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POPULATION STUDIES OF SEA TURTLE IN BA'BATOA LAPEO BEACH POLEWALI MANDAR REGENCY, WEST SULAWESI, INDONESIA

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ABSTRACT

Sea turtles are marine biota that have an important role in the lives of coastal communities, but their existence has decreased due to threats to their habitat. The protection status of sea turtles has been regulated nationally and internationally, where they are fully protected. One location with potential sea turtle habitat in West Sulawesi is Ba'batoa Lapeo Beach in Polewali Mandar Regency. This is evidenced by the existence of community groups that carry out sea turtle conservation activities. This research analyzes the population of landed sea turtles, analyzes the success rate of hatching sea turtle eggs, and identifies threats that occur in efforts to manage sustainable sea turtle conservation at Ba'batoa Lapeo Beach. Data was collected through collaboration between BPSPL Makassar and the Laut Biru Community Group—the implementation of data collection from April to July 2024 through primary and secondary data collection. Primary data is obtained directly from the results of monitoring by the Laut Biru Community Group. Secondary data is used to describe primary data. Based on the analysis results, the type of sea turtle that landed on Ba'batoa Lapeo Beach was the Olive Ridley Turtle (*Lepidochelys olivacea*) 42 times. The highest percentage of Olive Ridley Sea Turtle eggs hatching was in July 2024 at 95.54%, while the lowest was in April 2024 at 51.45%. Threats to sea turtle habitat in Ba'batoa Lapeo Beach are abrasion and natural predators such as monitor lizards. The results of this study are expected to optimize the national sea turtle database and become a concern for stakeholders for sea turtle conservation management in West Sulawesi Province.

Keywords: Hatching; Nesting; Population; Sea Turtle

INTRODUCTION

Sea turtles are important for the socio-economic life of coastal communities. However, their existence is threatened and has experienced a significant population decline, causing all sea turtle species to receive complete protection through Government Regulation No. 7 of 1999 concerning the Preservation of Plant and Animal Species and Government Regulation No. 60 of 2007 concerning the Conservation of Fish Resources. The Ministry of Maritime Affairs and Fisheries issued a Circular Letter of the Minister of Maritime Affairs and Fisheries No. 526 of 2015 concerning the Implementation of Protection of Sea Turtles, Eggs, Body Parts and Derivative Products. All sea turtle species have also been included in the International *Union for Conservation of Nature* (IUCN) red list and *Appendix I of the Convention on International Trade in Endangered Species* (CITES) (Ministry of Marine Affairs and Fisheries, 2023).

The sea turtle species found in Indonesia are the Green Turtle (*Chelonia mydas*), flatback turtle (Natator depressus), Olive Ridge Turtle (*Lepidochelys olivacea*), Hawksbill Turtle (*Eretmochelys imbricata*), Loggerhead Turtle (*Caretta caretta*), and Leatherback Turtle (*Dermochelys coriacea*). While the Kemp's turtle (*Lepidochelys kempii*) is not found in Indonesian waters, it can be found in Latin America and the east coast waters of the USA (Ministry of Marine Affairs and Fisheries, 2023).

West Sulawesi waters are one of the few remaining turtle habitats in Indonesia because the habitat is still supportive, with good coral reef and seagrass conditions. The white sandy and rocky beaches make coastal waters in West Sulawesi Province an excellent habitat and are favored by sea turtles to breed (Atjo *et al*., 2023).

Based on the results of data inventory by BPSPL Makassar in collaboration with community groups in Polewali Mandar Regency, one of the locations with the potential for sea turtle landing habitat is Ba'batoa Lapeo Beach. According to Munaja *et al*. (2024), Lapeo Beach, Campalagian District, Polewali Mandar Regency is one of the tourist destinations in Polewali Mandar Regency. This beach is in a very strategic location and easily accessible. Ba'batoa Beach, apart from being a tourist destination, is also the location of the Laut Biru Turtle Conservation and Marine Learning Center, focusing on handling marine debris, and is the location of an environmental-themed festival in 2016 and 2022.

With information about this potential, studying the sea turtle population at Ba'batoa Lapeo Beach, Polewali Mandar Regency is necessary. The purpose of writing this scientific paper is to analyze the population of sea turtles that land, analyze the success rate of hatching sea turtle eggs, and identify threats that occur in efforts to manage sustainable sea turtle conservation at Ba'batoa Lapeo Beach, Polewali Mandar Regency.

