Theme K: Small-scale and recreational fisheries surveys, assessment and management.

From fleet census to sampling schemes: an original collection of data on fishing activity for the assessment of the French fisheries.

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Abstract:

The development on the ecosystem-based approach to fisheries implies to improve integrated analysis of fisheries by considering the biological as well as the socio-economic dimensions of the exploitation and thus, an improvement in the knowledge of fleets structure, evolution and activity.

Since 2000, Ifremer has been implemented a Fisheries Information System (FIS), a multidisciplinary monitoring network allowing an integrated and comprehensive view of fishery systems including biological, technical, environmental and economical components. The FIS covers all the French fisheries, including the so-often neglected small-scale fisheries.

One of the originalities of the FIS lies in the fleet monitoring procedure: a comprehensive collection of annual activity calendars aiming at characterizing the inactivity or activity of the vessels each month of the year and, in the latter case, the métiers practised (use of a gear to target one or several species) and the main fishing areas.

This survey covers all the French fishing fleets and provides minimum but exhaustive information on the vessels. It is particularly instructive for the small-scale fisheries, where catches and effort data are often incomplete. Furthermore, this exhaustive data allows stratifying the fleet in fleets (typologies) and thus provides the basis (i) for the implementation of sampling schemes to estimate catches, landings, discards or economic performance of the different fleets and (ii) for the development of a fleet-métier matrix giving the possibility of identifying at the time, the structure of the whole fleet in fleets, the métier polyvalence of the vessels and the allocation of fishing effort on the different exploited fishing resources.

Keywords: fleet, métier, fishing activity, small-scale fisheries, fleet typology

Introduction

While the majority of small-scale fisheries (SSF) are found in developing nations, a considerable number exist in developed nations as well (Chuenpagdee *et al.* 2006). SSF are strongly represented in all European Union (EU) Member States, 81% and 87% of the EU 25 whole fleet is composed of vessels less than 12 and 15 meters long respectively, mainly involved in the coastal area (inside the 12 nautical miles) and approximately 100,000 crew are involved in small scale fleets in Europe (Guyader *et al.,* 2007). Small-scale fleets are present all around the European coast, even in isolated and sensitive areas and especially in ultra-peripheral regions. The lack of information about the SSF and the conditions of exploitation of the resources has, until very recently, been a factor limiting the development of approaches aiming at sustainable management of the ecosystems and practices in the coastal areas.

This situation is observed worldwide. As mentioned by Salas *et al.* (2007), fisheries research in Latin America and the Caribbean has mainly focused on bio-ecological aspects, with limited attention paid to socio-economic issues. Pauly and Agüero (1992) also stated that the focus of fishery science in the area has traditionally been on collecting data on total catches of the main fishery resources, and on fish stock evaluation based mainly on growth-mortality. However, several authors emphasize the need to go beyond the analysis of information from landings to explore the spatial distribution of catch and effort, as well as to assess fishing strategies and fleet dynamics (Seijo *et al,.* 1994, Cabrera and Defeo, 2001, Salas and Gaertner, 2004), and incorporate an ecosystem approach in their analyses (Pauly *et al.* 1998, España-Pérez *et al.,* 2006).

The development of the ecosystem-based approach for fisheries means improving the integrated analysis of fisheries by considering the biological as well as the socio-economic dimensions of the exploitation. A prerequisite for integrated analysis is improvement in the knowledge of fleet structure, fleet evolution and allocation of the fishing effort in the different fisheries. However, SSF are often characterized by a lack of knowledge about vessels' fishing activity. As stated by Salas *et al.* (2007), quantitative information on SSF is relatively little covered in the literature and more information is available on large-scale commercial fleets. Information gathered by countries focus mainly on catch and effort data from the landings, sometimes on size frequency and there is a limitation on the evaluation of the actual fishing effort on the resource. More generally speaking, Chuenpagdee *et al.* (2006) argue that there has been little coordinated effort to address the lack of systematic data collection and integrated information on small-scale fisheries.

This paper first presents the data collection methodology applied in France for the follow up of the fishing fleet, including SSF, based at first on a complete census of the whole fishing vessel population and the monthly fishing activity of each vessel (fishing calendar). Then the paper develops how this data set allows to build typologies in order to structure the whole fleet of a country in sub fleets, based on a statistical analysis (principal component analysis and hierarchical ascending classification). Some indicators, such as the global fishing activity, the métier diversity and polyvalence of the vessels but also the allocation of fishing effort on the different fishing resources exploited, are presented as illustrations of the potentiality of this kind of survey by census of the whole fishing fleet at regional or national levels.

Steps of the methodology for characterize fishing activity and profile fishing fleets

The Fisheries Information System (FIS) of Ifremer is a permanent, operational and multidisciplinary national network for the observation of marine resources and their uses (Leblond *et al.*, 2008).

