



DEEPFISHMAN

Case Study 1b
Orange Roughy in ICES VI and VII

Socio-economic study

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1 Introduction

Orange roughy (*Hoplostethus Atlanticus*) is a deep-water species, primarily fished in North East Atlantic in ICES areas VI and VII (see Figure 1).

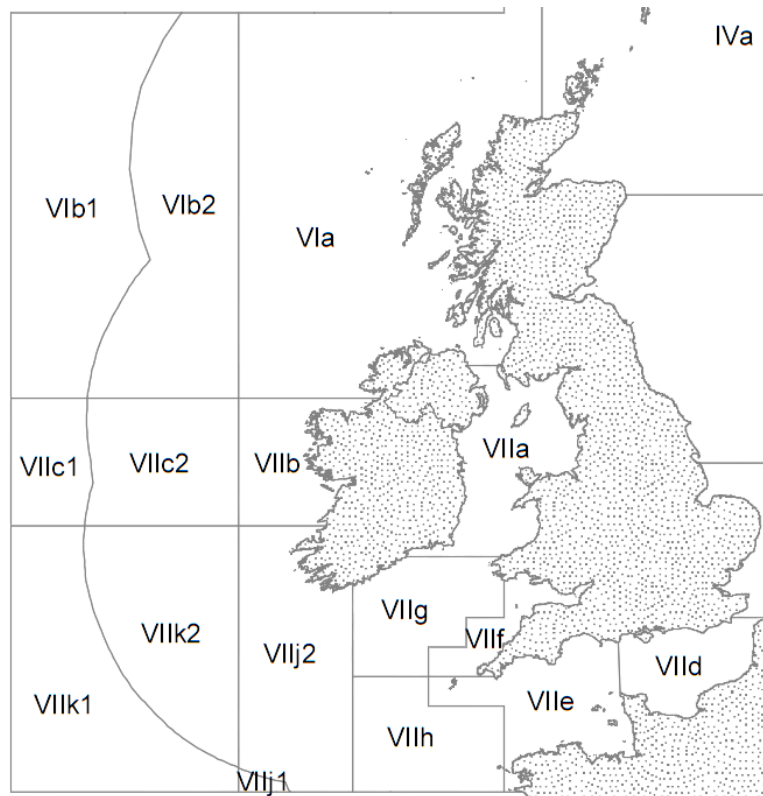


Figure 1 Map of ICES areas VI and VII.

Historically, most of the catches have taken place in ICES areas VII, VI and XII (see Figure 2).

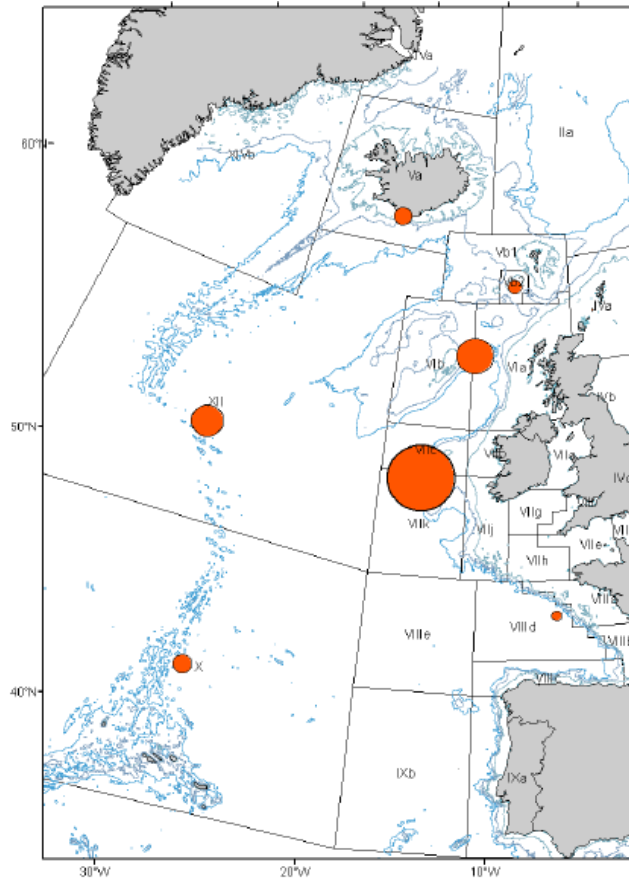


Figure 2 Fisheries for orange roughy by ICES areas. Size of circles reflects historic accumulated catch 1991-2009. Source: ICES WGDEEP 2010.

