

# PERHENTIAN TURTLE PROJECT

## 2021 REPORT



# OVERVIEW

## Who We Are



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- Officially established in 2015 as a sea turtle research and conservation initiative, under Fuze Ecoteer Outdoor Adventures Sdn. Bhd., in the Perhentian Islands Marine Park.
- Currently based in Kampung Pasir Hantu (Fisherman's Village) on Perhentian Kecil and Pantai Tiga Ruang (Turtle Beach) on Perhentian Besar.
- Monitors sea turtle population through photographic identification (photo ID).
- Works with the support and collaboration of the Terengganu State Department of Fisheries (TDoF) as well as the Marine Park Division.
- Also works among and with the local community and stakeholders (e.g. dive centers and resorts) to create and raise sea turtle as well as marine conservation awareness.
- Hopes to facilitate better conservation practices among the Perhentian Community to better conserve the islands and their inhabitants.



# OVERVIEW

## Why PTP?



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The Perhentian Islands, besides their natural beauty, are unique as they host both foraging and nesting populations of green turtles. Hawksbill turtles are also frequently sighted at coral reefs during dives. Despite being the state icon, natural heritage, and tourist attraction, there is a lack of data on the Perhentian Islands' sea turtle populations. Moreover, besides the Bubbles Dive Resort and local TDoF rangers - both of which focus their efforts on the nesting population - there are no other parties actively engaging in sea turtle conservation.

Thus, PTP was established with the hopes of addressing the lack of data by monitoring the foraging and nesting populations of sea turtles in the Perhentian Islands. PTP's strategic locations in the village (Perhentian Kecil) and on the main nesting beach (Perhentian Besar) also facilitates better conversation and relationships among stakeholders, especially the local community, who are key to the success of any conservation efforts.



# OVERVIEW

## Aims and Objectives



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Aim: To conserve the sea turtle population of the Perhentian Island Marine Parks by monitoring them via photo ID and increasing awareness as well as engagement among the Perhentian Community

Objectives:

- To estimate the Perhentian sea turtle population size and dynamics
- To identify the Perhentian sea turtle habitat use and connectivity
- To respond to and determine causes of Perhentian sea turtle strandings
- To create and raise awareness about sea turtles and marine conservation among the Perhentian Community (i.e. local community, stakeholders, tourists, and government)



# OVERVIEW

## Thank you



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2021 was supposed to be the year we recover from the impact of COVID-19. Trying to survive the limited funding that is left, our deepest gratitude goes to:

- The **2021 interns** for staying with us through the entire COVID-19 journey, exhibiting amazing hard work, dedication, and determination. We had it rough when we went through a home-quarantine together, but that what made us strong!
- our **local volunteers** and **supporters** - PTP would not have thrived without the support and encouragement from you.
- the **residents** of Kampung Pasir Hantu for their patience, understanding, and wisdom. Special thanks to the **boatmen** for always being there when we needed them, even on a windy night with choppy water, and to the **local TDoF rangers** for letting us help them with their work.
- our **stakeholders** who continue to be our extra pair of eyes, ears, hands and feet on the islands. **Bubbles Dive Resort** deserves a special thank you for sharing their nesting information - constantly without fail.
- the **TDoF** and **Marine Park Division** for permitting us to conduct our work
- the **FE team** for their enthusiastic support and motivation. Special shout out to Melisa Chan Bee Ling, Long Seh Ling and Wan Zuriana Wan Sulaiman for their advice that inspired and improved our ideas, and prevented us from repeating the cycle.



# Sustainability Impact

## Social



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Due to the COVID-19 pandemic, we were not able to organize any Turtle Camps nor are we able to give any Turtle Talks. In 2021, the pandemic hits Perhentian Island and the local area in Kampung Pasir Hantu so we had a several series of lockdown and home-quarantine.

