

Inshore fisheries and governance (France)

The case of the commercially harvested mussel fishery of eastern Cotentin

GIFS project • Action 1



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Inshore fisheries and governance

The case of the commercially harvested mussel fishery of eastern Cotentin (Lower Normandy)

Action 1 – GIFS Project

2014

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PRESENTATION OF THE STUDY

The GIFS (Geography of Inshore Fishing and Sustainability) Project brings English, French, Belgian and Dutch partners together. It was selected under the framework of the European Programme of cross-border cooperation INTERREG IV A 2 Seas, co-financed by the European Regional Development Fund (ERDF).

The GIFS Project, which this study fits into, began in 2012 and is the successor to the Anglo-French CHARM (CHannel integrated Approach for marine Resource Management) Project (<http://www.charm-project.org>). The objective of the GIFS Project is to study the overall socio-economic and cultural importance of inshore fishing so as to integrate these dimensions in fisheries policies, maritime policy, coastal strategies of urban regeneration and, more broadly, in the sustainable development of coastal areas.

The work of the GIFS Project covers the English Channel and the southern North Sea by involving six partners. All actions are implemented jointly between these various partners so that the project takes on a true cross-border nature.



Geographical location of the project's various partners

The actions carried out within this project are split into three main themes:

- ✓ Governance of coastal areas and maritime fisheries;
- ✓ Fishing grounds and communities;
- ✓ Economy and regeneration of fishing communities.

This report is part of the GIFS Project Activity 1 "Governance of coastal zones and maritime fisheries", the objectives of which are:

- ✓ To understand the different modes of coastal governance of the study area and identify management practices.
- ✓ To inventory and understand the approaches and existing management frameworks throughout the study area, as well as to identify the place held by maritime fishing in the latter.

ACKNOWLEDGEMENTS

We would like to thank the stakeholders met for their great availability and interest in the study. The objective of this report being to conduct a study on the governance of inshore fishing along the French coastline of the English Channel and the southern North Sea, discussions were very rewarding and helped open new avenues for thought

INTRODUCTION

Nicknamed the “Barfleur blonde”, the wild mussel (*Mytilus edulis*) is emblematic of eastern Cotentin. The main mussel deposits at sea are located offshore of Barfleur, Moulard, Réville, Ravenoville-Saint Floxel for the department of Manche and offshore of Grandcamp-Maisy for Calvados (**Figure 1**). Eastern Cotentin is used here to designate to the entire exploited area (eastern Cotentin and Calvados). In terms of surface area, the Barfleur deposit, which is the most northern of the area, is the most important French fishing deposit of wild mussels, with more than 2 000 ha (Cochard and Morin, 2013). The exploitation of this resource is subject to a strict regulation, with the objective of the economic sustainability of the stock in order to maintain this inshore fishery.

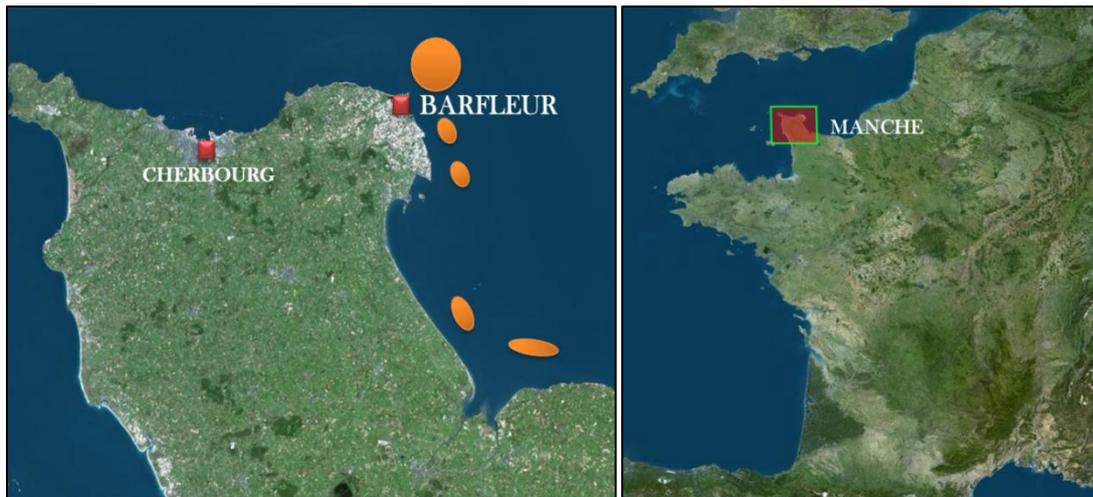


Figure 1: Distribution of the five natural mussel (*Mytilus edulis*) deposits of eastern Cotentin

The fishing takes place on deposits that all display significant interannual variability. Indeed, between 1980 and 2010, the annual biomass indices, all fields combined, are comprised between 1 000 and 20 000 tonnes (Personal communication from the CRPMEM BN, 2014). Therefore a scientific monitoring, carried out by Ifremer, was set up to better understand the stock and adjust fishing effort to the available resource. In addition to this is a regulatory framework established by the professionals that includes a system of licencing allowing access to the resource, a system of quotas, but also of opening and closing dates as well as legal fishing hours.

The exploitation of the wild mussel from eastern Cotentin is seasonal. The fishing season is spread from June to November, with variations depending on the deposit and the year so as to reach the commercial size, and more recently, to optimise the quality of the flesh. Ideally, the latter should meet certain quality standards that were set up through consultation between the fishermen and the quality management body of Lower Normandy (Normandie Fraîcheur Mer-NFM). Fishing involves 64 vessels for the 2013 season¹, and depending on the year, between 100 and 250 seamen exploit this product. For the 2013 fishing season, approximately 6 000 tonnes of mussels were landed. The production of this species may represent, in tonnage, 70 % of local fishing inputs, 30 % of Lower Normandy landings and 30 % of the French mussel production (Cochard and Morin, 2013).

Mussels are harvested using fishing dredges, the characteristics of which are determined by local regulations. This fishing gear is dragged along the bottom, and is used for collecting mussels that live standing on, or more or less buried in, the sediment. It consists of a frame on which is fixed a mesh pouch, and of a lower bar (**Figure 2**). The net is protected on the bottom by large rubber bands. A maximum of one dredge is authorised on board vessels. When the mussel fishing season is over, ships all practice other trade; for most it is dredging for scallops as well as trawling (Tesson, 2006).

¹ Personal communication of the CRPMEM BN on 13 Jan. 2014.

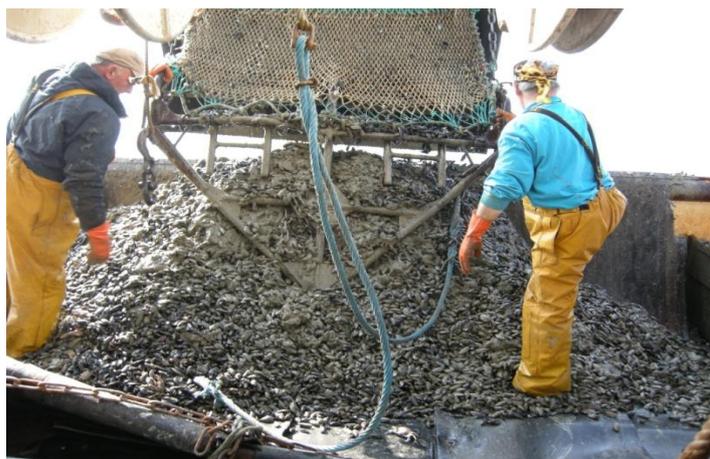


Figure 2: Mussel dredge (photo: CRPM)

The inshore mussel fishery of eastern Cotentin is defined as a very structuring fishery for the territory, and especially in Barfleur and Saint-Vaast la Hougue. It has a very strong socio-economic importance, notably *“because it is cultural and it sustains many boats in Barfleur, Saint-Vaast and Grandcamp”* (CRPMEM, 13 Jan. 2014). This fishery also helps develop the local economy because it *“provides business to the ports, landing centres, restaurant owners, wholesalers”* (CRPMEM, 13 Jan. 2014).

1 METHODOLOGY

Under the GIFS Project, the team from AGROCAMPUS OUEST was in charge of the study of the governance of coastal areas and maritime fisheries (in France, with the analysis of the governance methods for inshore fishing activities through five case studies. The methodology used was common to all partners regardless of the country.

