BIMCO Biofouling Survey 2024

Have your say on topics such as inspections & in-water cleaning

Why it is essential you participate?
In 2023 the IMO adopted new "Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species" (the Biofouling Guidelines) which are intended to provide a globally consistent approach to the management of biofouling- . At present work at IMO is focussed on providing guidance on inspections and in-water cleaning - two elements that have significant influence on ship operations.
As such it is extremely important that shipowners have their say in what is practical and what is needed to realise the benefits of biofouling management in, for example, energy efficiency and GHG reductions. BIMCO will use the outcome to provide evidence-based information on industry practices to help ensure that IMO guidelines are pragmatic and practical.

About the survey
This years' survey builds on previous BIMCO biofouling surveys conducted in 2018 and 2021 to allow us to determine whether there has been a change in biofouling management practices. It also delves more deeply into how inspections and in-water cleaning are being carried out through the development of case studies to allow us to inform, in particular, IMO member states. We expect the survey to take between 10 and 20 minutes to complete depending on the amount of information you are happy to supply.
When you have completed the questionnaire, just click the SUBMIT button to send it BIMCO. By doing so, you allow BIMCO to use the information as stated in the confidentiality and data protection management statement below.

Confidentiality and data protection management of information
We will use the information you provide for the purposes mentioned above. A statistical analysis of the survey's results will ensure complete anonymity. The anonymised data will exclude your organisation's name and names of ships or any contact information supplied.
Your contact information if supplied will be added to the BIMCO membership database, if it is not already there. BIMCO will not pass on your personal information to third parties.

We may contact you if we have questions about the information supplied.
By completing and submitting this questionnaire, you have given us your consent to keep and use your personal information in accordance with this notice.
Thank you for participating.
Should you need assistance in completing the questionnaire, please contact **marinesurveys@bimco.org**

Section 1: Your Biofouling Management Practices

This section looks at your entire fleet of ships and broad biofouling management practices.

For the purpose of the survey the following definitions are used:
Biofouling management: the action taken to minimise the transfer of invasive aquatic species by the ship (often with a co-benefit of efficiency) including ship design, selection of antifouling systems, hull cleaning and maintenance and maintaining a plan and record book.
Proactive cleaning: the periodic removal of microfouling on ships' hulls to prevent or minimise attachment of macrofouling. It is often called hull grooming.
Reactive cleaning: a corrective action during which biofouling is removed from a ship's hull and niche

areas either in-water with capture or in dry dock.

Company Name

How many ships do you own and/ or operate?

What types of ships do you own and/or operate (select all that apply)

- ☐ Tugs
- ☐ Offshore Supply
- ☐ Heavy Lift/Project Cargo
- ☐ Product Carriers
- ☐ Crude Carriers
- ☐ Chemical Carriers
- ☐ Liquefied Gas Carriers
- ☐ Cruise ships
- ☐ Ferries
- ☐ Ro-Ro
- ☐ Reefers
- ☐ Container Ships
- ☐ General Cargo
- ☐ Bulk Carriers
- ☐ Other

Firstly - we would like to learn about general uptake of biofouling management- what percentage of your fleet uses a method of biofouling management - for example having a management plan, antifouling system, cleaning schedule?

- ○ 0 - 24%
- ○ 25 - 49%
- ○ 50- 74%
- ○ 75- 100%

Please indicate the high-level biofouling management actions you take as a company thinking about the majority of your ships? Select all that apply.

- ☐ Have an antifouling system (AFS) selected based on ship profile and service period
- ☐ Have a ship-specific Biofouling Management Plan (BFMP)
- ☐ Maintain a Biofouling Record Book (BFRB)
- ☐ Conduct regular inspections
- ☐ Undertake performance monitoring
- ☐ Conduct assessments to determine biofouling risk
- ☐ Specifying thickness and application methods of antifouling coatings

selected based on cost and availability

☐ Other

What antifouling coating systems do you use for the ships' hull? Select all that apply.

☐ Biocidal coating e.g. Self-Polishing Copolymer (SPC)
☐ Fouling release coating e.g. Silicone
☐ Fouling release with biocide e.g hybrid
☐ Hard coating
☐ Other

Please estimate what % of your fleet use Biocidal coating e.g. Self-Polishing Copolymer (SPC)

Please estimate what % of your fleet use Fouling release coating e.g. Silicone

Please estimate what % of your fleet use Fouling release with biocide e.g. hybrid

Please estimate what % of your fleet use a Hard coating

The total should not add up to more than 100%. Please check your numbers and try again. Thank you.

Thinking back over the last 24 months - if you have had new ships built or existing ships re-coated could you please list of any of the coatings used. Please provide as many technical details as possible such as brand name and coating specific name.