However, we were able to lead 2 Turtle Snorkel Explorations (sea turtle-focused Eco-Snorkel Tours) for a total of 2 guests in April and received 1 local volunteer. The explorations included a visit to and brief Turtle Talk at Tiga Ruang, and snorkel stops at Turtle Point (Teluk Pauh), Fish Point, and Shark Point. Compared to the normal snorkel tours that tourists follow at the islands, the explorations we lead ensures that the guests' experiences are more guided, informed, responsible and safe.

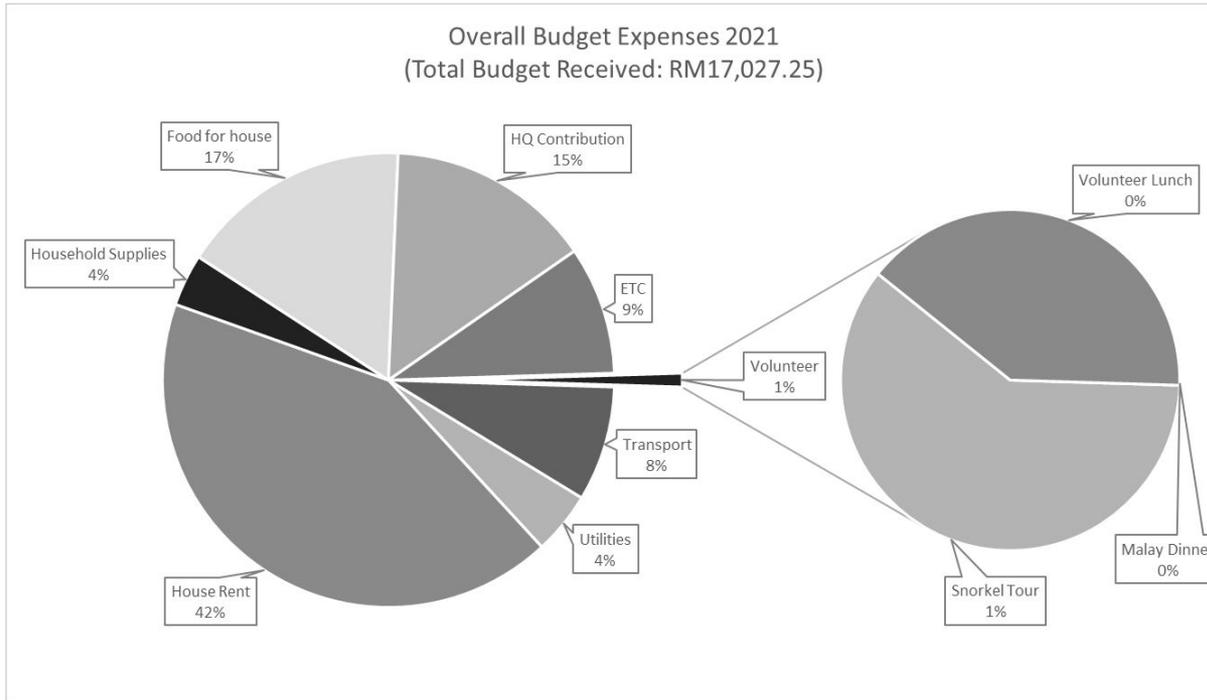


# Sustainability Impact

## Financial



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- <sup>a</sup> Portion of budget not spent*
- <sup>b</sup> Includes expenses for volunteer food i.e. Food for House is a shared resource, thus payments for volunteers and project staff were made in the same transactions*
- <sup>c</sup> Expenses specific to volunteer program*
- <sup>d</sup> Includes costs for kayak rentals, kayak equipment, etc*
- <sup>e</sup> Portion of budget not spent*

Figure 2: The breakdown of how the project and volunteer budgets were spent in 2021.

