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## CONSERVATION AND SUSTAINABILITY OF TURTLE FROM THE PERSPECTIVE OF SOCIAL SCIENCE IN BAKUNGAN KECIL ISLAND, SANDAKAN, SABAH, MALAYSIA

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ABSTRACT	ARTICLE INFO
<p><i>The writing of this paper aims to report on the results of research conducted on the conservation and sustainability of turtle in Bakungan Kecil Island in Sandakan, Sabah, Malaysia. Nowadays, turtles have been categorized as among the endangered species of life due to various factors. In fact, this study aims to find alternatives in the method of conserving and preserving turtle cubs from a social science perspective in addition to using existing methods of hatchery. The study began to be conducted for ten months from January to October 2022. The results from this study show that besides using the hatchery method there are three more methods that can be used in the conservation and sustainability of turtle, namely using cage, pond and tank method.</i></p> <p>© 2023 Kantor Jurnal dan Publikasi UPI</p>	<p><b>Article History:</b> <i>Submitted/Received 09 013 2023</i> <i>First Revised 09 028 2023</i> <i>Accepted 10 011 2023</i> <i>First Available online 12 001 2023</i> <i>Publication Date 12 001 2023</i></p> <hr/> <p><b>Keyword:</b> <i>conservation,</i> <i>hatchery,</i> <i>sustainability,</i> <i>turtle</i></p>

## 1. INTRODUCTION

Turtles are among the marine life that belong to vertebrates (backbone) in the class of reptiles similar to snakes, lizards, turtles, labi-labi and tuntung (Romimohrarto & Juwana, 2001). Studies show that these animals have been going back millions of years, namely in the Jurassic period (145-208 million years) and contemporaries of dinosaurs (Beath, 1981). Nowadays, these animals have been gazetted as protected life as they are threatened with extinction by human activities and are among the important assets for eco-tourism purposes (Puspitaningasih, 2012).

Nowadays, the sustainability and future of turtle species around the world seems to be already threatened by the collection of turtle eggs, capture for commercial purposes, sea pollution, climate change and so on (Numberi, 2009). Sabah, which is surrounded by the South China Sea, the Sulu Sea and the Celebes Sea and is blessed with dozens of islands and hundreds of coral patches, is one of the waters suitable for turtle habitat (De Silv, 1982). Although these animals have been gazetted as protected life under the Sabah Parks (Amendment) Enactment 1996, the Sabah Wildlife Enactment 1997 and the Malaysian Fisheries Act 1985, these animals continue to be hunted as they are in high demand in the domestic and international markets such as eggs, skins and meat (Heng, 2004). For example, on May 3, 2004, the Sabah Marine Police arrested a Chinese fishing boat on the island of Mengalum and found 130 turtle carcasses, 30 turtle shell and three surviving turtles (Zulkifli et al. 2004). On 26 March 2009, a group of fishermen from Hainan, China were detained by the Malaysian Maritime Enforcement Agency (MMEA) for illegally carrying out fishery activities in the waters off Mantanani Island near Kota Belud on the west coast of Sabah. In the arrest, the Sabah Marine Police found 74 turtles from green and hawksbill species including six still alive. Two days later, on 28 March 2009, the MMEA again detained a Vietnamese fishing boat about 18 nautical miles from the waters of Mengalum island and found 20 turtles.



**Figure 1.** Turtle hijacking arrested by Sabah MMEA (BERNAMA, 4 April 2009)

In addition to being caught and killed by foreign fishermen to obtain their meat and skins for the international market, the turtles in Sabah are also under threat in terms of their breeding. According to a survey conducted around the Sandakan market, the sale of turtle eggs is still underway despite being completely banned by the Sabah Fisheries Department and the Sabah Wildlife Department (Isnain, 2008). It is even more surprising that turtle eggs from Sabah have also been sold openly at the Payang Central Market in Terengganu. In the meantime, the expedition also found several turtle carcasses floating on the surface of the water in the Sulu Sea and the South China Sea which are believed to have been

caught and suffocated during the accidental fishing activities using tow trawlers, trawlers and explosives.



