



Success Rate Of Hatching Of Green Turtle Eggs (*Chelonia Mydas*) On Bangkaru Island, Banyak Island, Aceh Singkil

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Abstract

Turtles are biota that are included in the category of protected animals, because they have a high level of extinction threat both due to natural and anthropogenic factors. Turtles spend more time in the open sea and on land only to lay eggs each season. The success of hatching turtle eggs is important as an effort to increase their population. The purpose of the study was to analyze the success rate of hatching of green turtle eggs (*Chelonia Mydas*) on Bangkaru Island, Banyak Island, Aceh Singkil . The study was conducted from March to June 2024. The study was conducted based on observations on the emergence beach, number of nests, number of eggs, nest parameters and percentage of hatched eggs. The method used in the study was direct observation. The results of the study that had been carried out, the highest hatching percentage was in the 6th nest at 48%, the 3rd nest with a percentage of 42% and in the 5th nest a percentage of 10% was found this was due to the ideal location, while nests 1, 2, and 4 failed to hatch due to lack of light, sea abrasion, plant roots, and predator attacks. Hatching failure is generally caused by environmental factors and predators.

Keywords : turtle nesting; hatching success; in the Ecosystem Impact Area

1. INTRODUCTION

Indonesia is a country that has diversity of flora and fauna, with riches abundant nature very allow for society For utilise results natural However , the utilization that is taken in a way excessive can result in damage for natural including source Power nature in Indonesia (MR Rachman, 2021) . Turtle is a marine biota that benefits can land area For lay eggs on each season its laying (Winarto & Azahra, 2022) . Six of seven Turtles are found in Indonesian waters , namely turtle olive ridley (*Lepidochelys olivacea*), turtle green (*Chelonia Mydas*), turtle flatback (*Natator depressus*), turtle scaly turtle (*Eretmochelys imbricata*) starfruit (*Dermochelys coriacea*), and turtles loggerhead turtle (*Caretta caretta*) (Pratama & Romadhon, 2020) . green This often found and landed and laid eggs in Indonesian waters , especially on the island Turtles This including animal protected sea in a way national and international Because own level threat high extinction from natural factors Alone and anthropogenic like purification eggs , habitat degradation , fishing to parent turtles by humans and predators .

Turtles in the world are experiencing decline population , with endangered biota category extinct protection in Indonesia is stated in Law No. 5 of 1990, Law No. 31 of 2004, and regulations government No. 7, No. 8 of 1999 in particular international enter Appendix 1 Cites (*Convention on international trade inendangreed species*) turtles and turtles its derivatives No can be utilized or in the seller buy with threatened status extinct . Population turtle decreased due to complexity of natural factors and actions change yes done humans , there are also benefits material derivative turtle as support economy also triggers rate decline (Gariido) *et al.*, 2020) Activities conservation type turtle in a way *massively* carried out in various regions must done carried out in various regions must done measurement impact achievement success from various aspect (Edwards *et al.* , 2020) . Turtles lay eggs occurs throughout year , every turtle will release her eggs 4 to 6 times each his year in some location with a period of 12-14 days . Although thus , when season certain 2-5 months in a year turtle can release the eggs with large number . (Kasenda, 2013) .

Indonesia which is one of the place existence turtle roam and also as place For lay eggs , able to For release eggs in abundance at the time season drought occurs , namely in June and October (Sepawan, 2018) . Generally turtle do landing and making a number of nest For trick predators. There are two type the usual nest made into nest as place For turtle lay eggs that is nest natural and semi- natural nests . However , the existence of attack dampers and conditions more nests moist cause hatching turtle in the nest experience failure show that percentage Power hatching turtle in the nest experience different very real in semi- natural nests .

Turtle green (*Chelonia Mydas*) is types the most common turtle found in marine areas Indonesia is one of them on the island Bangkaru Aceh Singkil Regency , Aceh Province . Although turtle green is type the most turtles found , but sustainability Still become problems (Listiani et al., 2015). The number of population turtle green Keep going decrease caused by several factors , caused by the destruction of natural habitats , pollution sea , predator attacks , and hunting meat or the eggs For interest commercial (Apriando , 2012).

Turtle green is protected and incoming species in category threatened extinct (Endangered) according to IUCN. Research about level success hatching egg very important For know factors that influence continuity life species turtle green , especially on the island Bangkaru which is one of the main habitats laying turtles in Indonesia. The formulation problem in study This How level success hatching egg turtle green on the beach Island Bangkaruh , District Banyak Island , Aceh Singkil and how factor environment like temperature , humidity , pH and distance nest with lips beach .