# Sustainability Impact

## Financial



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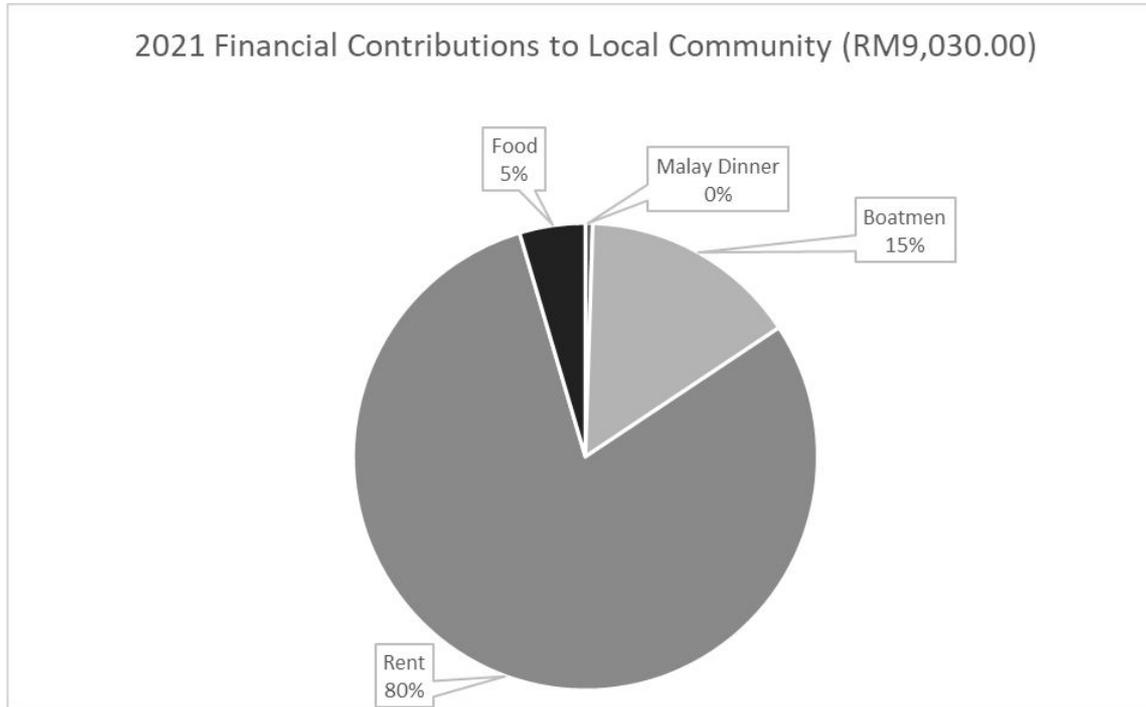


Figure 3: The breakdown of how the project financially gives back to the local community. The total contributions made up 53.03% of the total budget received and 62.17% of all project expenses.

# Project Activities

## In-Water Surveys



GREEN TURTLE PROJECT

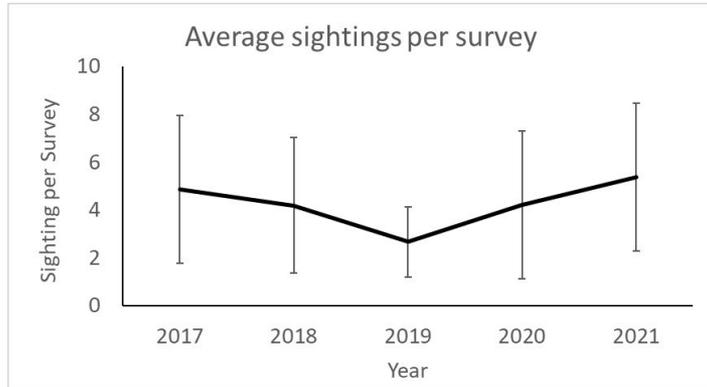


Figure 4: The average number of green turtle sightings per survey at Teluk Pauh. Error bars represent standard deviation.

