Notice to Cruise Vessel Operators and Masters -

Your role in protecting Fiordland from damaging marine pests transferred in biofouling

MAF Biosecurity New Zealand (MAFBNZ) is concerned about the potential risk biofouling on cruise ships poses to the special marine environment in Fiordland.

"Biofouling" is the growth of marine life that builds up on hulls and other wetted parts of ships. This and ballast water are the major ways that marine pests can be accidentally transported and spread around the world. These pest species can cause irreversible changes to marine ecosystems, may be harmful to humans and often impact on the aesthetic value of coasts and waterways.

A survey of cruise vessels arriving in New Zealand has found fouling species of concern on the hulls, particularly in niche areas. Also information on the distribution of marine species in ports in Australia and other countries has shown that pest species are present in the ports that are visited en route to New Zealand and could easily be transferred here in the biofouling.

MAFBNZ is already working with domestic vessel operators to help prevent biofouling organisms damaging the precious Fiords. Codes of practice have been established for domestic fishing boats and other vessels that visit Fiordland, to ensure hulls are kept clean and are checked for freedom from any marine life before visiting the Fiords.

Currently the MAFBNZ Requirements for Vessels arriving in New Zealand:

- encourages the good practice of keeping vessel hulls free of excessive growth of seaweed, barnacles, shellfish and other encrusting marine life, including around rudders, and water intakes and outlets, and
- advises that a Quarantine Inspector may direct a vessel to take action to reduce the risk to New Zealand if the biofouling it carries is such that it is considered to pose a severe biosecurity risk.

MAFBNZ supports the International Maritime Organisation (IMO) in its consideration of international measures to manage biofouling risks. In the meanwhile it will work with shipping sectors to develop and promote 'clean hull' guidelines. Australian authorities are taking a similar approach.

Because of the special values of Fiordland and the recent increased number of ship visits, cruise ships visiting this area are being asked to take special measures to ensure their vessel hulls are free of biofouling organisms.

Useful guidelines have been developed by the Australian Government in conjunction with the Shippers Association. These guidelines include:

- Maintaining an effective antifouling coating on all underwater areas of the vessel

- In-water cleaning of slime or early fouling growth to prevent the build up to larger organisms – however this must not be carried out in Fiordland and will require consent from the local regional council to undertake elsewhere in New Zealand waters.
- The full guidelines are below.

Please help protect Fiordland from damaging marine pests by following these guidelines before departing for New Zealand. Next year you may be required to show evidence that the hull and niche areas are clean of risk biofouling such as by presenting a certificate from an accredited dive inspection service.

For more information contact: Liz Jones, Vessel Border Standards: 04 8940481 or liz.jones@maf.govt.nz

Best Practice Management Guidelines for the Prevention of Biofouling on Commercial Vessels

Introduction

Marine pests are known to be introduced and translocated in a variety of ways including ballast water from commercial shipping, biofouling, aquaculture operations, and aquarium imports.

Introduced marine pests can have significant impacts on the marine environment, human health and the economy. Such impacts include destruction of marine habitats and adverse effects on tourism, fishing, marine industries and coastal values.

Voluntary best practice management guidelines are being developed to address biofouling risks from a range of sectors. These guidelines will provide management measures to prevent new marine pest introductions and prevent the spread (translocation) of established populations.

1. Risks

By the time a new invasive pest is detected in a new environment, the chances of eradication are low, and efforts must then focus on containment and management with considerable economic and ecological cost. Prevention of new incursions, by management of vectors to minimise the risk of introduction and translocation, better enables protection of Australia's marine environment.

Although the biofouling levels on any individual ship may seem insignificant, the capacity of some species with pest potential to successfully breed in large numbers can constitute a threat, and the risk of incursions is multiplied by the frequency of ship visits.

The following guideline provides options for managing and treating biofouling on commercial ships and includes guidance for treatment of hulls, internal seawater systems and niche areas such as sea chests, sea intake grates, bow tunnels, anodes, transducers, docking support strips, propellers, rudders and shafts.

