

Review of National Marine Pest Biosecurity – Discussion Paper

Submission by:

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Summary

The key message of my submission is similar to that in my submission on the Issues Paper: that any measures implemented by the Australian Government for the claimed purpose of preventing the future introduction of invasive marine species, or for limiting the spread of invasive marine species already established in Australia needs to be clearly justified on sound evidence of realised or potential significant environmental and economic impacts of these species. In the 20+ plus years since national management measures for marine pests were first proposed under the precautionary principle, and in the absence of effective management measures, few if any significant environmental and/or economic impacts attributable to invasive marine species have been documented. This needs review to inform decision making on policies for both prevention and ongoing management and control.

Any future commitment of resources to marine pest biosecurity, and the magnitude of these resources, needs to be clearly justified against the actual risk. The commitment of resources also needs to be balanced against those needed by Governments for the management of the potentially greater threats posed by invasive species in terrestrial and freshwater environments, ecosystem degradation associated with coastal development, and human-induced marine environmental disturbance associated with pollution, climate-change, etc.

With respect to prevention, any measures introduced need to be globally consistent and proactive minimisation of risk through ratification of the IMO Ballast Water Convention and adoption of the IMO Biofouling Guidelines is the best mechanism for this. Proposals for unilateral, reactive border management using a species-based approach are impractical and most likely ineffective. However, some targeted management of small vessels and mobile infrastructure with low standards of biofouling management may be warranted, possibly through a “level of fouling” approach.

With respect to the management of invasive marine species established in Australia, there are only a small number of species of concern. Small vessel movements and aquaculture are considered the most significant vectors. Improved biofouling management on vessels, and sanitary practices in aquaculture and fisheries should be promoted, with consistent application across jurisdictions.

Domestic ballast water management requirements will become redundant with the entry-into-force of the IMO Ballast Water Convention and the consequent installation of ballast water treatment systems on ships. Interim management, if deemed necessary, should be restricted to demonstrably high risk voyages for the few (3 or 4) species that could cause significant impact. Monitoring for the presence of these species in ports would be most effectively conducted by genetic probes, and only in ports where the risk species could feasibly survive.

Issue 1 – Limited commitment and resource allocation to implement the National System

1. What do you consider to be the main impacts (consequences) from marine pests to your business, industry, activities or the environment?

There is little documented evidence of significant economic or environmental impacts of marine pests in Australian waters. Almost all of the many non-indigenous marine species now established here are restricted to man-made structures or disturbed environments due to their opportunistic life histories and poor ability to compete against or displace native species and communities in undisturbed ecosystems. They therefore persist as secondary impacts of human habitat creation or modification such as port, marina and coastal development. For the relatively few marine species that are truly invasive, there is still no well documented evidence of harm, even for species such as *Asterias amurensis* and *Carcinus maenas* that would be expected to have impacted native species and ecosystems as a consequence of their high numbers and predatory habits.

Biofouling species, which represent an Anthropocene assemblage of species selected for their ability to colonise and survive on vessels and other artificially immersed surfaces and structures, do impact on the performance and operation of vessels, and in aquaculture through the fouling of net cages, culture ropes etc., but this is an issue relating to biofouling *per se*, which can comprise both native and non-indigenous species. Improved biofouling management practices would yield economic and operational benefits to these industries.

2. What activities should the Australian Government do to manage the biosecurity risks associated with marine pests to an acceptable level (to protect your business, industry activities or the environment)?

The small number of significant invasive marine species¹ introduced to Australia over the past century has been associated with the differing vectors of dry ballast, ballast water, aquaculture, vessel biofouling, and the aquarium industry. The introduction of new invasive marine species is therefore an extremely rare event, and such events would be almost impossible to predict and prevent. Better and proactive management of vectors may serve to lower an already low risk overall, but maximum benefit is likely to result from targeted management of potentially high risk vectors. This has already been done to some degree with increased controls on aquarium and aquaculture imports, and the international ballast water requirements. Vessel biofouling has been deemed a high risk vector, but it is likely that only the most severely fouled vessels pose a risk of introducing significant invasive species, as typical vessel biofouling species pose little threat to native species and ecosystems or to wild fisheries.

For new species introductions, the unrestricted release of foreign-sourced ballast water is a valid concern, as this has the potential to pick up entire communities from foreign ports and release these in a recipient port. Australia's international ballast water requirements have served to minimise this risk, but protection can be further enhanced by ratification of the IMO ballast water convention to facilitate the phase in of ballast water treatment systems. Ballast water treatment systems will also manage the risks of further spread of invasive marine species within Australia by domestic ballast water movements.

