

The Invention of Cod in Gafanha da Nazaré

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Abstract

To what extent can a fish drive specific urban developments? This paper seeks to trace the links between fluctuations in the natural cod resources, the technologies used by fishermen to catch and process the fish, and the development of coastal landscapes and urban forms. The fishing port of Gafanha da Nazaré, near Aveiro on the River Vouga lagoon, is an example of the close relationship between the twentieth-century nationalist cultural construction in Portugal (in which cod fishing played a major role), the development of urban sprawls in new territories (independently from the old urban centres with ties to agriculture) and the fluctuations in the cod populations on the other side of the Atlantic. Despite the somewhat haphazard development of the fishing port between the 1920s and the 1970s, it nonetheless established the territorial dynamics that displaced the centre of local urban developments from the ancient urban core to new territories.

Keywords

fishing architecture, coastal settlements, food processing, socio-ecology, Atlantic landscapes, cod fisheries, port architecture

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Atlantic gaze

The Portuguese coast to the south of Porto, where the river Douro drains its large basin, is dominated by sandy dunes. It is a dynamic landscape, shaped by marine hydrographical phenomena as well by man-made constructions designed to stabilise the coast's endless movements. Near Aveiro, in the lagoon of the river Vouga, a small fort was built in the sixteenth century above the dunes.¹ Periodically in a state of ruin, the construction mixed its military function with serving as a beacon for coastal navigation. Its position, close to the village of Ílhavo, later served as reference point for the construction of two piers to open up a canal across the sandbar. This canal, initiated in the nineteenth century and requiring constant improvements up to the twentieth century, granted safe navigation and permitted the development of a harbour in the Aveiro Lagoon.² A significant part of the harbour emerged in Gafanha da Nazaré, where, from the 1920s to the 1970s, the various surrounding agricultural terrains were progressively occupied by shipyards, docks, fish processing facilities, infrastructure, and government buildings to regulate the fisheries (Figure 1). The main product of this combined activity in Gafanha da Nazaré was salted dried cod, a staple foodstuff sourced from Newfoundland on the other side of the Atlantic Ocean. Ílhavo, until then a modest agricultural and pre-industrial settlement, became a hub among Portuguese fisheries.³ This essay sets out to address two questions: Is it possible to correlate the developments and transformations of the port of Gafanha da Nazaré to cod? And how did cod, this natural resource, mould an urban landscape so distant from its natural habitat, and what was its impact upon it?

Cod is a fish.⁴ As a demersal species, cod inhabits the bottom of the sea along the continental shelves, where the water has a convivial temperature and salinity. *Gadus morhua*, the Atlantic cod, prefers a lively environment, rich in nutrients, generated by the meeting of the warm Gulf Stream and the cold northern currents. As a species, cod occupies a high level within the trophic chain, meaning it eats other fishes (including its own juvenile species). There were once several cod populations in the North Atlantic, ranging from the Gulf of Maine up to the Barents Sea, the most popular being that from Newfoundland. In the fifteenth and sixteenth centuries, when European fishermen expanded the horizons of their search for Atlantic resources, the abundance of cod in Newfoundland was overwhelming and boosted a flourishing industry in dried fish. The intercontinental dynamics of fishing cod, processing the catches, and, ultimately, consuming them, led to various urban dynamics that unfolded on both sides of the Atlantic and that metamorphosed throughout the centuries. Such transfigurations often related to technological shifts in fishing or processing practices, while at other times they reflected cultural or political dynamics, yet all had a single common denominator: they were always dependent on the existence and behaviour of cod. Gafanha da Nazaré is part of this set of Atlantic dynamics, its singularities bound up in a larger history in which urban forms relate to marine ecology.⁵

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- 1 On the history of the fort and the urban development of Ílhavo, see the collective reference work: Gomes, S.A. (Ed.) (2017). *Ílhavo: Terra Milenar*. Municipal Council of Ílhavo. See also Tavares, A. (2021), *A Maritime Portrait of Ílhavo*. Lab2PT.
 - 2 Concerning the harbour, see the illustrated work: Amorim, I. & Garcia, J.C. (Eds.) (2008), *A Barra e os Portos da Ria de Aveiro, 1808-1932* [The Barra Canal and the Ports of Aveiro Lagoon, 1808-1932]. Aveiro Port Authority.
 - 3 Besides fisheries, its proximity to coastal navigation routes and the generous sand and water supply explain the location of the important Vista Alegre porcelain factory, established in the vicinity of the village in 1824. Vista Alegre remains a name and a standard in Portuguese porcelain manufacturing.
 - 4 The most compelling and sharply synthetic discussion of cod is the best-selling book by Mark Kurlansky. See Kurlansky, M. (1997). *Cod: A Biography of the Fish that Changed the World*. Walker and Co.
 - 5 This is the hypothesis of a research project entitled "Fishing Architecture" conducted by the author at the School of Architecture at Guimarães University. See www.fishingarchitecture.com.



FIGURE 1 Drying racks and the codfish port in Gafanha da Nazaré, 1940s. Courtesy of Administração do Porto de Aveiro

The form of two fishing settlements

Tender cod flesh is rich in proteins and poor in fat, an optimal chemistry for preserving its nutritional qualities by dehydration. The business of drying and salting cod started in Catholic Europe in the eleventh century, covering the entire Mediterranean Basin. Fishermen would venture from the North Sea up the coast of Norway, to Iceland and even Greenland – some historians go as far as claiming the existence of temporary settlements in Newfoundland prior to Columbus – to secure a continuous supply of cod. Historical descriptions from the fifteenth century often depict the sheer wealth of cod on the North American coast – a fabled abundance that attracted numerous merchant-venturers to explore further afield in the hope of tapping this rich natural resource.⁶ From the sixteenth century onwards numerous British and French fishing fleets operated in the region, combining long-distance fisheries with coastal operations. Cod was fished by line, from large boats. Once caught they were cleaned and salted on board to be later dried inland. The process required large amounts of salt, then a precious commodity, and thus also the rapid development of coastal settlements to process the catches. These shoreline settlements could undertake the drying process quickly, thereby avoiding the initial consumption of salt and producing a less expensive product.

