

**FISHERMEN GUILDS IN SPAIN (*COFRADIAS*):
ECONOMIC ROLE AND STRUCTURAL CHANGES**

Ramon Franquesa, Gabinete de Economía del Mar (GEM-Univ. Barcelona), ramon@gemub.com

ABSTRACT

Fishermen Guilds in Spain (*Cofradias*) have around one thousand years of tradition. They play a central role in the control of the fishing rights especially in the context of coastal fisheries. The paper examines the mechanisms to establish property rights, the quality of these rights and the cost and profits of the system. Then, it is considered the effect of technical changes in production and markets. Finally, it is presented a practical description of the evolution of Guilds Institutions in relation to the distribution of fishing rights in the Catalonia area (North East Spanish Mediterranean) and the effects in the distribution of the production and investments.

Keywords: Co-management; Mediterranean Fisheries; Coastal Fisheries; TURF

GUILDS IN SPAIN

Fishermen Guilds in Spain, named *Cofradias*; have a long history. Some of the present *Cofradias*, were founded in the XII Century as economic associations under religious basesⁱ.

In the beginning, these Guilds established an agreement between the fishermen community and the King (in some cases with the Church) to exploit the fishing resources of one specific area. At that time the fights against other kingdoms (specially the Muslims, but not the only ones), the piracy and the insane conditions in some areas of the coast (special in the South: lagoons and marshy areas where the development of the malaria and other illnesses were frequent) made the coastal areas a place where people did not wanted to live. The fishing Community assured the King that were living near the coast and protected the coastal area. By contrary the King assured the fishing rights to this community. Under this central agreement, at the local level some additional conditions could be included, as some way of payments (in most cases more ritual that economic, i.e. a yearly donation of fish to the King) or considerations (where the most important was for long time the obligation to join the Navy during war periods). This kind of agreement survived for Centuries under the religions institutional appearance. Each Guild was under the protection of a saint and had a complex system of rules to distribute the surplus where the religion activities played a central role.

But with the Industrial Revolution the general conditions changed. On one hand, the value of the fish product increased, due to that in Spain the cattle raising is poor and fish is a source of proteins to the industrial emergent cities. On the other hand, the power of the King and the Church went down because of the political revolutions of the XIXth Century. Under the influence of the French Revolution, different government tried to abolish the guild system in 1798 and 1813ⁱⁱ. The fishing guilds were abolished at the legal level in 1817ⁱⁱⁱ. But their application went slowly over the Fishing Guilds. But as consequence of their application to the fisheries it was produced disorganization and conflicts related to the free access. The problem of commons appeared when the system was abolished, because any person could go fishing. The technologies of that moment only allowed to fish near the coastal line and in the surface. The accessible resource was only a part of the resource, but this part begins to show overexploitation problems. In 1858 the Government tried to reintroduce the Fishing Guilds in Galicia, but in 1864 appeared a specific law to abolish the Fishing Guilds in Spain.

But fishermen guilds (*Cofradias*) in fact did not disappear. Guilds change in this period their institutional appearance. Before, they were a religious institution, but in the XIX and XX Centuries appeared as industrial associations, cooperatives, trade unions, socialist or anarchist associations, Fascist Corporations^{iv} or democratic institutions. But despite their institutional appearance, the economic role remained the same. This does not suppose to not consider the importance of this appearance, which is not the same at level of participation, transparency, efficiency, etc. But the economic historical analysis is not the central subject of this paper.

Under different institutional appearance, the Guilds supposed a system to assure the collective economic exploitation of a geographical coastal area. We try to explain in this paper their rationality, their potential contributions, and the present problems and provide some suggestions to improve their role.

Now in Spain only a part of the fisheries are organized under the *Cofradias* system: a part of the coastal fisheries. The Industrial fisheries have their particular system under Professional Organizations and Owners Associations^v. Then is important to avoid the romantic point of view where all fisheries in Spain remain under the Guild system.

As show on table 1, only 754 from the 15.385 Spanish vessels (5%), work outside the Spanish coast. But in GT this represents 279.315 from a total of 527.595 GT, around the 53%. If we consider the frozen fish data (produced by industrial vessels) they represent the 43% of the weight and the 42% of the value. Finally, if we consider the employment, the coastal employment represents the 83% of the total and the industrial one only the 17%.

Table 1. Some basic data on Spanish Fisheries.
The relative weight of the coastal fisheries in relation to large industrial fisheries^{vi}

	Total	Coastal	%	Industrial	%
Vessels	15.385	14.631	95	754	5
Total GT	527.595	226.720	47	279.315	53
Landings (Tn.)	924.675	523.675	57	401.000	43
Value (,000 €)	1.712.505	996.411	58	716.094	42
Price per Kg (€)	1,85	1,90		1,78	
Employment	65.991	54.643	83	11.348	17

From this data is possible to understand that given that *Cofradias* only cover the coastal fisheries, this institution does not cover all the Spanish fisheries. In fact, despite the very limited number of vessels and companies that work outside of the *Cofradias* frame, they represent a very large part of the production and investments. But the *Cofradias* is the institutional system for the 83% of the fishing employment in Spain. Their productivity is clearly lower than in the industrial one, but prices show that their product is more appreciated by consumers. Nowadays, 229 *Cofradias* cover all the Spanish coastal line and islands. The working way for each Guild can be different, but essentially they are based under the next roles:

1. The Guild include all the fishermen that are working in their geographical area
2. The institution has a democratic structure with two representative groups: the owners and the crew. Each group elects the same number of members in the Executive bodies.
3. In some cases, the desegregation by gears is established (trawl is normally the most important, but is possible to establish sections for purse seine, long line, shell gathering or other minor gears called artisanals).
4. It is compulsory for the members to sell at the auction market of the Guild. Nowadays, the most part of them are electronically equipped and provide basic data on landings to the administration.
5. To support the administrative cost of the Guild, it is established a charge over the sell. Normally between 1,5 to 3%.