1.1 Selection of the case study

The third case study was undertaken on the commercially harvested mussel of eastern Cotentin. This is a very widespread species in France but which mainly originates from aquaculture. This fishery exploits a wild deposit, the largest in France, with small sized fishing dredgers. There is a true development of this local fishery in terms of promotion of the mussel, which results in the emergence of numerous projects. Indeed, the community of fishermen is involved in the management of this fishery in order to sustain their business. The exploitation of the commercially harvested mussel in this region has a great socio-economic importance and structures the territory resource can provide lines of thought for a good governance. In addition, many projects, notably of promotion of the products, involve fishermen and can have an impact on governance.

1.2 Details of the method used

We will now discuss the framework of the case study, the sampling strategy, the gathering process, and the analysis of the data used for this research. A pilot case study was conducted in Hastings (England) to provide a first glimpse of the dominant themes of governance of fishing, but also to help develop and refine the methodology. The data from this pilot project was used to produce the interview guide and to identify the themes to be investigated, the participant sampling criteria, and the analytical framework. The structures involved in the governance as well as the stakeholders were identified through discussions with fisheries professionals. A reasoned sample of persons to be interviewed was chosen on the basis of the following criteria:

1. Stakeholders from various private and public sectors directly involved in each fishery, including the downstream sector (marketing, processing) to better understand the nature of their participation and interactions in the governance of fisheries
2. Stakeholders directly involved in governance at different scales. Local, regional, national and international to understand how and why the fishery is committed/participates, or not, in the decision-making system.

It should be noted that the specificity of the case studies influences the exact nature of the sample of stakeholders. Thus, the list of participants varies for each case study, especially when stakeholders “wear several hats” and can provide a perspective on governance at the local, regional and/or national level. In addition, in some cases, participants withdrew due to lack of time or interests. The table of participants for each of the five case studies is detailed in the introduction of each corresponding chapter. Not all the names of the participants were disclosed.

The method of the semi-structured interview was chosen because it enables to focus the discourse of respondents around different themes that are predefined by the surveyors. This method has the advantage of giving the opportunity to clarify certain points raised (May, 2001) during the face-to-face. A thematic interview guide consisting of open-ended questions was produced and the opportunity to expand or introduce new themes was taken into account. The interview guide was produced after discussions between all project partners and adjusted after the pilot case study at Hastings in 2012. The topics addressed in the interviews cover the following themes: the governance of the fishery (evolution, history, relationship between the various actors), the involvement of the State and of the fishermen in the governance of the fisheries; obstacles and levers of currently ongoing fishery projects; the socio-economic impact of this fishery (on tourism, local economy); the interactions between the community of fishermen and the local/regional/national or European organisms. These semi-structured interviews give the researcher the opportunity to better understand the complex processes (such as governance) with the help of a more interactive process (Dunn, 2001).

For the case of the commercially harvested mussel fishery of eastern Cotentin are concerned, 21 semi-structured interviews were conducted in January 2014 (**Table 1**). Most interviews were conducted in person in the workplace of the respondent or in a public place to ensure the convenience, comfort and privacy of the participants. Some interviews were conducted by telephone and the majority was recorded digitally to improve the accuracy of the data gathered. Notes were taken when the participant did not wish to be recorded.

Table 1: Interviewee Sample

Respondent	Sector/Role	Date	Duration
1. Respondent A	Quality management body	13 Jan. 2014	130 min
2. Respondent B	Regional Committee for Maritime Fisheries and Marine Fish Farms	13 Jan. 2014	98 min
3. Respondent C	Scientists	14 Jan. 2014	87 min
4. Respondent D	Fish auction	14 Jan. 2014	74 min
5. Respondent E	Joint Syndicate (development of fish farming and fishing)	14 Jan. 2014	90 min
6. Respondent F	Fisherman 1	14 Jan. 2014	44 min
7. Respondent G	Fisherman 2	14 Jan. 2014	47 min
8. Respondent H	Tourist office	15 Jan. 2014	34 min
9. Respondent I	Fisherman's wife	15 Jan. 2014	94 min
10. Respondent J	Fisherman 3	15 Jan. 2014	65 min
11. Respondent K	Axis 4 focus group	15 Jan. 2014	58 min
12. Respondent L	Regional Committee for Shellfish Farming	15 Jan. 2014	59 min
13. Respondent M	Fish wholesaler 1	15 Jan. 2014	85 min
14. Respondent N	Fish wholesaler 2	15 Jan. 2014	45 min
15. Respondent O	Sworn guard	16 Jan. 2014	47 min
16. Respondent P	Fish wholesaler 3	16 Jan. 2014	42 min
17. Respondent Q	Fishmongers	16 Jan. 2014	15 min
18. Respondent R	Fisherman 4	17 Jan. 2014	15 min
19. Respondent S	Fisherman 5	17 Jan. 2014	15 min
20. Respondent T	Fisherman 6	17 Jan. 2014	15 min
21. Respondent U	Departmental authority	17 Jan. 2014	76 min

A thematic analysis was adopted for the study of the raw data (Brewer, 2000). The minutes of the interviews were analysed using this approach to identify common themes, contradictions between different stakeholders, but also to identify problems, needs, and necessary improvements to the governance of the fishery. The reports of the five case studies are supported by quotations emanating from the interviews in order to illustrate the comments.

2 A REGIONAL GOVERNANCE BASED ON LOCAL CO-MANAGEMENT

The east Cotentin mussel is a species that is not subject to European quotas. Still, fishermen have gained awareness of the need to manage the resource and establish a regulation that is appropriate to the stock. A collective management of this resource has developed with the involvement of professionals, with scientific support and a collaboration of the authorities, to establish a regulatory management system since 1980.

2.1 A historical collective management

Previously, only near shore mussel fields were exploited by fishermen on foot at low tide. The fishing of wild mussels at sea, using a device towed by a vessel, began in the 1960s. The exploitation of this resource was done by small units (vessels less than 10 metres in length), carrying out very short campaigns (Montfort and Tesson, 2006). In 1970, fishermen wanted a management system within the Local Committee for Maritime Fisheries and Marine Fish Farms of Lower Normandy (Comité Local des Pêches et des Élevages Marins de Basse-Normandie - CLPMEM BN)², a professional organisation representing the fishermen in this region (Picault *et al.*, 2014a). A “Mussel” Commission has therefore been set up and a fishing licence has been established to regulate the activity. In the years 1979-1980, larger vessels also began to harvest wild mussels. So these were the first years of the intensive exploitation of this resource, and “*when they realised that they had “destroyed” it all, it is they [the fishermen] who created them [management measures]*” (Fisherman 2, 14 Jan. 2014). There has then been a real awareness of the importance of sustainable resource management. Thereby in 1981, at the request of the fishermen, through the Local Fisheries Committee (local professional organisation), the first prospecting campaigns to assess the state of the resource began with support from scientists (Montfort and Tesson, 2006).

2.2 The role of the various players of the co-management

There are two main players in the management of fisheries in Lower Normandy for the mussel: the State with a regional administrative representation and the Regional Committee for Maritime Fisheries and Marine Fish Farms of Lower Normandy (CRPMEM BN).

2.2.1 The government and the CRPMEM, players of the governance

In Lower Normandy, a real co-management system exists for the mussel fishery between administrative and occupational structures. In this system (Picault *et al.*, 2014b) the mussel resource management initiative originates mainly from the local users. The latter are represented here by the CRPMEM BN, professional organisation representing fishermen in this region and its local offices. Decision-making is participatory, giving stakeholders the opportunity to voice their positions. Fishermen enjoy a degree of autonomy because they hold some control over the management of the fishery (Ferracci, 2011). However, the regulatory decision-making falls to the national or regional authorities. For Lower Normandy, the management of regional fisheries is delegated by the regional prefect to the Interregional Directorate for the Sea Eastern English Channel–North Sea (Direction InterRégionales de la Mer (DIRM) Manche Est - Mer du Nord). At the departmental level, the prefect of the department delegates power to the Departmental Directorate of the Territories and the Sea (Direction Départementale des Territoires et de la Mer - DDTM), whose mission is to control fisheries and who proposes sanctions to the DIRM in cases of fishing infringements.

