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Exploring the legend and the myth in ocean and maritime life: A systematic literature review

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Samudera menutupi sekitar dua pertiga permukaan bumi dan menampung tidak kurang dari 97% air di bumi. Dengan kedudukan yang signifikan ini, masih banyak misteri yang belum terungkap oleh berbagai penjelajahan dan study di samudera. Here, kami mengeksplorasi berbagai legenda dan mitos di lautan dan dunia kemaritiman dari seluruh dunia. Paper ini merupakan systematic literature review (SLR) yang disusun dengan menggunakan pendekatan PRISMA. Kata kunci pencarian ditentukan dengan menggunakan metode PCC. Dokumen yang direview diperoleh dari basisdata Scopus. Sebanyak 436 dokumen diperoleh dan sebanyak 70 diantaranya memenuhi kriteria berdasarkan seleksi dalam proses ekstraksi, dan dilanjutkan pada tahap review. Temuan studi ini menunjukkan bahwa mitos di lautan dan kemaritiman tidak selalu berkaitan dengan mitos yang bersifat metafisika. Ada pula mitos yang menjadi falsafah kehidupan masyarakat dan semiotika. Mitos yang berkaitan dengan metafisika biasanya membentuk kearifan lokal dalam masyarakat. Secara ringkas, studi ini menawarkan wawasan baru mengenai mitos di lautan, dimana topik ini relatif masih sangat jarang dibahas dalam literatur terdahulu.

ABSTRACT

Keywords: Legend Myth Ocean Maritime Oceans cover about two-thirds of the Earth's surface and hold no less than 97% of the Earth's water. With this significant position, many mysteries still have yet to be revealed by various explorations and studies on the oceans. Here, we explore the oceans' and maritime world's legends and myths worldwide. This paper is a systematic literature review (SLR) organized using the PRISMA approach. Search keywords were determined using the PCC method. The documents reviewed were obtained from the Scopus database. A total of 436 documents were obtained, and 70 met the criteria based on selection in the extraction

process and continued in the review stage. The findings of this study show that ocean and maritime myths are not always related to metaphysical myths. Some myths are philosophies of community life and semiotics. Myths related to metaphysics usually form local wisdom in the community. In summary, this study offers new insights into myths in the oceans, a topic that is still relatively rare in previous literature.

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Pendahuluan

The ocean is a vast "world" on the Earth's surface. It covers two-thirds of the Earth's surface and no less than 97% of the water on Earth. The relationship between human life and the oceans has also been established for a very long time, forming a maritime civilization. Humans have long utilized natural resources, energy, and space in the oceans for shipping, commerce, and other activities. Along with the relationship between humans and the oceans, the science of oceanography also developed. Oceanography studies the oceans, while maritime is anything related to the sea or oceans. Oceanography studies the ocean itself in terms of the ocean floor's physics, chemistry, biology, and geomorphology (Purwantara & Ashari, 2023). Talley et al. (2011) explain that oceanography is the general name given to the scientific study of the oceans. Historically, oceanography divided into physics, biology, chemistry, and geology of oceanography.

Oceanography evolved with human contact with the oceans over time. As early as 2000 BC, the studying people had been Mediterranean, Red Sea, Arabian Sea, and Indian Furthermore, there are Ocean. famous explorations in history after Christ, such as those carried out by the Viking Leif Ericson, who crossed the Atlantic Ocean in 1003, the Polynesians who sailed the Pacific Ocean between 1100-1300, Marco Polo in 1292, Bartholomew Diaz in 1488, Christopher Colombus in 1492, Vasco De Gama in 1496, the Challenger Ship expedition 1872-1875, and others (Purwantara & Ashari, 2023). Until now, various activities related to oceanography and maritime affairs have been increasingly carried out. However, as a vast "world," many things about the ocean have yet to be detailed. These

unanswered questions have given rise to legends and myths associated with the ocean.