Have you experienced any AFS failures in the last 5 years on any of your ships?

○ Yes
○ No

Were you able to determine the cause of any failures? Select all that apply

☐ Improper application

- [ ] Degradation of AFS over time
- [ ] Environmental conditions
- [ ] Unable to determine
- [ ] Other

Do you have any special protection or differential management for niche areas? Select all that apply.

- [ ] None
- [ ] Differential coatings
- [ ] Cleaning regimes
- [ ] Marine growth prevention systems (MGPS)
- [ ] Other

Secondly, we would like to hear about your inspection and monitoring for the average ship within your fleet. What method, or methods, do you use in order to check the condition of the AFS and accumulation of biofouling? Select all that apply.

- [ ] Physical inspection – checking the condition of hull and niche area regularly based on calendar days and/or months
- [ ] Physical inspection – checking the condition of hull and niche areas on a non-fixed schedule i.e. when the opportunity arises
- [ ] Risk assessment of biofouling growth for example using a specialised software application
- [ ] Online hull performance monitoring systems using sensors and collecting high frequency data
- [ ] Semi-automatic or manual calculations using data collected from ship's staff (e.g. noon reports)
- [ ] Review of coating performance when dry-docked
- [ ] Conducting speed trials and comparing the performance data with previous speed trial reports
- [ ] Inspection by an independent organisation or inspector
- [ ] Do not check but have frequent cleanings at fixed intervals
- [ ] Other

How are in-water inspections normally carried out? Select all that apply.

- [ ] Using divers
- [ ] Deploying an ROV
- [ ] Quayside visual inspection by crew
- [ ] Other

Please estimate the burden to crew on undertaking activities related to biofouling management

	1	2	3	4	5	
minimal	○	○	○	○	○	heavy burden

For your average ship, do you perform in-water cleaning between dry-dockings?

- ○ Yes
- ○ No

When does the first cleaning normally take place prior to application of the AFS?

- ○ Within one year of application
- ○ Within two years of application
- ○ Within three years of application
- ○ Within four years of application
- ○ Five years after application

Have you changed your approach to biofouling management in the past 24 months?

- ○ No- our approach is the same as it has always been
- ○ Yes- to apply the 2023 IMO biofouling guidelines
- ○ Yes- to improve fuel efficiency
- ○ Other

When it comes to cleaning please let us know whether you undertake (or have undertaken) any of the following biofouling management practices. Select all that apply.

- ☐ Reactive cleaning - a corrective action during which biofouling is removed from a ship's hull and niche areas either in water with capture or in dry dock
- ☐ Proactive cleaning (hull grooming) - the periodic removal of microfouling on ships' hulls to prevent or minimise attachment of macrofouling. It is often called hull grooming
- ☐ Propeller polishing
- ☐ Other

How often do you undertake propeller polishing?

- ○ Less than once per year
- ○ Once per year
- ○ Twice per year
- ○ More than twice a year

Do you experience any barriers or challenges related to propeller polishing? Select all that apply.

- ☐ Port approvals/regulatory environment
- ☐ Port logistics
- ☐ Availability of cleaning company
- ☐ Availability of divers
- ☐ High costs
- ☐ Poor weather or visibility
- ☐ Not enough time to undertake cleaning due to commercial constraints

If you can please estimate the % decrease in fuel consumption for an individual ship after propeller cleaning.

Section 2: Biofouling Management Case Study - Inspection that then required a management action

In order to ensure that we can provide information that supports the development of practical in-water cleaning and inspection guidance we would like you to provide information on a specific instance of when a ship you own or operate was inspected (in any form) and details on any mitigation action that arose as a result of the inspection. The survey aims to ask questions that relate to information that would be contained within the Biofouling Management Plan/Record Book for a ship to assist in information gathering. You will be given the option to add up to 3 examples if you wish.

Type of ship to which this case applies

- ○ Tug
- ○ Offshore Supply
- ○ Heavy Lift/ Project Cargo
- ○ Product Carrier
- ○ Crude Carrier
- ○ Chemical Carrier
- ○ Liquified Gas Carrier
- ○ Cruise
- ○ Ferries
- ○ Ro-Ro
- ○ Reefer
- ○ Container
- ○ General Cargo
- ○ Bulk Carrier
- ○ Other

Please select the best fit operational profile for the ship in question

- ○ Domestic
- ○ North Sea and Baltic Trade
- ○ European Trade
- ○ Short International Voyages
- ○ International Voyages
- ○ Unrestricted Voyages

Please select the most appropriate description of the operating waters (climate) of the ship. Select all that apply

- ☐ Temperate
- ☐ Semi-temperate
- ☐ Tropical
- ☐ Polar

Please enter details of the coating applied to this ship (if known) – brand information will be kept confidential.