6. Guilds can not obtain profits. The surplus is used to improve the infrastructures (normally the Guilds provide shops with vessel equipment, gears, ice, etc.) or redistribute it to the members (i.e. as additional pension to retired members or widows, to pay ritual holidays, etc.).
7. Under the general laws and rules established by the European Commission, Spanish Ministry and Autonomous Communities (Spanish regional governments), Guilds can establish additional rules: control the fishing time, accept or forbid fishing gears in the area, accept or not new members, establish areas or time of closures, etc.
8. The importance of this institution is their control and punishment power. All Guild members participate in the surveillance of collective agreements and the transgressor is punished in real time at the market: their products are not allowed to sell in the market or it is forced to sell the last (with lower prices). Other system of penalization is the social isolation or not providing the collective services (shops, ice, bar, etc.)

Normally, the system is running well for sedentary species fisheries, but less for migratory ones. This system can coexist (especially in Galicia) with the industrial fisheries. In some cases, they can use the same auction market or the services of the Guilds, others can have their own sales system (directly to the transformation industry) but have a crew source in the Guild. But in any case, it is clear that Guilds do not regulate and can not regulate the industrial fisheries.

THE PROBLEM OF FISHING RIGHTS AND THE TURF SOLUTION

Fisheries are submitted to the economic incentives, leading to overexploitation if the natural resource is in free access and have an economic value, relevant in relation to their exploitation cost.

Technological change reduces the cost of fish exploitation. At the same time, the market development increases the price of the product. Both factors stimulate the over investment and overexploitation of the fishing resources. The problem of the commons enounced by H. Scott Gordon (1954) and Anthony Scott (1955) has appeared with dramatic effects since the 80's in many of the world fisheries.

To solve this problem appear new solutions. One of the most elegant solutions from economic point of view is the Individual Transferable Quota (ITQ), successfully applied in Iceland and other industrial fisheries as New Zealand. As clearly explained by Arnason (1995) this system allows to internalize the cost to use the resource and provides a mechanism to prevent the overcapacity.

The rationality of this mechanism is very clear: if the absence of property rights in the fisheries is the origin of all of the problems (overcapacity, over exploitation, etc.), when the property rights are introduced (i.e. by ITQ system) this problems disappear and the activity recovers the equilibrium between resources and investments.

But this solution in some cases does not consider sufficiently other aspects of the problem: why does not exist property rights in the fishery? The reason is well know: the difficulty to establish the control over the use of the resource. Then the solution is not only to assign property rights (i.e to sell the land to the farmer), but to establish a system of property rights that assures the effective right and this supposes an efficient control system. And it is very important taking into account that the control has a price. If the control cost are too high (i.e. upper that the earnings of the activity) the property system is inefficient and there is the need to find other solutions.

For instance if the control of landings is difficult because it is easy to sell directly to consumers and to hide the production, perhaps it is easier to control the inputs with a system based on licenses, that in fact represents a fishing right, that as ITQ can be sold and bought. It is simple to understand that the

Mediterranean coast, a tourist area with thousands of restaurants, is not the same situation than Iceland or New Zealand that export the fish, by a single “door” easily controllable by the Administration.

Other management system is the Territorial Use Rights in Fisheries (TURF's). The TURF consists of the allocation of a certain area of the ocean and the associated seabed to a user. The efficiency of the TURF system depends of some aspects as:

- The characteristics of the resources. In particular are efficient when they are sedentary and inefficient if they are migratory. Then, it is very efficient for mollusks and not useful for Tuna or swordfish.
- The number of users. When the number is reduced more efficient is the system. In the limit the system is very efficient when there is a single owner (shell gathering or aquaculture area) exists. But for many fisheries, an area is used by a large number of fishermen in a collective way.
- The Unemployment rate. If the Unemployment is high, the social pressure to fish can be difficult to avoid. The reason is clear: in closed societies the potential fishermen are often relatives and it can be impossible to forbid in the coastal communities the activity if there are no alternatives. For instance in places with tourist development that absorbs the working force, the TURF system can run well; in developing countries without employment alternatives difficulties appear to assure the effectiveness of the system.
- The degree of association is important when the area is exploited by a collective owner (cooperative, association, guild, etc.).

This last point is very important given that in one maritime area it is rare to reserve the space to a single owner. This is possible for aquaculture or in some cases of shell gathering, but not for the most cases of fisheries exploitation. In fact, the most frequent it is the share for many people (enterprises) of the same space and for many gears and uses. TURF management system needs the existence of one institution that assures the management of the collective property. If this institution (cooperative, association, guild, etc.) does not exist, or does not run in an acceptable way, then it is not possible that the management problem can be solved. Some requirements to run adequately are: reasonable number of people, strong social links, capacity of self control, power to punish the transgressor, etc.