Legends and myths about the ocean still exist in many societies, especially those that live from maritime activities. The problem is these legends and myths have not been widely addressed in scientific studies. The scientific study of these legends and myths is generally regarded as historical narratives believed by traditional cultures, but doubted by modern scholars (Masse et al., 2007). Until now, the literature has not covered the discussion of legends and myths in the oceans. Yet legends and myths are not just irrational but can also be viewed as local wisdom and traditional intelligence related to the oceans. The lack of scientific interpretation of oceanic legends and myths in the context of local wisdom is a scientific gap that needs to be filled with further study. The results of this study can bridge the knowledge gap, broaden insights about the ocean, and become a basis for education, especially in improving marine literacy (Paredes-Coral et al., 2021). This study is also expected to reveal the existence of legends and myths, what oceanographic aspects are related to them, and their function as local wisdom resulting from human interaction with the environment over a long period.

In this paper, we present the result of a systematic literature review of previous studies on the legend and the myth in oceanography. This paper has two more specific objectives. First, we present a description of the progress of prior studies, including the profile of study results in various journals indexed in the Scopus database, as well as trends in topics and approaches in studies. Second, we present the results of analyses of legend and myth in the context of local wisdom of maritime communities. This paper provides alternative information about legend and myth in

oceanography worldwide. Also, this paper offers new insight into the legend and myth as a form of local wisdom resulting from human interaction with the ocean over a long period.

Methods

This study employs the systematic literature review (SLR) method. The initial stage of the SLR method is to develop a research question using the PCC framework, namely: 'What is the progress of studies on legend and myth in oceanography worldwide?'. Referring to the PCC framework, the research question includes population, concept, and context (Table 1).

Table 1. PCC framework for identifying the main concepts of the scoping review study

PCC Element	Definition
Population	Worldwide, all oceans and seas in the world
Concept	Legend and myth in ocean and maritime life
Context	Research articles published in English

The next step is to search for documents on the Scopus database. This stage is carried out by referring to the keywords identified in the preparation of research problems and the PCC framework that has been developed. The keywords used in this study are (1) legends, (2) myths, (3) oceanography, (4) ocean, (5) sea, (6) Pacific Ocean, (7) Atlantic Ocean, (8) Indian Ocean, (9) Arctic Ocean, (10) Maritime. From these keywords, boolean operators were determined for searching in the Scopus database, namely: 'legends' OR 'myths' AND 'oceanography' OR 'ocean' OR 'sea' OR 'Pacific Ocean' OR 'Atlantic Ocean' OR 'Indian Ocean' OR 'Arctic Ocean' OR 'maritime.'

After collecting the documents, the next step was screening to determine which documents were suitable for the review. Based on the inclusion and exclusion criteria, the articles included in the provisions are (1) research articles, (2) English language, (3) published in Journal or Conference Proceedings, and (4) subject area limited to arts and humanities, social sciences, Earth and planetary sciences, and environmental science. The articles are categorized as irrelevant reports if they do not meet these criteria. There are two stages in the screening process. Completely irrelevant articles are no longer used from this first stage. Some reasons for being completely irrelevant are because they discuss irrelevant topics or the subject area outside the criteria. In the second stage, there is a possibility that the article is not included in the selection because the discussion does not match the expected criteria. This kind of article will be categorized as excluded with reasons. The review procedure was conducted using the PRISMA method, as shown in Figure 1.

From Fig 1, it can be seen that the number of documents obtained from Scopus is quite large, reaching 436. However, many of these documents have technical errors, such as the publisher's website not being accessed, no full paper, the author's name not being identified, and the year of publication not being recognized. From these technical constraints, 81 documents were not used, leaving 355 documents that were continued in the second screening stage. It turned out that this second screening found many papers that were irrelevant to the topic discussed. Some of them discussed legends and myths but not in the marine environment. From this second screening process, 70 documents were selected that were relevant to the topic.

