

# TOWARDS A SCIENTIFIC APPROACH OF NATURE: LOOKING AT SOUTHERN AFRICA BIODIVERSITY THROUGHOUT THE 16<sup>TH</sup> CENTURY PORTUGUESE RECORDS ON MARINE FAUNA \*

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**Resumo:** Considerando as informações dadas nos Roteiros e Diários de Navegação do século XVI sobre a fauna marinha da África Austral, pretende-se avaliar não só a relevância desta informação e a importância desses documentos na época, como a sua possível relevância atual para uma melhor compreensão da dinâmica desta região, numa perspetiva global, na qual questões como a biodiversidade, os recursos naturais ou a sustentabilidade se tornam cada vez mais importantes.

**Palavras-chave:** África Austral; Biodiversidade; Fauna marinha; Registos portugueses do século XVI.

**Abstract:** Considering the historical information on Southern African marine fauna given in the Portuguese 16<sup>th</sup> century Log Books and Diaries of Navigation, this chapter addresses both the relevance of these documents at the time, and the possible present-day importance of this information for a better understanding of the dynamics of this region from a global perspective, in which factors such as biodiversity, natural resources or sustainability become increasingly important.

**Keywords:** Southern Africa; Biodiversity; Marine fauna; 16<sup>th</sup> century Portuguese records.

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## PREVIOUS CONSIDERATIONS

One of the most relevant consequences of the 16<sup>th</sup> century transoceanic Portuguese travels concerns the acknowledgement and documentation of regions until then unknown to the Europeans. Landscape, fauna and flora were carefully observed and described and for some areas, such as Southern Africa, these records are the first known written documents informing of the regional ecosystems and wildlife.



Fig. 1. Study area

Information on wildlife is particularly significant as it provides important data on local and endemic species, regional distribution and animal behaviour which, in turn, when compared with other data from different scientific fields, allows the possibility of using it in a wider context, opening perspectives for interdisciplinary work involving diverse areas of the humanities and natural sciences as well as of the History of Science(s).

In this context, this chapter proposes an approach to Natural History from a broader perspective, considering both Southern Africa biodiversity and Environmental History, making use of information from 16<sup>th</sup> century Portuguese Log Books and Diaries of Navigation and questioning the European perspective on the processes of construction of scientific knowledge.

When thinking about natural sciences or natural history in the 16<sup>th</sup> century, what immediately comes to mind is not the idea of science or scientific expeditions but the idea of European expansion, trade and discoveries, discovery being mostly associated with the exotic, strange or monstrous which was, in fact, the general idea conveyed by the official discourse. This idea of the exotic feeds the imagination of the European, raising fears and anguishes very well expressed in literature and iconography of that period<sup>2</sup>. No matter the relevance of the new discoveries and the possible scientific impact, this feeling of fabulous-mysterious or «abnormal» things persisted in the mid-16<sup>th</sup> century discourse, giving priority to the description/representation of what was seen/experienced rather than to the record of a possible systematic observation required by a scientific methodology still under construction.

<sup>2</sup> CLASSEN, 2013.

None of the early 16<sup>th</sup> century Portuguese travellers had been previously instructed on the process of observation and/or classification of the natural world, but regardless of their professional skills, they were expected to describe and collect «natural objects» whenever possible. Indeed, most of the observations were made and recorded to assist and support specific activities such as navigation, to which marine fauna and flora were considered one of the main signs of what was then called the «conhecenças da terra», i.e. the «vital signs» to help travellers and navigators locate when at sea and recognize the nearby land<sup>3</sup>.

Seafarers were familiar with the observation and use of these signs as their correct interpretation was crucial for safe sailing. Each observation was framed by each experience and a set of descriptive practices related to specific purposes with a practical and immediate result, even though contributing to structure a specific *corpus* of knowledge on each region, which in the case of maritime travels included navigation instructions, geographic coordinates and magnetic variations, geo-climatic features, information on marine fauna and flora. A *corpus* of knowledge, based on multiple personal experiences and capable of being transmitted to sequential travellers who, in turn, could confirm, disprove or add more information according to their own experience. It is probably too much to talk about «acquired habits of perception cultivated by observation»<sup>4</sup> essential to consider it as result of scientific observation but, it's certainly a dynamic process, based on continuous learning and practical experience that we may consider pre-scientific.

Keeping this in mind and while focusing on the dialogue nature/science my proposal is that we look at the Portuguese 16<sup>th</sup> century Log Books and Diaries of Navigation informing about Southern Africa marine fauna, considering both the importance of the information they provide and the possible present-day relevance of this information for a better understanding of the dynamics of this region from a global perspective, in which factors such as biodiversity, natural resources or sustainability become increasingly important.

Such an approach will allow a wider perception of the importance of these documents in the sense that, as the scientific impact was not prompt – there is no evidence of its immediate circulation outside the specific groups collecting and using it – and imagination prevailed in many descriptions, we may be led to think that their contribution was not significant. Yet, despite this apparent lack of «scientificity», knowledge on marine fauna was of utmost importance within the Portuguese Expansion project and the data collected was (and still is) of extreme relevance, from a scientific perspective.

Additionally, this approach will bring us to specific questions related either to the documents selected to address this subject – Portuguese Log Books and Diaries of Navigation from the first half of the 16<sup>th</sup> century – or the way the information was collected and used and therefore the reliability of the data and its possible scientific validation or how to «authenticate eyewitness's testimony about distant places»<sup>5</sup> and different «natures».

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<sup>3</sup> ROQUE, 2003.

<sup>4</sup> DASTON, 2008: 98.

<sup>5</sup> DAVIES, 2016: 10.

## CONTEXT AND SOURCES

Both Log Books and Diaries of Navigation have been mostly used to approach the technical aspects of navigation or the art of sailing during the period of the Portuguese Expansion and thus primarily used to emphasize the technical aspects of navigation and the art of sailing<sup>6</sup>. Most of them were written by pilots, seamen used to observe the sky and the sea to prevent travel accidents, predicting the weather conditions, perceiving in time possible storms or land distances, readjusting or confirming sea route directions. None of them were scientists or had any training in natural science, thus enabling them to realize the potential importance of the information collected for further scientific validation<sup>7</sup>. Yet, their registry provides crucial information on the described areas, among which marine fauna is of paramount importance.

Integrating the body of a technical record, the marine fauna – seabirds and marine mammals – benefited from a privileged position. The fauna was extensively mentioned according to seasonal or sporadic occurrences along the sea road to India, and described in detail in view of the use of this information as a reliable indicator for navigation and recognition of the different Southern African coastal areas. And all the regions had a set of specific information on their peculiar signs.

Let's take the example of the Cape of Good Hope and how seamen could easily recognize its proximity.

Following these documents, the proximity of the Cape was recognized by the increasing number of flocks of birds and one or other sea lion. The most common birds would be *calcamares*, *antenais* and *feijões pintados*<sup>8</sup>, but other birds could appear, depending on the season or on the route followed, closer or further away from the coast.

Accordingly, while travelling nearer the coast, the concentration of seabirds around the Cape would be huge from February on. The end of February was marked by flocks of *alcatrazes*, *gaivotas* and *corvas*, all laying together on the sea<sup>9</sup>, before the arrival of the *negritas* which in early March could also be seen in big groups resting on the sea<sup>10</sup>. *Negritas* and *gaivotas* were always together<sup>11</sup> and both persisted in the Cape area until June, when the *gralhas* arrived<sup>12</sup>. However, from June onwards the number of seabirds decreased and only a few groups of *calcamares*, *antenais* and *feijões pintados* would remain<sup>13</sup>.

<sup>6</sup> ROQUE, 2001; ROQUE, 2003; ROQUE, 2013.

<sup>7</sup> GANNIER, 2009: 27.

<sup>8</sup> *Regimento de Portugal para a Índia (1550)*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 55-64.

<sup>9</sup> FERNANDES, Bernardo – *Diário de Navegação da Nau Boquica-a-Velha, saída de Lisboa para a Índia no anno de 1548*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 176-203.

<sup>10</sup> VAZ, André – *Diário de Navegação da Viagem de Inverno que, em 1537, fez André Vaz*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 152-175.

<sup>11</sup> FERNANDES, Bernardo – *Diário de Navegação da Nau Boquica-a-Velha...* p. 176-203.

<sup>12</sup> CASTRO, D. João de – *Roteiro de Lisboa a Goa (1538)*. In *Obras Completas de D. João de Castro*. Ed. crítica por Armando Cortesão e Luís de Albuquerque. Coimbra: Academia Internacional da Cultura Portuguesa, 1968-1982. 4 vols.

<sup>13</sup> *Regimento do Cabo da Boa Esperança para a Índia (1535-1555)*. In *O Livro de Marinharia de Manuel Álvares*. Ed. por Luís M. de Albuquerque e Armando Cortesão. Lisboa: Junta de Investigação do Ultramar, 1969, p. 102-105.

As for marine mammals, sea lions, whales and porpoises would also be very common<sup>14</sup>. In February, it was possible to observe big groups of porpoises and sea lions<sup>15</sup> but, if passing the area in June, sea lions would not be seen there as they took shelter on land to protect themselves from the low temperatures<sup>16</sup>.

