

Quantifying the past: a global literature review on historical pinniped exploitation

Diogo Falcato & André Carvalho

With the scientific revision of Nina Vieira and Cristina Brito

TECHNICAL REPORT 3

June, 2025





The posture of a Sea Lion wⁿ. Suddenly rous'd or disturb'd a Lioness asleep by him & a Seal, in a moveing posture

Original in the John Carter Brown Library at Brown University

The posture of a Sea Lion wⁿ. Suddenly rous'd or disturb'd a Lioness asleep by him & a Seal, in a moveing posture.
 Source: ©John Carter Brown Library <https://jcb.lunaimaging.com/luna/servlet/s/4i1226>

1. Introduction.....	4
2. Methodology: a two-step approach	5
3. Global results.....	6
3.1. Overview of the covered studies.....	6
3.2. Geographic range of publications/studies.....	9
3.3. Chronology of sealing data	12
3.4. Species covered.....	14
4. Case Study: Fur Seal Hunting in the Global Historical Scholarship.....	16
5. Final considerations	19
6. References	21
Appendices.....	23
I - Literature included in the review	23
II - Guidelines established for the Literature Review	32
III - List of charts	32
IV - List of maps	33
V - List of tables	33

1. Introduction

This report was conducted in the context of the wider, global scope of the literature review of the ERC Synergy Grant 4-OCEANS: Human History of Marine Life,¹ a project that aims to demonstrate how the exploitation of marine resources has played a crucial role in the global history of human societies (Holm *et al.*, 2022). Synthesizing data from the late 1st millennium BCE to 1860, it represents a coordinated effort to comprehensively survey quantitative literature on global marine extractions (fishing and hunting, among other practices). To achieve that, 4-OCEANS examines 10 major taxa of keystone environmental and/or economic species or taxonomic groups, including pinnipeds. The pinnipeds (from the Latin meaning ‘fin-footed’) are one of three major clades of modern marine mammals, comprising 3 families: the *Phocidae* ('true seals'), the *Otariidae* ('eared seals'), which include the fur seals and sea lions, and the *Odobenidae* comprising just one species, the walrus (*Odobenus rosmarus*).

The aim of this document is to present the methodology developed, to showcase possible taxa-specific and site specific-analysis and to inform 4-OCEANS' working publications.

The choice for pinnipeds pertains to the fact that this taxon was one of the heavy focuses of the 4-OCEANS' Lisbon team (NOVA FCSH), enabling the assessment of the potentialities of a taxonomic approach to a multi-language literature review, and providing a template and feedback for the use of this methodology for future research. It strives to produce the most comprehensive and detailed synthesis of existing research on the ten taxonomic groups² identified at the project's inception. The primary goal was to obtain a global overview of published literature related to pinnipeds' historical extractions by reviewing studies containing quantitative data on extractions during pre-industrial times and, to a lesser extent, market data on import and exports of products derived from seals. Our approach was built upon a two-step process: 1) data collection and 2) data synthesis and organization.

¹ ERC Synergy Grant 4-OCEANS - Human History of Marine Life: Extraction, Knowledge, Drivers & Consumption of Marine Resources, c.100 BCE to c.1860 CE. European Research Council funded Horizon 2020 project (Grant Agreement No. 951649), 2021-2027. <https://cordis.europa.eu/project/id/951649>; 4oceanserc.org.

² Right whales, bowhead whale, sirenians, cod, walrus, fur seals (northern and southern), sea otter, parrotfish, herring (Atlantic and Pacific) and bluefin tuna (Atlantic and Pacific).

2. Methodology: a two-step approach

Step 1 pertained to data collection and was initiated by several team members from NOVA FCSH and TCD³. The search was conducted across major databases (generic and multidisciplinary) and various search engines, including JSTOR, SCOPUS, Web of Science, Google Scholar, ProQuest, and B-On. We employed the use of the advanced search functionality and auxiliary search tools, such as truncations and boolean operators, across all databases and search engines. Typical search strings included: ("Pinnipeds") AND ("History" OR "Modern Period") AND ("Hunting" OR "Catching" OR "Fishing") AND ("South America") / ("pinnípedos") AND ("historia") AND ("caza") AND ("South Atlantic") / "phoques" AND ("histoire moderne") AND "chasse" AND "consommation".

For each paper identified the process included screening titles, keywords, and abstracts to identify relevant studies for inclusion or exclusion. Peer-reviewed publications and grey literature written in English, Spanish, Portuguese, and, to a lesser extent, French⁴, were included. Studies were excluded if they focused strictly on ecological, behavioural, physiological, genetic, or archaeological aspects, except whenever they provided relevant historical information. Our method included the search for data in any chronology until the 20th century, thus excluding extractions' data related with industrial operations.

Upon compiling a sufficient corpus of scholarly papers in the selected literature, we aimed at identifying quantitative data: this involved specific metrics such as the number of hunted/killed animals, quantity of skins harvested, or quantity of oil obtained. Any study that fulfilled these criteria was subsequently included in the Literature Review Mastersheet. Each study was then evaluated and categorized according to predefined guidelines established for the literature review.

³ Trinity College Dublin, <https://www.tcd.ie/tceh/>. This work was led by our colleague Cianna Devitt, to whom we extend our gratitude.

⁴ We identified two entries of works in Dutch and Chinese, but noted that the majority of entries across all project teams followed the languages we selected. The Lisbon team in particular focused mostly on English, Portuguese and Spanish.

Categories ranged from qualitative assessments (Level 1) to studies providing extensive quantitative data (Level 4)⁵, ensuring a rigorous and consistent approach to data classification.

Step 2 consists of the synthesis, organization, and standardization of the collected data into the 4-OCEANS Literature Review MasterSheet. This spreadsheet was structured to include essential bibliographic details and contextual information, such as the geographic location of captures or market data where applicable. It was built in compliance with Darwin Core data standards, and with the potential to be georeferenced, facilitating ArcGIS mapping integration. In regard to pinnipeds' data, researchers from the Lisbon team proceeded to standardize all entries, namely when it comes to the vernacular names of some species. The most notable example of this is the case of the brown and/or the cape fur seal, common names for the *Arctocephalus pusillus*, which we opted to standardize as the brown fur seal, following Worms⁶.

3. Global results

3.1. Overview of the covered studies

While our primary focus remained on pinnipeds along the entire process, it is important to note, first, that our work also yielded significant information on whales, otters and, to a lesser extent, sirenians or several fishes such as cod or croaker. This broader scope can be attributed to the inclusion of keywords in our research such as “marine mammals” or “mamíferos marinhos” (in Portuguese). While these terms expanded the scope and reduced the specificity of our search, they proved instrumental in uncovering extensive information on our target species. Additionally, this approach had the advantageous side effect of providing valuable data on other species relevant to the project's objectives that otherwise could be lost.

With this in mind, our survey on pinnipeds literature resulted in 679 individual entries derived from 169 studies,⁷ ranging from books, book chapters, thesis and peer-reviewed articles,

⁵ See Appendix II.

⁶ World Register of Marine Species, <https://www.marinespecies.org/aphia.php?p=taxdetails&id=231410#links>.

⁷ See Appendix I.

all of which were included in the 4-OCEANS Mastersheet on the basis of containing quantitative data on the history of sealing activities, namely extraction numbers, but also market data, such as seal imports and exports. Additionally, we aimed at gathering literature about the topic to assess the overall state-of-the-art. This process proved more complex than anticipated, as some works fell into a grey area. Specifically, studies and reports from the 19th century⁸ can be considered both a study and a historical source and the decision to include it or not was made by each reviewer and discussed with the team.

Entries related only to extractions constituted 73,3% of the total. Notably, the entries that do not exclusively pertain to numbers of animals extracted accounted for 26,7% of the total, highlighting the extensive amount of data that extends beyond our initial focus on quantifying historical pinniped harvests, illustrating the broader scope of information captured in our review. Considering the year of the publications, our literature review covered from 1814 to 2023. 82,8% of the studies (n=140) pertains to studies published from the second half of the 20th century onwards, and from those 48,2% being from the 21st century, as can be seen in Chart 1.

This trend reflects the increasing number of statistical reports and studies related with historical fisheries and other marine extractions in the last decades and the growing interest in the fields of marine environmental ecology, environmental history and the blue humanities, areas of knowledge and inquiry that engage with diverse historical, cultural, economic and theoretical perspectives, as evidenced by this literature review.

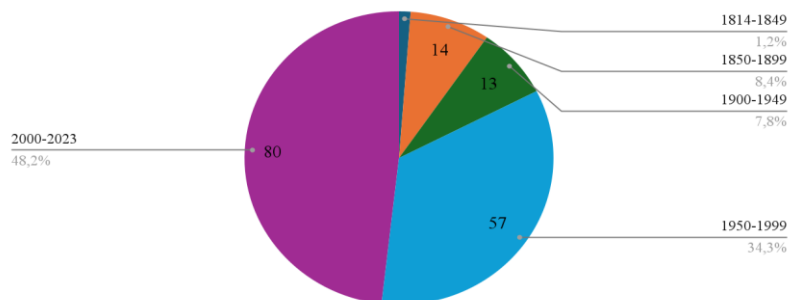


Chart 1. Percentage of studies by year of publication.

⁸ An example is Lisiansky's (1814) travel account, *A Voyage Around the World*, the earliest case found and that was included as a study.