The sinuous and rocky coast of Newfoundland, with its patchwork of bays and coves, provided a convenient setting to establish independent outports with protected access to the sea. The morphology of the shore enabled the safe use of natural ports and cabotage; the various settlements were connected by sea. The land interior and its climate were harsh and inhospitable, meaning that prior to the twentieth century there was almost no terrestrial infrastructure. Whereas the cities in the Gulf of Maine were mixed in nature, with fishing operations combining with colonial trade and flourishing urban scenarios,⁷ in Newfoundland fisheries remained the prime reason for settlement. In occupational terms, this meant that the formal architectural qualities of these habitats were predominantly dictated by the monoculture of cod fishing and processing.

6 See Roberts, C. (2007). *The Unnatural History of the Sea: The Past and the Future of Humanity and Fishing*. Gaia. pp. 199–213.

7 Such was the case for Boston and other growing commercial cities in New England. See Kurlansky, *Cod* (see note 4), pp. 62–106.

An 1821 atlas of French cod fisheries in Newfoundland represents the scattered outposts lying upon the margin between sea and land (Le Tourneur Atlas, c.1821). (Figure 2). The settlements were an intermingling of a few houses dotted between large expanses of drying racks ranged in military alignments. This synthetic depiction matches the later photographic records of late-nineteenth-century Newfoundland outposts, recording predominantly wooden constructions, either anchored onto piers or above the harsh rocky landscape, which simultaneously formed their barren background⁸ (Figures 3 & 4). Apart from the houses, built as straightforward wooden structures,⁹ and some occasional stone buildings, the racks, piers, docks, stairways, and other service constructions all have a strikingly frail appearance.¹⁰ From an urban perspective, these coastal fishing settlements were devoid of any infrastructure. Connected to the outer world only by sea, they constituted autonomous communities with the sole *raison d'être* of harvesting and producing a fish commodity that could then be traded in exchange for metropolitan goods.¹¹ This anti-urban, pre-industrial reality lasted until the twentieth century, when major technological, political and biological changes overwhelmed the fragile coastal habitat.

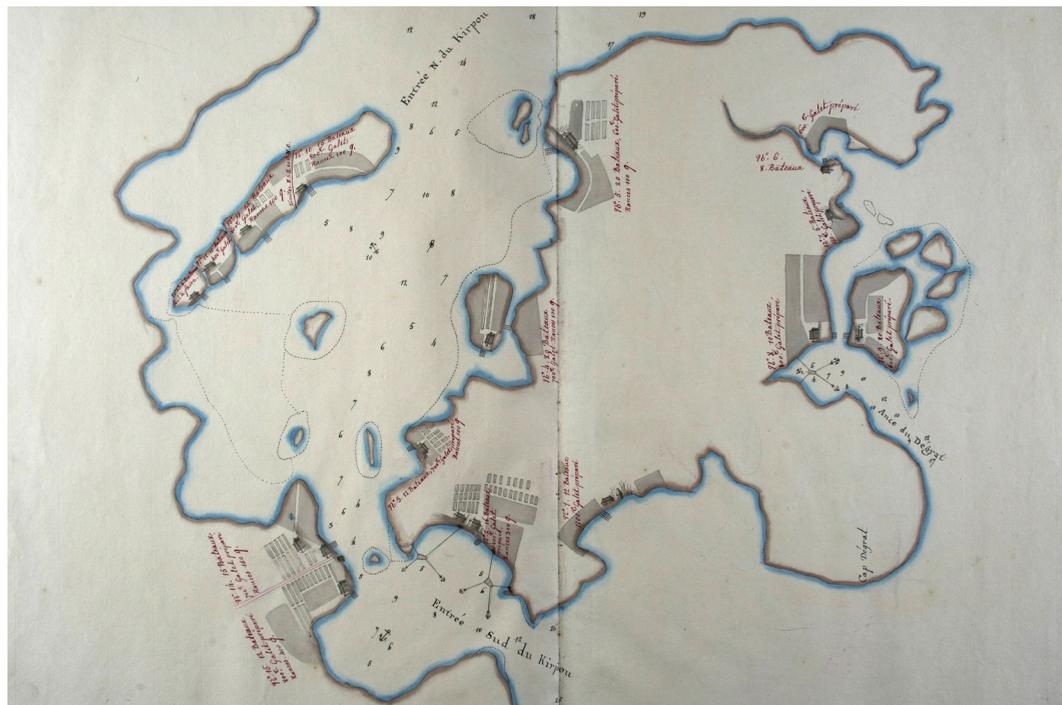


FIGURE 2 Bay in Newfoundland and its cod-fishing settlements. From Le Tourneur Atlas (c.1821). Courtesy of Memorial University of Newfoundland.

8 See the photographic album *Newfoundland Scenery*, presented to Joseph Laurence and attributed to Simeon H. Parsons (1844-1908). Memorial University of Newfoundland, Archives and Special Collections. [Accessible online](#).

9 For a survey of examples of vernacular Newfoundland architecture, see Mellin, R. (2003). *Tilting: House Launching, Slide Hauling, Potato Trenching, and Other Tales from a Newfoundland Fishing Village*. Princeton Architectural Press.

10 Directly supported by the bedrock, the houses have almost no foundations. As a result, in the 1950s, after Newfoundland became a Canadian province and a resettlement policy was implemented, many houses were simply transported by boat. This process was recorded by the National Film Board of Canada in 1961 in a short documentary film entitled *Moving House*. [Accessible online](#).

11 See Innis, H. (1940). Harold Innis delves into the trade network sustained by cod fisheries from the sixteenth to the twentieth century, cogently linking the various Atlantic human geographies to Newfoundland cod stocks.



