

PART 3 –

**POLICIES, MANAGEMENT
AND CONSERVATION**

CHAPTER SIX

AQUATIC ANIMALS, NOW AND THEN: APPROPRIATION OF NATURE IN PORTUGUESE AMERICA AND EARLY NOTIONS OF OVEREXPLOITATION AND HUMAN IMPACTS

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INTRODUCTION

Aquatic animals have always been an inseparable part of human history. Inhabitants of the ocean and freshwater systems, they were considered major resources, supporting human subsistence and trading activities. They played a key role in the building of societies, as well as in the structuring of great empires. Aquatic beings have always been key triggers of new geographic discoveries and peoples' displacements across territories, and the sea was a driving force in the search for creative solutions (Zuppa, 2001, 65). Historical sources have provided valuable insights into the multiple strategies adopted by different animal species to adapt to changes in their natural habitats, with specific references to freshwater and marine animals in a wide variety of contexts. This enables us to rewrite the histories of coastal and oceanic spaces in which people are inevitably also involved (Bolster, 2006). Oysters, shells, pearls (e.g. Warsh, 2018), small, large and flying fish, sharks, turtles, manatees, whales, seals and hippos, as well as the use or consumption of their by-products – such as meat, skin, teeth, fur, oil and ambergris (e.g. Brito *et al.*, 2015) – are a consistent presence in the history of the intercultural relations of the modern Atlantic world.

Whales inhabit all oceans. By the end of the Middle Ages, many Europeans living by the sea would probably have been familiar with them.

Together with some types of fishing, whaling was the most extensive form of exploitation of a living resource (Reeves & Smith, 2003) and it was probably the main biomass removal from the ocean at that time, as far as marine mammals are concerned.

Whale exploitation started with the first human settlements in coastal areas, as early as pre-historical times, across different regions and ecosystems of the globe (Reeves & Smith, 2006, 82), and its economic significance in history is well documented, mainly the American whaling type.

Throughout history, whaling practices have been represented in several writing, visual and artistic formats (Brito, 2016). In the Northeast Atlantic, most coastal species were gathered and/or hunted off the Iberian coast since at least the 11th century, as testified by both written sources and archaeological remains along the Portuguese coast. This is evidenced by the use of whales' bones, meat and blubber during the period of the Islamic occupation of the Iberian territory (Pereira, 2015, 1106) and the medieval and early modern ages (Brito, 2011; Teixeira *et al.*, 2014).

The whale, a 'royal fish' in medieval Europe, was, in fact, an important source of protein and oil for lighting (Szabo, 2008). In the context of the Portuguese overseas expansion, whales escorted the sea fleets; maritime travel reports described them mostly as monsters and symbols of bad omens at sea. However, on land, regardless of the territory, the Portuguese considered whales a very useful resource (Brito *et al.*, 2016).

From 1614 to 1801, whaling became a monopoly of the crown, giving high profits to the Portuguese Crown and its entrepreneurs, in good hunting years. And, in Brazil, this was an important activity, which significantly contributed to the settlement of the Portuguese in South America (Ellis, 1969; Vieira, 2018).

Unlike whales, manatees do not inhabit European waters. The three different species found on the coasts of West Africa and Central and South America were unknown to the Portuguese and Spanish travellers and explorers until the early modern period. Thus, they easily became part of a group of tropical creatures which populated the European imaginary about a New World and an all-new set of fauna possibilities (Brito, 2016).

Pre-Columbian indigenous communities across the Americas used manatees for food and the production of everyday objects and war artefacts (e.g. O'Donnell, 1981) and manatee meat was offered by locals to Europeans upon their first contacts. Foreigners appropriated this local novelty – and its multiple uses – as a result of the observation of local practices and assessment of indigenous knowledge, following a progressive epistemic interaction with the indigenous communities. It soon became clear to Europeans that this large, herbivorous and slow-moving

aquatic mammal was easy to capture and a potentially interesting commercial resource. Even though their exploitation was dependent on local expertise, manatees quickly turned into a common and valuable food and trading item, exploited by seamen and explorers (Vieira & Brito, 2017), pirates and settlers (e.g. Little, 2007, 132-133; Wheat, 2016, 201).

