

# A COMPARATIVE APPROACH TO HISTORICAL WHALING TECHNIQUES: TRANSFER OF KNOWLEDGE IN THE 17<sup>TH</sup> CENTURY FROM THE BISCAY TO BRAZIL\*

NINA VIEIRA\*\*

**Resumo:** No contexto da Expansão portuguesa no Atlântico, a baleação teve um papel importante apesar de ser mencionada pontualmente na historiografia da especialidade. Tal como outros recursos naturais, a baleia, e seus produtos derivados, esteve sujeita às dinâmicas do monopólio régio e não só beneficiou a Coroa Portuguesa e empresários, como potenciou o domínio territorial no Brasil. Técnicas baleeiras bascas foram transferidas da Europa para o Atlântico Sul no início do século XVII e prevaleceram durante três séculos até se tornarem obsoletas face às inovações tecnológicas de outras potências europeias e à redução dos stocks de baleias. Os impactos desta atividade fizeram sentir-se principalmente no aspeto económico, mas também a nível social, cultural e científico.

**Palavras-chave:** Expansão portuguesa; Baleeira; Transferência de conhecimentos e técnicas.

**Abstract:** Within the context of the Portuguese Expansion in the Atlantic, whaling played an important role although barely mentioned in the expansion historiography. Like other natural

---

\* This study was supported by the EU Framework Programme H2020 [COST Action IS1403 «Oceans Past Platform» (European Cooperation in Science and Technology)]. This study was also supported by CHAM Strategic Project (FCSH/NOVA-UAc) sponsored by FCT (UID/HIS/04666/2013). NV is supported by a PhD scholarship by FCT (SFRH/BD/104932/2014) and CB is supported by a research contract by FCT (IF/00610/2015).

\*\* CHAM, FCSH, Universidade NOVA de Lisboa. ninavieira.pt@gmail.com.

Nina Vieira has a Bachelor's degree in Biology, University of Évora and a Masters in Marine Ecology from the Faculty of Sciences of the Lisbon University. She is currently a PhD researcher at CHAM on «The taxonomy of Portuguese whaling from the 15<sup>th</sup> to the 18<sup>th</sup> century: An Atlantic history of the sea, whales and people» at CHAM, FCSH-UNL. Her primary research interest is to understand the history of the relation between humans and marine mammals, their exploitation, their economic and scientific values, and ultimately to contribute to the ecology and conservation of those animals and their marine ecosystems.

resources, whales and their products were exploited under a royal monopoly that not only benefited the Portuguese Crown and entrepreneurs but also strengthened the territorial control in Brazil. Basque whaling techniques were transferred from Europe to the South Atlantic in the beginning of the 17<sup>th</sup> century and prevailed during three centuries. Then, that practice became obsolete in the face of other European power's technologic innovation and the reduction of whales' stocks. This activity had a major impact in the economic agenda of the expansion but also on social, cultural and scientific fields.

**Keywords:** Portuguese Expansion; Whaling; Transfer of knowledge and techniques.

*A pesca da baleia é um dos feitos do homem mais digno de admiração, ela atraiu os baleeiros ao oceano, educou-os à mais árdua vida de marinheiro, e sobretudo concorreu muito para as grandes viagens e as grandes descobertas.*

António Alves Câmara, *Brazilian writer* (1888)

## INTRODUCTION

The history of whaling is a classic example of the relation between humans and a given natural element through time and space, from immemorial times to nowadays, and reveals social, cultural and economic aspects along the histories of coastal human communities. Whaling is present in local traditions, toponymy or heraldry in almost all maritime spaces, with manifestations in different artistic forms and immortalised in the literature by Melville<sup>2</sup>.

Together with some other important marine species, both through scavenging stranding animals or persecuting them at sea, whaling was the most extensive form of exploitation of a living resource, encompassing bays and gulfs, continental and insular platforms and pelagic waters<sup>3</sup>. The living resources of the sea and the activities associated with them, like fisheries and salt production for instance, were significant activities since the formation of the Portuguese nation. These activities went through several technologic innovations resulting from the movement of the Portuguese seaman to the Atlantic and the incorporation of the technical expertise of the French and Spanish in the exploration of fishing resources overseas since the middle age<sup>4</sup>. In the context of the Portuguese Expansion to the Atlantic, since the beginning of the Discoveries and the trading exploitation of the African coast, that exploration was supported by a genuine scientific curiosity<sup>5</sup>. Thus, a unique and accurate mapping of the sea and description of nature and people was characteristic of the Portu-

<sup>2</sup> MELVILLE, 1851: 639.

<sup>3</sup> REEVES & SMITH, 2006: 82.

<sup>4</sup> See for instance the work of AMORIM, 2009: 245-279.

<sup>5</sup> PLUMB, 1969: 13; LOPES, 2016: XI.

guese seafaring. Nature<sup>6</sup> and its elements were incorporated in the power strategies, as they were soon considered fundamental both to the expansion and maintenance of the new domains and the competition with other powers. The nations involved in this process spared no resources to dominate nature, at first through its recognition and description<sup>7</sup>. Given its immense proportions and significant legendary and symbolic weight, European nations including the Portuguese have always valued the whale and its products<sup>8</sup>. In the outset of the Portuguese expansion, the whale was not an absolute novelty, unlike tropical animals. These were observed for the first time in these new latitudes, mainly from the second half of the 16<sup>th</sup> century onwards, and were part of the new exotic world. Whales' products were known, appreciated and part of the trade routes that supported the economic ascendancy of the Portuguese-Speaking maritime empire, as we aim to highlight in this paper. In a symbolic duality between the mythical and the utilitarian, the whale accompanied maritime voyages along the Ocean Sea. It was seen as a portent of bad omen and associated with large and dark sea monsters<sup>9</sup>, yet also early on documented by Portuguese seamen as a great source of «fish oil»<sup>10</sup>. Since the discovery and colonisation of Brazil, mainly from 1530 onwards, we find several reports and descriptions on the occurrence and utility of whales. In fact, in 1602 an organised whaling activity was established in Brazilian waters<sup>11</sup>. This activity was conducted under a royal monopoly of the Iberian and Portuguese crowns from 1614 to 1801, with implications at distinct levels, mainly due to its economic importance, but also given the context of the globalisation of techniques and ways of understanding and handling marine resources<sup>12</sup>.

We use here the issue of whaling in colonial Brazil to discuss the circulation of knowledge and techniques between Europe and South America, focusing on who promoted the activity, how it was performed and the effects it had for peoples (in both sides of the Atlantic) and whales' populations. This work stems from a recent, yet continuous, effort to understand the dynamics of whaling in South Atlantic. And, with it we expect to contribute to the history of the Portuguese Expansion in relation to the oceanic history of other Atlantic nations and geographic regions. Furthermore, we also expect to contribute to the history of the Atlantic regarding the emergent field of Early Modern Marine Environmental History. We will use an integrative approach, thus bringing together the economic, social, cultural and scientific aspects related to the value attributed to the whale and its products. For that purpose, we need to go back in time to the inception of organised whale hunting in Europe and to the Iberian Peninsula where it finds its roots<sup>13</sup>.

---

<sup>6</sup> We are here considering non-human nature in the sense of an ecological system excluding human beings. Assuming that the debate of society-nature coevolution is out of the scope of this paper, for more about this discussion see FISCHER-KOWALSKI & WEISZ, 1999; WINIWATER, 2003; WEISZ & CLARK, 2011.

<sup>7</sup> POLÓNIA *et al.*, 2016: 6.

<sup>8</sup> BRITO & JORDÃO, 2014: 31.

<sup>9</sup> SZABO, 2008.

<sup>10</sup> BRITO, 2009.

<sup>11</sup> ELLIS, 1969: 33; EDMUNSON & HART, 2014: 33.

<sup>12</sup> BRITO *et al.*, 2017.

<sup>13</sup> AGUILAR, 1986: 192.