Since 1988, French vessels have caught the lion share of orange roughy in ICES area VI, or 6,800 tons out of total harvest of 7,200 tons. French vessels have also been most prominent in ICES area VII, where total catches since 1988 total 16,500, but Irish vessels have also been active in the area, with total catches amounting to 8,000 tons.

Table 1 Estimates of landings by orange roughy by nations in ICES area VI 1988-2009.
Source: ICES WGDEEP Report 2010.

	Faroes	France	E & W	Scotland	Ireland	Spain	Total
1988							0
1989		5					5
1990		15					15
1991		3502					3502
1992		1422					1422
1993		429					429
1994		179					179
1995	40	74		2			116
1996	0	116		0			116
1997	29	116	1				146
1998		100				2	102
1999		175			0	1	176
2000		136			2		138
2001		159		11	110		280
2002		152		41	130		323
2003		79			2		81
2004		54			2		56
2005		41			6		47
2006		32			1		33
2007		12					12
2008		5					5
2009		2					2
Total	69	6805	1	54	253	3	7185

Table 2 Estimates of landings by orange roughy by nations in ICES area VII 1988-2009.
Source: ICES WGDEEP Report 2010.

	France	Spain	E & W	Ireland	Scotland	Faroes	Total
1988							0
1989	3						3
1990	2						2
1991	1406						1406
1992	3101						3101
1993	1668						1668
1994	1722						1722
1995	831						831
1996	879						879
1997	893						893
1998	963	6					969
1999	1157	4					1161
2000	1019			1			1020
2001	1022		1	2367	22		3412
2002	300		14	5114	33	4	5465
2003	369			172			541
2004	279			188			467
2005	165			90			255
2006	451			37			488
2007	145			28			173
2008	118						118
2009	15						15
Total	16508	10	15	7997	55	4	24589

The fishing grounds are about 120 nautical miles away from the main Irish ports Fenit, Killybegs, Galway, Dingle and Ros a'mhil. Home ports and landing ports are mostly the same. For the French fleet the distance from home ports to the fishing grounds is 200 nautical miles, but the distance from the fishing grounds to landing ports is only 120 nautical miles. The most important French home ports are Boulognsur-mer and Lorient, but catches are usually landed in Lochinver or Ullapool in Scotland and Killybegs in Ireland, as well as the home ports of the Irish fleet. The fishing takes place within the jurisdiction of Ireland and Scotland and Area VI expands out into international water where the North East Atlantic Fisheries Commission (NEAFC) is responsible for management.

The average fishing trip for Irish vessels lasts 10 days. French vessels spend up to 29 days away from home port, but land in Scotland or Ireland every 9 days. Part of the crew is then relieved and the catch carried to France by lorries.

History of the fisheries

France has been the major player in the orange roughy fishery in ICES areas VI and VII. Although some French catches were recorded in the 1980, it was not until the early 1990s fishing began in all earnest. At first the main fishing grounds were in ICES area VI, but catches in area VII soon overshadowed catches in area VI. In both areas, catches peaked relatively early. In 2000, a programme to develop an Irish deep-water fishery was initiated with 10 vessels commencing exploratory deep-water fishing in areas VI and VII (Shephard (2006)), mainly in the slopes of the Porcupine Bank. The more efficient Irish vessels literally chased the French vessels out. Most of Porcupine Bank orange roughy fishery closed from January 2005, mainly because of concerns about unsustainable and illegal fishing. The negative effects on deep-water sharks and corals were also cited as an important reason (ICES (2006), Grehan et. al (2005)).

