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للمحافظة على
الكائنات الحية

The Mohamed bin Zayed
SPECIES CONSERVATION FUND

PROGRESS REPORT

SCALING UP
NESTING
MONITORING FOR
ENHANCED
CONSERVATION
EFFORTS OF
PAINTED AND
RIVER TERRAPINS
IN TERENGGANU,
MALAYSIA.



NOVEMBER 2024
(APRIL - NOVEMBER)

FRESHWATER CONSERVATION
(SETIU WETLANDS),
WWF-MALAYSIA

1.0 Introduction to the Project

1.1 Painted terrapin

The painted terrapin (*Batagur borneoensis*), also known as *tuntung laut* in Malaysia, is a critically endangered freshwater turtle species native to Southeast Asia, including Malaysia, Thailand, and Indonesia. Known for the striking white and red patterns that males display during mating season, these terrapins are found primarily in coastal river habitats, where they migrate between freshwater rivers and estuarine areas. They play an important role in the ecosystem by helping to maintain the balance of aquatic vegetation, contributing to the health of the rivers and surrounding habitats.

1.2 River terrapin

The river terrapin (*Batagur affinis*), also known as *tuntung sungai* in Malaysia, is a critically endangered freshwater turtle species found primarily in riverine environments across Southeast Asia, including parts of Malaysia, Thailand, and Cambodia. Unlike other turtle species, river terrapins are highly adapted to brackish and freshwater river systems, where they forage on vegetation and other organic materials. During nesting season, they migrate to sandy riverbanks to lay eggs, which they carefully bury to incubate naturally under the warmth of the sand.

1.3 Threats to terrapins

The primary threats to terrapins include habitat loss, illegal egg collection, and the poaching of adult turtles for meat, particularly during the nesting season. Sand mining, river pollution, and land development along riverbanks also impact their nesting sites, making it difficult for females to find safe places to lay eggs. Additionally, climate change and rising temperatures can affect the sex ratio of hatchlings, as warmer nest temperatures tend to produce more females, disrupting population balance over time.

2.0 Conservation Efforts by WWF-Malaysia

Conservation efforts are underway to protect terrapins across various regions in Malaysia. In areas like Setiu, WWF-Malaysia has been conducting these activities since the 1990s. With the expansion of efforts to Kuala Kerteh, WWF-Malaysia hopes to increase the population of river and painted terrapins in the wild, thereby helping to rejuvenate their numbers and improve their conservation status. Our programs focus on monitoring and protecting nesting sites, engaging local communities in conservation, and raising public awareness about the importance of this species. WWF-Malaysia is not alone in these efforts; we collaborate with local organizations and government agencies to protect nesting beaches, operate hatcheries, and mitigate threats to the terrapin population. Through these combined efforts, all parties involved strive to restore terrapin populations and safeguard their habitats for future generations.

2.1 Support from the Department of Wildlife and National Parks (PERHILITAN)

On 22nd February 2024, WWF-Malaysia visited the Director of PERHILITAN Terengganu to share the 2023 report on painted and river terrapins conservation work. During the meeting, we also presented upcoming projects for this year, including a new project under The Mohamed Bin Zayed (MBZ) Foundation Fund.



Figure 1: Discussion between the Director of PERHILITAN Terengganu and representatives from WWF-Malaysia.

3.0 Beach Classification in Terengganu, Malaysia

In Terengganu, Malaysia, nesting beaches are classified as reserved or tendered beaches to manage and regulate activities along the coastline, especially regarding environmental conservation, and other resource use. This distinction was designated by the Department of Fisheries Terengganu (DOFT) with approval from the State Secretary of Terengganu.

A reserved beach was determined based on the presence of high density of nests along the nesting season (particularly, green turtle and painted terrapin). This type of beach will be managed by DOFT or other agencies authorised by DOFT such as WWF-Malaysia.

A tendered beach is leased to the local community through a tendering process. The leaseholder of the beach is granted the right to control access and may impose restrictions on other parties entering the beach. According to the terms of the lease, the leaseholder is required to sell all eggs collected on the beach to the DOFT and regularly update the DOFT with nesting data from their area. However, due to the low price offered by the DOFT, most of the leaseholders prefer to sell the eggs illegally and withhold accurate nesting data. This keeps the beach classified as tendered beach in the future, despite high nesting activity in the area.