Yet, if forced to travel further from the coast most of these signs would not be seen. For over 40 leagues off the coast, the *altarizes*, the *mangas de veludo* and the white *alcatrazes* with black tip wings dominated<sup>17</sup> and for more than 60 leagues from the coast, the only sign would be the black *corvas* with white beaks<sup>18</sup>. However, though these last ones were a very good sign they could not be seen if travelling near the coast.

This example gives us quite a good idea of the type of information given in these documents on Southern Africa marine biodiversity in the 16<sup>th</sup> century and calls our attention to the potential of this data.

Far from scientific purposes, safe travelling made these observers/writers very cautious and precise in all their records, reporting everything considered unusual or simply noting the lack of significant signs, which was equally important<sup>19</sup>. In a way, it could be said that these records were never concluding documents, but a set of comprehensive notes able to be modified, so as to enlarge and improve as every new travel could bring new observations and changes and, at any moment, these observations could be revised and turned into significant signs. Over the years, and based on observation and practical experience, more information on the region would mean better knowledge plus better chances of travelling safely and the possibility to compare and integrate regions and information in a global *corpus* of knowledge.

With respect to marine fauna, the result was the creation of a body of coherent and consistent data, based on continuous observations and permanent updates of information, that goes far beyond navigation purposes and leads us directly either to the field of History and Natural Science(s) or to present day concerns regarding marine biodiversity and nature conservation in Southern African coast.

The information provided by these documents – identification of animal species, regional distribution, breeding rookeries, displayed behaviours, species associations, migrations routes – reveals and enhances their importance as a pertinent *corpus* of reference, historically supporting and framing some of the major debates of the 21<sup>st</sup> century, such as biodiversity, sustainability or the management and usage of the different natural resources.

<sup>14</sup> *Regimento de Portugal para a Índia (1550)*... p. 55-64.

<sup>15</sup> FERNANDES, Bernardo – *Diário de Navegação da Nau Boquica-a-Velha*... p. 176-203.

<sup>16</sup> AFONSO, Diogo – *Roteiro da Navegação daqui para a Índia (1535)*. In *O Livro de Marinharia de Manuel Álvares*. Ed. por Luís M. de Albuquerque e Armando Cortesão. Lisboa: Junta de Investigação do Ultramar, 1969, p. 84-104.

<sup>17</sup> *Roteiro das Costas Sul e Oriental de África (post. 1535)*. In *Documentos sobre os Portugueses em Moçambique e na África Central, 1497-1840*. Lisboa: National Archives of Rhodesia/Centro de Estudos Históricos Ultramarinos, 1969, vol. VI, p. 440-457; AFONSO, Diogo – *Roteiro da Navegação daqui para a Índia (1535)*... p. 84-104.

<sup>18</sup> AFONSO, Diogo – *Roteiro da Navegação daqui para a Índia (1535)*... p. 84-104.

<sup>19</sup> *Diários da Navegação da Carreira da Índia nos anos de 1595, 1596, 1597, 1600 e 1603*. Dir. por Quirino da Fonseca. Lisboa: Academia de Ciências de Lisboa, 1938.

The current discussion around these issues has evidenced the need to identify these resources as well as the different ways and strategies developed by the populations to make good use of them, thus stressing the importance of assessing the available resources while looking for solutions for their preservation and rational management without prejudice of its traditional use by the populations.

Far from being a problem confined to specific areas, this subject has today a worldwide dimension, stressing the deterioration or extinction of natural communities (plants and animals), whose balance also affects human communities. In turn, the transversality of the subject is also reflected in the possible involvement of different scientific branches of knowledge and methodologies working together in an interdisciplinary perspective and thus providing the possibility of a different and more global approach to this issue. In this context, History can play an important role as the specific research, to make available the existent historical information on these issues, provides the essential framework for a wider perception of its evolution and changes as well as a better comprehension of the present-day situation<sup>20</sup>.

Accordingly, the choice of Southern Africa marine fauna was not random. On one hand, most of the historical references which has been used for the Atlantic and the Indian oceans were, for the 15<sup>th</sup>-16<sup>th</sup> centuries, polarized around iconographic representations, fanciful but visually attractive, or ambiguous descriptions making it difficult to identify the sketched or described species. On the other hand, Southern Africa, more precisely the coastal area from the Cape up to Natal's border is a very peculiar region either from the bio-geographical point of view, or from the perspective of the History of the Portuguese Expansion<sup>21</sup>.

For the 16<sup>th</sup> century Portuguese navigators, sailors, travellers or merchants, Southern Africa embodied the double meaning of Expansion/Discovery, Fears/Expectations, as was rather well expressed by the double name given to the Cape – Cape of Good Hope or Cape of Torments –, and the huge universe of hypotheses and possibilities before the unknown, which is extensively described and understood as a whole.

## HISTORICAL INFORMATION, KNOWLEDGE AND SCIENCE

Considering the existent written sources, the historical contextualization of Southern Africa brings us to very recent periods. As far as we know by now, the first written documents date from the late 15<sup>th</sup> century and were produced in the context of the Portuguese maritime expansion.

This particularity bestows a special importance on the Portuguese documents from the late 15<sup>th</sup> century/early 16<sup>th</sup> century also because these documents testify the progressive process of acknowledgement of the coastal areas related to the continuous and regular pursuance of the travels of the *Carreira da Índia*.

The regularity of the travels allowed a progressive awareness of the specific features of the region, emphasizing the urgent need to transmit and explain what was observed by means of comparison with known environments: first, by identifying novelties and comparing them with European

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<sup>20</sup> DAVID & SITTE, 2008.

<sup>21</sup> ROQUE, 2012.

references (roughly till the mid-16<sup>th</sup> century), secondly, by comparing the observations made in the different African and Indian Ocean regions, to which the Portuguese were gradually becoming familiar (second half of the 16<sup>th</sup> century). Consequently, divulging distant and unfamiliar regions until then unknown to the Europeans also became a way of integrating these regions into the European world. From then on, there was one more place to observe, to compare, to study and think about when considering the relation with the non-European world.

Accordingly, the regularity of the travels, as well as the occasional and often forced stops of the route followed, allowed the building of a data repository quickly incorporated into the official discourse. This repository enabled, at the time, the acknowledgement of the different places along the African coast, by pilots and travellers, while, today, it can contribute to a better understanding of the characteristics, evolution and changes of the described regions.

Obviously, one cannot expect these records to be as exhaustive as the later European ones. Unlike the Dutch and the English, the Portuguese never considered Southern Africa as a regular stop but only as a waypoint to reach the Indian Ocean and the Far East. Most of the observations and records were made from inside the vessels while travelling as stops to go ashore were not foreseen, except in case of lack of fresh water or of exceptional situations. Thus, we cannot expect systematic records resulting from a continued and effective presence in the region that would disclose more precise and detailed information like the one provided by the records used by David and Sittert<sup>22</sup> for their work on the South African cape fur seals.

However, this cannot question the importance of the information collected. In the case of the Cape fur seals, for instance, if the Portuguese documents had been used, namely the account of the 1<sup>st</sup> Voyage of Vasco da Gama to Índia<sup>23</sup>, the reference to the species, their distribution, occurrence and specific behavior could have been accurate, based on substantiated information which referred to the «discovery» of this species at the end of the 15<sup>th</sup> century. Instead, the use of later information did not allow more than to erroneously assume that Cape fur seals were «first discovered by itinerant sailing vessels in the late 16<sup>th</sup> century»<sup>24</sup> and that they were abundant before the arrival of the Dutch and their harvesting for commercial purposes (skins and oils).

In fact, specific references on animal populations, with more or less precise data on population and certain aspects of animal behaviour, migratory birds and their routes and stops, on the regional ecosystems, on the identification and locations of drinking water reservoirs, on the reference to the use and exploitation of wild resources by populations or on the degradation of particular *habitats*, are quite well documented in these records, allowing us to realize today the historic problems of their uses and threats to which they were subjected, as well as a better perception of the degradation of the natural communities in the region and its reflection in everyday life of the populations<sup>25</sup>.

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<sup>22</sup> DAVID & SITTERT, 2008.

<sup>23</sup> VELHO, Álvaro – *Diário da 1.ª Viagem de Vasco da Gama à Índia (1497-1498)*. Lisboa: Publicações Alfa, 1989. (Biblioteca da Expansão Portuguesa).

<sup>24</sup> DAVID & SITTERT, 2008: 107.

<sup>25</sup> ROQUE, 2001; ROQUE, 2003; ROQUE, 2013.

Opening a door to the unknown, the voyages of the Portuguese and their records in the fifties displayed knowledge of other worlds, created opportunities for interaction in spaces up to then unknown and often established a relationship between us and the Other, in a context that we today can call a first globalization. Their observations and records are at the origin of a new perception of nature and were the starting point for a sequent scientific practice of observation, essential to all empirical sciences<sup>26</sup>.