FIGURE 3 Petty (Petit) Harbour, Newfoundland. From *Newfoundland Scenery*, presented to Joseph Laurence with photographs attributed to Simeon H. Parsons, c.1880s. Courtesy of Memorial University of Newfoundland



FIGURE 4 Beneath the drying racks, Newfoundland, St. Johns, 1950. Photograph by Gustav Anderson. Copyright by Memorial University of Newfoundland, Archives and Special Collections

Returning back to the shores of the European Atlantic, the sandbars near Gafanha da Nazaré are the locus of an equivalent process that took place from the end of the eighteenth century onwards. There is no cod in the waters off Portugal. Unlike the long extent of shallow waters on Newfoundland's continental platform, the Portuguese coastal profile dives down abruptly twenty miles from shore. This geological configuration, combined with the direction of the waves and the Coriolis effect, boosted in turn by the Earth's rotation, combines to produce a strong upwelling, bringing deeper ocean waters to the surface. As a result, the Portuguese coast has low-temperature waters and a wealth of plankton, ideal for another species of fish, namely sardine. The *Sardina pilchardus* is a pelagic fish that lives in the upper levels of the water column and that occupies a lower rank than cod in the trophic chain. The fatty acids of its flesh make it ideal for preservation in brine, a technique that developed in the late eighteenth century before being surpassed during the second half of the nineteenth century by the more efficient canning industry. The sandbars south of Porto led to the adoption of a fishing technique called *arte xávega* where a flat-bottomed boat hurdles the beach surf to then drop a purse sein net one or two miles offshore, the net then being pulled in from the beach with the help of oxen. Sardine fisheries were (and still are) a seasonal enterprise, effective from early spring to late summer when the fish accumulate fat to produce the energy required for reproduction. Hence sardine fisheries became a supplementary occupation to local agricultural labour, consequently shifting the cultural axis of the region.

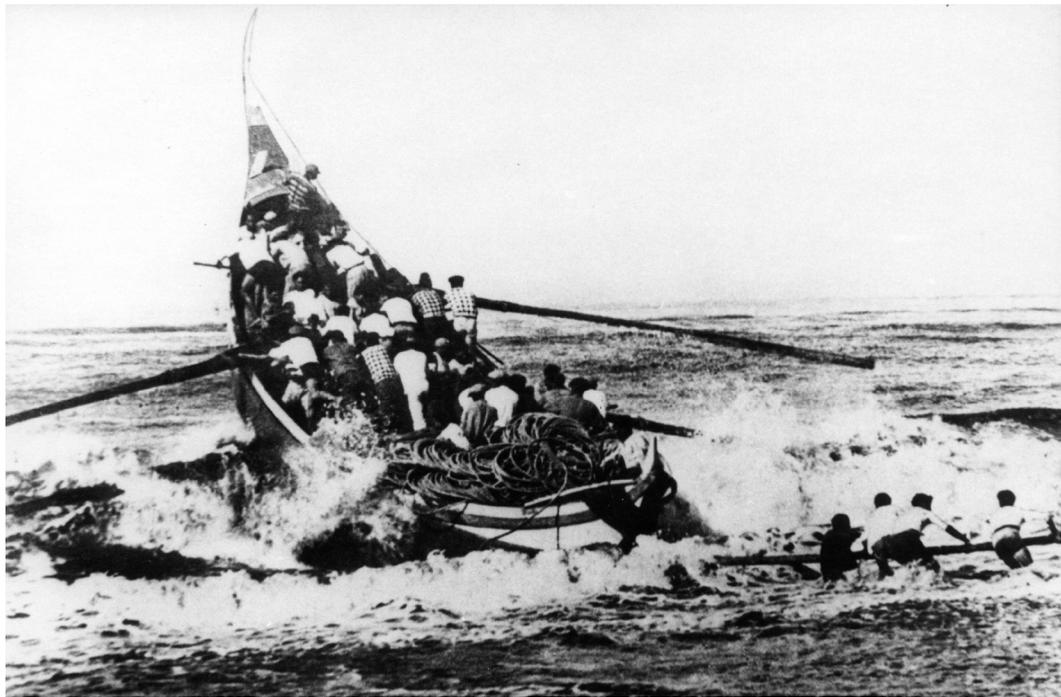


FIGURE 5 Arte Xávega, flat-bottom boat over the surf, Mira, undated. Courtesy of ABCD – Arquivo Biblioteca e Centro de Documentação do Centro de Estudos do Mar, Figueira da Foz, Buarcos

The ability to directly launch the boats into the sea, without the need for a harbour, meant that little investment or infrastructure was required to set up a fishing operation. (Figure 5). Devoid of any service infrastructure, various isolated settlements sprouted up along the coast to lodge the fishermen during the fishing season. In many respects these sardine-fishery settlements were not so different from their cod-fishery counterparts in faraway Newfoundland. The wooden-built constructions at beaches such as Esmoriz, Furadouro, Torreira, Costa Nova, Vagos, Mira, and Tocha were erected on stilts above the sand, only finally acquiring a corresponding infrastructure when seaside tourism required new facilities to host a different temporary residential clientele (Tavares, 2018) (Figure 6). A photograph of Tocha in the 1950s still

shows a small alignment of wooden houses arranged across the dunes, with a long umbilical cord connecting the coastal settlement with the main road and railway systems a few kilometres east (Figure 7). Unlike Newfoundland, however, where the coves and bays provided secure navigation for larger commercial boats, the roughness of the sea and the Portuguese shoreline required either port facilities or a direct connection to land-based infrastructure to quickly transport the catches to the main processing facilities. Nevertheless, despite their fundamental differences these two forms of fishing settlements share distinctly common elements in terms of their direct relation to the sea, their reliance on communication networks, and the absence of any major infrastructural schemes.



FIGURE 6 Furadouro, wooden-built sardine-fishermen's houses, undated. Photograph by Carlos Costa. Courtesy of Biblioteca Municipal de Ovar

