

SPANISH ATLANTIC COD (*GADUS MORHUA*) FISHERIES IN NEWFOUNDLAND IN THE SECOND HALF OF THE 20TH CENTURY

Ernesto López Losa

Department of Economic History, The University of the Basque Country, Av. Lehendakari Agirre, 83, 48015 Bilbao, BASQUE COUNTRY, SPAIN
e-mail: heploloe@bs.ehu.es

ABSTRACT

Atlantic cod (*Gadus morhua*) has been an economically and culturally important food in Spain for hundreds of years. The Spanish cod fishery in Newfoundland waters developed slowly over time, and was sometimes erratic in its operation. The demand for dried salted cod was always high, and what was not caught by the Spanish fleet was imported. Fishery development accelerated after WW II, but the fleets then faced economic difficulties during the 1970s and 1980s. Catch levels of cod in the Northwest Atlantic declined during this time due to overfishing and a reduction in the number of boats in the fleet. Although cod has always been the target of the fishery, fishers in recent years have increasingly caught other species as well, especially with the introduction of freezer trawlers into the fleet. The demand for salted cod has remained high, however, despite the increasing importance of other target species and the growing competition with fresh fish. Although data sources in the Spanish fisheries often underestimate landings and rarely identify where fish were caught, Atlantic cod catch data taken from the Spanish Fishery Yearbooks fit closely with NAFO-FAO data. However, discards since the 1970s and non-reported catches may each represent up to 25% of the weight of cod landed. Thus, Spanish cod catches are probably substantially underestimated.

INTRODUCTION TO THE SPANISH COD FISHERIES IN NEWFOUNDLAND

Spain has been in close contact with the fishing resources of Newfoundland since the first third of the 16th century, when Basques began whaling and fishing cod in those waters. Although the great Spanish cod fishery fell in the later years of that century and had almost disappeared by 1650, the connection with Newfoundland was not lost. References of trips from Spain to the Grand

Banks in the following decades are known. A few also took place in the 18th century, but it is commonly admitted that the Spanish presence in Newfoundland waters was nominal after the mid 17th century. In any case, the decline of the Spanish fisheries in the Northwest Atlantic did not greatly affect Spain's cod consumption, as Spain became a significant importer of Newfoundland's salted cod since then (Ryan, 1985; Zabala, 1994). Newfoundlanders, the British and the French supplied the high Spanish demand for cod and dominated the Spanish markets until the 20th century, when other European producers (both Nordics and Spanish) displaced them. There are no quantitative records of national imports until the 1850s, and calculating the cod consumption before then is nearly impossible. Nevertheless, alternative sources, such as local reports or series of imports and sales of salted-cured cod in various Spanish cities during the 18th and early 19th centuries, reflect the importance of its commerce and consumption in earlier times (López Losa, 2000a).

Since the 18th century, many attempts to rebuild the Spanish cod fishery were planned, but until the mid-1920s, none of them were carried out. Following the tariffs imposed over cod imports in 1922, new projects were developed, and in 1924, Spanish trawlers began to fish cod in the North West Atlantic grounds and off the Northern Norwegian coast (Giráldez Rivero, 1997; Barkham and López Losa, 1999; López Losa, 2000a). On the eve of the Spanish Civil War, the cod trawling fleet, owned by a fishing company called PYSBE, was composed of six trawlers of about 1,200 GRT each, landing a total of 9,000-10,000 metric tonnes of green cod. This production amounted to a quarter of the total salted-cured imports to Spain in 1935 (Giráldez Rivero, 1996; López Losa, 2000a). After World War II, diminishing returns in the European grounds caused the displacement of a great number of small pair trawlers towards the Grand Banks. In the following years, the cod landings in Spain grew rapidly, and with support from the Spanish government, a new trawling fleet of higher catch capacity was constructed to meet the demand of a large Spanish cod market. Fish transportation and preservation problems largely subsisted until the 1960s, and the cod continued playing its role as a cheap and easily kept source of animal protein (López Losa 2000b).

Catches of the Spanish fleet declined rapidly during the 1980s as a result of overfishing in the North West Atlantic grounds, the increasing production costs due to price rises of basics

inputs, the depreciation of the peseta in the 1970s, the 200 nautical mile EEZ and, later, the annual decrease in the number of licences and quotas for Spain in other North Atlantic areas. Cod, the main target of the Spanish fishery in the Northwest Atlantic, constituted the largest catch (Figure 1). Other species were caught and processed as well (Table 1), although, because of their lower salting quality, they were not very well

accepted by Spanish markets. In the 1970s new freezer trawlers joined the classical trawling fleet, composed of both pair- and single-trawlers in which cod was processed 'green' (see below). Although some of the new vessels worked for a time in cod fisheries, most of them fished for squids and for larger, white demersal fishes such as Greenland halibut (*Reinhardtius hippoglossoides*).

