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Digging into our whaling past: Addressing the Portuguese influence in the early modern exploitation of whales in the Atlantic

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Abstract

Portugal, together with the Basque Country, was an important whaling location where a whale culture developed since the Middle Age. Whaling and the ways of using stranded whales spread with the Portuguese expansion in the South Atlantic in the 15th century. In fact, organized whaling and development of related techniques did follow the Portuguese and Spanish expansion in the Atlantic. In the medieval and early modern Portugal, whaling had been an important economic activity. Nevertheless, reliable information for the period roughly spanning from the 13th to the 18th centuries is still scarce. Based on historical descriptions our investigation addresses the information available about the techniques used, the species exploited and the transfer of an activity across different Atlantic regions. In the 15th and 16th centuries whale use migrated from the Portuguese shores in Iberia to the Atlantic Islands (Azores, Madeira, Cape Verde) and to the new overseas territories, particularly to Brazil. Whalers did use small open boats and hand harpoons to reach and kill the whales. The Basque shore-based model was imported by several Atlantic regions but with significant impact on Brazilian coasts. This is relevant in a context of globalization of techniques and ways of handling whales and their products. Once the activity became established in Brazil, in the early 17th century, the Iberian Crowns started a shore whaling business and a Basque crew was hired for the first seasons. So, the beginning of whaling in these new regions was mostly supported upon Basque expertise. For the next couple of centuries, a structured shore based whaling enterprise developed in the coastal waters of Brazil, mainly

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dedicated to the hunting of right whales (*Balaenidae*) during the calving season. After the depletion of these the whalers turned to humpback whales. Local whalers in Brazil always stood with a land-based type of whaling in contrary to the Basques who conducted offshore whaling when moving into the North Atlantic and away from their Iberian shores. Basques and Portuguese whalers, and their Crowns played a significant role in the transfer of knowledge and techniques of whaling across the Atlantic in the early modern period.

Keywords: Whaling; Early modern period; Atlantic; Portuguese Empire

Introduction

*«[in the Atlantic] you shall find many whales (...) and porpoises
and many small calves»¹*

Since time immemorial humans have been fascinated by whales and over the years an entire whale mythology grew up, inspired by the mystery surrounding these creatures. The shared history of whales and people is however a bitter one, as the animals have long been hunted for their valuable oil, meat, bones and baleen. Whaling is a time-honored pursuit of mankind that has been carried out for centuries in many regions worldwide. The techniques necessary to kill and process the whales were developed over time by humans from different cultures and ethnical groups.

Historical whaling has often emerged wherever human beings encountered whales. Unrelated parties of skilled whaling people in distant geographic areas did come up with imaginative, yet diverse, ways to overcome the difficulties they faced while going about their activity. The first western people to hunt large whales in an organized and intentional manner were the Basques and they became the paradigm of early Atlantic whaling, establishing the way the industry would be characterized in the following hundreds of years (Ellis 2002; Fontaine 2007). For the Iberian shores of Portugal early references to marine mammals are available since the 12th century, through stranding records or whaling related activities registered in several coastal regions (Brito 2011).

¹ In the Portuguese reports of the *Carreira da Índia*, 16th century, Anonymous (1940).

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By the middle 15th century the Portuguese navigators were already exploiting several species of marine mammals in the newly discovered archipelagos of Madeira and Azores, and also along the western shores of Africa.

Shore-based whaling occurred in the Atlantic for many centuries conducted by the Basques and the Portuguese, and later they were followed by several other European nations (Clapham and Link 2006). For centuries, the chase was dangerous and romantic, sending mariners and whalers on perilous voyages in search of profit and adventure. For these reasons the history of whaling has always been a subject of interest, and references in the historiography can be found at least since the early 20th century (e.g. Jenkins 1921) to the present day (e.g. Reeves and Smith 2006). As part of this interest, a comprehensive approach to the historical aspects of this activity based on the Portuguese historiography is just beginning to be constructed (e.g. Brito and Sousa 2011; Brito 2012). Portuguese sources on this topic are still being studied and the chronology of events is not yet fully understood². Recent research has shown what seems to be an unexplained interregnum of the hunting activity in some regions, such as the Portuguese mainland (e.g. Teixeira et al. 2014; Brito and Jordão 2014) and in the Cape Verde Islands. Was it due to environmental collapse and subsequent changes in the populations of whales? Was it due to social and economic constraints in Portugal as a result of the maritime expansion and the onset of new transatlantic interests? These are some of the questions that must be addressed.

The early modern period was one of profound changes in Portugal that shaped the future of the Portuguese and other European societies irreversibly (Costa 2009). It is important now to identify written and iconographic sources, searching for archaeological remains, and to look into cartographic and heraldic elements related to marine mammals in the Portuguese Atlantic history. Supported on previous studies (e.g. Brito 2011; Teixeira et al. 2014), it is relevant to approach historical whaling and any episodes of whale scavenging and use, considering the importance they had in the Portuguese economy and culture over time. The environmental and ecological history of whales and whaling shall also be considered. Moreover, it is important to seriously reflect about the Portuguese contribution to expand marine commercial routes, and a

² For instance, Portuguese sources are never mentioned in the seminal book “Whales, Whaling and Ocean Ecosystems” edited by Estes et al. (e.g. Clapham and Link 2006; Reeves and Smith 2006).

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new sense about the prime value of first-hand experience and direct observation as tools to understand nature. They were crucial mediators in the access to new knowledge and ways of using and representing the natural world during the early modern period (Costa 2009).