Regarding the languages covered, there is a clear predominance of studies written in English, corresponding to 85,2% (n=144 studies), followed by Spanish (11,2%, n=19). Studies in French, Chinese, Dutch, Italian and Portuguese have also been included (Chart 2), revealing the much-needed effort in including non-anglophone academic production in the review, even if English written literature remains dominant.

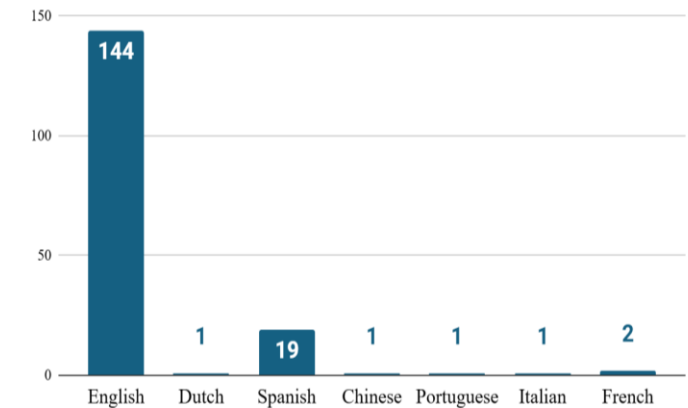


Chart 2. Number of studies for each language surveyed.

Most of the literature included, pertains to scientific publications, comprising 78 journal articles (44,2%), 50 books, including book chapters, (29,6%), 17 academic thesis (10%) and 3 conference proceedings (1,8%). Reports and travel accounts were also included (Chart 3) although our analysis being biased towards academic works due the scope and aim of this literature review.

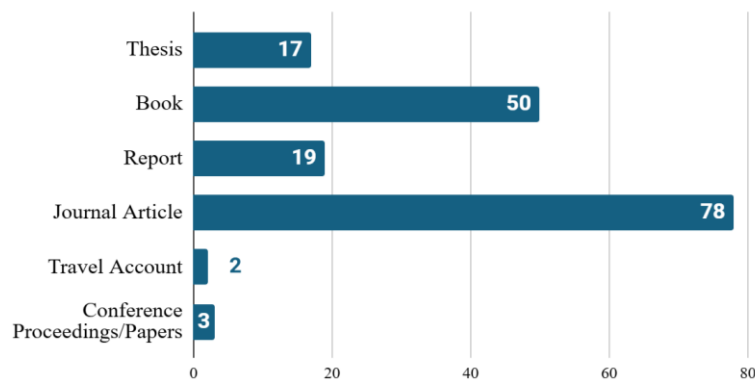


Chart 3. Number of studies by type.

3.2. Geographic range of publications/studies

Pinnipeds' extraction was a global phenomenon, throughout the historical timeframe assessed, with data being available for all the four oceans covered by the project. The results were 399 entries (58,8%) for the Pacific Ocean, followed by 203 (29,9%) entries for the Atlantic Ocean. The Arctic represents 51 entries of the database (7,5%) and the Indian Ocean is the least represented, amounting to 26 entries (3,8%). There seems to exist a bias in data related with the Pacific most likely resulting from the predominance of Anglo-Saxon scholars in the Literature Review. This in turn leads to a greater representation of areas that were historically associated with large scale sealing operations, such as Alaska, the Northern Pacific Coast or the Bering Sea.

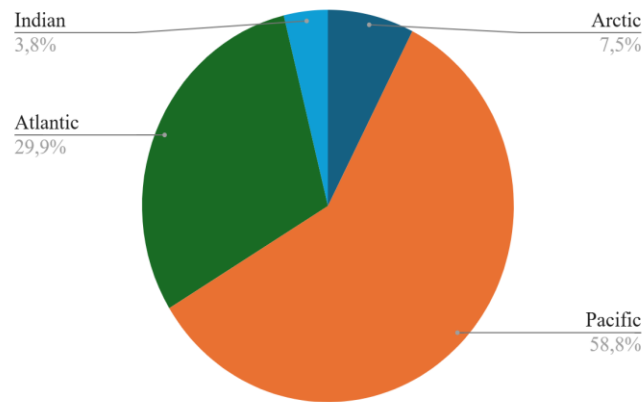


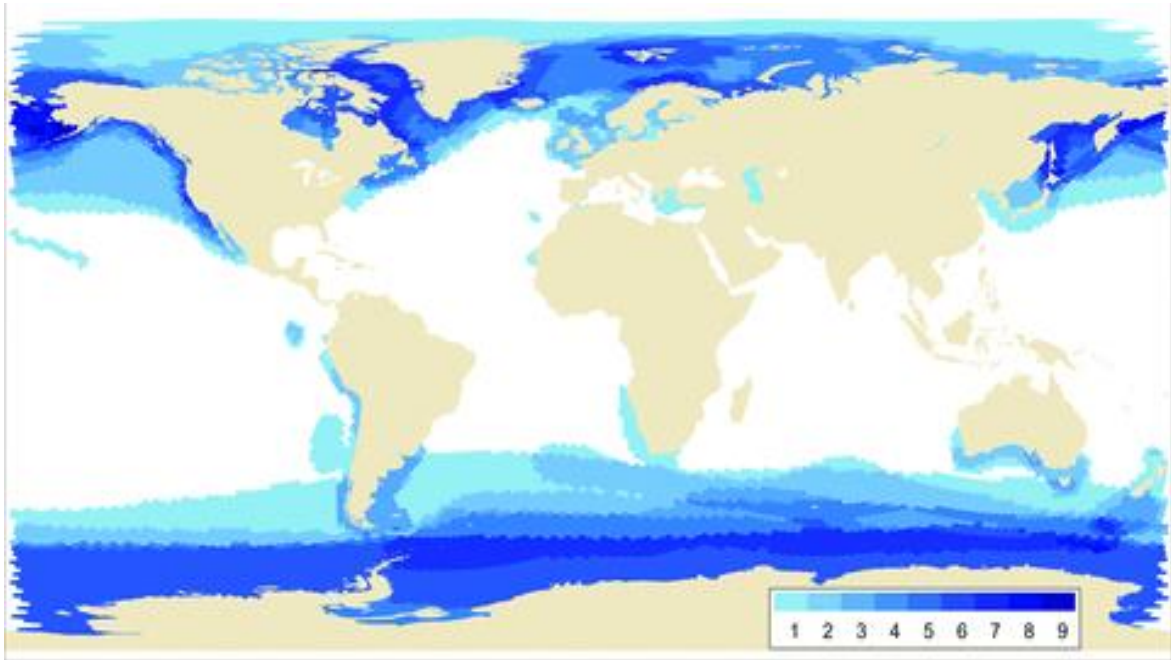
Chart 4. Oceans coverage of pinnipeds data.

By georeferencing the data, it was possible to create a visual representation of the current state of work related to historical pinniped extraction. In addition, this has allowed us to compare between the presence of these animals in the historical record and current information about their distribution areas around the world. While there is a significant overlap, as shown in Map 1 and Map 2 notable discrepancies emerge. Our literature review of historical data reveals pinniped presence in the past in areas where currently populations are absent or scarce. This may suggest that although most occurrence patterns remain stable, others have shifted significantly. The data collected by our reviewers reflects how these animals have been - and still are - distributed across the globe, in various latitudes and different biogeographic and climatic regions, aligned with the

fact that “pinnipeds do not conform to the generalization that marine mammals are concentrated in tropical and temperate regions” (Schipper et al., 2008). Crucially, it is indicative that when and wherever seals, sea lions, or walruses and humans have coexisted interactions occurred — sometimes integrating these animals into commercial networks, transforming them into commodities but also, in many cases, incorporating them into subsistence strategies, essential to the survival and cultural practices of indigenous communities. The only major discrepancy in distribution data comes with the Antarctic, which was not included in the Literature Review, due to not fitting the scope of 4-OCEANS.



Map 1. Distribution of historical pinniped extractions according to the Literature Review.



Map 2. “Global distribution of pinnipeds (including all extant subspecies)”, Kovacs *et al.* (2012).

Mapping efforts were conducted based on the most precise information communicated in the literature, with latitude and longitude coordinates being provided by online datasets such as Marine Regions⁹ or the Getty Thesaurus of Geographic Names¹⁰. The georeferencing could happen at two distinct levels. Firstly, on a regional, wider sense, enabling a general sense of hot spots of information around the globe. As shown in Table I, a regional analytical scope allows us to capture general trends, such as identifying New Zealand and Australia as a rich area on data, alongside the Bering Sea or the Atlantic and Pacific coasts of South America with Chile, for example, being a particular outlier.

The second level, upon which geographic coordinates were derived, is based on locality, also showcased in the above-mentioned table. In some instances, quantitative data in the studies

⁹ Available in: <https://www.marineregions.org/>.

¹⁰ Available in: <https://www.getty.edu/research/tools/vocabularies/tgn/>.

was not site-specific, which explains large regions like New Zealand and Alaska reappearing on the locality field (Table I). Even so, our reviewers identified many entries around historically significant sealing grounds, such as the Pribilof Islands or the Falklands. In the same manner, the various mentions of Canton and London, are indicative of the richness of information summarized, providing not only data to where these animals were hunted, but also of the most relevant markets of seal products in the 18th and 19th century, with “historical records of the number of southern fur seal skins sold on the Canton and London markets before 1833 indicate that a minimum of 7 million seals had been killed” (Richards, 2003: 1).