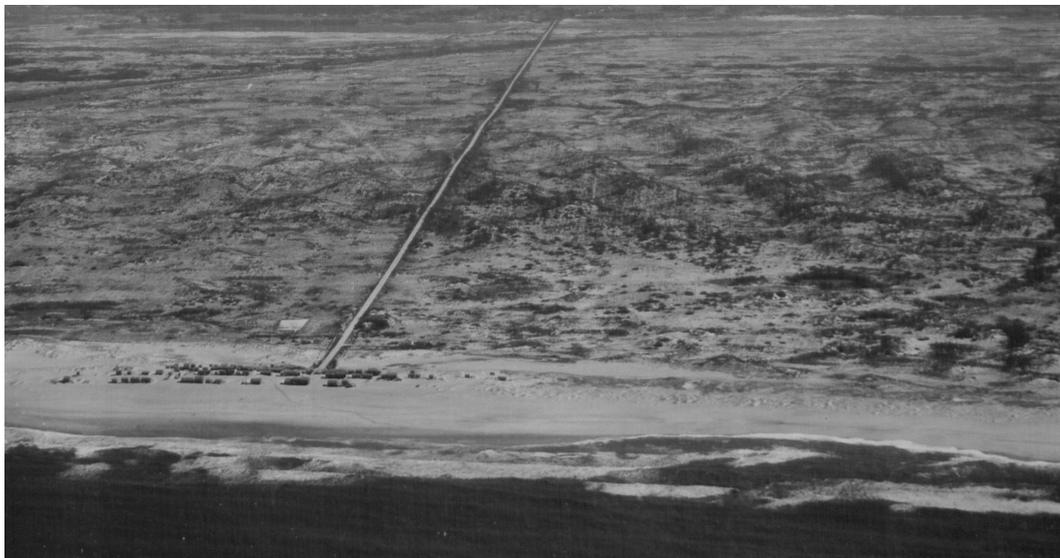


FIGURE 7 Aerial photograph (army flight) of Tocha beach and its wooden-built sardine-fishermen's houses, 1951. Courtesy of Arquivo Histórico de Marinha

Drying racks on the dunes

Several factors made Gafanha da Nazaré into a major cod-fishing port in the twentieth century. Although sailing knowledge and know-how do not equate to fishing knowledge and know-how, the long history of sardine fisheries formed a rich pre-existing regional pool of skills and understanding. A second factor that boosted the local cod fisheries was the modernisation of the Barra Canal, providing secure navigation to larger boats between the sandbar and the inner side of the Aveiro Lagoon. A third factor may have been the abundance of salt produced in the lagoon, although the extant records make it difficult to establish the exact relational balance between the salt produced regionally for sale abroad and the excess salt required to preserve fisheries that had to be acquired elsewhere (Amorim, 2001; Cunha & Nazaré Pereira, 2014). Despite these local reasons, what was it precisely that drove the growth of Portuguese cod fisheries in Gafanha da Nazaré?

In the late fifteenth and early sixteenth centuries, Portugal was one of the nations with a long-distance fishing fleet in Newfoundland, to the extent that many bays in the region still boast Portuguese names. The enterprise was abandoned soon afterwards, and it was only in the 1830s, under a renewed political regime, that Portugal resumed long-distance cod fishing with the aim of securing the provision of low-cost and high-nutritional proteins to what was a much-dilapidated country, ravaged by the French Napoleonic invasions and emasculated by a British colonial dominance of its main productive industries. Worthy as they were, these long-distance fishery ambitions failed: insufficient cod-fishery know-how and a lack of technology and investment combined to make the industry insignificant and unsustainable (Baldaque da Silva, 1892; Soares Franco, 1840; Frederico Torlade Pereira d'Azumbuja, 1835). As in other European countries, salted cod remained an important part of the Portuguese diet but most of it was ultimately imported from British, Spanish, and French suppliers. In the late nineteenth century, it was this dependency that prompted Lisbon, Viana do Castelo, Vila do Conde, and Figueira da Foz alike to set up small fleets using the then-common technique of fishing with three-to-four-mast luggers.



FIGURE 8 Cod fish drying racks, Figueira da Foz, c. 1950s. Coleção Rocha Madahil 4326, Courtesy of Centro de Documentação de Ílhavo.

In spring a boat would sail from Europe laden with salt accompanied by thirty to fifty fishermen and an equivalent number of dories (a small flat-bottomed boat with low gunwales). Once in Newfoundland they would find bait and anchor a few miles offshore over the Grand Banks. Daily, fishermen would leave the lugger in their dories and launch a long line carrying hundreds of baited hooks. Once the dory was full of catch the fisherman would head back to the main boat to unload the fish, where they were cleaned, cut, and split to be salted and packed in the hold. The season would last about five to six months – with rare visits to the Newfoundland ports – and once the holds were filled the boat would sail back to Europe. Back home the cargo of salted cod would be unloaded to be washed and dried. Drying took place on fishing racks, where the catch was treated by a workforce of womenfolk (Figure 8). The process required wind, low humidity, and no sun, each fish taking several days to dry in a process where it was laid out and then removed several times a day around the clock. The sheer expanse of these fishing racks formed a unique “codfish landscape” that occupied the vicinities of the fishing harbours, whereby the fish racks, the dories, and the labour-intensive fishing and processing techniques were common to all Atlantic coasts. With minor variations, this cod-fishing scenery extended ubiquitously from the Gulf of Maine to England, and from Norway to the Netherlands, France, Spain, and Portugal. And as Gafanha da Nazaré advanced to become Portugal’s main cod-fishing port, the drying racks likewise became a distinctive form of its landscape, with the particular smell of the fish and the rational pattern of the flat surfaces of the racks characterising the dunes of the Aveiro Lagoon.

Species biomass and fishing effort

The major shift in cod fisheries came about with the general spread of trawling in the late nineteenth century and, to a greater extent, the introduction of steel-hulled steam- or diesel-propelled boats, which exponentially increased the fishing capacity of trawling fleets. Bottom otter trawling subsequently ravaged the ecosystems of the North Sea, and although designed to catch other species it similarly decimated the local codfish population, along with all its rich natural diversity (Taudal Poulsen, 2007; Roberts, 2007, pp. 130–60). Other cod populations experienced the same fate. Rather than signalling a general decline in fisheries however, this decrease in overall cod biomass in various regions (and indeed coupled with the commercial advantages of its efficient preservation method) simply increased the fishing pressure over the Grand Banks of Newfoundland, with more fleets than ever now operating above its vast continental shelf. Historical descriptions mention an almost total collapse of Iceland’s cod stocks in 1914, on the brink of the Great War. However, at this point fleets were diverted en masse to the war effort and the move released pressures on the over-fished stocks, which underwent a small population recovery. It was during these war years that Portugal – in its infancy as a republic and taking its first steps as a new political system – set about reasserting itself as a cod-fishing nation. Despite their feeble state of technical development, the lack of then-active competitors, and their peripheral position within the war effort meant that the commercial Portuguese fleet could reap generous returns on capital invested in cod fisheries. The war also provided a welcome opportunity to increase catches in order to achieve national production autonomy, thereby freeing the county from the prevalent and onerous reliance on imports – a goal that was paramount but never in fact achieved.