The vessels involved in this fishery, also conduct a mixed species slope fishery for roundnose grenadier, black scabbard fish and deep-water sharks. In this fishery the trawl is towed along the depth contours of the slope for 4-6 hours and the orange roughy is only a small by-catch. However, vessels may still have a few targeted hauls.

A special fishing technique was developed in New Zealand for fishing orange roughy on peaks and later on used by Irish fishermen. The trawls are towed pelagic into the top of the seamount (peak). The trawl is then landed on the peak and the trawl slides down the slope. Each trip the fishery makes takes ten days with each haul taking 1-2 hours from shooting until the trawl is hauled back. The time the trawl has bottom contact varies between 5-30 minutes.

2 Management

A TAC was introduced for orange roughy in area VI in 2003, which remained at 88 tons until 2006. In to a TAC, a number of protection areas have been introduced from 2005, from which EU vessels have no permission to land or retain any catches of orange roughy. The TAC for EC vessels in 2010 is set for 0.

A TAC was introduced in the orange roughy fishery in area VII in 2003. The TAC in 2009 was set to 65 tons, and to 0 tons in 2010. Protection areas were introduced in 2005, from which EU vessels have no permission to land or retain any catches of orange roughy.

3 Fleet overview

As the combined catches of Irish and French vessels represent over 99% of total orange roughly catches in ICES areas VI and VII, we concentrate in what follows on the deep-water fishing sectors in these two countries.

Table 3 presents statistics for Irish trawlers participating in deep-water fisheries for the years 2001 to 2007. As mentioned earlier, the programme was initiated in Ireland in 2000 to develop the deep-water fisheries. Grant funding was organised through the Irish Sea Fisheries Board (BIM), and in that first year five trawlers were built. A slightly older trawler entered the fishery in 2003. Following exploratory fishing, the fishery really took off in 2001 and 2002. However, Irish catches in area VII declined considerably after a stunning increase in 2002 when landings increased from 2,365 in the previous year to 5,114 tons. All vessels were skipper owned.

Table 3 Characteristics of the Irish deep-water fleet engaged in deep-water fishing.
Source: DEEPFISHMAN, Case study 1 B report.

		2001	2002	2003	2004	2005	2006	2007
Number of veels		4	5	6	6	4	3	2
Age	Mean	1	2	3.5	2.3	4.3	5	7
	Max	1	2	6	7	5	6	7
	Min	1	2	3	1	2	3	7
	Std	0	0	1.2	1.9	1.5	1.7	0
Length	Mean	32.5	33	33.1	32.5	33.6	33.1	31.2
	Max	40.7	40.7	40.7	38.3	38.3	38.3	38.3
	Min	24	24	24	24	24	24	24
	Std	8.2	7.2	6.5	5.7	6.5	7.9	10.1
GRT	Mean	483	460	491	468	458	488	478
	Max	637	637	637	507	507	507	507
	Min	340	340	340	340	340	346	346
	Std	162	150	154	135	124	133	187
kW	Mean	1454	1646	1542	1717	1987	1844	1691
	Max	1900	2414	2414	2950	2950	2950	1521
	Min	1242	1242	1022	1022	1242	1242	1341
	Std	301	502	516	775	833	959	494

Data do not exist for the French deep-water fleet as such, but the Annual Economic Report compiled by JRC (for STECF) provides information on demersal trawl and demersal seiner larger than 40 m on the one hand and demersal trawl and demersal seiner 24-40 m long on the other. The second fleet segment includes data on the 33-38 m long semi-industrial vessels.

However, both these categories include a broader diversity of vessels than those targeting orange roughy and other deep-water species. Indeed, the number of licensed deep-water vessels has since 2003 never exceeded 50.

Table 4 Characteristics of the French fleet engaged in deep-water fishing.
Source: AER 2009.

