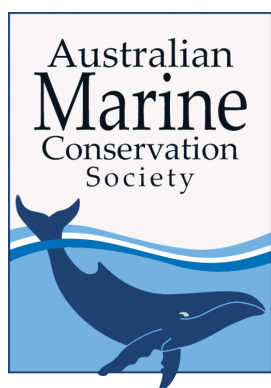


Review of National Marine Pest Biosecurity

A response



Invasive Species Council

Australian Marine Conservation Society

May 2015

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RECOMMENDATIONS:

Ballast Water

1. Adopt a national regulatory approach to ballast water, covering international and domestic traffic, for all Australian waters, as proposed in the Biosecurity Bill, with standards specified in regulations.

Biofouling

2. Adopt a national regulatory approach to biofouling for all Australian waters, covering initially international traffic, and then domestic traffic.
3. Due to a lack of knowledge, treat all biofouling species as risky, in addition to identifying species known to be high risks.
4. Conduct further investigation into the level of risk of vessel movements within domestic waters to identify suitable mandatory vessel procedures and restrictions to lower the risk of spread of exotic and indigenous marine species that may harm the environment.
5. Adopt containment strategies to prevent the spread of damaging exotic species from ports where these species are present.

Monitoring and surveillance

6. Revamp the national pest monitoring network, and include a focus on environmental pests.
7. Undertake mandatory port marine pest surveys at least every five years.
8. Ensure public reporting and disclosure of marine pest surveys.

Information and research

9. Employ a Marine pests R&D coordinator to ensure the objectives of the National Priorities for Introduced Marine Pest Research and Development 2013–2023 are met.
10. Undertake horizon scanning for future marine pest threats and opportunities.
11. Implement a marine pest education program.

Governance and engagement

12. Improve marine pest governance arrangements by improving transparency in decision-making, involving the community sector, undertaking broad public education and creating a collaborative institution tasked with marine pest preparedness and prevention.
13. Improve NEBRA decision-making, better taking into account realistic marine pest incursions scenarios.

1. INTRODUCTION

The Invasive Species Council and the Australian Marine Conservation Society consider invasive species are major threats to Australia's marine biodiversity. Australian waters already have an estimated 250 introduced species, another 230 cryptogenic species (whose origins are uncertain but are considered likely to be exotic) and 6 native species dispersed beyond their native range.¹ It is estimated that an additional average 3 to 4 species establish in Australian waters each year.

Our international and national obligations require rigorous biosecurity. The Biodiversity Convention requires action to prevent environmentally damaging invasive species² and the application of the precautionary principle. The recently passed Biosecurity Bill adopts a level of protection for Australia that aims to reduce biosecurity risks to a "very low level"³ and the Australian Biodiversity Strategy has a target⁴ to reduce the impacts of invasive species on marine biodiversity by 10%.

The federal government has direct and indirect responsibility for safeguarding marine environments from invasive species. The federal government is responsible for managing marine animals such as whales, turtles, crocodiles, seals, seahorses and marine birds such as albatross and penguins. It is also responsible for birds, marine mammals and other migratory animals under the Bonn Convention. Many marine species are listed as threatened under federal legislation. A number of marine areas are within a World Heritage Property such as the Great Barrier Reef, Lord Howe Island and Heard Island and McDonald Islands. Many marine areas contain Commonwealth-managed marine protected areas.

As vessels are the dominant vector for the dispersal of non-indigenous marine species – attached to the hull or equipment as biofouling or carried in ballast water – an adequate biosecurity regime must address these pathways. Compared to terrestrial invasive species, marine invaders have been neglected.

About 15,000 vessels arrive from overseas each year, and the numbers are growing. For example, 4000 ships cross the Great Barrier Reef every year, and this is projected to increase to about 7000 by 2020. Marine invasion risks in Australia are rising as shipping volumes escalate.

A preventive approach must inform all responses to marine pest. It is extremely difficult to eradicate most marine pests once they have arrived in Australian waters.

¹ DAFF. 2011. Proposed Australian Biofouling Management Requirements. Consultation

² The Convention of Article 8(h) of the Biodiversity Convention requires the signatory countries to as far as possible and as appropriate: "Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species"

³ Section 5 of the Biosecurity Bill 2014: "The Appropriate Level of Protection (or ALOP) for Australia is a high level of sanitary and phytosanitary protection aimed at reducing biosecurity risks to a very low level, but not to zero."

⁴ Target 7 of the Australian Biodiversity Strategy 2010-2030: 'By 2015, reduce by at least 10% the impacts of invasive species on threatened species and ecological communities in terrestrial, aquatic and marine environments.'