Result

Progress and recent research on the legend and the myth in ocean and maritime life

In this section, we present the results of an analysis of the progress and achievements of previous research regarding the legend and the myth of ocean and maritime life. In general, relatively few studies on this topic have been indexed in the Scopus database. As explained in the previous section, we found 436 documents. Of

these 436 documents, only 70 articles met the criteria according to the theme to be discussed. Although the number of articles is relatively small, studies in this field have been conducted for a very long time, spanning several decades.

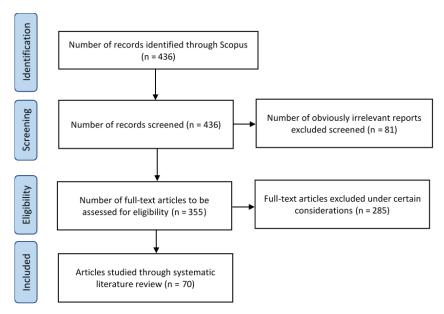


Fig 1. PRISMA flow diagram of the systematic literature review in this study according to Pollock and Berge (2018)

Publications on this theme span from 1979 to September 2024. However, there were not always publications every year during this period. Publications have only occurred continuously in the last two decades, from 2011 to 2024. The increase began around 2012-2013, but a significant increase has only happened in the previous decade, namely since 2020, with the highest peak in 2022 (See Fig 2).

In the 70 documents studied, there were 68 contributing first authors. Among these 68 authors, one contributor produced three articles, namely Stathis C. Stiros from Patras University, Greece. There were 57 affiliations of origin of the first authors who contributed to this study, three of which contributed two or more articles to the publication, namely Patras University, Greece, which contributed three articles, and two institutions that contributed two articles each, namely Leiden University, Netherlands and University of the Sunshine Coast, Australia.

However, nine documents do not include the author's affiliation, and one author is an independent researcher.

There were 28 countries of origin of the first author. The United States was the most significant contributor with 14 articles, followed by Australia with seven articles, the Netherlands, Canada, Poland, Greece, and the UK with four articles, and other countries (Figure 3). Sixty-two journals published articles on this topic, most of which contributed only one document. Five journals published more than one article, Religion published four articles, Isis published three articles, and three other journals published two: Folklore, Japanese Journal of Religious Studies, and International Journal of Maritime History.

Keyword analysis using VOSviewer showed that the various keywords in the published articles formed nine clusters (Figure 3). These clusters are not large, indicating that the number of publications produced is insignificant. The

distance between the clusters is relatively far apart, suggesting no strong connection between the clusters. The first cluster discusses myths and legends about the United Kingdom and the British Empire. In this cluster, many keywords are located close together. The second cluster discusses myths and legends of ancient times, indicated by keywords such as ancient Greece, ancient Rome, and ancient navigation. This cluster consists of four sub-clusters.

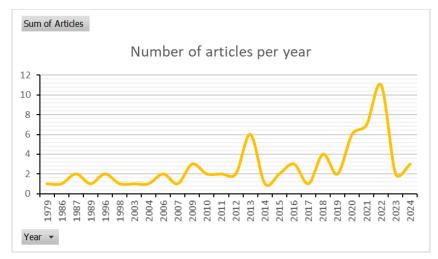


Fig 2. Number of articles per year (Source: Scopus Database)

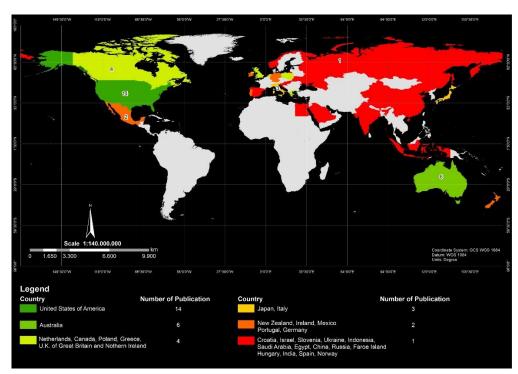


Fig 3. Distribution of countries of origin of first authors (Source: Scopus Database)