## THE DATA: OBSERVING AND RECORDING MARINE FAUNA

Marine fauna was considered one of the most distinctive signs for the recognition of the diverse geographic areas mentioned in these documents, with emphasis on seabirds and sea mammals. Both have been described and referred according to their contribution to the identification and recognition of the different areas of the South and Southern East African coast<sup>27</sup>.

Contradicting all medieval expectations and fears of unknown monsters who were supposed to inhabit the Southern seas and lands<sup>28</sup>, Southern Africa marine fauna was a real surprise to these first travelers as it made them feel at home. Hoping to find a completely unknown world they were confronted not only with very similar landscapes and geo-climate conditions, enabling them to recognize most of the species, but also with the fact that Southern Africa was, like some regions in Portugal, a migration pole and breeding area and therefore a region where they could easily appeal to their common knowledge regarding the use of traditional «navigation signs».

Both Log Books and Navigation Diaries from the first half of the 16<sup>th</sup> century are full of quotations, particularly related to seabirds, testifying to this proximity and especially the possibility of using ancestral knowledge of seamanship in waters so distant, and allegedly different from the ones they knew and were used to sailing.

In fact, throughout the centuries experience had taught these men that, once at sea and no matter where, the careful observation of marine fauna's behaviour would be of great help to predict the weather conditions and the distance of nearby land, as well as to readjust or confirm sea route directions. That is why they were so careful and precise in their records, mainly on what concerned the occurrence of seabirds; the most important sign and thus the one to be recorded, every day, immediately following the registration of the latitude values. Seabirds were most often the only sign of nearby land that no one could see but knew was there.

## SEABIRDS

The relevance of seabirds as navigation signs is mainly responsible for the huge amount of information collected, namely on the diversity, distribution, behavior or frequency of the various species observed in Southern Africa. As shown in Table 1, with the example of *alcatraz*, the references

<sup>26</sup> DASTON, 2008.

<sup>27</sup> ROQUE, 2013.

<sup>28</sup> DUZER, 2013; DAVIES, 2016.

clearly point to the possibility of assessing not only the frequency of observations but, for each trip, where and when the species was observed and which were the features worth of being incorporated as «knowledge» to report to subsequent travelers.

Table 1. Seabirds referred to Southern Africa coast – gannets (*alcatrazes*) (first half of the 16<sup>th</sup> century)

<b>ALCATRAZ (GANNET) – REGIONAL DISTRIBUTION AND ANNUAL OCCURRENCE: CAPE OF GOOD HOPE – ALGOA BAY<sup>29</sup></b>				
<b>Reference place<sup>30</sup></b>	<b>Latitude</b>	<b>Period of the year</b>	<b>Comments</b>	<b>Information<sup>31</sup> Source</b>
Cb. Boa Esperança	35.º/36 ½ S	-	In groups. In the sea, 30-40 leagues from land	AFONSO, 1940 [1553] (see n.º 2)
	-	March	In association with big black birds looking like chickens (Penguins)	AUTOR DESCONHECIDO, 1969 [post 1535] (see n.º 19)
	-	April	Small groups	AUTOR DESCONHECIDO, 1940 [1538] (see n.º 7)
	-	May/ June	Big groups	CASTRO, 1968-1982 [1538] (see n.º 4)
Cb. Boa Esperança/ Cb. Agulhas	34.º ½ S	February	1 gannet and 1 <i>paturca</i>	FERNANDES, 1940 [1548] (see n.º 12)
	35.º 1/6 S		Big groups	CASTRO, 1968-1982 [1538] (see n.º 4)
Pta. S. Brandão / Cb Falso	-	April	Small groups	AUTOR DESCONHECIDO, 1940 [1538] (see n.º 7)
Cb. Agulhas (55 leagues North)	-	February	Big groups with gannets, seagulls and <i>negritas</i> or only gannets and seagulls	FERNANDES, 1940 [1548] (see n.º 12)
Cb. Agulhas (North of)	-	March	Big groups of gannets, white seagulls and <i>antenais</i> . Early in the morning along with seagulls though gannets fly far away from land	AUTOR DESCONHECIDO, 1940 [1538] (see n.º 7)

(cont.)

<sup>29</sup> Current Port Elizabeth.

<sup>30</sup> Names in Portuguese as they appear in the documents used.

<sup>31</sup> The bibliographic references included are necessarily brief and simplified. To see the complete citation, check the final bibliographic list at the end of this paper.

Reference place	Latitude	Period of the year	Comments	Information Source
		June	Small groups. In the sea, early in the morning, in big flocks	AUTOR DESCONHECIDO. 1940 [1534] (see n.º 9)
			In association: big groups of gannets flying over porpoises and sea lions	AUTOR DESCONHECIDO, 1940 [1538] (see n.º 7)
		July	Big groups of gannets flying over flocks of birds looking like seagulls standing in the sea	AUTOR DESCONHECIDO, 1940 [1534] (see n.º 9)
Cb. Agulhas	-	February	Groups of gannets and seagulls	AFONSO, 1969 [1535] (see n.º 1)
		March	Groups of gannets and white seagulls and, sometimes, sea lions	AFONSO, 1940 [1553] (see n.º 2)
Cb. Agulhas (South of)	36/35.º 2/3 S	-	Groups of gannets with white beak <i>corvas</i>	AFONSO, 1969 [1535] (see n.º 1)
Angra de São Brás	35.º S	March	Flocks of gannets flying over porpoises	AFONSO, 1969 [1535] (see n.º 1)
			1 gannet isolated flying along with a flock of birds looking like seagulls	CASTRO, 1968-1982 [1538] (see n.º 4)
Baía de Alagoa	34.º ½ and 35.º S	February	Very large flocks of gannets, seagulls, black <i>corvas</i> , <i>negritas</i> and other unknown birds or flying along with seagulls over porpoises and flocks of <i>antenais</i> and black <i>corvas</i> lying in the sea. In the sea, lying in large groups, 18 leagues away from land	FERNANDES, 1940 [1548] (see n.º 12)
		March	Groups of gannets and seagulls	FERNANDES, 1940 [1548] (see n.º 12)
			Flocks of brownish gannets flying, sometimes over porpoises	AFONSO, 1969 [1535] (see n.º 1)
		July	Gannets isolated	AUTOR DESCONHECIDO 1940 [1538] (see n.º 7)

Seabirds were such a significant indicator that one simple text, combining direct observation with cumulative knowledge, can inform on more than a dozen of birds observed in a certain area.

This symbiosis is quite evident in the Log Book of the Ship S. Martinho written by Gaspar Ferreira Reimão in 1597 where, regarding Southern Africa, he reports the occurrence of two

dozen varieties of birds. Reimão combines data from new observations with the information already collected earlier, opposing what he saw to what was expected to be seen, as expressed in this short text about the «conhecenças» of the Cape of Good Hope: Hoping that the signs of approaching the Cape would be «*altarizes* with white breast [...]. White birds called *cemtenais* [...] and most probably some called *mangas de veludo* that are black and have white breast»<sup>32</sup>, Reimão didn't find anything but «one *feijão* and one *gaiotão* and some *borrelhos* [...] a bigger bird, some corva, which is an all white *feijão* like a seagull, and in the sea one or two *calcamares*»<sup>33</sup>. Follow-up travelers would, henceforth, be forewarned and meet these new signals, whether they were casual or really occurring; and in the case of usual occurrence, validate the information as indicator signs for the Cape.

This dynamic process combining observation, registry and validation enable us, today, to identify 32 different types of birds occurring along the Southern Africa shore line, from the Cape of Good Hope to the Coast of Natal, in the 16<sup>th</sup> century (Table 2).

Most of these birds were then named according to the 16<sup>th</sup> century designations used by Iberian seamen, appealing to specific cultural references and navigation experiences in other waters, and joining a reference system of knowledge recognized by seamanship even in unfamiliar waters.

The identification is clear when it comes to known species but, when the distance can be misleading there's only a «seems to be», having however particular care when finding something new, never seen before and therefore cause for attention in view of future identification<sup>34</sup>.

As previously said, the comparison with known references was the starting point for classifications and descriptions, allowing a quick identification. However, many of these names have changed or fallen into disuse and only a serious research on specific documents concerning the Portuguese maritime fauna in the modern period and the morphological or the behaviour description potentiate the possible identification of some of them. Such is the case, for instance, of the birds called *Calcamares*, whose name stems from the specific way these birds seem to walk on water and even in the case of different species, make them easily recognizable by the seafarers.

Unfortunately, most of the time this information is no more than a name and a brief description as is the case of the *cagalhos*<sup>35</sup> and thus clearly insufficient to enable any identification, even when both the historian and the biologist engage in a joint analysis of the information.

Identification is indeed one of the greatest challenges to the interpretation of this data. In most cases, it is hard to reach a conclusion about what kind of bird they were describing, being this situation even more complicated when the same bird name appears under different descriptions, making consensus about which bird or birds might be involved difficult, as in the case of the *borrelhos* (Plovers?

<sup>32</sup> *Roteiro das Costas Sul e Oriental de África (post. 1535)*... p. 440-457.