In this project, Kuala Kerteh beach was one of tendered beaches and has experienced high nesting activity of painted terrapin for the past two years. WWF-Malaysia has received approval from the DOFT to buy the eggs from the leaseholder in that area. After discussion with the leaseholder, both parties mutually agreed to work together in this area. All the painted terrapin's eggs collected from this beach will be sold to WWF-Malaysia, and WWF-Malaysia will send those eggs to designated hatchery for incubation.

4.0 Kontena Tuntung Information Gallery

Kontena Tuntung in Kampung Mangkok, Setiu, Terengganu, functions as an educational and awareness center dedicated to the conservation of the painted and river terrapins. It serves as an interactive space where visitors can learn about this critically endangered species, their nesting habitats, and the conservation efforts taken by WWF-Malaysia to protect them.

This centre, set up by WWF-Malaysia with funding from CIMB Islamic Bank and officially launched in September 2021, serves as a hub for conservation awareness. The centre features educational displays, conservation information, and replicas or visuals related to the terrapin's lifecycle and threats. By providing a space where both locals and tourists can engaged in conservation topics, the Kontena Tuntung helps build community support for terrapin preservation and raises awareness of the unique biodiversity in Setiu.

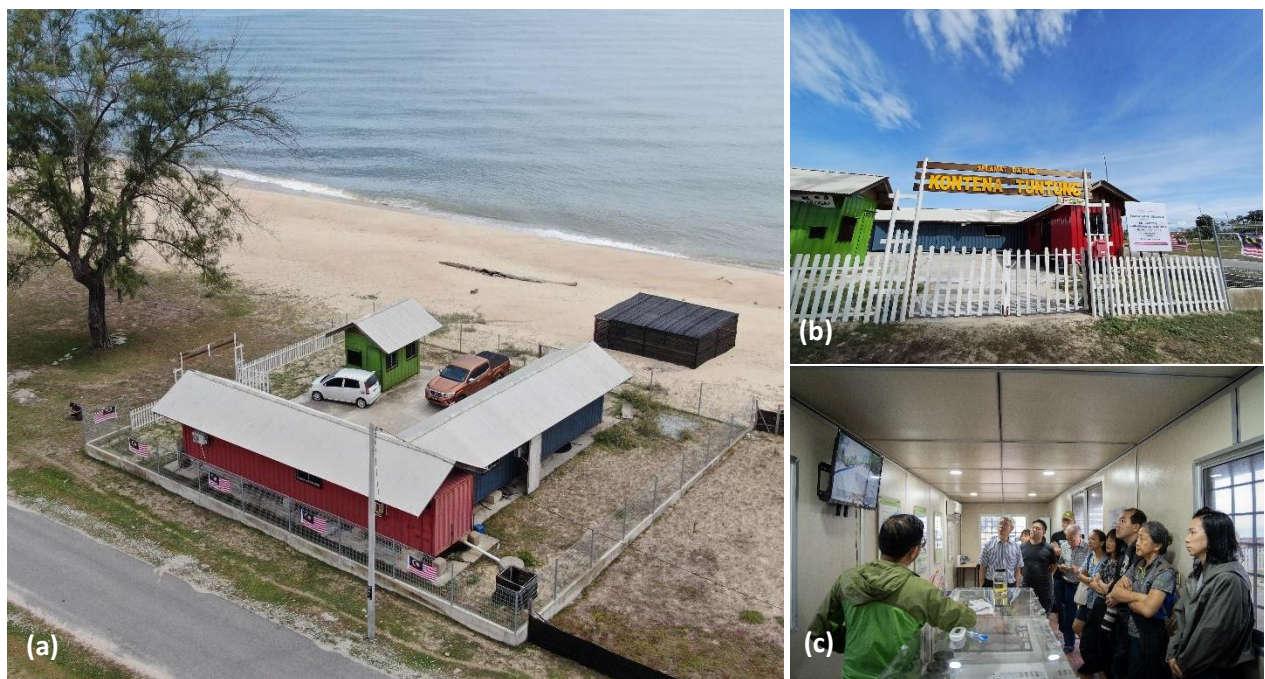


Figure 2: (a) Aerial view of the Kontena Tuntung in Kg. Mangkok, Setiu, Terengganu; (b) Front view of the Kontena Tuntung; (c) Internal view of the Kontena Tuntung.