Whales and manatees became one of the main subjects of management issues, which started emerging at the end of the 18th century. This followed two centuries of continuous exploration, where indigenous experience, combined with imperial authority and technical capacity for the extraction of living resources, led to the extirpation of some populations. The appropriation of these animals as exploitable resources was a common business. Yet, on the advent of their disappearance, concerns eventually rose.

In this chapter we aim to address the relationships between humans and non-humans, tracing a history of the appropriation, use and commercialisation of whales (Order Cetacea) and manatees (Order Sirenia) in Portuguese America in the late 18th century. The stories about these particular aquatic animals are not often included in historiography, and this environmental history perspective may contribute to the reconstruction of a new historicity of the ocean. For this purpose, we will use some of the documents included in *Memórias Economicas*, a 5-volume collection of essays published in the 18th century by the Royal Academy of Sciences of Lisbon, as well as some of the Portuguese works resulting from the *Viagem Filosófica* to Brazil in 1783-1792. In this way, we intend both to identify the connection between the process of the overexploitation of nature and Portuguese political and economic strategies, and to disclose historical information on the impacts of human activities and dominance over non-human animal populations and ecosystems.

DOMINGOS VANDELLI AND THE ECONOMIC EXPLOITATION OF AMERICAN AQUATIC ANIMALS

Consistent with the 18th century European Enlightenment movement, the creation of the Academy of Sciences (later the Royal Academy of Sciences) in Lisbon in 1779 contributed to the development of a scholarly and scientific elite in Portugal. The Academy proposed an intellectual movement for the promotion of the State and its economy, which, in addition to educating the people, would allow Portugal to put an end to a long philosophical, pedagogical and scientific isolation from Europe (Munteal Filho, 1993, in Marques, 2005). Alongside the reform of the University of Coimbra, the foundation of the Academy aimed at demonstrating the will

and commitment of Portuguese rulers to adopt and invest in new policies in the European framework.

This was the context at the time Domenico Vandelli arrived in Portugal in 1764. Vandelli was a prominent figure in the field of scientific and educational reforms (Vaz, 2002). He had been invited by the Portuguese King, in 1768, to plan and develop the Royal Botanical Garden of Ajuda, in Lisbon, of which he became director in 1791 after being a professor at the University of Coimbra between 1772 and 1791 (Cabral, 2018, 5).

In his works on natural history, he drew attention to the importance of natural products and the benefits of their economic exploitation. In this context, he referred specifically to the under-exploitation of aquatic animals in the Portuguese territories of Africa and South America. According to him, at a time when other nations benefited from the abundance of whales in the South Atlantic, Portugal needed to invest in new factories to ensure the exploitation of this natural resource for its own benefit (Vandelli, 1798a, 191).

Given the decrease of the North Atlantic whales' populations, the inhabitants of New England had begun to explore whaling on the coast of Africa and West Atlantic Islands since the early 1760s. By replacing oar-propelled whaleboats with ocean-going sloops and small brigs, they were able to process whale oil on board, producing an oil with better quality than the whale fat stored in barrels (Alden, 1964). Therefore, knowing about sperm whales' (*Physeter macrocephalus*) occurrence off the coast of Brazil in 1773 (Alden, 1964; Hart & Edmundson, 2017), the number of foreign vessels increased considerably on that coast, most probably constituting one of the main reasons for both the ruin of whaling in Brazil and the reduction of local populations of whales (Correa, 1820, in Araujo, 1822, 295).

Considering this situation as well as the wide range of aquatic animals with potential economic benefits (whales, manatees, turtles and even hippopotamuses), Vandelli defended the position that Portugal needed to invest in the modernisation of existing factories and in the construction of new ones to guarantee the exploitation and commercialisation of these resources, which should be used as profitable assets (Vandelli, 1789b, 235-236).

