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Dugongs' (Dugon Dugong) traditional values in Kenya; and their influence
on their conservation.

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Abstract

Purpose: This study aimed to assess Dugongs' status distribution of dugongs (*Dugong dugon*) in Kenya. A dugong is a herbivorous marine mammal of the tropical and subtropical Indo-West Pacific and the Indian Ocean. Dugongs are one of four existing species of the order *Sirenia*, which is considered most at risk of extinction. Globally, IUCN classified the Dugong as rare; Kenya has done the same under the Wildlife Conservation and Management Act 2013, thus making Dugongs a conservation priority. This paper discusses the traditional practices of dugongs and how this influenced their population and conservation.

Methodology: The study used a literature review, semi-structured questionnaires, guided interviews, and focus group discussions with respondents on obtaining data.

Findings: More than 100 dugongs occurred in the Kenyan waters in the 1960s; their population has declined drastically since then. Dugongs were a sought-after delicacy on the Kenyan coast. Dugong meat was consumed for its taste and nutritional use. In the northern study areas, its oil was separated and used for cosmetic and medicinal purposes.

Unique contribution to theory, practice and policy: This study confirms fishing practices and traditional consumption practices on dugongs were seen to have led to their detriment. The study recommends rich continuous education and awareness efforts to change the thinking and practices of the people towards conservation of dugongs and the environment in general.

Keywords: *Dugongs, Kenya, traditions*

BACKGROUND

1.0 Introduction

The Dugong (*Dugong dugon*) is a herbivorous marine mammal found in the coastal waters of the tropical and subtropical Indo -West Pacific and the Indian Ocean (Muir et al., 2012). It is one of the four living species of the order *Sirenia*, considered the risk of extinction (Marsh et al., 2012). The other member of the *Dugongidae*, Stellers, is the sea cow (*Hydrodamalis gigas*), which is extinct due to over-exploitation for meat (Marsh et al., 2012), demonstrating the vulnerability of species under the order *Sirenia*. Historically, the global population of dugongs have declined since the 1960s (Wamukoya et al., 1997). In Kenya, large herds were reported in the 1950s and '60s, with a group of 500 dugongs sighted in 1967 (EAME & Ecoregion, 2004). Dugongs are the most endangered large mammal on the African continent (Cockcroft, 1995), with the imminent danger of extinction in East Africa unless conservation measures are taken (Muir et al., 2012).

In the territorial dugong places such as the Middle East, Asia, and East Africa, people have myths and believe in dugongs' mysteries. In a study by (Muir, 2004) in Tanzania, the Dugong, generally known as a mermaid, a female Dugongs with breasts, gave birth to live young ones and menstruate. It was believed that the female Dugong was similar to a woman and that fishers were required to make an oath before they went out fishing, promising not to have sexual intercourse with one if they caught one in their net. Fishers believed that cry if caught in a net and laugh if released (Muir, 2004). These myths are beneficial to Dugong conservation because they are fellow humans and threaten fishers against killing or hurting them.

"Dugongs have been an important part of coastal Kenya's cultural heritage" (Marsh, 2002). Dugongs have been a focus in many traditional tales and legends. In Lamu, for instance, the Dugong has been known for hundreds of years as the 'Queen of the Sea'. Dugongs were hunted for food using traditional hunting harpoons, leading to a decline of the population in the South coast of Kenya (Wamukoya et al., 1997). In Tanga, Tanzania, dugongs were targeted and harvested for food (Cockcroft, 1995).

1.2 The economics related to Dugongs

Dugong meat is believed to be delicious and was sold at a reasonable price. Fishers are aware that killing dugongs is unlawful, but al habitually when caught in a trap (Muir et al., 2004). In Tanzania, dugong meat is sold for oil, used for cooking, remedy asthma, burns, muscle pain, skin ulcers, earache and breast pain, and occasionally waterproofing boats (*sifa*¹) (Muir, 2004). In India and Sri Lanka, the Gulf of Kutch, more like in Lamu, dugong oil is valued as a preservative and conditioner for wooden boats (Marsh, 2000). In

¹ Sifa- Oil from marine mega fauna such as whalesharks, sharks or dugongs that is used to waterproof boats

Cambodia and Laos, dugong bones are believed to cure fevers and were carved into ornaments (Alves et al., 2013).

Traditionally, fishers in Kenya use different Dugong parts as food, medicine, ornaments and jewelry (Alves et al., 2013; Delisle et al., 2018). Dugong oil was used as fuel for lamps, while smoke from burning dugong bones is believed to cure toothaches and labour pains (EAME & Ecoregion, 2004; Marsh, 2002). The tusks of the Dugong are fashioned into ornaments such as rings and nose plugs. Children also wear tusk and bone pieces as trinkets to ward off evil spirits (Marsh, 2002).