5.0 Project Location



Figure 3: Map showing the location of Terengganu in Malaysia (orange colour).

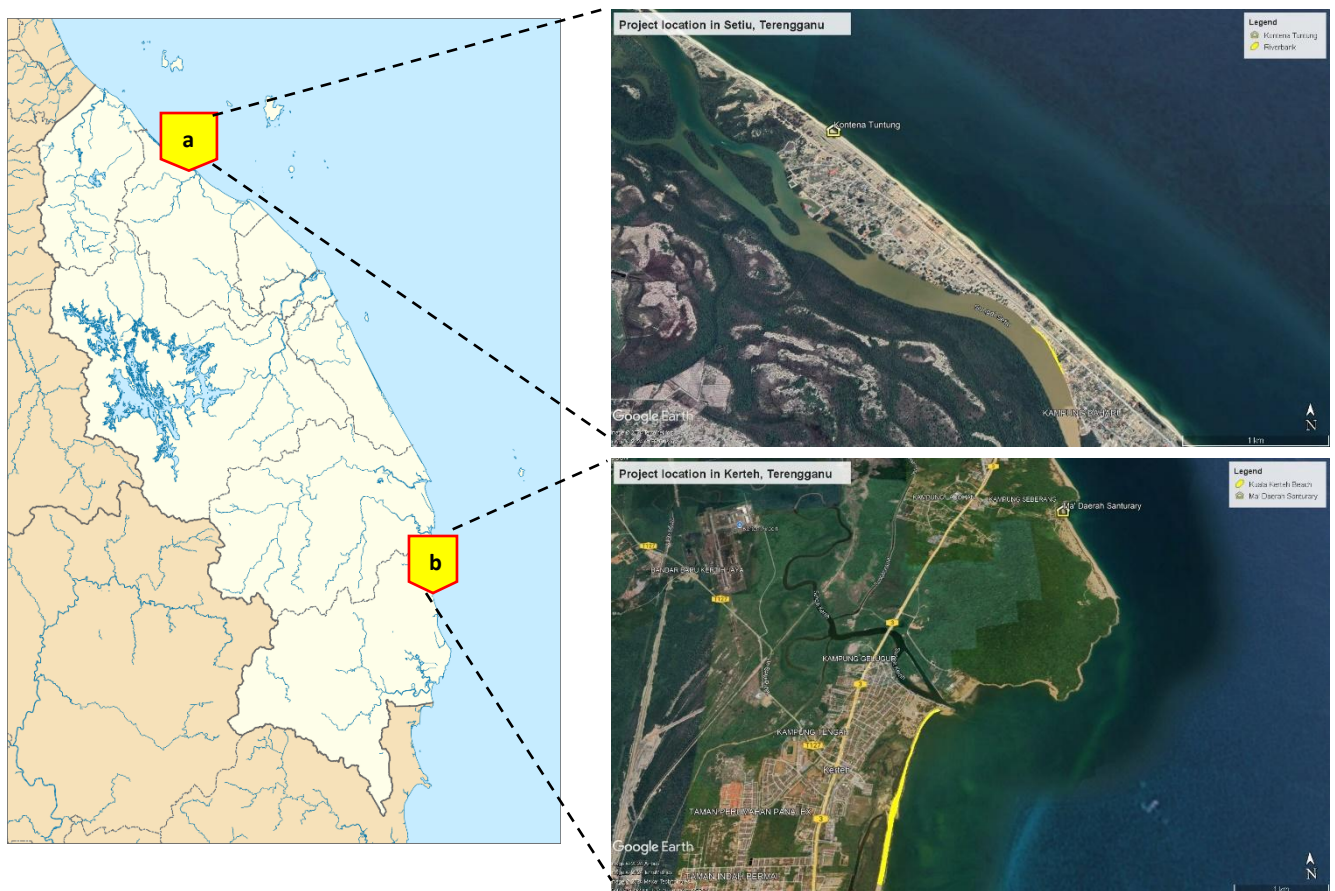


Figure 4: Project locations in Terengganu:

(a) River terrapin project in Setiu, Terengganu; (b) Painted terrapin project in Kerteh, Terengganu.