2. BALLAST WATER

The Invasive Species Council and the Australian Marine Conservation Society strongly endorse the proposal for national regulation of ballast water discharge under the recently passed Biosecurity Bill 2014 (Chapter 5 – Ballast Water and Sediment). This is one of the most positive reforms of the Biosecurity Bill. We will have to reserve judgement about the adequacy of the regime as details are still to be outlined in regulations or by decision of the Director of Biosecurity. We recommend that standards be clearly defined in regulations.

Given the projected increases in the discharge of ballast water concurrent with projected growth in ship based exports of mineral resources like coal, additional safeguards are essential to reduce the risk of invasive species introductions via ballast water. The use of on board ballast water treatment systems should be required for ships coming to Australia.

RECOMMENDATION

1. Adopt a national regulatory approach to ballast water, covering international and domestic traffic, for all Australian waters, as proposed in the Biosecurity Bill, with standards specified in regulations.

3. BIOFOULING

3.1. BIOFOULING AS A HIGH-RISK PATHWAY

Recent studies have demonstrated that vessels frequently convey organisms around the world in biofouling, for example:

1. Coutts and Dodgshun (2007) found about 150 species in sea-chests of 42 vessels visiting or operating in New Zealand between May 2000 and November 2004. 40% were indigenous to New Zealand, 15 % introduced, 10 % non-indigenous, and 35 % of unknown origin.⁵
2. Farrapeira et al. (2007) recorded 23 species from 7 cargo vessels at a Brazilian port.⁶
3. Mineur et al. (2007) recorded 31 algal taxa from 22 commercial cargo vessels, in the Mediterranean.⁷

⁵ Coutts A, Dodgshun T. 2007. The nature and extent of organisms in vessel sea-chests: A protected mechanism for marine bioinvasions. *Marine Pollution Bulletin* 54: 876-886.

⁶ Farrapeira C, Melo A, Barbosa D, Silva K. 2007. Ship hull fouling in the port of Recife, Pernambuco. *Brazilian Journal of Oceanography*, 55(3), 207-221.

⁷ Mineur F, Johnson M, Maggs C, Stegenga H. 2007. Hull fouling on commercial ships as a vector of macroalgal introduction. *Marine Biology* 151: 1299–1307.

4. Sylvester and MacIsaac (2009) found 57 species on 20 commercial vessels (16 bulk carriers and 4 chemical tankers) in North American ports.⁸
5. Otani et al. (2007) found 22 barnacle species on two bulk carriers in a Japanese port, the majority not recorded in that port.⁹

For the past three decades, ballast water was considered the vector primarily responsible for the dispersal of invasive marine species around the world (Carlton 1985; Thresher et al. 1999; Eldredge and Carlton 2002). However recent research suggests the role of ballast water was probably overstated, and that up to 69% of these introductions may have occurred via biofouling (Hewitt et al. 1999, 2004; Hewitt and Campbell 2010).

While there is imminent intergovernmental action on ballast water, the Commonwealth Government is presently neglecting the primary vector for invasive marine pests, biofouling.

To prevent further introductions, and limit the spread of invasive marine species, there must be requirements for shipping to manage both biofouling and ballast water.

3.2 THE NEED FOR REGULATION

The lack of a regulatory regime for biofouling is a major gap in Australia's biosecurity and environmental law. In 2011-12 the Government undertook consultation on a Regulatory Impact Statement analysing the costs and benefits of the regulatory and voluntary options. At the time, the Government was considering whether to proceed with a regulatory or voluntary regime. The recently passed Biosecurity Bill 2014 does not propose a regulatory regime for biofouling.

The Invasive Species Council and the Australian Marine Conservation Society strongly recommend a national regulatory regime with a scope similar to that for ballast water, covering international and domestic vessels and marine infrastructure (such as oil rigs), for all Australian waters, including external territories. This is justified on environmental and economic grounds due to the high likelihood of invasions by this pathway (as mentioned in 3.1 above) and the serious to catastrophic consequences that can result.

In 2014, the New Zealand government adopted a mandatory biofouling standard for vessels arriving from an international location. It is based on the 2011 International Maritime Organisation Guidelines for Biofouling Management and will come into force in 2018. It requires arriving vessels to have clean hulls.

⁸ Sylvester F, MacIsaac H, 2009. Is vessel hull fouling an invasion threat to the Great Lakes? *Diversity and Distributions* 16: 132-143.