Iberian roots of the Atlantic shore-based whaling

Whaling was central to the economy and culture of the first settlers around the globe. For example, in the Arctic region, the Inuit people of Greenland did hunt cetaceans for many centuries, like the aboriginal communities living in the eastern North Pacific (Scarff 1986). Aleutian hunters paddling seaworthy kayaks did throw poisoned darts at whales and waited until they died in a matter of days. Cooperation with neighboring villages was necessary in order to find and share prey. On the European side of the Atlantic, the use of whale products also happened early. Artifacts in sperm whale ivory have been recovered at archaeological sites from the Chalcolithic period in Portugal (Schuhmacher *et al.* 2013) and this may relate to scavenging episodes of dead whales washed ashore. One step ahead was made by the early settlers of Norway who would drive cetaceans ashore and kill them for food and oil.

In the Middle Age, the Basques emerged as pioneers of industrial whaling when they started hunting whales in the Bay of Biscay in an organized manner around the 9th century. Their main prey was the North Atlantic Right Whale *Eubalaena glacialis*. They were chased at sea in small wooden boats launched from shore and rowed by villagers from nearby fishing communities. The whales harassed by the hunting party were hit with hand thrown harpoons connected to floating devices. Once the harpoons were secured, the whale had its movements restricted and diving underwater was no longer possible. The men in the boats would then close in for the kill with lances in a series of deadly blows (Figure 1). The dead whale was pulled ashore and processed *in situ* for a rich yield of oil, meat and baleen plates (Reguart 1792; Ciriquiain 1979; Aguilar 1986; Reeves and Smith 2006). Some whale products were consumed locally while other would make valuable goods for export (Szabo 2008). Early in the 12th century, whaling was among the most important economic activities in the Biscay area.

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Basque whaling expanded along the Cantabrian shore to cover most of northern Iberia (Aguilar 1986). There is also evidence of whaling activities on the western Iberian shore and in Portugal the first documented source is from the 12th century. A royal decree (*'foral'*) by King Sancho I in 1168 establishes tax values that should be paid upon trading whale products (Pereira 2006). However, it should be noted that Portuguese dates fall two centuries before the timeline for Galicia (1371) set by Aguilar (1986). This would suggest an early participation of the Portuguese in the European whaling trade (Brito 2011).

References to whaling activities on the Portuguese shore (W. Iberia) may still be found for some time in old documents but they seem to fade away at some stage in the 14th century (Brito and Jordão 2014). This may suggest a sharp decline in that activity on the mainland as the Portuguese were preparing their great Oceanic expansion of the 15th and 16th centuries. Trading spices and exotic products obtained in India and SE Asia was a major driving force behind this national quest. There was little room left to other activities, besides the lucrative business of growing sugar cane in Brazil with manpower imported from African territories.

Meanwhile, the 15th century Basque whalers went northwards in pursuit of prey and they introduced new techniques there. Now they were able to process dead whales in the high seas by pulling the carcasses alongside the hull of seagoing whaling ships. Lumps of whale fat were put into boilers heated with furnaces lit onboard. Blubber was converted into oil and could be stored for long periods of time in wood barrels. Whaling activities reached further away from home and expanded to include hunting grounds around Ireland, the Faroe Islands and beyond. In the 16th century they were in Labrador and a shore station was established at Red Bay (Cumbaa 1986). They also reached Arctic waters in Spitzberg and Greenland. Basque whalers were often hired on board of Dutch and English ships. They shared their expertise and trained foreign crews, thus helping to launch the whaling industry in other countries.

The Portuguese sailed mostly the South Atlantic and Indian oceanic routes. We explore their impact at establishing and developing new whaling stations on Atlantic shores.

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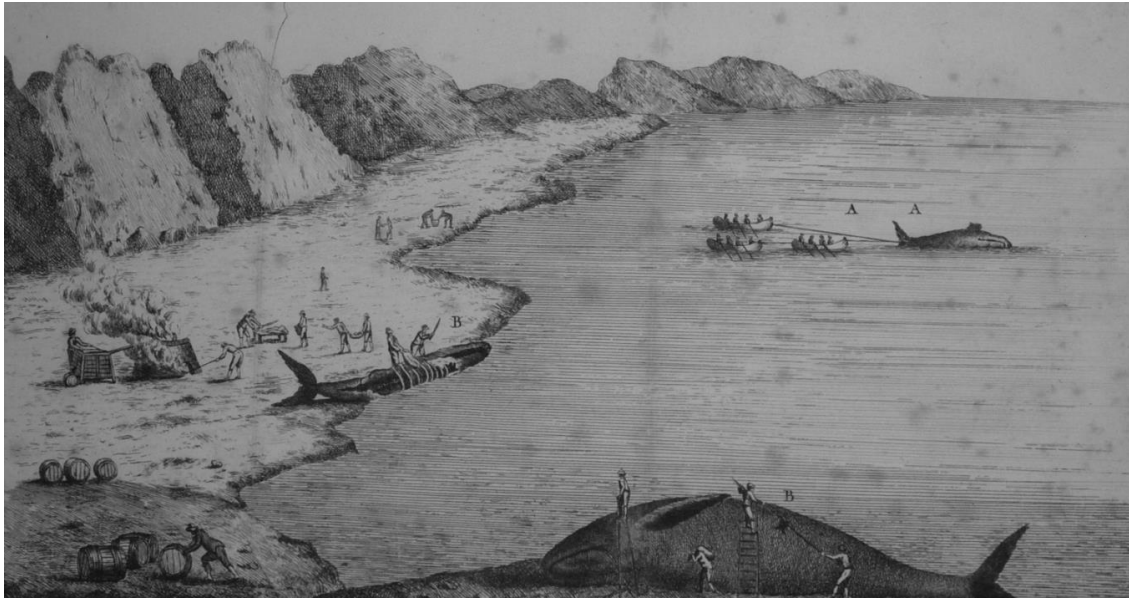


Figure 1 – Representation of the Basque way of capturing and cutting off the right whales ashore as it was in the Bay of Biscay since the 11th century. Picture from Reguart (1792) *Diccionario Histórico de las Artes de la Pesca Nacional*.