2021: Despite conducting fewer surveys compared to previous years (2021: 44; 2020: 71; 2019: 97, 2018: 133, 2017: 125) due to the COVID-19 pandemic:

- more turtles sighted on average per survey, even reaching 11-13 individuals sighted during surveys (Figure 4)
- more unique individuals sighted overall (Figure 5)
- Less re-sightings of previously sighted turtles, but seeing more juveniles

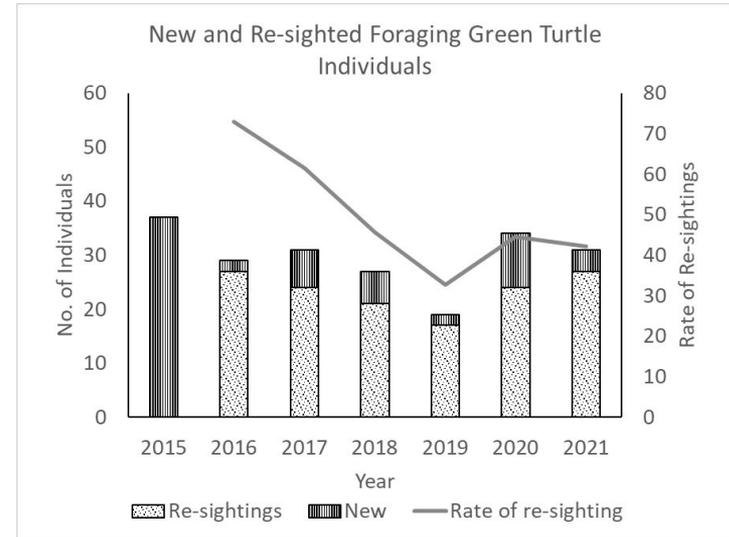


Figure 5: The number of new and re-sighted foraging green turtles at Teluk Pauh. The stacked bar graph corresponds to the left y-axis while the line graph corresponds to the right y-axis

# Project Activities

## In-Water Surveys



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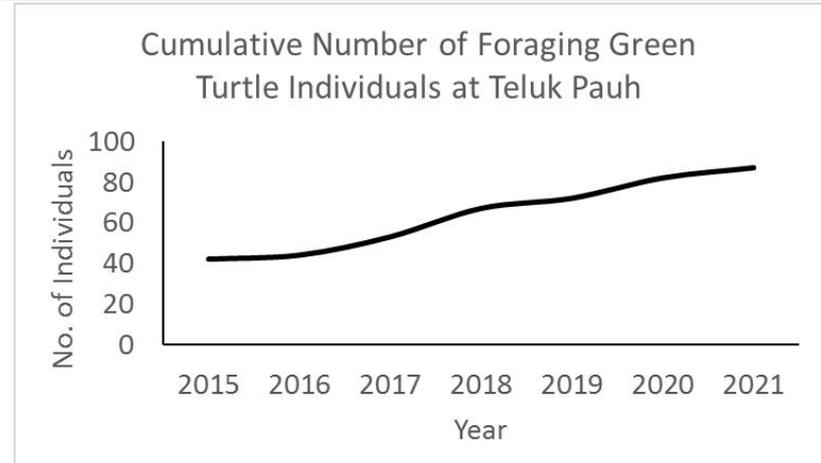
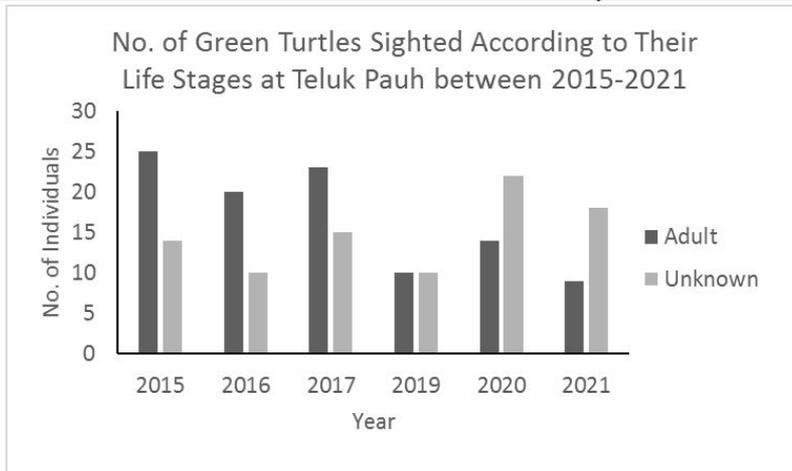