² The CRPMEM BN did not exist yet.

The French State, in this context of co-management, has given the CRPMEM BN missions of representation and defence of the interests of the trade³ in all areas pertaining to the sector (production, marketing, social, training, environment, ...). The community of mussel fishermen thus relies on this co-management system for the development of the regulation specific to their trade and to the region, which is then validated by the State. It is the fisherman who is a force of proposals. The governance of this fishery remains based on local and regional structures that have a crucial role in terms of representation of the fishermen, a system which is commonly used by all regionally managed fisheries in France such as for example that of the lobster in the Bay of Granville (Picault *et al.*, 2014a).

2.2.2 The role of the CRPMEM BN in the management of the fishery

The CRPMEM BN is the referent occupational structure within the eastern Cotentin mussel fishery. As is the case with other CRPMEMs, the Committee of Lower Normandy was founded by Law No 91/411⁴, which is now integrated into the Rural Code book IX (Picault *et al.*, 2014b). The main objective of CRPMEMs is *“to ensure, to regulate fishing within 12 nautical miles through established regulations [...] where all sedentary species are concerned”* (CRPMEM, 13 Jan. 2014). To this end, *“Regional Committees have established systems of fishing licences that are limited in number and on which is based a regulation on opening dates, quotas, fishing hours, etc. all management measures to regulate this [fishing] activity and ensure that it is as sustainable as possible”* (CRPMEM, 13 Jan. 2014). These regulations, established in the form of proceedings by CRPMEMs, are *“forces of proposal”* (CRPMEM, 13 Jan. 2014) and are made obligatory by prefectural order (by the regional prefect of Higher Normandy for the English Channel - North Sea).

The CRPMEM BN is therefore a structure representing the fishermen, to which membership is compulsory, and which consists of several colleges (colleges of shipowners, of fishermen on foot, employees of maritime fishing, of cooperatives, *etc.*). A board (union chamber type) of 25 persons is established by the colleges, the President of which is elected every five years. The board relies on specific commissions for each species fished which is the case for the mussel of eastern Cotentin. Unlike some other coastal regions, the former CLPMEMs of the Manche department did not choose to create a departmental committee but rather to link to the CRPMEM while maintaining local offices, of which one is based in St Vaast la Hougue.

2.2.3 The role of scientists

Scientists are an important link in the governance of the inshore fishing of mussels. One of the objectives of this management is to ensure the sustainability of fishery resources and cannot be done without scientific knowledge of the exploited stocks. It is Ifremer that intervenes in France on this aspect and notably on the mussel. Founded in 1984, Ifremer is a public body with industrial and commercial functions (Établissement Public à caractère Industriel et Commercial - EPIC) under the joint authority of the Ministry of Higher Education and Research and that of Ecology, Sustainable Development and Energy. It indirectly intervenes in the co-management as scientists do not have the power to vote in the decision-making system but simply have an advisory role.

³ Law n°2010-874 of 27 July 2010 on the modernisation of agriculture and fishing - LMAP – French Republic Official Journal of 28 July 2010 pages 3 to 90.

⁴ Law No 91-411 of 2 May 1991 on the interprofessional organisation of maritime fisheries and marine and on the organisation of shellfish farming.

2.3 The established management system

In the co-management framework of the Barfleur mussel fishery, fishermen and the authorities have gradually established a management system suited to the resource through a “Mussel” Commission and a system of licences.

2.3.1 The Barfleur mussel co-management decision-making system

The co-management system directly takes into account the fisherman or group of fishermen who will issue a request pertaining to the management of the fishery. This request will be recorded at the level of the CRPMEM BN offices, to be discussed in a special committee of the CRPMEM. Indeed, a “Mussel” Commission exists within the CRPMEM BN, it is chaired by a fisherman. It is the place of gathering and exchanges between local fishermen representatives, fishermen, and the CRPMEM BN. It enables opinions to be transmitted up the ladder and proposes management measures. This commission is composed solely of professional fishermen and elected members of the CRPMEM BN in order to have⁵:

- ✓ At minimum, 51 % of the board members,
- ✓ and at maximum, 49 % of outside non-elected members, who can volunteer to attend meetings (request to be placed with the CRPMEM BN) as long as there are enough members of the board to maintain the above proportion. The CRPMEM BN tries to have in this group as many representatives of the various ports, and small ships (less than 10 m in length) as well as large ships (up to 16 metres).

The President of the “Mussel” Commission is elected during a commission meeting. To date, it is an embarked shipowner from Barfleur. In the past, a college of fish wholesalers was included in the CRPMEM BN, however following the reform of professional organisations in 2010, this college disappeared. Fish wholesalers, similarly to the Departmental Directorate for the Territories and the Sea (Direction Départementale des Territoires et de la Mer - DDTM), are invited to commissions in an advisory capacity only, they no longer have a vote. Thereby, wholesalers can no longer directly influence the dates of opening and closing of the fishery.

The proceeding projects are brought to a “Mussel” Commission and then validated by proceeding during one of the board meetings that are held regularly. They must then be endorsed by the region prefect who delegates power to the Interregional Directorate for the Sea (DIRM) (Picault *et al.*, 2014b). Mussels not being a species under European management, the “Mussel” Commission is the body that sets the conditions of attribution of licences, gives an opinion on the issuance of these licences and implements the management measures. The CRPMEM issues the fishing licences. This fishery is therefore managed locally, with the direct involvement of fishermen. The limited spatial extent of this fishery is the reason why there are little or no relationships with the upper levels (CNPMEM, Europe).

The scheme of adoption of the proceedings is summarised in **figure 3**. This decision-making scheme of the co-management of the mussel is very close to that of the Great Atlantic scallop in the Bay of Saint-Brieuc, with the exception that in the department of Manche, there is no departmental Committee but rather local offices of the CRPMEM BN (Picault *et al.*, 2014c).

⁵Personal communication of the CRPMEM BN on 13 Jan. 2014.