Early modern whaling in the Atlantic Islands

During the period of the Portuguese sea voyages of Atlantic exploration, fishing was an important part of daily life and the capture of marine fauna occasionally included dolphins and large whales. Over the 15th and 16th centuries, with the discovery of new shores and faraway seas, the importance of the whaling industry to the Portuguese (and other European nations) moved away from Europe to other geographic locations, such as the Atlantic islands, the West Indies, the northeastern shores of North America, and Brazil (Cazeils 2000).

The first descriptions of whales occurring in the Madeira Archipelago are included in the epic poem “Insulana” by Thomas, 1635, as these animals were animating the bays of Madeira Island but not really hunted yet (Ribeiro 1991). In 1595 it is mentioned that a large whale was in the bay of Funchal and interfered with boats coming in to trade their goods in the town. Although it did not make any victims, the local authorities instructed the boatman Simão Rodrigues to take it out of the bay, paying him for that work the amount of 4,000 reis³ (Ribeiro 1991). In the 17th century using whales to

³ Reis were the 16th century Portuguese currency.

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make oil was not widespread and reference to these animals in Madeira is also offbeat. It seems that keeping special boats and skilled crews able to perform the arduous task of whaling was not viable then, either for native or foreign entrepreneurs alike. Settlers in Madeira, like the Portuguese Crown, were much more interested in exploiting the land and they did introduce ecologically and economically viable new agriculture products. So, whales might have been caught sparingly but not in a systematic way as it did happen later, in the early modern period in Madeira. The accounting book of the Customs at Madeira only reports the capture of one whale in October 1682. It was bought by Diogo Peter - an English merchant – and yielded the value of 64,000 reis after the capture expenses were paid (Ribeiro 1991).

For the Azores Archipelago, it is considered that from the 16th century onwards the settlers were becoming experts at capturing whales, mostly because of the large number of stranded sperm whales occurring in several islands (Figure 2). Some authors even state that the Azoreans took their expertise across the Atlantic into Brazilian shores (Ribeiro 1998) but there is no real evidence of a dedicated whale hunt in the Azores in early modern times. In contrast, the occurrence of large whales close to shore and stranding events are often reported (Frutuoso 2005):

«[whales] reach the coast of the island [S. Miguel] sometimes, most on the north that on the south, especially on the coast of the place of Rabo de Peixe, where they are many sea beans, [which are] said to be a nice or natural delicacy to them (...) and given that, only the oil from them is availed (...)»

It is only after the 17th century that whaling starts to emerge as a local activity with economic relevance and it was under the influence of the American Yankee whalers (Reeves and Smith 2006) that a shore based whaling on its own right develops from the 18th to the 20th century.

In the Madeira and Azores archipelagos, both settlers and the Portuguese cCrown would prefer the economic activities ashore rather than investing in the exploitation of marine resources. This added to the fact that a Royal concession was granted to whaling in Brazil in the 17th century and a monopoly was established there, strongly conditioning the development of any kind of early whaling activity in those Atlantic islands.

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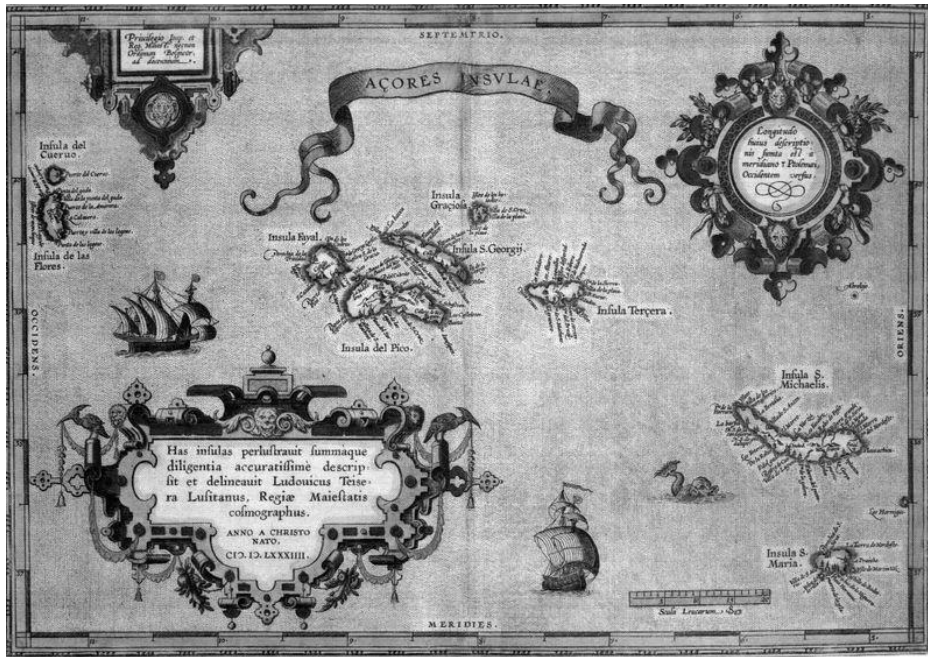


Figure 2 – One 16th century map of the Azorean Archipelago with a whale (or another large marine animal) alongside the islands and the boats, as depicted by the Portuguese Royal cosmographer Luis Teixeira (1584).