<sup>33</sup> REIMÃO, Gaspar Ferreira – *Diário da Navegação da Nau S. Martinho, em viagem para a Índia, no ano de 1597, por oeste da Ilha de S. Lourenço (1597)*. In *Diários da Navegação da Carreira da Índia nos anos de 1595, 1596, 1597, 1600 e 1603*. Dir. por Quirino da Fonseca. Lisboa: Academia de Ciências de Lisboa, 1938.

<sup>34</sup> CASTRO, D. João de – *Roteiro de Lisboa a Goa (1538)*... p. 136.

<sup>35</sup> VAZ, André – *Diário de Navegação da Viagem de Inverno que, em 1537, fez André Vaz*... p. 152-175.

Sandpipers?). According to Castro<sup>36</sup> they are «small birds that roam the beaches, to the edge of the sea, and now run after the waves, sometimes after they make waves». Rodrigues<sup>37</sup> says they are «small white birds» while others wrote they were «small as a house sparrow but grey» or, in a more elaborated form, describe them as a «water bird, the starling species, brown with white belly, long legs and a beak»<sup>38</sup>. Therefore, though frequently mentioned for all Southern Africa in the second half of the 16<sup>th</sup> century, descriptions of the *borrelhos* are not consistent with each other, making it difficult to agree on which bird or birds they might refer to, or if it is always the same bird and the different color of plumage corresponds not to different birds but to differences between males and females, juvenile and adults.

Still, in 8 cases it was possible to identify the species, and in 17 the family (Table 2). Major references concern seagulls, gannets, cormorants and terns flying alone, in clouds or in association with other species, such as *corvas*, *garajaus*, *negritas*, *paturcas* and *alcatrazes*, to which notes on their specific behaviour can be added: the *alcatrazes* have heavy flight and are never further out at sea than 40 leagues<sup>39</sup>; the *paturcas* prefer to be further, between 80 to 100 miles of the coast and are inseparable companions of the *negritas* and the seagulls<sup>40</sup>.

Table 2. Seabirds referred to Southern Africa coast (first half of the 16<sup>th</sup> century)

Portuguese name	Species	Family	Obs.
Alcatrazes		<i>Sulidae</i> (?) / <i>Laridae</i> (?)	Portuguese generic name covering different species of the) <i>Laridae</i> and <i>Sulidae</i> family
Alcatraz do Cabo	<i>Morus capensis</i>	<i>Sulidae</i>	
Altarizes	<i>Haliaeetus vocifer</i> (?)	<i>Accipitridae</i> (?)	Location and description suggests the African Fishing Eagle
Antenais	<i>Diomedea exulans</i> and/or <i>Thalassarche chlororhynchos</i>	<i>Diomedeidae</i>	<i>Antenal</i> , <i>Entenais</i> , <i>Centenais</i> or <i>Albatrozes</i> Portuguese common names formerly assigned to various species of this family
Borrelhos		<i>Charadriidae</i>	
Cagalhos		<i>Oceanitidae</i> (?)	
Calcamares		<i>Oceanitidae</i> (?)	Portuguese generic name given to several species of this family

(cont.)

<sup>36</sup> CASTRO, D. João de – *Roteiro de Lisboa a Goa (1538)*...

<sup>37</sup> BNP – Biblioteca Nacional, mc. 222, n.º 5. RODRIGUES, Vicente – *Roteiro da Carreira para a Índia com os ferros da Agulha, debayxo da Froll de Lys*.

<sup>38</sup> *Diários da Navegação da Carreira da Índia nos anos de 1595, 1596, 1597, 1600 e 1603*... p. 324.

<sup>39</sup> *Roteiro das Costas Sul e Oriental de África (post. 1535)*... p. 440-457.

<sup>40</sup> *Diário de Navegação da Nau Espera, que partiu da Índia para o reino, de Cochim, a 26 de Janeiro (1538)*. In *Livro de Mari-nharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 147-151.

Portuguese name	Species	Family	Obs.
Coleiradas			Portuguese generic name given to all birds showing «a leash»
Corvas		<i>Phalacrocoracidae</i>	<i>Corvas pretas</i> , <i>Corvas marinhas</i> and <i>Corvetas</i> Probably Cormorants
Estopegados or Estopagados			Portuguese generic name assigned to a coastal water bird of South Africa, namely in Angola
Farilhões			
Feijões and Feijões pintados		<i>Procellaridae</i> ?	
Fradinhos	<i>Tringa ochropus</i>	<i>Scolopacidae</i>	Also known in Portugal as <i>Rabilongo</i>
Gaivotas		<i>Laridae</i>	Portuguese generic name assigned to several species of this family
Gaivotões		<i>Laridae</i>	Portuguese generic name assigned to several species of this family
Garajaus	<i>Sterna sandwicensis</i>	<i>Laridae</i>	
Garajinas or grazinas	<i>Sterna albifrons</i>	<i>Laridae</i>	
Gralhas		<i>Corvidae</i>	
Maçaricos		<i>Charadriidae</i>	
Mangas de Veludo	<i>Macronectes giganteus</i>	<i>Procellaridae</i>	
Negritas	<i>Bulweria bulweria</i>	<i>Procellaridae</i>	
Pardaços		<i>Scolopacidae</i>	Portuguese generic name given to some species of this family
Pardelas		<i>Procellaridae</i>	Portuguese generic name given to some species of this family
Paturcas		<i>Diomedeidae</i> (?)	This is probably a species of the family of the Albatrosses
Pintadas			
Quelhas			
Rabiforcados		<i>Fregatidae</i>	Portuguese generic name given to some species of this family
Rabos de Junco		<i>Phaethontidae</i>	Portuguese generic name given to some species of tropical waters

(cont.)

Portuguese name	Species	Family	Obs.
Rolas and roletas			
Rombos			
Sotelicários	<i>Sheniscus demersus</i>	<i>Sheniscidae</i>	African Penguin
Tinhosas			
Birds looking like abetardas or alcatrazes		<i>Sulidae</i> (?)	Description and location suggests <i>Morus capensis</i> or other species of this family

In the case of unknown species, the penguins were headliners. Even if mistakenly considered a bird unable to fly by lack of feathers in the wings, African penguins were thoroughly described under the name of «sotelicários».

They are a good example to feature the way the descriptions were made, always appealing to a European referential to allow an approximate idea of the physical and behavioural characteristics of these animals: they were like ducks, though bigger, had beaks, walked like chicken and heehawed like donkeys. We probably would never describe the penguin this way but, in the European bestiary chicken and ducks were, for most people, the only known flightless birds and the comparison was crucial to give the idea of something that would allow the appropriation of an image/representation of these new animals.

A few years later, the Dutch reaction regarding the Dodo of the Mascarenhas Archipelago would be very similar. It was strange that they had no fear of men but the exotic remained in that they were birds unable to fly, not because they had no feathers but because they were too heavy and the wings had been replaced by a few black quills<sup>41</sup>.

How many of these seamen were familiar with strange big birds unable to fly? Other than the smaller domesticated birds there was little information on flightless birds in Europe in the late 15<sup>th</sup> century, as most of these species are non-European.

Yet they did describe them as birds and tried to give a possible explanation for this fact. Today, 40 flightless species are known and the description of the «sotelicário» is, no doubt, the first historical testimony of the existence of flightless birds in Southern Africa.

Besides these cases, special care was taken on the information on migration periods, nesting or wintering places, on the association of different species and their behaviour during certain periods of the day or the year, particularly in big concentrations and migratory movements related with changing season periods. The major concentration points were then, as today, Cape Agulhas and Algoa Bay/Port Elizabeth (*Baía de Alagoa*) where most of the species could be observed in great clouds between the end of February and beginning of June.

<sup>41</sup> HUME, 2006; SELVON, 2012.

## SEA MAMMALS

Though less referenced than the seabirds, the data collected on sea mammals is of no less importance. South African fur seals – *Arctocephalus pusillus*<sup>42</sup> – and several kinds of whales and dolphins are a permanent reference in these documents. Most of them, even if not pertaining to the same species, as in the case of the seals, were well known by all those used to sail the Atlantic waters and the descriptions show clearly that they were able to see and register the differences and similarities by comparing them.

In a universe of several species of sea mammals referenced to the Southern African waters, these accounts report at least 5 different types, even though sometimes the reference is nothing more than a vague or generic allusion to a whale or something resembling a whale, not allowing any possible identification. Anyhow, in 1 case it is possible to identify the species while 2 offer some doubts on the family's identification (Table 3).