2. MATERIALS AND METHODS

This section presents methodology used by the researcher to find answers to the research questions. It covers the areas of study, research design, target population, sampling procedure, methods of data collection, and data analysis

2.1 The area of study

Kenya's coastline lies in the Western Indian Ocean Region. It extends for about 640 km, from Ishakani on Kenya - Somali border at to the North on 1.6° S, 41.5° E to Vanga on the Kenya - Tanzania border at the south at 4.6 ° S, 39.4° E (Abuodha, 1993). This study was conducted along the Kenyan coast. Administratively, the shoreline touches five counties of Kwale, Mombasa, Kilifi, Tana River and Lamu. The region is roughly 150km by 450 km (NEMA, 2009, NEMA, 2017). Three study sites Vanga, Shimoni and Msambweni are in Kwale County and three Matondoni, Kizingitini and Kiunga are in Lamu county (Tychsen et al., 2006).

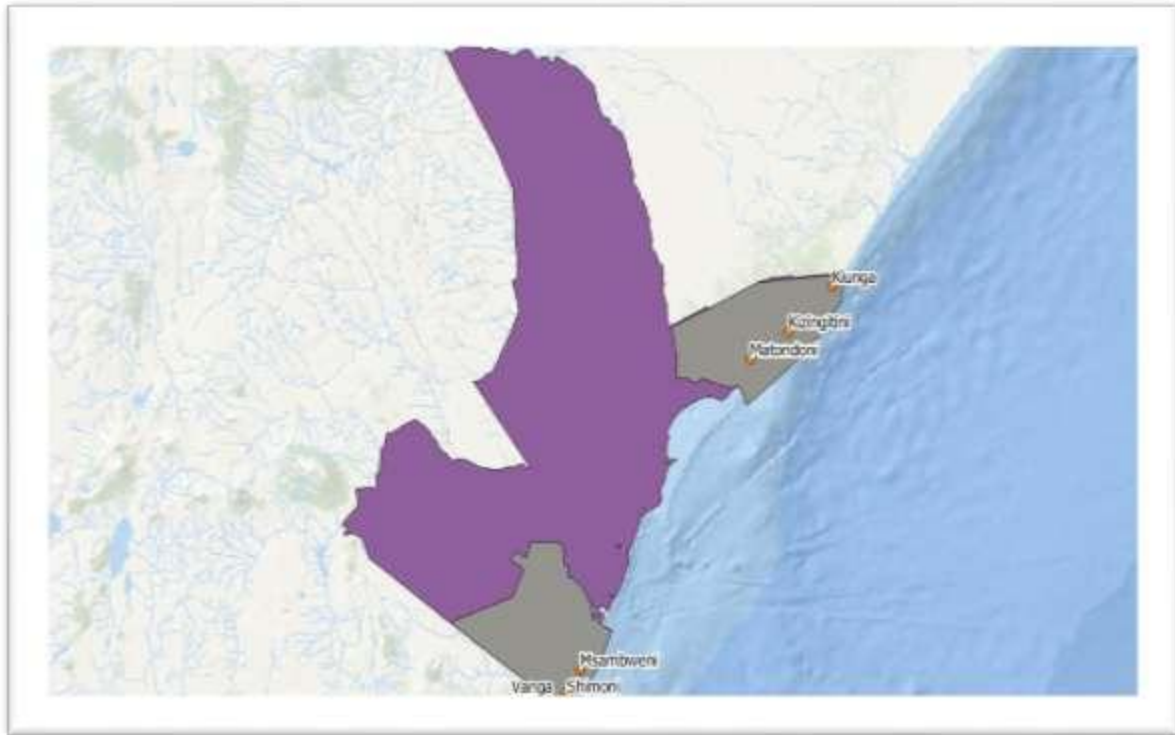


Figure 1: Map showing the study sites

2.2 Research Design

The study employed a concurrent triangulation design (Terrell, 2012). This design was used because the study wanted to collect and analyse quantitative and qualitative data separately on the same phenomenon. Then the different results are converged during the interpretation. During the reconnaissance survey, where 30 questionnaires were administered, most fishers had little or no information about the Dugongs. Therefore, purposive and snowballing techniques were used to select the respondents for the study.