At this historical juncture Gafanha da Nazaré did possess a number of luggers equipped for cod fishing, but they were fewer and smaller than the ones harboured in ports such as Porto, Lisbon, or even Figueira da Foz. Nevertheless, the locality had an advantage in the form of its own shipyard, which, since the 1890s, had occupied a site next to the newly built canal. In the 1920s, navigational obstacles at the mouth of the Mondego in Figueira da Foz obliged various functions of its port to relocate towards the now more reliable mouth of the Vouga and the Aveiro Lagoon. Hence, more cod-fishing boats also harboured in Gafanha da Nazaré, additionally profiting from both the shipyard and the fishing expertise, accumulated through

the existing sardine fisheries. Nonetheless the port remained an informal set of piers positioned around the shipyard and effectively nestling as the backyards to agricultural fields, bereft of any significant infrastructure other than the ancient road connecting Aveiro to its abandoned fort. In the 1920s, European fleets resumed fisheries in Newfoundland, by which point Portugal's sailing luggers, equipped with dories and reliant on longline hauling, were little but obsolete reminders of a bygone era. British and French fleets focused on the more efficient diesel-powered trawling method, which threatened cod stocks again. In 1926, Portugal's brief republican experiment was abruptly ended by a military putsch, which by 1933 had mutated into a fascist regime that lasted until 1974. With the support of the new autocratic government, Portuguese cod fisheries started to grow at a steady pace, with government investments being made to enlarge the long-distance fleet and increase catches.¹² However, instead of investing in modern fishing technology, Portuguese fisheries continued to rely on the existing but out-of-date and inefficient luggers. This anachronism was the result of several economic and political factors, including the widespread availability of underpaid labour (Cole, 1990). Along with the social and economic ambivalence of this strategy, and perhaps indeed reinforcing it, was a muscular political iconography of the cod-fishing fleet as a vital element in a heroic national pathos. Despite a relative resurgence of the industry during the 1940s, Portuguese cod fisheries remained suspended in a state of permanent deficiency and never managed to fulfil the high economic expectations placed upon them. This had a biological explanation: to maintain the profitability of their fleets other countries had to multiply their fishing efforts, thus compounding pressures on the remaining stocks and depleting the overall stock biomass. As a result, although Portuguese fleets attempted to expand, because their fishing efforts stayed similar to that of previous years, operations became less and less profitable.



FIGURE 9 Open-air mass and blessing of the cod-fishing fleet in Belém, Lisbon, 1941. Courtesy of História de Marinha

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A detailed analysis of this period was undertaken by Álvaro Garrido, who became a national expert on Portuguese cod fisheries. Despite his accurate and meticulous research, his approach fails to analyse Portuguese cod fisheries in relation to overall Atlantic history (See Garrido, 2007; 2003). An earlier history of Portuguese cod fisheries, less minutely researched than Garrido's but more poignant in its arguments, was written after the democratic revolution of 1974 (See Coutinho, 1985).

The architectural politics of cod fishing

The urban and architectural staging of this political utilisation of the fishing fleet is cogently evident in three examples initiated by the all-powerful Admiral Henrique Tenreiro (1901–1994), who controlled the corporative actions of all Portuguese fisheries (Garrido, 2009). One is the ritual of the annual blessing of the fishing fleet, in Lisbon; the second is the neighbourhoods of fishermen's houses built throughout the country; and the third is the location of the Cod Trade Regulatory Commission on the wharf at Gafanha da Nazaré. From 1936 onwards, and without interruption until 1973, the cod season was ushered in with the ceremonial gathering of the whole fleet in Lisbon to be blessed, either by the Cardinal Patriarch of Lisbon, Manuel Cerejeira (1888–1977), or Archbishop Trindade Salgueiro (1898–1965).¹³ (Figure 9). The some two thousand fishermen deployed for the coming season attended an outdoor mass and a special celebration within the sixteenth-century Jerónimos Monastery, followed by a reception by the heads of state, including dictator António Salazar (1889–1970). Anchored on the Tagus in Belém, the entire fishing fleet would face the monastery and the Tower of Saint Vincent, a ceremonial gateway to Lisbon both in the heyday of sixteenth-century navigation and the modern fascist era. The apparatus of this spectacle was a massive exercise in urban propaganda, with fishermen from all over the country congregating on the capital to perform as extras in a scenario carefully staged to be broadcast in newspapers, radio and, later, television. The long-distance fisheries, where fishermen were severed from their homes and hearts for five to six months, were a modern reincarnation of the Portuguese sailing *fado*, a fate glorified in the homonymous music genre that was promoted to the status of a national hymn. Underpaid fishermen, working in terrible conditions and reliant on antiquated techniques, were lauded as sacrificing themselves for the greater good of the country. This portrayal of the fisherman as hero corresponded to the romanticised notion that long-distance line-fisheries were maintaining “good old traditions” while at the same time securing the country's food self-sufficiency. These deeply inculcated ideas concealed the fact that cod fisheries were actually only a recent endeavour – the sixteenth-century experience was a long-gone episode – and that the rudimentary techniques being used were ruinous, the fisheries only being profitable (and highly profitable) by means of continuous government support to the entrepreneurs who ruled the businesses. Moreover, the sailor-of-yore image served to preserve a steep and rigid social hierarchy that was increasingly under threat by the modern fishing techniques used by other countries. Thus the inscription of the annual blessing of the fleet on the landscape of Lisbon represented a powerful urban orchestration, revealing behind its quasi-religious symbolism a deep political manipulation of fisheries under the Portuguese fascist regime.

The second architectural example is the fishermen's housing projects promoted by Tenreiro, co-joined with the establishment of corporative institutions such as *gremios*, cultural associations, and professional teaching schools for fishing communities (Figure 10). From the south to the north of Portugal these small neighbourhoods, ranging from ten to 150 houses (Tavares & Couto Duarte, 2018, pp. 217-21), sprang up as repetitions of each other following the model of the *Casa Portuguesa* (the Portuguese House) – a national standard coined by the architect Raul Lino (1879–1974) and characterised by an amalgamation of stereotyped details (Lino, R, 1933; Ribeiro, 1994). This myth of a national architecture was even rendered into a popular *fado* interpreted in 1953 by Amália Rodrigues (1920–1999).¹⁴ In the lyrics of the song the architectural imagery is translated into an homage to the modest and humble but generous family, faithful to God and Nation, working hard to partake in the simple joys of life. Mapping the fishermen's housing projects built during the 1940s is an exercise in tracing the distribution of fishing communities along the coast.