References to the presence of whales are also found for other Atlantic islands under the Portuguese Crown administration, such as the Sao Tome and Principe archipelago located in the Gulf of Guinea (Anonymous 1980):

«Between this island [Sao Tome] and the coast of Africa we can see such a huge amount of large and small whales that is a wonderful thing to say.»

Also the Cape Verde Islands are worth mentioning here. The stringent diet of the islanders was complemented with whatever available resources could be found in their harsh natural environment. Hunting and fishing would complement any derivatives of livestock farming (such as meat, cheese and milk) and all of these were valuable food items. Fishing would have been an important activity for coastal communities depending on a wide variety of seafood, and this also included the use of whales in their diet (Vieira N.D.). The gathering of ambergris, mainly in S. Nicolau, Sal and Brava, indicates the regular occurrence and the scavenging of sperm whales (Marques 1985). It is also known that before the establishment of whaling in Brazil, whale oil (probably from stranded whales) was being imported from the Cape Verde Islands to this overseas region (Pedrosa 2009).

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Even if whales were captured only in small numbers and mostly for local use, in the Portuguese Atlantic Islands no clear indication of quantities or species was found. Some whale products were obtained and traded within the Portuguese Atlantic Empire in the early modern centuries, as it would also be expected to occur in associated European markets. Among the products resulting from whale exploitation that were sold to Europe, oil, meat and baleen stand out. The oil, commonly referred to as “fish oil” was the result of melting the animal fat and would be commonly used for lighting, soap production, or sealing the hull and wooden joints of seagoing vessels. The meat was to be consumed as human food, and could be eaten fresh or salted, although whale meat was often considered inferior and worse on taste than beef. In Europe, the interest in products of the whaling industry was growing slowly but steadily. Whales were then perceived as convenient living sources of fat ready for consumption, producers of oil and raw materials (baleen for instance), with a wide range of applications in European markets. Whales were thus captured all over the Portuguese Empire and they were more valued every day (Ellis 1969).

American and Brazilian whaling: the start of a long-lasting endeavor

Whales were a valuable marine resource and an important source of income to many cultures all over the Atlantic. For instance, Native Americans of the Algonquin People living in Long Island (close to present day New York) were catching whales at sea with dugout canoes many years before the 17th century when European settlers stepped in (Pritchard 2007). The Long Island Right Whale fishery was then operated for almost three hundred years under control of the European settlers, until it came to an halt in 1924 (Reeves and Mitchell 1986). It is worth noting that according to Rattray (1953), it was the Long Island Indians who “introduced” white settlers to the whale fishery.

Human interaction with cetaceans was also reported in areas further south. Spanish colonists reaching Florida in the 16th century made fancy claims about blowhole plugs used by daring native fishermen who jumped on the back of whales surfacing for air and would try to suffocate them (Acosta 2008).

Relatively few whaling operations arising from local initiative and invention have been reported in tropical latitudes (Reeves and Smith 2003) but there are other examples in

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the Indo-Pacific (Indonesia, Philippines). Aboriginal whaling in these areas involved the islanders leaping from a boat onto a whale's back to secure the harpoon or to embed one large hook (Reeves and Smith 2006).

Since the discovery and colonization of Brazil in 1500, several reports and descriptions about the occurrence and stranding of whales on the shore there did reach Portugal and Europe (e.g. Cardim 1980; Gandavo 1980; Sousa 1989).

The first native people using whale products in Brazil were probably indigenous from Ceará who collected ambergris from stranded sperm whales on the beach. However, the first solid references of a directional and organized hunting for whales are from colonial Brazil in the beginning of the 17th century (Ellis 1969; Edmunson and Hart 2014). There was a clear need for oil in Brazil then and this could be provided by killing and processing whales (Salvador 1889):

«It was great throughout the State of Brazil the lack in grease or fish oil, either for trailer boats and ships, as to light up the mills (...) and it was a shame to suffer this lack, seeing the whales, which are the same grease, throughout this bay without no one to fish them (...) but then God, that all provides, has given the will to a certain Pedro de Orecha, Biscainho [from Biscay] so that he wished to come to this fishery (...)»

In 1602, a century after the arrival of the Portuguese, and during the Iberian Union, Felipe III of Spain – Felipe II of Portugal – has conferred to the Biscayan captain Pêro de Urecha a license to hunt whales along the Brazilian coast for ten years. The target species was the Southern Right Whale *Eubalaena australis* and during this period (from 1602 to 1612) two or three whaling vessels traveled from Biscay to the *Bahia de Todos os Santos Reconcavo* with expert crews of Basque hunters on board. This occurred coincidentally to the whales breeding season (Salvador 1889; Pedrosa 2009):

«In the months from May to June, breeding season, many [whales] came to the Brazilian shores and many stranded on beaches and shallow waters dying suffocated due to their own weight compression»

The crown has established that the whale oil should supply the *Reconcavo* demands and the remaining product should be sent only to Portuguese ports. The Basque techniques were performed in front of the Portuguese settlers, who learned their methods of harpooning, and how to transport, handle and process the whales. In 1613 the first