## WHALING IN IBERIA

Recent studies suggest that an early whaling activity occurred in mainland Portugal. These are based on historical sources dating back to the 12<sup>th</sup> century, in the form of local records and rules related to stranding, whales' scavenging or whaling related activities, which warranted the payment of taxes to the crown since the 13<sup>th</sup> century. The Portuguese whaling activity does not seem to have emerged chronologically as a geographical spreading from the French and Spanish Basque Country along the coast of the Iberian Peninsula, but rather as an activity contemporary to the early Basque whaling<sup>14</sup>. This type of whaling, characterised by specific features originated in the Gulf of Biscay no later than the 11<sup>th</sup> century. It is well-documented in the historiography and has been studied in some depth, since hundreds of documents, iconographic sources, as well as objects and structures, have been found along the time and allow to reconstitute this activity<sup>15</sup>. Basque whalers were the first western people to make their livelihood from whaling and to commercialise them in the occidental world, in an organised and intentional manner. They established the characteristics of the industry for the following centuries both locally and through overseas expeditions<sup>16</sup>.

In the beginning, the Basques may have herded whales into the shallower bays where they were lanced to death. They spotted the whales from watch towers named *attalaya* and made large campfires with wood and shrub vegetation in order to alert the whalers. The *attalayas* were built on top of the hills around the harbour and the smoke could be seen from a considerable distance. They were chased at sea in small wooden boats called *chalupas*, about 10 to 12 meters long, with a slender and symmetrical shape with low edges, symmetrical stern and bow, with room for a crew of about 8 men: the harpooner in the bow, the helmsmen in the stern, and six rowers. The harassed whales were hit with a powerful hand-thrown harpoon stroke by the harpooner. The *chalupa* could reach 12 knots of speed and, if necessary, its quadrangular sail could be hoisted. After approaching the whale as much as possible, the men in the boats would then enclose it and kill it with lances, in a series of deadly blows. The Basques soon understood the bonding relation between females and calves and they often harpooned the calves in the beginning of the hunting in order to keep the adults close, while trying to help their offspring. Once killed, the whales were brought to land where they were torn to pieces and the fat was melted in large metallic vats and sometimes salted<sup>17</sup>. The main target in the Gulf of Biscay was the North Atlantic Right Whale *Eubalaena glacialis*, also called black whale<sup>18</sup>.

The hunting techniques perfected in European waters for centuries were transferred from the Gulf of Biscay to Newfoundland and Labrador. It was their expertise in whaling skills and techniques that allowed the Basques to create a highly successful monopoly of the whaling enterprise there<sup>19</sup>. The first Basque whaling crews operating in Newfoundland and Labrador are reported in 1540 and

<sup>14</sup> BRITO, 2011: 293.

<sup>15</sup> Numerous works exist on this subject, so we just give some examples such as JENKINS, 1921; AGUILAR, 1986; BARTHELMESS, 2009; VALDÉS HANSEN, 2010; LÓPEZ FERNANDEZ, 2014.

<sup>16</sup> FONTAINE, 2007: 195.

<sup>17</sup> VALDÉS HANSEN, 2010: 123-125.

<sup>18</sup> AGUILAR, 1986: 192.

<sup>19</sup> BARKHAM, 1984: 515.

in 1546 whaling was a regular activity as it is shown by remains of ovens and other facilities that were built to process whales<sup>20</sup>. From the end of the 16<sup>th</sup> century on, Basque whalers' operations started to move further north off the coast of Norway, Spitzbergen and Greenland. Yet, although Basques were involved in whaling since its outset, in the first years of the 17<sup>th</sup> century other nations also promoted this activity in their home waters, namely Normans, Flemings, Danes and Norwegians<sup>21</sup>, and the same is also true for the English and Dutch, who often recruited experienced Basque crews<sup>22</sup> (Fig. 1).

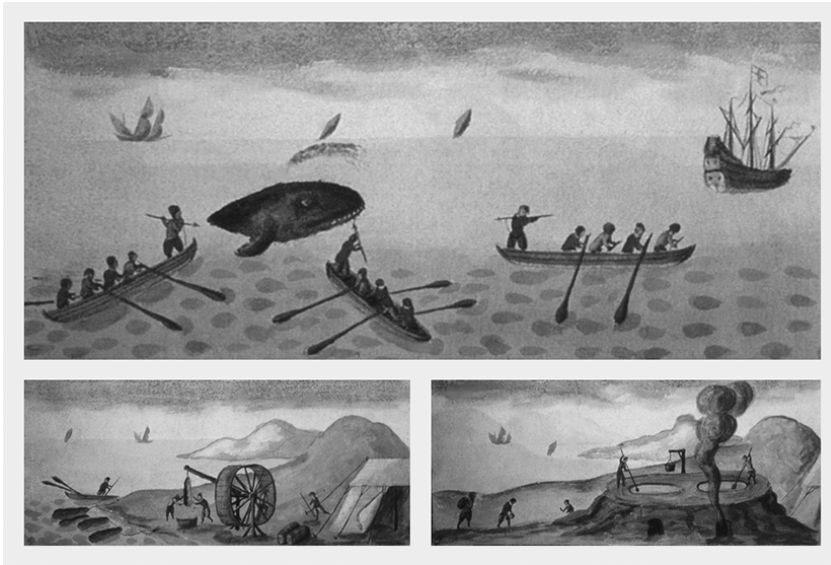


Fig. 1. Hunting, dismantling and production of whale oil, using Basque crews at the service of English whalers in Spitzbergen in 1613.

Watercolours of Robert Fotherby. American Antiquarian Society, Worcester, Massachusetts

## NATIVE AMERICAN USES OF WHALES

We could expect to happen with the animals, in particular marine mammals, the same occurred with the new flora, which was introduced by the native populations of the New World to the Europeans. Along with its uses and properties, for instance for medicinal purposes, this allowed for the colonial empiricism to meet the native knowledge<sup>23</sup>. In fact, manatees (Order *Sirenia*) – a tropical aquatic mammal – were hunted by native people of Brazil and nearby regions as Venezuela, for food and therapeutic uses, and were soon valued by Europeans for their meat, oil and hide<sup>24</sup>.

Regarding whales, the *Historia Natural y Moral de las Indias* by the Jesuit Joseph de Acosta entails a very detailed description of how native American people hunted whales in Florida. In his third book, Chapter 15. *De diversos pescados y modos de pescar de los indios*, Acosta wrote:

<sup>20</sup> BARKHAM, 1984: 518; LÓPEZ FERNÁNDEZ, 2014: 20.

<sup>21</sup> AGUILAR, 1986: 197.

<sup>22</sup> AGUILAR, 1986: 197; CAZEILS, 2000: 52.

<sup>23</sup> FURTADO, 2008: 128.

<sup>24</sup> VIEIRA & BRITO, 2017.

*But the combat which the Indians have with Whales is yet more admirable, wherein appears the power and greatness of the Creator to give so base a Nation, as be the Indians, the industry and courage to encounter the most fierce and deformed beast in the world, and not only to fight him, but also to vanquish him, and to triumph over him. [...] The manner the Indians of Florida use (as some expert men have told me) to take these whales (whereof there is great store) is, they put themselves into a canoe, which is like a bark of a tree, and in swimming approach near the whales side; then with great dexterity they leap to his neck, and there they ride as on horseback, expecting his time, then he thrusts a sharp and strong stake, which he carries with him, into the whales nostril, for so they call the hole or vent by which they breathe; presently he beats it in with another stake as forcibly as he can; in the mean space the whale does furiously beat the sea, and raises mountains of water, running into the deep with great violence, and presently rises again, not knowing what to do for pain; the Indian still sits firm, and to give him full payment for his trouble, he beats another stake into the other vent or nostril so as he stops him quite, and takes away his breathing; then he betakes him to his canoe, which he holds tied with a cord to the whales side, and goes to land, having first tied his cord to the whale, the which he lets run with the whale, who leaps from place to place whilst he finds water enough; being troubled with pain, in the end he comes near the land, and remains on ground by the hugeness of his body, unable anymore to move; then a great number of Indians come unto the conquered beast to gather his spoils, they kill him, and cut his flesh in pieces, this do they dry and beat into powder, using it for meat, it does last them long<sup>25</sup>.*

To seduce both erudite European readers and the general public, Acosta puts together a philosophic and scientific content, including naturalistic aspects, where the innovation lies in the way information is organised rather than in the content itself<sup>26</sup>. In the case of the native hunting of whales, the author did not observe the scene but he considers it a recurrent act and worthwhile mentioning – not forgetting his attempts to refer both elements from the natural and the moral history. Of course we

<sup>25</sup> Translation adapted by the author from ACOSTA, Joseph de – *The Natural and Moral History of the Indies*. Reprinted from the English translated edition of Edward Grimston, 1604, and edited, with notes and an introduction by MARKHAM, Clements R., ed. – *The Natural History*. London: Hakluyt Society, 1888, vol. I. Books I, II, III and IV, p. 148-149.