2.3 Population and sampling size

Socio-economic and cultural data was collected from fishing villages identified based on specific spatial dimensions. The fishing villages identified were those that had fishing villages adjacent to the beach and the sea. The fishing villages should also have had a history of anecdotal, scientific or documented information on Dugongs and seagrass meadows based on previous studies and consultations with local community members and marine conservation practitioners during the reconnaissance survey. The selected fishing villages had 1,167 active fishers distributed in each villages as shown in Table 1 below.

(EAME & Ecoregion, 2004) were among the critical publications reviewed to provide evidence for selecting the fishing villages. The total number of registered fishers in each fishing village was used to derive the sample size.

The formula on Biostatistics by (Zaied et al., 2014) was used to calculate the sample size at the 90 per cent confident level and 5 per cent margin of error.

$$sample\ Size = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N}\right)}$$

Where; $z = 1.65$ at 90 per cent

confidence level $p =$ is the sample

proportion (50%)

$E = 0.05$

N is the population size.

The sample size from each fishing village is shown in Table 1; therefore, the study sampled a total of 378 respondents.

Table 1: Study Sample size and Distribution

Fishing village	Mode of data collection		
	Questionnaire	Key informant Interview	FDG discussants
Vanga	34	8	30
Shimoni	18	4	20
Msambweni	30	4	30
Matondoni	39	8	20
Kizingitini	39	6	20
Kiunga	32	8	28
	192	38	148

2.4 Data collection methods and tools

Questionnaires

A questionnaire is a data collection tool that a researcher can administer to a respondent or be self-administered for a literate respondent. This research questionnaire was adapted from

the CMS –UNEP Dugong questionnaire and modified to meet the research objectives. The Questionnaires were administered to 192 fishers.

Interviews

Interview guides are simple and moderately low-cost to implement and have been commended as a suitable starting point to evaluate dugong populations in developing countries (Marsh et al., 2001). The interview was conducted to 38 older and sometimes retired fishers as key informants or other persons whose role in the community exposes them to the information being sought.

Focus group discussions (FGDs)

FGDs are a qualitative research approach to gain in-depth knowledge of social issues. It is a purposive design method that obtains data from a scheduled group. FGDs were conducted in villages identified to have sighted a dugong or villages near a dugong site. One hundred and forty-eight fishers participated in the discussions across the study area. Focused group discussions were held with fishers who comprised experienced and new fishers and fishers who had other occupations such as boat operator's, mangrove cutters and marine tour guides. The Focus group discussions were used to determine the understanding of dugong distribution, abundances and trends in the local region.

2.5 Analysis of data

The study organised the knowledge of dugong myths by age brackets to analyse the knowledge of dugong myths. The data was further analysed to compute the composition of those that knew and those who did not know by their age bracket. The composition was presented in a bar graph to demonstrate the distribution by age. The analysis from FGDs involved establishing shared themes and assembling responses with similar themes into discrete data types. The original wording was retained as much as possible to reveal local views on dugongs' socio-cultural values directly. Aggregating respondents analysed data on Paradigm Shift by action and site. Each aggregate response was compared to the total responses on all the actions and by the same responses in all site. Aggregating responses by reasons for conservation also analysed data on planning to conserve Dugongs. Responses were presented in a table form detailing each category and percentage of response per site.

3.0 The Traditional Dugong Values in Kenya

3.1 Introduction

Most Respondents had a common explanation on the status of natural resources or the decline of Dugongs. It was the work of God the Almighty, and that blessing from God, Favor from God or Grace, has reduced over the recent past. They attributed the decline in

fish catch, erratic rains and the high cost of living due to God's wishes. They also believed that the ocean was a livelihood in itself. These beliefs affected the fishers' ability and perception of conservation and protection of the marine resources, including the Dugongs.

3.2 Perceptions, customs and myths on Dugongs

Knowledge of Dugong's myths is common among older people. Perception, customs and myths On Dugongs differ with different respondents within and across villages in the study area. The fishers who dominantly subscribed to the Islamic faith believed it was permissible to eat any food from the sea (Table 2 below). Dugongs were sources of meat, medicine and nutrition and that eating dugong meat enabled one to be physically strong. This belief has probably contributed to the plummeting of the dugong population. The belief that Dugongs were human ancestors and seeing a dugong signals an oath positively inculcates conservation values into the fishers. The beliefs and perceptions of Dugongs in Kenya are classified into five categories as summarised in Table 2 below;