Table I. Regional and local distribution of sealing data entries

Region	Entries	Locality	Entries
New Zealand	72	Pribilof Islands	42
Bering Sea	66	Falkland Islands	29
Chile	47	Canton	23
South Atlantic	38	London	22
Australia	35	Juan Fernández Islands	21
Canada Atlantic	35	Newfoundland	20
Alaska	29	Alaska	17
Arctic	26	Guadalupe	12
England	26	New Zealand	12
China	24	Antipodes Islands	12

3.3. Chronology of sealing data

Due to their coastal reproduction patterns and the predictability of its associated behaviour, pinnipeds were early targets for human communities (Monsarrat, 2015: 29), as can be discerned from the archaeological record. When examining the historical data on sealing activities, a notable

absence of information becomes evident, particularly in terms of chronology. There is a clear gap in data prior to the High Middle Ages, with only two identified studies focused on the period prior to the year 1000. The first, and earliest, makes mention of seal exports starting in 713, in the early medieval kingdom of Balhe, which comprised parts of modern China, Korea and Russia (Ruxing, 2016). The second pre-1000 study is quite interesting, revealing both quantitative and qualitative: it pertains to a catch of 60 walruses (*Odobenus rosmarus*), reported to “King Alfred of Wessex around 890 AD, [by] the Scandinavian traveller Othere” (Monsarrat, 2015: 30), showcasing the relevance and importance given to the catch of this species to configure as news to a royal figure.

There is less information in the database from 713 up until 1250, where quantitative data begins to pick up, peaking in 1300 with 8 entries in the database, concerning the mediterranean monk seal (*Monachus monachus*). What follows is steady, if reduced presence of pinniped quantitative data, up until 1700 (Chart 5), with the number of data points hovering between 1 and 3, with the notable exception of 1610, with 7 entries, in reference to brown fur seal (*Arctocephalus pusillus*) extractions in the Cape of Good Hope, South Africa.

The 18th and 19th century, represent a major uptick in information, consisting of the vast majority of all entries. (Chart 6). Furthermore, the chronological data is increasingly more precise as we move from the 18th century to the early 1800s. Historical records are clear in showcasing a clear intensification of the hunting of seals during this time period, namely in the region around the Falkland Islands and the South American Coasts (Dickinson, 1987; Dickinson, 1990; Richards, 2003) and the growing fur and oil Alaskan trade, led mostly by Russian and American sealers (Allen, 1880; Brown, 1894; Bosworth, 2020; Gibson, 1992). It is therefore natural that, as the commercialisation and industrialisation of sealing operations expanded into a growing global market, information on the quantities of skins, litres of seal oil and the number of pinniped slaughters was increasingly communicated and remained in the written record, due to its importance as a commercial commodity.

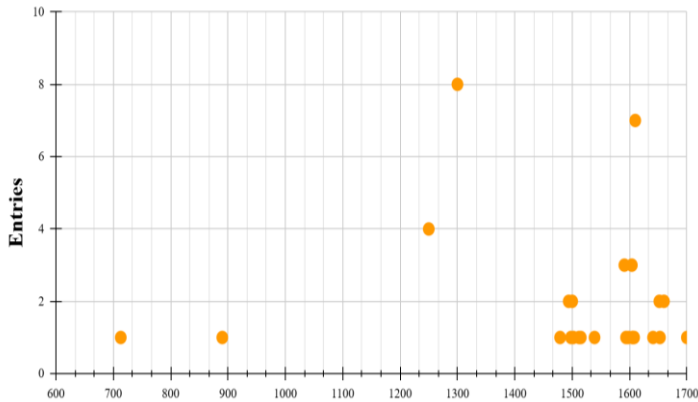
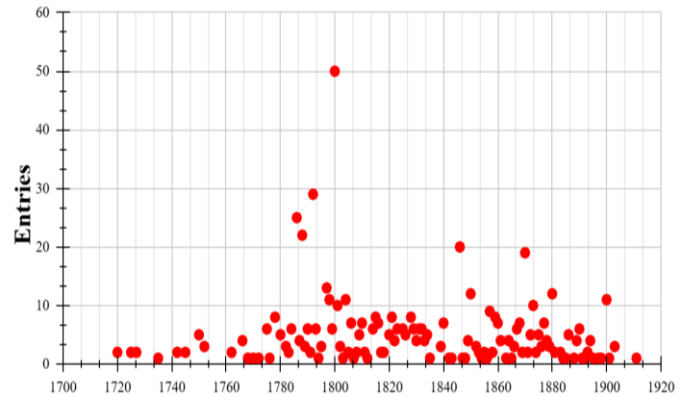
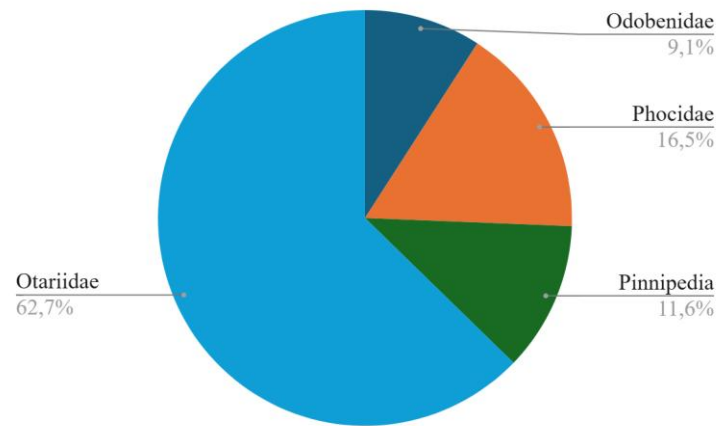


Chart 5. Number of entries with pre-18th c. data.



historical source — such as morphology, behaviour or local naming — to infer the most likely species.



Map 3. Distribution of entries per Families and the clade Pinnipedia.

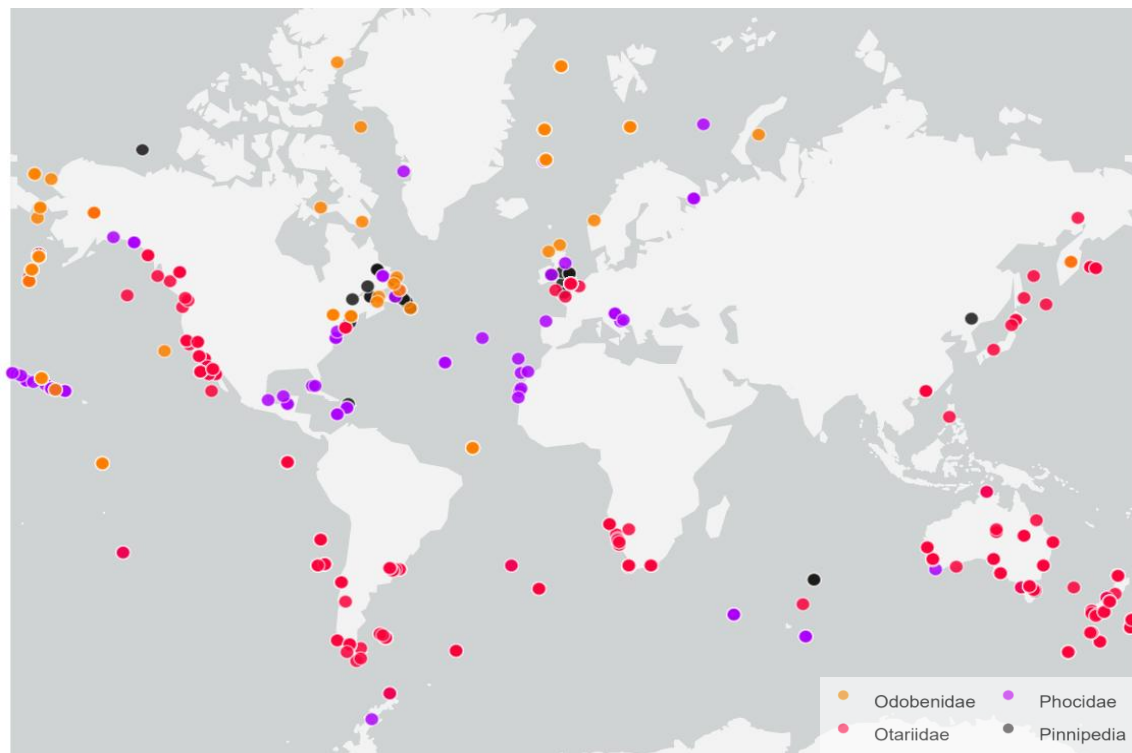


Chart 7. Percentage of entries per taxonomic Families and the clade Pinnipedia.

4. Case Study: Fur Seal Hunting in the Global Historical Scholarship

Fur seals belong to the *Otariidae* family, comprising the only species of the *Callorhinus* genus, the northern fur seal (*C. ursinus*), and the eight species of the genus *Arctocephalus*: the antarctic fur seal (*A. gazella*); the brown fur seal (*A. pusillus*)¹¹; the Galápagos fur seal (*A. galapagoensis*); the Guadalupe fur seal (*A. townsendi*); the Juan Fernández fur seal (*A. philippii*); the South American fur seal (*A. australis*)¹²; and the subantarctic fur seal (*A. tropicalis*).