«Pero más maravillosa es la pelea que tienen los indios com las ballenas, que cierto es una grandeza del Hacedor de todo dar a gente tan flaca como indios habilidade y osadía para tomarse com las más fiera y disforme bestia de cuantas hay en el universo, y no sólo pelear pero vencer y triunfar tan gallardamente. [...] El estilo que tienen (según me refirieron personas expertas) los indios de la Florida – donde hay gran cantidad de ballenas – es meterse en una canoa ou barquilla – que es como una artesa – y bogando llégase al costado de la ballena, y com gran ligereza salta y sube sobre su cerviz, y allí Caballero – aguardando tiempo – mete un palo agudo y recio que trae consigo por la una ventana de la nariz de la ballena – llamo nariz aquella fistula por donde respiran las ballenas –, luego le golpea com outro palo muy bien y le hace entrar bien profundo. Brama la ballena y da golpes en la mar y levanta montes de agua, y húndese dentro com furia, y torna a saltar no sabendo qué haceres de rabia. Estáse quedo el índio y muy caballero; y la enmienda que hace del mal hecho es hincarle outro palo semejante en la otra ventana y golpearle, de modo que le tapa del todo y le quita la respiración. Y com esto se vuelve a su canoa, que tiene asida al lado de la ballena com una cuerda; pero deja primero bien atada su cuerda a la ballena y, haciéndose a un lado com su canoa, va así dando cuerda a la ballena. La cual, mientras está en mucha agua, da vueltas a una parte y a otra como loca de enojo, y al fin se va acercando a tierra: donde com la enormidad de su cuerpo presto encalla sin poder ir ni volver. Aquí acuden gran copia de indios al vencido para coger sus despojos: en efecto la acaban de matar y la parten y hacen trozos, y de su carne – harto perversa – secándola y moliéndola hacen ciertos polvos que usan para su comida, y les dura largo tiempo» (ACOSTA, Joseph de – *Historia Natural y Moral de las Indias* (1590). Edición crítica de Fermín de Pino-Díaz. Madrid: CSIC, 2008, p. 79. [Colección de acá y allá, fuentes etnográficas, n.º 2]).

<sup>26</sup> ACOSTA, Joseph de – *Historia Natural y Moral de las Indias* (1590)... p. XXVII.

cannot assure if, in fact, that was the way they killed whales but we may assume, with some level of certainty, that whales were caught in Central America by the native people in the 16<sup>th</sup> century (Fig. 2).

Within the concept of «taxonomy of world whaling», among the eleven whaling eras proposed by Reeves and Smith<sup>27</sup>, relatively few operations have been identified as arising from local initiative and invention in tropical latitudes, and only two operations in the Indo-Pacific were included. For instance, the whaling tradition in the Indonesian islands of Lembata and Solor preceded the arrival of American and English whalers by at least two centuries and persists nowadays<sup>28</sup>. It is characterised by the use of open boats powered by hand or sail, and hand-delivered weapons such as harpoons, large hooks and blowhole plugs, and processing of the animal on shore<sup>29</sup>, similar to what Acosta described. For Brazil, despite the non-sustained hypothesis that the indigenous people of Ceará hunted sperm whales<sup>30</sup>, we did not find so far any indications of an aboriginal-whaling type occurring in pre-colonial context.



Fig. 2. Whaling scene illustrated in *Indias Occidentalis* xxx. XI of Theodoro de Bry, 1560

## FIRST PERCEPTIONS TOWARDS WHALES IN BRAZIL

As stated before, the whale was not *per se* a novelty in the Europeans' eyes. The great novelty should have been the diversity of species and its abundance as reported, among others, by the Jesuit priest Joseph de Anchieta on his *Informação da Província do Brasil para nosso padre* from 1558. He wrote that «Among these fish there are many of price and royal, such as whales, so many and so big

<sup>27</sup> REEVES & SMITH, 2003: 89.

<sup>28</sup> REEVES, 2002: 87.

<sup>29</sup> REEVES & SMITH, 2003: 86.

<sup>30</sup> PAIVA, 1969: 95-98.

that it is to see. Here in Bahia from the windows of the cubicles we see them jumping and along the coast there are many»<sup>31</sup>. The construction of the Jesuit College at *Baía de Todos os Santos* allowed for several observations of these animals in the past, boasting an abundance hard to believe today. They could be seen without difficulty by most observers who contemplated their unique size and exuberant behaviour, making it «very dangerous to sail in small boat along this coast, because besides other dangers, the whales capsize many, if hearing their sound, thus soar as they were horses when hearing drums, and lunge like lions, many of them wash ashore and of them is made much oil» as Fernão Cardim wrote in his *Tratados da terra e gente do Brasil*<sup>32</sup>.

We can move from one description to another, analysing a variety of meanings and considering the uses and values attributed to whales and their products, as we find in Chapter CXXV of the *Tratado Descritivo do Brasil* from 1587 of Gabriel Soares de Sousa:

*And while the whales are in Bahia, run the fish from the middle from the shoals and reconceives where they [whales] cannot be, which sometimes for following [the fishes] wash ashore, as happen in the river Pirajá in the year of 1580 [...] the male was without comparison bigger, which we cannot measure, because at that time was already unclothed of meat, that was taken to oil [...] the female had a huge mouth in which I saw a black man inside between one chin and the other, cutting with an axe the bottom lip with both hands, without touching the upper lip which whale was pregnant, and it was took from the inside a son as big as a thirty palms keel boat; and was made from both so many oil that supplied the land for two years*<sup>33</sup>.

This document describes in detail the whales entering the sea of Bahia, at the Bahia Recôncavo, their size, other particularities and their potential benefits. This work bears a particular interest because it is, so far, the first indication about Basque expertise being brought to Bahia as mentioned in Chapter CXC:

*and because the ships cannot be pitched without mixing with grease resin, in Bahia a lot is made from sharks, lixa and other fishes, with which the engines are illuminated and the ships from the land are pitched,*

<sup>31</sup> Translation by the author: «Entre estes pescados ha muitos peixes de preço e reais, como baleias, tantas e tão grandes que é para ver. Aqui na Baía das janelas dos cubículos as vemos andar saltando e por toda a costa ha muitas» (ANCHIETA, Joseph de – *Informação da Província do Brasil para nosso padre* (1558). In *Cartas, Informações, Fragmentos Históricos e Sermões do Padre Joseph de Anchieta, S. J. (1554-1594)*. Rio de Janeiro: Civilização Brasileira, S. A, 1993, p. 429. Publicações da Academia Brasileira, II-Historia, Cartas Jesuíticas III).

<sup>32</sup> Translation by the author: «muito perigoso navegar em barcos pequenos por esta costa, porque alem de outros perigos, as baléas sossobrao muitos, se ouvem tanger, assi se alvoração como se forão cavallos quando ouvem tambor, e arremetem como leões, dão muitas á costa e dellas se fazem muito azeite» (CARDIM, Fernão – *Tratados da terra e gente do Brasil (1540?-1625)*. Introd. Rodolfo Garcia. Belo Horizonte: Ed. Itatiaia; São Paulo: Ed. da Universidade de São Paulo, 1980, p. 47).

<sup>33</sup> Translation by the author: «E em quanto as baléas andam na Bahia, foge o peixe do meio della para os baixos e reconcavos onde ellas não pôdem andar, as quaes ás vezes pelo irem seguindo dão em secco, como aconteceu no rio de Pirajá o anno de 1580 [...] o macho era sem comparação maior, o que se não pôde medir, por a este tempo estar já despido da carne, que lhe tinham levado para azeite [...] a femea tinha a boca tamanha que vi estar um negro mettido entre um queixo e outro, cortando com um machado no beijo debaixo com ambas as mãos, sem tocar no beijo de cima a qual baléa estava prenhe, e tiraram-lhe de dentro um filho tamanho como um barco de trinta palmos de quilha; e se fez em ambas de duas tanto azeite que fartaram a terra d'elle dois anos» (SOUSA, Gabriel Soares de – *Tratado Descritivo do Brasil (1587)*. Edição de Francisco Adolpho de Varnhagen. 2.ª ed. Rio de Janeiro: Typographia de João Ignacio da Silva, 1879, p. 254).