Figure 6: The number of adult and unknown (their exact life stages, juvenile or sub-adult, could not be confirmed) green turtles at Teluk Pauh

Figure 7: The cumulative number of foraging green turtles at Teluk Pauh between 2015-2020.

Increase in no. of individuals and sightings may be due to COVID-19 pandemic, particularly because:

If the previous inference is true, then it is possible that:

- Figure 6: More juveniles and sub-adults (a.k.a Unknowns) - which are more wary of human presence - compared to years before COVID-19
- Corresponds to lack of tourists due to the COVID-19 lockdown in Malaysia and Perhentian Islands

- Teluk Pauh's population is larger than expected
- Perhentian's green turtles' foraging range is larger than expected (1,4,5), as inferred in the 2019 report
- human overcrowding is a major influence on Teluk Pauh's green turtle foraging behaviour, consequently affecting differences in feeding times (3)

# Project Activities

## Night Patrols



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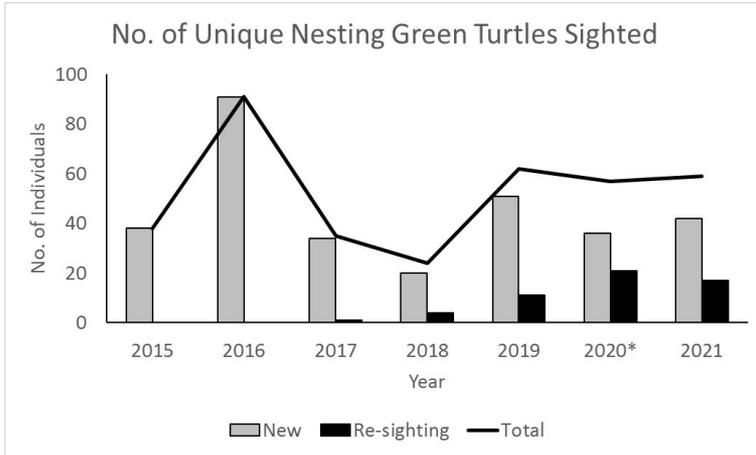


Figure 7: The number of nesting green turtles sighted at Tiga Ruang and the Bubbles Dive Resort, the only two beaches where individuals are catalogued and 'share' nesting individuals.. \*2020 Tiga Ruang data incomplete due to infrequent night patrols

2021: 81.7% of data from Bubbles due to infrequent night patrols at Tiga Ruang

- nesting trend was expected to be similar to that of 2016 and 2019
- 3Ruang: unable to confirm trend
  - only opportunistically sighted 11 individuals
  - 4 = returning mothers from 2016, 2017 and 2018
  - Molly (PG0032F) a turtle with no back flipper returns - nested 6 times in 2021
- Bubbles: recorded more turtles than 2020; 35 new individuals and 14 re-sightings



- We are unable to confirm that individuals have different nesting cycles in line with the previous prediction of 3-year cycles in the 2019 report due to the incomplete data in 2020 and 2021 caused by infrequent night patrols.
- Though unable to confirm trend, based on Bubbles' data and hatchery data, 2021 data would have recorded a lesser individuals compared to 2020.