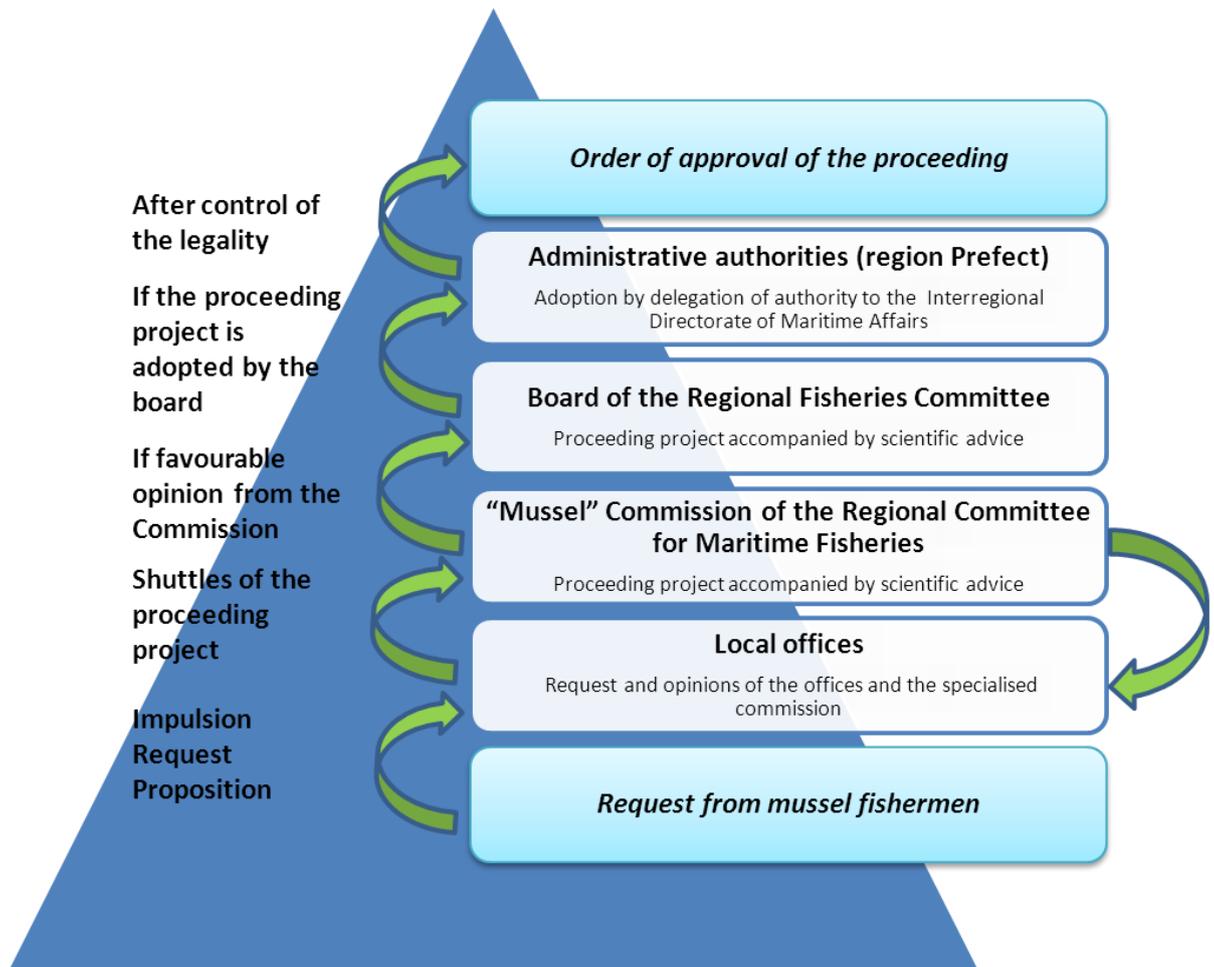


Figure 3: Co-management decision-making system for the Barfleur mussel

2.3.2 The establishment of a licencing system as a management measure

The management of the mussel fishery is based on a system of licences that are limited in number, where each license is associated with a pair shipowner/ship, non-assignable and limited to one fishing season (Order No 67/2012⁶). For 2013, 64 mussel fishing licences were issued. The issuance of these depends on a set of eligibility criteria (vessels less than 16 metres in length, less than 50 gross tons, be an embarked fisherman, etc.) defined by the “Mussel” Commission. For three years, the decisions that were made tend to reduce the fishing effort on the resource by not renewing certain licences, while favouring the fishermen that were first in place. *“Every year, we [the CRPMEM] therefore put forward the idea to repeal a licence among the licences that are not renewed. We [the CRPMEM] issue the second free licence, if there is one, to a fisherman setting up his activity for the first time. The third potential license, if there is one more available, to a new application. This enables over time to reduce the number of licences”* (CRPMEM, 13 Jan. 2014).

Each year, the Commission refuses around twenty applications for licences, three or four of which originate from young fishermen setting up their activity for the first time. The application for this licence is therefore significant and mainly originates from shipowners wishing to diversify. Indeed mussel fishing is less expensive than other fishing activities because it is not as energy-hungry

⁶ Order No 62/2012 of 2 May 2012 making compulsory Mussel Proceeding No ATT-13/2012 of the Regional Committee for Maritime Fisheries and Marine Fish Farms of Lower Normandy establishing and setting attribution conditions for granting the special mussel fishing licence.

(deposits near the coast). The appeal of this fishery leads some fishermen to apply for a “mussel” licence even if they do not use it: *“These are precautionary licences, even if we do not practice it [mussel fishing], we keep it [the licence]. This is a licence is not active but that can, let’s say in a year or two, enable us to get started”* (Fisherman 1, 14 Jan. 2014).

This license is associated with management measures that led to a development of the fleet, of the market and of the technical characteristics of the fishing gears and vessels in order to optimise the balance between fishing effort and the resource. A “Mussel” Commission proceeding annually sets the exploitation conditions of the resource (Order No 82/2013⁷). It delineates, among other things, the five mussel fields of eastern Cotentin, the fishing gear, the fishing periods, the allocated quotas, the landing locations and the minimum catch size.

An annual assessment of mussel stocks in the various deposits is carried out in partnership between the CRPMEM BN and Ifremer. From the results submitted in a “Mussel” Commission, quotas and opening dates are set. The quota is set per day and per embarked crew member, with a maximum quantity allocated per boat and per day (360 kg/man/day and a maximum of 1.8 t per vessel/day in 2013). Following the results of the preliminary stocks assessment, the opening date for the fishery is established and may be different depending on the deposit and the year. Indeed, the growth of mussels varies according to the fishing ground and the climatic conditions. The presence of spat over exploitable fields is also an obstacle to the opening of the fishery in order to preserve the resource. In fact, in 2010, the deposit of Réville was only opened for ten days and that of Barfleur for two and a half months (NFM, 2011). It is common that in some years there is a complete closing of one or more fields. In 2003 and 2004, the fishery has also been completely closed on all deposits (Ifremer, 2004). Nowadays, the opening of the fishery is also dependent on the flesh index⁸ (a minimum of 23 % of the mussel weight has to be flesh). This decision was taken in order to start the season with better quality mussels. The closure of the fishery is decided mid-season by the Commission and is based on the empirical knowledge of fishermen.

A fishing period is also fixed by Order No 82/2013, only authorising mussel fishing for five days a week (in 2013, from 9pm Sunday to 6:30 pm Friday) and at certain times only (in 2013 fishing is permitted between 9pm and 6:30pm). Only one landing is authorised per day and per vessel. Landing locations are also specified in this proceeding so as to facilitate the control work of the sworn guard and the authorities.

The minimum regulatory catch size set by Order No 82/2013 is 4 cm. It is mandatory for fishermen to directly discard back on the deposit the mussels whose sizes are less than the commercial size. This is why a sorting machine is required on the ship, as long as the size of the boat permits it.

In 2013, fields were not closed at the same time for large and small units (vessels less than 10 metres in length, named “Doris”). Indeed, after years of requests from small-scale fishermen, fishing was closed a month later (end of December) for the latter (Order No 154/2013⁹). This reflects an evolution in terms of governance with the consideration of “small boats” and the influence they are beginning to have in the decision-making pertaining to the closing of the fishery. The latter notice a better consideration of their views within the “Mussel” Commission, they feel they *“are slowly starting to make their voices heard”* (Fisherman 3, 15 Jan. 2014).

⁷ Order No 82/2013 of 17 June 2013 making compulsory amendment No 2 to the Proceeding No EXP-16/2013 of the Regional Committee for Maritime Fisheries and Marine Fish Farms of Lower Normandy setting the exploitation conditions of the mussel on the mussel deposits of eastern Cotentin for the 2013 campaign.

⁸ The flesh index represents 100 times the drained weight of flesh divided by the weight of the mussel.

⁹ Order No 154/2013 of 31 October 2013 making compulsory the amendment No 2 to the Proceeding No EXP-16/2013 of the Regional Committee for Maritime Fisheries and Marine Fish Farms of Lower Normandy setting the exploitation conditions of the mussel on the mussel deposits of eastern Cotentin for the 2013 campaign.

2.3.3 A control of the fishery wanted by the fishermen

In order to satisfactorily manage this fishery, a control system has been implemented in addition to the controls of public services. The CRPMEM BN pays a sworn guard through a seasonal contract with a part of the revenue generated by the licencing fees. The objective is to limit quota overruns and avoid the collapse of a sensitive resource. The creation of this position originates from a willingness of fishermen to control the mussel fishery. The mission of the sworn guard is the dockside control of quotas and landing hours of boats. However, given the distance of these ports from each other (Barfleur to Port en Bessin), this control is not exhaustive. *“There are boats that we cannot control [...] if there are five arriving at the same time, I can only control one”* (Sworn guard, 16 Jan. 2014).

The penalty system differs depending on the type of offence. The sworn guard has the power to record all offences of fishermen against the regulation, through official statements of offence. These are then forwarded to the DDTM. For fishermen who exceed the permitted quota, they may be assigned to dock for one to two weeks.

2.4 Participation of fishermen to joint projects

Beyond the management of the fishery, the fishermen were brought to participate in various projects to make their voice heard or to be taken into account in the establishment of new activities. For example, the projects can be environmental or come from the industrial sector (activities related to energy: wind or water power turbine installation sites).

2.4.1 Projects pertaining to the environment

Fishermen participate in various projects related to the marine environment such as the establishment of marine protected areas or of no-take zones for lobsters.