*and which is enough to many ships, the more that if to Bahia went Biscayans or other men who know how to kill whales, in any other part there are so many as here, where they live six months a year and more, and from which so much grease will be made that there will be no ships than can bring it to Spain*<sup>34</sup>.

The need for foreign experts to hunt whales may lead us to think that the Portuguese fisherman were few or ineffective in this practice<sup>35</sup>. Yet, we may also assume that by the late 16<sup>th</sup> century a stranding whale constituted a resource useful to know. In fact, Pêro Magalhães de Gândavo, Jean de Léry, Anchieta, Cardim and Sousa were considered by Professor Carlos Almaça as the first contributors to the Natural History in Brazil. Their descriptions were built in abundance of medieval concerns and the interest in the animals relied mainly on their utilitarian character<sup>36</sup>. The complaint about the underutilization of the American nature's richness is recurrent in authors from the 16<sup>th</sup> to 18<sup>th</sup> centuries. They called for the need to get to know the territory and its potentialities better and for having men and means to properly explore the resources<sup>37</sup>, such as the whales «all over this Bahia, without having people to hunt them», as reported in *Historia do Brazil* of Father Vicente do Salvador<sup>38</sup>.

Concerning whaling, a question keep emerging: Did European settlers in Brazil know how to kill whales? Yet, they were aware of whales' by-product profits and also of Biscayan's knowledge of hunt them... It would just take a few years until a commercial whaling activity began.

## WHALING SOUTH: FROM IBERIA TO THE SOUTHERN ATLANTIC

As seen above, some slight uncertainties about who were the first whale hunters in the coast of Brazil still prevail, whether native populations or the Portuguese, namely Azoreans<sup>39</sup>. Nevertheless, a century after the arrival of the Portuguese, in 1602, during the Iberian Union, with Felipe III of Spain – Felipe II of Portugal – an organised whale hunting began in Brazil. Directly or indirectly, possibly through the work of Sousa, Felipe III became aware of the abundance of whales in Bahia region<sup>40</sup> and sent a letter to Diogo Botelho, the governor of Brazil between 1602 and 1608, before his departure to Brazil that reads as follows:

*I am Informed that in the coast of Brazil whales will be fished as it is made in others it will be great the profit of oil from them because there are many in the seas of that cost for what I commend you that before*

<sup>34</sup> Translation by the author: «e porque se não podem brear as náos sem se misturar com a resina graxa, na Bahia se faz muitas de tubarões, lixa e outros peixes, com que se alumiam os engenhos e se bream os barcos que há na terra, e que é bastante para se adubar o breu para muitas náos, quanto mais que se á Bahia forem Biscainhos ou outros homens que saibam armar ás baléas, em nenhuma parte entram tantas como n'ella, onde residem seis mezes do anno e mais, de que se fará tanta graxa que não haja embarcações que a possam trazer á Hespanha» (SOUSA, Gabriel Soares de – *Tratado Descritivo do Brasil* (1587)... p. 323).

<sup>35</sup> SILVA, 1964: 214.

<sup>36</sup> ALMAÇA, 2002: 89.

<sup>37</sup> SILVA FILHO, 2016: 122.

<sup>38</sup> SALVADOR, Vicente do – *Historia do Brazil* (1627). Rio de Janeiro: Typ. de G. Leuzinger & Filhos, 1889, p. 170.

<sup>39</sup> Although there is no in-depth study on Azorean people as promoters of whale hunting in Brazil, references to this topic can be found in the works of SILVA, 1964: 214 or RIBEIRO, 1998: 24.

<sup>40</sup> VALDÉS HANSEN, 2016: 730.

*living seek for some biscayans that in this fishery have more use because doing so and teaching others it will be achieved a great profit of oil [...]»<sup>41</sup>.*

Thus, in the same year of 1602, the king assigned to the Biscayan captain Pero de Urecha and his partner Julião Miguel (or Julien Michel) a license for a period of ten years (1602 to 1612). Two or three whaling vessels travelled then from Biscay to Bahia with expert crews of Basque hunters on board, to hunt whales along the Brazilian coast<sup>42</sup> and in Portugal, being this an exceptional concession<sup>43</sup>. In a complex period of confrontations between European powers, and with the fragile Portuguese maritime empire collapsing<sup>44</sup>, the description of Francisco Pyrard de Laval (1601-1611) points to a possible close relationship between Julião Miguel and the king himself, who facilitated the operation of a (presumably) French in the waters of Brazil<sup>45</sup>.

Nevertheless, the first steps were taken to begin a commercial whaling activity in the South Atlantic, with secular expertise. The Basques established themselves most probably in Itaparica island, as indicated by the 17<sup>th</sup> century map by João Teixeira Albernaz the Old. There, *Ponta de Biscaya* stood out, among Portuguese and native places' names, disappearing later, after the Portuguese Independence, to be replaced by *Ponta das Baleias*<sup>46</sup>. Despite this exclusive concession granted to the Biscayan partners, one year after their arrival the inhabitants of Bahia started to hunt whales, after observing and learning the whaling practices<sup>47</sup>. And, even prior to 1612, the activity was also performed by the inhabitants of Bahia.

After a short period of free whale hunting, in 1614 the crown established the whaling monopoly, which greatly benefitted the royal finances. It bore an increasing importance in Brazilian revenues, correspondent to the expansion of the activity, what was not ignored by the following governors<sup>48</sup>. From mid-17<sup>th</sup> century, especially after the Restoration of Independence in 1640, and during more than three centuries, whale hunting in Brazil gained economic importance. The same applies to its by-products that met basic needs of the residents and generated profits for the entrepreneurs who signed exploitation contracts, and for the crown who established a royal monopoly in 1614, which lasted until 1801<sup>49</sup>.

<sup>41</sup> Translation by the author: The Portuguese citation as presented here is found in the work of ELLIS, 1969: 33-34.

«Eu sou Informado que na costa do Brazil se pescará baleas como se faz em outras sera grande o proveito de azeite delas por aver muitas nos mares daquela costa pelo que vos Encomendo que antes partais procureis levar alguns biscainhos que nesta pescaria tem mais uso porque fazendo a elles E ensinando outros se venha a conseguir Este tamanho proveito do azeite [...]».

<sup>42</sup> SALVADOR, Vicente do – *Historia do Brazil (1627)*... p. 170-172; ELLIS, 1969: 33; EDMUNSON & HART, 2014: 33.

<sup>43</sup> VALDÉS HANSEN, 2016: 730.

<sup>44</sup> COSTA, 2014: 182-183.

<sup>45</sup> LAVAL, Francisco Pyrard de – *Viagem de Francisco Pyrard, de Laval, contendo a noticia de sua navegação ás Indias Orientais, ilhas de Maldiva, Moluco, e ao Brazil, e os diferentes casos, que lhe aconteceram na mesma viagem nos dez anos que andou nestes paizes (1601-1611)*. Versão portuguesa correcta e acrescentada com algumas notas por Joaquim Heliodoro da Cunha Rivara. Nova Goa: Imprensa Nacional, 1858, p. 276; PAZ, 2015: 31.

<sup>46</sup> VALDÉS HANSEN, 2016: 731.

<sup>47</sup> ELLIS, 1969: 36.

<sup>48</sup> JOHNSON & SILVA, 1992: 187.

<sup>49</sup> EDMUNSON & HART, 2014: 36-37.

Aiming to reach a brief description to facilitate the comparison between the techniques used in the «original» place of the activity (the Gulf of Biscay) and the «new» place (Brazil) we divided the activity into Observation, Catching and Processing.

Regarding the animals' observation and targeting, the major and primarily persecuted species in Brazil were probably the Southern Right Whale *Eubalaena australis*<sup>50</sup>. This baleen whale is one the three right whales species, whose common name is said to come from English whalers who designated this as the «right» (i.e. correct) whale to hunt due to its habits. Right whales appeared near the shore, swam slowly enough to be caught, floated when dead and yielded large amounts of oil and baleen<sup>51</sup>. Southern right whales appeared in the Southern Ocean ranging from Argentina, Brazil, South Africa, east Africa, Mozambique, western and southern Australia, New Zealand and Chile. This species migrates annually between high-latitude feeding grounds and low-latitude calving and breeding grounds. Calving areas include shallow waters and bays coinciding with the historical descriptions of the hunting season between June and September according to Myriam Ellis<sup>52</sup> or August to November, according to the recent work of Váldeś Hansen<sup>53</sup> when a huge amount of whales occupied the bay and surrounding sea<sup>54</sup>. Probably, the same reason explains the lack of reference to a high point on land to spot whales, like the *attalayas* in Biscay, or to any type of warning, the whales being very likely easy to spot from the shore (Fig. 3).