Table 3. Sea mammals referred to Southern Africa coast (first half of the 16<sup>th</sup> century)

Portuguese name	Species	Family	Obs.
<i>Baleatos</i>			Portuguese generic name covering different species of the <i>Zhiphidae</i> , <i>Delphinidae</i> and <i>Physeteridae</i> family
<i>Baleias</i>			Portuguese general designation for whales covering different species of the <i>Balaenopteridae</i> and <i>Balaenidae</i> family
<i>Botos</i>		<i>Delphinidae</i>	Portuguese generic name covering different species of the family. According to the region they can be named by «botos» (dolphins) or «toninhas» (porpoises)
<i>Lobos marinhos</i>	<i>Arctocephalus pusillus pusillus</i>	<i>Otaridae</i>	South African Cape fur seal
<i>Toninhas</i>		<i>Phocoenidae</i>	Portuguese generic name covering different species of the family. According to the region they can be named by «botos» (dolphins) or «toninhas» (porpoises)

As for the seabirds, references underline associations, geographical distribution, location and breeding rookeries, occurrences or absences as well as several associations with flocks of birds, that in certain periods of the year share the same waters<sup>43</sup>, as well as specific aspects of their

<sup>42</sup> One of 16 species of marine mammals in the family of Eared seals which include sea lions and fur seals. It is the only resident species of seals in Southern Africa and occurs from the Angola South border along the Namibia coast till Port Elizabeth in South Africa. South African Cape fur seal, *Arctocephalus pusillus pusillus*, is one of the two sub-species, endemic to South Africa, with a regional distribution on the south and southwestern coast of Africa (*Encyclopedia of Life*, 2011...).

<sup>43</sup> Table 4.1, 4.2 and 4.3.

behaviour<sup>44</sup>; being the unknown species or their strange behaviour, namely the displaying behaviour, the ones worthy of special attention.

Unlike seabirds, throughout the years the records become more detailed, mainly related to the time of the year when the travellers could observe the animals and watch and describe their specific behaviours, while registering with precision attendances and absences, when they accounted for extraordinary situations that contradicted previous records.

Every unknown detail was a priority to write down and describe and even for similar species they were used to finding in the Atlantic waters, the descriptions clearly highlighted the caution in posting the differences and similarities, by comparing the different species.

Table 4.1. Southern African coast: sea mammals referred to place and period of observation – whales and dolphins (*baleias*, *baleatos e botos*) (first half of the 16<sup>th</sup> century)

Portuguese name	Place of observation <sup>45</sup> with reference to latitude	Period of the year	Obs.	Information source
<i>Baleias</i>	Cb. Boa Esperança		– In large groups – They appear at times in conjunction with the Cape fur seals	FIGUEIROA, 1964 [1505-1511] (see n.º 13)
	Cb. Boa Esperança		– In large groups – They appear at times in conjunction with porpoises and associated to large flocks of birds similar to seagulls and gannets	AUTOR DESCONHECIDO, 1940 [1522] (see n.º 8)
	Cb. Boa Esperança / Cb. Agulhas	June (end of)	– 1 whale and 1 Cape fur seal isolated	CASTRO, 1968-1982 [1538] (see n.º 4)
	Cb. Agulhas (40 leagues Northeast of)	March	– Group under a flock of «paturcas»	AUTOR DESCONHECIDO, 1940 [1535] (see n.º 10)
<i>Baleatos</i>	Cb. Agulhas	July	– Very few	AUTOR DESCONHECIDO, 1940 [1534] (see n.º 9)

(cont.)

<sup>44</sup> VELHO, Álvaro – *Diário da 1.ª Viagem de Vasco da Gama à Índia (1497-1498)*...

<sup>45</sup> Names in Portuguese as they appear in the documents used.

Portuguese name	Place of observation with reference to latitude	Period of the year	Obs.	Information source
<i>Botos</i>	Baía de Algoa (Latitude 34.º ½ South)	February	– In association: dolphins with porpoises under flocks of seagulls, <i>bulweria</i> and a few «antenais»	FERNANDES, 1940 [1548] (see n.º 12)
	Baía da Alagoa (Latitude 34.º South)	February	– In association: dolphins with large groups of porpoises, and bands of cormorants (?corvas) resting at sea under few «entenais» and flocks of gannets and seagulls; – In association: one dolphin with large groups of porpoises under small groups of «entenais», seagulls and <i>bulweria</i> – In large groups	FERNANDES, 1940 [1548] (see n.º 12)
	Cb. Agulhas (45 leagues North of)	March	– A few big dolphins in association with large groups of «pardelas» and other seabirds	FERNANDES, 1940 [1548] (see n.º 12)
	Cb. Agulhas	July	– Plenty	AUTOR DESCONHECIDO, 1940 [1534] (see n.º 9)

Table 4.2. Southern African coast: sea mammals referred to place and period of observation – porpoises (*toninhas*) (first half of the 16<sup>th</sup> century)

Portuguese name	Place of observation <sup>46</sup> with reference to latitude	Period of the year	Obs.	Information source
<i>Toninhas</i>	Cb. Boa Esperança		– In large groups – They appear at times in conjunction with whales and associated to large flocks of birds similar to seagulls and gannets	MAYR, 1989 [1505-1506] (see n.º 15)
	Angra de S. Brás (Latitude 35.º South)	March	– In association: large groups of porpoises with flocks of gannets – In big flocks	VAZ, 1940 [1537] (see n.º 21)

(cont.)

<sup>46</sup> Names in Portuguese as they appear in the documents used.

Portuguese name	Place of observation with reference to latitude	Period of the year	Obs.	Information source
	Baía da Alagoa (Surroundings. Latitude 34.° ½ South)	February	In association: large groups of porpoises, black cormorans (? «corvas») and «entenais» at sea, all resting in water under big groups of seagulls and gannets – In big flocks	FERNANDES, 1940 [1548] (see n.º 12)
	Baía da Alagoa (Surroundings. Latitude 35.º South)	February	– In association: groups of porpoises under flocks of gannets with some seagulls – In big flocks	FERNANDES, 1940 [1548] (see n.º 12)
	Baía da Alagoa (Surroundings. Latitude 34.º ½ South)	February	– In association: groups of porpoises and some «entenais» and cormorans (? «corvas») resting on the sea, under groups of gannets and seagulls – Very large flocks of porpoises and dolphins under small groups with seagulls, «entenais» and <i>bulweria</i>	FERNANDES, 1940 [1548] (see n.º 12)
	Baía da Alagoa (Surroundings)	March	– In association: large groups of porpoises under groups of gannets – In big flocks	VAZ, 1940 [1537] (see n.º 21)
	Natal (South)	March	– In big flocks	FERNANDES, 1940 [1548] (see n.º 12)
	Cb. Agulhas (close to)	March	– Many porpoises along many birds, lodgings at sea	FERNANDES, 1940 [1548] (see n.º 12)
	Cb. Agulhas	March	– Many porpoises associated with «paturcas» and some other birds	FERNANDES, 1940 [1548] (see n.º 12)
		June (end of)	– In association: groups of porpoises and Cape fur seals under large groups of «entenais», jays, «fradinhos», «feijões pintados» and seagulls	AUTOR DESCONHECIDO, 1969 [post 1535] (see n.º 19)
	Cb. Agulhas (North)	June (end of)	– In association: large groups of porpoises under large groups of gannets – In big flocks	CASTRO, 1968-1982 [1538] (see n.º 4)
		June (end of)	– In association: large groups of porpoises under large groups of gannets – In big flocks	AUTOR DESCONHECIDO, 1969 [post 1535] (see n.º 19)

In the case of seals, and as these tables show, most of them were observed from the Cape of Good Hope till Natal's border, but the most significant groups, namely of South African Cape fur seals, were mainly referred in the areas between Namibia coast and the Great Fish River (Rio do Infante) with a major concentration around the Cape of Good Hope, the Cape Agulhas and Algoa Bay, especially the local endemic species known as South Africa Cape fur Seal (*Arctocephalus pusillus pusillus*).

Table 4.3. Southern African coast: sea mammals referred to place and period of observation – cape fur seals (*lobos marinhos*) (first half of the 16<sup>th</sup> century)

Portuguese name	Place of observation <sup>47</sup> with reference to latitude	Period of the year	Obs.	Information source
<i>Lobos marinhos</i>	Ilhas de Tristão da Cunha / Cb. Boa Esperança		<ul style="list-style-type: none"> <li>– Many, depending on the season.</li> <li>– Not seen in cold weather.</li> <li>– Specific behavior in cold weather</li> </ul>	AUTOR DESCONHECIDO, 1969 [post 1535] (see n.º 19)
	Cb. Boa Esperança		<ul style="list-style-type: none"> <li>– In large groups</li> <li>– They appear at times in conjunction with whales</li> </ul>	FIGUEIROA, 1964 [1505-1511] (see n.º 13)
	Cb. Boa Esperança (Latitude 35.º South)		– In association: groups of cape fur seals with groups of several birds («altarizes», «entenas» and Southern Giant Petrels)	AUTOR DESCONHECIDO, 1969 [post 1535] (see n.º 19)
	Cb. Boa Esperança (Latitude 34.º 1/3 South)		– In association: Cape fur seals along the coast and offshore groups of «calcamares», «feijões pintados» and «entenas»	VAZ, 1940 [1537] (see n.º 21)
			– In association: Cape fur seals along the coast and offshore along with groups of «calcamares», «feijões pintados» and «entenas»	AUTOR DESCONHECIDO, 1940 [1550] (see n.º 18)
	Cb. Boa Esperança	March	– In association: groups of sea lions with <i>bulweria</i> and many other birds at sea, all resting in water	VAZ, 1940 [1537] (see n.º 21)
	Cb. Boa Esperança / Cb. Agulhas	June (end of)	<ul style="list-style-type: none"> <li>– 1 cape fur seal and 1whale (isolated)</li> <li>– Very few</li> </ul>	CASTRO, 1968-1982 [1538] (see n.º 4)

(cont.)

