

The Management Of Turtle Nesting In Protected Areas On Bando Island And Kasiak Island, Pariaman, West Sumatera

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Abstract – This research was carried out from December 2021 to October 2022 on Bando Island and Kasiak Island, Pariaman City. The research aims to analyze the management of turtle eggs in protected areas using survey methods. The results is were that turtles lay eggs on Bando Island every month and on Kasiak Island turtles lay eggs in May, June and July and other months there are no turtles laying eggs. Traces and nests of the hawksbill turtle (*Eretmochelys imbricata*) on Bando Island and the green turtle (*Chelonia mydas*) on Kasiak Island were found on the island. Management of turtle eggs on Bando Island involves relocating eggs from natural nests to semi-natural nests as a place for incubation of eggs to hatch, while on Kasiak Island the relocation of eggs to another beach, namely Apar UPTD KPSDKP Kota Pariaman and is not in accordance with conservation rules. The characteristics of the turtle nesting sites at the study site have the same habitat conditions but turtles prefer to lay their eggs on Bando Island around Bakung vegetation (*Scaevola taccada*) while Kasiak Island around Ketapang vegetation (*Terminalia cattapa*). Management of turtle nesting on Bando Island is appropriate based on the quality standards of technical guidelines for turtle conservation management, namely the development of semi-natural habitats and Kasiak Island is not yet managed. On Kasiak Island, the management of turtle eggs is still relatively low and requires guidance from related parties.

Keywords – Turtle eggs, Bando Island, Kasiak Island, the management, protected area.

I. INTRODUCTION

Indonesia is known as an archipelagic country consisting of thousands of islands, namely 17,480 islands with different geographical and topographical conditions, with the shape of the archipelago and these differences actually provide distinct advantages for sea turtles to choose their habitat around certain islands. Seven species of sea turtles in the world are included in Appendix I by CITES (Convention International Trade in Endanger of Wild Flora and Fauna) as endangered, protected and not exploited in any form. Six types of turtles are found in Indonesia, namely the green turtle (*Chelonia mydas*), the hawksbill turtle (*Eretmochelys imbricata*), the olive ridley turtle (*Lepidochelys olivacea*), the leatherback turtle (*Dermochelys coriacea*), the flat turtle (*Natator depressus*) and the loggerhead turtle (*Caretta caretta*), (Departemen Kelautan dan Perikanan R.I., 2015).

Turtles have experienced a decline in population in the last period, even some species are threatened with extinction and include rare animals. Newly hatched hatchlings in nature will face the threat of death from animals such as crabs, birds, and reptiles, namely monitor lizards. The greatest threat to sea turtles in Indonesia and around the world is humans, as excessive coastal development has reduced turtle nesting habitats. Then the capture of turtles such as taking eggs, meat, skin, and shells has reduced the turtle population.

All types of turtles that live in Indonesian waters will choose a unique nesting habitat. The province of West Sumatra has many beaches and small islands that are often visited by turtles to lay their eggs, such islands as Kasiak Island and Bando Island are often visited by turtles to lay their eggs. Kasiak Island is a small island located in Pariaman City, West Sumatra. Kasiak Island

is included in the turtle conservation area managed by UPTD KPSDKP Pariaman, West Sumatra. Kasiak Island has a characteristic white sand beach with coral sand and there are several vegetations such as *Ipomea batatas*, *Pandanus tectorius*, *Hibiscus tiliacus* and *Cocus nucifera*. Bando Island is a small island that is included in the Marine Tourism Park (TWP) Pieh Island and the surrounding sea is one of the national marine conservation areas located in West Sumatra Province, precisely to the west of the administrative area of Padang City, Padang Pariaman and Pariaman Regencies. TWP Pieh Island and the surrounding seas are turtle nesting habitats that have the characteristics of white sand beaches overgrown with vegetation such as *Hibiscus tiliacus*, *Pandanus tectorius*, and *Ipomea batatas* (Direktorat Jenderal Pengelolaan Ruang Laut, 2019).

The purpose of this study is to determine the implementation of conservation area management in accordance with applicable rules and can preserve the turtles in these waters. Therefore, this research was conducted because these two islands are conservation areas and islands that have been used as turtle landing sites.