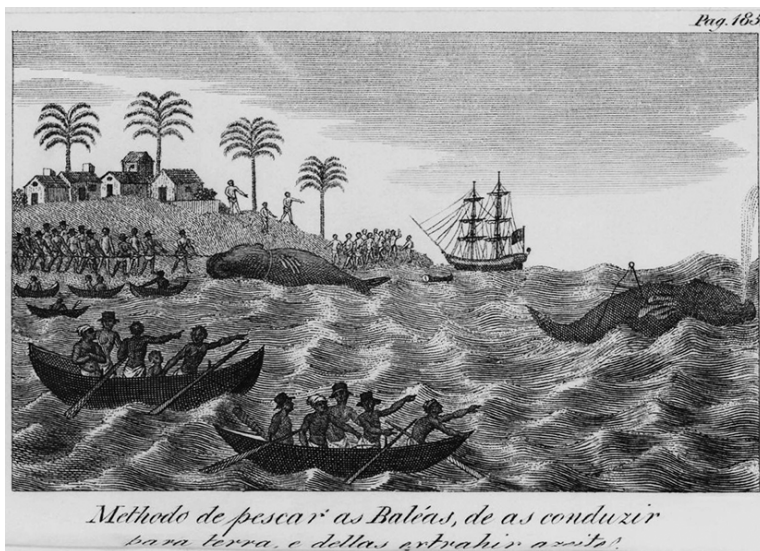


Fig. 3. Whaling scene entitled *Way of fishing whales, to drive them to land and from them extracting the oil from Historia de Brazil...* of Alphonse de Beauchamp (1767-1832), Tomo VIII. Lisbon: Na Impressão de J. B. Morando, 1820  
Cortesy of John Carter Brown Library at the Brown University (<http://jcb.lunaimaging.com/luna/servlet/s/194e8c>)

<sup>50</sup> EDMUNSON & HART, 2014: 34.

<sup>51</sup> KENNEY, 2009: 962-972.

<sup>52</sup> ELLIS, 1969: 34.

<sup>53</sup> VALDÉS HANSEN, 2016: 731.

<sup>54</sup> SALVADOR, Vicente do – *História do Brazil (1627)*... p. 170-172.

The catch occurred after a religious ceremony to bless the whaling ships and usually three boats went to sea to chase whales. The *chalupas* were now *baleiras*<sup>55</sup> with the same features and quadrangular sail. With a length of 10 to 12 meters, sometimes longer, reaching 16 or 18 meters, the *saveiro* was a boat adapted to this specific type of persecution. Like in the Biscayan technique, the whalers at first looked for the calf, which was the first to be harpooned and immediately put alongside the boat. Once this was done, it was easier to capture the adult. A rowing boat with the harpooner standing in the bow approached the whale and several strikes of harpoons and spears weakened the animal, while the second and third boat helped to achieve the killing and towed the dead whale ashore. A white flag was lifted to warn the workers and the population on land that the whale had been killed. The boats used were identical to those of the Biscayans. This was, of course, a very difficult and dangerous activity, that held on to traditional and poorly developed methods over a long period of time (Fig. 4).

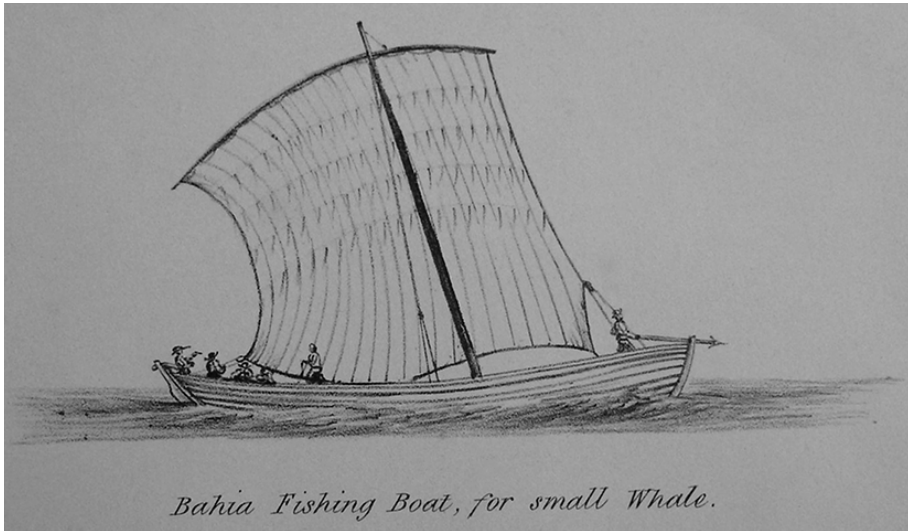


Fig. 4. Bahia fishing boat. Klaus Barthlemess Whaling Collection

About the dismantling of the animals, in the first period, from 1602 to 1612, within the contract with the Biscayans experts, the whale was dismantled and the blubber was melted into oil in temporary bases on land. After that, *armações* – permanent locations equipped with all the necessary appliances for the whale hunt, dismantling and oil processing – were usually set at the entrance of bays and straits, protected from the strong wave action and southern winds (Fig. 5). These also provided sheltered places for breeding whales, facilitating the catch. The first *armações* were set at the entrance of the Bahia Reconcavo and later the activity expanded further south, to Rio de Janeiro, São Paulo and Santa Catarina<sup>56</sup>.

<sup>55</sup> From the Portuguese word for whale: *baleia*.

<sup>56</sup> ELLIS, 1969: 46.

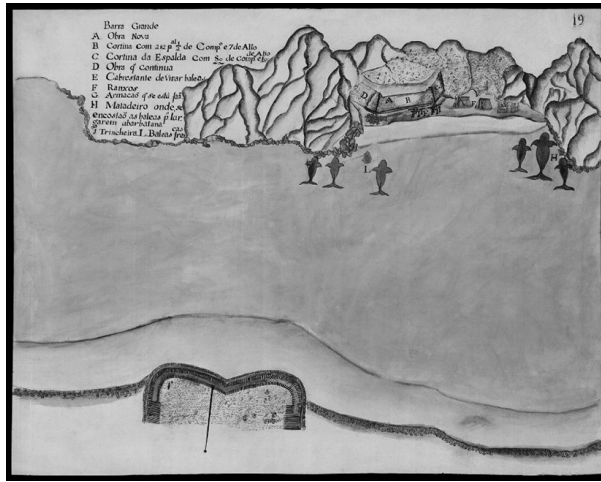


Fig. 5. Whaling Illustration of a whaling *armação* in Mourão, Luís Antônio de Sousa Botelho (1775) *Cartas Topograficas do Continente do Sul e Parte Meridional da America Portuguesa: com as batalhas que o Illmo. e Exmo. Conde de bobadella ganhou aos indios das missoens do Paraguay.* Planta n.º 19: Obras Novas de Fortalezas na Barra de Santos  
Biblioteca Digital Luso-Brasileira <http://bdlb.bn.br/> accessed on 30.07.2015

The various usages of the whales' by-products ranged from food to building houses. Yet, the oil was certainly the most important product extracted from the whale blubber melting. It lightened the houses, sugar mills, fishing vessels during night fisheries and villages. It was also used as a substance to heal rheumatism and other diseases. Whale oil was also the most relevant ingredient used as a binder for construction. From the bones, they built fences for backyards, decoration objects and seats, regularly sold in the markets of *Salvador da Baía*. They were also used as support pieces in fountains and lagoons where women washed clothes. The meat was a minor ordinary product, mostly used to feed the slaves, sold to the women that salted and dried it on the street or distributed to the poor people. In Bahia, a popular believe said that if the whale entrepreneur favoured the poor with humanity and Cristian charity, when dismantling the animal, the yearly hunting would be of great profit, turning into a failure otherwise<sup>57</sup>. On the other side, whale oil profits were used in the reconstruction of Brazilian forts and acquisition of guns and munitions in 1668<sup>58</sup>. Moreover, the whale oil was used to repair the ships of *Carreira da Índia*, and when the whaling season did not succeed as expected, it had an impact on maritime issues and businesses<sup>59</sup>.