In fact, the TURF is not an intellectual construction or a new innovation. It has been used by centuries as a pseudo-property. In fact, in the Middle Age they have a similar treatment to the land property: the fish product is property of the King and their use was rented to the coastal communities by a tax or other kind of payments. The Spanish *Cofradias* has been running as a TURF management institution before the economists established the intellectual concept.

In the real world, not in the models, the use of a management system (ITQ, transferable licenses, TURF, technical restrictions), does not suppose to exclude the use of other systems. In the contrary, given the imperfection in the assignation of the property rights in the fisheries, in many cases a combination of measures and instruments is used. Then, in practice a system based in TURF, uses also transferable licences or gear restrictions, to assure and prevent the lacks in the application of any system. These lacks are associated to the fishing activity. If fishing rights were easily established, then no problems of overexploitation in any world fishery would be present.

In of Spanish coastal fisheries management many instruments are used. The Census of the fleet is closed for any vessel. And the number of vessels is reduced every year, under EU programs. When a fisherman wants to improve the capacity of their vessel, needs to buy licenses to other fishermen. In some fisheries (i.e. Atlantic EU waters) the catch is limited by yearly TAC, and the fishermen can buy and shell the fishing day as an indirect ITQ system.

The TURF system is used, in particular in the small scale fisheries and in the coastal fisheries. The guilds system (*Cofradias*) is based in a TURF management system. But to understand the economic role of the institution and their utility is later that their legal contemporary consolidation.

In fact in Spain the Administration tolerate the existence of this mechanism, because avoids many conflicts to be solved by political intervention. The existence of the *Cofradias* under a TURF mechanism avoids spending money in control, avoids regulating the distribution of rights between gears, etc. All these suppose the Administration to be able to avoid supporting the cost of political decisions that can be quite high. For instance, if the administration tries to reduce the fishing time, probably all fishermen would resist this “political” regulation, but if the measure is adopted by themselves because the costs are increasing and the catches going down, the role of the administration is only to assure by additional control over a measure adopted by the fishermen themselves. Not always the mechanism is theoretically understood by the administration, but at a practical level is very clear their utility for any politician in electoral terms.

But understanding the theoretical reason of the utility is relevant for two reasons: first to avoid the temptation to destroy this mechanism because even it is too old; its functionality is very “modern” and operative. Second, because it is important to understand its limits and the factors that can disable its utility.

THE CATALAN CASE

The Spanish Administration is decentralised organised by regions that in practice works as a federal system in many fields, despite that this name is not used by historical reasons. The 17 regional administrations, called “Autonomous Communities” (CCAA) have elections, Parliament and Government.

The fishing activity is regulated in some aspects by the State (*Ministerio de Agricultura, Pesca y Alimentación*, MAPA) and others by the regions (CCAA). Basically the State is the single representative at international level, specially when dealing with the EU and regulates the Fleet Census, the high waters fisheries and the distribution between regions of the TAC and the structural support from the EU. The CCAA regulate (in some aspects by state delegation) the coastal fisheries, under the general Law and rules established by the EU and the Spanish State. As is possible to appreciate in the Figure 1, ten of the 17 CCAA have coastal and fishing activity. Only 3 of these CCAA have international fishing activity: Galicia, Basque Country and Canary Islands. The other regions have only coastal fisheries. The regulation of the Guilds, then the TURF system, is basically regulated by the regions (CCAA).

In the North-East of Spain, Catalonia is one of the regions with exclusive coastal fisheries and used the TURF mechanism as a basic part of its management system. We concentrate in this paper to analyse this particular case, in order to take advantage of two factors: availability of data and because is a CCAA without long distance fisheries, where practically all fisheries are developed in the coastal area^{vii}.

The legal total number of Guilds in Catalonia is 30. But in fact the real number of operative Guilds is less. As can be appreciated in the table 2, 10 of the guilds have not market and they sell the fish in other guilds. The auction is only opened for some hours one or twice. A big *Cofradia*, opens its auction twice a day at 9 AM (for night purse seine) and at 5 PM. The auction (*lonja*) plays a central role in the *Cofradia* TURF management system. For the next reasons:

1. It is the way to control the time of arrival to the market, because the later that is arrived sold the fish at lowest price.
2. It is the way to control the minimum fish size, under to all eyes of the community.



Figure 1. Regions (CCAA) in the Spanish State

3. It is the way to penalise the potential offender. The *Cofradia* not use legal procedures. But in real time punish the offender in two ways: in case of light transgressions, force the offender to sell the last of the day; or it is forbid to sell one day or more in cases of more important transgressions.
4. Taken into account that a low percentage over the sale is taken for the *Cofradia* (1.5 to 3%) to maintain the infrastructures, all members' control that all people contribute. This supposes to control that everybody sell in the auction and allow control the landings.

If an auction does not exist, there are no ways to effectively control their members and in fact, it does not exist as association. Then, why remain 10 *Cofradias* without auction? Because they have some rights over the harbour and remain as sportive or pensioners associations. Those *Cofradias* only have minor gear vessels and not have real impact over the resource, but there are some additional reasons that explain why the other *Cofradias* accept their existence, as we explain after.