In the framework of the Fisheries Information System of Ifremer, the statistical and integrated methodology to follow and analyse the fisheries and produce standardized indicators (biological, ecosystemic, social and economic) relies on six stages:

- Exhaustive characterization of the fishing fleet vessels
- Exhaustive characterization of the fishing activity
- Segmentation of the fleet
- Stratified data sampling Plans
- Extrapolation by métiers and or by fleet of the data
- Production of standardized indicators

Exhaustive characterization of the fishing fleet register

The first step of knowledge in such fisheries monitoring network is to have or to build an exhaustive fishing fleet register. At least, this exhaustive inventory shall include individual codification of vessel, technical vessel characteristics and base port. It could include further descriptions of equipment (electronic, preservation…). Basically this inventory exists, coming from administrative source: the national fishing fleet register. For a better usefulness, historical series must be available as well as additional data such as ownership[1] information, effective (and not legal) crew on board and a complete view of all the licences and permits[2] linked to the vessel. The upgrading of information must be at least on a yearly basis or trimestrial.

In the French context, all the fishing vessels are registered in the French fishing fleet register (FFR) according to the Common Fisheries Policy. This exhaustive inventory of the commercial vessel population includes technical vessel characteristics (Commission Regulation (EC) No 26/2004) and is a prerequisite base port. In 2006, 7700 vessels are registered in the different districts in France mainland but also overseas (Guadeloupe, Martinique, French Guyana, La Réunion) (Table 1).

Table 1. Structure of the French fleet by length categories

Area	North Sea-Channel*	Atlantic*	Mediterranean*	Lesser Antilles**	French Guyana**	Reunion***	Total
Less than 12 meters	1115 **(72%)**	1461 **(70%)**	1391 **(87%)**	2001 **(99.7%)**	110 **(64%)**	261 **(91%)**	6340 **(82%)**
12 meters and more	432 **(28%)**	633 **(30%)**	200 **(13%)**	6 **(0.3%)**	62 **(36%)**	27 **(9%)**	1360 **(18%)**
Total	1547	2094	1591	2007	172	288	7700

FAO areas, * FAO 27and 37, ** FAO 31,*** FAO 51
Source: French fishing fleet register

The definition of Small Scale Fleets is subject to a lot of definitions (Guyader *et al.* 2007) and the limit between SCF and Large Scale Fleets (LSF) is of a conventional nature and set at 12

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[1] It includes the nature of ownership, the address and the age of the owner (if physical person). The change in the ownership can induce a complete change in the fishing behaviour of the vessel and must be following.
[2] This information is useful for an identification of the potential fishing activities but doesn't give necessarily a complete picture of the fishing activity during a given year. In some cases, a vessel can have a licence only for precautionary purposes and can be involved in a métier not submitted to any permit.

meters vessel length for testing. SCF are present in all areas in relatively high rates, especially in North Sea –Channel and Atlantic areas relevant for ICES. The highest rate is the Lesser Antilles and the lower in French Guyana. Within the whole fleet, 82% of the vessels representing 49%of the total engine power and 12% of the total tonnage are small scale vessels (Table 2).

Table 2. Structure of the French fleet by length categories

Length categories	Number of vessels	Power main (kW)	Jauge (GT)
Less than 7 meters	2 281	93 301	297 345
7-9 meters	2 476	220 163	722 135
9-12 meters	1 583	208 415	1 487 529
12-16 meters	477	100 997	1 658 670
16-20 meters	268	83 563	1 836 839
20-24 meters	350	136 025	4 307 625
24-40 meters	212	101 800	3 965 383
40 meters and more	53	114 564	6 756 600
Total	**7 700**	**1 058 828**	**21 032 126**

Source : French fishing fleet register

The less than 12 meters fleet represents 6340 vessels, from which 75% are less than 9 meters.

Characterization of the individual fishing activity: Census of the vessel fishing activity per métier

The objective is to have a complete picture of the whole fleet in terms of fishing activity, at least monthly activities per métier. Fishing authorisations in the French FFR or the two gears declared in the Community FFR are a useful first information but clearly not sufficient to obtain this necessary knowledge needed to reach the critical objective of linking biological (fishery-métier based) and economic (fleet based) approaches.

Different kinds of data are available to grasp the activity of the fleet. EU logbooks or national fishing forms filled on a daily (or trip) basis provide information on the gear used, the areas visited, the time fishing and the species caught. These detailed data (source: Ministry of agriculture and fisheries) can be used to classify all the fishing sequences in métiers by the mean of multivariable analysis or automatic classification based on thresholds or catches composition. Thus the fishing activity of a vessel for which these data are available can be described very precisely. Unfortunately, these data are not exhaustive for all the active vessels depending on the FAO areas (table 3) and their reliability sometimes difficult to assess.

Table 3. Fishing forms and sale notes data by FAO Area compared with individual fishing activity calendar data (see later) by length categories

FAO Area	Length category	Number of vessels					Number of vessel * months				
		Activity	Fishing forms		Sale notes		Activity	Fishing forms		Sale notes	
FAO 27	less than 10 metres	1 732	1 439	83%	1 458	84%	16 317	10 279	63%	10 644	65%
	10 metres and more	1 793	1 737	97%	1 761	98%	19 981	18 074	90%	18 447	92%
FAO 37	less than 10 metres	938	1	0%	171	18%	9 501	8	0%	1 344	14%
	10 metres and more	283	1	0%	142	50%	2 889	8	0%	1 409	49%

Therefore, in order to compensate the lack of complete information regarding activity of the vessels in the declarative data, Ifremer has carried out a comprehensive survey consisting of

an exhaustive collection of annual activity calendar, consisting of a follow up of the métiers practiced by each vessel (**métier is defined as the use of a gear to target one or several species**). The survey is carried out by the observers' network of the FIS. The vessels present in the Community Fleet Register for the year of reference define this reference population that is the subject of this census.