	2005	2006	2007
24-40 m			
Number of vessels	125	117	116
GRT	185	184	181
kW	492	488	484
> 40 m			
Number of vessels	18	13	13
GRT	699	1038	1038
kW	1692	1806	1806

The bulk of the deep-water fishery is carried out by 5 large trawlers, which are owned by 2 companies. Two other companies operate one trawler each which participate in the fishery on a smaller scale.

4 Labour

On average, there were 10 persons fully employed per Irish vessel. Of these, approximately 7.3 were at sea while 2.7 crew members were employed in various on-shore activities. All the crew members were men. Data on crew has been collected from interviews in 2009 and from observation by observers in 2003 and 2004. In the Irish deep-water fishery fleet, 76 per cent of the crew was Irish when the fishery started in 2001. Gradually, however, foreigners became a larger proportion of the crews and in 2005 68 per cent of the crew was foreign. The foreigners, mainly east Europeans, were mainly working as deckhands. The engineers and the skippers and mates were mainly from Ireland with a few exceptions. Only one of the vessels used Irish crew only, but this vessel left the fishery in 2005.

At the beginning of the fishery, wages were good and thereby attractive for Irish labour. However, declining catches lead to decreasing wages and that made the fishery less competitive. Decreasing profits lead vessel operators to look elsewhere for suitable labour, and thus the share of foreigners increased. Good economic conditions facilitated exit from the industry and into other branches of economic activity. The boom years also attracted foreign labour to the country, which competed with local fishermen for crew places. Irish crew

members have, however, claimed that the ship owners preferred foreign crew not only because of lower wages, but also because foreigners did not demand the same level of social security as Irish fishermen. It seems that the change from peak fishery for orange roughly to mixed deep-water demersal fishery had considerable effect on the employment structure, as the fishery on the flats was fuel intensive and yielded low price catches. This in turn forced labour costs down.

Table 5: Composition of crew and total number of fishermen employed by Irish vessels engaged in deep-water fishing.

Source: DEEPFISHMAN, Case study 1 B report.

	Number of vessels	Irish crew	Foreign crew	Total crew	Mean crew (n)	% Foreign
2001	4	39	12	51	12.8	23.5
2002	5	35	14	49	9.8	28.6
2003	6	28	20	48	8	41.7
2004	6	23	25	48	8	52.1
2005	4	12	26	38	9.5	68.4

Table 5 presents data on the composition of crew and total number of fishermen employed. Vessel owners are members of different producer organizations. Crew member were not known to be members of any union. All vessels used to have a share system where the catch was divided by the number of share. However, the system of fixed payments became dominant when it became more common to use East European crew.

In 2002-2003 there were about 1.7 million individuals employed in Ireland, whereof just 10,600 engaged in fishing, and just 80 in deep-water fisheries. Average wages in Irish fisheries were then only €9,500, but wages in the deep-water fisheries were four times higher, and considerably higher than average wages in the economy as a whole. No females were then employed by the deep-water trawlers, and women made up only 1% of those engaged in the fisheries as a whole.

Table 6 Irish fleet. Total employment, earnings and gender distribution for 2002-2003.

Source: DEEPFISHMAN Case study 1 B report.

	Whole economy	Fishing	Deepwater trawlers
Employment	1.764 million	10,584	80
% male	58%	99%	100%
Average	€ 35,411	€ 9,500	€ 40,000

In 2005 there were 1077 fishermen (full time equivalent) employed by the two French fleet segments partly engaged in deep-water fisheries. Two years later, the number of fishermen had dwindled to 905. In 2006 total employment in the French fisheries amounted to 13,400 FTE, and 13,155 in 2007. Hence, the two fleet segments represent less than 7% of the total employment at sea. It is estimated that in 2006, the harvesting sector employed around 19,900 people and the processing sector 18,500. Total employment in the economy then amounted to 27.6 million people. The share of the fisheries sectors in total employment was thus only 0.14%.

Table 7 Number of fishermen (full time equivalent) employed by French vessels engaged in deep-water fishing.
Source: AER 2009.