- **Natura 2000 sites: consultation and debate**

Natura 2000 is the European network of natural sites, which aims to ensure the conservation or the restoration of habitats and species of Community interest. The creation of the network is based on the “Birds” Directive of 1979 and the “Habitats” Directive of 1992, and is the origin of the delineation of terrestrial and marine sites. At sea, the sites designated under Natura 2000 constitute one of 15 categories of marine protected areas defined in the Environmental Code (natural marine parks, national parks with a marine part, nature reserves, ...). The establishment of marine protected areas is a mode of action and governance of marine areas which contributes to any comprehensive strategy for the management of the marine space. They target areas delineated on the basis of the value of the natural heritage, the importance of ecological functions and nature of uses. They are dedicated to the objective of protecting the habitat, often associated with an objective of sustainable usage and provide it with a governance framework and suitable means. Following the Grenelle de la Mer in 2009, France is committed to reach 20 % of marine protected areas in metropolitan waters by 2020. Meanwhile, the Marine Strategy Framework Directive (Directive cadre stratégie pour le milieu marin - MSFD), was developed in 2008 in order to maintain or restore the good ecological status of marine waters by 2020. These different environmental policies contribute to the preservation of marine ecosystems, and anticipate the creation of management measures to reduce the potential impacts of human activities that could jeopardise the achievement of the objectives.

In Lower Normandy, nine exclusively marine Natura 2000 sites originate from the offshore extension of the network. The activities carried out on Natura 2000 sites and susceptible to impact habitats or species which justified its designation, are subject to an impact assessment. This traditional system is suitable for commercial fishing practices through the circular of 30 April 2013, which makes compulsory the completion of a risk analysis of habitat degradation by commercial fishing activities, on the basis of a methodology established by the National Museum of Natural History (Muséum National d'Histoire Naturelle - MNHN). When a risk is identified (for a fishing gear on a given habitat), management measures must be taken to reduce this impact (limitation of certain fishing gears, restrictions on certain areas, ...).

Due to the importance of fishing practices within Natura 2000 sites in Lower Normandy, the CRPMEM chose to get involved in the process. It has thereby been designated as an operator associated with the Agency for marine protected areas (Agence des aires marines protégées) for the preparation of objectives documents for 5 Lower Normandy sites. The mussel fishery is directly affected by the Natura 2000 sites, as deposits are almost exclusively included in the perimeters of the sites "Western bay of Seine" and "Reefs and rear-coastal marshes from Cape Levi to the Saire headland". In addition to analyses of the potential impacts of this fishery, the socio-economic importance linked to the exploitation of this resource, and the existence of a supervision of the activity (by a system of licence, of quota, ...) that is based on long term scientific monitoring, are factors taken into account in the thought processes relating to the management measures to be implemented.

- **Project of implantation of offshore water turbine pilot farms**

Fishermen have also been confronted with the emergence of Marine Renewable Energies (MRE). Indeed, the Barfleur Strait, displaying strong sea currents and hosting the Barfleur mussel field was identified as a favourable area for the establishment of offshore water power turbine pilot farms, but the project was not selected. In point of fact, this project raised concerns within the fishing community related to the potential prohibition of fishing in this area and therefore the ban on the exploitation of the largest natural deposit of wild mussels. However, thanks to a strong mobilisation on their part, the fishermen were able to express their "discontent" by stating their views during consultation meetings. This project has raised major concerns for the future of this fishery, but thanks to the strong mobilisation of fishermen, it is now abandoned (Sadouni, 2013).

- **Scientific monitoring**

The major problem with the wild mussel is the high interannual variability displayed by this resource. *"It had been several years since there were any mussels in Barfleur whereas we had some in Ravenoville, Réville"* (CRPMEM, 13 Jan. 2014). It is therefore difficult to *"predict the abundance of a specific field"* (CRPMEM, 13 Jan. 2014). These strong interannual recruitment variations of natural mussel deposits of eastern Cotentin motivated professionals, supported by the CRPMEM BN, to call upon Ifremer scientists to conduct studies on this resource. These studies aim to provide all elements necessary to enable better management of the resource. Management and regulation measures of the CRPMEM BN are notably based on exploitation recommendations by Ifremer following survey campaigns. Indeed, since 1981 an annual survey campaign is conducted in the spring on the various deposits. These campaigns help provide indications on the status of the exploitable stock. This fishery's opening timetable is based on the proportions and the size of young mussels but also on the flesh index. It is primarily an *"economic management based on biological parameters"* (Scientist, 14 Jan. 2014). The survey and data gathering campaigns are always carried out jointly between Ifremer and the CRPMEM BN, with a division of labour. Ifremer provides the protocol, records and processes the data while the CRPMEM BN takes care of the hardware and equipment logistics. These assessment campaigns are an opportunity to confront "different worlds". Indeed, students of the Intechmer institution, students of maritime college and professional fishermen are associated to

these campaigns and work closely together, thereby allowing them to recognise and respect each other's work.

To better understand the dynamics of mussel deposits and anticipate interannual variations of this resource, a project pertaining to larval drift (DILEMES started in 2012) was initiated by the CRPMEM BN and in collaboration with scientists from Ifremer (Anonymous, 2012). Based on a modelling of larval drift, from field experiments consisting in the release of drifting buoys, this study would in the longer term allow the implementation of resource protection procedures by protecting “mother” areas and thus ensure continuity in the natural reseeding of the deposits.

2.4.2 Projects pertaining to enhancing the value of the products

More than ten years ago, the product quality was considered poor due to the presence of sand and small crabs in the Barfleur mussels, which generated a low selling price. Since then, several projects are implemented to improve the quality and thereby increase the value of the product.

- **Improvement of the fishing gear: 1st step of a value enhancement process**

Following the recognition by fishermen of the damages caused on mussels by metal mesh net dredges, it was decided by mutual agreement between the fishermen to find an alternative solution. This problem, raised during the “Mussel” Commission, has enabled the ban of metal mesh net dredges and their replacement with dredges equipped with rubber to minimise damages to the shells.

- **Degritting the mussels: the beginning of the product’s value enhancement on land**

The creation of degritting pools was initiated by the Barfleur fishermen to remove sand from mussels and thereby avoid supplying customers with mussels that “*crack between the teeth*” (Fisherman 1, 14 Jan. 2014). At Saint-Vaast la Hougue, this technique started much later, in oyster farming areas, by some fishermen who wanted to improve the quality of their product and not be limited to the sale “in bulk”.

- **Normandie Fraîcheur Mer: a body centred on increasing product value**

In addition to these steps, the Barfleur fishermen joined Normandie Fraîcheur Mer (NFM) which is a quality group comprising fishermen, fish auctions and wholesalers of Lower Normandy. The objective is to improve the quality of mussels to increase the value of the products. “*We went from a product that was very undervalued in terms of image, when it cracked between the teeth because it was sandy, to a product that is starting to be appreciated*” (Quality management body, 13 Jan. 2014).

Terms of reference were created in permanent collaboration with the fishermen to improve the quality and the sustainability of the resource. These specifications ensures several points: (1) the virtual absence of small crabs, (2) the origin of the product (commercially harvested mussels, *Mytilus edulis*, caught on deposits to the east of the Cotentin), (3) freshness (truly live mussels), (4) quality (fleshy, clean, degrittied and undamaged mussels), (5) the excellent quality of the water (class A), (6) the cleanliness of the shell and (7) the flesh index (above 25 %) (Monfort and Tesseron, 2006). NFM communicates on the eastern Cotentin mussel, under the trademark “Barfleur mussel” using various tools such as posters, placemats, videos, etc. This communication serves as advertising and thus allows an increase in value of the product. “*The positive effects of NFM are benefits brought to the whole fishery*” (Quality management body, 13 Jan. 2014). The Barfleur people and NFM are truly the promoters in the improvement of the product quality. Thanks to their dynamism, the mentalities of the fishermen have evolved throughout eastern Cotentin. This has resulted, among other things in a decrease of fishermen involved in “bulk” sales in favour of a degrittied mussel in the marketing circuit. However, the involvement of these two groups of players also induced changes in the

management of the fishery. Indeed, the NFM terms of reference require that a mussel with a flesh index above 25 % be exploited so as to have a mussel that is full from the beginning of the season. This obligation has, at the level of the “Mussel” Commission, enabled to enforce an opening of the activity only when this index is above 23 %, which is a compromise between the different opinions of fishermen.