Table 2. Auctions in Catalan *Cofradias*

No market	1 time per day	2 times per day	Direct distribution
Calafell	Cases d'Alcanar	L'Ametlla	Cambrils
Sitges	St Carles	Tarragona	
Mongat-Masnou-Premia	Deltebre	Vilanova	
S.Pol	L'Ampolla	Barcelona	
Calella	Torredembarra	Arenys	
Pineda	Badalona	Blanes	
Lloret	Mataró	Palamos	
Tossa	St Feliu	L'Escala	
L'Estartit		Roses	
Cadaques		Port de la Selva	
		Llança	

The others 20 all do not have the same economic importance. Table 3 shows the landings in the 20 markets in weight and value for 2003. In fact, 13 *Cofradías* (43%) produce the 95% of economic value. The average price is over 3.6 €. In some cases the price is highest because the harbours are specialised in expensive species as shrimp (Llança, Palamos) or molluscs (Deltebre, Mataró). In other cases the price is low because the fisheries are specialised in small pelagic (sardine, anchovy).

Table 3. Landings in Catalan *Cofradías* Markets

Cofradia	Euros 2003	Kg. 2003	Average price €/Kg
Total Catalonia	121.937.307	33.572.880	3,63
Tarragona	10.853.527	3.255.813	3,33
Roses	15.302.290	4.605.292	3,32
Sant Carles	14.481.666	3.526.807	4,11
Vilanova	11.291.106	3.304.075	3,42
Blanes	8.733.297	1.915.602	4,56
Palamós	9.853.664	1.378.806	7,15
Cambrils	6.368.141	1.882.347	3,38
Arenys de Mar	7.982.845	2.709.757	2,95
L'Ametlla de Mar	7.830.167	2.373.262	3,30
Barcelona	6.569.898	2.832.527	2,32
Port Selva	6.904.196	1.938.786	3,56
Llança	4.693.336	779.877	6,02
L'Escala	4.229.052	1.664.171	2,54
Deltebre	1.233.406	225.381	5,47
Mataró	1.175.239	150.042	7,83
L'Ampolla	1.314.894	267.829	4,91
Sant Feliu de G.	1.182.375	440.511	2,68
Les Cases d'A.	1.151.536	224.268	5,13
Torredembarra	786.672	97.728	8,05

The gears used by the coastal fisheries in Catalonia are not industrial, but local fishermen would never consider as artisanal their fleet. In fact, the smaller industrial vessels require an investment from 300.000 to 600.000€^{viii}. It is possible to establish a segmentation with the classification presented at table 4.

Table 4. Catalan Fishing Fleet by gears

	Fishing Gear	Number
Small industrial	Trawl	375
	Purse seine	133
	Deep Longline	37
	Tuna Seine	5
Minor Gears	Drags addressed to molluscs	114
	Artisanal Multipurpose	703

One part of the fleet is artisanal. With one or two person per vessel, they fish very near of the coastal line. The largest part of this kind of vessels are multipurpose boats that fish with net, traps, pots, surface longlines, etc. The investment required is low, but the experience in the work is very important. In some cases, it is not easy to evaluate when the vessel is fully professional, it is operative a part of year or it is used for semi-pleasure, specially in the tourist harbours where the auction has disappear. In the minor

gears exists a specialised group of vessels: the drags addressed to molluscs. They require a some additional investment and consume more fuel, but they produce a product well appreciated by the market.

The small industrial segment comprises as the most important group the **deep trawlers**, addressed to demersal fish (hake, shrimps, etc.). This segment is the most important form the economic point of view. Their production is regular. With 4 to 6 crew on board, returning every day to their harbour: Then their fishing grounds are near of their harbour.

The second small industrial group is the **purse seine** addressed to minor pelagic fish (sardines, anchovies, etc.). Their production is irregular and moves in large areas that can be far from their harbour, but fishing only at night (with light attractors) and returning every day to harbour. Employ more crew (10 to 15) but wages are low. They need to arrive to agreements with other *Cofradias* to land in their harbours. In some cases there are not problems because this gear is not present in many harbours and their landings represent an income to the auction managed by the local *Cofradia*. If there are other purse seine vessels at the other harbour, only if the resource is abundant there are not problems to landing.

The third group is the **deep longline**, that fish demersal species (hake) in places there not accessible to trawl. There are not many vessels of this group, but they require a middle investment in automatic recovery machines and in the vessel, that can have 15 meters length.

Finally the last group is the **Tuna Seine**, TAC managed by the State Administration under the agreements of ICCAT (International Commission for the Conservation of Atlantic Tunas, which cover also the Mediterranean Sea). They comprise large vessels with more of 15 people crew

The total number of vessels is now 1367 and there is distributed between the 30 *Cofradias* as can be appreciated in table 5. The employment in the area, and then the number of *Cofradia* members has a large correlation with the production and investment. The top 13 *Cofradias* supposes the 84% of the total associates.

The historical evolution of *Cofradias* in recent times is influenced by three factors:

- The Spanish democratisation since 1978.
- The incorporation process to EEC (now European Union) since 1986.
- The decentralisation process that established the CCAA structure with regional governments.

The corporative structure of the *Cofradias* produces a first discussion over their future. Some opinions criticise this institution as a limitation over the free market principles and their survival under the fascist period (where parties, trade unions and associations were forbidden). Other opinions sustain that is an institution that allows the self management and the participation of stakeholders. Meanwhile maintains their utility to self regulate the local fisheries, in a context where the Spanish large fishing industry need to reconvert face to new UNCLOS regulations (200 miles extension). Nobody wants open new problems with an unclear modification, and this allows *Cofradias* remaining in their place.