With ups and downs related to the success of the hunting and trading of each contracted season, the whaling monopoly in Brazil prevailed until 1801. The profits of this enterprise had an impact on the 16<sup>th</sup> and 17<sup>th</sup> Portuguese centuries overseas and the colonisation of Bahia, not only fostering

<sup>57</sup> ELLIS, 1969: 41-42; CASTELUCCI JUNIOR, 2008: 184.

<sup>58</sup> SERRÃO, 2004: 58.

<sup>59</sup> LAPA, 1968: 71

richness and capital in the territory but also being a factor for the development of that Captaincy and, subsequently, of Brazil<sup>60</sup>.

## FINAL REMARKS – WHALING EVOLUTION AND EARLY MANAGEMENT CONCERNS

By the late 18<sup>th</sup> century, the whaling enterprise in Brazil was living profitable times, displaying a considerable expansion along the coast and the entrepreneurs' families, who held whaling contracts with the Crown, strongly benefitted from Marquis of Pombal's reforms<sup>61</sup>. At the same time, more precisely in 1779, the Royal Academy of Sciences was created in Lisbon. One of its goals was the promotion of the empirical knowledge with public profit and social utility<sup>62</sup>. Within the economic and scientific political agenda, America was considered the most important source of power, given its commercial and maritime expansion. Still, the authors of some works published in the Academy were not completely aware of the industrial progress happening in Europe<sup>63</sup>, in a time where the Iberian crowns were losing territory for the recent French, Dutch and British empires<sup>64</sup>. In fact, at the end of the 18<sup>th</sup> century, other European nations were using the so-called «Brazil Banks» to catch whales<sup>65</sup>. Together with the old practices of an indiscriminate hunt, the killing of calves and females are pointed as one of the major reasons for the decline of the activity's success and profit. Some of these concerns are reported in *Memorias Economicas* of the Royal Academy of Sciences by Manoel Ferreira da Camara<sup>66</sup> and José Bonifácio de Andrada e Silva<sup>67</sup> where a very current terminology is used. For instance, José Bonifácio de Andrada e Silva in his *Memória sobre a pesca da baleia e extração do seu azeite...* shows the first signs of concern with this activity's sustainability. He draws attention to the killing of the calves, stating that 1) the future generation is being diminished, 2) a small whale is not as profitable as an adult, 3) even 2 years-old whales yield just half of the amount of oil, and 4) female whales in the breeding season are skinny and their amount of oil is lower. Silva had State functions and was part of an erudite elite that played a role in the Independence of Brazil. This Memory is particularly relevant as it is marked by a vision of the world founded on the economy of nature, the defence of economic progress and the application of scientific knowledge to the production techniques and the critique of the destructive exploitation of natural resources. Nevertheless, the focus of his thoughts was not the overexploitation of whales but rather the bad and rudimentary way in which they were being exploited, preventing them to create more richness in the future<sup>68</sup>. It is also important to highlight that when discussing the relation between whale mothers and calves,

<sup>60</sup> SILVA, 1964: 224; COMERLATO, 2010: 1136.

<sup>61</sup> BOXER, 1969: 192.

<sup>62</sup> DOMINGUES, 2012: 144.

<sup>63</sup> BOXER, 1969: 196.

<sup>64</sup> DOMINGUES, 2012: 146.

<sup>65</sup> EDMUNSON & HART, 2014: 50

<sup>66</sup> CAMARA, 1789: 344-346.

<sup>67</sup> SILVA, 1790: 395-402.

<sup>68</sup> PÁDUA, 2000: 123.

Silva abandons the objective character of his text, adopting a literary tone, describing whales as having feelings and motivations like humans. This narrative is in line with the questioning of animals' rights and the intrinsic value of nature of the 18<sup>th</sup> and 19<sup>th</sup> centuries<sup>69</sup>. Despite the focus on the economic value of the whales, these reports give interesting insights to rebuild a trajectory of change towards whales use and the beginning of «conservation» or management concerns, a subject that we aim to further investigate.

The Portuguese whaling is still a barely explored topic, punctually referred throughout the Portuguese and international historiography and lacking a dedicated work revealing its main contours. In our opinion, greater attention should be paid to this thematic than hitherto. The whale exploitation in Brazil was subject to the economic dynamics of the royal monopolies established in the colonial context, alike tobacco, *pau-brasil* and, later, gold and diamonds. The circumstantial and instructive character of Basque whaling in the most important Portuguese colony was actually brief, yet transcendent in time<sup>70</sup>. In fact, there are more similarities than differences between the Basque techniques introduced in the early 17<sup>th</sup> century and the whaling techniques that were built upon those in Brazil, which did not change much along the centuries<sup>71</sup>. Except for the search for whales that, as written above, was made from a lookout or *atallaya* in Biscaya, for which we haven't found, so far, any correspondent reference in Brazil, the boat type, the tools, the approach to the animal, the dismantling process, were in everything very similar, and prevailed at least since the 19<sup>th</sup> century<sup>72</sup>.

Reminding the whaling eras established by Reeves and Smith, «Basque Shore» whaling generally involves lookouts on cliffs or other high-elevation position and is characterised by a pursuit of the whales in small open boats, and attack with hand harpoons and lances. Despite the difference, the authors affirm that «shore whaling in Brazil was inaugurated by Basques in 1603» and they «assigned this and ensuing Brazilian primitive shore enterprises to a single operation that extended temporally far beyond the end of the Basque Shore era», being the Brazilian operation the major one outside the North Atlantic<sup>73</sup>.

Regarding the target species, again a similarity seems to exist. As previously said Basque whalers were experts in hunting Right Whales, although the North Atlantic species, and in Brazil the main target was presumably the Southern Right Whale which is, with minor exceptions, identical in appearance and behaviour to the northern species<sup>74</sup>.

The Portuguese played an important role as promoters of whale hunting in Brazil and other Atlantic regions, and not so much in the innovation of whaling techniques<sup>75</sup>. Perhaps we must bear

<sup>69</sup> PÁDUA, 2000: 124.

<sup>70</sup> VÁLDES HANSEN, 2016: 737.

<sup>71</sup> EDMUNSON & HART, 2014: 60.

<sup>72</sup> As described, for instance, by the French merchant Louis François de Tollenare in 1817, who followed at sea the hunting of a whale in Bahia. See TOLLENARE, 1956: 291-294 and EDMUNSON & HART, 2014: 54-55.

<sup>73</sup> REEVES & SMITH, 2003: 7.

<sup>74</sup> REEVES *et al.*, 2008: 194-195. Note from the authors: Humpback Whale (*Megaptera novaeangliae*) and Sperm Whale (*Physeter macrocephalus*) were also hunted, refereed in some works on this thematic, nevertheless, a profound review and analysis about the targeted species in the coast of Brazil is being conducted by our team and will be presented in the future.

<sup>75</sup> BRITO *et al.*, 2017.

in mind that the Portuguese sent to the new territories were mostly farmers<sup>76</sup> and not so much adventurous sea people. Maybe that explains somehow the recurrent presence of the word «teach» in historical sources related to the Basque expertise.

Whaling is the core of our work, where coherence emerges from a maritime activity common to the Atlantic space<sup>77</sup>, with knowledge and techniques being transferred from one region to another, establishing convergent developments in the use of whales overseas and connecting different worlds around a similar marine resource. The increasing intimacy with the marine environment, especially in the early modern era, promoted not only commercial opportunities, curiosity about nature and new cultural forms, but has also changed and impacted ecosystems. And while the economic implications of ecological constraints can sometimes be tracked relatively clearly, reconstructing subtle cultural shifts triggered by changes in the sea requires careful interdisciplinary study of maritime communities and marine environments<sup>78</sup>.

It is broadly accepted that the Portuguese expansion greatly contributed to the human understanding of global navigation and geography, but also of pharmacology, botany and medicine<sup>79</sup>. Science, besides being a source of knowledge, was also an instrument of human control over nature and a way for the State to control natural resources, where science and technique allowed to transform and boost the New World<sup>80</sup>. Whaling in colonial Brazil had a major importance on the economic level to the Portuguese crown and entrepreneurs, but not only that. It had a social impact, whereas the hardest, more difficult and stinking task of dismantling a whale was performed by slaves who received the most undervalued and cheapest whale product, the meat. Furthermore, it is important to stress the cultural value of whaling, as it is a paradigmatic case of knowledge transfer from Europe to the New World, in a place where the hunting of whales was not part of the local culture. Knowledge was assimilated, adapted and constructed over more than three centuries, and is now part of the collective memory and represented in artistic forms as music, paintings and literature<sup>81</sup>. Finally, the scientific input that the knowledge of the whale anatomy and behaviour allowed the most curious and concerned ones, for understanding these giant animals and change their perceptions towards these symbols of evil and bad omen. These were the perceptions that built the knowledge about a marine mammal that was a monster in the ocean and a valuable royal resource at land, or in the words of Rocha Pitta «a useful monster of the sea»<sup>82</sup>.