The data required on an annual activity calendar for each fishing vessel are the following (Berthou et al. 2003):
o Main port of exploitation
o Number of fishermen on board
o Fishing activity or inactivity in the month
o Estimate of the number of days at sea in the month
o Estimate of the number of fishing days in the month
o Métier : up to 5 métiers can describe monthly the fishing activity of a vessel[3].
o Per metier, the two main fishing areas and the corresponding range of operation (distance to the coast or depth of operation)

Additional data are collected on a yearly basis:
o Number of hours of the engine
o Number of days at sea
o Number of fishing days
o Declarative fishing form behaviour
o First marketing behaviour

To collect the calendar, a previous analysis of the available declarative information is provided: it consists of a summary of the data available in the logbooks, national fishing forms and landings statistics from auction markets, related to catches and effort per species, gear and areas. For the vessels satisfying completely its obligations (EC logbooks or national landings forms), this fully automatic treatment is sufficient to resume all its fishing activity. For the others, the annual activity calendar is filled in and completed through direct (fisherman or his wife) and indirect interviews (local fishing network). The minimal rate of direct interviews is set at 40%, and each vessel's owner has to be surveyed at least once every 3 years. Good knowledge of the vessels' activity and close relationship between fishermen and the observers are key elements to obtain quality information.

Non fishing activities using the vessel are also collected. The FIS intends indeed to take into account the multi-activity of the fishermen, widespread in the small scale context.

Finally, collection of data is based on a series of referential data, based on the international coding of gears, species and zones, allowing comparisons between countries or between fishing zones of a single country. The referential data are also organised according to aggregation trees, allowing proposing indicators at different scales.

The originality of this comprehensive approach first lies in the fleet monitoring procedure, by census and by the type of data collected on the activity of the vessels in the small coastal fishing context where it is unfortunately impossible to have complete declarative information concerning the effort and production by species for all the vessels in a given population.

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[3] During the census, all the associations between gears and target species or group of species given by the fishermen are managed as métiers. In a second phase these métiers are aggregated in a hierarchical tree for each fishing gear.

The aim of collecting data about the activity of each vessel is to have minimum[4] but exhaustive information about the reference population, to have a complete picture of the whole fleet in terms of gears used and fishing activity, at least at a monthly scale. The whole population of vessels is covered, especially the small scale vessels. This methodology can be considered cost-effective, and may also be implemented on a large scale in developing and developed nations (Berthou *et al., 2000*).

Multivariate analysis of individual annual fishing calendars and standardisation for fleet segmentation

This previous fishing activity data set is very useful in order to propose fishing fleet profiling (typology) methodology (see a synthetic diagram in Annexe 2).

Depending on fluctuations in resources' abundance or in the market, the fisherman will decide to practice one or several metiers. This choice of a metier or a combination of metiers during the year determines its exploitation strategy. These strategies greatly determine the means of production implemented but also the revenue and the costs of production. The fishing fleet profiling methodology consists in bringing together in fleets vessels having relatively homogeneous exploitation strategies. Vessels may have different fishing activities during the reference period, but they can be classified in only one fleet. A fleet is thus defined as group of fishing vessels sharing, during a reference period (e.g. one year), similar characteristics in terms of technical features, economic structure and fishing activity.

The first step of the analysis consists in carrying out exploratory multivariate statistical methods (Biseau and Gondeaux 1988, Pelletier and Ferraris 2000, Berthou *et al*. 2003). Non-normalized principal component analysis (PCA) is applied on a table individuals*variables where the individuals (in row) are fishing vessels and the active variables (in column) are the number of months of activity per metier (at the chosen aggregation level). This factorial analysis is completed by a hierarchical ascending classification (HAC), allowing a classification tree of the separate classes. The number of classes is chosen *a posteriori* by arbitration in order to have classes that group together the maximum information, while keeping internal pertinence. In addition, illustrative data (such as the port, the range of operation, the length of the vessel...) complete the description of the sub-fleets obtained.

To allow multi-annual analysis of the fishing fleet behaviour, it is needed to stabilize the typology methodology through a standardization of the segmentation procedures. The standardization of the classification procedures (adopted since 2001) consists in analyzing step by step the vessels according to the gears used (Berthou *et al.*, 2003). A first, all the vessels involved in trawling métiers are isolated in the trawlers fleet (whatever the number of months of trawl in the year), then those using dredges, glass-eel trawl, and finally those involved only in passive gears (netting then potting, hook metiers and coastal metiers). For each step of the classification, sub-classes are identified, distinguishing exclusive and polyvalent (e.g. trawler exclusive or trawler-dredger). This hierarchy between the gears takes into account their impact on the investments and costs structure. Indeed, the first economic

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[4] One of the main limits of this method is that fishing activity, in terms of days at sea, may be often overestimated by fishers. As a consequence, this variable should be used carefully for fishing effort assessment per métier, without the implementation of a more precise and long-term data collection system (daily fishing calendar, established by field workers in the fishers communities (Berthou, 2000) or by phone enquiries, and trips sampling program) with crossed validation of the different sources of information.

analysis has shown a more significant level of investment for vessels using active gears and a different costs structure (higher fuel cost for active gears, higher gear costs for passive).