The entrance process to the EU added another problem. The EU regulations promote Producers Organisations (PO), similar but not equal institution. The major differences between PO and *Cofradias* are:

- The PO is voluntary, the adhesion to *Cofradias* is compulsory to fishing in an area. Modifications in the EU Rules now allow to provide a new perspective, the adhesion to PO remains voluntary, but their agreements (over TAC, fishing period, etc) can be considered compulsory by the Administration.
- The PO associates are only the owners (as in agriculture), but the *Cofradias* associates are also the crew. In an activity where the control is difficult and the decisions affect very directly the

crew (the wages is on a shared system), if there is not complicity and participation of everybody in any agreement, it can appear difficulties to apply the agreements and deal with the transitory negative effects.

Table 5. Number of Vessels and Employment. Catalan Fishing Fleet by gears and *Cofradias*^{ix}

	Number of Vessels						Employment					
	Trawl	Seine	Minor gears	Deep longline	Tuna seine	TOTAL	Trawl	Seine	Minor gears	Deep longline	Tuna seine	TOTAL
Cofradias												
Cases d'Alcanar	7		6			13	28		13			41
St Carles	62		74	3		139	250		274	10		534
Deltebre			27			27			125			125
L'Ampolla	4		31			35	14		60			74
L'Ametlla	27	12	24		5	68	99	92	59		66	316
Cambrils	30	4	27	1		62	107	31	27	2		167
Tarragona	44	22	17	2		85	171	242	23	3		439
Torredembarra	2		7	2		11	3		14	4		21
Calafell	4		9			13	14		16			30
Vilanova	27	15	47	5		94	98	173	75	23		369
Sitges			16			16			24			24
Barcelona	26	35	20			81	125	415	45			585
Badalona		2	68			70		26	80			106
Mongat-Masnou-Premia		44				44			50			50
Mataró	3	1	16			20	17	16	34			67
Arenys	21	9	46			76	77	115	93			285
S.Pol	2		9			11	2		12			14
Calella	1		7			8	2		12			14
Pineda			2			2			4			4
Blanes	22	4	42			68	102	57	110			269
Lloret			7			7			10			10
Tossa			5			5			10			10
St Feliu		5	18			23		60	30			90
Palamos	36	9	66			111	171	50	65			286
L'Estartit			16			16			21			21
L'Escala		6	49			55		61	49			110
Roses	29	9	63	11		112	155	38	49	10		252
Cadaques			23			23			20			20
Port de la Selva	12		29	6		47	36		17	27		80
Llança	16		2	7		25	48		0	56		104
TOTAL	375	133	817	37	5	1367	1519	1376	1421	135	66	4517

This process opens other discussion between “traditionalist” and “fashion fan”. In my opinion this is false discussion that can produce some negative effects. By a side some administrators try to force to establish the new OP system, and destroy some *Cofradias* by the privatisation of the auctions^x. The effect was very negative, the community control disappeared and the black fishery increased out of control. Only at this moment these administrators realized that they not enough have resources to control the fishermen: to many fishermen, potential places to landing, too easy sell the fish by not legal paths (tourist restaurants, etc.).

By the other side the “traditionalist” tries to find the justification of their position from the History and not in the socio-economic functionality. This produces a strong resistance to amalgamate any *Cofradia*, because any old *Cofradia* that remains across the centuries is considered a reason. In a context that appears new transport systems and new commercial paths and structures, that made necessary some amalgamation in order to assure a sufficient sales volume, they prefer maintaining all the *Cofradias*. This produces that many of them remain only as nominal appearance. But also produce other effects, because under old rules any legal *Cofradia* equals a vote inside the national Federation of *Cofradias* and face to administration. This distorts seriously the effective democracy and opens a “vote market” between the small *Cofradias*, which only appear in negotiations and internal conflicts.

Finally, another practical option, firstly adopted in Guipuzcoa (Basque Country) it is being extending in all Spain. Under the control of the *Cofradias* in a region, it was established a legal institution as OP that depend fully on the *Cofradias*. This kind of apparent PO can solve many of the past conflicts because allows to follow the EU requirements and maintaining the self-control over the territory.

The decentralising process produces also additional lags in the adoption of decisions. The Spanish Constitution establishes not useful legal division: land and internal waters^{xi} for CCAA, the sea waters for the State. Only after many years of discussions at the Constitutional Tribunal, some practical agreements can be established to solve the grey areas in the distribution of functions. The management of the *Cofradias* is basically now a CCAA competence.

In 1991, appeared a first essay to regulate the new conditions of the role of *Cofradias* in Catalonia^{xii}. The last regulation over the Catalan *Cofradias* was established by Law in 2002^{xiii}. The next year there were developed rules to assure the democracy procedures in the poll process^{xiv}. Under the umbrella of the law it was recognized a clear area distribution between the *Cofradias*. This geographical delimitation is presented in Figure 3. In fact this rule only recognizes the oldest delimitations of the historical *Cofradia* territories (never recognised by law), to avoid open a complex discussion on limits. This division contributes to avoid conflicts between *Cofradias* but present some difficulties:

- First, the limits have overlapping areas in many cases. As is possible to appreciate, in many cases the border of one Guild goes further on the limits of they neighbour.
- Second, the legal rules establish 30 areas but as we have seen before, only 13 *Cofradias* have real economic importance. Then some of the limits are a fiction: the real user is other that the name that appears in the legal rules: other users that the legally allowed exploit some areas.
- The last, but not the least. It does not exist a proportion between territorial space, production and capacity of production (vessels, crew, etc.). It is only necessary to compare the data from tables 3 (landings) and 5 (vessels and employment) with the limits presented in Figure 3, to see that there is not any proportion between economic importance of the *Cofradia* and the area assigned by the Administration..