⁹ Otani M, Oumi T, Uwai S, et al. 2007. Occurrence and diversity of barnacles on international ships visiting Osaka Bay, Japan, and the risk of their introduction. *Biofouling* 23: 277-286.

A voluntary regime will not be sufficient to address the risk. The 2011 Regulatory Impact Statement noted there was “limited evidence of widespread uptake” of voluntary biofouling guidelines. A consistent national approach (which also takes into account regional environmental differences) will be of benefit to business in reducing complexity arising from different state standards.

The Beale review recommended “the Commonwealth’s legislative reach should be restricted to international vessels arriving in Australia, with the states and territories retaining responsibility for domestic biofouling requirements.” Although there is as yet no international convention covering biofouling,¹⁰ as there is for ballast water, a national approach can be justified constitutionally on the basis of the Biodiversity Convention and the United Nations Convention of the “Law of the Sea”, article 196 of which states that “States shall take all measures necessary to prevent, reduce and control ... the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto.”

Current federal, state and territory approaches to biofouling are deficient (mostly non-existent apart from Western Australia¹¹) and inconsistent. The approach to biofouling management in Australia (and globally) is in its infancy, akin to the situation for terrestrial introductions several decades ago. As the Regulatory Impact Statement noted, for “most jurisdictions, the detection and identification of NIMS is by chance or through other compliance mechanisms, rather than by undertaking a targeted risk management approach specific to biofouling risks.”

Western Australia has the most stringent requirements, and any national approach should exceed those standards and apply them comprehensively to all vessel types, depending on individual and cumulative risks.

The environmental justification for regulation of biofouling is substantial, as biofouling is likely to be the dominant cause of marine invasions, potentially responsible for more than two-thirds of marine introductions worldwide.¹² Currently, fewer than 1% of arriving vessels are inspected for biofouling. A substantial proportion of inspected vessels (about one in four) have high priority pest species present in biofouling.¹³

¹⁰ The International Maritime Organisation has endorsed the Guidelines for the Control and Management of Ships’ biofouling to minimise the transfer of invasive aquatic species.

¹¹ The Western Australian Department of Fisheries, EPA and numerous oil and gas companies have been actively managing the introduction of invasive marine species via vessel biofouling since about 2006. Northern Territory also has mandatory inspections and treatment of internal seawater systems of all vessels entering Darwin’s locked marinas in response to the Black striped mussel incursion in 1999.

¹² 55–69 % of the ~1780 introduced marine species detected in ports and harbours globally have life-history characteristics that are consistent with attachment to and survival on vessel hulls. Hewitt C, Campbell M. 2008. Assessment of relative contribution of vectors to the introduction and translocation of marine invasive species. Report for the Department of Agriculture, Fisheries and Forestry. National Centre for Marine Conservation and Resource Sustainability Australian Maritime College.

¹³ According to inspections of oil and gas related vessels bound for Western Australia, Biofouling Solutions Pty Ltd unpublished data.

As the number of ships visiting Australia increases, the risk of invasive marine species sourced from biofouling also increases. Although slow-moving vessels such as yachts and oil rigs tend to accumulate considerably more biofouling than fast-moving commercial ships, the cumulative risks due to commercial traffic could represent the greater risk simply due to their dominance (about 90% of vessels arriving in Australia) as well as the diversity of ports they visit. This is simply due to the increased propagule pressure.¹⁴

The report on environmental biosecurity by the Senate Environment and Communication Committee published in May 2015 noted that biofouling is a significant pathway for marine incursions, and made two recommendations:¹⁵

Recommendation 22

The committee recommends that, following the completion of the current review of national maritime pest policy by the Department of Agriculture, the Commonwealth Government amend biosecurity legislation to incorporate a national mandatory biofouling management regime.

Recommendation 23

The committee recommends that the Department of Agriculture conduct more regular ship inspections targeted at biofouling.

The risk of invasive marine species translocations via vessel biofouling is influenced by many factors such as:

- Residency period both in international and Australian waters
- Distance from land and depth of water both in international and Australian waters
- Presence/absence, age and type of antifouling coating
- Voyage speed and route
- Frequency of moving and stationary
- Presence/absence, location and type of marine growth prevention systems within internal seawater systems.

In considering the movement of vessels within Australian waters, two additional important factors should be considered: the distance the vessel is travelling and whether the vessel is spending time in locations with high numbers of exotic marine species, such as Port Phillip Bay.

There may be some merit in adopting a management regime based on marine bioregions (eg. the Integrated Marine and Coastal Regionalisation of Australia mesoscale bioregions), however more information is needed to understand what is the best approach from a risk management point of view. Information required would

¹⁴ For example Locke et. al.

