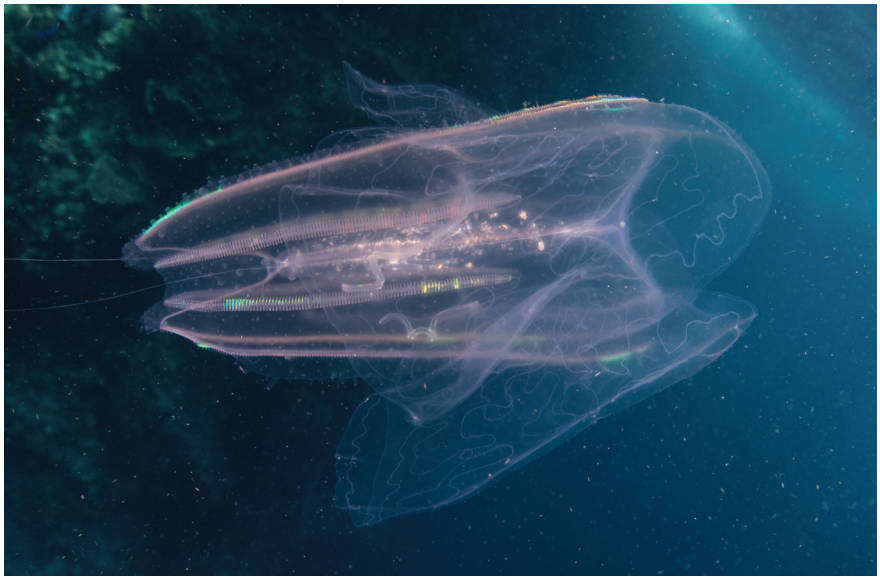
Minimising the transfer of invasive aquatic species

The introduction of invasive aquatic species (IAS) associated with global shipping has been identified as a significant threat to the world's oceans and coastal ecosystems. Research suggests that 70-80% of IAS introductions occur through biofouling, and new areas are constantly being invaded.



In 2011, the IMO adopted Resolution MEPC.207(62) outlining the *Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species*. The Guidelines are supplemented by the *Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft circulated as MEPC.1/Circ.792*. Local governments including California, New Zealand and Australia have developed or are developing unilateral mandatory regulations which are more stringent than the IMO Guidelines. This article is to alert Members to developments and to encourage Members to comply with the IMO Guidelines as part of Members' biofouling management systems.

What is Biofouling?

- Undesirable accumulation of various aquatic organisms (microorganisms, plants, algae and animals) on submerged structures like ships' hulls

What impacts are caused by biofouling?

- Introduction of invasive aquatic species (IAS)
- Marine species can not only be carried in ship's ballast water into new environments but also through biofouling
- Marine species establish a reproductive population in the host environment, becoming invasive, out-competing native species and multiplying into pest proportions
- In some parts of the world, evidence suggests that 70-80% of IAS introductions have occurred through biofouling
- The problem of IAS has intensified over the last few decades due to an increment of traffic volume
- New areas are being invaded
- Causes major threat to the world's oceans and to the conservation of biodiversity
- The spread of IAS is one of the greatest threats to the ecological and the economic well-being of the planet
- Enormous damage to biodiversity, and damage to the environment is often irreversible
- Prevention of the introduction of IAS is more efficient and more economical than effective combating of IAS

Measurements taken by IMO against IAS

- Cooperation and collaboration of states is required
- UNCLOS provides the global framework. It stipulates that states shall work together to prevent, reduce and control human caused pollution of the marine environment, including the intentional or accidental introduction of harmful or alien species to a particular part of the marine environment (Art. 196 UNCLOS)
- Adoption of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention); the BWM Convention entered into force on 8 September 2017
- Biofouling Guidelines were adopted by MEPC in 2011 and further supplemented by the Guidance for minimising the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft circulated as MEPC.1/Circ.792
- Guidelines are not binding
- Intended to provide useful

recommendations on general measures to minimise the risks associated with biofouling