**The Kontena Tuntung and Ma' Daerah Sanctuary accommodate the hatchery for each project area.*

6.0 Progress of the project

Objective 1: To establish critical baseline data for river terrapins in the Setiu River, Terengganu, Malaysia

The river terrapin nesting monitoring project began during the nesting season, which spans from March 17 to May 16, 2024 focusing on the primary nesting site in Setiu, Terengganu. Although the MBZ Foundation funding was still being processed at that time, the team proceeded with the project using an existing budget, whereby the related expenses will be recovered once the anticipated MBZ fund is received in April. Four (4) local community members—two rangers and two hatchery workers—were hired to support the project. The rangers were responsible for patrolling a 1,000-meter stretch along the riverbank and collecting any eggs found during their shifts. This patrolling effort was essential to prevent poaching by local communities and to protect against predators like monitor lizards and wild boars. All collected eggs were transferred to the hatchery for incubation.

The hatchery, built with the assistance of the hatchery workers, is where the collected eggs are reburied and incubated until they hatch. The hatchery workers monitored the facility 24 hours daily, overseeing all buried nests. Once hatched, all hatchlings were released into the river within one week.

Over this period, two nests with a total of 40 eggs were successfully secured from the riverbank. The rangers reported that more nests were likely present, though many were laid by young, inexperienced mothers unfamiliar with the area. Some terrapins were reported nesting outside the designated monitoring zone.

Unfortunately, despite the hatchery workers' careful efforts to manage the incubation process, none of the incubated eggs hatched successfully. All eggs were monitored until Day 85, but eventually, they all turned rotten. Several factors may have contributed to this outcome, including:

1. Inexperience or immaturity of the female terrapins.
2. Overcrowding of eggs within a single nest or unsuitable nest depth.
3. Improper handling of eggs during the collection process at the riverbank and subsequent transfer to the hatchery.
4. Potential bacterial presence in the hatchery area, which have affected egg fertility.
5. Predation by ghost crabs; three eggs from the second nest were missing, with evidence of a deep hole beneath the nest, suggesting crab activity.

Project expenses: USD 3,607 (RM16,807.50) – for the hatchery construction, allowances for the local community hired to assist with nesting beach patrolling and hatchery operations, and other necessary project support requirements.



Figure 5: (a) Female river terrapin spotted after laying eggs on the nesting riverbank; (b) Eggs of river terrapin removed from their original nests and prepared to be transferred to the hatchery for incubation.



Figure 6: Hatchery constructed for the incubation of terrapin eggs.

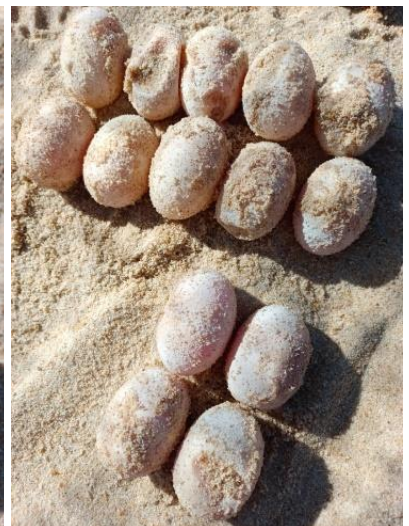


Figure 7: Rotten eggs were discovered after 60-70 days of incubation in the hatchery.

Objective 2: To establish critical baseline data for painted terrapins in Kuala Kerteh, Terengganu, Malaysia

The painted terrapin project in Kuala Kerteh, Terengganu, ran from July to November 2024. The nesting beaches in this area span 9 km, however the project team concentrated on patrol efforts in a specific area believed to be a nesting hotspot for painted terrapins.

Since Kuala Kerteh is a new project site, several site visits were conducted to assess beach conditions and engage with local community members who could be hired to assist with the project.

Initially, two rangers and one hatchery worker were hired from early July to the end of the project (15th September 2024). However, due to unforeseen circumstances, the two rangers were terminated by mutual agreement. This decision followed the tenderer's unwillingness to collaborate with the rangers for personal reasons. As an alternative, the team hired a project assistant from outside the local area to replace the two rangers.

This adjustment helped preserve a positive relationship with the tenderer, who then allowed the continuation of our patrols and egg collection on the beach. The tenderer also permitted the project to purchase the collected eggs, though all activities on the beach would be managed by him.