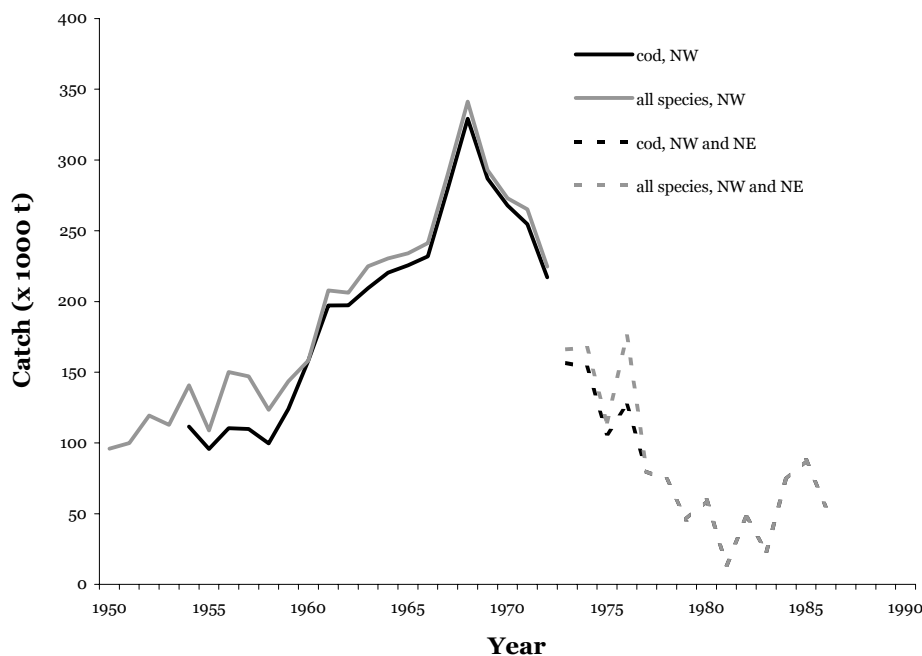


Figure 1. Spanish cod fishery catches, 1950-1986. Until 1972, data are for the Northwestern Atlantic only (NAFO zones), and after 1972 totals are summed for the Northwest and Northeast Atlantic (NAFO and ICES zones). Data are taken from the Spanish Fishery

It is interesting, in a historical context, to ask why, for centuries, cod has been so popular throughout Spain. Attempts to answer this question might help us to understand the scale and the scope of the Spanish cod fisheries in the second half of the 20th century. Traditionally, Catholic influences were largely responsible for the high level of fish consumption in Spain and, in particular, the demand for cod. Obviously, in a country where the number of days per year during which eating other meat was forbidden fluctuated between 60 and 120, depending on the century and the geographical area, the fish trade had many opportunities to increase. Nevertheless, the fresh fish market faced many problems, mainly linked to the limits of pre-industrial transport in Spain and the great difficulty in preserving fresh fish for storage. Confronted with these problems, salted and cured cod presented many advantages: it kept for a long time in all weather conditions, it was quite easy to transport, and its price was usually similar to that of fresh fish in inland markets even though the quantity consumed in the end

was generally higher than for fresh fish. (Before being consumed, salted cod is soaked in water for nearly 24 hours to remove the salt and to recover its natural aspect. In this process, salted cod usually increased its weight by 25 or 30 per cent. Moreover, unlike fresh fish, all of the salted cod weight purchased can be consumed.) To some extent, these arguments can help explain the preference for cod in the Iberian Peninsula and around the Mediterranean Basin. Since the 18th and 19th centuries the demand for cod has increased, as it had become very popular among working classes and the peasantry, and often acted as a substitute for beef and other meat when prices rose quickly. Despite the rise of fresh

Table 1. Main species caught in Spanish cod fishery in Newfoundland.

Spanish	English	Scientific Name
Bacalao	Atlantic cod	<i>Gadus morhua</i>
Eglefino/Lubina	Haddock	<i>Melanogrammus aeglefinus</i>
Barbudo/Locha	White hake	<i>Urophycis tenuis</i>
Palero/Carbonero	Pollock	<i>Pollachius virens</i>

fish consumption in the early 20th century, the consumption of cod in Spain appears to have remained stable. While the demand of the urban population decreased - probably because of the growing competition with fresh fish, whose market increased with more efficient transportation - the countryside consumption increased and compensated for the urban losses. Nevertheless, the presence of cod in the diet of the Spanish population for many centuries has created customs and habits of consumption that have maintained a high demand until the present.