WHALING PRACTICES IN THE *MEMORIAS ECONOMICAS*

In line with Vandelli's proposals, Manoel Ferreira da Camara, a Brazilian engineer and politician, wrote the first "*Ensaio de Descrição Física, e Economica da Comarca dos Ilheos na America*" in 1789 (Camara, 1789),

later included in the *Memorias Economicas*, in which he defended the urgency of investing not only in agricultural products, but also in fishery products, namely whale and turtle hunting. With respect to whales, Camara lists several mistakes related to the killing of the animals and oil processing methods. He points out that “whale fishery in Brazil is subject to infinite errors” and identifies what he believes could contribute to a delay in the development of whaling activities and cause a “greater future ruin” of the sector. Among these, he lists the process of the removal of fat with a significant amount of waste; the melting of fat at high temperatures, resulting in a low quality oil; and finally, the indiscriminate hunting of females and calves, which diminished the number of females and also resulted in a low quality oil, as the oil of the calves was worst (Camara, 1789, 344-346). It is evident to this author that these methods somehow unbalanced the whales’ population and the female-male ratio, consequently not guaranteeing the sustainable and continued exploitation of the resource in the long run.

The emotionally bonded relationship between the cetaceans’ mother and calf had been already noticed in Classical Antiquity (e.g. Aelian, 1958) and was also reported by the first Portuguese naturalists. Frei Vicente do Salvador (1627, 171), for example, refers to this surprising relationship, emphasising that even after being harpooned, the mother “does not separate from her son”. At the time, he probably did not know that harpooning the mother first was a deliberate act, a whaling technique from the Basque whaling culture that persisted in Brazil over time. Yet, unlike Frei Vicente do Salvador, Camara was aware of the whaling methods and their negative consequences and was in a position to provide some suggestions to avoid them:

1. Try to kill a larger number of males, and find a way to kill the females, without reducing and eradicating the offspring; 2. Dissect the whale, if possible, in the water, making it strand, extracting every unctuous part, which is easy to do; and when it is not possible to do this with all whales already caught, I believe it is a better solution to salt everything that cannot be melted, than to loose it; (...) 3. the biggest disadvantage in the burning of the oil is its waste together with the greaves, leaving out the oil boiled in the water (...) making the oil more clear, clean and without a suffocative smell. (Camara, 1789, 346)

Camara synthesised and made public issues that were already known to the colonial authorities. The Governor of the Captaincy of São Paulo, Luís António de Sousa Botelho Mourão, had referred to the number of whales killed, the ways of extracting fat and the oil extraction process. In 1766, he

requested the construction of a whale-processing station closer to where the animals were killed, so that they would not deteriorate on the way to the existing whaling station (Mourão, 1766, 77-79). The whales were cut into pieces and transported in very slow canoes and boats, and this drew his attention to the uselessness of killing many whales, which were to be wasted, as they could not be used in good time. Accordingly, it would have been far more convenient “to kill two a day and use them, than to kill four and lose everything for lack of time” (Mourão, 1766, 80-81). We are not sure if this is evidence of the growing notion of sustainable use. But it is certainly a perception of the discarding and waste of resources, which is not necessary and should be avoided. It was probably following this request that the *Armação da Barra Grande* was built. One of the first representations of this *Armação* (Figure 1) shows whales – probably Southern Right Whales (*Eubalaena australis*) – of different sizes, suggesting the possible presence of mothers and calves.

