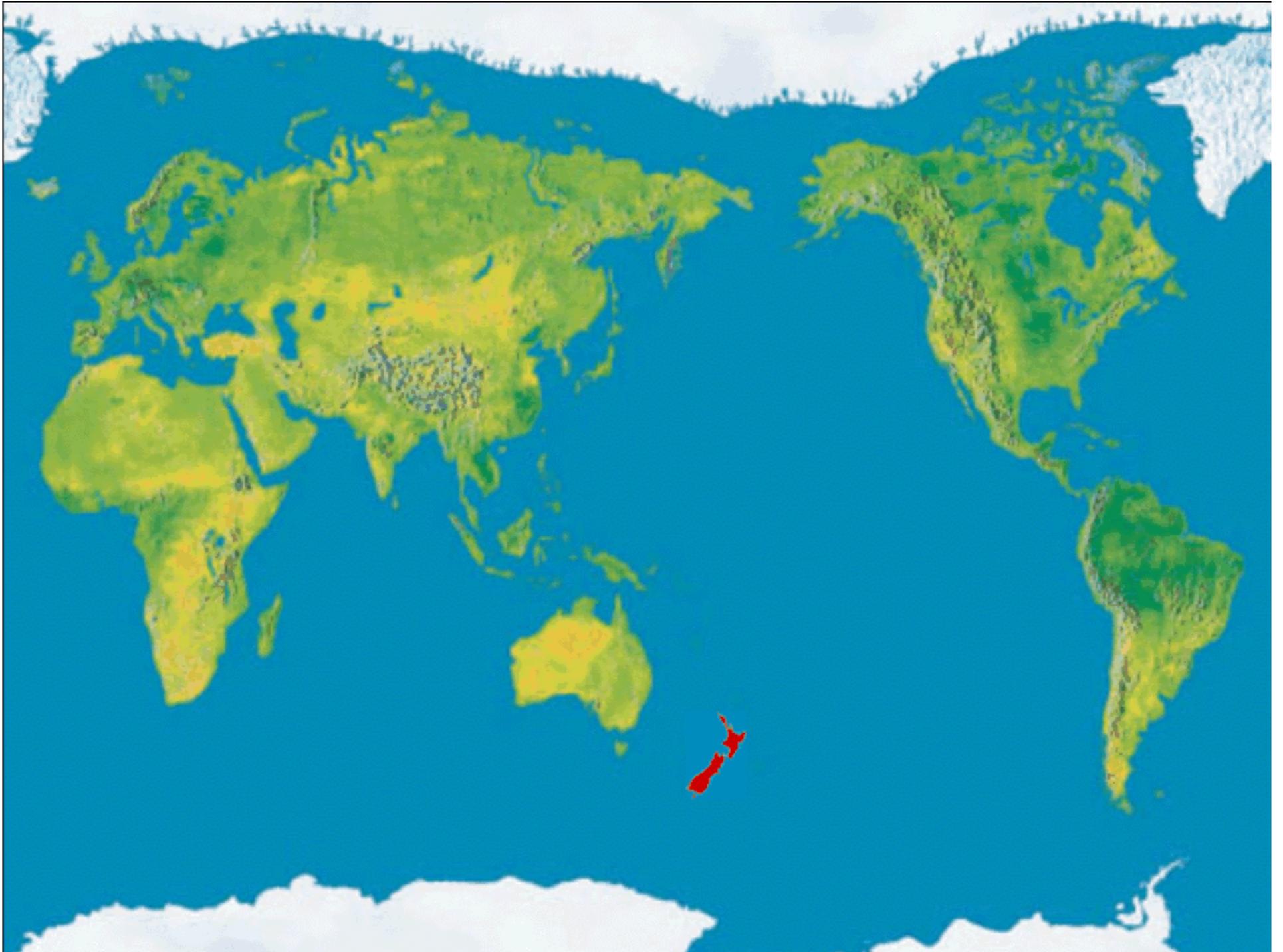
EVIDENCE OF BIOFOULING INVASIONS

- Hawaii: 74% (Eldredge & Carlton 2002)
- Japan: 42% (Otani 2006)
- New Zealand: 69% (Cranfield et al. 1998)
- New Zealand: 87% (Kospartov et al. 2008)
- Port Phillip Bay: 78% (Hewitt et al. 2004)
- North Sea: >50% (Gollasch 2002)
- Coastal North America: 70% (Fofonoff et al. 2003)