---

<sup>76</sup> BOXER, 1969: 29.

<sup>77</sup> MORGAN & GREENE, 2009.

<sup>78</sup> BOLSTER, 2008: 46.

<sup>79</sup> WALKER, 2009: 247.

<sup>80</sup> DOMINGUES, 2012: 147.

<sup>81</sup> See for instance the poem of ITAPARICA, Manuel de Santa Maria – *Descrição da Ilha de Itaparica (1704-1768)*. In BRAYNER, Sônia, org. – *A Poesia no Brasil 1*. Rio de Janeiro: Civilização Brasileira, 1981, p. 48-62.

<sup>82</sup> PITTA, 1880: 22.



## SOURCES

- ACOSTA, Joseph de – *The Natural and Moral History of the Indies*. Reprinted from the English translated edition of Edward Grimston, 1604, and edited, with notes and an introduction by MARKHAM, Clements R., ed. – *The Natural History*. London: Hakluyt Society, 1888, vol. I. Books I, II, III and IV.
- \_\_\_\_\_*Historia Natural y Moral de las Indias (1590)*. Edición crítica de Fermín de Pino-Díaz. Madrid: CSIC, 2008. (Colección de acá y de allá, fuentes etnográficas, n.º 2).
- ANCHIETA, Joseph de – *Informação da Província do Brasil para nosso padre (1558)*. In *Cartas, Informações, Fragmentos Históricos e Sermões do Padre Joseph de Anchieta, S. J. (1554-1594)*. Rio de Janeiro: Civilização Brasileira, S. A, 1993. Publicações da Academia Brasileira, II-Historia, Cartas Jesuíticas III.
- CAMARA, Manoel Ferreira da (1789) – *Ensaio de Descrição Física, e Economica da Comarca dos Ilheos na America*. In *Memorias Economicas da Academia Real das Sciencias de Lisboa*. Lisboa: Officina da Academia Real das Sciencias, Tomo I, p. 304-350.
- CARDIM, Fernão – *Tratados da terra e gente do Brasil (1540?-1625)*. Introd. Rodolfo Garcia. Belo Horizonte: Ed. Itatiaia; São Paulo: Ed. da Universidade de São Paulo, 1980.
- ITAPARICA, Manuel de Santa Maria – *Descrição da Ilha de Itaparica (1704-1768)*. In BRAYNER, Sônia, org. – *A Poesia no Brasil I*. Rio de Janeiro: Civilização Brasileira, 1981, p. 48-62.
- LAVAL, Francisco Pyrard de – *Viagem de Francisco Pyrard, de Laval, contendo a noticia de sua navegação ás Indias Orientais, ilhas de Maldiva, Moluco, e ao Brazil, e os diferentes casos, que lhe aconteceram na mesma viagem nos dez anos que andou nestes paizes (1601-1611)*. Versão portuguesa correcta e acrescentada com algumas notas por Joaquim Heliodoro da Cunha Rivara. Nova Goa: Imprensa Nacional, 1858.
- PITTA, Sebastião da Rocha (1880) – *História da América Portuguesa...* Lisboa: Editor Francisco Arthur da Silva.
- SILVA, José Bonifácio de Andrada e (1790) – *Memória sobre a pesca da baleia e extração do seu azeite, com algumas reflexões a respeito das nossas pescarias*. In *Memorias Economicas da Academia Real das Sciencias de Lisboa*. Lisboa: Academia Real das Sciencias, Tomo II, p. 388-412.
- SOUSA, Gabriel Soares de – *Tratado Descriptivo do Brasil em 1587 (1587)*. Edição de Francisco Adolpho de Varnhagen. 2.ª ed. Rio de Janeiro: Typographia de João Ignacio da Silva, 1879.
- TOLLENARE, L. F. de (1956) – *Notas Dominicais tomadas durante uma viagem em Portugal e no Brasil em 1816, 1817 e 1818*. Salvador: Livraria Progresso Editora.

## REFERENCES

- AGUILAR, Alex (1986) – *A Review of Old Basque Whaling and its Effect on the Right Whales (Eubalaena glacialis) of the North Atlantic*. «Report of the International Whaling Commission», Special Issue 10. Cambridge: International Whaling Commission, p. 191-199.
- ALMAÇA, Carlos (2002) – *A zoologia pré-lineana no Brasil*. Lisboa: Museu Bocage, Museu de História Natural.
- AMORIM, Inês (2009) – *The Evolution of Portuguese Fisheries in the Medieval and Early Modern Period. A Fiscal Approach*. In SICKING, Louis; ABREU-FERREIRA, Darlene, eds. – *Beyond the Catch. Fisheries of the North Atlantic, the North Sea and the Baltic, 900-1850*. Leiden: Brill, p. 245-279.
- BARKHAM, Selma Huxley (1984) – *The Basque Whaling Establishments in Labrador 1536-1632 – A Summary*. «Arctic», vol. 37, n.º 4. [S.l.]: Arctic Institute of North America, p. 515-519.
- BARTHELMESS, Klaus (2009) – *Basque and whaling in pictures, 16<sup>th</sup>-18<sup>th</sup> century. Itsas Memoria*. «Revista de Estudios Marítimos del País Vasco», n.º 6. Donostia-San Sebastián: Untzi Museoa-Museo Naval, p. 643-667.
- BOLSTER, W. Jeffrey (2008) – *Putting the Ocean in Atlantic History: Maritime Communities and Marine Ecology in the Northwest Atlantic, 1500-1800*. «The American Historical Review», vol. 113, n.º 1. Oxford: Oxford University Press, p. 19-47.
- BOXER, Charles R. (1969) – *O Império Marítimo Português, 1415-1825*. Lisboa: Edições 70.

