

# CAREENING AREAS IN MARINAS, ANCHORAGES, AND PRIVATE SHIPYARDS. STATUS OF IMPLEMENTATION OF THE MSFD MEASURE

Julie Droit<sup>1</sup>

<sup>1</sup>CEREMA eau, mer et fleuves. Institute for risks, environment, mobility and development. 155 rue Pierre Bouguer, BP 5, 29280 Plouzané, FRANCE.

Phone: +33-(0)2 98 05 67 32 E-mail: [julie.droit@cerema.fr](mailto:julie.droit@cerema.fr)

**Abstract** – Ship careening, which consists of stripping an antifouling paint by various techniques, generates waste, in the form of dust or flakes, which can contaminate the marine environment by runoff or by air. These residues contain different chemical contaminants (biocides, hydrocarbons, microplastics, solvents ...) that can have an impact on the environment and human health.

The implementation of the Framework Directive Marine Environment Strategy has been declined through the adoption of the Marine Environment Action Plans at the level of each marine sub-region, and then associated measurement programs. These include all concrete and operational actions that meet one or more environmental objectives, with a view to achieving or maintaining the good ecological status of marine waters by 2020.

An action on the fairing areas is part of the measures implemented at the national level: The M013 – NAT2 measure: Conduct a census of fairing areas of marinas, incite demarcation and the sharing of fairing areas and promote the elimination of discharges of contaminants into the sea.

In this context, the Cerema was commissioned by the Department of Water and Biodiversity of the Ministry of Ecological and Solidarity Transition to carry out a national study identifying the level of equipment in fairing areas of marinas, anchorages and private shipyards to assess their respect for the environment.

Data collected through surveys of managers, state agencies and public institutions concerned, are the subject of a layer of geographic information posted on the site Geolittoral: <http://www.geolittoral.developpement-durable.gouv.fr>

## Introduction

Ship careening, which consists of stripping an antifouling paint by various techniques, generates waste, in the form of dust or flakes, which can contaminate the marine environment by runoff or by air. These residues contain different chemical contaminants (biocides, hydrocarbons, microplastics, solvents ...) that can have an impact on the environment and human health [1].

The implementation of the Framework Directive Marine Environment Strategy has been declined through the adoption of the Marine Environment Action Plans at the level of each marine sub-region, and then associated measurement programs. These include all concrete and operational actions that meet one or more environmental objectives, with a view to achieving or maintaining the good ecological status of marine waters by 2020.

An action on the fairing areas is part of the measures implemented at the national level:

*The M013 – NAT2 measure: Conduct a census of fairing areas of marinas, incite demarcation and the sharing of fairing areas and promote the elimination of discharges of contaminants into the sea.*

In this context, the Cerema was commissioned by the Department of Water and Biodiversity of the Ministry of Ecological and Solidarity Transition to carry out a national study identifying the level of equipment in fairing areas of marinas, anchorages and private shipyards to assess their respect for the environment.

## **Materials and Methods**

### ***Synthesis of existing data***

Before soliciting the port managers, an inventory of existing data was carried out. Data have been collected from various bodies and state departments: Water agencies, French biodiversity office, relevant state bodies. A synthesis of the data available in the studies published on the subject was also carried out [2].

### ***Online surveys***

The contact details of the managers of the public and private refit areas were identified from the data synthesis and via internet searches.

An online questionnaire was constructed targeting the essential parameters for the study:

- accommodation capacity,
- type of area,
- fairing capacity,
- commitment to a certification or other exemplary approach,
- existence of a system for treating fairing effluents,
- type of treatment.

The questionnaire and all of the data collected were submitted to the relevant government departments for validation.

Following the first online survey, a complementary online survey was sent to managers who agreed to be contacted and who have a system for treating fairing effluents.

This second survey made it possible to obtain additional information concerning:

- the modalities of access to the fairing device,
- the periods of attendance,
- the methods of maintenance and control of the efficiency of the effluent treatment devices,
- the management of waste related to fairing activity (including bio-waste).

### ***Classification criteria for ports, anchorage areas and boatyards***

In order to describe the level of equipment of each site a color code has been adopted:

Table 1 - Color code applied to the data relating to the fairings.

Color	Code	Fairing activity?	Fairing area ?	Fairing area project ?	Sharing solution ?	Type of treatment known ?
White	0	no	no	/	/	/
Red	1	yes	no	no	no	/
Orange	2	?	? or no	?	?	?
Yellow	3	/	no	yes	/	/
Purple	4	/	no	no	yes	/
Green	5	yes	yes	/	/	no
Blue	6	yes	yes	/	/	yes



A "fairing area" (or « careening area ») is defined as a site (hold or land) equipped with a fairing effluent treatment system.