Correlation Analysis can clearly show this last problem. The Partial Correlations procedure computes partial correlation coefficients that describe the linear relationship between two variables while controlling for the effects of one or more additional variables. Correlations are measures of linear association. In Table 6 we show the correlation between Number of Vessels, Landings Value, Landings Weight and Maritime Territory of the Catalonian *Cofradias*. As it can be seen the correlation between employment, value, number and weight is significant at the 0.01 level in each case, but the correlation from all variables with the territorial distribution is only significant at 0.05 level.

In a more visual way, it is possible understand this phenomena in Figure 2 that shows as percentage of the total of Catalonia, the relative weight of each Cofradía on Landing Value, Employment and Coastal Territory. To allow the visual relation, it was only taken 3 of the 5 variables. As it is possible appreciate

there is a large correlation between Value and Employment, but the maritime territory of each *Cofradia* is largely independent of their economic weight. These outcomes show that the nowadays legal distribution is far from the reality. It is clear that the biggest *Cofradias* are working on their neighbours territory. Then, what is the reason of this distortion? From my point of view this is due to socio economic and political historical processes. If the fishing rights distribution is based in historical reasons and the rules of the *Cofradias* has been established from many years ago (from Centuries in many cases), then this distribution is sacred considered and any fishermen like analyse their functionality.

Table 6. Correlations between Number of Vessels, Value of Landings, Weight of Landings and Maritime Territory of Catalan *Cofradias*^{xy}

Variables		Vessels	Euros	Kg	Employment	Territory
Vessels	Pearson Correlation	1	,906(**)	,863(**)	,860(**)	,517(**)
	Sig. (2-tailed)	.	,000	,000	,000	,003
Euros	Pearson Correlation	,906(**)	1	,959(**)	,828(**)	,453(*)
	Sig. (2-tailed)	,000	.	,000	,000	,012
Kg Landings	Pearson Correlation	,863(**)	,959(**)	1	,846(**)	,428(*)
	Sig. (2-tailed)	,000	,000	.	,000	,018
Employment	Pearson Correlation	,860(**)	,828(**)	,846(**)	1	,588(**)
	Sig. (2-tailed)	,000	,000	,000	.	,001
Territory	Pearson Correlation	,517(**)	,453(*)	,428(*)	,588(**)	1
	Sig. (2-tailed)	,003	,012	,018	,001	.
	N	30	30	30	30	30

Correlation is significant at the * 0.05 level (2-tailed). ** 0.01 level (2-tailed)

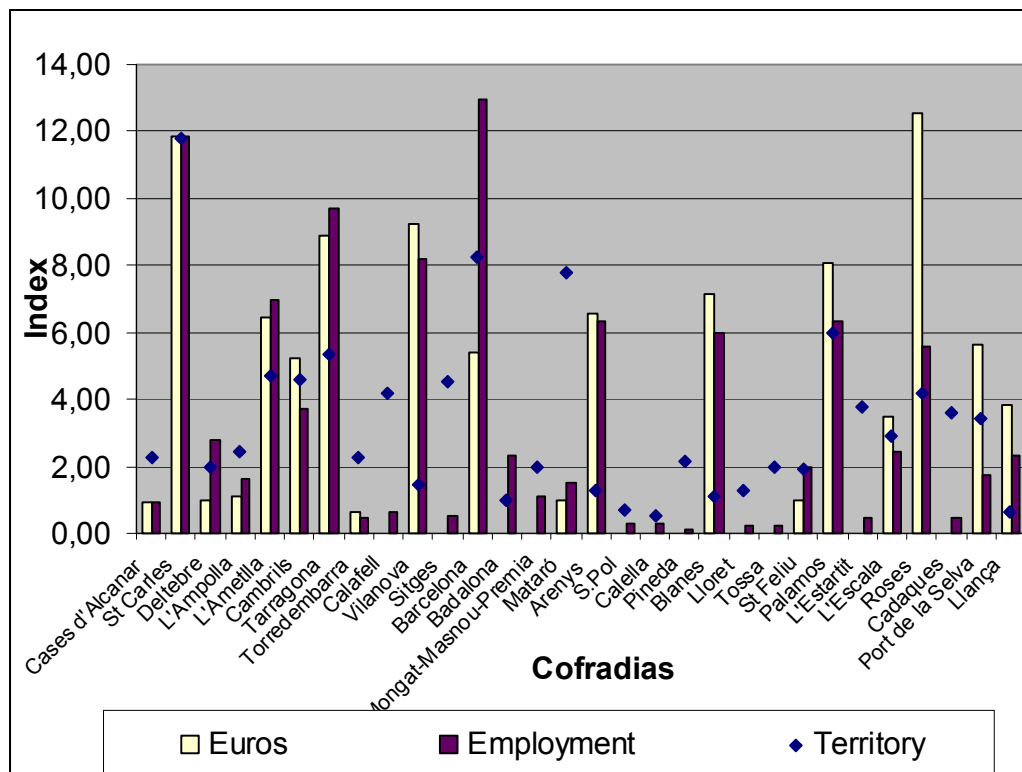


Figure 2. Percentage over the Catalan Total of Employment, value and Maritime Territory of each *Cofradia*