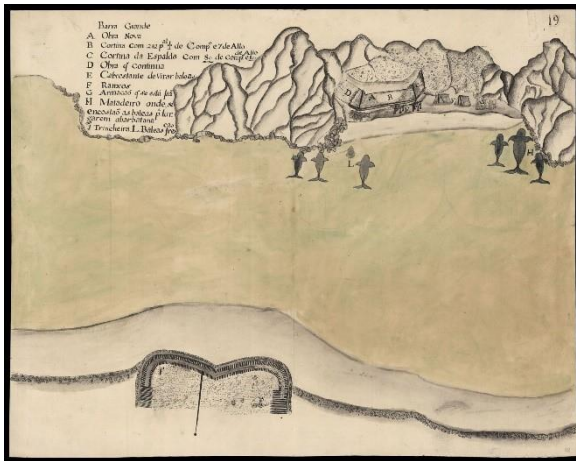


Figure 1. Plan of *Barra Grande* in *Cartas topograficas do Continente do Sul e parte Meridional da America Portuguesa: com as batalhas que o Illmo. e Exmo. Conde de Bobadella ganhou aos indios das missoens do Paraguay*, 1775. This is one of the few representations of the whaling industry and whales in Brazil. National Library of Brazil. Available at http://objdigital.bn.br/acervo_digital/div_cartografia/cart1033420/cart1033420.pdf (last accessed 30 July 2015).

The publication of the *Memorias Economicas* must have had a great impact, with a second volume released in 1790. Therein stands out a memoir written by José Bonifácio de Andrade e Silva, a very important Brazilian naturalist and politician (cf. Pádua, 2000). The 25-page text entitled “*Memória sobre a Pesca das Baleas, e Extração do seu Azeite; com algumas reflexões a respeito das nossas Pescarias*” (Silva, 1790) is one of the few documents on modern whaling in Brazil, and includes detailed information on the methods of hunting animals and processing oil.

Interestingly, a draft of this memoir, with a slightly different title, was first given to the whaling contractor in Brazil (Ellis, 1969). This may, to some extent, be understood as a way of understanding the existence of an articulation between scientific and empirical knowledge, natural history and economics.

Silva wrote this memoir as a young scholar, already committed to the study of nature and the discovery of natural laws on behalf of a better life for people and to indicating practical ways for economic progress (Amzalak, 1941, 6; Caldeira, 2002, 21).

Like other authors, he highlighted the major consequences of killing whales’ calves because it would result in a decrease in the “future generation” of whales. He reported whales only give birth to a calf every two years and questioned the benefits of using small calves and nursing mothers, as the amounts of oil obtained were smaller than those obtained from adults. Moreover, this would cause “irreparable damage” to the whale populations, resulting in an unbalanced female/male ratio.

As with Camara, the “pernicious practice” of killing breast-feeding whales was a central issue in Silva’s essay, and it was mentioned as one of the main reasons for the decline of the business and “the total ruin of such important fishery” (Silva, 1790, 399).

DOLPHINS AND MANATEES IN THE VIAGEM FILOSOFICA

The *Viagem Filosofica*, led by Alexandre Rodrigues Ferreira in Brazil (1783-1792), resulted in a huge collection of natural objects that ended up dispersed in several countries. Vandelli was the mentor of the expedition, and thus the first to receive the materials sent from Brazil, and he enjoyed the privileged position of exchanging specimens from Ferreira’s campaign with other naturalists and invited foreign academics to visit Portugal and examine the collections.

Among the several species sent to Portugal by Ferreira, Vandelli received two specimens of dolphins from Mato Grosso and the Amazon (Simon, 1983). One was the Amazon River Dolphin *Inia geoffrensis*,

known as *boto*; the other was *Sotalia pallida*, currently known as *Sotalia fluviatilis* or *tucuxi*, which is probably represented by Ferreira in his expedition watercolours (Figure 2).

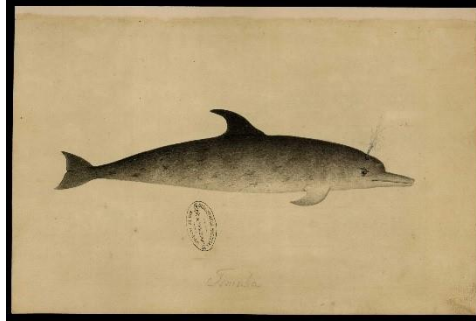


Figure 2. Drawing of a dolphin with the legend “Toninha”, presumably from the *Viagem Filosófica* of Alexandre Rodrigues Ferreira to Brazil (21A,1.004 n°029-Manuscritos). National Library of Brazil. Available at http://objdigital.bn.br/acervo_digital/div_manuscritos/mss1255460/mss1255460_29.jpg, (last accessed 31 July 2015).