2. Definitions

biofouling – the attachment of marine organisms to any part of a vessel (including the hulls, rudders, propellers and other hull appendages) or internal seawater systems (such as sea chests and engine cooling pipes), or any equipment attached to or on board the vessel, aquaculture equipment, mooring devices or the likes.
marine pest – any exotic marine species that may pose a threat to Australia's marine environment or industry, if introduced, established or translocated.
Where **exotic marine species** is defined as any species not normally considered to occur and that may or may not be present in Australia's marine environment.
niche area – a protected or refuge area of relatively constant conditions in which marine organisms can escape detection or drying out. Also areas that are not coated in antifouling paint or areas where antifouling coating breakdown is common enabling the settlement of marine organisms.
translocation – the transport of an exotic marine species from one area of Australia's marine environment to another.
vector – anything capable of introducing or translocating an exotic marine species.

3. Hull Antifouling Systems

Hulls should be painted with antifouling systems that are able to prevent biofouling between dockings using materials that are in accordance with the AFS Convention. The system applied should take into account the planned docking period, the ship's speed and activity (nautical miles per month), and any projected lay-up periods. The choice of paint and application specification of the antifouling system should be developed in consultation with the paint manufacturer or their technical representative.

Where antifouling paint is damaged as a result of grounding, collision or mechanical impact, in-water repair of the paint system should be considered for the area of damage even if the area of damage is relatively minor.

At maintenance dockings, prior to antifouling system repair and recoating, care should be taken in hull cleaning to ensure all residual biofilm, biofouling residues or other surface contamination is completely removed, particularly in niche areas, to facilitate good adhesion and durability of the repair systems.

Dry-dock facilities should be able to contain wastes to ensure that all material removed from the hull, including antifouling paint and biofouling, is disposed of in an appropriate land based facility.

4. Sea Chests

The internal surfaces of sea chests should be painted with antifouling paints suitable for the flow conditions of seawater through the chest. Care should be taken in application of both anticorrosive and antifouling paint to ensure adequate film build and adhesion to corners and edges.

Where possible, marine growth protection systems should release dosed water into the sea chest. Care should be taken to ensure that marine growth protection systems are operating at a level that is effective in preventing build up of marine organisms.

If steam blow-out pipes are fitted within sea chests, regular use may minimise growth in the sea chest. External surfaces of the blow-out pipes and holding brackets must be effectively antifouled as they are prone to fouling colonisation.

Antifouling paint adhesion and durability are improved if sea chest angles and corners are beveled or radiused, and sea chest grates use round instead of angular bars. Hinged grates will enable diver access for in water inspection and maintenance between dockings.

5. Sea Inlet Pipes and Overboard Discharges

Antifouling paint system adhesion and durability is improved if all sea inlet pipes and discharge penetrations are radiused and grates on sea intakes are constructed of round bars.

The antifouling paint system should also be applied inside the pipe opening and accessible internals and the anticorrosive or primer coating selected should be appropriate to the specific pipe material if this material is different to the hull plate.

6. Hull Appendages and Niches – Painted

Painted hull appendages are niche areas that, although painted, are for a variety of reasons, particularly susceptible to biofouling growth.

a. Docking support strips

Positions of docking blocks and supports should be varied at each docking to ensure that areas under blocks are painted with antifouling, at least at alternate dockings. These areas should receive major refurbishment type of surface preparation and painting at each docking they are accessible.

b. Bow and Stern Thrusters

The body and area around bow and stern thrusters are prone to paint damage through cavitation forces. High performance coating systems should be applied to resist cavitation damage and systems should be routinely maintained at dockings.

Antifouling paint system adhesion and durability is improved if tunnel openings are radiused where they penetrate the hull and grates are made of round section.

c. Bilge Keels, Cooling Scoops and Propulsion Scoops

The outer edge of bilge keels and scoops, and the weld joints to the hull should be stripe-coated with additional anti-corrosive and antifouling paint to ensure adequate film build to optimise system durability and antifouling life.

d. Rudder Hinges and Stabiliser Fin Apertures

Recesses within rudder hinges and behind stabilizer fins need to be carefully and effectively cleaned and re-antifouled at maintenance dockings. These niches should be inspected between dockings and fouling removed, ensuring that debris is captured and disposed to shore facilities. Before removing biofouling in-water, permission is required from the State/Territory authority (see section 11: In-water Cleaning).