RESEARCH METHODS

The research was located at Ba'batoa Lapeo Beach, Campalagian District, Polewali Mandar Regency, West Sulawesi Province. The collection was carried out through collaboration between BPSPL Makassar and the Laut Biru Conservation Activist Community Group (KOMPAK). Data collection was

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carried out from April to July 2024. The research location can be seen in Figure 1.

The research used a quantitative approach through primary and secondary data collection. Primary data was obtained directly based on the monitoring results by the Laut Biru Conservation Activist Community Group (KOMPAK). Secondary data describes primary data that has been processed and sourced from previous research in the form of journals, theses, books, regulations, government publications, publications of non-governmental organizations (NGOs), and others.

The tools used in this research include stationery and cameras. The materials used in this study are data on sea turtle landing, nesting, and hatching at Ba'batoa Lapeo Beach from April to July 2024.

To determine the success rate of hatching sea turtle eggs, data processing and analysis were carried out using the formula according to Dermawan *et al.* (2009) *in* Sinaga *et al.* (2024), namely:

$$Hatching\ succes = \frac{Number\ of\ hatchling\ alive}{Number\ of\ Sea\ Turtle\ eggs} \text{ x } 100\% \quad \ldots\ldots (1)$$

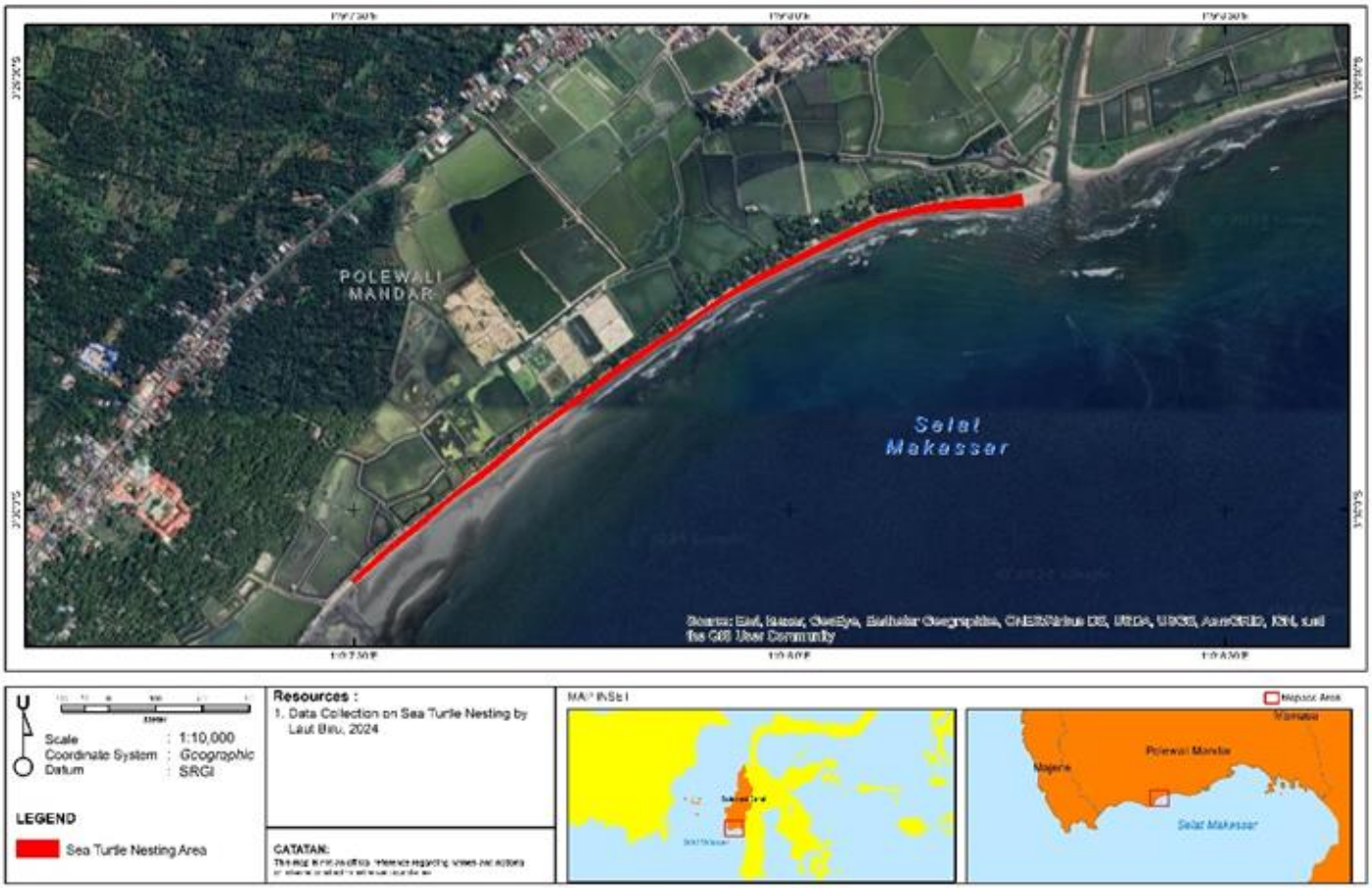

Figure 1. Sea Turtle Monitoring Location by Laut Biru Group

RESULT AND DISCUSSION

Based on data analysis from the results of monitoring that has been carried out by the Laut Biru Conservation Activist Community (KOMPAK) group, it is known that the type of sea turtle that lands on Ba'batoa Lapeo Beach is the Olive Ridley Sea Turtle (*Lepidochelys olivacea*) with the following number of landings, nesting, and hatching:

Sea Turtle Landing

The Species of sea turtle that landed in 2024 was the Olive *ridley* sea turtle (*Lepidochelys olivacea*). The following figure shows the number of sea turtle landings at the Laut Biru Group data collection.