Most of the specimens collected were identified according to the Linnaeus classification system and are described in *Observações gerais e particulares sobre a classe dos mamíferos no território dos Rios Amazonas, Negro e Madeira* (Ferreira, 1972a). Therein, Ferreira provided information on the physical characteristics of the different species, their habitat and reproduction particularities, as well as how local populations harvested these animals for economic, medicinal and food purposes. The text is a very detailed report on mammals with information on 65 species observed during the expedition, including the *boto* dolphin locally known as *pirá-iaguara* and erroneously classified by Ferreira as *Delphinus delphis*. Describing the *boto*, Ferreira felt the need to explain the following: “it looks like fish, but in fact it is not, according to the very distant characteristics of this class” and that there were “two distinct varieties: large and small, which they call *tucuxi*”, whose liver and fat could be used to produce a large amount of oil for lighting (Ferreira, 1972a, 201-2).

Although manatees were also introduced in his “General observations” (Ferreira, 1972a) with a brief description and illustration (Fig. 3), they would be the subject of another manuscript entitled *Memória sobre o peixe-boi e o uso que lhe dão no Estado do Grão-Pará* (Ferreira, 1972b). Ferreira is very likely to have shipped at least seven manatees (*Trichechus manatus*) from Brazil to Lisbon (Ferreira, 1794, fl. 3v). In this manuscript,

he describes this animal, methods for its capture and its uses. Ferreira stresses that all animals were harpooned, with no distinctions made for size or age.

They harpoon them in all sizes, without distinction of age. So, it should not cause surprise that it is rare in some lakes where we cannot find them for several years. (Ferreira, 1972b, 62)

Pregnant females were captured and females in oestrus were harpooned first to attract males (1972b, 59). Moreover, calves were harvested to ease the capture of their mothers, leading the author to notice that the inexistence of a policy concerning these practices would cause the number of these animals to diminish.

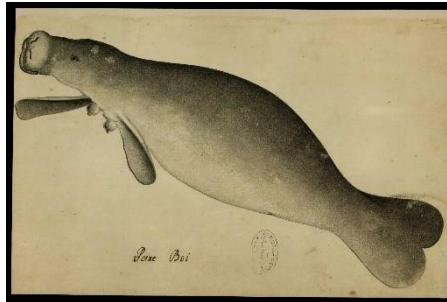


Figure 3 – Illustration of a manatee, known in Brazil as *peixe-boi* or, in Tupi, *iuarauá*, from the *Viagem Filosofica* of Alexandre Rodrigues Ferreira to Brazil (21A,1,004 n°011–Manuscritos). National Library of Brazil. Available at http://objdigital.bn.br/acervo_digital/div_manuscritos/mss1255460/mss1255460_11.jpg, (last accessed 30 July 2015).

WHALES AND MANATEES: DIALOGUES FOR THE CONSERVATION OF MARINE MAMMALS

As Tim Ingold (2000, 61) puts it, “just as humans have a history of their relationships with animals, animals also have a history of their relations with humans”. Aquatic animals have a shared history with humans. They played their part as agents in the construction of practices regarding the use, exploitation, knowledge, management and conservation of nature. In this respect, it is clear that aquatic animals and their exploitation played an important role in Portuguese Colonial America and in Portugal’s scientific, economic and political agenda for those territories.

All the above-mentioned species are currently facing the risk of extinction due to centuries of intensive overexploitation (e.g. Ellis, 2003) and are under national and international protection and conservation acts. But at some moment in the past, the exploitation of aquatic animals was perceived as an action that needed management, ensuring its continuity as a profitable economic resource.

Despite their focus on the economic value of animals, the mentioned works provide us with interesting insights to rebuild the trajectory of changes in attitudes towards and uses of marine mammals (Pádua, 2002; Vieira, 2018).