¹⁵ See Attachment 1 that includes an Extract from Chapter 7 Conclusions and recommendations.

include the level of risk from the artificial spread of local and exotic organisms between marine bioregions and the risk of spread of highly damaging introduced exotic organisms from places such as international port with they are already abundant. This would include a pathway risk analysis.

While the bioregion-based approach has some merit, it appears to focus on a species-specific approach rather than on the level of biofouling hygiene. The focus should be on any vessel, regardless of origin/s.

There would be great benefit for specific measures such as a marine pest containment strategy for specific ports with damaging exotic pests such as Port Phillip.

When more generally considering adoption of a species-based approach or an approach with a low tolerance to any biofouling species, due to the limited information on marine species and the difficulty in accurately identifying biofouling species, we strongly favour an approach that assumes all biofouling species are harmful.

All vessels should be required by law to undertake the risk-minimising measures specified in the biofouling guidelines specific to different types of vessels¹⁶ rather than leave it to voluntary compliance. There should be enforcement regimes and penalties sufficiently robust to motivate compliance, and the potential for the government to recover all costs of responding to a marine pest incursion from the person or organisation responsible for the introduction (but it will be impossible to trace back in most cases).

The recently Biosecurity Act 2014 should be used as a tool to implement the mandatory measures.¹⁷

RECOMMENDATION

2. Adopt a national regulatory approach to biofouling for all Australian waters, covering initially international traffic, and then domestic traffic.
3. Due to a lack of knowledge, treat all biofouling species as risky, in addition to identifying species known to be high risks.
4. Conduct further investigation into the level of risk of vessel movements within domestic waters to identify suitable mandatory vessel procedures and restrictions to lower the risk of spread of exotic and indigenous marine species that may harm the environment.
5. Adopt containment strategies to prevent the spread of damaging exotic species from ports where these species are present.

¹⁶ <http://www.marinepests.gov.au/>. However these guidelines are in desperate need of updating and made more committal and explicit. We understand that, as they stand, the industry finds the guidelines of little use because they are so generic.

¹⁷ This will depend on how the Biosecurity Bill 2014 will be implemented. For example, the Quarantine Act 1908 had to list quarantinable pests under the proclamation. If the new Biosecurity Bill 2014 has the same mechanism then a hybrid approach may be required whereby a level of hygiene is the indicator, but compliance action may require identification of a specific biofouling species.

4. MONITORING AND SURVEILLANCE

At a Commonwealth level, apart from in northern Australia, there is limited surveillance for high priority biosecurity threats to the environment outside that routinely conducted for designated pest species at ports and airports.¹⁸ One impediment to surveillance and monitoring is the lack of diagnostic capacity within governments (to identify exotic species).

Specifically there is little information about recent marine incursions due to a lack of marine surveillance and monitoring. Given the risks associated with shipping, there should be mandatory port marine pest surveys every five years.

There has been recent policy development in marine pest monitoring. This includes the National Marine Pest Monitoring Strategy, a National Monitoring Network Cost Sharing arrangement, the Australian marine pest monitoring manual and the Australian marine pest monitoring guidelines. Despite these policies, the goals of the national monitoring network are unclear and the network is not in effective operation.

The final report on environmental biosecurity by the Senate Environment and Communication Committee published in May 2015 noted that “surveillance for marine biosecurity is significantly under resourced” and that some states are failing to properly implement marine pest monitoring programs under the Marine Pest National Monitoring Strategy.¹⁹

RECOMMENDATION

6. Revamp the national pest monitoring network, and include a focus on environmental pests.
7. Undertake mandatory port marine pest surveys at least every five years.
8. Ensure public reporting and disclosure of marine pest surveys.

5. INFORMATION AND RESEARCH

There is a serious deficiency in the understanding of the marine environment. This makes it difficult to make evidence-based decisions to limit the risk of marine pests.

The Invasive Species Council and the Australian Marine Conservation Society note the adoption of National Priorities for Introduced Marine Pest Research and Development 2013–2023. This is a useful document to guide future research. However, creation of the strategy on its own is not enough to ensure that its objectives are met.

¹⁸ WA is a notable exception in monitoring their main ports.

¹⁹ Paragraph 7.92.