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colonial “*armação*”⁴ was held in Salvador (in the Island of Itaparica) by António Machado de Vasconcelos, who chose a location where whales could be hunted even inside the bay (Edmunson and Hart 2014). Thus, the whale hunting monopoly in Brazil was established in 1614 and cetaceans were considered “royal fish” and property of the Crown. For the next two centuries, with a special focus after the Restoration of the Portuguese Independence from Spain in 1640, and in order to address the colonial expenses, several concessions were granted by the colonial government to private whaling entrepreneurs in a constant feud with local inhabitants who also wanted to enjoy the economic benefits of this activity (Ellis 1969; Edmunson and Hart 2014). Also during this period, due to the whaling success in Bahia, the activity has expanded to some areas further south, first to Rio de Janeiro, then São Paulo, and later to Santa Catarina. From the 17th century onwards, there were successive reports about the importance and success of this enterprise (Anonymous 1657). In one whaling season of the 17th century an average of 46 whales were captured per year, and in the first half of the 18th century the captures increased to an average of 150 whales (Ellis 1969).

From Bahia to Santa Catarina, “*armações*” were usually set at the entrance of bays and straits protected from strong wave action and southern winds, which would also provide sheltered places for breeding whales. The hunt was carried out in the breeding season and the presence of calves was also an advantage to help hunting adult females⁵. Nevertheless it was a very difficult and dangerous activity still holding to traditional methods that were not very much developed over long periods of time. A rowing boat with the harpooner standing in the bow approached the whale and several strikes of harpoons and spears weakened the animal, while a second boat helped to achieve the killing and at towing the dead whale ashore (Figure 3). The animal was slashed to remove the fat that would produce the oil that lightened Salvador and Rio de Janeiro. The meat, tongue and entrails were also removed but in general a lot of the animal was not used and would be discarded. By the end of the 18th century American whalers started to hunt whales in Brazilian waters with a modern approach (Edmunson and Hart

⁴ *Armação* (singular) or *Armações* (plural) are the Portuguese words for a specific type of traps, in which there is a complex set of nets assembled near the shore to capture large migratory fish like Bluefin tuna. Other marine animals may be killed eventually, including cetaceans.

⁵ The first whaling target were Right Whales (adults calving in Brazilian shores from May to June) but when the population became seriously depleted, the target moved to Humpback Whales *Megaptera novaeangliae* breeding from June to September (Salvador 1889).

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2014). This was a turning point in Brazilian whaling that resulted of the intense American whaling there together with the depletion of the Southern Right Whale populations. Just a few years later the first drill for oil marked the end of a whaling era in Brazil (Ellis 1969; Edmunson and Hart 2014).

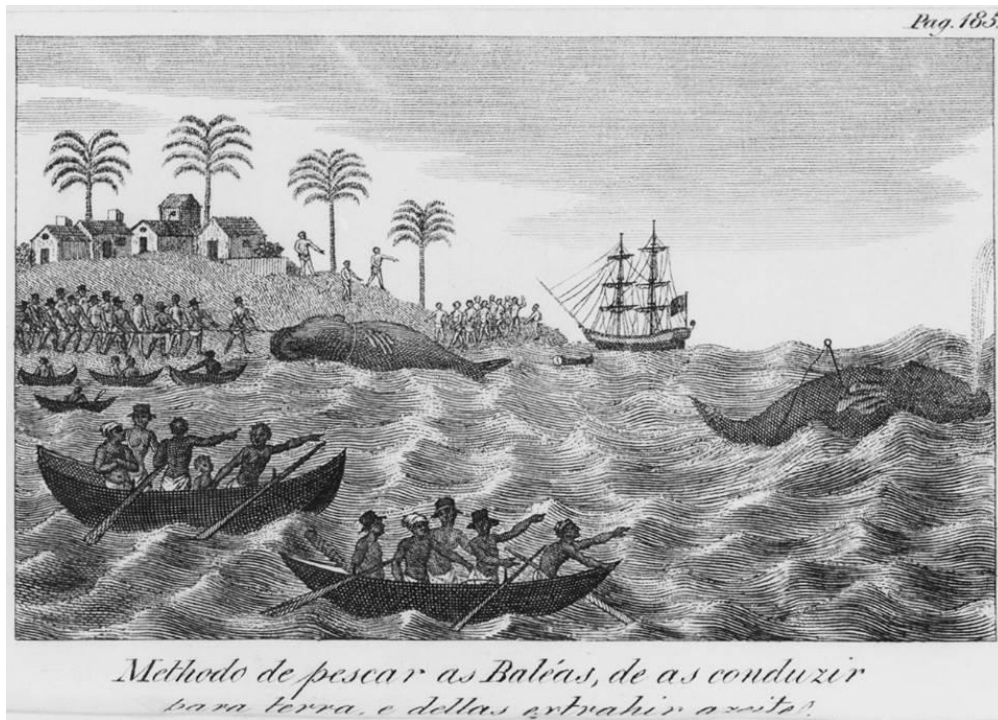


Figure 3 – “The way of fishing whales, of conducting them to land and from them extracting the oil”. A drawing showing Brazilian shore-based whaling from Beauchamp (1767-1832) *Historia de Brazil*.