Silva's work is marked by a worldview based on the economy of nature. Yet, when writing about these animals, he abandons his objective analysis, adopting a literary tone, describing whales as having feelings and motivations like human beings (Pádua, 2000). A sense of the author's emphatic feelings towards the animals emanates from his text. Nevertheless, he focuses on rudimentary forms of exploitation, which would, in the long run, jeopardise the future of those species as a resource. The text reflects both the idea of progress, enhanced by the application of scientific knowledge and new technologies, and the criticism of destructive exploitation practices. This is in line with the questioning of animal rights and the intrinsic value of nature of the 18th and 19th centuries (Pádua, 2000; 2004).

With respect to Ferreira, his attention focuses mainly on the highly predatory fishing methods used in the Amazon freshwater ecosystem, a region currently under great economic pressure. Arguing that local economies and natural populations will be threatened by these methods, Ferreira briefly presents his political awareness of nature conservation (Pádua, 2004; Vieira & Brito, 2017).

In fact, by the late 18th century, these authors were already using a terminology we now relate to the protection of species, such as the expression “future generations”, which was one of the flags of 20th-century conservation and environmental sustainability activism. The ideas of an over-exploitation of animals and the negative results of humans' impact on the environment very likely emerged for the first time in Brazil in this period. Today, the fact that “whalers, fishermen, [hunters], and sealers have systematically destroyed the fisheries that sustained them (...) [and] could not pass on their legacy to those who followed” is widely acknowledged (Ellis, 2003, 7). We do not know the impact of these authors' concerns. But we do know that, over time, dissimilar visions and life experiences have contributed to changing the dialogue between human communities and nature (Zuppa, 2001, 87).

Hunting may be observed from different angles and concepts, it may be conducted by different peoples, and ultimately it may set the tone of the human relationship with the environment (The Animal Studies Group, 2006; Miller, 2007). The dominance of humans over nature has indeed been a process marked by overexploitation, the killing of animals being a structural feature of all human-animal relations that led to the extinction of species (The Animal Studies Group, 2006). If we take a glimpse at the current conservation status of some whales and manatees, we will find them variously classified from the ‘Least Concern’ category to ‘Critically Endangered’. And, thus, we can read the consequence of the long-term exploitation of aquatic mammals. The impacts of this interaction affected the activities that relied on wildlife populations, and simultaneously left a footprint on natural populations and ecosystems. By addressing specific case studies, we realise that somehow, somewhere, the worlds of economy and aquatic animals overlapped, constructing the beginning of a new dialogue about nature, between people and non-human beings.

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REFERENCES

- Aelian, C. 1958. *On the characteristics of Animals*. Translation by A. F. Scholfield. London: William Heinemann; Cambridge, MA: Harvard University Press.
- Alden, D. 1964. “Yankee Sperm Whalers in Brazilian Waters, and the Decline of the Portuguese Whale Fishery (1773-1801)”, *The Americas*, Vol. 20 (3): 267-288.
- Amzalak, M. B. 1941. “José Bonifácio de Andrada e Silva, economista”, *Separata de Boletim da Academia das Ciências de Lisboa*, Vol. XIII, Lisboa.