3. WHAT'S HAPPENING IN NEW ZEALAND







BIOFOULING INVASIONS IN NEW ZEALAND

- New Zealand's is a 'biological economy', reliant on:
 - Tourism
 - Primary production and resource use (including fisheries and aquaculture)
 - Clean Green image
- New Zealanders see biosecurity as one of the issues they are most concerned about
- Strong border biosecurity requirements

TRIGGERS FOR NZ ACTION



- Ongoing biofouling invasions and impacts
 - *Sabella spallanzanii*, *Styela clava*, *Eudistoma elongatum*, *Pyura praeputialis*, Ocean Patriot
- Research findings
 - Niche areas, slow movers, poorly maintained vessels, maintenance history, voyage history
- A critical gap in New Zealand's border



RESEARCH



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BIOFOULING RESEARCH KEY FINDINGS



- All vessel types likely to have some biofouling;
- Biofouling organisms were predominantly arthropods (barnacles), tube worms, bryozoans, bivalves, macroalgae;
- Of 187 species identified, >65 % non-indigenous to NZ and 73 % of those had not yet established in NZ;
- The greater the amount of biofouling, the higher the number of non-indigenous species present
- Biofouling most common in niche areas
- Slow movers and poorly maintained vessels are high risk

DEVELOPING AN IHS



- **Risk Assessment**
 - All vessels have some biofouling
 - Wide range of biofouling taxa are a risk to NZ – anything more than a slime layer
- **Consultation on draft IHS**
 - Acknowledge the risks
 - Concerns about implementation and going ahead of the IMO
- **Working through the issues with industry**
 - niche areas, slime or slime+, border actions, equivalent levels of protection



2. WHAT'S HAPPENING AT IMO



TRIGGERS FOR INTERNATIONAL ACTION

- Research findings
 - Niche areas
 - Number of species likely to be transferred as biofouling vs ballast
- Ongoing biofouling invasions and impacts
- Developing national measures for an international industry



ISSUES TO BE ADDRESSED

- Antifouling paint application and use
- Minimising biofouling in niche areas
- In-water cleaning (including standards)
- A standard for 'clean'
- Recording and Reporting
- Design of dry dock and other vessel cleaning facilities
- Different measures for different vessel types



TIMELINE OF BIOFOULING AT IMO



IMO

2005/6	Lunchtime presentations from Australia and New Zealand on concerns about biofouling invasions
2007	
2008	
2009	
2010	
2011	



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2011	BLG 15 will consider a close to final Guideline

OUTSTANDING ISSUES FOR FINALISATION OF GUIDELINES

- Definitions
- Finalising the details
- Getting 'airtime' at IMO
- Dealing with recreational craft
- Evaluation timeframe





4. CHALLENGES AND OPPORTUNITIES



CHALLENGES & OPPORTUNITIES: ALL MEASURES

- Technological developments
 - In-water cleaning with capture
 - Niche area management
 - Design and engineering solutions
- Managing biofouling considering related environmental and operational issues:
 - Invasive species, GHG emissions, AFS contaminants, efficiency and safety



CHALLENGES & OPPORTUNITIES: ALL MEASURES cont.

- Shifting focus from hull AFS for operational reasons to holistic biofouling management
- Effectively implementing a 'clean before you go' approach, especially slow vessels
- Having effective biofouling management solutions for all vessel types
- Eradication and response tools



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CHALLENGES & OPPORTUNITIES: IMO MEASURES

- Finalising the Guidelines
- Getting uptake of voluntary measures
- Getting the data to effectively measure efficacy of the specific measures and the Guidelines as a whole
- Driving technology change
- Determining whether mandatory measures are required

CHALLENGES & OPPORTUNITIES: NATIONAL MEASURES

- Moving ahead of an international approach in regulating an international industry
- Setting the right standard
- Decision support / regulatory tools
 - In-water cleaning risk assessment
 - Inspection and verification
 - Dealing with non-compliant vessels
 - Recording and reporting
- Getting and sharing the data to improve both national and international measures

SUMMARY

- EDUCATE
- INTEGRATE
- INNOVATE



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