Data on extractions remained minimal between 1250 and 1600, indicating that fur seals have been scarcely documented or discussed in the literature. A small peak in the early 17th century suggests a momentary rise in record numbers, possibly due to early modern European explorations in the regions inhabited by fur seals (Raven-Hart, 1971). The late 17th century and the beginning of the 18th century show an upward trend in recorded entries, although they remain relatively low and sporadic. The number of entries in the Literature Review peaked significantly around the beginning of the 19th century, corresponding to the period of commercial hunting driven by Europeans and Americans which targeted fur seals for their pelts (Roppel, 1984). These were primarily sold in major trade hubs such as London or Canton which were among the most preferred destinations for such high-demand commodities (Richards, 2003). Consequently, this suggests an intense period of production of documentation due to the expansion of hunting activities and trade records, reflected in our review.

Lastly, we observe a fluctuating decline in entries after the beginning of the 19th century (although still higher than pre-18th century levels), indicating an over-exploitation of fur seal species which led to an increase of national and international regulations and a decrease in the commercial viability of sealing operations (Sellheim, 2018; Hofman et al., 1985). The decline of entries through the end of the 19th century and the 20th century is noteworthy. This may come as

¹¹ There are two subspecies of brown fur seal, the australian fur seal, *Arctocephalus pusillus doriferus*, and the cape fur seal, *Arctocephalus pusillus pusillus*.

¹² Similarly, *A. australis forsteri*, commonly known as the New Zealand fur seal, is considered a subspecies of *A. australis*.

the result of a decline in commercial sealing activities by western agents, a shift that can be related with the wide scale expansion of whaling operations in the 20th century, greatly covering the market demand for oil. Against this backdrop, it is worth asking: was there in fact a decline in hunting activity or a shift in geographic focus such as a move to Antarctic waters (which fell outside the geographic scope of the present study), or even a broader loss of scholarly interest in this taxon? Further research on these hypotheses is in progress and represents a particularly interesting research question in future inquiries into the subject.

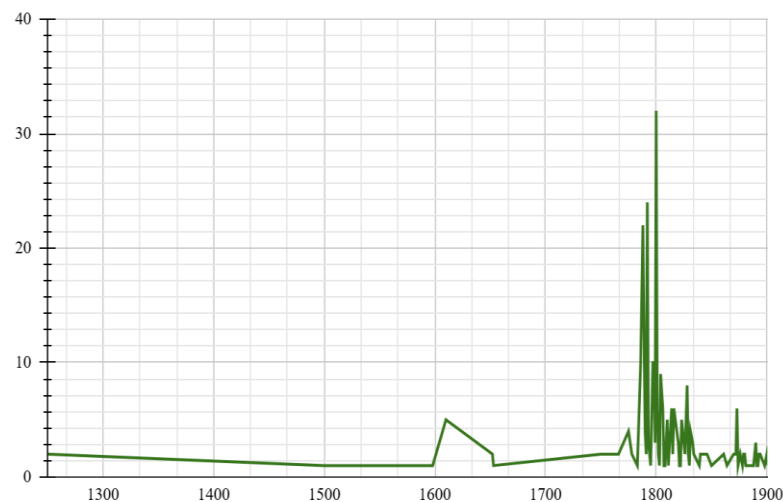
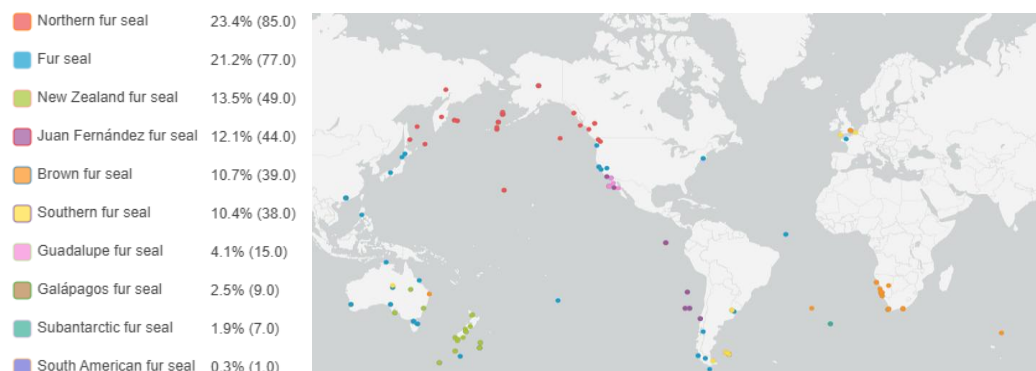


Chart 8. Number of entries with fur seal data.

The most represented species in the literature review was the northern fur seal comprising 85 entries (23,4%). It was followed by 78 entries (21,2%) that refer generically to "fur seals". This happened when the information provided in the studies did not allow the identification of the species or did not provide any indication of their classification, highlighting that many historical records and literature couldn't differentiate between species, underlining major gaps in its identification. Additionally, the New Zealand fur seal is well represented with 49 entries (13.5%), along with the Juan Fernández fur seal with 44 entries (12,1%), the brown fur seal with 39 entries

(10,7%)¹³ and the southern fur seal with 38 (10,4%). Among the less frequently represented species are the Guadalupe fur seal with 15 entries (4.1%), the Galápagos fur seal was documented in 9 entries (2,5%), the Subantarctic fur seal in 7 entries (1,9%) and the South American fur seal in 1 (0,3%).

A few patterns emerge when we visualize the global map of the distribution of fur seal historical extraction data (Map 4). First, the geographic diversity and distribution of recorded evidence of fur seals span both hemispheres and multiple oceanic regions reflecting, as previously mentioned, a truly global interest in fur seals historically, mostly with economical interest. When closely analysed, the northern fur seal clearly stands out as the most frequently recorded species, displaying its importance in the context of the 18th and 19th century northern hemisphere (particularly in Alaska and the Russian Far East) commercial sealing industry (Owens and Petrov, 2015). Also, references to non-specified fur seals appear frequently and across a wide geographic range, showing a significant limitation in the literature reviewed. This taxonomic ambiguity — where many sources fail to identify the specific species — complicates efforts to assess historical distributions accurately. The New Zealand and the Juan Fernández fur seals are the most documented species in the southern hemisphere, specifically in the South Atlantic. Data on the southern fur seal is also significant in the South Atlantic and on the brown fur seal in both the South Atlantic and the Australian Indian coast.



Map 4. Distribution of fur seal historical extraction data

¹³ Of these, 29 pertain to the *Arctocephalus pusillus pusillus* subspecies, also commonly referred as the Cape fur seal, due to its distribution around the Cape of Good Hope in South Africa.

This certainly reflects our deliberate effort to expand the literature base on the fur seals across the South Atlantic and Indian oceans, ensuring a more comprehensive geographic representation than, perhaps, has been done in the past. More regionally restricted species such as the Galápagos, the Guadalupe and the subantarctic fur seal, naturally, have fewer entries consistent with their smaller and more isolated populations. Lastly, the Australian and South American fur seals are the species least represented in the Literature Review with just one entry each. However, this underrepresentation may come because of the difficulty in identifying the species in historical documentation, mainly in the case of sympatric species, which led to the large number of “Fur Seal” entries (i.e. unspecified entries) in both regions.

5. Final considerations

Sealing has been a relevant activity for centuries, across multiple societies and communities, with seals and sea lions being “easily accessible coastal species of marine mammals” and “for millennia the target of aboriginal subsistence for the meat, oil, bones and fur they provide” (Monsarrat, 2015: 29). Our work, more than quantifying these historical sealing activities, highlights the economical, cultural and environmental significance that pinnipeds have held across various regions and chronologies.

The global synthesis we conducted underscore the relevance and significance of the Literature Review while also highlighting the limitations and challenges inherent to this methodological approach. It helps us discern patterns in the historical extractions of seals across different regions and time periods, contributing to a better understanding of the global dynamics of pinniped exploitation. It may, nevertheless, miss studies that do not clearly refer to numbers of extractions but rather provide descriptive or interpretive information.¹⁴

The results showcase the shortcomings and reveal important gaps in this methodological approach. In this context, a significant gap is evident regarding the data pertaining to the Indian

¹⁴ An example of such may be the case of the monk seals. Even though we do have information that these species were heavily hunted throughout the early modern age, across their global distribution range, the Literature Review has underrepresented this species. This may come as a consequence of the exclusion, for the most part, of focused research on the sea basins of the Caribbean and Mediterranean, alongside the mentioned bias towards quantitative data.

Ocean, underscoring the possible need for a focused literature review targeting this region. This shortfall in scholarship may stem from linguistic barriers, which restrict access to pertinent studies, or from a comparative lack of research dedicated to the Indian Ocean in scholarly discourse. Considering that the intensity of occurrence of pinnipeds in this region is significantly lower than in other areas, we have been able to find information nonetheless, which would suggest that a targeted effort on the region, enlarging the languages covered may prove fruitful.

Notwithstanding these challenges, we successfully captured a breadth of potentially relevant information and data from the literature that was not direct extractions of pinnipeds, ensuring no valuable information was overlooked. This can include mentions of sealing expeditions, infrastructure or trade networks that, although not describing direct extraction events, provide crucial qualitative and contextual information. Simultaneously, we gathered a considerable amount of data pertinent to our original objectives, thereby balancing a comprehensive yet focused analysis.