¹³ The first ceremony, in 1936, was conducted by the priest Padre Cruz and followed the example of a French blessing that had been recently attended by Portuguese officials. Cerejeira, a close ally of the dictator, conducted the blessings in April 1937, 1938, 1945, 1947, and 1948. Trindade Salgueiro was born in Ílhavo, the site of the Gafanha da Nazaré port, and he conducted the blessings in 1939, 1941, 1942, 1944, 1946, and from 1949 to 1961, resuming the function from 1963 to 1965 before he died. See the annual May issues of the monthly newspaper *Jornal do Pescador: Órgão Mensal das Casas dos Pescadores*.

¹⁴ *Uma Casa Portuguesa*, composed by Artur Fonseca, lyrics by Reinaldo Ferreira and Vasco Matos Sequeira.



FIGURE 10 Ílhavo, Malhada Fishermen's Housing, 1949. Courtesy of Arquivo História de Marinha

Not simply intended to address the severe housing shortage, these neighbourhoods were also a deliberate strategy to inscribe a state presence into each and every location, enabling a permanent social vigilance against potentially problematic groups and making them a political emblem of state benevolence towards the fishing communities. From an architectural perspective, despite the specific clientele, the aim was not to create a distinctive (and hence potentially disruptive) design language nor to instigate any form of typological innovation, rather the projects stuck rigidly to standardised state housing patterns. The relatively simple set of ten houses inaugurated in Ílhavo in 1949,¹⁵ sited halfway between the ancient village centre and the growing port of Gafanha da Nazaré, do not mark a significant housing investment commensurate with its location as a major cod-fishing port. Instead they represent a larger government policy of ossifying a conservative social attitude towards fishing communities, the cod fisheries included.

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In the 1960s, a second phase of fishermen's housing developments was constructed, each encompassing a larger number of houses, a school, and a social centre, although by this stage its architecture had assumed a more neutral rhetoric.



FIGURE 11 Gafanha da Nazaré, Cod Trade Regulatory Commission (CRCB), inaugurated in 1936. Courtesy of Museu Municipal de Etnografia e História da Póvoa de Varzim

The third example involves the Cod Trade Regulatory Commission (CRCB), a key element in the corporate state and the regulation of cod fisheries¹⁶ (Figure 11). It was set up in 1934 and its headquarters located on the Gafanha da Nazaré wharf in 1936, a decision that subsequently prompted many cod-fishing and processing companies to relocate to Ílhavo during the 1930s.¹⁷ The location of the CRCB in Gafanha da Nazaré was instrumental in elevating Ílhavo as the national centre of cod-fisheries. As a building, it has the pedestrian appearance of a warehouse-like artefact – this in stark contrast to the powerful refrigerated storehouses built in Lisbon and Porto, executed in an architectural language of monumentality and refined symbolism. In fact, the port continued to keep its rather haphazard form, each company enlarging its drying racks on the neighbouring agricultural fields and building its own piers to dock the luggers. The wharf was not continuous, with the shipyard interrupting the sequence of piers, and there were no railway connections to Aveiro, the transport of the processed goods instead being undertaken by boat. There were several tentative designs to unify the codfish harbour, most of them part of larger plans for the growing Aveiro harbour, but none of them really progressed further than the drawing board (Figure 12).

16 Comissão Reguladora do Comércio do Bacalhau (CRCB). Its archive is currently held by the Centro de Documentação de Ílhavo (CDI) on the premises of the Maritime Museum of Ílhavo, which has dedicated one of its main permanent exhibitions to Portuguese cod fisheries and hosts a cod aquarium.

17 The companies that moved to the port are, in chronological order, as follows: Empresa de Pesca Testa & Cunha (prior to 1924); Empresa de Pesca de Aveiro (1928); Brites, Vaz & Irmãos (1929); António José dos Santos–Empresa de Pesca Ribau (prior to 1932); Indústria Aveirense de Pesca (prior to 1936); Empresa União de Aveiro–João Maria Vilarinho (prior to 1936); Parceria Marítima Esperança (prior to 1936); Ribaus & Vilarinhos–José Maria Vilarinho (1936); Pascoal & Filhos (1937).