- Araujo, J. S. A. P. 1822. *Memórias históricas do Rio de Janeiro*. Tomo IX. Rio de Janeiro: Na Imprensa Nacional.
- Bolster, W. J. 2006. "Opportunities in Marine Environmental History", *Environmental History*, Vol. 11 (3): 567-597.
- Brito, C. 2011. "Medieval and Early Modern Whaling in Portugal", *Anthrozoös*, Vol. 24 (3): 287-300.
- Brito, C. 2016. *New Science from Old News: Sea monsters in the early modern Portuguese production and transfer of knowledge about the natural world*. Scientia et Historia, Vol. 1. Lisboa: Escola de Mar.
- Brito, C., Jordão, V., & Pierce, G. 2015. "The environmental history and economy of ambergris: Portuguese sources contributing to study the trade of a global commodity", *The Journal of the Marine Biological Association of the United Kingdom*, Vol. 96 (3): 585-596.
- 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: C. Joanaz de Melo, E. Vaz, & L. M. C. Pinto (Eds.), *Environmental History in the Making. Volume II: Acting* (pp. 33-47). Springer International Publishing.
- Cabral, J. 2018. *A História Natural de Portugal em Domingos Vandelli*. Lisboa: Edições Colibri.
- Caldeira, J. 2002 *José Bonifácio de Andrada e Silva*. São Paulo: Editora 34.
- Camara, M. F. da. 1789. "Ensaio de Descrição Física, e Economica da Comarca dos Ilheos na America". In: *Memorias Economicas da Academia Real das Sciencias de Lisboa...* Vol. I (pp. 304-350). Lisboa: Na Officina da Academia Real das Sciencias.
- Ellis, M. 1969. *A baleia no Brasil colonial: feitorias, baleeiros, técnicas, monopólio, comércio, iluminação*. São Paulo: Edições Melhoramento.
- Ellis, R. 2003. *The Empty Ocean*. Washington D.C: Island Press/Shearwater Books.
- Ferreira, A. R. 1972a. "Observações gerais e particulares sobre a classe dos mamíferos no território dos Rios Amazonas, Negro e Madeira". In: J. C. M. Carvalho (Ed.), *Viagem Filosófica pelas capitânicas do Grão Pará, Rio Negro, Mato Grosso e Cuiabá* (pp. 67-204). Rio de Janeiro: Conselho Federal de Cultura.
- Ferreira, A. R. 1972b [1786]. "Memória sobre o peixe-boi e do uso que lhe dão no estado do Grão-Pará". In: J. C. M. Carvalho (Ed.), *Viagem Filosófica pelas capitânicas do Grão Pará, Rio Negro, Mato Grosso e Cuiabá* (pp. 59-65). Rio de Janeiro: Conselho Federal de Cultura.

- Ferreira, A. R. 1794. *Inventário geral e particular de todos os produtos...* Coleção Alexandre Rodrigues Ferreira, ABN v.72, p.56. CEHB Nº11.301. Cat. ARF nº18.
- Hart, I. & Edmundson, W. 2017. *A History of Whaling in Brazil. From royal fish to Japanese delicacy*. Herefordshire: Pequena.
- Ingold, T. 2000. "From trust to domination: an alternative history of human-animal relations". In: T. Ingold (Ed.), *The perception of the environment: essays on livelihood, dwelling and skill* (pp. 61-76). London: Routledge.
- Little, B. 2007. *The Buccaneer's Realm: Pirate life on the Spanish Main, 1674-1688*. Washington D.C.: Potomac Books, Inc.
- Marques, V. R. B. 2005. "Escola de homens de ciências: a Academia Científica do Rio de Janeiro, 1772-1779", *Educar em Revista*, Vol. 25: 39-57.
- Miller, S. W. 2007. *An Environmental History of Latin America*. Cambridge: Cambridge University Press.
- Mourão, L. A. S. B. 1766 (1896). *Publicação Oficial de Documentos Interessantes para a História o Costumes do S. Paulo. Vol. XXIII. Correspondência do Capitão-General Dom Luiz Antonio de Souza Botelho Mourão 1766-1768*. São Paulo: Arquivo do Estado de São Paulo.
- O'Donnell, D. J. 1981. *Manatees and Man in Central America*. PhD Dissertation. University of California, Los Angeles.
- Pádua, J. A. 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 (44): 119-142.
- Pádua, J. A. 2004. *Um sopro de destruição: pensamento político e crítica ambiental no Brasil escravista, 1786-1888*. 2nd edition. Rio de Janeiro: Jorge Zahar Ed.
- Pereira, V. 2015. "Evidências Zooarqueológicas do mundo rural islâmico – O caso de Portela 3 (S. B. de Messines)". In: *Actas do VII Encontro de Arqueologia do Sudoeste Peninsular* (pp. 1097-1113). VII Encontro de Arqueologia do Sudoeste Peninsular, Aroche, Serpa, 29 November-1 December 2013.
- Reeves, R. R. & Smith, T. D. 2003. "A taxonomy of world whaling: operations, eras, and data sources", *Northeast Fish. Sci. Cent. Ref. Doc.* 3-12, 28 p. Available from: National Marine Fisheries Service, 166 Water St., Woods Hole, MA 02543-1026.
- Reeves, R. R. & Smith, T. D. 2006. "A taxonomy of world whaling: Operations and eras". In: J. A. Estes, D. P. Demaster, D. F. Doak, T. M. Williams & R. L. Brownell Jr. (Eds.), *Whales, whaling, and ocean ecosystems* (pp. 82-101). London: University of California Press.