- BRITO, Cristina (2009) – *Os Mamíferos Marinhos nas Viagens Marítimas pelo Atlântico entre os Séculos XV e XVIII. A Evolução da Ciência e do Conhecimento*. Lisboa: Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa. Tese de doutoramento.
- \_\_\_\_ (2011) – *Medieval and early modern whaling in Portugal*. «Anthrozoös», vol. 3, n.º 24. Oxford: Berg, p. 287-300.
- BRITO, Cristina; JORDÃO, Vera (2014) – *A Baleação medieval e no início da era moderna em Portugal: que nos din as fontes históricas?*. «Eubalaena», n.º 14. Nigrán: CEMMA, p. 28-40.
- BRITO, Cristina; VIEIRA, Nina; JORDÃO, Vera; TEIXEIRA, António (2017) – *Digging into our whaling past: Addressing the Portuguese influence in the early modern exploitation of whales in the Atlantic*. In VAZ, Estelita; JOANAZ DE MELO, Cristina; PINTO, Lígia M. Costa, eds. – *Environmental History in the Making. Volume II: Acting*. [S.l.]: Springer International publishing.
- CASTELUCCI JUNIOR, Wellington (2008) – *Pescadores e roceiros: escravos e forros em Itaparica na segunda metade do século XIX, 1860-1888*. São Paulo: Annablume Editora.
- CAZEILS, Nelson (2000) – *Dix siècles de pêche à la baleine*. Rennes: Éditions Ouest-France.
- COMERLATO, Fabiana (2010) – *A baleia como recurso energético no Brasil*. In *Anais do Simpósio Internacional de História Ambiental e Migrações*. Florianópolis: [s. n.], p. 1119-1138.
- COSTA, João Paulo Oliveira e, coord. (2014) – *História da Expansão e do Império Português*. Lisboa: Esfera dos Livros.
- DOMINGUES, Ângela (2012) – *Monarcas, Ministros e Cientistas. Mecanismos de Poder, Governação e Informação no Brasil Colonial*. Lisboa: CHAM. (Coleção Estudos e Documentos, 15).
- EDMUNSON, William; HART, Ian (2014) – *A história da caça das baleias no Brasil: de peixe real a iguaria japonesa*. Barueri: Disal.
- ELLIS, Myriam (1969) – *A baleia no Brasil colonial: feitorias, baleeiros, técnicos, monopólio, comércio e iluminação*. São Paulo: Edições Melhoramento.
- FISCHER-KOWALSKI, Marina; WEISZ, Helga (1999) – *Society as hybrid between material and symbolic realms: Toward a theoretical Framework of society-nature interaction*. In FREESE, Lee, ed. – *Advances in Human Ecology*. [S. l.]: Emerald, vol. 8, p. 215-251.
- FONTAINE, Pierre-Henry (2007) – *Whales and Seals; Biology and Ecology*. Atglen: Schiffer.
- FURTADO, Júnia Ferreira (2008) – *Tropical Empiricism: Making Medical Knowledge in Colonial Brazil*. In DELBOURGO, James; DEW, Nicholas, ed. – *Science and Empire in the Atlantic World*. New York: Routledge.
- HOLM, Poul; BAGER, Maibritt (2001) – *The Danish Fisheries, c. 1450-1800: Medieval and Early Modern Sources and Their Potential for Marine Environmental History*. In HOLM, Poul; SMITH, Tim D.; STARKEY, David J., eds. – *The Exploited Seas: New directions for Marine Environmental History*. St. John's: International Maritime Economic History Association, p. 97-122.
- JENKINS, J. T. (1921) – *A History of the Whale Fisheries*. London: H. F. & G. Whiterby.
- JOHNSON, Harold; SILVA, Maria Beatriz da, coord. (1992) – *O Império Luso-Brasileiro, 1500-1620*. In SERRÃO, Joel; MARQUES, A. H. de Oliveira – *Nova História da Expansão Portuguesa*. Lisboa: Editorial Estampa, vol. VI.
- KENNEY, Robert D. (2009) – *Right whales*. Eubalaena glacialis, E. japonica, and E. australis. In PERRIN, William F.; WÜRSIG, Bernd; THEWISSEN, J. G. M., eds. – *Encyclopedia of Marine Animals*. Second Edition. Burlington: Academic Press.
- LAPA, João Roberto do Amaral (1968) – *A Baía e a Carreira da Índia*. São Paulo: Companhia Editora Nacional. (Coleção Brasileira, 335).
- LOPES, Marília dos Santos (2016) – *Writing New Worlds*. Newcastle upon Tyne: Cambridge Scholars Publishing.
- LÓPEZ FERNÁNDEZ, Alfredo (2014) – *Historia Ambiental Antigua das Baleas do Atlântico Norte*. «Eubalaena», n.º 14. Nigrán: CEMMA, p. 3-17.
- MELVILLE, Herman (1851) – *Moby-Dick; or, The Whale*. London: Harper & Brother, Publishers.
- MORGAN, P. D.; GREENE, J. P., eds. and introd. (2009) – *Introduction: The Present state of Atlantic History*. In *Atlantic History: A critical appraisal*. Oxford: Oxford University Press.
- PÁDUA, José Augusto (2000) – *A Profecia dos Desertos da Líbia: Conservação da natureza e construção nacional do pensamento de José Bonifácio*. «Revista Brasileira de Ciências Sociais», vol. 15, n.º 44. São Paulo: ANPOCS, p. 119-142.

- PAIVA, Melquiades Pinto (1969) – *Uma hipótese histórica – A caça do cachalote por indígenas Cearenses*. «Revista do Instituto do Ceará», tomo LXXXII. Fortaleza: Imprensa da Universidade Federal do Ceará, p. 95-98.
- PAZ, Marcelo de Oliveira (2015) – *Companhia da Pescaria das Baleias nas Costas do Brasil (1765-1801): a caça ao leviatã dos mares*. Lisboa: Faculdade de Letras da Universidade de Lisboa.
- PLUMB, John Harold (1969) – *Introdução*. In BOXER, Charles R. – *O Império Marítimo Português 1415-1825*. Lisboa: Edições 70, p. 11-17.
- POLÓNIA, Amélia; BRACHT, Fabiano; CONCEIÇÃO, Gisele Cristina da (2016) – *Introdução*. In POLÓNIA, Amélia; BRACHT, Fabiano; CONCEIÇÃO, Gisele Cristina da; PALMA, Monique – *História e Ciência. Ciência e Poder na Primeira Idade Global*. Porto: Faculdade de Letras da Universidade do Porto, p. 5-8.
- REEVES, Randal R. (2002) – *The origins and character of “aboriginal subsistence” whaling: a global review*. «Mammal Review», vol. 2, n.º 32. London: The Mammal Society; Hoboken: Wiley, p. 71-106.
- REEVES, Randal R.; SMITH, Tim D. (2003) – *A taxonomy of world whaling: operations, eras, and data sources*. «Northeast Fisheries Science Center Reference». Doc. 03-12.
- \_\_\_\_ (2006) – *A taxonomy of world whaling: Operations and eras*. In ESTES, James A.; DEMASTER, Douglas P.; DOAK, Daniel F.; WILLIAMS, Terrie M.; BROWNELL Jr., Robert L., eds. – *Whales, whaling, and ocean ecosystems*. London: University of California Press, p. 82-101.
- REEVES, Randal R., STEWART, Brent S., CLAPHAM, Phillip J., POWELL, James A. (2008) – *Guide to Marine Mammals of the World*. New York: Alfred A. Knopf.
- RIBEIRO, João Adriano (1998) – *A pesca da baleia na Madeira*. «Historia», n.º 139. [S.l.: S.n.], p. 22-27.
- SALVADOR, Vicente do – *História do Brasil (1627)*. Rio de Janeiro: Typ. de G. Leuzinger & Filhos, 1889.
- SERRÃO, Joaquim Veríssimo (2004) – *O Tempo dos Filipes em Portugal e no Brasil (1580-1668)*. Lisboa: Colibri.
- SILVA FILHO, Wellington Bernardelli (2016) – *Terapêutica e flora brasílica no contexto da farmácia portuguesa do século XVIII*. In POLÓNIA, Amélia; BRACHT, Fabiano; CONCEIÇÃO, Gisele Cristina da; PALMA, Monique – *História e Ciência. Ciência e Poder na Primeira Idade Global*. Porto: Faculdade de Letras da Universidade do Porto, p. 122-141.
- SILVA, José Pinheiro da (1964) – *A Capitania da Baía (Subsídios para a história da sua colonização na segunda metade do século XVII)*. Coimbra: Faculdade de Letras da Universidade de Coimbra.
- SZABO, Vicki Ellen (2008) – *Monstrous fishes and the mead-dark sea: Whaling in the medieval North Atlantic*. Leiden: Brill, vol. 35. (The Northern World).
- VALDÉS HANSEN, Felipe (2010) – *Los Balleneros en Galicia (Siglos XIII al XX)*. A Coruña: Fundación Pedro Barrié de la Maza.
- \_\_\_\_ (2016) – *Balleneros Vascos en Brasil*. «Itsas Memoria. Revista de Estudios Marítimos del País Vasco», vol. 8. San Sebastián: Untzi Museoa – Museo Naval, p. 725-740.
- VIEIRA, Nina; BRITO, Cristina (2017) – *Brazilian manatees (re)discovered: early modern accounts reflecting the overexploitation of aquatic resources and the emergence of conservation concerns*. «International Journal of Maritime History», vol. 29, n.º 3. [S.l.]: International Maritime History Association; London: SAGE, p. 513-528.
- WALKER, Timothy D. (2009) – *Acquisition and Circulation of Medical Knowledge within the Early Modern Portuguese Colonial Empire*. In BLEICHMAR, Daniela; DE VOS, Paula; HUFFINE, Kristin; SHEEHAN, Kevin, ed. – *Science in the Spanish and Portuguese Empires, 1500-1800*. Stanford: Stanford University Press, p. 247-270.
- WEISZ, Helga; CLARK, Eric (2011) – *Society-nature coevolution: interdisciplinary concept for sustainability*. «Geografiska Annaler: Series B, Human Geography», vol. 93, n.º 4. Lund: Swedish Society for Anthropology and Geography; Hoboken: Wiley, p. 281-287.
- WINIWATER, Verena (2003) – *Approaches to Environmental History: A Field Guide to Its Concepts*. In SZABÓ, Péter; LASZLOVSZKY, József, ed. – *People and Nature in Historical Perspective*. Budapest: Central European University, Department of Medieval Studies & Archaeolingua, p. 3-22.