Furthermore, this method has proven effective in a very restricted chronological time frame, with most of the data identified pertaining to the 19th century. In fact, even in the context of the 19th century, a lot of information available is related to the last quarter of the century. This methodology, by design, is not meant to include historical sources, and that revealed a clear tendency of researchers to focus on 19th century studies, probably due to the greater level of abundant sources of many types such as fishing reports, journals or travel logs. The problem is further exacerbated when the Literature Review does not include archaeological studies. As we move back in time, historical sources become scarcer, making archaeological evidence critical for the reconstruction of extractions in earlier periods. As such, we advocate for further questioning and incorporation of both historical and archaeological sources, to enable a broadening of the chronological scope of analysis and, in turn, a deeper understanding of the role of seals and sealing operations in the historical narrative of colonial Europeans and indigenous populations (Buss *et.al.*, 2024). Archaeological records have been particularly sidelined and may provide answers on the chronological gaps in the Literature Review, for regions and historical moments where the written record is scarce or non-existent.

Considering these challenges, our Literature Review should be seen as a first step towards a comprehensive understanding of the global history of pinniped exploitation in its various forms and dimensions, from subsistence activities to fully developed global industries that helped build and shape empires, particularly during the 17th and 18th centuries. Recognizing both the achievements and limitations of this effort, the goal of the 4-OCEANS project - and particularly of this work - is ultimately to offer directions to current and future researchers. By identifying both the strengths and limitations of this approach, we clearly reinforce the need for multidisciplinary, multilingual and geographically diverse studies in order to fully understand the historical dynamics and interactions between human societies on land, and non-human populations at the sea, and to point out future avenues of research.

6. References

- Allen, J. A. (1880). *History of North American Pinnipeds: A Monograph of the Walruses, Sea-Lions, Sea-Bears and Seals of North America*. Washington: Government Printing Office.
- Bosworth, A. L. (2020). *After "Walrussia": American, Russian, Canadian, and Japanese Fur Seals between Empires, 1867-1911*. PhD Thesis: Cornell University.
- Brown, J. S. (1894). Fur Seals and the Bering Sea Arbitration. *Journal of the American Geographical Society of New York* 26(1): 326-372.
- Buss DL, Dierickx K, Falahati-Anbaran M *et. al.* (2024). Archaeological evidence of resource utilisation of walrus, *Odobenus rosmarus*, over the past two millennia: A systematic review protocol [version 1; peer review: 2 approved]. *Open Res. Europe*, 4:86.
- Dickinson, A. (1987). *A History of Sealing in the Falkland Islands and Dependencies, 1764-1972*. PhD Thesis: University of Cambridge.
- Dickinson, A. (1990). Some Aspects of the Origin and Implementation of the Eighteenth Century Falkland Islands Sealing Industry. *International Journal of Maritime History* II(2): 33-68.
- Gibson, J. R. (1992). *Otter Skins, Boston Ships, and China Goods: The Maritime Fur Trade of the Northwest Coast, 1785-1841*. Ontario: McGill-Queen's University Press.

Hofman, R. J. and N. W. Bonner (1985). "Conservation and Protection of Marine Mammals: Past, Present and Future ". *Marine Mammal Science*. 1(2): 109-127.

Holm, P., Barrett, J., Brito, C., and Ludlow, F.. (2022). New challenges for the Human Oceans Past agenda. *Open Research Europe*. 2 (114).

Kocavs, K., et al., (2012). Global threat to pinnipeds. *Marine Mammal Science*. 28 (12).

Monsarrat, S. (2015). *Reconstruction of marine mammals' historical distribution and abundance: setting a baseline to understand the past, inform the present and plan the future*. PhD Thesis: University De Montpellier.

Owens, K., Petrov, A. (2015). *Empire Maker: Aleksandr Baranov and Russian Colonial Expansion Into Alaska and Northern California*. Washington, University of Washington Press.

Raven-Hart, R. (1971). Cape of Good Hope: 1652-1702, A.A. Balkema: Johannesburg.

Richards, J. F. (2003). *The Unending Frontier: An Environmental History of the Early Modern World*. Oakland: University of California Press.

Roppel, A. Y. (1984). *Management of Northern Fur Seals on the Pribilof Islands, Alaska, 1786-1981*. Washington DC: U.S. Department Of Commerce.

Ruxing, 郭. G. (2016). 唐代渔业地理 (**Fishing Geography in the Tang Dynasty**). **Research Master**, 陕西师范大学.

Schipper, J. et al. (2008). The Status of the World's Land and Marine Mammals: Diversity, Threat, and Knowledge. *Science*. 322 (225).

Sellheim, N. (2018). *The seal hunt: Cultures, economies and legal regimes*. Leiden/Boston: Nijhoff.

Appendices

I - Literature included in the review

Alava, J.J. (ed.). (2017). *Tropical Pinnipeds: Bio-Ecology, Threats and Conservation*. Boca Raton: CRC Press.

Aldworth, R. and S. Harris (2007). *Canada's Commercial Seal Hunt. The State of the Animals*. D. J. Salem and A. N. Rowan, Humane Society Press. IV.

Amerson Jr., A. B., Clapp, R., Wirtz II, W. (1974). The Natural History of Pearl and Hermes Reef, Northwestern Hawaiian Islands. *Atoll Research Bulletin*. 174. Washington D.C.: The Smithsonian Institution.

Amerson Jr., A. B. (1971). The Natural History of the French Frigate Shoals, Northwestern Hawaiian Islands. *Atoll Research Bulletin*. 150. Washington D.C.: The Smithsonian Institution.

Anderson, R. (2016). *Modelling maritime society and cross-cultural contact on Australia's Southern Ocean frontier*. PHD Thesis: University of Western Australia.

Anderson, R. (2018). The Role of Sealers, Whalers and Aboriginal People in the Exploration of Western Australia's Southern Ocean Frontier. *The Great Circle* 40 (2): 1-27.

Baker, R. C., et al. (1970). The Northern Fur Seal. Washington D.C., United States Department of the Interior U.S Fish and Wildlife Service Bureau of Commercial Fisheries. Circular 336.

Beattie, J. (2023). Chinese Resource Frontiers, Environmental change, and Entrepreneurship in the South Pacific, 1720s-1920s, in James Beattie, Ryan Tucker Jones and Edward Dallam Melillo (eds.), *Migrant Ecologies: Environmental Histories of the Pacific World*. Honolulu: University of Hawaii Press.

Best, P.B. and Shaughnessy, P.D. (1979). An Independent Account of Captain Benjamin Morrel's Sealing Voyage to the South-West Coast of Africa in the Antarctic, 1828/1829. *Fish Bulletin of South Africa* 12(1): 1-19.

Biangardi, N. (2013). Una Nueva Área Para La Región Poblamiento Y Crecimiento Económico En Maldonado (1755-1814). *Revista Uruguaya de Historia Económica* 3(4): 11-30.

Biangardi, N. (2018). No Sólo de Vacas y Trigo Vivía el Hombre: Actividades Económicas alternativas en la región de la región Río de la Plata a Fines del Siglo XVIII. *Revista De Historia Americana Y Argentina*. 53(1): 11-31.

Black, L. T. (2004). *Russians in Alaska: 1732-1867*. Fairbanks, Alaska: University Of Alaska Press.

Bockstoe, J. R., Botkin, D.B. (1982). The Harvest of Pacific Walruses by the Pelagic Whaling Industry, 1848 to 1914. *Arctic and Alpine Research* 14(3): 183-188.

Bolster, J. (2014). *The Mortal Sea, Fishing the Atlantic in the Age of Sail*. Cambridge: Harvard University Press.

Bosworth, A. L. (2020). *After "Walrussia": American, Russian, Canadian, and Japanese Fur Seals between Empires, 1867-1911*. Ph.D Thesis: Cornell University.

Braje, T. J., J., Erlandson, M. and Rick, T.C. (eds.), (2011). *Human Impacts on Seals, Sea Lions, and Sea Otters: Integrating Archaeology and Ecology in the Northeast Pacific*. Berkeley: University of California Press.