2. RESEARCH IMPLEMENTATION METHOD

2.1 Time and Location

Study carried out on the Bangkaru Coast , District Banyak Island , Aceh Singkil Regency , from May to with August 2024. Monitoring implementation is carried out every day with frequency twice a day , namely at 08.00 - 15.00 WIB and 21.00-24.00 WIB.

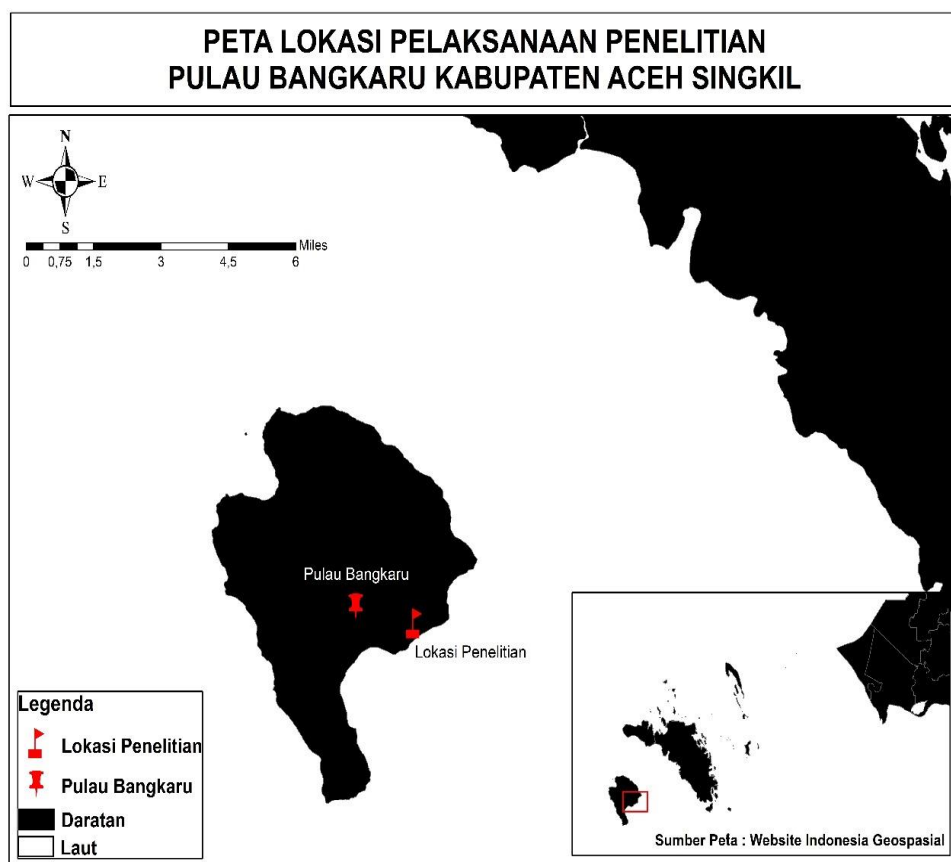


Figure 1. Map of Nesting Habitat Monitoring Locations Turtle

2.1 Tools and Materials

Study use tool as well as materials that include turtle (object) research), thermometer mercury , soil tester, meter tape, peter roll, camera , flashlight , tools write , wood and board plywood . Turtle is Poikilothermous animals which means as animals that are capable adapt depends temperature range 24-33°C Turtles are also herpetology animals , namely animals that are classified as in discussion aspect biology class Reptilia and amphibia. Along with the development of the era , turtles are animal ancient evolve and survive life from millions last year until now . turtle own a number of part different body from other animals such as head , neck , shell or carapace , and hands that resemble wings (legs) front) and legs (legs) back) which can swimming in the sea (Fitriani *et al .*, nd)

Temperature is the very part important For determine determination place nest laying turtle . Temperature sand very influential to growth emberio eggs , if moment temperature too tall allow turtle will difficulty in process making nest lay eggs . However if temperature too low will also affect the incubation period as well as level success hatching egg turtle (BA Rachman *et al .*, 2021) . For range experience temperature turtle between 26°C-30°C is normal limits for hatching and development emberio (Syapura *et al* 2020).

2.3 Procedure Study

Search nest experience done moment Evening day , with observation in a way directly . Next measure length and width parent turtles obtained , measuring deep and wide nest with use meter , marking nest with use pole given marker sign numbers on each nest , measure distance nest at high tide until ebb lowest , measuring nest parameters among them temperature , pH, and humidity in the nest . Egg nest turtle the keep an eye on every morning , afternoon and evening in a way routine until egg turtle hatch . In brackets 1x48 hours is done checking return temperature , ph and humidity . Calculation amount egg in nest as well as amount live hatchlings , things This done For know level success hatching . Data that has been obtained furthermore tabulated .