Keyword analysis using VOSviewer showed that the various keywords in the published articles formed nine clusters (Figure 4A). These clusters are not large, indicating that the number of publications produced is insignificant. The distance between the clusters is relatively far apart,

suggesting no strong connection between the clusters. The first cluster discusses myths and legends about the United Kingdom and the British Empire. In this cluster, many keywords are located close together. The second cluster discusses myths and legends of ancient times, indicated by keywords such as ancient Greece, ancient Rome, and ancient navigation. This cluster consists of four sub-clusters.

The third cluster discusses classical mythology. The fourth cluster represents studies in the Hawaiian region and myths about sharks. This cluster consists of two sub-clusters. The fifth cluster represents studies in the Pacific region, with the keywords Maori, New Zealand, and oral tradition. The seventh cluster represents studies in Central America with the keywords Maya and Mesoamerica. The eighth cluster represents studies in the Indonesian region. This cluster is closest to the center of all clusters, the keyword myth. The last cluster is a group that represents studies with a religious approach.

Visualization with density shows that several keywords are widely used, including myth, Hawaii, sharks, caches, art, ancient Greece, Indian Ocean, and British Empire (Fig 4B). This shows that the study of legends and myths in the sea is mainly conducted in the Pacific Ocean, Indian Ocean, Greece around the central sea, and the British Empire, which has a lot to do with sea exploration in the past. Local wisdom related to legends and myths of the sea and maritime life can still be explored in East Asia, Southeast Asia, the Atlantic Ocean, and other regions.

In the last decade, many keywords have been used. Keywords such as art, Ancient Greece, Ancient Rome, and ancient navigation were used at the beginning of the last decade, around 2014-2016. Furthermore, keywords such as myth, Indian Ocean, and various keywords related to studies in the Pacific were widely used in the middle of the decade. Currently, the study trend is towards the Hawaiian region, with keywords such as monstrosity, indigenous epistemology, and Hawaii (Fig 4C).

The legend and the myth in ocean and maritime life around the globe

In this section, we present the results of an analysis of previous studies that discuss legends and myths in ocean and maritime life. Our findings

show that, in general, there are four groups of discussions of legend and myth in the ocean and maritime life, namely (1) groups that explore legend and myth as local knowledge, (2) groups that try to reveal the truth of various existing legends and myths, (3) groups that discuss legend and myth as a philosophy of life, and (4) groups that discuss legend and myth as symbols and reflections for everyday human life, and discuss them in a semiotic context.

The first group was the most widely studied. Among the 70 articles analyzed in this study, the first group accounted for 70% of the articles, followed by the third group (24.29%), the second group (18.57%), and the fourth group (10%). In addition to these four groups, there is a miscellaneous group of articles that discuss legends and myths outside of these four groups, namely discussions from a religious perspective and approaches that emphasize the separation of myths from science. This miscellaneous group is not much, covering only 7.14% of all articles.

1. Legend and myth: local knowledge from human interaction with the sea

The first group of contributions was started by Coombes (Coombes, 1986), who explored the Icarus myth. Subsequently, Hughes (Hughes, 1987) discussed the legends of great floods from various cultures and linked them to the possibility of rising sea levels due to the collapse of ice sheets in the prehistoric period, around 8,000 to 6,000 BCE. Shields (1987) In South Kanara, India, formerly known as Tulunadu, studied an annual rural pageant honoring the local Spirit through ritual performances combining masked folk dramas and epic recitations. Ross (1998) discusses the role of the anchor as a symbolic link between two worlds, both in medieval legends and modern narratives. The research begins with legends linking ships in the sky with the Earth and then progresses to legends linking the sea's surface with the underwater world, including stories of a man lured to an underwater monastery.