When the type of treatment is known, it is described as follows:



- **level 1 treatment:** Pre-treatment of effluent sludge / settler / oil separator. This pretreatment reduce the contents of suspended solids, hydrocarbons and oils. Micro-pollutants, including biocides, are not treated.



- **level 2 treatment:** Complete process : Pretreatment + filtration treatment (zeolite, activated carbon). This complete treatment system treat micropollutants (including biocides).

## Results

### *Results of the first online survey*

The questionnaire was sent to 600 harbor and mooring area managers and 400 managers of private boatyards.

Managers for whom no email address could be identified could not be contacted.

A total of 321 complete responses were recorded:

- 33.6 % of the requested port or anchorage area managers replied;
- 13.6 % of the managers of nautical shipyards contacted replied.

It should be noted that several managers have sometimes been identified for the same structure. Several responses were therefore sometimes received for the same site.

The actual response rates to the survey are therefore as follows:

- Ports and anchorage areas: 26 %
- Nautical sites: 8 %

The types of managers who responded to the survey are illustrated in the figure 1.

Given the difficulties encountered in identifying managers of private boatyards and their low response rate, data concerning them is scarce.

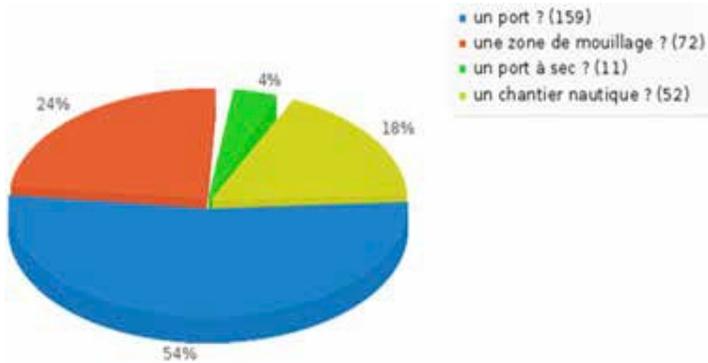


Figure 1 - Types of managers who responded to the online fairing survey.

### ***Complementary online survey***

Out of 99 managers contacted, including 81 ports, 29 complete responses were received. Or a response rate of 29 %.

According to these answers, the peaks of frequentation of the fairing areas are located between March and June:

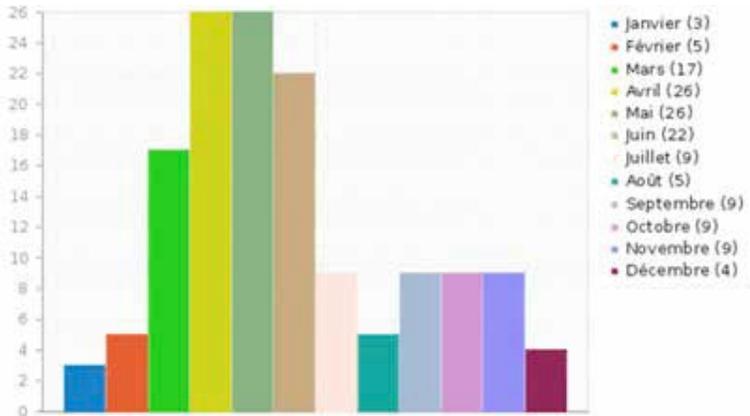


Figure 2 - Peaks in the use of fairing areas in mainland France.

41 % of the fairing area managers carry out self-checks of their treatment devices. These self-checks are always carried out at the point of discharge, and for only 25 % to 30 % of them, at the level of the sediments located at the level of the discharge or at the inlet of the treatment system.

For 30 % of the managers interviewed, the maintenance operations of the fairing installations consist of:

- clean and rinse the fairing surface,
- clean the grids upstream of the treatment systems,
- empty the tanks.

Only 20 % clean the filters, and 17 % replace them. Simple maintenance operations such as rinsing the surface, or cleaning the grids, are generally carried out by port operators, even by boaters. More complex maintenance operations such as emptying the tanks and cleaning the filters are delegated to specialized companies.

Finally, only 24 % of managers interviewed indicated that they were equipped with hazardous waste collection devices (oils, batteries, paint drums, solvents, etc.) at their refit area, and very few of them (13.8 %) have biowaste management channels from fairings.