Controls on the arrival of heavily fouled vessels and mobile infrastructure may also reduce risk. Small international vessels and some non-trading vessel types have been identified as presenting risk, due to sub-optimal antifouling practices, and a targeted approach based on "level of fouling" to manage these may be warranted.

With respect to the domestic spread of invasive marine species, evidence suggests that this is mostly associated with small vessel biofouling or organism entrainment (recreational, fishing, non-trading) and

¹ *Arcuatula senhousia*, *Asterias amurensis*, *Carcinus maenas*, *Codium fragile* ssp. *fragile*, *Corbula gibba*, *Crassostrea gigas*, *Grateloupia turuturu*, *Sabella spallanzanii*, *Undaria pinnatifida*

aquaculture. Promoting better biofouling management and sanitary practices within these sectors in a nationally consistent approach may reduce the further spread of species.

3. What information or data should the Australian Government collect to support ongoing national commitment to manage marine pest biosecurity?

Substantiated evidence of significant economic and environmental impacts of invasive marine species, both those established in Australia or considered a threat from overseas, is needed to justify the expenditure of resources by governments, business and industry. The precautionary approach and commitment to a National System in the late 1990s, and then justifiable in the wake of the alarming incursions of *Asterias* and *Undaria*, is no longer defensible if harmful impacts cannot be identified.

Issue 2 – Current biofouling requirements are not consistent across jurisdictions

4. What are the best ways to manage and monitor the biosecurity risks of biofouling on vessels?

Biofouling risks are best managed by good biofouling management practices, which include use of effective antifouling systems and routine out-of-water cleaning and maintenance. The IMO Biofouling Guidelines provide recommendations and a mechanism to promote and enforce good biofouling management practice and these should be adopted to manage this vector.

The highest biosecurity risk associated with biofouling would be on those with no, or inappropriate or poorly maintained, antifouling systems, such as small vessels and mobile infrastructure. Improving and monitoring the standard of biofouling management on these may serve to minimise risk.

Checks on the biofouling status of international yachts and compulsory remedial action when needed, as previously proposed for mandatory implementation in 2006 following the 12-month trial period, should be reconsidered.

5. If the Commonwealth progresses to regulate the management of biofouling on international vessels, what role should it take in the development of domestic controls by the states and territories?

Biofouling on small domestic vessels is potentially the most significant vector for the spread of established invasive marine pests. This is currently poorly managed and unregulated. Uniform management measures are needed across jurisdictions which should promote good biofouling management practices and awareness of the issues across relevant sectors. The current, ludicrous scenario of rigorous biofouling requirements on construction vessels coming in to, but not out of, the most invaded marine water body in Australia (northern Port Phillip Bay) highlights the need for a consistent national approach.

Good biofouling management practice in Australia is also compromised by the hurdles posed by the APVMA for the registration of new antifouling products for use in Australia. As a consequence, the majority of antifouling systems on sale for use in Australia are 'old technology' systems that are less effective and, for many, more environmentally hazardous than modern systems available elsewhere in the world. The Government should work to streamline the registration process for new and more effective antifouling products to enable better domestic biofouling management. A strong case also continues for antifouling coating efficacy standards to remove less effective products from the market.

Species specific control plans for the few invasive species with demonstrated impact should be reviewed and used to inform priorities for domestic vector management.

Issue 3 – The ‘species-based’ approach to manage biofouling

6. Should the department consider a regulatory framework for international biofouling that is:

- A species-based approach (as currently proposed in the Biofouling RIS) or
- An approach based on a requirement for vessel operators to adopt IMO Biofouling Guidelines, including on-board biofouling management plan and record book

The species-based approach is an ineffective and impractical framework for managing international biofouling for a number of reasons:

- Few species currently proposed for listing (the SOC) pose a significant threat as they are either rarely associated with biofouling and were introduced overseas by vectors other than biofouling, such common biofouling species that they would be already established in Australia if conditions suited, or have no demonstrated significant economic or environmental impact likely to be exhibited in the Australian marine environment
- Experience suggests that it is the unknown and unexpected species that potentially pose the greatest risk; the prime example is *Asterias amurensis*. “Clearing” a vessel of only those species on an SOC list does not preclude risk, and possibly clears it only of species that don’t constitute a risk
- Demonstrating association between a listed species that is of proven concern and biofouling on any particular vessel is nigh impossible and vessel biofouling risk assessments would not correlate with likely SOC presence unless highly refined and voyage specific (e.g. by identifying a vessel that has spent days or weeks in the Straits of Johor as likely carrying Asian green mussels) .
- Except in the most extreme cases, detection and certain identification of biofouling species on a vessel at the border in a timely manner is resource intensive and also nigh impossible due to the requirement for specialist taxonomic expertise to identify many species with certainty, particularly when organisms are immature or belong to a suite of related species with similar appearance.