A total of 63 nests were collected and secured from the Kuala Kerteh Beach. The findings showed that the number of eggs per clutch ranged between 5 and 15 eggs. A total of 570 eggs from 63 nests were secured and transferred to the hatchery for incubation. Out of the total, 449 were successfully hatched (82% success rate) while 98 eggs (18%) remained unhatched. To date, there are still five more nests waiting to hatch. Full data will be shared in the final report later.

Project expenses (as per October 2024): USD 3,191 (RM14,868.29) – for the hatchery construction, allowances for the local community hired to assist with nesting beach patrolling and hatchery operations, and other necessary project support requirements.



Figure 8: Female painted terrapins spotted on the nesting beach after laying their eggs.



Figure 9: The hatchery at Ma' Daerah Turtle Sanctuary, Kerteh. (view from outside and inside).



Figure 10: Eggs collected from the nesting beach were counted for confirmation before being reburied in the sand.



Figure 11: Local communities and WWF-Malaysia's officers involved in the early phase of the project.



Figure 12: Hatchery workers reburied the eggs in the sand at the hatchery for incubation.

Objective 3: To enhance awareness, knowledge and capacity of target community groups

From April to October 2024, six (6) awareness programs were conducted in Setiu and Kuala Kerteh, Terengganu. These included hatchling release event, exhibition, awareness talks and a workshop, involving engagement with various target audiences such as students, local community and government agencies.

1. Hatchling Release Event – 18 May 2024

A technical visit of the Malaysia SDG Summit 2024 was conducted at Setiu Wetlands, Terengganu. This visit was organised by the East Coast Economic Region Development Council (ECERDC) together with the State Park Management Council (MPTN), the United Nations Development Programme (UNDP) and the Setiu District Office which included various tourism checkpoints in the Setiu Wetlands area.

WWF-Malaysia and the Department of Wildlife and National Parks (PERHILITAN) were invited to host one of the checkpoints during the visit to spread awareness on the critically endangered terrapins. The number of participants was approximately 80, coming from various sectors, including representatives from the Malaysian Ministry of Economy, state agencies, private sectors, and tourism stakeholders around Terengganu.

WWF-Malaysia, together with PERHILITAN, had the opportunity to deliver an engaging awareness talk to the participants about the terrapins, and WWF's efforts to protect them from extinction. The highlight of the event was the hatchling release program. A total of 150 river terrapins were released into the river by the participants before they proceeded to the next activity.



Figure 13: Photos showing the atmosphere throughout the hatchling release program.

2. Silver Jubilee Celebration of Ma' Daerah, Terengganu – 10-12 Aug 2024

This event was organised by the Terengganu Department of Fisheries in collaboration with WWF-Malaysia through its Marine Program, to celebrate the establishment of the Ma' Daerah Turtle Sanctuary in Kemaman. The Freshwater team participated in this three-day event as one of the exhibitors. Through this platform, the team showcased to the the public and distinguished guests the contribution of the Mohamed Bin Zayed Foundation Fund in supporting the painted terrapin project in Kerteh, Terengganu which is located adjacent to Ma' Daerah beach.



Figure 14: Exhibition by WWF-Malaysia during the Silver Jubilee Celebration.

3. Hatchery Management Workshop - 28 August 2024

A workshop on Hatchery Management was conducted to train participants in effective and appropriate methods for handling eggs and nests when the hatching dates approach. The workshop was attended by new hatchery workers, project assistants and internship students, and was facilitated by an experienced hatchery worker who is based in Setiu, Terengganu and had worked with WWF-Malaysia in this role for almost 15 years. Participants were also taught how to accurately complete data sheets and took part in practical sessions to reinforce their learning. Each participant received a certificate of participation at the end of the workshop.

By attending the workshop, our hired hatchery worker and project assistant in Kerteh, Terengganu, gained skills to manage the hatchery more effectively and efficiently, and indirectly reduce errors in nest handling.



Figure 15: Photos showing activities undertaken during the workshop.

4. Setiu Cakna Alam Sekitar - 10 October 2024

Setiu Cakna Alam Sekitar was conducted to celebrate World River Day, featuring various pocket activities such as batik colouring competition, an awareness session on solid waste and hatchling release activity for painted terrapins. 40 participants including 30 students from University College Bestari (UCB) and 10 from Universiti Sultan Zainal Abidin (UNISZA) participated in this activity.