- Brown, J. S. (1894). Fur Seals and the Bering Sea Arbitration. *Journal of the American Geographical Society of New York*. 26(1): 326-372.
- Bryan, W. A. (1915). *Natural History of Hawaii*. Honolulu: The Hawaiian Gazette Co., Ltd.
- Campbell, R. (2005). Historical distribution and abundance of the Australian sea lion (*Neophoca cinerea*) on the west coast of Western Australia. *Fisheries Research Report*. 148. Australia: Western Australian Marine Research Laboratories: 5-44.
- Cass, V. L. (1985). Exploitation of California Sea Lions, *Zalophus californianus*, Prior to 1972. *Marine Fisheries Review* 47(1): 36-38.
- Castonguay, D. (2003). L'exploitation du loup-marin et son incidence sur l'occupation de la côte par les Montagnais de la Traite de Tadoussac, au XVIII^e siècle. *Recherches amérindiennes au Québec*. 33(1): 61-72.
- Childerhouse, S. and Gales, N. (1998). Historical and modern distribution and abundance of the New Zealand sea lion *Phocarctos hookeri*. *New Zealand Journal of Zoology*. 25: 1-16.
- Childs, W. R. (1982). Ireland's Trade with England in the Later Middle Ages. *Irish Economic and Social History* 9: 5-33.
- Christensen, L. B. (2006). Marine Mammal Populations: Reconstructing historical abundances at the global scale. British Columbia: Fisheries Centre Research Reports.
- Clapp, R. B., (1972). The Natural History of Gardner Pinnacles, Northwestern Hawaiian Islands. *Atoll Research Bulletin*. 163. Washington D.C: The Smithsonian Institution.
- Clapp, R. B., Kridler, E. and Fleet, R.R.(1977). "The Natural History of Nihoa Island, Northwestern Hawaiian Islands." *Atoll Research Bulletin*. 207.
- Clapp, R. B. and Kridler, E. (1977). The Natural History of Necker Island, Northwestern Hawaiian Islands. *Atoll Research Bulletin*. 206. Washington D.C: The Smithsonian Institution.
- Clapp, R. B. and Wirtz II, W. (1975). The Natural History of Lisianski Island, Northwestern Hawaiian Islands, *Atoll Research Bulletin*. 186. Washington D.C: The Smithsonian Institution.
- Clayton, James L. (1966). Papers on the North American fur trade, *Minnesota historical Society*. 40(4): 149-220.
- Cobb, J. N. (1902). Commercial Fisheries of the Hawaiian Islands. United States Commission of Fish and Fisheries. Report of the Commissioner for 1901. Washington D. C., Government Printing Office: 381-499.
- Cole, D., Lockner, B. (1993). *To the Charlottes: George Dawson's 1878 Survey of the Queen Charlotte Islands*. Vancouver, UBC Press.
- Coppinger, R. W., (1884). *Cruise of the 'Alert': Four Years in Patagonian, Polynesian and Mascarene Waters: (1878-1882)*. R. Worthington Publishers.
- Courtright, A. M. (1968). *Game Harvests In Alaska*. Juneau: State Of Alaska Department Of Fish And Game.
- Crespo, E. A., Schiavini, A., García, N., Franco-Trecu, V., Goodall, R., Rodríguez, D., Morgante, J. and Oliveira, L. (2015). "Status, population trend and genetic structure of South American fur seals, *Arctocephalus australis*, in southwestern Atlantic waters." *Marine Mammal Science*. 31(3): 866-890.
- Crowell, A. L. (2015). "The Yakutat Seal Camps Project 2014: Excavations At An A.D. 1200 Sealing Camp." *Arctic Studies Center Newsletter*.

- Crowell, A. L. (2016). Ice, Seals, and Guns: Late 19th-Century Alaska Native Commercial Sealing in Southeast Alaska. *Arctic Anthropology* 53(2): 11-32.
- Croxall, J. P., Gentry, R.L. (1987). *Status, Biology, and Ecology of Fur Seals Proceedings of an International Symposium and Workshop Cambridge, England*. Washington DC: US Department of Commerce.
- Dall, W. H. (1870). *Alaska and Its Resources*. Boston: Leed and Shepard.
- David, J., van Sittert, L. (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* 104: 107-110.
- de Groot, B. J. (2013). Eerste internationale beheersmaatregelen voor de Arctische robbenvangst. *Tijdschrift voor Zeegeschiedenis*(1): 21-34.
- Demuth, B. (2019). The Walrus and the Bureaucrat: Energy, Ecology, and Making the State in the Russian and American Arctic, 1870–1950. *American Historical Review*. 124 (2): 483–510.
- Dickinson, A. (1994). Early Nineteenth-Century Sealing on the Falkland Islands: Attempts to Develop a Regulated Industry, 1820-1834. *The Northern Mariner*. 4(3): 39-49.
- Dickinson, A. (1987). *A History of Sealing in the Falkland Islands and Dependencies, 1764-1972*. PhD Thesis, University of Cambridge.
- Dickinson, A. (1990). Some Aspects of the Origin and Implementation of the Eighteenth Century Falkland Islands Sealing Industry. *International Journal of Maritime History*. II (2): 33-68.
- Dickinson, A. (1993). Early Sealing in the Falkland Islands Dependencies. *The Great Circle*. 15: 1-17.
- Dolin, E. J. (2010). *Fur, Fortune and Empire: The Epic History of the Fur Trade in America*. New York: WW Norton.
- Drew, J. et al. (2016). Collateral damage to marine and terrestrial ecosystems from Yankee whaling in the 19th century. *Ecology and Evolution*. 6: 8181–8192
- E. De Lalaing. (1889). *Histoire des pêches maritimes et fluviales : accompagnée de la description des poissons et polypes qui en font l'objet, d'après les plus savants naturalistes*. Lille: J. Lefort.
- Eden, A. W., (1955). *Islands of Despair: Being an Account of a Survey Expedition to the Sub-Antarctic Islands of New Zealand*. Michigan: Andrew Melrose.
- Elliott, H. W. (1881). *The history and present condition of the fishery industries: the seal-islands of Alaska*. Washington, Department of the Interior.
- Fanning, E. (1924). *Voyages and Discoveries in the South Seas, 1792-1832*. Salem: Marine Research Society.
- Fay, F. H. (1955). *The Pacific Walrus (Odobenus Rosmarus Divergens): Spatial Ecology, Life History, And Population*. PHD Thesis. The University Of British Columbia.
- Friedlander, A. (2009). *A Marine Biogeographic Assessment of the Northwestern Hawaiian Islands*. Maryland: National Ocean Service.
- Gales, N., Kirkwood, R. (eds.) (2003). *Marine mammals: fisheries, tourism and management issues*. Collingwood: CSIRO Publishing.

- Gibson, J. R. (1992). *Otter Skins, Boston Ships, and China Goods: The Maritime Fur Trade of the Northwest Coast, 1785-1841*. Ontario: McGill-Queen's University Press.
- González, L. M. (2015). Prehistoric and historic distributions of the critically endangered Mediterranean monk seal (*Monachus monachus*) in the eastern Atlantic. *Marine Mammal Science*. 31(3): 1168-1192
- González Vázquez, A. (2000). Aprovechamiento De Los Recursos Acuáticos En California Y Alaska: Cazadores-Recolectores En Las Fuentes Escritas De Los Siglos XVI, XVII Y XVIII. *Nivel Cero*. 8: 77-93.
- Griněv, A., V. (2018). *Russian Colonization of Alaska: Preconditions, Discovery, and Initial Development, 1741-1799*. Lincoln: University of Nebraska Press.
- Griněv, A., V. (2020). *Russian Colonization of Alaska: Baranov's Era, 1799-1818*. Lincoln, University of Nebraska Press.
- Hainsworth, D.R., (1967). Exploiting the Pacific Frontier: The New South Wales Sealing Industry: 1800-1821. *The Journal of Pacific History*: 59-75.
- Haller, S. C. (2020). *La Historia Marítima De La Patagonia Atlántica: Circulación De Especies En El Contexto Social Global (1800-1914)*. PHD Thesis. Universidad Nacional De San Martín.
- Heise, K. A., N. A. Sloan, P. F. Olesiuk, P. M. Bartier and J. K. B. Ford (2003). Living Marine Legacy of Gwaii Haanas. IV: Marine Mammal Baseline to 2003 and Marine Mammal-related Management Issues throughout the Haida Gwaii Region. *Technical Reports in Ecosystem Science*. 38.
- Hofman, R. J. and N. W. Bonner (1985). "Conservation and Protection of Marine Mammals: Past, Present and Future". *Marine Mammal Science*. 1(2): 109-127.
- Hooper, J. (2022). *Yankees in the Indian Ocean American Commerce and Whaling, 1786-1860*. Ohio: Ohio University Press.
- Hudson, R., Mason, R. (2014). *Lost Villages of the Eastern Aleutians: Biorka, Kashega, Makushin*, Washington DC: National Park Service.
- Innis, H. (1954). *The cod fisheries: the history of an international economy*. Toronto: Toronto University Press.
- Irwin, R., (2015). Canada, Aboriginal Sealing, and the North Pacific Fur Seal Convention. *Environmental History*. 20: 57-82
- Jackson, G. (1972). *Hull in the eighteenth century : a study in economic and social history*. London: Oxford University Press.
- Jones, A.G.E., (1981). The British Southern Whale and Seal Fisheries. *The Great Circle*. 3: 20-29.
- Jones, A.G.E., (1983). *The South Seas Whaling Voyage of the "Comet", 1813-1815*. The Great Circle. 5: 98-104.
- Jones, R. T. (2013). Running into Whales: The History of the North Pacific from below the Waves. *The American Historic Review*. 118: 349-377.
- Jordan, D. S. (1898). *The Fur seals and fur-seal Islands of the North Pacific Ocean, Part 1*. Washington: Government Printing Press.
- King, J. E., (1954). The Otariid Seals of the Pacific Coast of America, *Bulletin of the British Museum. (Natural History) Zoology*. 2 (10).
- Kirkwood, R. et al. (2010). "Continued population recovery by Australian fur seals". *Marine and Freshwater Research*. 61(6).