Table 2: Believes that have been linked to dugongs

Cluster/ category	Details (from interview responses)
Disease Carrier	<ul style="list-style-type: none"> • They were believed to spread diseases, e.g. asthma, mysterious diseases & stroke • Older men would say that they would develop complications or disfigure the face and body if one eats the animal.
Human ancestors	<ul style="list-style-type: none"> • Dugongs are like human beings (they have hair, eyes, genitals and mammary glands) • Were first like humans, then they cursed and cast to the sea
Medicinal value	<ul style="list-style-type: none"> • Their oil is medicine for coughs and colds • Their meat and oil, if eaten by men, is an aphrodisiac • Dugong oil is a cosmetic used by the women
Seafood	<ul style="list-style-type: none"> • It was traditionally considered food just like fish • In the Islamic religion, we have been permitted to eat what is from the sea. It is a nutritious natural food □ Its meat helps to strengthen body muscles. • If one catches a dugong, it is a vital sign for taking an oath
Signal for an oath	<p>□ It is auspicious to see a dugong</p> <ul style="list-style-type: none"> • It is rarely seen, once caught, should take an oath □ The female Dugong is considered royal and sacred • A fisherman has to be cleansed if he catches a dugong.

Those who believed seeing a dugong was auspicious would not want to catch and eat it and prefer seeing it on their way to fish. While those who claim it's a bad omen kept away from dugongs altogether. Other beliefs, such as disease carriers, though not positive, can keep off potential poachers. The transcriptions below illustrate some myths of the respondents towards the dugongs that were passed on generations.

Pro Conservation Myths

a. Mzee Mwalimu Badi – matondoni

"There once lived a fisherman in a faraway village. His parents arranged for his marriage as it was the tradition at the time. His wife was beautiful and loyal to him and his parents. With time, she became a good mother to the children they had. The man had everything that a man should want in a wife. However, he was ungrateful and abusive to his wife. She reported the matter to the elders; on reviewing the case, the elders said that it was okay for the man to assert his authority as he pleased. The wife, feeling jilted, deliberately drowned herself and her children in the sea. On drowning, it is believed that she was then magically transformed into a dugong. The "dugong" and her children lived in the sea and forever tormented the husband and the elders and family when they tried to fish. The Dugong was getting more beautiful by the day she was now a mermaid and transformed her lower body to a fishtail with scales so that no matter how much the husband wanted her back, he could not have her. She is said to swim with grace and pride because she is a queen making her strikingly attractive."

From a conservation perspective, this myth discourages people from eating dugong meat. The Dugongs are humans who were betrayed by family feuds, and in Lamu, men who betrayed their wives were believed as sources of bad luck (*chadu*²) in fishing. The people from this tale do not eat dugong meat because they think it is like a human being. This myth can get people to conserve the Dugongs, as they are fellow human beings.

b. Mohamed Amin -Kiunga

"Many years ago, hundreds of years, there was an island in Kiunga that was rich. The people were blessed, beautiful, and had plenty of food, jewellery, and every kind of wealth in plenty. The people were so rich that they gradually became arrogant. They thought the richness was from their own doing, forgetting it is a blessing from God.

They were frivolous and extravagant in their wealth, competing with each other on frivolous expenses, wasting food and showering with milk. God was angry at them and cursed them and their entire village. The island was submerged after being hit by a storm. The ungrateful people all drowned and were banished to the sea. The defiant people of the village were turned to dugongs, unclothed and feeding on grass. They are

² Chadu- is a Bajuni term used to refer to bad luck or a jinx

ashamed, that is why to date, and they avoid humans. When dugongs know that humans fish in a particular area and use a sea channel, they move somewhere else. The sea in the area that was submerged is rough. It is believed that when one travels at night, one can hear the drowned people screaming and crying for help. "

This story, like the others, show that the Dugong is a version of human beings. The Dugong, in this take, is a version of what people would be or would be reduced to if they were greedy and extravagant. The myth encourages responsibility in using natural resources, commonly known as "God's favours." **Anti-Conservation Myth**

c. Ibrahim Hamza- Shimoni

"When a fisherman caught a female dugong in the sea and brought it to a village, fishermen have to take an oath to swear he has had no physical intimacy with the Dugong before the meat could be consumed. On reaching the village, a sheikh (religious leader) would have to come to administer the oath in the presence of many villagers. After this, the Dugong was now halaal³ (legal) to eat. It would be slaughtered then sold or shared among villagers."

This myth given in Shimoni, Vanga, Msambweni and Matondoni does not support conservation, and if anything, it finds a loophole to enable people to eat dugong meat. Beyond this study this has been reported in Kenya and Tanzania in previous studies (EAME & Ecoregion, 2004; Muir, 2004; Muir et al., 2012).