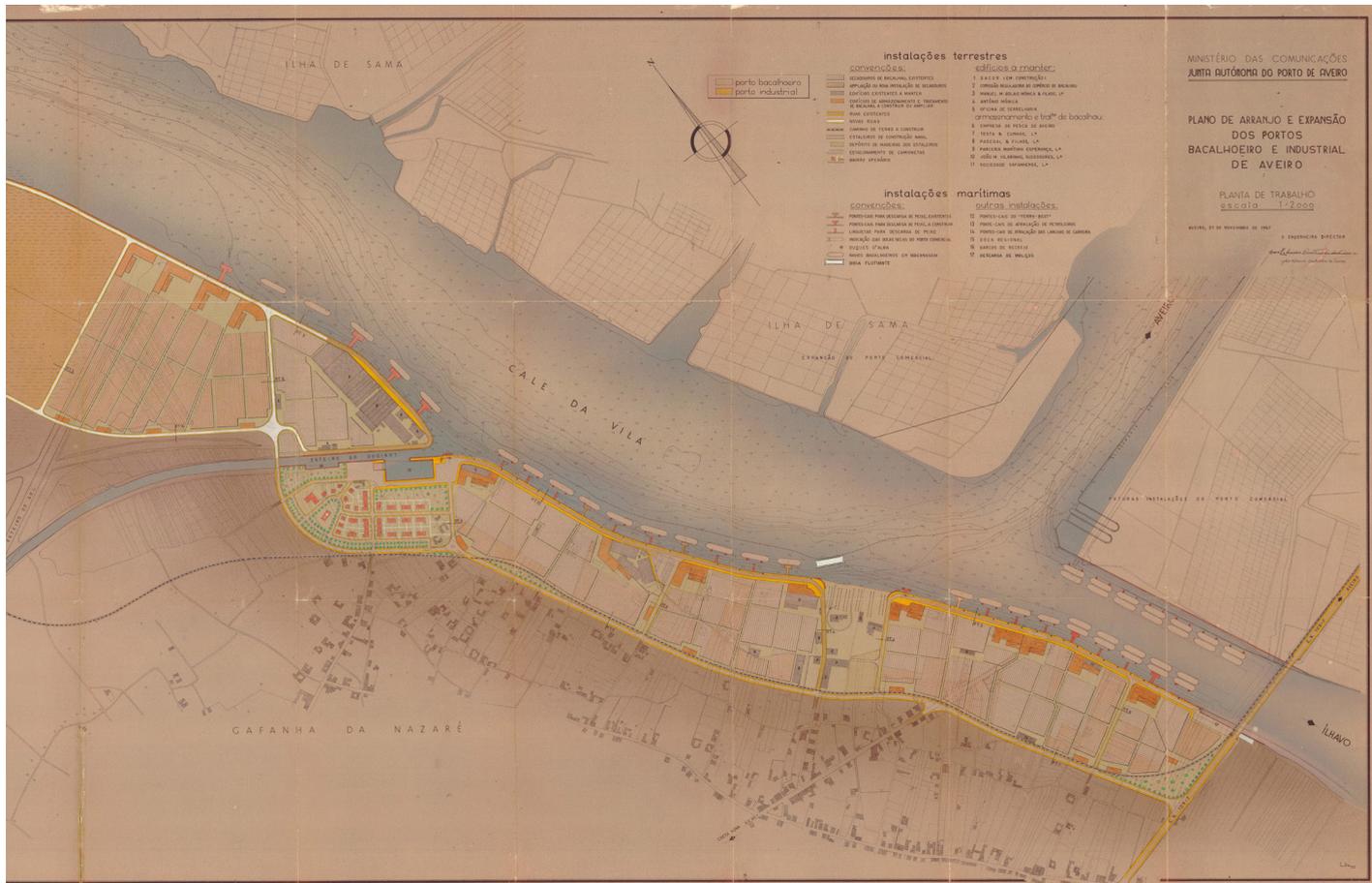


FIGURE 12 Unrealized plan of expansion of Aveiro's harbour, 1956. Courtesy of Administração do Porto de Aveiro

Depleting cod resources

Cod live on rocky slopes and between boulders and only reproduces when they reach three years old, their eggs developing over a period ranging from days up to weeks in open water before becoming larvae that drift towards the shore for several months. Juveniles take months to years to grow into adults, their preferred habitat being the eel-grass and sandy gravel bottoms not far from shore, after which they return to the boulders where they finally become fully-grown adults and reproduce. This cycle is a complex ecosystem that oscillates with the seasons from shore to open sea. Although its overall functioning is still relatively obscure to scientists, it is commonly acknowledged that large, several-year-old cod are crucial in establishing the required ecological balance to rejuvenate their populations. Without larger cods other predators move up the chain to dominate the ecosystem, making it harder for the younger specimens to thrive.

The period from the 1950s to the 1970s is known as “The Glorious Thirty”, and fisheries also took part in this euphoria (Gascuel, 2019, pp. 42–6). The post-war years experienced a combination of an expanding market for fish consumption, increases in technological capabilities, and an exponential growth in catches, whereby most countries saw the consumption of salted cod replaced by frozen cod. The economic profits were large, but the pressure on fish stocks resulted in a catastrophe, with overfishing compromising not only the



physical survival of various species but also the economic survival of fisheries themselves. Needless to say, the low-tech and relatively primitive Portuguese fisheries were not the main culprits in the depletion of the Grand Banks. The second half of the twentieth century experienced a further boost in fishery technology, encompassing everything from boat design and propeller systems to sonar that could localise schools of fish underwater, and from the fishing gear and high-performance nets to refrigeration systems. These latter freezing techniques thrust the scale of fisheries to unprecedented heights (Harbron, 1962). Notorious on the Grand Banks were the Soviet Bloc factory ships that processed their catches on the high seas, operating as floating logistical hubs to serve the fishing boats, which would rarely see their home ports. All-year-round factory-ship fishing at the outer limits of the continental shelves decimated the entire elder fish populations, and ultimately cod stocks on the Grand Banks of Newfoundland collapsed completely.¹⁸

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By this time several countries had claimed sovereignty over the seas around their continental shelves. In 1958, under the auspices of the United Nations, treaties were signed defining strategies to secure "sea law," a concept finally established in 1982 with the definition of Exclusive Economic Zones (EEZs) that came into force in 1994 with the United Nations Convention on the Law of the Sea (UNCLOS). The "Cod Wars" between Iceland and the United Kingdom (the first between 1958 and 1961, the second between 1972 and 1973) illustrate this post-war reconfiguration of maritime legal limits, but also the shift in British fisheries from Newfoundland to Iceland and other regions where cod was still abundant.

Portuguese fisheries never kept pace with this technological progress. Its fleet included a handful of trawlers equipped with sonar, radios, and high-performance nets, but they mixed the new technologies with the tried-and-tested past practices, still operating long-liner luggers with a combination of motor and sail propulsion, and using refrigerators for bait but not for freezing the catches. This atavism reflected both the incapacity to invest in fisheries (especially after the outbreak of the colonial wars in Africa, which drained the state's financial reserves) and the intractable ideological will to preserve and maintain otherwise obsolete "traditions." As for the *Casa Portuguesa* and *fado*, cod represented a nationalist glue in forging cultural consolidation through food. Despite all the gastronomic diversity from the north to the south of Portugal, cod was inculcated and promoted as a unifying national dish during the dictatorship. Unwilling to forego the ideological, iconographic, and social control that cod granted the political regime, the outdated Portuguese fisheries continued sailing until the 1970s, when fewer and fewer operators finally became willing to risk the dangerous and ruinous seasons. Finally, with the Carnation Revolution of 1974, long-distance cod fishing ceased, and the processing facilities started to acquire cod from other countries, especially Iceland and Norway.

What happened to Gafanha da Nazaré?

The lowlands of the southern branch of the Aveiro Lagoon are known as Gafanhas. They were formerly occupied by agricultural fields fertilised with seagrass from the lagoon, a complementary activity to the predominant inland agricultural sector and other local industries, such as the important pottery factory. Until the 1930s the dunes on the coastal sandbar, where the sardine *arte xávega* fishing communities settled, were more like sand deserts until a pine forestation programme was initiated to stabilise the shifting terrain. The rudimentary roads that crossed this landscape were sparsely dotted with small communities that served the variable demand for labour.