**Figure 2.** Turtle eggs from Sabah sold at Payang Central Market, Terengganu (Payang Central Market, Terengganu 15 Juni 2009)



**Figure 3.** Turtle remains found in Sipadan Island waters (Sipadan Island, 22 October 2012)

## 2. MATERIALS AND METHOD

There are three major turtle breeding and conservation centres in Sabah, namely the Turtle Islands in Sandakan (Selingan, Bakungan Kecil, and Gulisan Islands) and Sipadan Islands in Semporna which are operated by Sabah Parks. To this end, turtle hatchery has been set up on these islands and are fully guarded by the staff of Sabah Parks. For this purpose, the eggs of the turtles will be collected at night and will continue to be planted in the hatchery and will hatch in the period between 40-60 days. To date, the breeding method of turtles carried out by Sabah Parks is still based on the natural law of releasing new hatched turtle into the sea.



**Figure 4.** Turtles lay eggs (Bakungan Kecil Island in Sandakan)



**Figure 5.** Hatchery (Bakungan Kecil Island in Sandakan)



**Figure 6.** New turtle cubs hatched (Bakungan Kecil Island in Sandakan)



**Figure 7.** Turtle cubs released into the sea (Bakungan Kecil Island in Sandakan)

However, the results of the study found that this natural method (hatchery) of releasing the newly hatched turtle cubs into the sea also invites a thousand and one questions. Based on the monitoring carried out, the efforts to breed and raise the turtle cubs until adulthood were not as expected. This is due to the existence of various predatory animals such as beavers and storks, fish, squids and so on (National Research Council, 1990). In addition, this study found that there are also turtle stuck dead on the fishing trawler's net. In fact, a review should be done to address these issues and questions and use other methods and perspectives.

### 3. RESULT AND DISCUSSION

There are several purposes for which this study was carried out. Among them are the need to identify the continuity of breeding and conservation program for turtle cubs based on the hatchery method carried out by Sabah Parks; to assess the extent to which the method of releasing newly hatched and directly released turtle and continue to be released into the open sea is still relevant in the breeding and conservation efforts of turtles in Sabah taking into account the present reality; know why the new turtle cubs that are hatched and continue to be released into the open sea have trouble surviving and ultimately cause the number of turtles to decrease and finally set out other suggestions that can be used as a new alternative to overcome the problem of the survival of turtle breeding and conservation programs in Sabah.

Taking into account the issues and questions mentioned earlier, this study and writing suggest that the conservation and sustainability methods of turtle using cages, tanks and ponds are practiced as an alternative to the hatchery method and the direct release of newly hatched turtle cubs into the sea (Supriharyono, 2007). Through this method, the survival of turtle is believed to be more secure as the *shells* of turtle have become harder than the newly hatched, larger in size, capable of swarming the sea and predators and so on. In fact, this study and writing suggest three (3) methods used which are (1) cage (2) tank and (3) ponds as shown below.



**Figure 8.** Cage Method (Bakungan Kecil Island in Sandakan)



**Figure 9.** Tank Method (Bakungan Kecil Island in Sandakan)



**Figure 10.** Pool Method (Bakungan Kecil Island in Sandakan)

The results and findings from this study found that all three methods of using a social science perspective seem to have shown positive and encouraging results. The results of this study have been successful in raising turtle as shown in **Table 1** and the photos below.

**Table 1.** Expansion of Turtle Child Growth in Bakungan Kecil Island Between January 2022 until October 2022

Measure	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Weight (Gram)	29.5	30.1	30.5	30.6	31	31	33	33.5	33.8	33.8
Long (Milimeter)	4.8	4.9	5.1	5.2	5.2	5.2	5.4	5.4	5.6	5.6
Wide (Milimeter)	3.9	4	4.2	4.2	4.2	4.2	4.2	4.2	4.4	4.4



**Figure 11.** Measuring the size of the new born turtle (Bakungan Kecil Island in Sandakan)



**Figure 12.** Comparison size between new born and ten months turtle (Bakungan Kecil Island in Sandakan)

#### 4. CONCLUSION

The survival of turtle nowadays seems to be unsecured and requires human intervention to help its sustainability. In fact, the use of cages, ponds and tanks is among other alternative methods that can be practiced in the conservation and survival of turtles to continue to be part of the marine ecosystem and contribute to the development of a country, especially the marine-based tourism industry.

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