In relation to animal health, the need for government and support to implement and R&D strategy is recognised. Government funding is provided to Animal Health Australia to coordinate implementation of the Animal RD&E Strategy. The AHA notes that its role is to: “facilitate partnerships and to help establish the structures and processes that enable research providers, funders and end-users to work together to reduce fragmentation and unnecessary duplication in the national biosecurity RD&E system”. In doing this, AHA coordinate a National Animal Biosecurity RD&E Steering Group, a Stakeholder Advisory Group and holds an annual RD&E Forum.

A similar approach could be applied to implementing the National Priorities for Introduced Marine Pest Research and Development 2013–2023.

Horizon scanning is needed to look at future threats and is currently not undertaken for marine pests. This would involve systematically identifying potential threats and opportunities, allowing improved prioritisation of actions to minimise the risk from future invasive threats to biodiversity.

There is low awareness about the problem of marine pests in the general community, even amongst those that consider themselves environmentally aware. Education is vitally important to build awareness, particularly among boaters, fishers and divers, and assist with compliance of mandatory and optional measures.²⁰

Recommendations

9. Employ a Marine pests R&D coordinator to ensure the objectives of the National Priorities for Introduced Marine Pest Research and Development 2013–2023 are met.
10. Undertake horizon scanning for future marine pest threats and opportunities
11. Implement a marine pest education program.

6. GOVERNANCE AND ENGAGEMENT

The Invasive Species Council and the Australian Marine Conservation Society believe that there needs to be improved governance in managing marine pests. The fact that progress has been patchy and slow is a major indicator of the weaknesses of current arrangements under the National Biosecurity Committee. While cooperation between state/territory and federal governments can be difficult to achieve, increasing the level of priority should catalyse progress. The failure of marine monitoring network exemplifies the problem.

²⁰ Consider the results of the extensive education program conducted in New Zealand.

Governance arrangements can be enhanced by improving transparency in decision-making, community sector participation²¹, undertaking broad public education and creating a collaborative institution that is tasked with marine pest preparedness and prevention. Greater involvement by community representatives will need to take into account their limited capacity.

The National Environmental Biosecurity Response Agreement (NEBRA) is not a suitable tool for responding to marine incursions because of the high threshold needed to trigger a national response. The need for a cost-benefit study when it is difficult to cost environmental damage, the lack of certainty about impacts and eradication success, the poor information about the marine environment and the need for consensus limit the likelihood of undertaking a response under the agreement.

Recommendations

12. Improve marine pest governance arrangements by improving transparency in decision-making, involving the community sector, undertaking broad public education and creating a collaborative institution tasked with marine pest preparedness and prevention.
13. Improve NEBRA decision-making, better taking into account realistic marine pest incursions scenarios.

²¹ See the paper: Engaging the community sector on environmental biosecurity (Invasive Species Council 2012) that describes the benefits and costs of community engagement in decision-making and policy-setting in environmental biosecurity, assesses the current state of engagement at the national level and makes recommendations for improvement. Available at: <http://invasives.org.au/publications/engaging-community-sector-environmental-biosecurity/>

ATTACHMENT 1

SENATE ENVIRONMENT AND COMMUNICATION COMMITTEE REPORT ON ENVIRONMENTAL BIOSECURITY MAY 2015

Extract from Chapter 7 Conclusions and recommendations

Marine, freshwater and island biosecurity

7.89 The committee received evidence highlighting the role of shipping in the movement of organisms in the marine environment. The roles of ballast water and biofouling and their respective regulatory schemes were highlighted in evidence.

7.90 The committee notes that the Biosecurity Bill 2014, which was introduced to the Parliament after the committee had received submissions and held hearings, addresses the need to develop a national ballast water regime, but does not address the need to better regulate biofouling.

7.91 The committee acknowledges the complexities of regulating this area, but believes a national mandatory regime must be implemented as soon as possible given the contribution of this pathway to marine incursions. Evidence presented to the committee suggests that biofouling poses a significantly greater threat to Australia's biosecurity than ballast water.

7.92 The committee also received evidence that surveillance for marine biosecurity is significantly under resourced. The failure of some states to properly implement marine pest monitoring programs under the Marine Pest National Monitoring Strategy is a stark example of this situation.

7.93 Another surveillance weakness highlighted in evidence was the lack of regular inspections by the Department of Agriculture targeted at biofouling.²²

Recommendation 22

7.94 The committee recommends that, following the completion of the current review of national maritime pest policy by the Department of Agriculture, the Commonwealth Government amend biosecurity legislation to incorporate a national mandatory biofouling management regime.

Recommendation 23

7.95 The committee recommends that the Department of Agriculture conduct more regular ship inspections targeted at biofouling.

²² See discussion in chapter 6 of the report.