Still from the first group, <u>Stothers (2004)</u> explains that knowledge about the great serpent

is formed from zoological data and evolving myths, emphasizing the relationship between real animals such as pythons and whales. There is thus a combination of myth and zoological data that produces knowledge. In Indonesia, Wessing (2006) examined the relationship between local and belief in spirits in three mythology communities, focusing on the myths of Dewi Samudera Selatan, Nyai Roro Kidul, and Nyi Blorong. The research shows that as one gets further away from the queen's domain, knowledge of these mythological figures diminishes and mixes with local spirits. From this, it can be seen that people have beliefs about spirits in the sea as a form of local wisdom. Hamid (2016), in his study, found that the Binongko people in Indonesia constructed their world through the myths of La Patua Sakti and Princess Bidadari. Because the environment is unfavorable for farming, most of the community's needs are supplied by sailing from the sea. Meanwhile, in Madagascar, Evers (2006) explores the myth of the landlord after the abolition of slavery.

Taylor (2009) This article discusses the travel records of Western explorers to the Dead Sea. It also discusses the various myths that developed around the Dead Sea, which are reflected in the travel accounts of Western explorers from the Byzantine period to the modern day. These include the belief that birds cannot fly over the sea, the story of Lot's wife turning into a pillar of salt and unique phenomena such as the attractive-looking but poisonous "Sodom's apple" fruit. Carlqvist (2010) discusses the first myth told in Izumo fudoki: the myth of pulling dirt. This myth tells how one of the local deities looked across the Sea of Japan and decided to pull Earth from four places he could see, including the Korean Peninsula. Torrance (2019) discusses the god Ōnamochi (Ōkuninushi) in Japanese mythology. Stubingon (2011) explores clan songs on the north coast of Australia. Meanwhile, Nunn (2016) discusses Australian Aboriginal oral traditions related to coastal flooding that took place thousands of years ago. These traditions are documented in six locations in coastal Australia.

In Mexico, Lorente (2012) explores the figure of Nezahualcóyotl and the rain god Tlaloc combined in the current understanding of the people of the Sierra of Texcoco as the figure of Tlaloc-Nezahualcóyotl or King of the Sea, which symbolizes the power that regulates the availability of water. Pearl (2014) explores the myth of the water dragon as it relates philosophically to the sea. Perris (2018) discusses Māui's encounter with Hine-nui-te-pō, the goddess of the underworld in Māori mythology. Firouz (2022) discusses the aquatic mythology of the Faroe Islands, particularly narratives about shovellers or ship spirits, as well as other supernatural beings in Faroese folklore. Møllegaard (2024) examines Hawaiian culture's reciprocal relationship between sharks and humans. Meanwhile, Gonzalez's (2024) classic Teotihuacan mural tradition reveals the worship of the Great Goddess and the Storm God concerning rain and fertility.

Concerning ancient life, Kołoczek (2020) discussed how Roman stereotypes associations related to the Aegean Sea and its islands were influenced by local knowledge, including pre-existing myths and traditions. Nawotka (2021) found that Greek cities along the western coast of the Black experienced foundation myths and phenomenon known as the "second foundation," mainly in response to the invasion of Burebista, king of the Getae and Dacia tribes from 82 BC to 44 BC. In Egypt, Mesbah (2021) explains that in Ancient Egyptian ideology, water was seen as the origin of all existence, originating from the Eternal Sea, Nun, who was revered as a god. Wang (2021) revisited the Nanhaishen Temple (South Sea God Temple) in Tang Dynasty Guangzhou, expanding on previous research that focused mainly on its role as a patron of the Maritime Silk Road. Erzsébet (2022) examines Korean beliefs about Potalaka and Avalokiteśvara through legends about Naksan Temple, emphasizing their relationship with mountain and sea worship.