Two types of stratification of the whole French fleet are used at the moment by the FIS of Ifremer : the segmentation under the DCR (Commission regulation (EC) N° 1639/2001) based on a criterion of dominant gear in terms of fishing effort, an alternative segmentation based on the combination of gears according to biological and economic expertise.

The fleet-métiers matrix

The aim of identifying fleets is to group together vessels having similar fishing strategies and therefore relatively homogeneous economic behaviour. However, the volume and composition of the catches and discards per species is determined by the metier. The scientific community and managers acknowledged that the current procedure of collecting biological data on a stock basis and economic data on a fleet based did not favour the provision of relevant inputs to fishery-based management advice (STECF, 2008). The development of a fleet-métier approach (on the scale of a fleet or a set of fleets in different regions or countries) must allow a relation between the two approaches to be established.

The fleet-métier approach consists in a matrix crossing the fleets in row and the metiers in column (STECF, 2005) (figure 1). A fleet can practice one or several metier. In the same way, different fleets can be involved in the same métier, and according to the fleet, it can be a basic structuring métier or, on the contrary, an opportunistic métier. These behaviours have obvious impacts for fisheries management (divergent interest between different fleets).

Figure 1. The fleet-métiers matrix
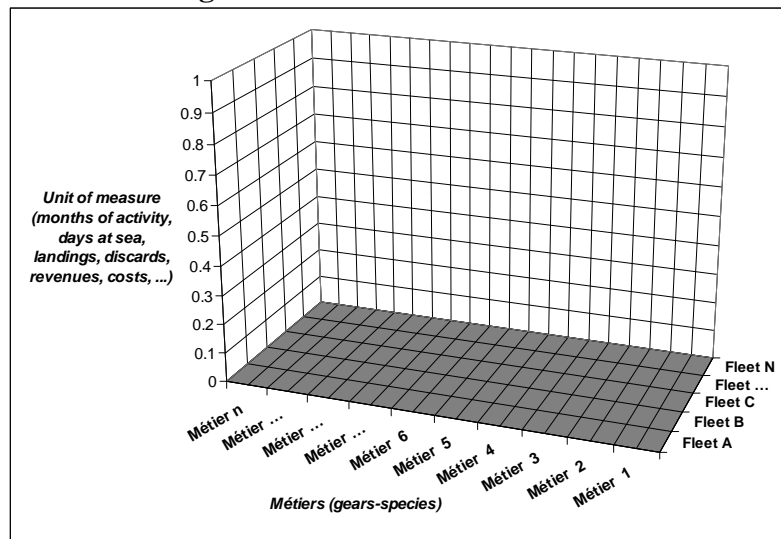
Source: Ifremer-SIH

Some illustrations from fishing activity calendar data

This section presents some results of this simple data set. The fishing activity calendar data provide a comprehensive view of the fishing activity and the level of inactivity, a detailed description of the gears used and the metiers operated, a first assessment of the intensity of activity and of the polyvalence of the vessels, and the identification of fleets represented.

Inactivity and degree of activity of the fleet

The data allow to characterise the activity and the inactivity of each vessel and precise the degree of activity (in terms of number of months) of the active ones. In 2006, at French national level, the fishing calendar follow up concerned 7509 vessels (98% of the total population) and 91% are active at least one month in the year and 9% of them totally inactive.

If the SSF present the biggest rates of total inactivity, they are not systematically part time vessels (Figures 2 and 3). Only the less than 7 meters long vessels operating in Atlantic are mainly part time (61% of them are active less than 9 months) but are in average active 8.1 month in a year (table 4) .

Figure 2. Percentage of activity by length class in the French Atlantic fleet, 2006. **Figure 3. Percentage of activity by length class in the French Mediterranean fleet, 2006**
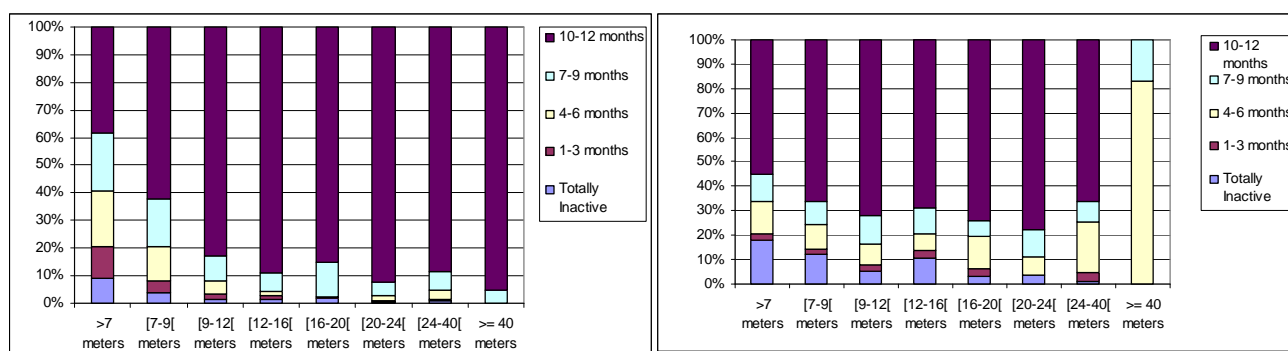
Source: Ifremer-SIH

Table 4. Degree of activity (number of months of fishing in a year) per length categories and areas.