Dugongs have had cultural importance to many communities across their range (Ilangakoon & Tun, 2007; Pusineri et al., 2013). In recent times, the indigenous community members of Torres Strait between Australia and Papua New Guinea depend on dugong fishery. It is estimated that over 50% of men supported their families with dugong hunting (Kwan et al., 2006). In territorial dugong places such as the Middle East, Asia, and East Africa, people have myths and believe in the mysteries of dugongs (Al-Abdulrazzak & Pauly, 2017). In the same countries, dugong products were used for various purposes. In the Arabian Gulf, dugong meat and bone marrow were eaten (Muir, 2004). In Abu Dhabi, UAE, they preferred section was the tailstock, while dugong hide was used to make foot sandals. *Sheikhs* and *Emirs* of Bahrain used the tusks of dugongs in their sword handles (Al-Abdulrazzak & Pauly, 2017). The hunting method involved herding dugongs into shallow water with large groups of people hands, capturing them by clubbing them to death (Preen, 1989). This active hunting method was outlawed about 30 years ago (Marsh, 2002).

In Tanzania, people described dugongs as mermaids to menstruate, give birth, and breastfeed as humans (Muir, 2004). The myth of the mermaid cuts across the dugong territories. (de Jongh et al., 2009) conferred that the mermaid myth was spread by sailors who from a distance could have confused dugongs as half-human/half-fish creatures. Other

³ Halaal, also spelled halal meaning permissible by Islamic law

tales on dugongs included believing that one lived longer than 1025 years by eating dugong meat and one sighting a Dugong while fishing would arrive at their destination safely (Muir et al., 2012).

From an anthropologic standpoint, many cultures have different connections, understandings or relations with the Dugong. Some are exploitative and cultural, including rites and rituals associated with dugong hunting and use, arts and crafts, myths and folklore. Even quasi-religious beliefs highlight the role of dugong "bush meat" in maintaining cultural identity and social capital. Based on ecological and socio-cultural considerations, as outlined above, there is ample evidence that dugongs can play an essential role in sociocultural systems. The study further found that in Matondoni, Kizingitini and Kiunga, the dugong oil was stored for three purposes.

- (i) It was used as a cosmetic, particularly hair oil, by women; it is said to be the reason their hair is soft, and
- (ii) Dugong oil was burnt on firewood to women with labour pains. The smell from this was said to reduce the pain for the mother.
- (iii) When someone has a stubborn cough or asthma, dugong oil would be rubbed on the chest and sometimes taken orally as medicine, and they believed that they would heal.

The Dugong is a phenomenal animal to the people of the coast who held important beliefs such as human ancestors, were nutritious and medicinal, were an auspicious animal to see, and do a few they were disease carriers. The desirability of eating dugong meat was more prevalent in the past than in the present. Younger people did not hold many beliefs on dugongs. On the one hand, this may lead to a loss of the oral history of communities. Nevertheless, it is good that we have younger people who are likely to have a clear mind to receive factual scientific knowledge on dugongs.

The myths of the Dugong were mostly myths of mermaids - female mermaids in particular. Older men and women tell stories to the younger generation. Some believed the Dugong looks as it does when dead but looks like a mermaid when alive in the water. (Muir et al., 2012) reveal a trend that communities in the western Indian Ocean relate the Dugong to mermaids. Through environmental education, people becoming aware the mermaid is a myth, and the Dugong is an actual animal that is endangered. However, people still want to hold on to the myth. This study proposes the myth can be held alongside facts as long as it aids the conservation of the Dugong.

Conclusion

The Dugong is a phenomenal animal to the people of the Kenyan coast who held significant beliefs about them. To some, they were human ancestors or auspicious animals to see. Such thoughts created a positive connection between the people who believed and thus cared to

see it thrive or even protect it. To other people, and do a few, they were disease carriers, and therefore they shunned dugongs. The desirability of eating dugong meat was more prevalent in the past than in the present. Fishing communities have, for a long time, felt that eating dugong meat is their God-given right. The hunting of dugongs for their meat has contributed to their decline. The dugong population has reduced to an extent where some study respondents think they are extinct.

Though known for its culinary use, the Dugong was also known for its mythical and enchanted values, making it a cause for their conservation.

Recommendation Education and awareness

The wakefulness of the significance of dugong conservation in the study area is low. Well designed education and awareness programs targeting specific audiences like school-going children, fishers and local businesses can be an impactful technique in helping to forge conservation values. While education and awareness to school-going children could shape future generations' values and conservation priorities, awareness programs to natural resource consumers could awaken a sense of responsibility to the general public and halt immediate current threats.

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