Adoption of the IMO Biofouling Guidelines is a mechanism that will reduce the presence and abundance of biofouling on a vessel and therefore also minimise any small risk of invasive species being introduced via this vector. The guidelines promote practices that proactively reduce the colonisation of biofouling onto a vessel, and the effect on reducing species transfer risk is magnified by the subsequent survival reduction afforded by each stage in the translocation and establishment process. Targeted measures to address high risk vessels such as international yachts and mobile infrastructure that are not adequately encompassed by the IMO Guidelines should be considered.

Issue 4 – Minimise the cost to industry of domestic ballast water management requirements

7. How can the Australian Government cost-effectively manage domestic ballast water risks, while preventing the spread of established marine pests?

Ratification and promotion of uptake of the IMO Ballast Water Convention will cost-effectively manage domestic ballast water risks as vessels are increasingly required to fit ballast water treatment systems.

In the interim, management of domestic ballast water should be restricted to demonstrably high risk voyages for species established in Australia that are of demonstrably high impact if spread to other parts of Australia. Of the current seven species used to inform the BWRA, four possibly warrant retention: *Asterias amurensis*, *Crassostrea gigas*, *Corbula gibba* and, questionably, *Undaria pinnatifida*. The majority of voyages would therefore be exempt. Species could be added to this list if new species with significant impact do establish in particular ports.

In implementing the above, it should be noted that there appears to be no evidence of domestic spread of invasive species by ballast water in the absence of regulation. Victoria has had ballast water regulation but

the one species of concern to Victoria, *Crassostrea gigas*, has nevertheless established in Western Port which suggests other vectors, most likely small vessel biofouling, pose a greater risk.

8. Should species-specific assessments of port-to-port movements, with associated monitoring, be used?

As in the previous question, as an interim measure, a small suite of established species could be used to manage port-to-port movements. Monitoring for these few species is possibly most effect through use of genetic methods

9. Should we restrict ballast water movements between suitably determined regions?

Only if risk can be clearly established and associated with the presence of high risk species within regions. However I do think this would be an overly complex process in light of the few regions that now pose a significant risk. Should such a system be adopted, it also follows that there must be tighter regulation of small vessel movements and biofouling management between these regions as these are likely to pose a greater species translocation risk.

Issue 5 – Incomplete implementation of the National Monitoring Strategy

10. What are the most important aim(s) for monitoring in a cost-effective national marine pest biosecurity system?

The only value of the current system is to inform domestic ballast water arrangements and it is an overly expensive and onerous requirement for this purpose. Monitoring to a lengthy target list of supposed species of concern that are not yet established in Australia, but are unlikely to arrive, adds to the resource burden and achieves little (see Q6). The imminent introduction of ballast water treatment systems will also void this need.

Despite claims, the monitoring strategy does not provide a mechanism for early detection of new marine pest incursions as it has been demonstrated that colonisation of ports is usually a secondary colonisation and detection within a port is consequently too late for any attempt at eradication. The sampling strategy is also not designed to detect “unknowns” and, even in the detailed port baseline surveys, previously unreported or reported NIS were missed due to the sampling plan or time, or lack of taxonomic expertise for species identification. Most new species detections have been by ‘informed’ eyes from outside of the National System.

Monitoring is not considered a useful or cost effective method to inform decision making for the ongoing management and control of established marine pest populations. This could be more productively achieved by reviewing knowledge on invasive pest populations and their realised impacts from the past 20 years.

11. How should this monitoring be achieved?

Monitoring for the few species of valid concern within ports would be best undertaken using genetic probes.

The detection of new invasive species incursions or spread is most effectively achieved through a public reporting scheme based on ‘informed’ eyes (scientists, consultants, naturalists, fishers, divers, beach combers etc.) that are working in the coastal environment. Education through identification cards and slates, apps and brochures and a clearly understood reporting scheme would form the basis of an effective system.

There is a need for greater knowledge of the marine flora and fauna of port and adjacent regions, particularly along our northern coastline given that a low proportion of taxa could be named in the initial round of baseline port surveys, but sadly this is probably beyond Australia’s current taxonomic capability.

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