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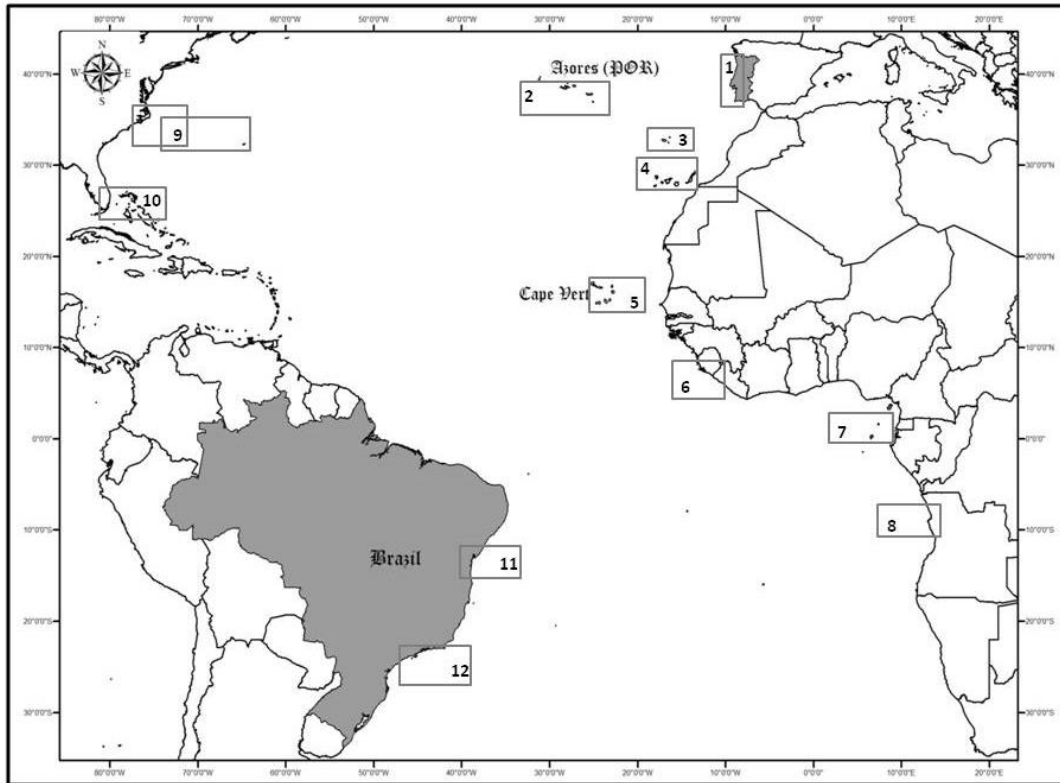


Figure 4 – Map of the Atlantic Ocean as we know it today, showing some regions where whaling, whale sightings and whale strandings were documented in the 15th to 17th centuries. The Atlantic regions highlighted are: (1) Portugal mainland; (2) the Azores archipelago; (3) Madeira archipelago; (4) Canary Islands; (5) Cape Verde Islands; (6) Guinea; (7) São Tomé and Príncipe; (8) Luanda (Angola); (9) Virgin Islands (USA) and Bermudas; (10) Florida (USA); (11) Salvador and Bahia (Brazil); (12) Santos (Brazil).

Table I – Atlantic regions are documented in the text and the number of historical sources about whale hunting, sightings and strandings for each of them in the 15th and 17th centuries. The total number of sources reviewed in this work is 43 and it includes, village charts, voyage chronicles, and natural history reports from the new overseas territories).

Nº	Region	Hunting	Sightings	Strandings
1	Portugal mainland	16	1	4
2	Azores Archipelago (Portugal)	1	1	2
3	Madeira Archipelago (Portugal)	1	1	
4	Canary Islands (Spain)	-	1	-
5	Cape Verde Islands	-	1	-

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6	Guinea	-	1	-
7	São Tome and Principe	-	1	-
8	Luanda (Angola)	-	1	-
9	Virginia (USA) / Bermudas	-	1	-
10	Florida (USA)	1	-	-
11	Salvador and Bahia (Brazil)	3	3	2
12	Santos (Brazil)	-	1	-

Discussion

Man had been using stranded whales for quite a long time before people in the maritime communities began to think about ways of capturing them. At first this was achieved through leading whales into areas of shallow water on the coast, such as estuaries, where they would be easier to kill. Later techniques were more elaborate and included actively pursuing the whales at sea. To reach this purpose, some distinct and pretty ingenious processes were employed which have been historically described by navigators and explorers travelling in the Atlantic Ocean. Large cetaceans provide a number of resources and products, mainly oil and meat but also baleen and bones. In the early modern period these were always in demand not only in Europe but also in the new European settlements on both sides of the Atlantic.

Commercial whaling, in the sense of a continuous and directed effort pursued for profit, had its origin in the Eastern North Atlantic and was carried out initially by the Basques and the Portuguese, and subsequently by other European people. There was a well-organized whale hunt in the shores of the Iberian Peninsula beginning earlier than the 11th century and this was taken afterwards to the New World. Even though various coastal whale hunts existed in Europe since medieval times (Clapham and Link 2006; Szabo 2008), by the 16th century Iberian whalers were already pursuing their quarry much further across the Atlantic and this effort was supported upon expertise and techniques from the Basques and early Portuguese whalers. In Iberian shores, the main captured target was the Right Whale – but it is likely that any other whale species with

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coastal habits could also become a target in the new Atlantic regions. The colonization of the New World by Europeans (both in the northern and southern hemispheres) allowed the development of new whaling endeavors and started the exploitation of pristine whale populations (Clapham and Link 2006).