- Klinger, W. (2010). Note sulla presenza storica della foca monaca nell'Adriatico. *La Ricerca*. 57.
- Kocavs, K., et al., (2012). Global threat to pinnipeds, *Marine Mammal Science*, 28-12.
- Latham, A.J. H. and H. Kawakatsu. (2006). *Intra-Asian Trade and the World Market*. New York, Routledge.
- Lear, W. H. (1998). History of Fisheries in the Northwest Atlantic: The 500-year Perspective. *Journal of Northwest Atlantic Fisheries Science*. 23: 41-73.
- Ling, J. K., (1999). Exploitation of fur seals and sea lions from Australian, New Zealand and adjacent subantarctic islands during the eighteenth, nineteenth and twentieth centuries. *Australian Zoologist*. 31: 323-350.
- Ling, J. K. (2002). "Impact Of Colonial Sealing On Seal Stocks Around Australia, New Zealand And Subantarctic Islands Between 150 And 170 Degrees East". *Australian Mammalogy*: 24(1).
- Lisiansky, U. (1814). *A Voyage Round the World in the Years 1803, 4, 5, & 6; Performed, By Order of His Imperial Majesty Alexander the First, Emperor of Russia, in the Ship Neva*. London: S. Hamilton.
- Ilen, J. A. (1880). *History of North American Pinnipeds: A Monograph of the Walruses, Sea-Lions, Sea-Bears and Seals of North America*. Washington: Government Printing Office.
- Long, E.D. (ed.) (1884). *The Voyage Of The Jeannette*. Boston, The Riverside Press, Cambridge.
- Lowry, L. F., et al. (2011). Recovery of the Hawaiian Monk Seal (*Monachus Schauinslandi*): A Review of Conservation Efforts, 1972 to 2010 and Thoughts for the Future". *Aquatic Mammals*. 37 (3): 397-419.
- Lucas, F. A. (1889). Animals Recently Extinct or Threatened With Extermination, as Represented in the Collections of the U.S. National Museum. *Report of the United States National Museum for the year ending June 30, 1889*. Washington D.C: United States National Museum: 609-649.
- Luna Pérez, M. I., & Cuevas Cardona, C. . (2022). La extinción de la Foca Monje del Caribe (*Neomonachus tropicalis*): The extinction of the Caribbean Monk Seal (*Neomonachus tropicalis*). *Herreriana*, 3(2), 12–17.
- MacDiarmid, A.B.; Cleaver, P.; Stirling, B. (2018). Historical evidence for the state and exploitation of marine fish and invertebrate resources in the Hauraki Gulf and along the Otago-Catlins shelf 1769–1950: Supplementary Information. *New Zealand Aquatic Environment and Biodiversity Report*. 194. Wellington: Ministry for Primary Industries.
- MacDiarmid, Alison B., et al. (2016). Taking Stock - the changes to New Zealand marine ecosystems since first human settlement: synthesis of major findings, and policy and management implications. *New Zealand Aquatic Environment and Biodiversity Report*, No. 170. Wellington: Ministry for Primary Industries.
- Mac Laughlin, J. (2010). *Troubled waters: a social and cultural history of Ireland's sea fisheries*. Dublin: Four Courts Press.
- Mancilla González, P. (2018). "Federico Albert: Apreciaciones sobre la caza y pesca de los lobos marinos en los territorios australes de Chile, 1901". *Sophia Austral*. (22): 71-87.
- Martínez Shaw, C. (2008). Economía e Imperio. Los Establecimientos De La Real Compañía Marítima En América. *Anuario de Estudios Atlánticos*. 54 (I): 593-630
- Maser, C. et al. (1981). *Natural History Of Oregon Coast Mammals*. Portland: US Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station.

- Mayorga Zúñiga, M. (2018). "Loberos Yankees: Encuentros/Desencuentros En Torno A La Tierra Del Fuego Y Patagonia". *Revista Estudios Hemisféricos y Polares*. 9(4): 28-44.
- Mayorga Zuniga, M. (2019). "Explotación de guanacos, avestruces y lobos de mar: José Nogueira y las actividades económicas iniciales de Magallanes." *Bajo la Lupa, Subdirección de Investigación, Servicio Nacional del Patrimonio Cultural*.
- Mayorga Zúñiga, M. (2020). "Seal-skinners lobeando en territorio chono, aónikenk y chilote, 1830-1845." *Estudios Atacameños*. 64: 85-107.
- McClenachan, L. and A. B. Cooper (2008). Extinction rate, historical population structure and ecological role of the Caribbean monk seal. *Proceedings. Biological Sciences/Royal Society*. 275: 1351-1358.
- McClenachan, L. E. (2009). *Historical change in marine animal populations and coastal ecosystems in the Caribbean and Florida Keys*. PHD Thesis: University of California.
- McIntosh, R. et al. (2022). "Sustained reduction in numbers of Australian fur seal pups: Implications for future population monitoring". *PLoS ONE*. 17(3).
- McNab, R., (1909). *Murihiku: A History of the South Island of New Zealand and the Islands Adjacent and Lying to the South, from 1642 to 1835*. Wellington: Wellington and Tombs Limited.
- Miller, G. M. (1986). *America, Hawai'i And The Sea: The Impact Of America On The Hawaiian Maritime Mode Of Production 1778-1850*. PHD Thesis. University Of Hawaii.
- Monsarrat, S. (2015). *Reconstruction of marine mammals' historical distribution and abundance: setting a baseline to understand the past, inform the present and plan the future*. PHD Thesis. University De Montpellier.
- Morales, F. R. (1991). Apuntes para una historia ecológica de Chile. *Cuadernos de Historia*. 11:149-196.
- Morris, P. (1847). *A short review of the history, government, constitution, fishery and agriculture of Newfoundland*. Newfoundland; J Woods.
- National Research Council (2003). *The Decline of the Steller Sea Lion in Alaskan Waters: Untangling Food Webs and Fishing Nets*. Washington, D.C.: Committee on the Alaska Groundfish Fishery and Steller Sea Lions.
- Newsome, S. D., et al. (2007). "Historic decline in primary productivity in western Gulf of Alaska and eastern Bering Sea: isotopic analysis of northern fur seal teeth". *Marine Ecology Progress Series*. 332: 211-224.
- Novaglio, C. et al. (2018). Fishery Development and Exploitation in South East Australia. *Frontiers in Marine Science*. 5: 1-15.
- Ogden, A. (1932). The Californias in Spain's Pacific Otter Trade, 1775-1795. *Pacific Historical Review*. 1(4): 444-469.
- Ogden, A. (1933). Russian Sea-Otter and Seal Hunting on the California Coast, 1803-1841. *California Historical Society Quarterly*. 12(3): 217-239.
- Osgood, W. H. et al (1915). The Fur Seals And Other Life Of The Pribilof Islands, Alaska, In 1914. *Bulletin Of The Bureau Of Fisheries*. Washington. 34.
- Owens, K., Petrov, A. (2015). *Empire Maker: Aleksandr Baranov and Russian Colonial Expansion Into Alaska and Northern California*. Washington, University of Washington Press.
- Palomares, M. L. D. et al. (2006). On European Expeditions as a Source of Historic Abundance Data on Marine Organisms: A Case Study of the Falkland Islands. *Environmental History*. 11(4): 835-847.

- Passetti, G. (2010). *O mundo interligado: poder, guerra e território nas lutas na Argentina e na Nova Zelândia (1826-1885)* Post-Graduation. Faculdade de Filosofia, Letras e Ciências Humanas da Universidade de São Paulo.
- Peratrovich, Robert J. (ed) (1971). *Source Book on Alaska*, Alaska: Alaska Department of Education.
- Quiroz, D., Mayorga, M. (2018). Un Experimento Temprano De Caza Moderna De Ballenas En Magallanes: El Vapor Magallanes De La Braun & Blanchard Y El Capitán Andresen. *Magallania*. 46(2): 25-46.
- Quiroz, D. Toledo, P. (2014). *Balleneros del Sur: Antropología e historia de la industria ballenera en Is costas sudamericanas*. Santiago de Chile: Andros Impressores.
- Raven-Hart, R. (1971). *Cape of Good Hope: 1652-1702*. Johannesburg: A.A. Balkema.
- Razo, A. (2011). Uso de hábitat por cuatro especies de pinnípedos en las islas al occidente de Baja California. Ciencias Master, Centro de Investigación Científica y de Educación Superior De Ensenada.
- Richards, J. F. (2003). *The Unending Frontier: An Environmental History of the Early Modern World*. Oakland: University of California Press.
- Richards, R. (1984). The Maritime Fur Trade: Sealers and Other Residents on St Paul and Amsterdam Islands- Part II. *The Great Circle*. 6 (2): 93-109.
- Richards, R. (1993). 'The Upland Seal' of the Antipodes and Macquarie Islands: A Historian's Perspective. *Journal of the Royal Society of New Zealand*. 24(3), 289-295.
- Richards, R. (2003). New Market evidence on the Depletion of Southern fur seals: 1788-1833. *New Zealand Journal of Zoology*. 30: 1-9.
- Richardson, L. (2020). *The role of seals in coastal hunter-gatherer lifeways at Robberg, South Africa*. Master Thesis. University of Cape Town.
- Rick, T. C., & Erlandson, J. M. (eds.). (2008). *Human Impacts on Ancient Marine Ecosystems: A Global Perspective*. Berkeley: University of California Press
- Rink, H.. (1877). *Danish Greenland: Its People and Products*. London: Henry S. King.
- Rodríguez, D., Bastida, R. (1998). "Four hundred years in the history of pinniped colonies around Mar del Plata, Argentina." *Aquatic Conservation: Marine and Freshwater Ecosystems*. 8 (6): 721-735.
- Rodríguez, D. (2002). From the Conquest to Ecotourism: Environmental Consequences of Human Activities in Coastal Argentina. *Man and the Ocean: Conserving Our Coastal Environment*. Tokyo: United Nations University: 109-128.
- Roppel, A. Y., Davey, S. P. (1965). "Evolution of Fur Seal Management on the Pribilof Islands". *The Journal of Wildlife Management*. 29(3): 448-463.
- Roppel, A. Y. (1984). *Management of Northern Fur Seals on the Pribilof Islands, Alaska, 1786-1981*. Washington, DC: U.S. Department Of Commerce.
- Rosas, F. C. W. et al. (2001). *Biology, Medicine, And Surgery Of South American Wild Animals*. Iowa: Iowa State University Press.
- Ross, K. (2006). *Pioneering Conservation in Alaska*. Denver: University Press of Colorado.