II. RESEARCH METHODS

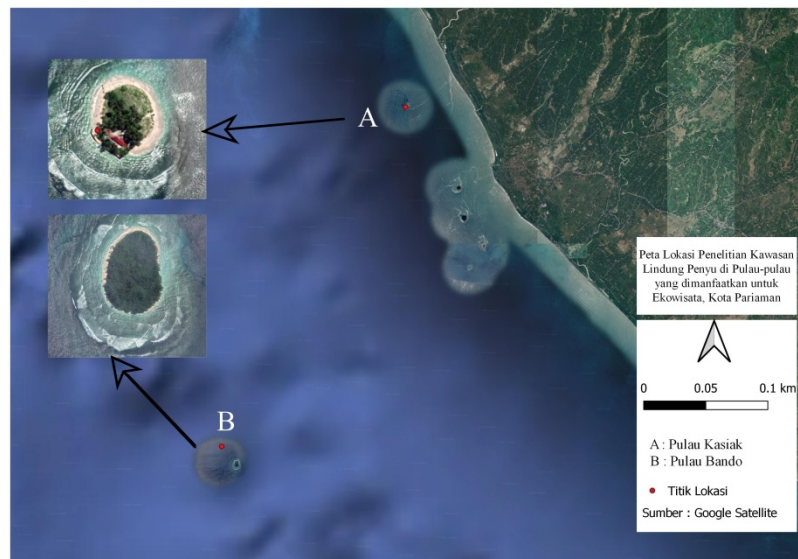


Fig. 1. Map of Kasiak Island and Bando Island

The research location for turtle nesting management is on Bando Island and Kasiak Island, Pariaman City. This research was conducted using a descriptive survey method at two locations, namely Bando Island and Kasiak Island. Monitoring of turtles going up to the beach to lay their eggs is by combing the beaches on Bando Island and Kasiak Island. Monitoring of turtles landing to lay eggs is carried out three times at night. This monitoring is carried out to observe the turtle species that rise to lay their eggs, the behavior at the time of laying eggs and when the turtles ascend to land. If sea turtles have been found laying eggs in the area, monitoring is continued by measuring environmental parameters, namely temperature, pH, humidity and salinity, then proceeding to take samples of plant vegetation around the nest of turtle eggs. Research is continued by relocating eggs to semi-natural nests if necessary. Analysis of the data used in this study is descriptive analysis, the data obtained in the form of numerical data and photos in the form of tables, diagrams and pictures.

III. RESULT AND DISCUSSION

The results on Bando Island did not find turtles, but only traces of turtles with a width of 80 cm, then a turtle nest with a nest depth of 36 cm with a diameter of 20 cm that had been abandoned whose eggs had been relocated and the distance of the nest egg to the beach was 11 m. On Kasiak Island, no turtles were found, but turtle nests with a diameter of 25 cm and a distance of 9 m from the nest to the beach. The results of measurements of traces and nests of turtle eggs can identify the type of turtle that lays eggs, traces and nests of turtle eggs found on Bando Island can be identified which species of turtle that lay eggs is the hawksbill turtle (*Eretmochelys imbricata*), while the nest of turtle eggs found on Kasiak Island can be identified The species of turtle that lays eggs is the green turtle (*Chelonia mydas*).

Table 1. Data on the results of measurements of traces and nests of turtle eggs on Bando Island and Kasiak Island

| Location | Track | Nest distance from shore | Nest | Characteristics of habitat | Beach of slope | Vegetation |
|---------------|-------------|--------------------------|-----------------------------------|----------------------------------|----------------|---|
| Bando Island | Wide = 80cm | 11 m | depth = 36 cm diameter = 20 cm | Coral sand, white sand and moist | 6,6° | <ul style="list-style-type: none"> • Bakung (<i>Scaevola taccada</i>) • Malapari (<i>Pongamia pinnata</i>) • Waru laut (<i>Thespesia populnea</i>) • Ketapang (<i>Terminalia cattapa</i>) |
| Kasiak Island | - | 9 m | diameter = 25 cm | Coral sand and white sand | 13,4° | <ul style="list-style-type: none"> • Ketapang (<i>Terminalia cattapa</i>) • Katang (<i>Ipomea pescaprae</i>) • Waru laut (<i>Thespesia populnea</i>) |

The characteristics of habitat on Bando Island are fine white coral sand with moist sand conditions on the surface of the nest, then with a beach slope of 6,6° and surrounded by vegetation is Bakung (*Scaevola taccada*), Malapari (*Pongamia pinnata*), Ketapang (*Terminalia cattapa*), Waru laut (*Thespesia populnea*). Hawksbill turtle be found on surrounded of vegetation is Bakung (*Scaevola taccada*) (Dermawan and Adnyana, 2003). Dermawan, Nuitja and Dedi (2009) said that the hawksbill turtle (*Eretmochelys imbricata*) nesting area consists of grains of coral sand produced from seawater waves, white and yellowish sand.