Length categories	North Sea-Channel-Atlantic	Mediterrannean
Less than 7 meters	8.1	9.9
7-9 meters	9.7	10.5
9-12 meters	10.8	10.6
12-16 meters	11.3	10.6
16-20 meters	11.1	10.4
20-24 meters	11.3	10.8
24-40 meters	11.1	9.9
40 meters and more	11.8	5.9

Source: Ifremer-SIH

Dependence to coastal areas and spatial mobility of the fishing vessels

In order to establish the degree of dependence in coastal areas, the annual range of operation of each vessel is calculated regarding the cumulative monthly fishing activity in the different areas. By definition, "coastal" vessels spend more than 75% of their activity inside the 12 nautical miles, "mixed" vessels spend between 25 and 75% of their activity inside the 12 nautical miles and "Large-offshore" vessels spend more than 75% of their activity outside the national 12 nautical miles limits. In the French context, the dependence in the coastal areas is

strongly linked with the size of the vessels; for the less than 12 meters categories, more than 80% of the vessels are defined as coastal, when only 40% and 15% of the vessels belonging to the 12-16 meters and 16-20 meters categories operate mainly inside the 12 nm. For these length categories, a large number of vessels are defined as "mixed" and may harvest in the same fishing area as the smallest vessels (Figure 4). The study on small scale coastal fisheries at EU level underlined that this situation of interaction between small scale vessels and large scale vessels is not specific to France but shared by several member states SCF (Guyader *et al*., 2007).

Counting the numbers of statistical rectangles (1° of latitude by 30' of longitude) fished in a year provide an simple indicator of the mobility of fishing vessels (Figure 5) and indicate how sedentary are the SSF fishing units compared to the LSF. Because of their low capacity to switch to other fishing areas compared to LSF, the SSF are more sensitive to natural or anthropic perturbations in their fishing area.

Figure 4. Distribution of the fleet per length categories and range of operation (French whole fleet, 2006)
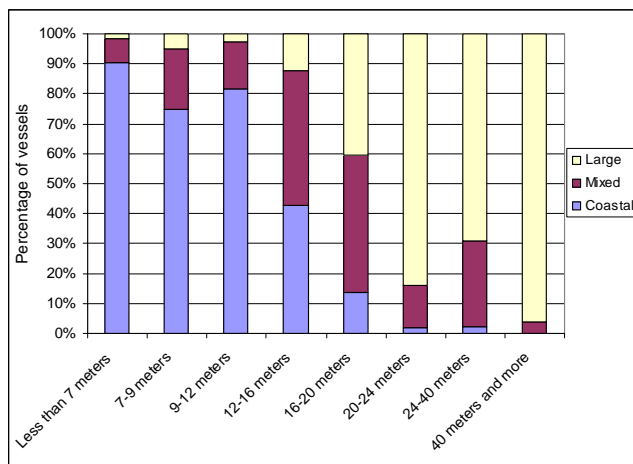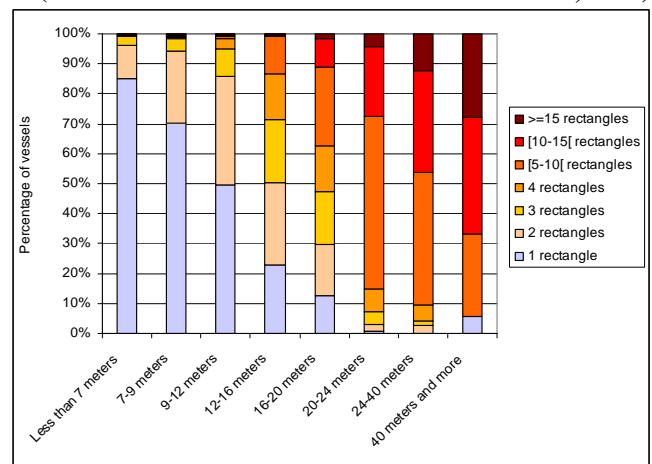
Figure 5. Mobility of the vessels expressed in number of rectangles of operation per year (North sea-Channel-Atlantic areas French fleet, 2006)
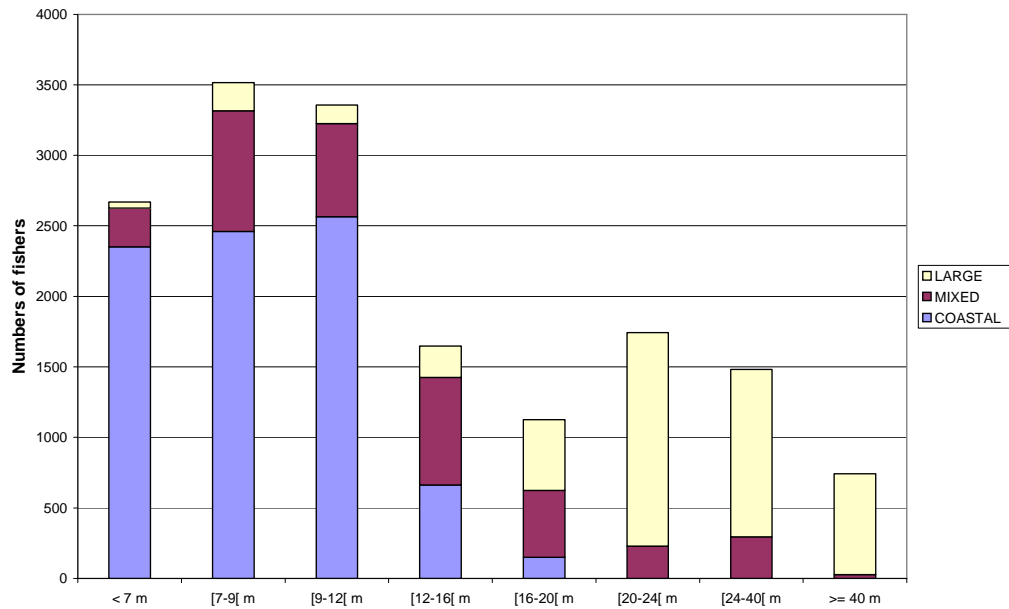