What was the primary trigger for in-water inspection in this instance?

- ○ A risk assessment indicated there may be biofouling growth
- ○ Performance monitoring indicated there may be biofouling growth
- ○ It was a statutory and class IWS (in-water survey) between dry docks
- ○ An inspection service was provided during another action e.g. divers doing regular propeller polishing
- ○ Following an idle period or specific lay up - for example as stipulated in a charter party or in a contract with the AFS manufacturer
- ○ Proceeding to an arrival port or waters of a coastal state where there were mandatory inspection requirements
- ○ Requested by the charterer e.g. due to failure of the AFS
- ○ Requested by the AFS manufacturer
- ○ Planned inspection in accordance with the Biofouling Management Plan
- ○ Ship was being repaired
- ○ Other

What main action was taken as a result of the inspection outcome?

- ○ Nothing- no action was required
- ○ In-water cleaning in port/harbour
- ○ In-water cleaning at anchorage
- ○ In-water cleaning offshore/open water
- ○ Cleaning in dry dock
- ○ Repaint in dry dock
- ○ Fast sailing
- ○ Other

Was the cleaning done with or without capture?

- ○ With capture (including influent/effluent treatment system)
- ○ With capture (no treatment system)
- ○ Without capture
- ○ Don't know

Where was the ship when the need for cleaning was identified?

Please enter the country and port if known.

Where did the ship cleaning take place?

Please enter as many details as possible- such as the port or dry dock or if offshore - where.

Did you experience any delays or disruption due to the cleaning?

- ○ Significant delay
- ○ Some delay
- ○ No delay

Do you believe cleaning had an impact on GHG emissions?

- ○ Increased GHG emissions
- ○ Decreased GHG emissions
- ○ No Impact on GHG emissions
- ○ Don't know

Which company did you use to undertake the cleaning (if known)?

What kind of cleaning method was employed?

- ☐ Manual removal using hand-held equipment - using a diver
- ☐ Mechanical removal brushes– using a diver
- ☐ Mechanical removal – water jets – using a diver
- ☐ Mechanical removal brushes – using an ROV
- ☐ Mechanical removal- water jets- using an ROV
- ☐ Surface treatment (heat, UV etc)
- ☐ Other

Did you experience any barriers or challenges related to the cleaning? Select all that apply.

- ☐ Port approvals/difficult regulatory environment
- ☐ Port logistics such as bunkering barges alongside
- ☐ Availability of cleaning company
- ☐ Availability of divers
- ☐ Availability of dry dock
- ☐ High cost
- ☐ Poor weather or visibility
- ☐ Areas of ship not accessible for cleaning
- ☐ Not enough time to undertake cleaning due to commercial constraints
- ☐ Coating damaged during cleaning
- ☐ Other

Do you have another example you would be willing to share to support this work?

- ○ Yes
- ○ No

Section 3: Biofouling Management Case Study - Proactive Cleaning

If you use proactive cleaning (the periodic removal of microfouling on ships' hulls to prevent or minimise attachment of macrofouling) on any of your ships we would like you to provide a case study using a single-ship example

Do you use proactive cleaning methods within your fleet?

- ○ Yes
- ○ No
- ○ No but we are investigating it as an option

What % of ships in your fleet are using proactive cleaning to manage biofouling?

- ○ 0 - 24%
- ○ 25 - 49%
- ○ 50- 74%
- ○ 75- 100%

Type of ship to which this single-ship case applies

- ○ Tug
- ○ Offshore Supply
- ○ Heavy Lift/ Project Cargo
- ○ Product Carrier
- ○ Crude Carrier
- ○ Chemical Carrier
- ○ Liquified Gas Carrier
- ○ Cruise
- ○ Ferry
- ○ Ro-Ro
- ○ Reefer
- ○ Container
- ○ General Cargo
- ○ Bulk Carrier
- ○ Other

Please select the best fit operational profile for the ship in question

- ○ Domestic
- ○ North Sea and Baltic Trade
- ○ European Trade
- ○ Short International Voyages
- ○ International Voyages

- ○ Unrestricted Voyages

Thank-you for agreeing to provide a second example.