Rudders should be moved port and starboard during the painting process to ensure that all surfaces are correctly painted to the correct specification of the antifouling system.

7. Hull Appendages and Niches – Unpainted

Some hull appendages are not painted with antifouling paint for operational reasons. Such appendages include anodes, velocity probes and echo sounders.

a. Cathodic protection (CP) anodes

Niche areas can be minimized if anodes are flush-fitted to the hull, or a rubber backing pad is inserted between the anode and the hull. If not flush-fitted, the hull surface under the anode and the anode strap should be stripe coated with a static antifouling to prevent fouling colonisation. If anodes are attached by bolts recessed into the surface, the recess should be caulked to remove a potential niche.

Sacrificial CP and Impressed CP anodes should be regularly inspected in-water and maintained to prevent biofouling. If the cathodic protection anodes are fouled any growth should be removed, ensuring that fouling debris is captured and disposed of to shore facilities. Before cleaning anodes in water cleaning permission is required from the State/Territory authority (see section 11: In-water Cleaning).

b. Echo sounders and velocity probes

Unpainted surfaces of echo sounders and velocity probes should be regularly inspected. If the echo sounders and velocity probes are fouled, growth should be removed ensuring that debris is captured and disposed of on shore. Before removing fouling, in-water cleaning permission is required from the State/Territory authority (see section 11: In-water Cleaning).

Where retractable pitot tubes are fitted, they should be internally painted with a static antifouling paint.

c. Propeller and shaft

Propellers should be regularly polished to maintain operational efficiency and to prevent biofouling. Painting propellers and propeller shafts with silicone fouling release coatings can maintain efficiency and enable self-cleaning, obviating the need for regular polishing. Unpainted propeller shafts should be cleaned at the same time as the propeller.

Thruster propellers or propulsion units should be routinely inspected for biofouling. If propellers or propulsion units are fouled, in service arrangements should be made to carry out a safe and environmentally acceptable cleaning with fouling captured in water. Before cleaning removing

biofouling in water, permission is required from the State/Territory authority (see section 11: In-water Cleaning).

Exposed sections of stern seal assemblies and the internal surfaces of rope guards should be carefully painted with antifouling paint systems appropriate to the degree of water movement over and around these surfaces.

8. Internal Seawater Systems

Effective marine growth protection systems can be fitted to internal seawater systems prone to biofouling. These Systems need to be regularly operated and monitored to ensure effective biofouling control is maintained. Seawater systems that operate while the vessel is in port are particularly vulnerable to fouling infestation, and should be closely monitored.

If seawater systems become fouled they should be treated with a product to kill fouling.

9. In-water Cleaning

a. Dive inspection and Propeller Polishing

Regular polishing of the propeller will not only improve ship performance but will minimise the risk of species translocation. Propeller polishing also provides an opportunity to inspect fouling prone niches and remove any significant growth.

While undertaking propeller polishing divers should inspect all niche areas for biofouling. Where significant biofouling growth is detected it should be removed using appropriate technology to ensure that all material is collected for disposal onshore and no material is allowed to remain in the water column.

Areas that should be specifically inspected by divers undertaking propeller polishing include:

- Rudder stock and hinge
- Stabiliser fin apertures
- Rope guards and propeller shafts
- Cathodic protection anodes
- Sea chest and bow thruster tunnel grates
- Sea chests
- Overboard discharge outlets and sea inlets
- Areas of antifouling paint system damage or grounding

Operators should plan in-water inspections for each individual ship and identify locations of potential fouling niches on the hull to enable divers to efficiently target these areas during inspections.

b Hull Cleaning

In-water cleaning or scrubbing of hulls painted with biocide-containing antifouling paints for the purpose of delaying dockings or attempting to rejuvenate depleted antifouling coatings must not be undertaken.

Scrubbing fouled antifouling paints can not only generate fouling debris, but prematurely depletes the antifouling coating and creates a pulse of biocide that can harm the local environment and may impact on future applications by the port authority for the disposal of dredge spoil.

Depleted antifouling coatings on hulls will also rapidly re-foul, reducing efficiency and increasing marine pest translocation risks.