Within the context of the Portuguese Expansion in the Atlantic, the discovery of a New Natural World has brought strong stimulus to describing the novelty, exoticism, beauty and strangeness of nature but, even more important, in appreciating its value as an economic resource. The Portuguese traveling to the African and Brazilian coasts, upon arriving on those shores were dazzled by the new cultural, geographical and natural sceneries, including the occurrence and abundance of marine wildlife (Seixas 2003). They often observed whales at sea, and their abundance and proximity to the coast quickly drew attention for its possible use and economic value (already known from Iberian coasts). These sightings were usually reported (e.g. Cardim 1980) and the information about the natural richness of new land and seas quickly reached the kingdoms in Europe. In fact, there are several authors from the 15th to the 17th century who wrote about whales in the Atlantic Islands, West Africa and Brazil (e.g. Salvador 1889), describing also their occurrence and local importance. In the present work we identify and review 43 different historical sources referring to hunting, sightings and the stranding of whales in the early modern period, as witnessed in the Atlantic spaces under the influence of the Iberian kingdoms. These sources include old village charts from Portugal, chronicles of the early Atlantic voyagers, and natural history reports from the new oversea territories (Figure 4 and Table I). The coeval narratives allow us to understand the relevance of this activity and why they are instrumental to obtain information about the natural and economic aspects and how they were interconnected at that time.

The Basque shore-based model (Reeves and Smith 2006) was imported into several far-away trans-Atlantic regions with significant impact on Brazilian coasts. Following the same process of discovery and exploitation of natural resources, in the early 17th century settlers in Brazil started to explore the breeding grounds of large whales off their shores and their efforts were supported by the Crown. They opened a new activity that developed into a continuous process that persisted until the middle 20th century. Researchers and scholars assign the Basque whaling as a decisive settling authority in a

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regional or national sphere of influence, both in Europe and in the context of the new overseas settlements. The Portuguese have also played an important role in the history of whaling with impact on the marine environment. Not so much because they utilized techniques pioneered by the Basques but mostly because they were the promoters of the whaling activity in vast areas and introduced it at many new Atlantic regions. In Brazil, whaling eventually reached a prominent place in the Royal finances and that turned out to be a local activity into an Atlantic monopoly, which was also an important economic resource for the financial management of the Portuguese Kingdom.

At the same time, the success of the Brazilian early modern whaling together with the American, British and French whaling since the 18th century, had contributed to the depletion of Southern Right Whale populations, changing their natural environment until the present day. This is particularly relevant in a context of globalization of techniques and ways of handling renewable resources obtained from the sea. First, the hunt was mainly dedicated to catching the Right Whale during the calving season, but after the depletion of this species the whalers switched to hunt the Humpback Whale. This type of shore based whaling continuously occurring in several Atlantic grounds, severely depleted whale populations and changed the natural balance of ecosystems. Due to such series of global or local extinctions, whaling drastically changed the pristine condition of the marine environment over the last 500 years. And the proportions of this change are still witnessed today. The historical data currently available shows that important changes did occur on the past distribution and abundance of whale populations in the Atlantic.

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References

Acosta J (2008) *Historia Natural y Moral de las Indias*. Consejo Superior de Investigaciones Científicas, Madrid.

Aguilar A (1986) A review of old Basque whaling and its incidence on the right whales of the North Atlantic. In *Right Whales: Past and Present Status*, pp. 191-199. Ed. by R. L. Brownell Jr., P. B. Best & J. H. Prescott. Reports of the International Whaling Commission, Special Issue 10.

Anonymous (1657) *Relação da viagem que fez ao estado do Brazil a Armada da Cõpanhia*, anno 1665. A cargo do General Francisco de Brito Freire. Impressa por mandato del Rey N.S. Na officina de Henrique Valente de Oliveira. Lisboa.

Anonymous (1940) *Roteiros portugueses inéditos da carreira da Índia do século XVI*. Agência Geral das Colónias, Lisboa.

Anonymous (1989) *A ilha de S. Tomé nos séculos XV e XVI*. Coleção Alfa, Biblioteca da Expansão Portuguesa, nº 21, Lisboa.

Beauchamp, Alphonse de (1767-1832): *Historia de Brazil ...* Tomo VIII. Lisboa: Na Impressão de J. B. Morando, 1820.

Brito C (2011) Medieval and early modern whaling in Portugal. *Anthrozoos*, 24 (3): 287-300.

Brito C & Sousa A (2011) The Environmental History of Cetaceans in Portugal: Ten Centuries of Whale and Dolphin Records. *PLoS ONE* 6(9): e23951.

Brito C (2012) Portuguese Sealing and Whaling Activities as Contributions to Understand Early Northeast Atlantic Environmental History of Marine Mammals. In Romero A and Keith EO (Eds.) *New Approaches to the Study of Marine Mammals*. InTech: 207-222.

Brito & Jordão (2014) A baleação medieval e no início da era moderna em Portugal: Que nos din as fontes históricas? *Eubalaena*, 14: 28-40.

Cardim F (1980) [1540?-1625] *Tratados da terra e gente do Brasil*. Introdução de Rodolfo Garcia. Ed. Itatiaia, Belo Horizonte; Ed. da Universidade de São Paulo.

Cazeils N (2000) *Dix siècles de pêche à la baleine*. Éditions Ouest-France.

Ciriquiain M (1979) *Los Vascos en la Pesca de la Ballena*. Ed. Vascas Argitaletxea, San Sebastian.