- **The landing centre: a joint project between different player groups**

Since the end of June 2005, the port of Barfleur distinguishes itself by the presence of a landing centre, authorised for Barfleur fishermen (and a fisherman from Saint-Vaast) and managed by the fish auction of Cherbourg. The creation of this landing centre has been established following the will of the Barfleur town council to revitalise local fishing and stand out from other ports by playing the card of maintaining the authenticity of the village (in a logic of tourism). On the other hand, the centre enables European health standards to be met and thus to benefit from a collective health approval provided by the fish auction. It provides professionals with a working structure that facilitates product traceability, the recording of volumes landed per ship and provides a collective storage location.

For fishermen members of NFM, mussels harvested must necessarily pass through the Barfleur landing centre after passing through a degritting pool for one to six hours depending on the sediment type and the fishing area. This method avoids any risk of “crunchy” mussels for consumption. This tool is the result of cooperation on a project between different players who are the fishermen, the fishing auction, the Barfleur town council and NFM to improve product quality.

2.5 The importance of the role of women within the fishery

The fishermen’s wives from the village of Barfleur have always had an important place, but it has not always been recognised within the mussel fishermen communities: *“It is somewhat cultural, they are families of fisher folk where women helped fishermen and this endures from generation to generation”* (CRPMEM, Jan. 13). Despite an ever-present *“machismo”* (Fisherman's wife, 15 Jan. 2014) within the profession (notably on the docks), fishermen now recognise the role of their spouses. Today, some fishermen are no longer reluctant to say that *“women represent fifty percent [of the work]. If my wife stops, I stop. [...]. My wife does all the accounting, the sales, it is she who deals with the clients otherwise there would be no sales.”*(Fisherman 2, 14 Jan. 2014). Indeed, since there are no sales by auction, the spouses take care of the commercialisation of the product. According to a survey by Montfort and Tesson (2006), 28% of persons selling mussels through first sales are the spouses and 10% are the fisherman/wife couple. Some spouses even participate in NFM meetings and will manage the landing the centre in Barfleur. They are considered to be one of the major players in the development of the product quality in Barfleur. In contrast, the fishermen’s wives in other villages (Saint Vaast, Grandcamp, ...) do not seem to have as much importance in this fishery.

3 THE LIMITATIONS TO THE GOVERNANCE OF THIS FISHERY

The co-management based governance of the Barfleur mussel enables to consolidate the sustainability of this seasonal fishery. Numerous initiatives are thereby established by the fishermen and the sector to meet the future. But still, there are some limitations to this governance that will be detailed below.

3.1 A communication to be improved between the players of the fishery

The Barfleur mussel fishermen community is a stakeholder in the local management of this species. The persons surveyed have nevertheless raised some points to be improved at this scale in terms of communication between the various players to enable better governance

3.1.1 A lack of communication which impacts the management of the fishery

At the level of the "Mussel" Commission, there is a real willingness of fishermen to participate in decision-making. However, for some, it is difficult to attend all meetings and be heard. This is the case of small units fishing masters who feel inferior to others "*it is a little like the elder watching the youngest*" (Fisherman 3, 16 Jan. 2014). In addition, the information originating from the Commission meetings may be poorly transmitted to absent fishermen. This is notably the case of fishermen on small units (whose landing locations are distant from Cherbourg¹⁰) who do not necessarily mix with mussel fishermen having attended the meetings. On the other hand, the recent reform of occupational structures has, to a certain extent, affected the recognition given to the opinions of fishermen in decision-making. For some, the local offices have less power to transmit their messages.

In addition, the lack of communication between the authorities and small-scale fishermen non-members of the "Mussel" Commission or not attending all meetings can be at the origin of several offences due to a lack of information on regulations. "*Small fishing companies are not very well informed on the regulation [...] lack of information*" (DDTM, 17 Jan. 2014).

3.1.2 Difficulty of access to information in view of improving the management system

The governance is based on a good knowledge of the fishery and the exploited resource. According to respondents, the CRPMEM BN and fishermen experience a lack of feedback from the authorities with regard to fisheries statistics supplied by fishermen (from fishing forms for vessels less than 10 m in length, paper or electronic logbooks for those over 10 m). They would like to have access to harvested quantities in near real time. This would allow them to rely on hard data to decide on a closure of the fishery. The CRPMEM can therefore not "*rely only on professionals, [...] on their feelings, and on a decreasing density*" (CRPMEM, 13 Jan. 2014) to decide on closure dates.

Conversely, still with regard to these fishing statistics, the authorities blame the fishermen for the excessive time taken to complete the paper logbook. If fishermen are obliged to submit their paper logbook 48 h after the campaign at the latest, they will however sometimes take a week or even a month to do so, with quality of information that can be variable.

¹⁰ The CRPMEM BN is based in Cherbourg.

3.1.3 A limited involvement of the fishermen

Fishermen are directly involved in the governance of the fishery through co-management. In order to improve the management of the fishery, they undertake steps to better understand the mussel resource. In this context, they are interested in scientific projects such as the DILEMES Project by Ifremer. Scientists are accustomed to transmitting the results of their research at meetings of the “Mussel” Commission. Although a certain interest of fishermen has been observed for this project, this was not translated into action during feedback meetings, which have mobilised very few professionals. Indeed, during the last meeting of Project DILEMES only three fishermen were present out of the 65 fishing licenses. The conclusion is that it is *“difficult to involve fishermen, strictly speaking they only take action when it concerns the economic aspect of their business”* (Scientist, 14 Jan. 2014).

3.2 The value-enhancement of the Barfleur mussel to be optimised

The French commercially harvested mussel is little known to the general public and has some difficulty breaking into a competitive market. Numerous steps have been initiated to better promote this species but although the quality is improving, the selling price remains relatively low and depends on the commercialisation method (in bulk, ready to eat, detail, *etc.*). Currently, it ranges from 0.60 to 0.85 euros in bulk and from 1.0 to 1.30 euros in detail. This low price shows that despite an improvement in the quality and selling price, the value-enhancement remains insufficient. Some fishermen are therefore focused on quantity rather than quality. *“The quality comes second”* (Fish wholesaler 1, 15 Jan. 2014).

3.2.1 A lack of cohesion for marketing

The governance of the Barfleur mussel fishery is adjusted to the resource and to the fishing effort in this area, with the establishment of numerous management measures. In addition, there are difficulties in commercialising this species, which is for sale in a very competitive market, even though efforts are being made to improve quality.

- **Two types of markets**

Currently, we distinguish two markets for the Barfleur mussel. The market for direct sales with high quality products that are degritté and cleaned by the fishermen. They sell them on the docks directly or deliver them to restaurants and to supermarkets as well as hypermarkets. The wholesale market with mussels that are delivered “in bulk” to wholesalers for price which is very much under that of direct sales. In this case, the mussels are often sold uncleaned and not degritté.

- **A restricted market**

The sale of the Barfleur mussel is only carried out on a limited scale. Because they are wild deposits, the stock displays a strong interannual variability in abundance. For some buyers, it is necessary to have a regular intake of the product that is not possible then. In addition, the marketed quantity remains relatively low (6 000 tonnes in 2013) compared to the French consumption of mussels which is about 100 000 t/year (Monfort & Tesson, 2006), therefore the fishery cannot aspire to conquer new markets.

Today, the eastern Cotentin mussel remains undervalued nationally. Indeed, it has *“[only] been known for a short time and very locally”* (Tourist office, 15 Jan. 2014). The promotion of this fishery is in its infancy but it is necessary for it to move forward that everyone works together, which is not currently the case. This can be partly explained by the presence of local market niches, which does not encourage fishermen to regroup under one unique product name, which would be beneficial for value-enhancement.

3.2.2 A significant local competition

Where the commercialisation of mussels is concerned, attempts to share a sales market have always failed. The lack of cohesion between fishermen can explain this failure with regard to the selling price, *“every fisherman sells in his corner”* (Fish auction, 14 Jan. 2014) as well as their individualism. It is a competitive market where the fisherman does not draw the best price for his product. There is a real war on price.

- **The practices of supermarkets and hypermarkets**

Supermarkets and hypermarkets are major players in the commercialisation and in the conflict regarding prices. They may have a strong influence on the price of the mussel. For example, when the season starts, the supermarkets and hypermarkets can make the Barfleur mussel one of their leading products (without making a profit), which influences the sales prices of fishermen and wholesalers who will be forced to sell at low prices in order to keep their markets.