<sup>47</sup> Names in Portuguese as they appear in the documents used.

Portuguese name	Place of observation with reference to latitude	Period of the year	Obs.	Information source
	Angra de S. Brás	March	<ul style="list-style-type: none"> <li>– Great concentrations</li> <li>– In herds, covering the sea</li> </ul>	AUTOR DESCONHECIDO, 1940 [1535] (see n.º 10)
	Ilhéu da Angra de S. Brás	November (end of) December	<ul style="list-style-type: none"> <li>– Great concentrations</li> <li>– Breeding rockery – description; displaying behaviour</li> <li>– Sometimes in conjunction with the African Penguins</li> </ul>	VELHO, 1989 [1497-1498] (see n.º 22)
			<ul style="list-style-type: none"> <li>– Great concentrations</li> </ul>	AUTOR DESCONHECIDO, 1966 [1518] (see n.º 5)
			<ul style="list-style-type: none"> <li>– Great concentrations</li> <li>– Description; displaying behaviour</li> </ul>	AUTOR DESCONHECIDO, 1969 [post 1535] (see n.º 19)
	Baía de Alagoa (Latitude 34.º 1/3 South)	February	<ul style="list-style-type: none"> <li>– In large groups</li> <li>– In association: Cape fur seals with large flocks of seagulls and <i>bulweria</i></li> <li>– At sea, 12 leagues from land</li> </ul>	FERNANDES, 1940 [1548] (see n.º 12)
	Baía de Alagoa (Latitude 34.º 1/2 South)	February	<ul style="list-style-type: none"> <li>– In large groups</li> <li>– In large groups on the sea with his tail up</li> </ul>	FERNANDES, 1940 [1548] (see n.º 12)
	Baía de Alagoa		<ul style="list-style-type: none"> <li>– Great concentrations</li> </ul>	PEREIRA, 1892 (see n.º 16)
	Rio do Infante	March	<ul style="list-style-type: none"> <li>– In association: groups of Cape fur seals under flocks of «entenais», seagulls, «pardelas», gannets and <i>bulweria</i></li> </ul>	FERNANDES, 1940 [1548] (see n.º 12)
			<ul style="list-style-type: none"> <li>– In association: groups of Cape fur seals under flocks of «entenais», seagulls, «pardelas», gannets and <i>bulweria</i></li> </ul>	AUTOR DESCONHECIDO, 1969 [1535-1555] (see n.º 17)
	Cb. Agulhas	March	<ul style="list-style-type: none"> <li>– In association: groups of Cape fur seals under flocks of gannets and seagulls</li> </ul>	VAZ, 1940 [1537] (see n.º 21)

(cont.)

Portuguese name	Place of observation with reference to latitude	Period of the year	Obs.	Information source
		June (end of)	– In association: groups of porpoises and Cape fur seals under large groups of «entenais», jays, «fradinhos», «feijões pintados» and seagulls	AUTOR DESCONHECIDO, 1969 [post 1535] (see n.º 19)
		July	– In groups with flocks of seagulls resting at sea and under flocks of gannets	AUTOR DESCONHECIDO, 1940 [1534] (see n.º 9)
	Cb. Agulhas (North of)	June (end of)	– In association: groups of Cape fur seals and flocks of gannets	AUTOR DESCONHECIDO, 1940 [1538] (see n.º 7)
	Cb. Agulhas (55 leagues North of)	February	– In association: groups of Cape fur seals and flocks of seagulls, gannets and <i>bulweria</i>	FERNANDES, 1940 [1548] (see n.º 12)

Today, as was probably in the early 16<sup>th</sup> century, the biggest and most significant colonies can be found along the Western coast<sup>48</sup> but, as it was impossible to sail safe near the coast, Portuguese accounts rarely inform on their occurrence in the Southwest African coast.

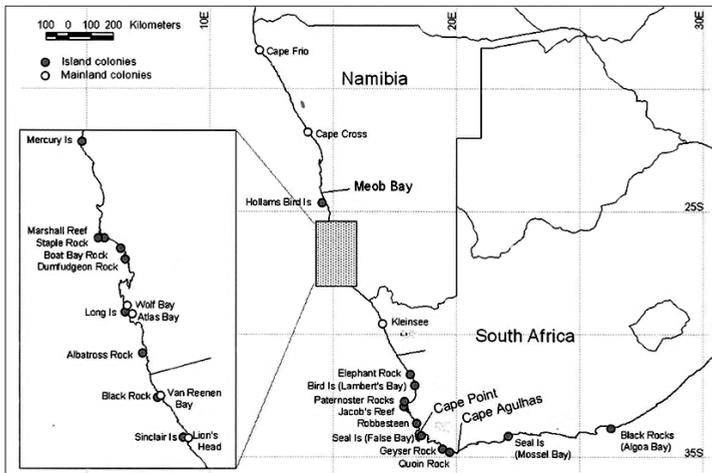


Fig. 2. Present-day distribution of Cape fur seal population in South Africa and Namibia<sup>49</sup>

<sup>48</sup> See Fig. 2.

<sup>49</sup> KIRKMAN, 2010: 63.

Information for the Western Cape areas is mainly on small groups or isolated individuals that exceptionally could be far from the coast. In fact, this is not a species of high seas. A maximum of 160 km from land has been recorded for this species but this cannot be considered a common situation<sup>50</sup>. The few explanations given for this situation in the Portuguese documents concern not the capacity of the animals to swim away from the coast in open waters nor the need to look for food but because in June, due to the extreme cold, they try to protect themselves in the coastal areas<sup>51</sup>.

This is a very interesting comment because it's not a record made for navigation purposes. If this was considered an important sign for the navigation in the area, the information would include a reference to latitude or an indication of the distance from land to inform future navigators that, when seeing these small groups of Cape fur seals in that precise location, it meant that mainland would be about «x» km away. However, as there is no record of any of these figures, we can state that this comment refers to a specific behavior of these animals they had opportunity to witness, namely how they behave and react to the cold sea temperatures and winds characteristic of the Benguela Current Ecosystem, seeking shelter in the deepest and narrowest continental areas of this region as described in the synthesis presented by Kirkman<sup>52</sup>. Therefore, this reference, from an ethologic standpoint is probably the first one for this species in this geographical area.

As for the big concentrations, they were reported especially for Cape Agulhas and Algoa Bay, with relevance for Cape Agulhas, where the documents give information on the presence of all the species identified in the area, particularly at the end of June, beginning of July, with emphasis on Cape fur seals. Considering the seasonal migrations of several species, late June/early July is pointed out as the main period for the large concentrations of marine fauna in Southern Africa and the documents often report associations of seabirds with sea mammals, as shown in Table 4.1 and 4.2, in close relation with local marine flora and shoals of fishes<sup>53</sup>.

Despite the fact that the Cape fur seal is a non-migratory species, there is considerable movement between their colonies and the documents show that if in early July they could be seen in Cape Agulhas, in March big herds of seals and porpoises were mostly concentrated further east on Mossel Bay (Angra de São Braz in the Portuguese documents). Apparently, these movements were not commented at the time and the reports don't mention the possibility of being the group being the same. Only some notes can inform that this kind of «distribution» was normal and if travellers and sailors didn't find them in those places at those precise periods, they should be very attentive because something wrong was going on.

The most frequent associations join cape seals, whales and porpoises with numerous clouds of birds with special relevance to seagulls and several migratory species but, only for the sea mammals do we have an approximate number of animals, and not just a simple general consideration on big or small herds, specifically for Mossel Bay where at least in late November one could count more

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<sup>50</sup> *Encyclopedia of Life*, 2011...

<sup>51</sup> AFONSO, Diogo – *Roteiro da Navegação daqui para a Índia (1535)*... p. 66.

<sup>52</sup> KIRKMAN, 2010: 13-15.

<sup>53</sup> ROQUE, 1994.

than 3000<sup>54</sup>. Numbers that are not very far from the actual statistics on the size of the Cape fur seal colonies. Present day references point out colonies of 500-3000 individuals, although some have been spotted with over 3000<sup>55</sup>.

Very often, the reports give information about thousands of birds in the sky or resting at sea, waiting for the right moment to start the migration North, side by side with the non-migratory Cape fur seals. However, from the Great Fish River up to the North, Cape fur seals disappear from the accounts and there are only references to whales, «baleatos» and porpoises in small or large groups, isolated or in association with other species, according to the time of year.

Besides the accurate description of most of all this species associations and the possible interpretations and meanings in terms of navigation signs, early travellers and sailors paid special attention to the breeding areas and the displaying behaviour of certain sea mammals. In some cases, as for the Cape fur seal, the description given by Álvaro Velho in 1497 is so detailed and rich that it is more than enough to give us, approximately, the period of the year they were passing by if we didn't know this information previously.