- Salvador, F. V. 1627 (1889). *História do Brazil*. Rio de Janeiro: Typ. de G. Leuzinger & Filhos.
- Silva, J. B. A. 1790. “Memoria sobre a Pesca das Baleas, e Extracção do seu Azeite; com algumas reflexões a respeito das nossas Pescarias”, *Memorias Economicas da Academia Real das Sciencias de Lisboa...* Tomo I (pp. 388-412). Lisboa: Na Officina da Academia Real das Sciencias.
- Simon, W. J. 1983. *Scientific expeditions in the Portuguese overseas territories (1783-1808): and the role of Lisbon in the intellectual-scientific community of the late eighteenth century*. Lisboa: Instituto de Investigação Tropical.
- Szabo, V. 2008. *Monstrous Fishes and the Mead-Dark Sea. Whaling in the Medieval North Atlantic*. Leiden, Boston: Brill.
- 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*, Vol. 9 (2): e85971.
- The Animal Studies Group, 2006. *Killing Animals*. Urbana and Chicago: University of Illinois Press.
- Vandelli, D. 1789a. “Memoria sobre algumas produções das Conquistas, as quaes ou são pouco conhecidas, ou não se aproveitaõ”, *Memorias Economicas da Academia Real das Sciencias de Lisboa...* Tomo I (pp. 187-206). Lisboa: Na Officina da Academia Real das Sciencias.
- Vandelli, D. 1789b. “Memoria sobre as Produções Naturaes do Reino, e das Conquistas, primeiras materias de diferentes Fabricas, ou Manufaturas”, *Memorias Economicas da Academia Real das Sciencias de Lisboa...* Tomo I (pp. 223-236). Lisboa: Na Officina da Academia Real das Sciencias.
- Varela, A. 2007. “A trajetória do ilustrado Manuel Ferreira da Câmara em sua ‘fase européia’ (1783-1800)”, *Tempo*: 150-175.
- Vaz, F. A. L. 2002. *Instrução e economia: as ideias económicas no discurso da ilustração portuguesa, 1746-1820*. Lisboa: Edições Colibri.
- Vieira, N. 2018. “A Comparative Approach to Historical Whaling Techniques: Transfer of Knowledge in the 17th century from the Biscay to Brazil”. In: A. Polónia, F. Bracht, G. C. Conceição & M. Palma (Eds.), *Cross-cultural Exchange and the Circulation of Knowledge in the First Global Age, Vol. I* (pp. 133-156). 1st ed. Porto: CITCEM/Edições Afrontamento.
- Vieira, N. & Brito, C. 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 (3): 513-528.
- Warsh, M. A. 2018. *American Baroque: Pearls and the Nature of Empire, 1492-1700*. Omohundro Institute of Early American History and Culture and the University of North Carolina Press.
- Wheat, D. 2016. *Atlantic Africa and the Spanish Caribbean, 1570-1640*. Omohundro Institute of Early American History and Culture and the University of North Carolina Press.
- Zuppa, G. 2001. “Construcciones y representaciones en los nuevos escenarios de la naturaleza costera: Mar del Plata norte en sus orígenes”. In: G. Arruda, D. V. Torres & G. Zuppa, (Eds.), *Natureza na América Latina: apropriações e representações*. London: UEL Press.