Source: Ifremer-SIH

Contribution of the SSF in terms of employment

The census of fishing activities calendars provides on monthly basis the number of crew per fishing vessel. At national level, including overseas, the level of employment (full time equivalent) resulting from the vessels under 12 meters accounts for 58% of the total employment at sea and the rate increase to 68 % considering the 16 meter's limit.

Regarding the range of operation, the inshore fishing activity (without considering vessel size) contributes to around 60% in the total employment (11 % corresponds at the half of employment observed from vessels with mixed activity e.g. inshore and offshore during the same year) (Figure 6).

Figure 6. Number of fishers (full-time equivalent) by length category and range of operation in the French national fleet, 2006.

Source: Ifremer-SIH

Gears used and polyvalence of the fishing units

The use of passive gears and associated métiers is generally a strong feature of the small-scale vessels for all the European countries (Guyader *et al*., 2007). The mostly used gears by the French SCF are passive gears, mainly nets, pots, hook and lines, long lines and the inshore métiers (snorkelling, diving, …). The main active gears used by the French SCF are dredges, bottom trawls and the glass eel trawl (Figure 7); they mainly concern the biggest and the more powerful SSF vessels. On the opposite, the French LSF are mainly involved on active gears, bottom trawls, dredges, mid-water trawls and purse seines (Figure 8). Few of them are using nets and long lines. Because of the difference of impacts between gears on the physical environment, on non-target species, on target stock depletion and also on fuel consumption, is it very useful to have a global view of the métiers in use at regional or national level.

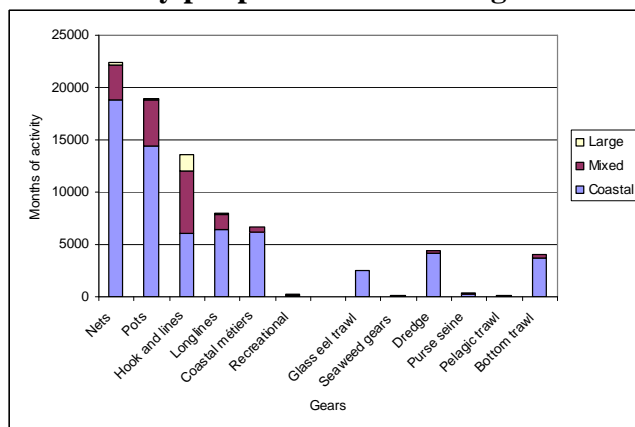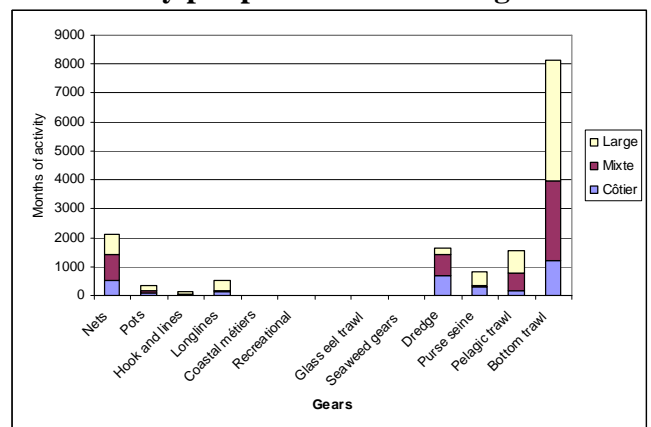**Figure 7. SCF: Distribution of the months of activity per passive and active gears***

Figure 8. LSF: Distribution of the months of activity per passive and active gears*


Note: * Right side of the figures, Passive-active on the left-right
Source: Ifremer-SIH (French whole fleet, 2006)

Whether expressed in terms of number of vessels or in months of activity, these results also show the diversity of the métiers in SCF and the polyvalence of the vessels in terms of gears used compared to LSF. The average number of gears used reaches 1.8 for the less than 12

meters vessels while it is 1.25 for the large scale vessels(more than 16 meters). Only 40% of the less than 12 metres long vessels use only one type of gears in a year, and this percentage growth to 60% and 80% for the 12 to 40 metres long vessels and reach near from 100% pour up to 40 metres long fishing vessels (figure 9). About 20 to 25% of the less than 12 metres long vessels use three gears in a year or more. These differences between SCF and LSF are linked with the limited spatial mobility of the first ones who need to use a range of gears to access different species seasonally available in their fishing areas. These results show the range of possibilities in the choice of métiers that fishermen can combine in their annual activity, according to their chosen strategies.