*in this small island, there are lots of «sea lions» and some are as big as big bears and they are very dangerous, have many big teeth, attack men; no spear can trespass or hurt them; and there are other smaller and other even more smaller; and the big ones, roar like lions and smallest yelling like young lambs [...]»<sup>56</sup>.*

We know that Vasco da Gama's fleet passed by the Cape region between 25<sup>th</sup> November and 8<sup>th</sup> December and though the breeding period of this species starts in mid-October, most females give birth to their young by the end of November, exactly in the period that the Portuguese arrived and could observe the entire colony at this very special moment and could make the distinction between the males – the big ones as big as bears and roared like lions –, the females – smaller and calmer –, and the new born ones – the smallest, yelling like lambs.

That is probably why they noted that males could be dangerous to the point of attacking men, as during the breeding period males are even more fiercely territorial and will fight viciously to defend their chosen territories and their females. In fact, during all the 16<sup>th</sup> century there are no reports of seals attacking any boat of the *Carreira da Índia* in this area, and the threatening behaviour was most probably related to their male function of protecting the colony as a safe place for breeding and nursing the new born babies.

Despite the considerations on how dangerous they could be, there's absolutely no reference sustaining this risk for humans, even when the Portuguese started shooting at them from the boats<sup>57</sup> either because they were afraid or because they thought they could use them as food. In fact, though there are some references pointing out the opportunity of hunting for food purposes, none of them

<sup>54</sup> VELHO, Álvaro – *Diário da 1.ª Viagem de Vasco da Gama à Índia (1497-1498)*...

<sup>55</sup> *Encyclopedia of Life*, 2011...

<sup>56</sup> VELHO, Álvaro – *Diário da 1.ª Viagem de Vasco da Gama à Índia (1497-1498)*... p. 14.

<sup>57</sup> VELHO, Álvaro – *Diário da 1.ª Viagem de Vasco da Gama à Índia (1497-1498)*... p. 14.

are conclusive regarding this possibility and all the information concerning the inclusion of the sea mammals in the daily diet regards the comments on local people's behaviour and traditions.

As for the furs, one of the main purposes of slaughtering the Cape fur seal population from the late 16<sup>th</sup> century till late 19<sup>th</sup> century, there is not a single reference in the Portuguese accounts, as well as no indication of any interest in its trade in this region, though there is information on the Portuguese trade of seal products (furs and oil) in the Northern West coast, North of the Guinea gulf, in the first half of the 15<sup>th</sup> century<sup>58</sup>.

However, with or without Portuguese participation, the harvesting of seals seems to have been one of the major contribution for the decreasing of the seal population in the area from the late 16<sup>th</sup> until 1893, when the first legal restrictions over sealing in Southern Africa were introduced – Cape Fish Protection Act / Act No. 15 of 1893 of the Cape of Good Hope – which prohibited commercial sealers from operating without a government permit<sup>59</sup>.

Back to our Cape fur seal and though a similar species – *Monachus monachus* (Mediterranean Monk Seal) – occurs in the Atlantic waters of Madeira, Azores and the Canary Islands, and the same species occurs in the Southwest African coast –, the fact is that there was no previous record of any observation of a breeding rookery. And this simple fact makes this description very special.

Moreover, it is not only the first written account on the displaying behaviour of this species during the breeding period, but also the first reference to one of the regional breeding rookeries, the *Ilhéu da Angra de S. Braz*, now Seal island in Mossel Bay. Among the 25 known existent breeding colonies from the Skeleton Coast to Port Elizabeth<sup>60</sup>, Seal Island is the only one to have, in the early 16<sup>th</sup> century, a detailed written registry including location, an estimate of population and the description of the displayed behaviour of the species during breeding and nursing period.

It is interesting to note that this description is unique and none of the other references support the possibility of identifying or locating any other colony or breeding rookery in the region. On the South African coast, at least until the Great Fish River, boats sailed quite near the coast and it would have been easy to notice other colonies, even the ones on the rocky beaches of the mainland.

Today, three breeding colonies are known between Mossel Bay and Algoa Bay – Seal Island (Mossel Bay), Rondekloppe (Plettenberg Bay) and Black Rocks (Algoa Bay). Yet, it might have been that in the early 16<sup>th</sup> century, Mossel Bay was the biggest one or that the two other areas were not even used at the time; a possible reason for not being mentioned.

After a long period of threats due to poachers particularly interested in their pelts, blubber and meat as well as the genitals of the male puppies, taken and sold as an aphrodisiac<sup>61</sup>, the actual population of Cape fur seals increased in Southern Africa during the 20<sup>th</sup> century and Seal Island in Mossel

<sup>58</sup> ZURARA, Gomes Enes de – *Crónica dos Feitos da Guiné (1453)*. Lisboa: Publicações Alfa, 1989. (Biblioteca da Expansão Portuguesa).

<sup>59</sup> *South African/Australian Fur Seals, Arctocephalus pusillus...*

<sup>60</sup> There are estimated to be about 25 breeding colonies and a further 10 non-breeding colonies along the South African and Namibian coastlines, which together support a current estimated population of nearly 2 million seals (*Cape fur seal...*).

<sup>61</sup> *Encyclopedia of Life*, 2011...

Bay remained a breeding rookery for this endemic species. Additionally, Mossel Bay has also become one of the main feeding grounds in the area.

Nevertheless, today the whole resident community is being permanently and closely followed by the international organizations engaged in global nature conservancy. These organizations fear the possible damages caused to the community due to the habitat degradation mainly because of the marine pollution caused by the oil tankers in the Cape region. Yet, other than the oil pollution, plastic, pieces of netting, pieces of fishing line or even organized commercial hunting is still ongoing<sup>62</sup>, killing or injuring thousands of these seals every year.

## FINAL CONSIDERATIONS

It is important to mention that the information used here is only part of what we can find in the 16<sup>th</sup> century Portuguese Log Books and Diaries of Navigation to approach this subject. And, although the focus was on seabirds and marine mammals, similar information exists also on fisheries and fish banks or on marine flora.

Yet, even considering only the data presented here, it seems clear that these documents, as well as giving technical records for navigation purposes, provide relevant data on 16<sup>th</sup> century South African marine biodiversity. And that this data, as historical information, reveals and enhances the importance of these documents as a pertinent *corpus* of reference either to help clarify the evolution and current situation of local marine communities, or to support and frame some of the major debates of 21<sup>st</sup> century on biodiversity, sustainability and on the management of the different natural resources.

Accordingly, the study of these documents can also be taken into a broader perspective which falls, for example, in the specific concerns of some recent institutions and organizations such as the African Marine Mammals Colloquium (AMMC) which, at its first meeting in South Africa in 2010, drew attention to the need to carry out data collection of the existing information on marine mammals for a better identification of the regional resources in view of building up databases supporting possible programs and conservation politics in the area.

As previously said, though these documents are not the result of systematic records resulting from a continuous observation of the Portuguese in the region, they provide valuable information on the animal populations and the regional ecosystems, allowing a better perception of the historic problems of their uses and threats to which they had been subjected throughout the centuries.

In this sense, it's not only necessary to show their relevance at the time, but to evaluate present-day importance by recognising that these documents deserve the attention of both historians and natural scientists and consequently to emphasise the need of a transdisciplinary work for a new perception of the 16<sup>th</sup> century' Southern African marine biodiversity and a much wider and global approach to the History of this region.

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<sup>62</sup> *South African/Australian Fur Seals, Arctocephalus pusillus...*