- **Competition between fishermen**

Locally, there is a strong competition between fishermen, particularly on prices. Some fishermen in particular tend to cut prices to make sure they sell all their catch, *“There is no agreement”* (Fish wholesaler 1, 15 Jan. 2014) between fishermen on sale prices of mussels. On the contrary, *“There is a competition between fishermen to sell this product, which lowers the price”* (Fish wholesaler 1, 15 Jan. 2014), and sometimes even in spite of costs incurred *“it is such a race on prices that there are boats that almost fail to pay their charges [...] and end-up overshooting their quota”* (Fish wholesaler 1, 15 Jan. 2014). On one hand there are the fishermen who sell their product directly, and try to obtain a good price by promoting it. And on the other, there are those who go through wholesalers, and sell at low prices due to the pressure exerted by the latter and must increase volumes to compensate. Fish wholesalers can even sell at prices lower than those charged by the selling fishermen.

Even within a port, there are problems with selling prices between fishermen, *“there is always tension, we [fishermen] will never be in agreement; on the broad lines yes, but not on small lines”* (Fisherman 2, 14 Jan. 2014). Indeed, even if they agree on a price, there will always be one who seeks to reduce his price in order to sell. *“Some boats are prepared for sale twice as cheap as the boat that produced the same mussel and is right next to it”* (Fish wholesaler 1, 15 Jan. 2014). Some fishermen are more in a policy of quantity at the start than quality. This can lead to a devaluation of their product and impact the rest of the fishery.

- **Competition with bouchot mussels**

There also exists a local and occasional competition with bouchot mussels which weakly influences product marketing. In fact, the only moment of real competition between the two markets is the wild mussel fishing season.

3.2.3 A promotion of the Barfleur mussel in its infancy

Another problem related to the value-enhancement of the mussel is linked to a failure of the marketing tool, which is not successful in making the product known under the trade name “Barfleur mussel” in other regions. The commercially harvested mussel is recognised as being more fragile, with a shorter lifespan (out of the water and unprocessed) than farmed mussels, which limits its export within the country and is an impediment to sale.

Communication steps are emerging, notably with NFM that has established a collective mark and was a driving force in improving the quality of the Barfleur mussel. In addition, a project is underway to create a Protected Designation of Origin (PDO) “Barfleur mussel” or a Protected Geographical Indication (PGI) “Eastern Cotentin mussel”. This project could well enable the establishment of a socio-economic and cultural cohesion between players but also recognition of the product from a wider audience of consumers. The ultimate goal is to increase the selling price and the reputation of this product.

One of the avenues being explored for the promotion is also that of tourism. Indeed, the village of Barfleur displays tourism appeal (between 87 000 and 90 000 tourists per year¹¹) through its membership in the association “Most Beautiful Villages of France” but *“it is not because there are Barfleur mussels that tourists come here. At least not yet. However, when they come here, [...] we [Tourist office] tell them about the Barfleur mussels and then they are flabbergasted!”* (Tourist office, 15 Jan. 2014). So there is educational work to be carried out with tourists either by the Tourist Office, restaurant owners and fishermen. For Barfleur, where the sea holds a prominent place, it is important to develop projects around the sea and mainly around artisanal fisheries. In Barfleur *“there is no industry, there is fishing, so you have to turn to fishing”* (Tourist Office, 15 Jan. 2014).

3.2.4 The lack of cohesion, a major impediment to the value-enhancement of the mussel

Better value-enhancement of the Barfleur mussel cannot be achieved without cooperation between the sector stakeholders. Various collective projects have failed due to the lack of cohesion among stakeholders.

- **Tourism project**

The Festivals Committee and the Association of Barfleur port users have organised the first festival in 1994, honouring the “Barfleur blonde” *This initiative was an attempt to raise the awareness of and promote this product originating from local fishing. The Barfleur mussel can therefore be considered as a “tourism asset for Barfleur but that is not yet exploited”* (Tourist Office, 15 Jan. 2014). They are therefore individual and uncoordinated initiatives due to a lack of cohesion between the various players. During major events such as the antiques fair *“everyone eats mussels, people should therefore come to an agreement, do something to better promote the mussel. It would require that fishermen, restaurant owners, the town council, and everyone sit around the table and decide to promote the mussel.”* (Tourist office, 15 Jan. 2014).

¹¹ Pers. comm. Tourist Office of Barfleur.

- **Project of creation of a maritime cooperative for the eastern Cotentin mussel**

There was an attempt to create a sales cooperative of mussels between 1983 - 1984, with a fixed sales price for all fishermen. This project has encountered two major problems related to the mode of sales and the heterogeneity of the product quality. The Barfleur mussel being sold for the most part in short cycle (direct sales, mutual agreement), each fisherman has its own markets and thus its own buyers. In addition, the quality differs from one fisherman to another, if he deals in “bulk” or “ready to eat” mussels. The first being satisfied and the latter feeling penalised by the lack of quality differentiation.

For a fisherman, *“the best idea to move the fishery forward is to create a cooperative that would decide and set the selling price and would include all the fishermen who sell the same product quality”* (Fisherman 1, 14 Jan. 2014). However, for this same fisherman *“the independence of fishermen hinders the establishment of the cooperative”* (Fisherman 1, 14 Jan. 2014). Furthermore, the idea shared by all is that now *“everyone manages their own businesses”* (Fisherman 2, 14 Jan. 2014). *“In the past, it would have been to establish a cooperative, now that I'm independent that is over. The work we did [market research, clients], we do not want to give to others who broke the trade. The ideal would have been to set up a cooperative with one or two vendors, for us to put our mussels in a centre and that it would be up to the seller to say that there were 60 tons sold, there is a ton each. We could have had a fixed price”* (Fisherman 2, 14 Jan. 2014).

3.2.5 Conflict within the fishery

There is first of all *“an ancestral conflict between Saint-Vaast la Hougue and Barfleur”* (Tourist Office, 15 Jan. 2014). This conflict is exacerbated by the presence of different mentalities, and slightly different view between the port of Barfleur where they are in an approach that emphasises quality and Saint-Vaast where they are in a quantity approach.

Other conflicts are also reported such as land use conflicts between mussel fishermen and sea bass line fishermen or with trawlers but they remain anecdotic. Indeed, *“liners consider that mussel fishermen dredge in sea bass spawning grounds”* (Departmental authority, 17 Jan. 2014), coexistence between the two trades is difficult. And beam trawlers *“sometimes come too close to the mussel spats and they cause damages”* (Fisherman 1, 14 Jan. 2014).

Conflict can even take place within the same port. These are notably caused by the individualism of fishermen towards compliance with quotas. Some fishermen say that *“if I don't take them, the others will”*.

The Barfleur mussel fishery is very present locally with a governance based on co-management by directly involving fishermen. However during interviews, stakeholders did not mention interactions in terms of governance and fisheries management between the local/regional level of the fishery and the national/European level, unlike the case studies that were conducted (Picault et al., 2014b and c)

“It is a thoughtful and responsible fishery” (Fisherman’s wife, 15 Jan. 2014)

The interviews conducted within this fishery have helped to highlight the socio-economic, patrimonial and cultural significance of the wild mussel fishery of eastern Cotentin, on a local scale. This fishery has changed a great deal in terms of governance. For the last forty years, there has been a real rise in the awareness of the fishermen on the need to manage this resource. It is in this context that the “Mussel” Commission of CRPMEM BN was established. The better consideration of the various opinions originating from all categories of fishermen (consultation) and the cooperation between these players led to a rapid development of the latter. The Barfleur mussel fishery rests on regional governance based on local co-management. The Barfleur mussel is a resource supervised by an *“economic management based on biological parameters”* (Scientist, 14 Jan. 2014).

In addition, a participatory quality approach has been established and developed by the fishermen themselves despite a lack of cohesion and harmonisation of marketing resources. This step has helped increase the quality of the product, through the establishment of strict specifications developed jointly between fishermen and the quality management body. It ensures a good quality of the product, such as organoleptic quality, by implementing value-enhancement processes such as degritting. However, this trend is more pronounced within the fishing community of Barfleur than in the other municipalities of the area. This can be explained by an ancient or even ancestral social background.