The activity began with an awareness talk on terrapins and WWF-Malaysia's efforts to protect and safeguard them in Setiu. This was followed by a short sharing session by a researcher from UNISZA on how the public can contribute to protecting this species. 14 painted terrapin hatchlings were then released to the river by the participants. This activity concluded at the Kontena Tuntung; a gallery for painted terrapin, with a fun Kahoot quiz open to all participants. Winners received tokens from WWF-Malaysia as recognition for their active participation and understanding during the awareness talk.



Figure 16: Photos showing activities undertaken during the program.

5. Terengganu Eco Fest 2024 - 25-27 October 2024

WWF-Malaysia was invited to conduct an awareness talk and a hatchling release activity as part of the pocket programs during the Terengganu Eco Fest 2024. A total of 22 participants comprising local community in Setiu participated in the activity. Participants were given a short briefing on the species and conservation efforts undertaken by WWF-Malaysia followed by the release of 30 painted terrapin hatchlings into the river.

Besides the hatchling release, there were also other activities featured during the Eco Fest 2024, including demonstration of handicraft, tree planting, beach clean-up, *wayang kulit*, and traditional games competition.



Figure 17: Photos showing activities undertaken during the hatchling release program.

6. Tuntung Edu-Rescue - 29 November 2024

This event was organised by the Aquatic Life & Animal Livestock Production and Health Association (ALPHA) from Universiti Sultan Zainal Abidin (UNISZA) collaboratively with WWF-Malaysia. This event was participated by 18 students from Sekolah Kebangsaan Beting Lintang (primary school) and 18 students from Sekolah Menengah Kebangsaan Tembila (secondary school) and facilitated by 19 students from ALPHA UNISZA and six (6) officers from WWF-Malaysia.

The objective of this event are:

1. To raise awareness among school students about critically endangered species.
2. To cultivate and instil a love for wildlife, especially terrapin species, which are well-known and iconic in the state of Terengganu.
3. To enhance participants' knowledge and understanding of WWF-Malaysia' conservation efforts for terrapin species in Setiu, Terengganu.

A variety of activities were lined-up throughout the half day event, aimed at educating and engaging participants to foster hands-on learning and deeper understanding of terrapin conservation efforts:

1. Release of 54 painted terrapin hatchlings into the river;
2. Plogging (pick up litter and jogging) at the river bank and beach area;
3. Am awareness talk on terrapins and WWF's conservation efforts;
4. A visit in Kontena Tuntung;
5. A demonstration on nest excavation techniques;
6. Sowing of merambong (*Scaevola taccada*) saplings.

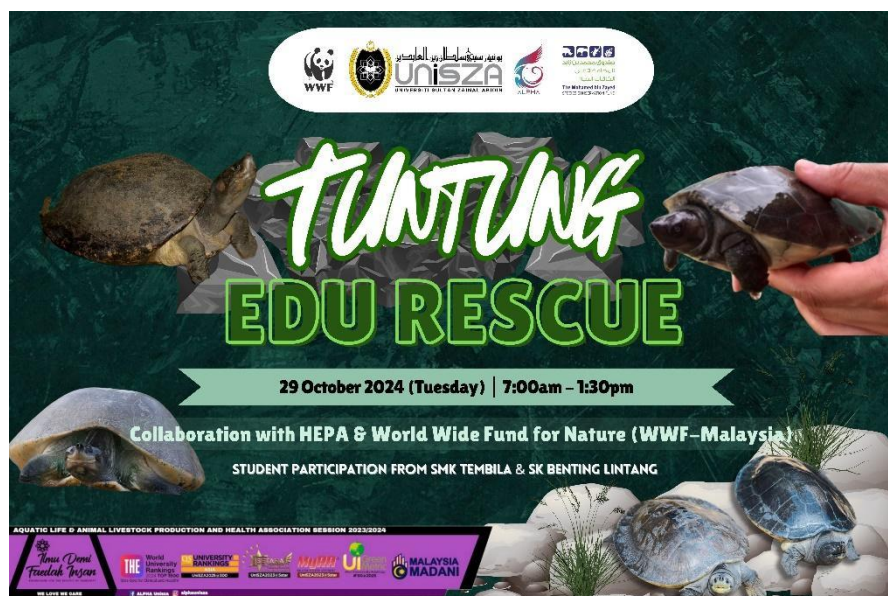




Figure 18: Photos showing activities undertaken during the Tuntung Edu-Rescue program.