### ***Data on-line and updating methods***

A Geographic Information System (GIS) has been produced as part of the data exploitation.

The purpose of this GIS is to make the data available to the public and to enable government departments to have a tool for diagnosing installations and analyzing needs, which they can then update.

This GIS will allow spatial analyzes on:

- the capacity of ports and anchorage areas,
- whether or not there is a fairing area,
- pooling of equipment,
- projects for the creation or upgrading of fairing areas,
- the level of activity of the fairing areas,
- the location of the discharge from the fairing areas,
- the type of treatment: level 1 (pretreatment) or level 2 (complete treatment).

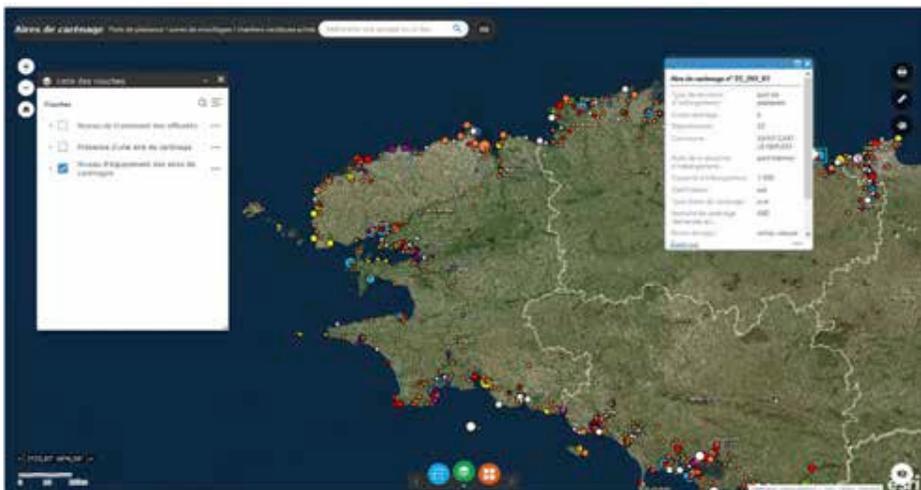


Figure 3 - Extract from the GIS fairings on Géolittoral.

Data will be made available via the national Géolittoral portal: <http://www.geolittoral.developpement-durable.gouv.fr>

Géolittoral is the data portal on the sea and the coastline of the Ministry in charge of the environment and the sea. It disseminates the geographic data produced within the framework of the fulfillment of public policies carried by the Ministry and is intended to cover all of France's maritime and coastal areas.

The data will be updated once a year by the Water Police Services while keeping a check step by Cerema.

## **Discussion**

In addition to the updates that will be carried out annually by the Water Police services, the database could be supplemented by the following actions:

- Additional information could be collected via telephone surveys supplemented if necessary by field visits, in particular for large capacity ports;
- The GIS could be improved by the geolocation of all the mooring areas;
- The location of nautical sites could also be improved.

Data from the Port Sediment Quality Monitoring Network, the REPOM, could be analyzed in order to identify possible contamination of the receiving environment by contaminants that may be present in the fairing discharges (TBT, Cu, Zn, etc.).

## **Conclusion**

The GIS fairing will allow the State services to define priority sites for:

- upgrading of installations,
- the creation of a fairing area,
- the implementation of innovative alternative solutions,
- the search for equipment pooling solutions.

However, upgrading treatment facilities is only part of the solution. Actions must also be taken:

- to develop practices by raising the awareness of port managers and boaters;
- to promote regular maintenance of treatment systems [3], [4].
- and finally, to act at the source of the problem by finding alternatives to antifouling paints with biocides.

## **Acknowledgments**

Thank you to Cerema teams (Eau, Mer et Fleuves, Normandie-Centre, Ouest, Nord-Picardie, Sud-Atlantique and Méditerranée) for their participation in the survey and their help in carrying out the GIS and putting it online.

## References

- [1] Loire Bretagne Water Agency (2015) - *Specifications for carrying out pollution measurements on refit sites.*
- [2] Loire Bretagne Water Agency (2015) - *The fairing areas of private nautical sites. Presentation of the Blue Wave collective operation.*
- [3] Marine Protected Areas Agency, Iroise Marine Natural Park, IDHESA (2011) - *Summary report on the monitoring of anti-fouling paints in port and anchorage areas.*
- [4] French Federation of Marinas (FFPP) (2003) - *Guide to recommendations for the design, construction and management of a technical and fairing area.*