2.4 Data Analysis

The results of the data obtained in the field furthermore analyzed use formula following namely percentage egg hatching and percentage hatchling release (Darmawan *et al .*, 2009).

$$\text{Percentage egg hatching (\%)} = \frac{\text{Jumlah tukik hidup} + \text{Jumlah tukik mati}}{\text{Jumlah telur}} \times 100\%$$

$$\text{Percentage hatchling release (\%)} = \frac{\text{Jumlah tukik hidup}}{\text{Jumlah tukik hidup} + \text{Jumlah tukik mati}} \times 100\%$$

4. RESULTS and DISCUSSION

Monitoring turtle done during period 4 months time from May to with August 2024. Based on the data obtained , the type of turtle doing landing and nesting on the island Bangkaru Conservation Area *Ecosystem Impact* there is two type turtle landing For lay eggs among them turtle green (*Chelonia mydas*) and turtles star fruit (*Dermochelys coriacea*). Landing the it is possible Island Bangkaru is track migration from second type turtle the .

Amount The turtle egg nests found are all natural nests obtained during monitoring. *The Ecosystem Impact conservation area* does not have semi-natural turtle nests designed to imitate natural conditions, prioritizing the protection of their natural habitat. Based on the data obtained, it shows that the hatching power of green turtle eggs (*Chelonia Mydas*) in each nest is different . The nests that have been found are then guarded and monitored until they hatch into hatchlings. The more detailed percentage of egg hatching can be seen in the diagram below (Figure 2). All eggs are the total number of eggs from the nests found. While hatched eggs are the number of eggs that successfully hatch into hatchlings, both alive and dead, from each nest.

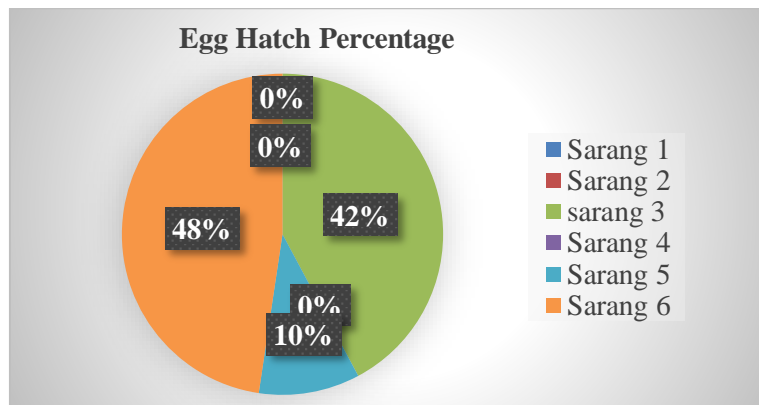


Figure 2. Percentage Hatching Egg

Based on Figure 2, it shows that the highest percentage of turtle eggs is found in nest 6 with a percentage of 48%, nest 3 with a percentage of 42% and in nest 5 a percentage of 10% was found. This is because the location of the nest is in accordance with the environment and gets enough sunlight, far from sea abrasion and there are no plant roots in the nest. While in nests 1, 2 and 4 no egg hatching was found because the nest did not get enough sunlight and was often exposed to sea water abrasion, the availability of roots in the nest and the nest had been targeted by predators. On the other hand rainfall heavy rain result in Power incubation egg become disturbed and there is body like Pandanus sea (*Pandanus odorifer*), shrub daffodils (*Pandanus odorifer*) and Katang-katang (*Ipomoea pes-caprae*) which are located around nest the turtle that.

Peak landing and nesting turtle in various location No always The same depending on the season, wind, tidal patterns, and light month (Sinaga *et al.*, 2024). Monitor lizards, crabs, snakes and ants including predator disturbance (Samosir *et al.*, 2018). Furthermore egg failed turtle hatch usually caused by predators and contamination microbes on the substrate nest, temperature and humidity (Nugroho *et al.*, 2018); (Umama *et al.*, 2020). Coastal vegetation on turtle egg incubation shows that the type and density of vegetation can affect the temperature and humidity of the nest which most influences the success of turtle egg hatching (Akbarinissa *et al.*, 2018).

Percentage between amount successful egg hatch become hatchling with total eggs called as percentage hatchling release. As for the hatchlings release depicted in Figure 3.