When the present administration translated the customary uses to legal rules preferred not open a discussion on borders and maintain the old limits. Also in each village, fishermen communities prefer not to open the discussion, to obtain some legal recognition immediately and leave this problem for the future. In fact, they know that at present they can use the neighbour territory when the contiguous *Cofradia* is not running or is weak

But the analysis shows that the problem is not closed. The present situation is a permanent building process to consolidate fishing rights in a sustainable way. Any difference between the legal and the effective distribution is not adequate in a process of necessary adjustment and changes.

SOME CONCLUSIONS ON TURF MANAGEMENT SYSTEM AND *COFRADIAS*

The TURF management of fisheries has had acceptable outcomes in Catalonia. This system, together with others as the withdraw EU programs, allows to reduce effort. In 2000 there were 1550 vessels in Catalonia, in 2003 there were 1367. The GRT goes from 24,615 to 23,953^{xvi} during the same period. Effort growth process finished, and there has been started a slow adaptation process. In 1948 the total employment was 20.888, but down to 13.346 (1960), 7362 (1970), 8408 (1980), 5819 (1990) and finally 4517 (2003). The evolution of employment goes in a reduction direction, to compensate the effects of productivity growth and assure a sustainable exploitation.

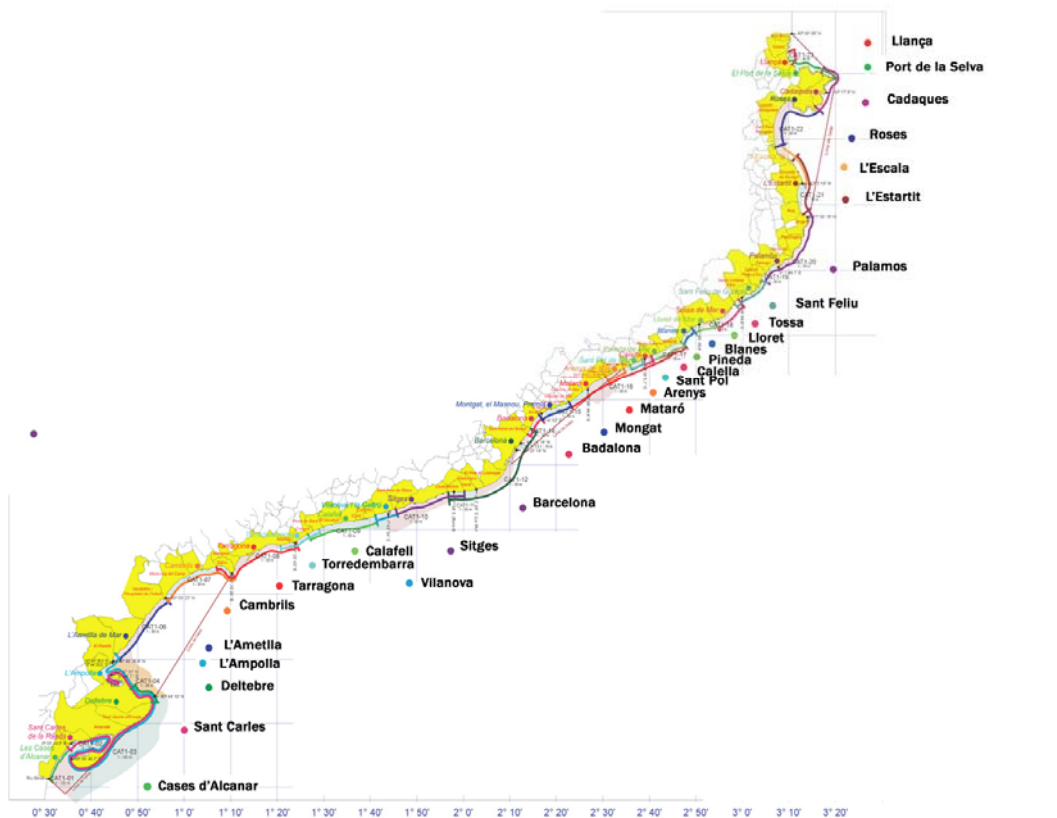
Take in account the participative mechanism of TURF systems, there could be difficulties to reduce employment over the rate of employment retreat. But if other economic activity were promoted, as nautical tourism, hotels, processing or fish trade; the speed of adaptation could be accelerated. In Spain, as in other parts of the world that the TURF system is applied (See Asada., 1983; for the case of Japan), is a management system that can contribute to regulate efficiently the fisheries.

The TURF system applied in Catalonia (as in Spain areas) presents nowadays some problems that need be considered:

The atomisation of the territory perhaps is the main problem. By historical reasons (“traditionalist” positions) is maintained an excessive and unreal number of *Cofradias*. An amalgamation process and reorganisation is necessary. Nowadays only around 10 *Cofradias* can be enough to regulate the Catalanian Fishing Grounds. If we extrapolate this outcome from Catalonia to the rest of Spain; this could suppose to move from 229 *Cofradias*, to only 75.