Brito C, Vieira N, Jordão V & Teixeira A (2016) Digging into our whaling past: Addressing the Portuguese influence in the early modern exploitation of whales in the Atlantic. In *Environmental History in the Making*. Volume 7 of the series *Environmental History*. Springer International Publishing Switzerland: 33-47 pp. Doi: 10.1007/978-3-319-41139-2_3

- This is a version by the authors –

Clapham PJ & Link JS (2006) Whales, whaling and ecosystems in the North Atlantic Ocean. In Estes et al (Eds.) *Whales, whaling and ocean ecosystems*. University of California Press: 314-323.

Costa PF (2009) Secrecy, ostentation, and the illustration of exotic animals in sixteenth-century Portugal. *Annals of Science*, 66 (1): 59-82.

Cumbaa SL (1986). Archaeological Evidence of the 16th Century Basque Right Whale Fishery in Labrador. *Reports of the International Whaling Commission*. Special Issue 10: 187-190.

Edmunson W & Hart I (2014) A história da caça das baleias no Brasil: de peixe real a iguaria japonesa. Disal, Barueri, SP, Brasil.

Ellis M (1969). A baleia no Brasil colonial: feitorias, baleeiros, técnicas, monopólio, comércio, iluminação. Edições Melhoramento, São Paulo.

Ellis R (2002) Whales, Whaling, Early, Aboriginal. In William F, Würsig, B & Thewissen JGM (Eds) *Encyclopaedia of Marine Mammals* Perrin, Academic Press, San Diego: 1310-1316.

Fontaine PH (2007) *Whales and Seals: Biology and Ecology*. Schiffer Publishing, Lda.

Frutuoso G (2005) [1522-1591] *Saudades da Terra: Livros I-IV*. Nova edição, 2ª tiragem – Instituto Cultural de Ponta Delgada.

Gandavo PM (1980) [1550-1557] *Tratado da terra do Brasil; História da Província Santa Cruz*. Ed. Itatiaia, Belo Horizonte; Ed. da Universidade de São Paulo.

Jenkins JT (1921) *A history of whale fisheries: From the Basque fisheries of the tenth century to the hunting of the finner whale at the present*. London.

Marques AHO (1985) *História de Portugal*. Volume I-III. Palas Editores, Lisboa.

Pedrosa FG (2009) *O Declínio do Poder Naval Português: A Marinha, o corso e a pesca nos inícios do século XVII*. Câmara Municipal de Cascais.

Pereira MB (2006) *Atouguia da Baleia – seus forais, seus termos*. Junta de Freguesia de Atouguia da Baleia, Peniche.

Pritchard ET (2007) *Native New Yorkers: the legacy of the Algonquin people of New York*. San Francisco: Council Oak Books.

Ratray JE (1953) *East Hampton History including Genealogies of Early Families*. East Hampton, Long Island, New York. [xviii]+619 pp.

Brito C, Vieira N, Jordão V & Teixeira A (2016) Digging into our whaling past: Addressing the Portuguese influence in the early modern exploitation of whales in the Atlantic. In *Environmental History in the Making*. Volume 7 of the series *Environmental History*. Springer International Publishing Switzerland: 33-47 pp. Doi: 10.1007/978-3-319-41139-2_3

- This is a version by the authors –

Reeves RR & Mitchell E (1986) The Long Island, New York, Right Whale Fishery: 1650-1924. *Reports of the International Whaling Commission*. Special Issue 10: 201-220.

Reeves RR & Smith TD (2006) A taxonomy of world whaling: Operations and eras. In Estes et al (Eds.) *Whales, whaling, and ocean ecosystems*. University of California Press: 82-101.

Reguart AS (1792) *Diccionario Histórico de las Artes de la Pesca Nacional*. Madrid. Tomo I-IV.

Ribeiro JA (1991) A pesca da baleia na Madeira. *História*, nº 139, Abril, Funchal: 22-27.

Ribeiro JA (1998) A pesca da baleia nos Açores: Subsídios para o seu estudo. *Islenha*, Nº 22, Janeiro-Junho, Funchal: 97-116.

Salvador V (1889) [1627] *História do Brasil*. Publicação da Biblioteca Nacional, Rio de Janeiro.

Scarff JE (1986) Historic and Present Distribution of the Right Whale (*Eubalaena glacialis*) in the Eastern North Pacific South of 50° N and East of 180° W. *Reports of the International Whaling Commission*. Special Issue 10: 43-63.

Schuhmacher TX, Banerjee A, Dindorf W, Sastri C, Sauvage T (2013) The use of sperm whale ivory in Chalcolithic Portugal. *Tabajos de Prehistoria*, 70: 185-203.

Seixas MLB (2003) *A Natureza Brasileira nas Fontes Portuguesas do Século XVI*. Para uma tipologia das grandezas do Brasil. Passagem Editores, Viseu

Sousa GS (1989) [1587] *Notícia do Brasil, Descrição verdadeira da costa daquele Estado que pertence à Coroa do Reino de Portugal, sítio da Baía de Todos-os-Santos*. Coleção Alfa, Biblioteca da Expansão Portuguesa, nº 11, Lisboa.

Szabo VE (2008). *Monstrous fishes and the mead-dark sea: Whaling in the medieval North Atlantic*. *The Northern World*, Volume 35. Brill, Leiden, Boston.

Teixeira A, Venâncio R & Brito C (2014) Archaeological remains accounting for the presence and exploitation of the North Atlantic right whale *Eubalaena glacialis* on the Portuguese coast (Peniche, West Iberia), 16th to 17th century. *PLOS ONE*, 9 (2): e85971.

Vieira A (N.D.). *A fortuna das afortunadas*. CEHA, Funchal, Madeira.