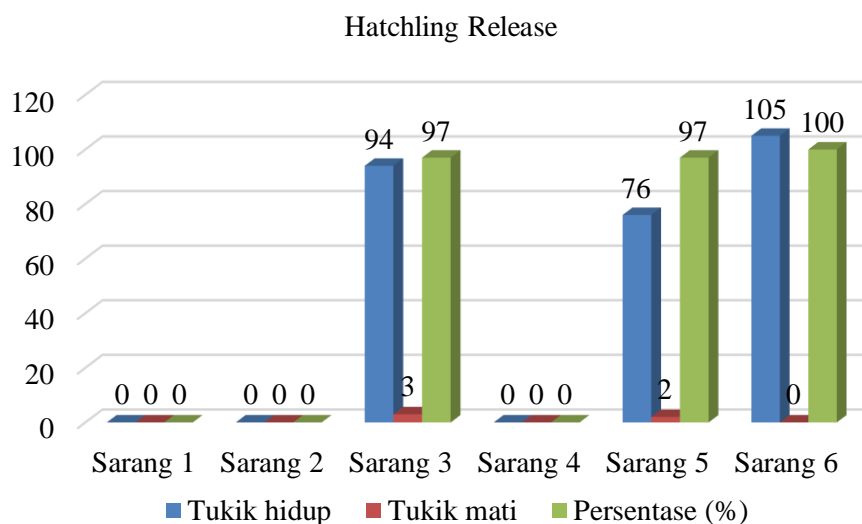


Figure 3. Percentage hatchling Release

Based on the graph above percentage hatchlings in nests 3,5 and 6 that survived and were released at the location This Enough high where the value percentage his around 80-100% caused by location a suitable nest because caught light sun in a way direct and far from abrasion that makes it easier hatchling For dig out. While in nests 1,2 and 4 it is not There is live hatchlings and release mark percentage 0% is caused by light the sun that doesn't caught in a way direct to nest, on the other side often caught abrasion and there is the

amount root inside nest that causes hatchling No can dig out . Success hatching egg turtle influenced by several factor among them factor biotic and abiotic factors biotic namely predators and pollution microbes found in the nest , meanwhile factor abiotic is character physique from substrate nest or sand as well as temperature and humidity (Fitri and Herawati 2022). Ruthig and Gramera (2019) stated that predatory turtles are animals and activities humans who are detrimental , including take egg from nest For consumed or traded .

The results of nest parameter measurements carried out at 06.00 , 13.00 and 21.00 WIB, where temperature range between 29-35 °C. According to Nuitja (1992), normal range of temperature nest hatching turtle is 24-34°C. If the temperature nest not enough or exceed normal range , eggs will fail hatch (no can grow or dead) (Rofiah *et al .* , 2012) . Lalo *et al .* , (2017) stated that temperature range 28.5 ° C-32.2 ° C will give percentage good hatching .

Blechsmidt (2020) stated that more Lots shade near nest will lower temperature nest as well as can reduce rainfall Rain to nest . Setiawan *et al .* , (2018) stated that increase temperature nest affected by light sun and lack of cover vegetation around nest . Sim *et al.* , (2015) stated nests that exceed 34°C during three day in succession approaching end of incubation period can reduce percentage hatchlings hatching . Humidity in the morning day 3.45-4.00% during the day 3.27-3.45% and at night range between 3.02-3.6 % . Umama *et al .* , (2020) stated that temperature , humidity , and pH affect hatching egg turtle . Next distance beach range between 2.02-3.26 meters. Turtle tend choose place certain as beach laying in accordance with its characteristics . Characteristics area laying turtle green among them that is own vast land and landau , located above beach with average slope value 30° , above tidal between 30 to 80 meters, has grains sand certain easy dug by turtles as well as female considered safe For lay eggs (Fitri and Herawati 2022).

pH with value 8, where the pH value is at a neutral number shows the pH of the sand nest very Good For hatching egg turtles . According to Samosir *et al* (2018) stated that the pH is neutral more Good For hatching egg turtle compared to acidic pH . If the pH of the sand nest nature sour will result in content metal in sand hatching become toxic and causes bioaccumulation which can hinder hatching egg turtle . On the other hand failure hatching egg turtle usually caused by predators and contamination microbes in nests , substrates nest , temperature and humidity (Nugroho *et al.* , 2018); (Umama *et al.* , 2020). Decline success hatching egg turtle on the nest can happen in a way significant due to Because density high , caused by the presence of rotten eggs so that become a growth medium bacteria , the consequences temperature rises, oxygen decreased , and bacteria to infect another egg .

5. CONCLUSION

Monitoring done on the nest experience until hatchling hatch with percentage hatching highest 48 % were found in the 6th nest , the 3rd nest with a percentage of 42% and in the 5th nest a percentage of 10% was found Because ideal location , while nest 1, 2, and 4 no succeed hatch consequence lack of light , abrasion sea , roots plants , or predator attack . Failure hatching generally caused by factors environment and predators .

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