- Intended to provide a globally consistent approach to the management of biofouling
- Port States, flag States, coastal States and other parties should exercise due diligence to implement the Guidelines to the maximum extent possible, but are not forced to do so
- Guidelines assist by giving proposals to implement practices to control and manage biofouling to reduce the risks of the transfer of IAS
- Establishment of the GloFouling Partnerships project: a collaboration between the Global Environment Facility (GEF), the United Nations Development Programme (UNDP) and the International Maritime Organization (IMO)
- The project will focus on the implementation of the IMO Guidelines for the control and management of ships' biofouling
- Will build capacity in developing countries to reduce the transboundary introduction of biofouling-mediated invasive aquatic species
- Is supposed to help tackle one of the key remaining vectors for the transfer of invasive aquatic species
- The previous project was the GloBallast Partnerships project, which resulted with the successful adoption of the BWM Convention

Implementation of an effective biofouling management plan – content of MEPC.207(62)

- Biofouling management plan:
  - Biofouling management measures to be undertaken on a ship should be outlined (Example: Appendix 1 of MEPC.207(62))
  - Should be specific to each ship and included in the ship's operational documentation
- Biofouling record book:
  - Should record details of all inspections and biofouling management measures undertaken on the ship
  - It is recommended that it be retained on the ship for the life of the ship
  - Example: Appendix 2 of MEPC.207(62)
- Possible anti-fouling systems:
  - The anti-fouling system used should comply with the AFS Convention
  - Coating system
  - Biofouling resistant materials used for piping and other unpainted components
  - Marine growth prevention systems (MGPSs) for sea chests and internal seawater cooling systems
  - Other innovative measures to control biofouling
- Procedures for ship maintenance and recycling facilities
  - Such facilities should adopt measures (consistent with applicable national and local laws and regulations) to ensure that viable biofouling organisms or chemical and physical pollutants are not released into the local aquatic environment
- In-water inspection of ships
- In-water cleaning and maintenance
- Focus on design and construction for new ship buildings
- States are encouraged to maintain and exchange information relevant to these Guidelines
- State authorities should provide relevant information about the applicable biofouling management measures and treatment requirements to shipowners and operators
- Training for ships' masters and crews, in-water cleaning or maintenance facility operators and those surveying or inspecting ships as appropriate should include instructions on the application of biofouling management and treatment procedures

Benefits from managing biofouling

- Improve a ship's hydrodynamic performance
- Hull fouling leads to significant increases in ship resistance
- Lower fuel costs and emissions of air pollutant and greenhouse gases, i.e. enhancing energy efficiency and reducing air emissions from ships

Regional biofouling regulations

California, United States (US)

- Biofouling Management Regulations to minimise the Transport of Non-indigenous Species from Vessels Arriving at California Ports (Article 4.8)
- Effective since 1 October 2017
- Is applicable for Vessels of 300 GRT or more that arrive at a California port and carrying, or capable of carrying, ballast water
- The provisions apply to newly constructed vessels delivered into service on or after January 1, 2018, and to existing vessels beginning with completion of the first regularly scheduled out-of-water maintenance on or after January 1, 2018
- The master, owner, operator or person in charge of a vessel that arrives at a California port shall maintain a Biofouling Management Plan to be retained onboard and prepared specifically for that vessel as well as a Biofouling Record Book
- The management plan shall provide a description of the biofouling management strategy for the vessel that is sufficiently detailed to allow a master or other appropriate ship's officer or crew member serving on that vessel to understand and follow the biofouling management strategy
- Record Book must contain details of all inspections and biofouling management measures undertaken on the vessel since the beginning of the most recent scheduled out-of-water

maintenance or since delivery into service as a newly constructed vessel if no out-of-water maintenance has yet occurred