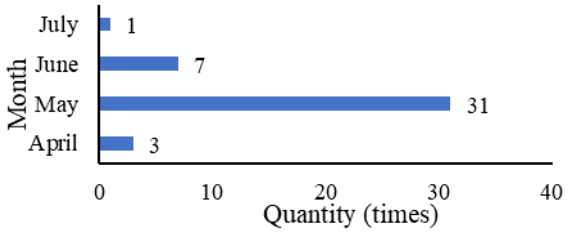

Figure 2: Graph of The Number of Olive Ridley Sea Turtle (*Lepidochelys olivacea*) Landings

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Figure 3. Landing of Olive Ridley Sea Turtle (*Lepidochelys olivacea*); (Source: Laut Biru Group Documentation, 2024)

The number of sea turtles that landed to nest at the monitoring location from April to July 2024 was 42 times. The type of sea turtle recorded was the Olive Ridley Sea Turtle (*Lepidochelys olivacea*). The status of the Olive Ridley Sea Turtle is categorized as "Endangered" by the IUCN (Rosalina and Prihajatno, 2022). According to the *Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)* list, the Olive Ridley Turtle *(Lepidochelys olivacea*) is included in Appendix I (CITES, 1973). Appendix I CITES is a list of CITES that contains types of flora and fauna, including *endangered* fish species (Minister of Marine Affairs and Fisheries Regulation Number 61 of 2018).

Olive Ridley turtles have an oval-shaped carapace (back) with five neural pieces, four coastal pieces, and 10 marginal pieces, and have a serrated lower jaw and varied carapace colours (Dermawan, 2009 *in* Rosalina, D and Prihajatno, M., 2022). According to the Ministry of Marine Affairs and Fisheries (2023), the morphological characteristics of Olive Ridley turtles are the same number of *scales* and scutes as adult Olive Ridley turtles, solid *black* in color overall, and false sides.

Based on the data collection results, the landing time of sea turtles at the research site mainly occurred at night between 21.00 - 05.00. This is reinforced by Sulumasi *et al.* (2020), who state that the nesting time of Olive Ridley turtles usually occurs at night during the young convex, complete, and old convex moon phases. This is because sea turtles have an orientation towards the influence of moonlight, where during the moon phase, the beach tends to be brighter, making it easier for sea turtles to make landings.

Sea Turtle Nesting

The following figure shows the number of sea turtle nests at the Laut Biru Group data collection location.