The amalgamation need of some *Cofradias* and abolish the legal level of others, supposes other changes. Other need is to move from the “historic” arguments to the economic arguments. The main social role of the *Cofradias* is not to maintain tradition, but to apply a system of fishing rights (TURF) that can assure the sustainability and the management at a rational cost. This supposes to adapt the legal territorial divisions to the actually effective distribution.

The TURF system can have a good future; take in account the strength of the *Cofradias* if the administrations play an active role to converge legal rules and real practices. If this process is correctly developed other advantages can be obtained. Not only to preserve the fishing resources. The use of the Fishermen Community synergies to preserve the environment can be very effective. As show at the mobilisation of the Galician *Cofradias* to limit the impact of the Prestige disaster in 2003, they have the capacity to save large amounts of money to the society. Considering the potential of the fishing communities to preserve the territory for different uses (tourism, environment protection, etc.) including border controls against human or drug illegal traffic and to develop local programs (processing, trade, aquaculture, etc.) they can produce significant social and economic benefits. But this implies the need to preserve the social links not with nostalgia but with intelligence.

Figure 3. Territorial limits of the Catalan *Cofradias*

REFERENCES

- Alegret, J.L. 2003, *La pesca a Catalunya*, Ed Angle, Barcelona.
- Scott, A. 1955, *The Fishery: The objectives of Sole Ownership*, Journal of Political Economy, 63. pp. 116-124.
- Arnason, 1995, *The Icelandic Fisheries: Evolution and management of a Fishing Industry*. Fishing New Books, Blackwell Science, London.
- Asada, Y., Hirasawa Y. and Nagasaki F. 1983, *Fishery Management in Japan*, FAO, Fisheries Tech. Papers, N 238.
- Boix, L. 2003, *Pescadors de Catalunya*, Generalitat de Catalunya, Departament de Agricultura, Ramaderia i Pesca, Barcelona.
- Díaz de Rabago, J. 1885, *La industria de la pesca en Galicia*; Redit 1999, Fundación Pedro Barrie, Vigo.
- Generalitat de Catalunya 2004, *El control de les zones de produccio de marisc del litoral de Catalunya*, Departament de Agricultura, Ramaderia i Pesca, Barcelona.
- Scott Gordon, H. 1954, *The Economic Theory of a Common-Property Resource: The Fishery*, Journal of Political Economy, 62. pp. 124-142.
- MAPA 2001, *La Agricultura la Pesca y la Alimentación en España*, Ministerio de Agricultura, Pesca y Alimentación, Madrid.

OECD 2001, *Review of fisheries in OECD countries 2001*, OECD, Paris

ENDNOTES

ⁱ The first document available is from the year 1114, the regulation of the *Cofradia* of Tortosa (in the Ebro river Delta) as explained by Alegret (2003). But probably this kind of institution existed before, but not remaining documental evidences.

ⁱⁱ This process is documented in Diaz de Rabago (1885)

ⁱⁱⁱ By Real Decreto of 20th February of 1817. Alegret (2003)

^{iv} In fact, after the 1936 fascist strike, recovered the religious oldest name of *Cofradias* (Guild) and replace others as trade union, Association, Cooperative, etc. Restored the Democratic System in 1978, the *Cofradias* name remained.

^v It is important to remark that there are other parts where the Spanish capital is present: the fishing joint ventures, called "*Sociedades Mixtas*". These enterprises are placed in third countries and working in their fishing grounds. Given that they use the third state flags, their regulation and management belong to these states. But also these companies export part of their production to Spain and use market facilities and some infrastructures (as reparation) of the Spanish harbours.

^{vi} Data from 2001 Spanish Fleet Census in *La Agricultura la Pesca y la Alimentación en España*, Ministerio de Agricultura, Pesca y Alimentación, 2001, Madrid (pp 417). Landings and value from 2000 in Op. Cit. pp. 382. Employment from 1998 in *Review of fisheries in OECD countries 2001*, OECD, Paris, pp 196.

^{vii} From 1365 vessels, the exception was 5 seine for Mediterranean Tuna.

^{viii} At July 2003 the equivalence is 1 € (euro) = 1,23 \$ = 135 Yen

^{ix} Data elaborated by the author from Boix (2003)

^x A paradigmatic case was the privatisation of the Malaga (Andalusia) auction by the end of 80's.

^{xi} The internal waters are the area of Sea comprised between the base line of UNCLOS and the coast.

^{xii} By the Ordenance (Decret) 152/1991, 17th June, to regulate fishermen guilds.

^{xiii} *Cofradias* Catalanian Law 22/2002, 12th de July. (DOGC num. 3684, 24/07/2002, page 13393)

^{xiv} Decret 232/2003, 23th Setember, Pel qual s'estableix el procediment electoral de les confraries de pescadors i les seves federacions. (DOGC num. 3985, 10/10/2003, page 19476)

^{xv} The Pearson correlation is estimated from the precedent data on Number of vessels, Value, Weight landings, Employment and Territory. This data was transformed in as a percentage of the total of each variable for Catalonia. The calculations were made by SSPS 12 software.

^{xvi} Data from Catalan Administration. www.gencat.net/darp/c/pescamar/flota/flota02.htm.