2. Uncovering the truth of legend and myth

Besides discussing legend and myth in the context of local wisdom, some articles try to reveal the truth of legend and myth. This kind of study usually interprets legend and myth so that it becomes more rational and acceptable to science. Studies on this aspect were started by Crawford (1979), who revealed the truth of the myth of Tethys as a vast ocean. His findings proved that Tethys is actually an epicontinental ocean that is longer than it is wide. Furthermore, Morgan (1989) revealed that ocean regions exist and are not myths. Examples are the different types of ocean regions, with three case studies of the Indonesian Sea, Southern Ocean, and Mediterranean Sea. Cucci (2009) analyzed and reconstructed the Holocene evolution of the Sybaris Plain, highlighting how geological and geomorphological factors contributed to the legend of the ancient sunken city of Sybaris.

Jones (2012) explains pirate myths and legends as a means to popularize the geographic region of Madagascar. Gillett (2013) discusses the ancient myth of the abduction of Dionysus by Etruscan pirates, focusing on how it shaped people's identity and view of Etruscans in history. Robertson (2013) interprets the truth of the mermaid myth from a humanitarian perspective. Rapisarda (2015), in his article, explores the relationship between the Atlantis myth and oceanographic evidence, suggesting that Plato's story may be rooted in actual geological events at the end of the last Ice Age. Pastore (2021), meanwhile, describes the shallow waters of the early Atlantic World as a place where myths and scientific inquiry collided, where elite knowledge intersected with the expertise of people from simpler backgrounds. Shallow sea creatures such floating seeds and barnacles sparked discussions about ocean circulation, taxonomy, and ecology while contributing to understanding life's origins. This understanding was driven not only by scientific curiosity but also by imperial interests. At the same time, the views of coastal peoples provided an alternative perspective that is often missing in the history of marine science.

Lazarenko (2021) examines transformation of the Achilles cult in the Northern Black Sea, showing how local influences and mythological elements shaped its early veneration and the significant changes that occurred as the cult conformed to Greek norms and Homeric legends. Meanwhile, Reese (2022) explains that historians have argued that men dominated Indian Ocean trade networks while women were inactive in these activities. This article challenges that assumption by showing evidence that women of different religions participated in the network of movements in the British Indian Ocean region and had more significant legal rights than previously thought.

Stiros (2022) analyzed the ancient narrative of the destruction and sinking of Helike and Boura, which was considered a punishment from the god Poseidon. Still, based on geoarchaeological approaches and archaeological excavations, there was no evidence to support the catastrophic event. In another article, <u>Stiros (2022)</u> analyzes the differences between Aristotle's work and "De Mundo" and explores the evolution of the legend of Helike and Boura. New geoarchaeological evidence allows dating "de Mundo" to the first century AD, thus refining previous interpretations and implying no evidence of changes in Aristotle's philosophical and geographical ideas at the end of his life. Stiros (2022) also refuted the view that the mythological or legendary account of the lost cities of Helike and Boura being submerged into the sea by an earthquake is a legend that is not supported by facts using archaeological evidence, sedimentology, and historical text sources, but rather a legend that developed during the Roman period.

3. Legend and myth as a philosophy of life

The third group views legend and myth as a philosophy of life. <u>Agius (2020)</u> explains that these stories are not only entertaining but also an additional source for modern researchers as they

reflect the realities of the daily life of the maritime community in the Indian Ocean at that time. Among the fantastic stories, there is a simple human side of the sailors not found in purely factual geographical and historical texts.

Studies in this group were initiated by Van Londen (1996), who discussed the critical role of mythology, particularly the Sea Woman myth, in the context of Inuit ecology and culture. This myth functions as a story and an adaptation mechanism that helps Inuit people face environmental challenges. The same idea was proposed by Ruth (2018), who used myths to support marine conservation in Scotland. Nancy (2022) also interpreted the myth behind the story of Noah to save the environment. Nunn (2022) explored the value of cultural stories, such as myths and legends, in understanding environmental change in coastal areas in post-glacial Scotland. Fourth (2021), in his study of the Flores community in Indonesia, linked the endangered dugong (Dugong dugon) with mystical issues that turned out to have an impact on the preservation of this fauna.