	2005	2006	2007
24-40 m	746	657	641
> 40 m	331	264	264
Total	1077	921	905

In a recent survey, it was found that the fisheries employed 818 women, whereof the shellfish culture segment employed 616 and 182 were employed by vessels in the Petite peche category. Trips made by vessels in that category usually last less than 24 hours. There was no indication that any women were taking part in the deep-water fisheries.

The four companies active in the orange roughy fishery are all member of the same union, *Union des Armateurs à la Pêche de France*. Historically, this union has been very influential in key negotiations, notably for the CFP in the 1970-1980s and in the Law of the Sea Conferences.

Unemployment is not a problem for the deep-water fleet, much rather insufficient labour supply.

The five larger trawlers all operate under a regime of a fixed minimum wages, plus a part of the sales, excluding such costs as fuel and gear etc. Crews on the two smaller vessels also receive a certain minimum and a share of net sales, but fuel costs are deducted before sharing.

5 Landings and marketing

France is the most important market for orange roughy in Europe and catches of both French and Irish vessels are transported from the ports of landing in Ireland and Scotland to the mainland where catches are sold in auctions. There is no tradition and market for deep-water fish in Ireland. Transport and logistics facilities have been developed for catches from all the west coast of the British Isles, and the Irish industry has taken advantage of this infrastructure to get catches of deep-water species to mainland markets.

Irish landings are either sold in auctions or to single buyers or coops. In the latter two cases prices are to a large extent determined by auction prices. Most of the orange roughy catches are bought by processing firms, which fillet the fish and sell it fresh in the domestic market. Prices are to a large extent determined by demand and supply, but it is possible for buyers to keep the fish for a few days without the quality deteriorating. This gives buyers some possibilities to adapt to market conditions.

Table 8 reveals development of prices of Irish catches in French auction in recent years. Although there has been some year-to-year variation, prices have generally been rising in nominal terms.

Table 8 Average prices in (€ per kg) for Irish catches of orange roughy in French auction markets.

	Bologne	Le Guilbinec	Concarneau	Lorient
2000	4.4	4.3	2.2	4.0
2001	3.8	3.5		3.6
2002	4.6	4.5		4.6
2003	5.7	5.5	4.6	5.3
2004	5.9	5.4	5.1	5.1
2005	5.9	6.5	6.5	5.4
2006	6.3	5.9	6.0	5.3
2007	6.1	6.3	6.8	6.7
2008	5.7	5.7	7.9	6.5

Landings of French vessels are also sold in auctions. Even though one of the companies operating a trawler is a subsidiary of a supermarket business, which also owns processing plants, it has no preferential arrangement for the sale of the vessel's catches, which all end up in auction.. As revealed in Figure 3, the amount sold in auctions has been declining in the last few years, but prices have risen almost continuously.

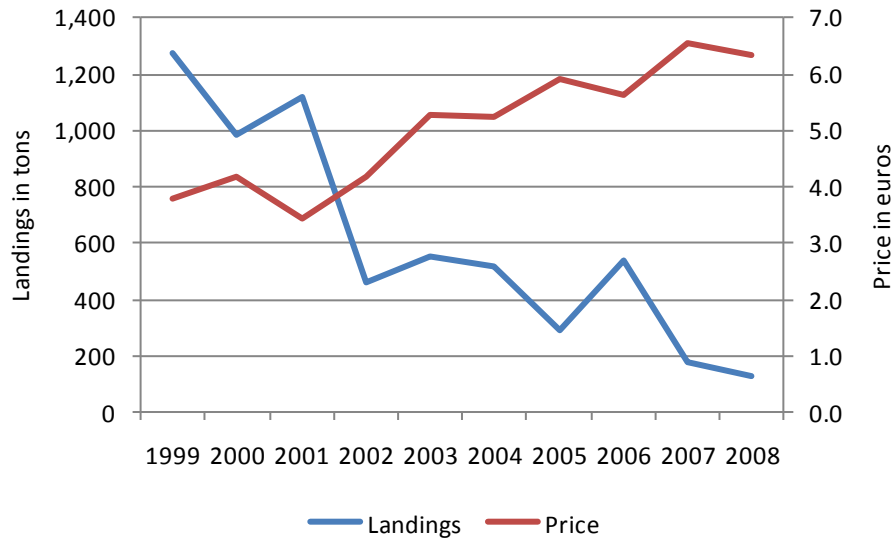


Figure 3 Landings and prices (€ per kg) for French catches of orange roughy at French auctions. Source: DEEPFISHMAN Case Study 2 report.