- For further information see Article 4.8 § 2298.3. Biofouling Management Plan[1] and § 2298.4. Biofouling Record Book[2]
- The regulations are similar to the requirements of the IMO Biofouling Guidelines
- The master, owner, operator, agent or person in charge of a vessel that arrives at a California port shall submit the "Marine Invasive Species Program Annual Vessel Reporting Form" (SLC 600.12, Revised 08/17)[3] to the Commission in written or electronic form at least twenty-four hours in advance of the first arrival of each calendar year at a California port of call
- Regulations for managing biofouling on wetted surfaces:
  - Must be managed in accordance with the Biofouling Management Plan
  - Use of anti-fouling coating
  - Other measurements to prevent biofouling
  - Documentation
- It is possible to submit a petition for alternatives to the requirements of Article 4.8
- Exemptions in case of emergency
- Assistance to understand how to fulfil the requirements is given by the California State Lands Commission; therefore a Guidance Document has been released[4] and an overview of all requirements is available on SLC's website[5]

US federal law

- Within the context of US Coast Guard regulations in 33 Code of Federal Regulations (CFR) Part 151 regarding discharging of ballast water, it is stated in §151.2050 CFR that anchors and anchor chains shall be rinsed when the anchor is retrieved to remove organisms and sediments at their places of origin
- Furthermore, fouling organisms shall be removed from the vessel's hull, piping, and tanks on a regular basis and any removed substances shall be deposed in accordance with local, State and Federal regulations
- The Environmental Protection Agency (EPA) issued its most recent Vessel General Permit (VGP) in 2013
- The permit applies to large commercial vessels (79 feet (24m) in length or greater)
- Within the permit the EPA implements regulations regarding biofouling management (VGP 2.2.23)
- The regulations do not reach the extent of the IMO Guideline MEPC.207(62), but are derived from the Guidelines
- It is stipulated that the Vessel owners/operators must minimise the transport of attached living organisms when traveling into US waters from outside the US economic zone
- An appropriate biofouling management system should be installed and that system should be maintained
- Therefore, hull-cleaning activities should take place whenever possible while the vessel is in drydock
- In addition, cleaning activities while the vessel is waterborne must employ methods that minimise the discharge of fouling organisms and antifouling hull coatings
- To fulfil the VGP regulations it is not necessary to provide a biofouling management plan and/or biofouling record book as it is proposed in MEPC.207(62)

New Zealand

- The government of New Zealand issued a Craft Risk Management Standard (CRMS) to address biofouling on vessels arriving at New Zealand ports
- Requirements are based on the International Maritime Organization's Guidelines MEPC.207(62)
- CRMS applies to any vessel that will anchor, berth or be brought ashore in New Zealand whose voyage originated outside New Zealand's territorial waters
- Vessels must arrive with a "clean hull", i.e. only a limited amount of biofouling is permitted
- Allowable biofouling includes a slime layer and goose barnacles on hull surfaces
- If the vessel is staying for 20 days or less and visiting only designated locations additional fouling (up to 5% cover) is allowed in niche and other areas
- Three categories of options are considered to be acceptable for meeting the CRMS clean hull standard:
  - All biofouling must be removed from all parts of the hull by an approved facility 30 days or less before visiting New Zealand, if such a cleaning has not been performed, it can be performed within 24 hours after time of arrival
  - Continual maintenance using best practice including: application of appropriate anti-fouling coatings; operation of marine growth prevention systems on sea-chests; and in-water inspections with biofouling removal as required; following the IMO Biofouling

[1] https://govt.westlaw.com/calregs/Document/IC9FA65EBE3EC45289FC54C496DE5E009?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)
[2] https://govt.westlaw.com/calregs/Document/IC2A31BA4461548E286F726E37727DC9C?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)
[3] http://www.slc.ca.gov/Forms/MISP/Annual_Vessel_Reporting_Form.pdf
[4] http://www.slc.ca.gov/Programs/MISP/4_8_GuidanceDoc.pdf
[5] http://www.slc.ca.gov/Programs/MISP.html

Guidelines is recognised as an example of best practice

- Application of approved treatments listed on CMRS' website

- Providing evidence of compliance is necessary before arriving at New Zealand's ports via the Advanced Notice of Arrival and associated documents
- It is possible to be asked to provide photographic (or video) evidence of the cleaned hull and niche areas
- Biofouling management plan and record book shall be provided
- A website to provide guidance for fulfilling the requirements is established by New Zealand's Ministry of Primary Industries