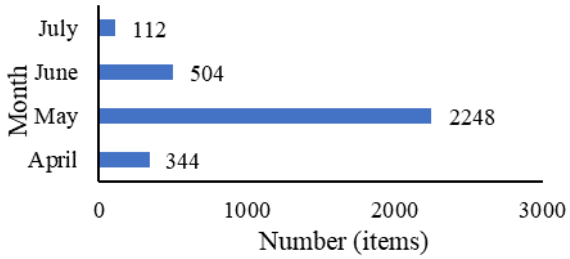

Figure 5. Olive Ridley Sea Turtle (*Lepidochelys olivacea*) nesting. (Source: Laut Biru Group Documentation, 2024)

Figure 6: Turtle Egg Monitoring Activity by the Laut Biru Group (Source: Laut Biru Group Documentation, 2024)

The number of Olive Ridley Sea Turtle (*Lepidochelys olivacea*) nesting from April to July 2024 was 3,208 eggs. May was the highest turtle nesting time, with 2,248 eggs, while the lowest was in July, with 112 eggs. According to research by Afriani (2018), Olive Ridley Sea turtles come to lay eggs from March to September, but the peak landing is from July to September. WWF Indonesia (2020) states that April to May is the peak nesting season for Olive Ridley Sea Turtles *(Lepidochelys olivacea)*. Another study by Umama et al. (2020) states that the Olive Ridley Sea Turtle nesting period at Boom Beach Banyuwangi starts in April and ends in July with the peak nesting season in June.

Turtle Egg Hatching Success Rate

The following table shows the results of the analysis of the hatching success of *Olive ridley* Sea Turtle (*Lepidochelys olivacea*) eggs at the data collection sites.

Table 1. Success Rate of Turtle Egg Hatching at Ba'batoa Lapeo Beach

No.	Spawning Time	Number of Eggs (Grain)	Number of Hatchlings (Tails)	HC (%)
1	April 2024	344	177	51,45
2	May 2024	2.248	1.662	73,93
3	June 2024	504	412	81,75
4	July 2024	112	107	95,54
		3.208	2.358	73,50

Source: Data processing, 2024, and Blue Ocean Group Monitoring Results, 2024.

Based on the results of data processing, it is known that the highest percentage of Olive Ridley Turtle (*Lepidochelys olivacea*) eggs hatching in July 2024 was 95.54%, and the lowest in April 2024 was 51.45%. Factors affecting the success rate of Olive Ridley Sea Turtle (*Lepidochelys olivacea*) eggs hatching are natural predators and sea tides on the nests. According to Rouli (2019), moving eggs from natural nests to natural nesting sites aims to avoid hatching failures due to natural or human predators and prevent natural nests from being exposed to high tides.

According to the results of the analysis, the time required for sea turtle eggs to hatch in 2024 ranges from 49-57 days. This is reinforced by research conducted by Samosir *et al. (2018); the incubation period of* Olive Ridley *Turtle eggs in natural nests is 47 days*, while the incubation period of Olive Ridley Turtle eggs in semi-natural nests with an incubation period limit of 55 days. Meanwhile, according to Sinaga *et al.* (2024), eggs in semi-natural nests will hatch about 50-60 days after transfer.

The sea turtle population in West Sulawesi is currently threatened. At the community level, illegal fishing still occurs. Lack of supervision, low public awareness, and the high selling

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price of sea turtles encourage various communities to capture and trade sea turtles. Some cases of sea turtle deaths that occurred in West Sulawesi due to illegal fishing include, in 2016, the death of 2 sea turtles in Palippis Beach and Lapeo Beach, which were found in terrible condition, namely the condition of the turtle wounded in the rectum (Nur, et al., 2022). Another threat is the abrasion at Ba'batoa Lapeo Beach, which threatens the existence of turtle eggs in natural nests and natural predators such as monitor lizards.

CONCLUSION

Based on the results of the analysis that has been done, it can be concluded that the type of sea turtle that landed on Ba'batoa Lapeo Beach in 2024 is the *Olive* Ridley *Sea* Turtle (*Lepidochelys olivacea*) 42 times. The highest percentage of Olive Ridley Sea Turtle (*Lepidochelys olivacea*) eggs hatching was in July 2024 at 95.54%, while the lowest was in April 2024 at 51.45%. Threats to sea turtle habitat in Ba'batoa Lapeo Beach are abrasion and the presence of natural predators such as monitor lizards. The results of this study are expected to optimize the national sea turtle database and become a concern for stakeholders for sea turtle conservation management in West Sulawesi Province.

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