## SOURCES

1. AFONSO, Diogo – *Roteiro da Navegação daqui para a Índia (1535)*. In *O Livro de Marinharia de Manuel Álvares*. Ed. por Luís M. de Albuquerque e Armando Cortesão. Lisboa: Junta de Investigação do Ultramar, 1969, p. 84-104.
2. AFONSO, Diogo – *Roteiro da Viagem da Índia para Portugal (1553)*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas de A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 76-83.
3. BNP – Biblioteca Nacional, mc. 222, n.º 5. RODRIGUES, Vicente – *Roteiro da Carreira para a Índia com os ferros da Agulha, debayxo da Froll de Lys*.
4. CASTRO, D. João de – *Roteiro de Lisboa a Goa (1538)*. In *Obras Completas de D. João de Castro*. Ed. crítica por Armando Cortesão e Luís de Albuquerque. Coimbra: Academia Internacional da Cultura Portuguesa, 1968-1982. 4 vols.
5. *Descrição da situação, costumes e produtos de alguns lugares de África (1518)*. In *Documentos sobre os Portugueses em Moçambique e na África Central, 1497-1840*. Lisboa: National Archives of Rhodesia/Centro de Estudos Históricos Ultramarinos, 1966, vol. V, p. 354-371.
6. *Diário de Navegação da Nau Conceição, saída de Lisboa, a 19 de Maio (1516)*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 106-108.
7. *Diário de Navegação da Nau Espera, que partiu da Índia para o reino, de Cochim, a 26 de Janeiro (1538)*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 147-151.
8. *Diário de Navegação da Nau S. Leão, saída de Lisboa a 10 de Abril (1522)*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 109-112.
9. *Diário de Navegação da Nau Sta. Maria da Graça, saída de Lisboa a 12 de Março (1534)*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 121-129.
10. *Diário de Navegação da Nau Sta. Maria da Graça, tornada para o reino, saída de Cananor a 25 de Janeiro (1535)*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 129-137.
11. *Diários da Navegação da Carreira da Índia nos anos de 1595, 1596, 1597, 1600 e 1603*. Dir. por Quirino da Fonseca. Lisboa: Academia de Ciências de Lisboa, 1938.
12. FERNANDES, Bernardo – *Diário de Navegação da Nau Boquica-a-Velha, saída de Lisboa para a Índia no anno de 1548*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 176-203.
13. FIGUEIROA, Martim Fernandes de – *Relação de Martim Fernandes de Figueiroa (1505-1511)*. In *Documentos sobre os Portugueses em Moçambique e na África Central, 1497-1840*. Lisboa: National Archives of Rhodesia/Centro de Estudos Históricos Ultramarinos, 1964, vol. III, p. 586-633.
14. LOPES, Tomé – *Navegação às Índias Ocidentais escrita por Tomé Lopes (1503)*. In *Collecção de Notícias para a Historia e Geografia das Nações Ultramarinas que vivem nos domínios Portuguezes ou lhes são visinhas*. Lisboa: Academia Real das Sciencias, 1812.
15. MAYR, Hans – *Viagem e cousas de D. Francisco, visor-rei da Índia (1505-1506)*. Lisboa: Publicações Alfa, 1989.
16. PEREIRA, Duarte Pacheco – *Esmeraldo de Situ Orbis*. Ed. por Raphael Basto. Lisboa: Imprensa Nacional, 1892.
17. *Regimento do Cabo da Boa Esperança para a Índia (1535-1555)*. In *O Livro de Marinharia de Manuel Álvares*. Ed. por Luís M. de Albuquerque e Armando Cortesão. Lisboa: Junta de Investigação do Ultramar, 1969, p. 102-105.
18. *Regimento de Portugal para a Índia (1550)*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 55-64.
19. *Roteiro das Costas Sul e Oriental de África (post 1535)*. In *Documentos sobre os Portugueses em Moçambique e na África Central, 1497-1840*. Lisboa: National Archives of Rhodesia/Centro de Estudos Históricos Ultramarinos, 1969, vol. VI, p. 440-457.
20. REIMÃO, Gaspar Ferreira – *Diário da Navegação da Nau S. Martinho, em viagem para a Índia, no ano de 1597, por oeste da*

- Ilha de S. Lourenço (1597)*. In *Diários da Navegação da Carreira da Índia nos anos de 1595, 1596, 1597, 1600 e 1603*. Dir. por Quirino da Fonseca. Lisboa: Academia de Ciências de Lisboa, 1938.
21. VAZ, André – *Diário de Navegação da Viagem de Inverno que, em 1537, fez André Vaz*. In *Livro de Marinharia de Bernardo Fernandes (cêrca de 1548)*. Pref. e notas por A. Fontoura da Costa. Lisboa: Agência Geral das Colónias, 1940, p. 152-175.
22. VELHO, Álvaro – *Diário da 1.ª Viagem de Vasco da Gama à Índia (1497-1498)*. Lisboa: Publicações Alfa, 1989. (Biblioteca da Expansão Portuguesa).
23. ZURARA, Gomes Eanes de – *Crónica dos Feitos da Guiné (1453)*. Lisboa: Publicações Alfa, 1989. (Biblioteca da Expansão Portuguesa).

## REFERENCES

- BRITO, Cristina (2006) – *Referências a mamíferos marinhos n'Os Lusíadas: A realidade biológica e o mundo natural na base da narrativa épica*. In EVANS, J.; CRESPO, Ó.; KRISTENSEN, B., ed. – *Estudos Atlânticos*. Rianxo: Instituto Galego de Estudos de Segurança Internacional e da Paz, p. 35-47.
- CLASSEN, Albrecht, ed. (2013) – *East Meets West in the Middle Ages and Early Modern Times: Transcultural Experiences in the Premodern World*. In CLASSEN, Albrecht, ed. – *Fundamentals of Medieval and Early Modern Culture*, vol. 14. (EBCO ebook academic collection). ISSN 1864-3396.
- DASTON, Lorraine (2008) – *On Scientific Observation*. «Isis», vol. 99, n.º 1. Chicago: The University of Chicago Press, p. 97-110.
- DAVID, Jeremy; SITPERT, Lance van (2008) – *A reconstruction of the Cape (South African) fur seal harvest 1653-1899 and a comparison with the 20th century harvest*. «South African Journal of Science», vol. 104, n.º 3-4. [Pretoria]: [s.n.], p. 107-110.
- DAVIES, Surekha (2016) – *Renaissance Ethnography and the Invention of the Human: New Worlds, Maps and Monsters*. Cambridge: Cambridge University Press.
- DUZER, Chet Van (2013) – *Sea Monsters on Medieval and Renaissance Maps*. London: British Library.
- GANNIER, O. (2009) – *Building marine mammal knowledge: scholars and seamen*. In BRITO, C.; EVANS, P. G. H., eds. – *Proceedings of the ECS workshop Marine Mammal History, held at the European Cetacean Society's 21st Annual Conference, San Sebastián, Spain, 21st April 2007*, p. 23-29. (ECS Special Publication Series, n.º 50).
- HUME, Julian P. (2006) – *The History of the Dodo Raphus Cucullatus and the Penguin of Mauritius*. «Historical Biology», vol. 18, n.º 2. [S.l.]: Taylor & Francis, p. 65-89.
- KIRKMAN, Stephen P. (2010) – *The Cape fur seal: monitoring and management in the Benguela Current Ecosystem*. Cape Town: Department of Zoology – University of Cape Town. PhD Thesis.
- ROQUE, Ana Cristina (1994) – *A Costa Oriental de África na primeira metade do século XVI, segundo as fontes da época*. Lisboa: Faculdade de Ciências Sociais e Humanas da Universidade Nova de Lisboa. Tese de mestrado. Unpublished but available for reference in the University Library.
- \_\_\_\_ (2001) – *Da paisagem, da fauna e da flora da África Austral no Diário da 1.ª Viagem de Vasco da Gama à Índia*. In *Actas do IV Simpósio de História Marítima: A Viagem de Vasco da Gama*. Lisboa: Academia da Marinha, p. 169-178.
- \_\_\_\_ (2003) – *Para uma outra leitura da Carreira da Índia: A importância dos Diários de Navegação, Roteiros e Relatos de Naufrágios para o conhecimento da Costa Sul-Oriental de África no séc. XVI*. In *Actas do V Simpósio de História Marítima: A Carreira da Índia*. Lisboa: Academia da Marinha, p. 205-212.
- \_\_\_\_ (2012) – *Terras de Sofala: Persistências e mudança. Contribuições para a História da Costa Sul-Oriental de África nos séculos XVI-XVIII*. Textos universitários de Ciências Sociais e Humanas. Lisboa: Fundação Calouste Gulbenkian/FCT.
- \_\_\_\_ (2013) – *A costa sul-oriental de África e o conhecimento da natureza no século XVI: saberes, experiência e ciência*. In AMORIM, I.; BARCA, S., ed. – *Atas do I Encontro Internacional de História Ambiental Lusófona*. Coimbra: CES, p. 145-174.
- SELVON, Sidney, ed. (2012) – *A New Comprehensive History of Mauritius*. [S.l.]: Ed. Sidney Selvon, vol. I.

## GENERAL INFORMATION AVAILABLE ON-LINE

- Cape fur seal*. Disponível em <<http://www.travelbutlers.com/south-africa/garden-route/cape-fur-seal.asp>>. [12/10/2016].
- Cape fur seal facts – Sea Shepherd*. Disponível em <<http://www.seashepherd.org/desert-seal/cape-fur-seal-facts.html>>. [Consulta realizada em 13/10/2016].
- Encyclopedia of Life*, Lead Author; Peter Saundry, Contributing Author; Marion McClary, Topic Editor (2011) – *South African fur seal*. In *Encyclopedia of Earth*. Eds. Cutler J. Cleveland (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment). [First published in the *Encyclopedia of Earth* June 28, 2010; Last revised Date October 9, 2011; Retrieved December 13, 2012. Disponível em <[http://www.eoearth.org/article/South\\_African\\_fur\\_seal?topic=49540](http://www.eoearth.org/article/South_African_fur_seal?topic=49540)>. [Consulta realizada em 13/10/2016].
- Sea birds and seals protection act no. 46 of 1973*. Disponível em <[http://www.nda.agric.za/daDev/fisheries/03\\_areasofwork/Aquaculture/AquaPolGuidLeg/Legislation/SeabirdsSealsProtectionActNo46of1973.pdf](http://www.nda.agric.za/daDev/fisheries/03_areasofwork/Aquaculture/AquaPolGuidLeg/Legislation/SeabirdsSealsProtectionActNo46of1973.pdf)>. [Consulta realizada em 10/10/2016].
- South African/Australian Fur Seals, Arctocephalus pusillus*. Disponível em <<http://marinebio.org/species.asp?id=266>>. [Consulta realizada em 13/10/2016]. Disponível em <<http://dSPACE.anu.edu.au/bitstream/1885/48199/3/03Chapter1.pdf>>. [Consulta realizada em 7/10/2016].