7.0 Project Funding Justification

The budget spending over the past six months has been slower than anticipated due to the following factors:

1. Changes in Staffing Plans for Nesting Beach Patrols

Initially, the project planned to hire two rangers in Kerteh to patrol and monitor the nesting activities on the beach. However, these hiring plans were cancelled when the leaseholder did not agree to collaborate with the hired rangers due to personal issues. The status of tendered beach gives the right to the leaseholder to restrict the access to the beach making the need for rangers less viable.

Besides that, there is a plan to hire a hatchery worker for six months to monitor all nests in the hatchery. However, this hiring lasted for two months only due to bad performance and poor commitment given by the hired worker.

As an alternative, the budget originally allocated for the two rangers and one hatchery worker was redirected towards hiring a single project assistant. This adjustment allowed the project to maintain oversight and ensure continued data collection while staying within the permitted boundaries set by the beach's tendered status.

2. Limited Internship Applications

The project also allocated a portion of the budget for hiring internship students, who would assist with fieldwork and data collection, offering valuable support during peak activity periods. However, within this period, no suitable internship application was received. As a result, the funds designated for intern support have not yet been spent. Plans are underway to expand recruitment efforts to fill these roles, which will help improve project's river terrapin conservation efforts for next year and achieve targeted outcomes.

3. Collaborative Funding for Awareness Programs

During this period, several awareness programs were organized in collaboration with strategic partners, who co-funded most of the activities. By pooling resources, we maximized outreach and impact, allowing each organization to share in the costs of program delivery. This collaborative approach reduced the immediate need for project-specific budget allocations while still achieving program goals. However, with additional awareness events planned for coming months (after monsoon season), spending is expected to increase to meet the expected targets.

8.0 Planning for the remaining project duration

The following are the key area of focus and activities for the remaining duration of the project:

1. Ongoing Monitoring of River Terrapin Nesting Season in Setiu (for 2025)

Continuing to monitor the river terrapin nesting season in Setiu is essential for tracking nesting patterns, protecting nests and collecting valuable data to understand the species' nesting behaviour. By extending these monitoring activities into 2025, the team can gather consistent data that will strengthen long-term conservation efforts and help adapt strategies based on current trends in nesting behaviour.

2. Expansion of awareness activities across project areas

Increased awareness among local communities and stakeholders is critical to the project's success. In the remaining period, additional awareness activities will be conducted in both Setiu and Kerteh, where the terrapins are most at risk. These activities aim to foster community support, encourage local involvement in conservation efforts, and inform the public about the ecological importance of the terrapin species.

These awareness activities are also important to recognize the support of The MBZ Conservation Fund towards the conservation of terrapins in both project areas.

3. Development and publication of awareness materials

To support awareness initiatives, the project will develop and distribute informative materials, including posters, flyers, and merchandise. These materials will be tailored to engage different age groups and audiences, ensuring widespread education on terrapin conservation.

4. Procurement of supplies for upcoming project phases

Essential supplies for the next phases of the project will be purchased to prepare for continued conservation activities, ensuring the team has the necessary resources to carry out monitoring, awareness events, and fieldwork. This proactive approach will help maintain project momentum and avoid delays during critical periods of activity.

5. Maintaining the current awareness center for future use

The awareness center known as Kontena Tuntung plays a vital role in educating the public and fostering community involvement in terrapin conservation. To ensure it remains a valuable resource, the Kontena Tuntung will be maintained and updated regularly, providing an engaging space where visitors can learn about the terrapin species, their habitats, and ongoing conservation efforts.

By preserving and enhancing the Kontena Tuntung, the project secures a lasting platform for outreach and education, allowing it to host future events, workshops and school programs. This commitment ensures that the Kontena Tuntung continues to

support conservation goals beyond the current project duration, helping to build a more informed and supportive community for long-term conservation efforts.

If project funds remain available after the original duration, WWF-Malaysia plans to utilize these resources to support the next nesting season of the painted terrapin in Kerteh and Setiu, scheduled from June to November 2025. By extending support to the next season, we aim to ensure continuity in conservation efforts and enhance the project's long-term impact. This approach reflects both our commitment to the terrapin's protection and a proactive response to emerging conservation challenges due to shifting environmental conditions. We appreciate your understanding and support for this well-planned continuation to maximize the project's effectiveness.