Hatcher (2013) discusses the enduring myth of Hippalus serves as a valuable lens for understanding Greco-Roman perceptions of longdistance trade, suggesting that the legend may be more critical in interpreting ancient trade than the actual figure of Hippalus himself. Petitto (2013) discusses Japanese political thought, focusing on geographical visions of the Japanese archipelago as evidence of cultural ties between Japanese society and the sea dating from primordial times to a mysterious future. Braund (2010) examined how the myths of Diogenes and the Sinope Amazons influenced the city's cultural identity and history. Rapisarda (2019) found that Plato most likely created the legend of Atlantis to support the political ideal in "The Republic" and praise his ancestors. Mingging (2020) traced China-Africa relations through Zheng He's legend. Emily (2020) uses the mermaid myth as an instrument of international law enforcement management. Meanwhile, Moran (2022) brought up Davy Jones' Locker as an inspiration for SAR at sea.

Melo (2020) examines how the myth of Kianda, a sea goddess in Angolan mythology, illustrates animist values and counter colonial epistemologies and harmful modern Western practices, including in the context of African wildlife poaching. Alexandra (2021), in an article focusing on the critique of ocean destruction, provides some discussion on sea myths, especially in the context of environment and ecocriticism. The myth of the siren from Greek mythology emerges as a symbol of the attraction and danger associated with the sea, illustrating how sea creatures can tempt sailors with their songs, ultimately leading to destruction. In addition, Byatt also uses mythology in "Ragnarök: The End of the Gods" to illustrate the environmental damage caused by human actions, creating a narrative that implies that myths and legends of the sea can serve as warnings about the consequences of indifference to nature.

4. Legend and myth as symbols and semiotics

The fourth group uses legends and myths to symbolize something. Grace (2007) gives an example of the sea, symbolizing mastery over modern science in Chinese society. Mojca (2011) explains the sea as a social and state life symbol. Østhagen (2024) describes the myths in Svalbard regarding geopolitics. Meanwhile, arctic Medvedev-Mead's (2013) "Soul Boats" explores the symbolism of boats as archetypes rich in meaning, relating to death, rebirth, and spiritual journeys in various cultures. Referring to Jung's concept of a primordial era when the unconscious is dominant, the article traces the role of boats in the human imagination, from the "ships of renewal" in Mesopotamia to the funeral boats of Northern Europe.

Jarosław (2017) describes how the story of the ship Emden and the crew's escape became a legend and a patriotic symbol that strengthened the German national Spirit during World War I. This narrative of the heroics and bravery of the

Emden crew shaped collective memory and military tradition, creating an inspiring symbol of courage. Thus, myths and legends at sea are not just stories but also symbols in the social, cultural, and political life of people in various regions.

Conclusion

Legends and myths concerning maritime life abound at sea. Here, we find previous studies and their essential findings related to these legends and myths. The study of legends and myths in the ocean has been conducted for a long time and has recently increased. The Scopus database has numerous contributing authors, institutions, and countries. No particular author is particularly dominant. Many scientists worldwide have contributed to the study of legend and myth. In general, there are four groups discussing legend and myth in the ocean, namely groups that explore legend and myth as local knowledge, groups that try to reveal the truth of various existing legends and myths, groups that discuss legend and myth as a philosophy of life, and groups that discuss legend and myth as symbols and reflections for everyday human life, and discuss them in the context of semiotics.

For evaluation, this study still has limitations; for example, the database used is only focused on Scopus to obtain high-quality publication manuscripts. As a consequence, the results obtained are also relatively few. Given the lack of publications in highly reputable databases such as Scopus, it is recommended that future studies expand the search to other databases.

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