Australia

- Australia's biosecurity laws are the strictest in the world
- Biosecurity Act 2015 commenced on 16 June 2016
- Introduces new requirements that affect how the department manages the biosecurity risks associated with goods, people and conveyances (vessels) entering Australia
- Biosecurity risks means the likelihood of a disease or pest entering Australian territory, or establishing itself or spreading in Australian territory and the disease or pest could harm human, animal, plant health or the environment
- The regulations do not expressly mention biofouling, but biofouling may be considered as a biosecurity risks
- All commercial vessels must use the Maritime Arrivals Reporting System (MARS) for all vessel pre-arrival reporting
- The operator of the vessel/shipping agent is obligated to accurately report information in accordance with Section 193 of the Biosecurity Act 2015
- The provided information must facilitate the Director of Biosecurity to assess the level of biosecurity risk associated with the entering vessel (Section 195 and seq. of the Biosecurity Act 2015)
- Inspections can be performed to assess the risk if necessary
- Gathered information and the assessed biosecurity risk may potentially provide a basis for banning a vessel from making a port call
- To lower the level of biosecurity risk it is recommended to manage biofouling on the entering vessel
- The National Biofouling Management Guidelines are designed to help the maritime industry and vessel owners and operators to manage and control vessel biofouling
- The guidelines are not binding
- They are recommended for use by resource managers, owners and operators of vessels and movable structures, operators and customers of maintenance facilities, and contractors providing vessel maintenance services
- Practices described in these guidelines have been aligned with international conventions, included, inter alia, the 2011 IMO Biofouling Guidelines
- Structure of the guidelines:

  Part 1: Best practice guidance for the application, maintenance, removal and disposal of anti-fouling coatings at shore-based maintenance facilities to minimise environmental risk

  Part 2: Best practice guidance for in-water cleaning and maintenance of vessels and movable structures to minimise environmental risk

  Appendices with supporting information (e.g. a template for a Biofouling Management Plan and a Biofouling Record Book)

Europe

- No European legal acts, i.e. no regulations or directives are in force ■

The author, Madlene Wangrau from Hamburg, Germany, is currently on a work placement with the UK P&I Club. Madlene completed her major subject on "Maritime Law and Law of the Sea" at the University of Hamburg.

If Members have any questions on this subject, please do not hesitate to get in touch with your usual contact at the Club.

Sources:
http://www.imo.org/en/OurWork/Environment/Biofouling/Pages/default.aspx
http://www.gard.no/web/updates/content/24305557/biofouling-moves-up-the-regulatory-agenda
http://www.imo.org/en/mediacentre/pressbriefings/pages/20-biofouling.aspx
http://www.imo.org/en/OurWork/Environment/Biofouling/Documents/RESOLUTION%20MEPC.207%5b62%5d.pdf
https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I7B8BB9028E8D46DFB63FBC7410E45356&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)
https://www3.epa.gov/npdes/pubs/vgp_permit2013.pdf
http://www.eagle.org/eagleExternalPortalWEB/ShowProperty/BEA%20Repository/References/Booklets/2013/ABS_Trends_October2013
http://www.maritime-enviro.org/Downloads/Reports/Other_Publications/Status_of_Vessel_Biofouling_Regs_2014_%20Nov_18_2014.pdf
https://en.wikipedia.org/wiki/Regulation_of_ship_pollution_in_the_United_States
http://www.mpi.govt.nz/importing/border-clearance/vessels/arrival-process-steps/biofouling/biofouling-management/
http://www.agriculture.gov.au/biosecurity/avm/vessels/#biosecurity-concerns
http://www.agriculture.gov.au/biosecurity/avm/vessels/biofouling/anti-fouling-and-inwater-cleaning-guidelines
http://www.agriculture.gov.au/biosecurity/avm/vessels/biofouling
http://www.agriculture.gov.au/biosecurity/legislation/new-biosecurity-legislation/how-changes-affect-you/shipping-industry
https://www.legislation.gov.au/Details/C2015A00061
http://www.agriculture.gov.au/SiteCollectionDocuments/animal-plant/pests-diseases/marine-pests/antifouling-consultation/antifouling-guidelines.pdf