Type of ship to which this case applies

- ○ Tug
- ○ Offshore Supply
- ○ Heavy Lift/ Project Cargo
- ○ Product Carrier
- ○ Crude Carrier
- ○ Chemical Carrier
- ○ Liquified Gas Carrier
- ○ Cruise
- ○ Ferries
- ○ Ro-Ro
- ○ Reefer
- ○ Container
- ○ General Cargo
- ○ Bulk Carrier
- ○ Other

Please select the best fit operational profile for the ship in question

- ○ Domestic
- ○ North Sea and Baltic Trade
- ○ European Trade
- ○ Short International Voyages
- ○ International Voyages
- ○ Unrestricted Voyages

Please select the most appropriate description of the operating waters (climate) of the ship. Select all that apply

- ☐ Temperate
- ☐ Semi-temperate
- ☐ Tropical
- ☐ Polar

Please enter details of the coating applied to this ship (if known) – brand information will be kept confidential.

What was the primary trigger for in-water inspection in this instance?

- ○ A risk assessment indicated there may be biofouling growth
- ○ Performance monitoring indicated there may be biofouling growth

- ○ It was a statutory and class IWS (in-water survey) between dry docks
- ○ An inspection service was provided during another action e.g. divers doing regular propeller polishing
- ○ Following an idle period or specific lay up - for example as stipulated in a charter party or in a contract with the AFS manufacturer
- ○ Proceeding to an arrival port or waters of a coastal state where there were mandatory inspection requirements
- ○ Requested by the charterer e.g. due to failure of the AFS
- ○ Requested by the AFS manufacturer
- ○ Planned inspection in accordance with the Biofouling Management Plan
- ○ Ship was being repaired
- ○ Other

What main action was taken as a result of the inspection outcome?

- ○ Nothing- no action was required
- ○ In-water cleaning in port/harbour
- ○ In-water cleaning at anchorage
- ○ In-water cleaning offshore/open water
- ○ Cleaning in dry dock
- ○ Repaint in dry dock
- ○ Fast sailing
- ○ Other

Was the cleaning done with or without capture?

- ○ With capture (including influent/effluent treatment system)
- ○ With capture (no treatment system)
- ○ Without capture
- ○ Don't know

Where was the ship when the need for cleaning was identified?

Please enter the country and port if known.

Where did the ship cleaning take place?

Please enter as many details as possible- such as the port or dry dock or if offshore - where.

Did you experience any delays or disruption due to the cleaning?

- ○ Significant delay
- ○ Some delay
- ○ No delay

Do you believe cleaning had an impact on GHG emissions?

- ○ Increased GHG emissions
- ○ Decreased GHG emissions
- ○ No Impact on GHG emissions
- ○ Don't know

Which company did you use to undertake the cleaning (if known)?

What kind of cleaning method was employed?

- ☐ Manual removal using hand-held equipment - using a diver
- ☐ Mechanical removal brushes– using a diver
- ☐ Mechanical removal – water jets – using a diver
- ☐ Mechanical removal brushes – using an ROV
- ☐ Mechanical removal- water jets- using an ROV
- ☐ Surface treatment (heat, UV etc)
- ☐ Other

Did you experience any barriers or challenges related to the cleaning? Select all that apply.

- ☐ Port approvals/difficult regulatory environment
- ☐ Port logistics such as bunkering barges alongside
- ☐ Availability of cleaning company
- ☐ Availability of divers
- ☐ Availability of dry dock
- ☐ High cost
- ☐ Poor weather or visibility
- ☐ Areas of ship not accessible for cleaning
- ☐ Not enough time to undertake cleaning due to commercial constraints
- ☐ Coating damaged during cleaning
- ☐ Other

Do you have another example you would be willing to share to support this work?

- ○ Yes
- ○ No

Please select the most appropriate description of the operating waters (climate) of the ship– select all that apply

- ☐ Temperate
- ☐ Semi-temperate
- ☐ Tropical
- ☐ Polar

Thank-you for agreeing to provide a third example.

Type of ship to which this case applies

- ○ Tug
- ○ Offshore Supply
- ○ Heavy Lift/ Project Cargo
- ○ Product Carrier
- ○ Crude Carrier
- ○ Chemical Carrier
- ○ Liquified Gas Carrier
- ○ Cruise
- ○ Ferries
- ○ Ro-Ro
- ○ Reefer
- ○ Container
- ○ General Cargo
- ○ Bulk Carrier
- ○ Other

Please select the best fit operational profile for the ship in question

- ○ Domestic
- ○ North Sea and Baltic Trade
- ○ European Trade
- ○ Short International Voyages
- ○ International Voyages
- ○ Unrestricted Voyages

Please select the most appropriate description of the operating waters (climate) of the ship. Select all that apply

- ☐ Temperate
- ☐ Semi-temperate
- ☐ Tropical
- ☐ Polar

Please enter details of the coating applied to this ship (if known) – brand information will be kept confidential.