As is clear from Figure 4, the development of prices in open auctions in France has been very similar for catches of French and Irish vessels.

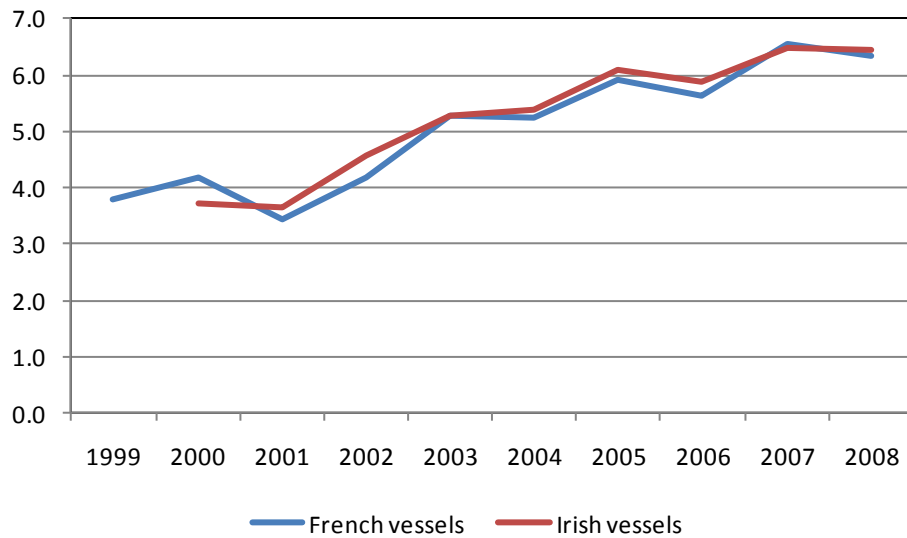


Figure 4 Comparison of average prices (€ per kg) of landings from French and Irish vessels. Source: DEEPFISHMAN Case Study 1 B report and DEEPFISHMAN Case Study 2 report.

In 2006, there were 324 companies active in the whole sector, 287 in processing and 50 in mixed wholesale-processing. A total of 5,500 persons were employed by wholesale and

13,000 in processing. The vast majority of the processing plants is located in coastal regions; in the North, Normandy, Brittany, along the Atlantic coast and in the Mediterranean area.

6 Financial performance

When the direct fishery for orange roughy was carried out during the years 2001-2004 the normal revenue per week in Ireland was approximately €100,000-200,000. When fishing on peaks, fuel consumption was approximately 2,500 litres per day. Fishing flat grounds fuel consumption was 6,000 litres per day. Total cost per week was approximately €20,000. Annual capital costs varied between €700,000 and €1.1 million. The fishery enjoyed huge profits and there were anecdotes of skippers retiring early.

No data exist for the French deep-water fleet, but the financial performance of the two above-mentioned fleet segments are provided in Table 9. The largest trawlers have been operated with losses in recent years, but the smaller vessels turned profits in 2007, after sustaining losses in the previous two years.

Table 9 Financial performance of the French fleet. All figures in € million.

Source: AER 2009.

	2005	2006	2007
24-40 m			
Income	84.1	85.7	89.9
Costs	91.2	89.4	85.9
Profits	-7.1	-3.7	4.0
> 40 m			
Income	48.7	50.0	46.3
Costs	52.5	55.5	50.9
Profits	-3.8	-5.5	-4.6

There are currently no subsidies in force for deep-water fisheries in Ireland. Subsidies in France are for the whole fishing and aquaculture industry, and not specifically for the deep-species segment.

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