Figure 9. Average number of gears used by length categories (French whole fleet, 2006). Source: Ifremer-SIH
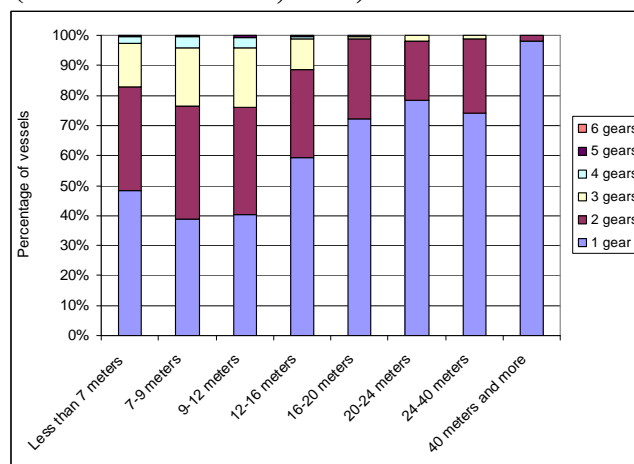
Seasonality of the activity by gears or métiers

The fishing activity calendar provides useful data about the seasonality of fishing activities by gears or by métiers. According with the availability of the resources or the regulation framework, the metiers are practised all over the year or only at some seasons (Figure 10).

Figure 10. Number of fishing vessels involved by main metiers during 2006 (French SSF in FAO area 27).
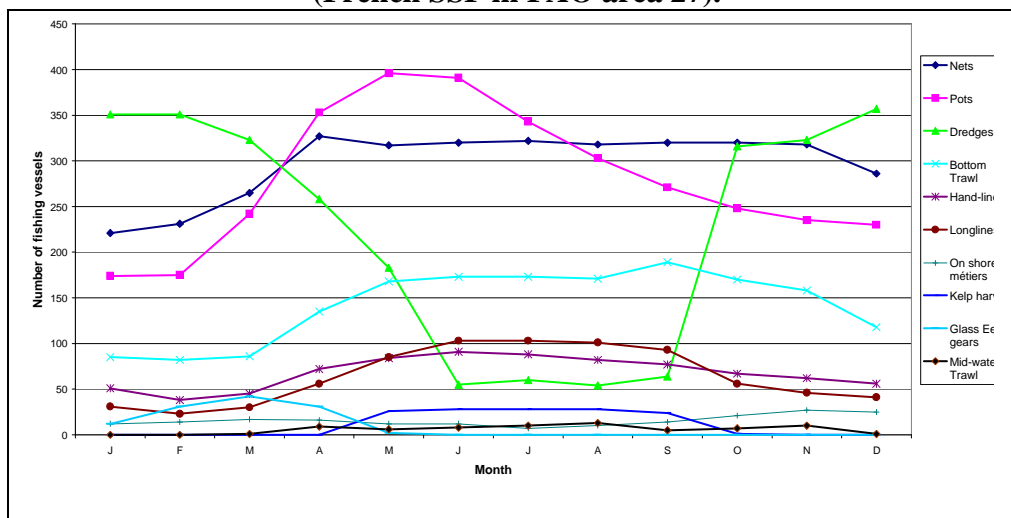
As an example, in the FAO area 27, more than 300 French SSF are involved in scallops and clams dredging mainly in winter. They complete their annual fishing calendars in summer by

11

increasing their activities in others complementary metiers : some of them are involved in crustaceans and cuttlefish potting, others are trawlers or netters and some kelp harvesters.

Fleet segmentation and evolution

The fishing fleet of a region or country can be divided in sub-fleets sharing the same fishing strategy in terms of metiers or combination of metiers performed during a year. Such typology could be more or less detailed, by using as active variables in the analysis a particular level of metiers aggregation tree, according to the objectives and the scale of the studies.

Repeated on a regular basis, such fleet typologies allow to estimate the trends of the national or regional fleet structure (Figures 11 and 12).

Figure 11. Evolution of the structure of the SCF fleets in FAO area 27 between 1996 and 2007