The lack of cohesion, resulting in a lack of collective dynamism and individualism, was an obstacle in the implementation of several common projects. These aspects are all obstacles to the value-enhancement of the product that is the Barfleur mussel. However, today, there are several initiatives from fishermen and other organisations, so as to improve the value-enhancement and the promotion of the Barfleur mussel, as well as communication about it. The development of joint projects oriented towards tourism can be seen as a key to this success. The aim is to promote the development of this territory by highlighting the fishery products and using the mussel as a leading product to improve tourism attractiveness.

It has also been shown that the various players, directly or indirectly involved in the mussel, had a heterogeneous vision of the structure of this sector. This heterogeneity can be explained by the constraints, the concerns and the economic issues of each one. The following diagram summarises the relationships between the players of the “Barfleur mussel” sector (**Figure 5**). In this context, three main parts, affecting the management of this resource, have been identified (scientific research, governance and commercialisation).

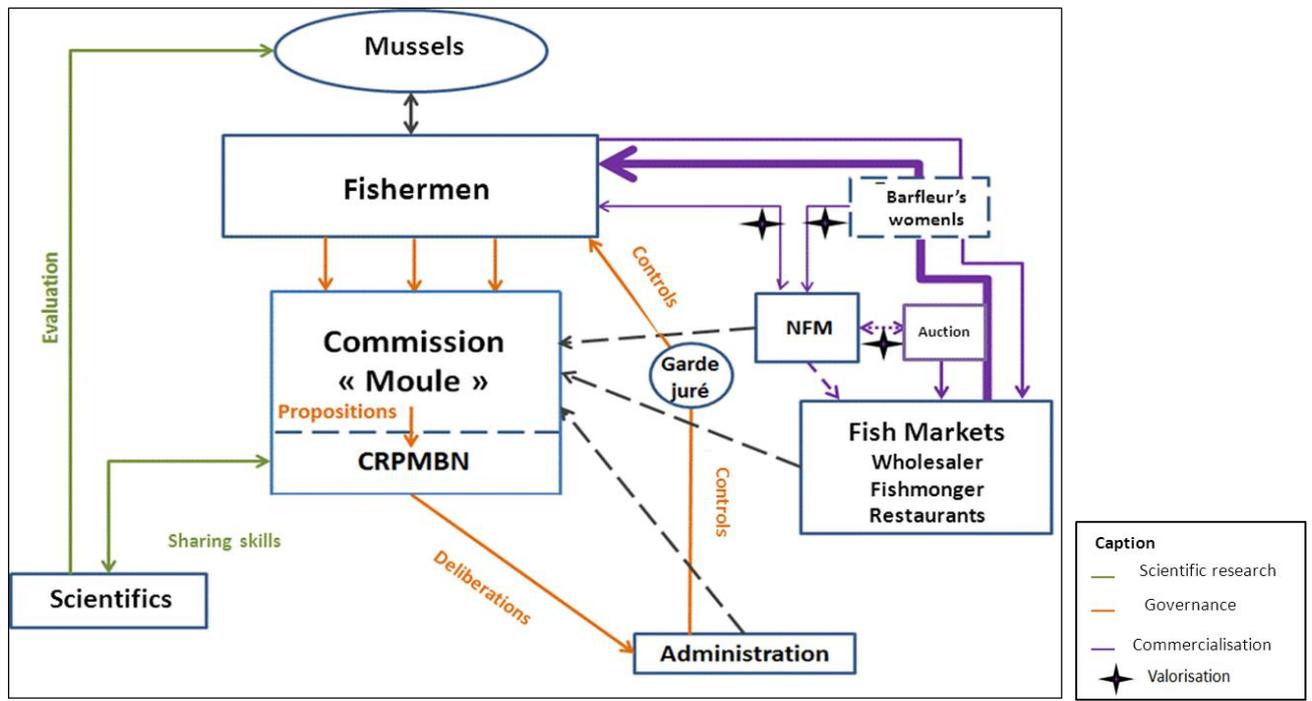


Figure 2 : Block diagram of the « Barfleure blonde » sector organisation

In this schematic, fishermen are positioned in the centre *via* the "Mussel" Commission and are a force of proposals. The authorities control the fishermen with the assistance of the sworn guard who is a link between the fishermen and the authorities. Therefore, this pattern of governance reflects a strong cohesion and collaboration between players but also a true willingness from fishermen to ensure the sustainable development of their trade. Scientific research plays a role within this sector, on resource management aspects: notably by supplying scientific advice on the stock.

In terms of commercialisation, markets are of major importance since they exert social pressure but also in terms of governance. The latter is strongly influenced by a change in mentalities towards a better value-enhancement of the product. This value-enhancement is largely supported by the quality approach of NFM, in partnership with the fishermen. The fish auction also promotes compliance with health standards and contributes to the improvement of product quality by managing the landing centre of Barfleure. The fishermen-markets relationship itself has evolved. Previously, wholesalers had an important role in the decision-making pertaining to the fishery. In addition, they had a certain power and monopoly on price setting. Today, with fewer middlemen and the reduction for the distribution cycle, fishermen prefer the more direct sales by giving prominence to women (notably in Barfleure). On the other hand, this market impacts the governance of this fishery, guiding decisions towards a consideration of the qualitative aspect of the product.

This fishery is based on a strong co-management upstream in the management of the resource. However, a lack of cohesion persists between the players at the level of the commercialisation. The Barfleure mussel fishery displays a real evolution in the sense of economic sustainability of the stock. It also tends towards a harmonisation of techniques enabling the optimisation of the quality of the product.

Finally, one of the consequences of management by a licencing system is the integration of young people in this fishery. Indeed, it is not easy for a fisherman setting up his activity for the first time to retrieve a fishing license for the mussel since the CRPMEM BN first follows a strategy to reduce fishing effort. This is explained by economic factors, notably the supply/demand equilibrium and everything that follows on prices. From there, a young fisherman no longer invests in a fishery without being sure of having licences enabling him to earn a living from his trade.

LIST OF ACRONYMS

CDPMEM	Departmental Committee for Maritime Fisheries and Marine Fish Farms (<i>Comité Départemental des Pêches et des Élevages Marins</i>)
CLPMEM	Local Committee for Maritime Fisheries and Marine Fish Farms (<i>Comité Local des Pêches et des Élevages Marins</i>)
CNPMEM	National Committee for Maritime Fisheries and Marine Fish Farms (<i>Comité National des Pêches et des Élevages Marins</i>)
CRPMEM	Regional Committee for Maritime Fisheries and Marine Fish Farms (<i>Comité Régional des Pêches et des Élevages Marins</i>)
DDTM	Departmental Directorate for the Territories and the Sea (<i>Direction Départementale des Territoires et de la Mer</i> - anciennement Affaires Maritimes)
DIRM	Interregional Directorate for the Sea (<i>Direction Interrégionale de la Mer</i>)
EPIC	Public body with industrial and commercial functions (<i>Établissement Public à Caractère Industriel et Commercial</i>)
Ifremer	French Research Institute for Exploitation of the Sea (<i>Institut Français de Recherche pour l'Exploitation de la Mer</i>)
MPA	Marine Protected Areas
MRE	Marine Renewable Energy
NFM	Normandie Fraîcheur Mer
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
TAC	Total Allowable Catch

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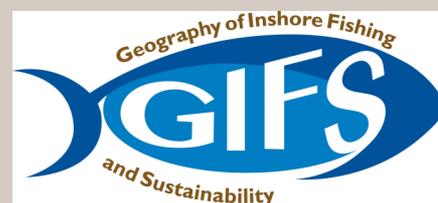
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This report presents the results of the study on the governance of inshore fisheries, undertaken on the mussel fishery of eastern Cotentin. The objective is to better understand the different modes of governance of inshore fishing and to identify the role of fishing in the selected areas. The results of the study provide an overview of the way in which fishing communities interact with sovereign bodies and the main decision makers at different levels of governance (local, national and European). AGROCAMPUS OUEST examined how, and to what extent, the fishermen are engaged in the governance structures to maintain the economic and social viability of their community. These results provide the context of governance in France, supplemented under the GIFS Project by other case studies in England, Belgium and the Netherlands, in order to better define the role of inshore fishing within the framework of the sustainable development of the coastal zone.

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