- Rousset, T. J.-M. (2011). 'Might is Right': A study of the Cape Town/Crozets elephant seal oil trade (1832–1869). Master Thesis: University of Cape Town.
- Ruxing, 郭. G. (2016). 唐代渔业地理 (**Fishing Geography in the Tang Dynasty**). Master Thesis. 陕西师范大学.
- Ryan, L. (1977). The Struggle For Recognition: Part-Aborigines In Bass Strait In The Nineteenth Century. *Aboriginal History*. 1(1): 27-52.
- Sáenz-Arroyo, A. et al. (2006). The value of evidence about past abundance- marine fauna of the Gulf of California through the eyes of 16th to 19th century travellers. *Fish and Fisheries*. 7(2), 128-146.
- Salas, E. P. (1936). Buques norteamericanos en Chile a fines de la era colonial (1788-1810). *Anales*. 9: 90-129.
- Santos del Prado, K., Peters, E. (2005). *Los pinnípedos de Isla Guadalupe*. Mexico: Instituto Nacional de Ecología.
- Saunt, C. (2014). *West of the Revolution: An Uncommon History of 1776*. New York and London: W. W. Norton & Company, Inc.
- Scammon, C.M. (1874). *The marine mammals of the North-western coast of North America, Described and Illustrated: Together with an account of the American whale fishery*. San Francisco: J.H. Carmany.
- Seagars, D. J. (1984). The Guadalupe Fur Seal: A Status Review. *National Marine Fisheries Service Southwest Region: Administrative Report SWR-84-6*. California: National Marine Fisheries Service.
- Sellheim, N. (2018). *The Seal Hunt: Cultures, Economies and Legal Regimes*. Leiden/Boston: Brill.
- Shima, M. et al.(2000). Response of Pinniped Populations to Directed Harvest, Climate Variability, and Commercial Fishery Activity: A Comparative Analysis. *Reviews in Fisheries Science*. 8(3): 89-124.
- Silva, H. A. (1993). *El Comercio Entre España Y El Río De La Plata (1778-1810)*. Madrid: Servicio de Estudios.
- Skira, I. (1993). *Tasmanian Aborigines and Muttonbirding: a Historical Examination*. PHD Thesis: University of Hobart.
- Smith, I. (2005). Retreat and Resilience: Fur Seals and Human Settlement in New Zealand. in Monk, G. (ed.), *The Exploitation and Cultural Importance of Sea Mammals*: 6-18.
- Smith, P. M. (2019). The Sealing Industry and the Architecture of the Tasman World. *Fabrications*. 29(3): 317-337.
- Snow, H. J. (1910). *In Forbidden Seas: Recollections of Sea-Otter Hunting in the Kurils*. London: Edward Arnold.
- Stejneger, L. (1896). *The Russian Fur-Seal Islands*. Washington: U. S. Commission Of Fish And Fisheries.
- Stewardson, C. L. (1999). The Impact of the fur seal industry on the distribution and abundance of Cape fur seals *Arctocephalus pusillus pusillus* on the Eastern Cape coast of South Africa. *Transactions of the Royal Society of South Africa*. 54(2): 217–245.
- Stewart, B. S. et al. (1994). History and Present Status of the Northern Elephant Seal Population. Elephant seals: population ecology, behavior, and physiology in Le Boeuf, BJ, Laws, R.M. (eds.). *Elephant Seals: Population Ecology, Behavior, and Physiology*. Berkeley, CA: University of California Press. pp. 29–48
- Stora, N. (1987). Russian Walrus Hunting in Spitsbergen. *Études/Inuit/Studies*. 11(2): 117-137.
- Strombom, D. B. (1980). *Marine Mammal-Fishery Interactions in the Northeast Pacific*. Master Thesis: University of Washington.

- Stuessy, T. F. (2020). *Environmental History of Oceanic Islands. Natural and Human Impacts on the Vegetation of the Juan Fernández (Robinson Crusoe) Archipelago*. Cham: Springer.
- Taylor, R. H. (1971). Influence of man on vegetation and wildlife of Enderby and Rose Islands, Auckland Islands. *New Zealand Journal of Botany*. 9 (2): 225-268.
- Taylor, R. H. (1982). New Zealand fur seals at the Bounty Islands. *New Zealand Journal of Marine and Freshwater Research*. 16 (1): 1-9.
- Torrejón, F., et al (2013). Descifrando la Historia Ambiental de los Archipiélagos de Aysén, Chile: El Influjo Colonial y la Explotación Económica-Mercantil Republicana (Siglos XVI-XIX). *Magallania*. 41(1): 29-52.
- Townsend, C., H. (1931). The Fur Seal of the California Islands with new descriptive and historical matter. *Zoologica; scientific contributions of the New York Zoological Society*. 9: 443-457.
- Townsend, C. H. (1924). The Northern Elephant Seal and the Guadalupe Fur Seal. *Journal of the American Museum of Natural History*, 24(5): 567-577.
- Tressler, D.K.. (1927). *The Wealth of the Sea*. New York City, The Century Company.
- Veltre, D. W., Veltre, M. J. (1987). The Northern Fur Seal: A Subsistence and Commercial Resource for Aleuts of the Aleutian and Pribilof Islands, Alaska. *Études Inuit*. 11(2): 51-72.
- Villa-Ramírez, B., Gallo Reynoso, J., Le Boeuf, B. (1986). La foca monje *Monachus tropicalis* (Mammalia Pinnipedia) Definitivamente Extinta en México. *Anales del instituto de Biología Serie Zoología*. 56: 573-587.
- Wallace, S. S. (1999). *Fisheries Impacts on Marine Ecosystems and Biological Diversity: The Role for Marine Protected Areas in British Columbia*. PhD Thesis: The University of British Columbia.
- Wardman, G. (1884). *A Trip To Alaska: A Narrative Of What Was Seen And Heard During A Summer Cruise In Alaskan Waters*. San Francisco: Samuel Carson and Co. Publishers.
- Wollock, B. (2016). *El Hombre Es El Lobo Del Lobo: Interacciones Entre Pescadores Artesanales y Lobos Marinos*. Bachelor's Thesis: University ORT Uruguay.
- Woodward, A. (1938). Sea Otter Hunting on the Pacific Coast. *The Quarterly: Historical Society of Southern California*. 20(3): 119-134.
- Woodward, P. W. (1972). The Natural History of Kure Atoll, Northwestern Hawaiian Islands. *Atoll Research Bulletin*. 164. Washington D.C: The Smithsonian Institution.
- Working Meeting of Seal Specialists on Threatened and Depleted Seals of the World. (1973). *Seals: Proceedings of a Working Meeting of Seal Specialists on Threatened and Depleted Seals of the World*. Ontario: IUCN Publications New Series.
- Zavala-Gonzalez, A., Mellink, E. (2000). Historical Exploitation of the California Sea Lion, *Zalophus californianus*, in Mexico. *Marine Fisheries Review*. 62(1): 35-40.
- Ziswiler, V. (1967). *Extinct and Vanishing Animals A biology of extinction and survival*. New York: Springer.

II - Guidelines established for the Literature Review

Quantitative Level:	This field is another dropdown list that describes the amount of quantitative information contained in a study. The different levels are described below (and in the Introduction tab of the spreadsheet):
1 - Qualitative	No quantitative data provided in the study. Will be entirely based on qualitative evidence.
2 - Minimal Quantitative Information	This study will contain minimal data points that are scattered into an otherwise qualitative/narrative study. This could be one or two figures mentioned in the text.
3 - Moderate Quantitative Information	Quantitative information is integrated into the narrative, with some tables or charts provided. This could be a study that uses a traditional narrative approach, but quantitative figures are mentioned now and then in the narrative and are important to the argument.
4 - Quantitative Study	Contains considerable amounts of quantitative information. This will be a study that is almost entirely based on quantitative data and is focused on the presentation or analysis of data. Datasets would also fall into this category.

III - List of charts

1. Period of publications	7
2. Languages covered	7
3. Types of studies	8
4. Ocean coverage in the Pinniped database	9
5. Pre-18th century data	13

6. Post 18th century data	14
7. Species by clade	15
8. Historical timeline of fur seal entries	18

IV - List of maps

1. Distribution of Pinniped extractions in the Literature Review	10
2. “Global distribution of pinnipeds (including all extant subspecies)”, Kovacs et al., (2012)	11
3. Distribution of entries per clade	16
4. Historical geographical distribution of fur seal entries	19

V - List of tables

1. Regional and local distribution of sealing data entries	12
------------------------------------------------------------	----