Figure 12. Evolution of the structure of the LSF fleets in FAO area 27 between 1996 and 2007
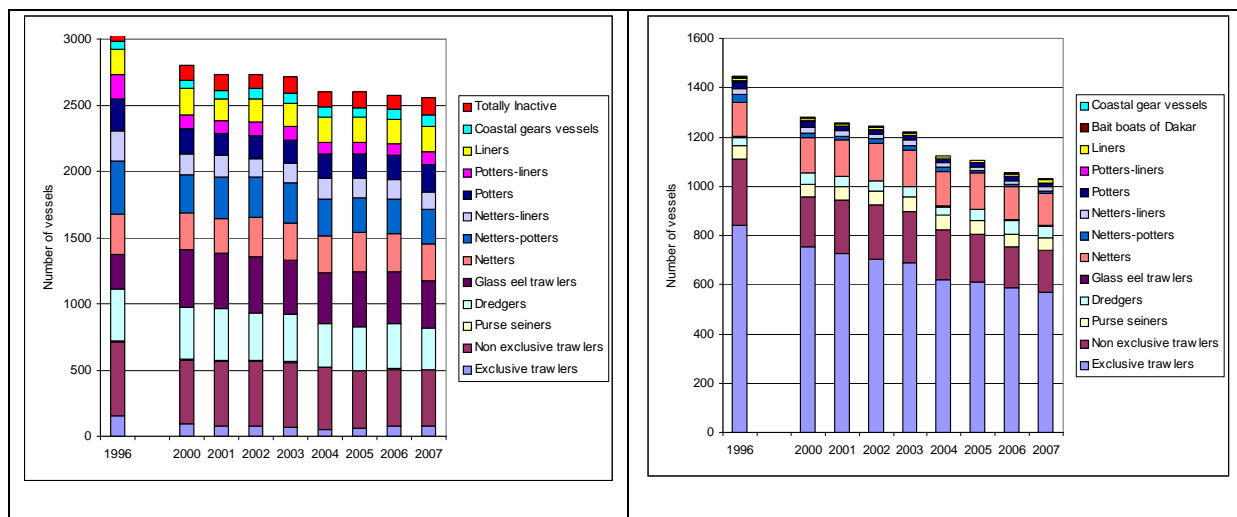
Previous analysis of exploitation strategies show that the strategies observed in a given exploitation area often appear to be stable over time. Fishermen can't change easily their strategy because of the initial investment, but also the regulation of access conditions (Le Gallic 2000, Berthou *et al.* 2003,).

Others

The previous examples are only some brief illustrations of the potential indicators coming from the fishing calendars analysis. Others treatments are already processed ; this exhaustive data set allows crossed validations of declarative information (logbooks, sale notes) and extrapolations of sampling data. The métiers and fleet approaches allows a better understanding of the various interactions between métiers and fleets for space and resources, complementarities between métiers, substitutions of métiers within a chosen fishing strategy, fishers communities spatial distributions. It thus offers possibilities in terms of developing data collection programs whose results can be integrated into a set of data, for disciplinary or multi-disciplinary uses (Guyader *et al.* in prep.).

Conclusion

In conclusion, a minimum but exhaustive information on the whole French fleet obtained through the follow up of annual fishing calendars allows:

- a complete description of the fleets in terms of activity, gears used, target species, main fishing areas and seasonality (numbers of boats, numbers of months of activity…); interactions,…
- different fleet based approaches according to scientific objectives : segmentation by gears, target species, métiers or combination of métiers…

These stratifications allow the implementation of *ad hoc* sampling plans for specific purposes as more accurate fishing effort estimates (such as fishing days)(Demaneche *et al*., 2008), gear characteristics, landings and discards estimates, biological and socio-economic data sampling programs (Daurès et al., 2008).

For these reasons, the annual fishing calendar is the key point of our fisheries information system (Leblond et al, 2008). If such a census cannot be produced each year, because of the relative stability of the fisherman strategy, a multi annual approach can be considered, focusing yearly only on the new vessels and those with ownership change (9 % per year in French case).

Such complete overview of fleets at regional or national scales could be useful in terms of management and modify sometimes substantially the Fisheries system's perception of stakeholders and managers. Fishers organisations are using more and more the annual synthesis of fleets we produce yearly, ask for the such information at European level (Regional Advisory Committee) or at local scale (fishermen organisations). This kind of exchange with fishers is very profitable to make durable our observation network. That is why we are widening the range of our deliverables and developing an interactive Web GIS on our FIS portal.

Literature cited

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Annexe 1

FISHING FLEET ACTIVITY CENSUS 2007   Individual annual fishing calendar

Registration Code	Starting date	Ending date	Vessel name	District Name	Port Name	Loa	Tonnage	Power (kW)	Owner code and name	EU main gear code and subsidiary gear code	Year building

							Métier 1					Métier 2					Métier 3					Métier 4					Métier 5				
Month	District	Port	Owner	Crew	Das	FD	Métier	O	AREA 1	R	AREA 2	R	Métier	0	AREA 1	R	AREA 2	R	Métier	O	AREA 1	R	AREA 2	R	Métier	0	AREA 1	R	AREA 2	R	Métier	O	AREA 1	R	AREA 2	R
J																																				
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DAS = NB days at sea during the month / FD = NB fishing days / O = Origin of information (I = from Interview, L = from Logbook analysis) R = Fishing range of operation :Lagoon, Inshore, Mixed, ,Offshore

Reliability of information		Activity Evolution	2006	2007
❑ Direct		NB days at sea / year		
❑ Estimation		NB fishing days / year		
❑ Indirect		NB motor hours / year		

Panel

Would you agree to participate an another enquiry, belong to the Panel ?

Yes |__| No |__|

Owner data : address phone

Métiers in logbooks or fishing forms All |__| **Some |__| (A)**   *No |__|*

landings reliab : **Y** |__| **N**|__| NoAdjud |__|

First selling of auction |__| **All through auction market |__|**   **Partly through auction |__| (B)**   **Totally**

Welc Quality :   + |__| =|__| - |__| NoAdjud

Whole landings |__| (A + B)

Species completely sold through auction market : ………………………… / ……………….……..…. / ……………..………..… / ……………….…… / ………

Species completely sold out auction market : ………………………… / ……………….……... / ……………..………..… / ………………….…… / ……………

Annexe 2 : From a single fishing set to the fishing fleet (from Berthou, P., 1995, in "La pêche " Océanopolis, p33.)