The growth of Gafanha da Nazaré's specialised cod-fishing port from the 1920s onwards led to a growth in regional population. The cod-processing facilities can be described as having negotiated their occupancy with the agricultural terrain in the form of low-cost drying racks, which were usually seasonally rented. Once the peripheries of the port were fully occupied, other random drying facilities were installed on the coastal sandbars of Costa Nova and São Jacinto, only to be later abandoned when no longer needed. On the port side the shipyards fell into bankruptcy in the 1980s and a periphery road was finally built, amalgamating the wharf with its waterfront. In the 2000s, with the help of European funds, a railway and new road infrastructures were built in its interior stretch facing the former agricultural fields, now transformed into a carpet of low-density suburban housing. Meanwhile, most of the former cod-processing facilities were converted into warehouses, with a few companies adapting their operations to import fresh cod to be salted and dried complying to modern hygienic methods. Two newly built specialised cod-fishing boats are docked on the harbour and still undertake annual cod-fishing seasons to Norway. At the same time the codfish harbour itself has been engulfed by the growth of the Aveiro port, with logistics platforms and ro-ro terminals, but also including a local fishing port and recreational wharfs. Unlike the fenced-in and gated zones of the continuous sequence of the commercial port, the cod-fishing port has remained an open and easily accessible area (Figure 13). This ambivalence and its convenient position in relation to the motorway system have made it a preferred site for small companies and industries to operate from, merging the forms of new warehouses and offices with the remains of the former cod-fishing companies.



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FIGURE 13 13.1. Gafanha da Nazaré north embankment, public access to ferries, 2019.
13.2. Gafanha da Nazaré, food processing facilities, 2019.

Gafanha da Nazaré's cod-fishing port originally grew adjacent to the road connecting Aveiro to the ancient fort, where the Barra Canal was opened and then the beacon installed. This area has now been colonised by seasonal seaside tourism, slowly urbanising the dunes from the canal towards Costa Nova, with the former fishermen's settlement becoming a second-home urban community. Post-war attempts to confine the urbanisation of Ílhavo to within a formal, closed and centralised layout were ultimately unsuccessful, and the former agricultural centre has come to epitomise the sprawled communities that have spread throughout Gafanha's lowlands and along the seaside. As the cod fisheries collapsed, supplanted by a new economy based on services and tourism, this urban sprawl was further accentuated by the overlay of new road-infrastructure networks.

Codfish architecture?

Rather than bearing the architectural imprint of a specific fish, the form of Gafanha da Nazaré port seems more the result of circumstantial decisions. The links between the fluctuations in natural resources, the nationalist politics of socio-cultural construction and the related development of urban sprawl are subtle, but they do exist. It was the naïve understanding of marine ecology and the zeal to build a distinct propaganda apparatus that precipitated the persistence of an out-of-date fishing culture.

Social reasons – not biological ones – determined the low-tech strategy of Portuguese fisheries and the consequent loose form of Gafanha da Nazaré's port. More significant investments in the industry would have resulted in more up-to-date fishing techniques – and an effectively predatory pursuit of ever-larger catches – as well as in a purpose-designed wharf and the establishment of a formal relationship to its environs and surroundings. On the other hand, the collapse of the fisheries in the 1970s ushered in a period of abandonment and a struggle for survival that led to public access and mixed port functions – unlike other areas of the port that were designed and rebuilt as autonomous units with limited access and single functions.

The concentration of codfish operators in Gafanha da Nazaré also resulted from a distribution of political power (i.e. the location of the central regulatory board). Still, cod processing did generate a specific landscape, different than, for example, sardine processing. Whereas the latter prioritised canning factories and fostered a more industrialized context, the former presents an ambivalent quasi-agricultural scenario embodied in its cod-drying racks. And although the drying racks of its heyday have clear affinities with other Atlantic cod-fishing landscapes, its own specific location resulted from the opening of the canal, the proximity of a shipyard and the existence of fishing knowledge. If there is an identifiable common relational denominator between natural resources and architectural form, it is to be found in the similarity between the Newfoundland cod bays and the wooden Portuguese sardine settlements on the dunes.

The links between ecological dynamics and urban processes are subtle and not simple to trace, with the complexity of the elements of the equation blurring any attempt to establish direct relations of cause and effect. The case-study narrative presented above is, by its nature, incomplete and tentative but nevertheless provides a vital pointer to direct further future research in that what ultimately emerges is a picture of an identifiable socio-ecological system that responds to the dynamics of a fishing-port landscape, thus providing a hypothesis on which to trace a larger marine history of urbanism.

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FIGURE 14 Gafanha da Nazaré, Cod Fishing Port, 1925. Copyright by Fishing Architecture



FIGURE 15 Gafanha da Nazaré, Cod Fishing Port, 1942. Copyright by Fishing Architecture



FIGURE 16 Gafanha da Nazaré, Cod Fishing Port, 1956. Copyright by Fishing Architecture



FIGURE 17 Gafanha da Nazaré, Cod Fishing Port, 1973. Copyright by Fishing Architecture



FIGURE 18 Gafanha da Nazaré, Cod Fishing Port, 2010. Copyright by Fishing Architecture

Legend figures 14-18

- 1 – Cale da Vila Bridge
- 2 – Bolais Mónica Shipyards
- 3 – Codfish Drying Facilities
 - (I) Testa & Cunha
 - (II) Empresa de Pesca de Aveiro
 - (III) Seca do Capitão Santos
 - (IV) Seca de Vaz / Brites, Vaz & Irmão
 - (V) Seca de António Pascoal e Filhos
 - (VI) Seca do Capitão Corujo
 - (VII) Ribaus e Vilarinhos
 - (VIII) Parceria Marítima Esperança
 - (IX) José Maria Vilarinho
 - (X) José Maria Vilarinho
 - (XI) Sociedade Gafanhense
 - (XII) Indústria de Pesca Aveirense
 - (XIII) Empresa de Pesca Ribau
 - (XIV) Sociedade de Pesca Miradouro e Friopesca
- 4 – Cod Trade Regulatory Commission
- 5 – Indústria Transformadora dos Produtos de Pesca / Fish-processing Industry

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