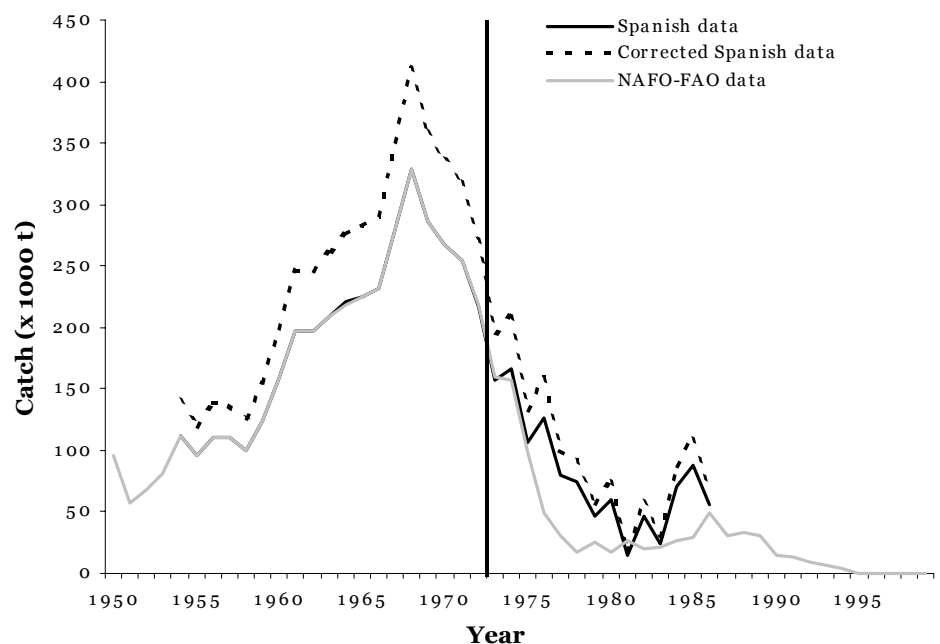
Spanish statistics present another particular characteristic linked to the way cod was treated before being landed and how it was statistically represented. After being caught, the cod was processed on board, and after removing heads, bones, guts etc., it was lightly salted and piled up in the vessel's hold. After reaching the Spanish coast, it was transferred to the factories where the curing process was completed (López Losa, 2000a, b; Rodríguez Martín, 1967). When landed, the fish was 'green', which is why it was known as 'green' cod.

AVAILABILITY AND RELIABILITY OF SPANISH COD FISHERIES DATA

The Spanish Fishery Yearbooks ('Estadística de Pesca', and later 'Anuario de Pesca Marítima') contain the best data available for the Spanish cod fishery in Newfoundland between 1950 and 1986, the year of the last published issue.

Although the way the data are presented and the scope of the information gathered change during this period, the lack of reasonable alternatives favors their use. Other Spanish official bodies, such as Francoist Syndicates, collected fisheries data, but their range is shorter in terms of both time and scope of the data collected. From 1950 to 1953, the statistics are incomplete, especially with respect to representing areas for the whole fleet. Various other firms such as PYSBE and PEBSA do not even offer landing statistics computed by species (although we can estimate the catches by species for these years by using the species proportions from following years). These alternative data sources only offer complete data on fishing effort, fleets and fishing zones for the period of the Spanish fisheries in the Northwest Atlantic, 1954-1972. Since then, statistics have changed dramatically, and unlike previous years, there is no indication about effort, origin of fish (Newfoundland or from North European grounds), or any other species besides cod. In addition, their scope is much narrower, and doubts regarding their quality arise after comparing them with other sources thought to be more reliable, such as FAO and NAFO data (the same data are used by both organizations). Until 1975, there is almost no difference between Spanish official cod landings data and NAFO-FAO data. However, between 1976 and 1985 the Spanish official cod landings data are on average 144% higher than the NAFO-FAO cod data (Figure 2), likely because the Spanish data in this second period are the sum of the Northeast and Northwest Atlantic cod catches.

Figure 2. Spanish Atlantic cod catches in the Northwest Atlantic, 1950-1999. Spanish data are corrected for an estimated 25% non-reported catches. Until 1972, Spanish data are for the Northwestern Atlantic only (NAFO zones), and after 1972 totals are summed for the Northwest and Northeast Atlantic (NAFO and ICES zones). Spanish data are taken from the Spanish Fishery Yearbooks, and NAFO-FAO data from the FAO-Fishstat database.