What was the primary trigger for in-water inspection in this instance?

- ○ A risk assessment indicated there may be biofouling growth
- ○ Performance monitoring indicated there may be biofouling growth
- ○ It was a statutory and class IWS (in-water survey) between dry docks
- ○ An inspection service was provided during another action e.g. divers doing regular propeller polishing

- ○ Following an idle period or specific lay up - for example as stipulated in a charter party or in a contract with the AFS manufacturer
- ○ Proceeding to an arrival port or waters of a coastal state where there were mandatory inspection requirements
- ○ Requested by the charterer e.g. due to failure of the AFS
- ○ Requested by the AFS manufacturer
- ○ Planned inspection in accordance with the Biofouling Management Plan
- ○ Ship was being repaired
- ○ Other

What main action was taken as a result of the inspection outcome?

- ○ Nothing- no action was required
- ○ In-water cleaning in port/harbour
- ○ In-water cleaning at anchorage
- ○ In-water cleaning offshore/open water
- ○ Cleaning in dry dock
- ○ Repaint in dry dock
- ○ Fast sailing
- ○ Other

Was the cleaning done with or without capture?

- ○ With capture (including influent/effluent treatment system)
- ○ With capture (no treatment system)
- ○ Without capture
- ○ Don't know

Where was the ship when the need for cleaning was identified?

Please enter the country and port if known.

Where did the ship cleaning take place?

Please enter as many details as possible- such as the port or dry dock or if offshore - where.

Did you experience any delays or disruption due to the cleaning?

- ○ Significant delay
- ○ Some delay
- ○ No delay

Do you believe cleaning had an impact on GHG emissions?

- ○ Increased GHG emissions

- ○ Decreased GHG emissions
- ○ No Impact on GHG emissions
- ○ Don't know

Which company did you use to undertake the cleaning (if known)?

What kind of cleaning method was employed?

- ☐ Manual removal using hand-held equipment - using a diver
- ☐ Mechanical removal brushes– using a diver
- ☐ Mechanical removal – water jets – using a diver
- ☐ Mechanical removal brushes – using an ROV
- ☐ Mechanical removal- water jets- using an ROV
- ☐ Surface treatment (heat, UV etc)
- ☐ Other

Did you experience any barriers or challenges related to the cleaning? Select all that apply.

- ☐ Port approvals/difficult regulatory environment
- ☐ Port logistics such as bunkering barges alongside
- ☐ Availability of cleaning company
- ☐ Availability of divers
- ☐ Availability of dry dock
- ☐ High cost
- ☐ Poor weather or visibility
- ☐ Areas of ship not accessible for cleaning
- ☐ Not enough time to undertake cleaning due to commercial constraints
- ☐ Coating damaged during cleaning
- ☐ Other

Please enter details of the coating applied to this ship (if known)

Do you use a shipboard system to undertake proactive cleaning?

- ○ Yes
- ○ No

Please indicate the level of crew intervention required to use the onboard system ?

	1	2	3	4	5	
minimal crew intervention	○	○	○	○	○	high crew intervention

Which company do you use to undertake the cleaning or provide the equipment (if known)

How is the proactive cleaning carried out?

- ○ Manual removal using hand-held equipment - using a diver
- ○ Mechanical removal brushes– using a diver
- ○ Mechanical removal – water jets – using a diver
- ○ Mechanical removal brushes – using an ROV
- ○ Mechanical removal- water jets- using an ROV
- ○ Surface treatment (heat, UV etc)
- ○ Utrasonics
- ○ Other

Do you undertake the proactive cleaning with or without capture?

- ○ With
- ○ Without
- ○ Don't know

Where do you undertake the proactive cleaning? Select all that apply.

- ☐ In port
- ☐ Open sea
- ☐ On the roads

Do you experience any barriers or challenges related to proactive cleaning? Select all that apply.

- ☐ Port approvals/regulatory environment
- ☐ Port Logistics
- ☐ Technology readiness
- ☐ Reliability of technology
- ☐ Availability of cleaning company or equipment
- ☐ Availability of divers
- ☐ Availability of dry dock
- ☐ Cost
- ☐ Poor weather or visibility
- ☐ Areas of ship not accessible for cleaning
- ☐ Not enough time to undertake cleaning due to commercial constraints
- ☐ Coating damaged during cleaning
- ☐ Crew training
- ☐ Other

Thank you for taking the time to fill out this survey. Your input will be used by BIMCO to enable us to ensure future developments on in-water cleaning and inspection are practical and support industry. Please ensure that you click the submit button below to send your answers to BIMCO.

If you are content for us to follow up with you on any elements of the survey please enter your email.

example@example.com