Meanwhile, The characteristics of the habitat on Kasiak Island are not much different with Bando Island, which has fine coral sand and if yellowish-white color, with a beach slope of 13,4° and around the nest surrounded vegetation by ketapang (*Terminalia cattapa*), waru laut (*Thespesia populnea*), katang (*Ipomea pescaprae*) According to Sari, Fauzi, and Sumiarsih (2018). The sand texture of green turtle nesting nest on Kasiak Island is the preferred sand texture for turtles to lay their eggs, because the fine sand texture is dominated by sand which is preferred by turtles for laying eggs.

Table 2. Condition of Turtle Eggs on Bando Island and Kasiak Island

| No | Activity | Bando Island | Kasiak Island |
|----|--|--------------|---------------|
| 1 | Turtle nest monitoring | | |
| | -bring the necessary equipment | √ | - |
| | -identification of sea turtle species | √ | √ |
| | -observation of characteristics habitat | | - |
| | -observation of vegetation | | - |
| 2 | -measurement of environmental factors | √ | - |
| | Protection of turtle egg nests | | |
| | -erase turtle tracks | - | - |
| 3 | -make artificial egg nests | - | - |
| | Leaving natural nests, fenced and monitored by officers | √ | - |
| | Relocating to semi-natural nests according to SOP | | |
| 4 | -bring the necessary equipment | √ | - |
| | -relocate if necessary | √ | √ |
| | -make semi-natural nests according to habitat characteristics types of sea turtles that lay eggs | √ | - |
| | -make semi-natural nest size according to natural nests | √ | - |
| | -measurement of environmental parameters in the hive was carried | √ | √ |

| | | | |
|---|----------------------------|---|---|
| | out semi natural | | |
| | Hatched eggs | | |
| 5 | -counted | √ | √ |
| | -measured and weighed | √ | - |
| | -Released all hatched eggs | √ | - |

Note : (√) activity

(-) no activity

Activity in Departemen Kelautan dan Perikanan R.I., (2009)

The condition of turtle eggs on Bando Island was that some of the eggs were relocated to semi-natural nests and some were allowed to remain in natural nests. This was done because the turtle eggs are in an area that was relatively safe from predators and sea tides. In addition, turtles were found to make nests. Around the area of the officer's monitoring post and the semi-natural nest incubation room so that it can be monitored by the officer (enumerator). The natural nests of turtle eggs are protected by a wire netting fence and data board stakes to indicate that there are turtle egg nests in the area. This is in accordance with the quality guidelines for technical guidelines for turtle conservation management (Departemen Kelautan dan Perikanan R.I., 2009), namely semi-natural habitat development is carried out by moving egg nests from their natural habitat to areas that are protected and maintained, but with substrate and environmental conditions similar to their natural habitat to areas that are protected and maintained, but with substrate and environmental conditions similar to their natural habitat. This semi-natural habitat is usually located around the turtle breeding station, where the semi-natural habitat will be monitored and protected from external factors that threaten the failure of hatching eggs.

On Kasiak Island, all turtle eggs were relocated to the semi-natural nest incubation room of the UPTD KPSDKP Kota Pariaman, which is far from the natural nesting beach, due to insufficient officers (enumerators) overseeing egg nest from predators. This is not in accordance with the quality guidelines for technical guidelines for turtle conservation management, namely semi-natural hatching of eggs is carried out by transferring eggs from natural nests to semi-natural nests that are located close to natural nesting areas with the aim that habitat characteristics in semi-natural nests are the same as natural nests. Sheavtiyan, Setyawati dan Lovadi (2014) said hatching success of turtle eggs can be nice because characteristic of habitat turtle eggs same like before.

IV. CONCLUSION

Management of turtle eggs on Bando Island is better than Kasiak Island because it complies with conversation principles, namely relocating eggs from natural nests to semi-natural nests located on the island, while Kasiak Island is not in accordance with conversation principles, namely relocating eggs away from the island by habitat characteristics are much different and can increase failure in hatching eggs.

ACKNOWLEDGMENTS

The management of turtle nesting on Bando Island and Kasiak Island should be paid more attention, because there are still several activities from the national standard for turtle nesting management that are not carried out on the two islands. However, when compared between the two islands, the management of turtle nesting is better, namely on Bando Island because the procedure for relocating eggs is very systematic and the habitat characteristics in natural nests and semi-natural nests are not much different, then for the management of turtle nesting on Kasiak Island, relocation should be done. Eggs are not carried to a place far from the island, it is better to relocate the eggs to the island itself to avoid hatching failure rates because the habitat characteristics are much different.

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