LANDINGS, CATCH ESTIMATES AND DISCARDS

In the Spanish statistics, catches are estimated from landings using period-specific conversion factors (Table 2). The reason for the use of different factors is unclear, but it is likely due to variations in processing methods. A conversion factor of 3 kg of live weight fish to 1 kg of landed 'green' cod (3:1) was maintained from 1953 until 1978 when, without any complementary information, official records reported the change from 3:1 to 2.2:1, which was used until 1986, the last published data. This change in weight conversion might partly explain the dissimilarities between the Spanish and International catch data.

It is commonly admitted that Spanish fishery statistics are underestimated. Apart from unknown amounts of discards, which are not even recorded in the data series, fishers may hide or significantly underestimate catch figures when reporting data to authorities, particularly in the case of trawling fisheries. Although printed records obviously do not exist, information collected from former skippers of trawlers engaged in cod fisheries suggests that the landings declared to official fishery boards should be increased by about 20-25%.

With reference to discards, we know that the traditional Spanish market was primarily for salted fish, and even then only the large fish were suitable. Around the period of 1940-1965, the catch was likely not yet dominated by small fish,

Table 2. Conversion factors of wet weight caught to 'green' cod landed, by period and fishing company or source. Data are taken from the Spanish Fishery Yearbooks.

Company/Source	1950	1951	1953-1977	1978-1986
PYSBE, S.A	2.5:1	-	-	-
PEBSA	1.89:1	2.5:1	-	-
COPIBA	2.14:1	1.7:1	-	-
Pairs of Trawlers	-	1.7:1	-	-
Other	-	-	3:1	2.2:1

and discard rates were probably no greater than 25%. In later trawling years (1970s to mid-1980s), fish populations fluctuated through low abundance periods, when small fish would have been particularly abundant. The technology was capable of taking them, but the markets were just then beginning to accept them. For this latest period, the discard rate may have exceeded 25% in some years or areas, but the overall rate may have been lower (P. Fanning, Department of Fisheries and Oceans, Halifax, Canada, pers. comm.).

Finally, the official Spanish data indicate that the number of fleets fishing in Canadian waters and their cod landings fluctuated widely between 1946-1986 (Figure 3). There was an increase in the number of boats in the early 1950s, although this was not associated with increased landings. After this, however, the increase in the number of boats between 1955 and 1968 resulted in a simultaneous increase in landings. The rapid decrease in cod landings after 1968 was probably a combined result of the decrease in the number of boats, as well as overfishing.

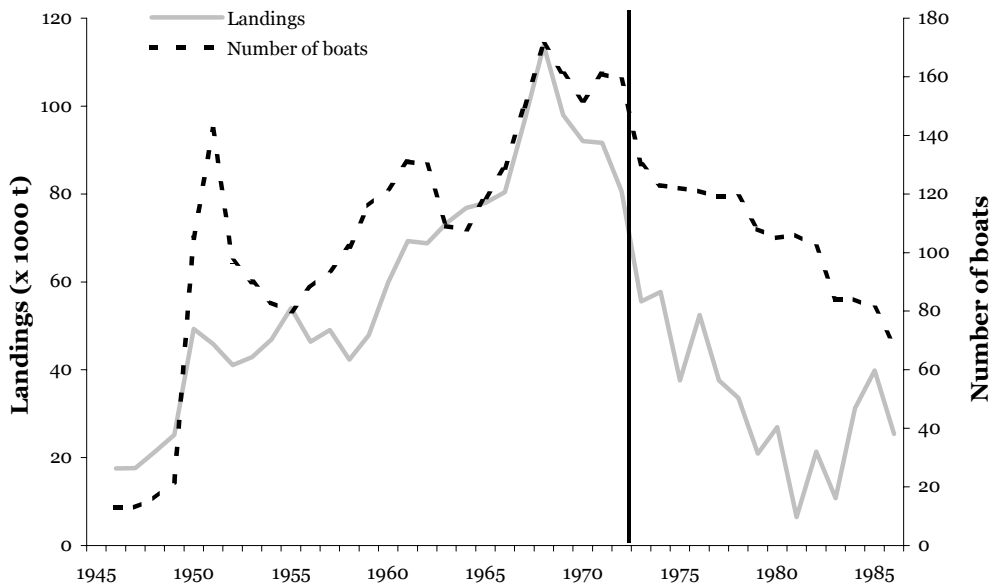


Figure 3. Number of boats and cod landings (green cod) of the Spanish cod fishery, 1946-1986. Until 1972, data are for the Northwestern Atlantic only (NAFO zones), and after 1972 totals are summed for the Northwest and Northeast Atlantic (NAFO and ICES zones). Data are taken from the Spanish Fishery Yearbooks.

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