# Project Activities

## The Hatchery



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Table 1: The number of nests relocated into the hatchery between 2015-2021

Year	# Nests
2015	260
2016	423
2017	141
2018	76
2019	316
2020*	461
2021	216

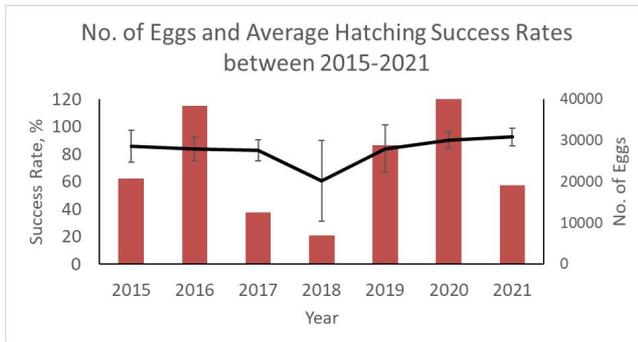


Figure 8: The number of eggs (bar graph; right y-axis) and average hatching success rates (line graph; left y-axis) of nests in the hatchery. Error bars represent standard deviation.



2021: also expected hatchery trend to be similar to that of 2016 and 2019 i.e. higher nests and eggs. However, the number of nests and eggs are lesser this year. Fantastically, the average hatching success rates (92.42%) has been the highest since 2015. It is difficult to determine if this is related to COVID-19 as 2021 supposed to be a low nesting year. Furthermore, the vast majority of the nests have always come from dark, secluded/uninhabited beaches. The lack of human movement around the islands, on the other hand, may foster more nesting activity. Furthermore, the greater hatching success rates in 2021 could be attributed to the hatchery's relocation to the middle of the beach (i.e., changes in sand quality and

# Project Activities

## Citizen Science Initiative



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Due to the COVID-19 pandemic, the lockdown in Malaysia meant that our team and the public were not able to photograph sea turtles as usual. Thus, we were not as rigorous in promoting our citizen science initiative this year. In 2021, we only managed to receive a total of 4 sightings submissions of 4 individuals (3 re-sightings and 1 new), where the 3 re-sightings green turtles were found as male, female and sub-adult at Teluk Pauh. Excitingly, we also got a visit from 1 new Hawksbill Turtle at Batu Layar.

We have been receiving submissions from citizen scientists since 2015 and though they have only contributed **4%\*** of 3554 total sightings, they have contributed an overall of **22%\*** of the individuals in our database.

*\* only includes green turtle sightings*



# Project Activities

## Response Network



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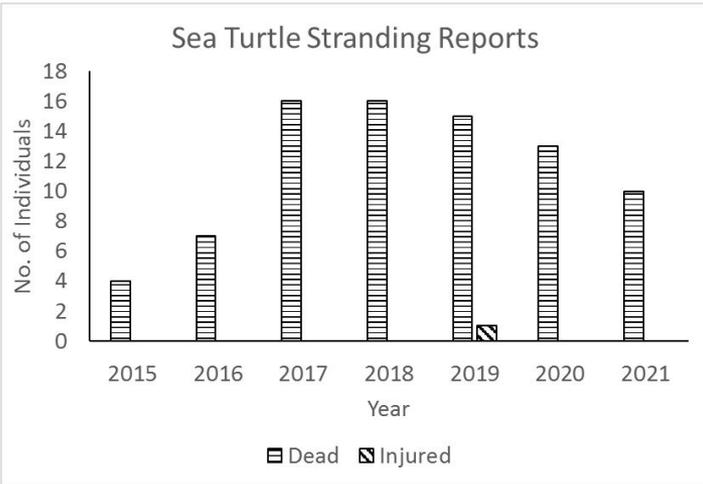


Figure 10: The number of sea turtles we received and responded to between 2015-2020.

the boats around the island. However, it is important to note that the numbers in Figure 10 does not reflect the actual number of stranded individuals. We also received and responded to reports of nesting events from locations other than those patrolled by us and the TDoF rangers. Shout out to the reporters which are the villagers, local boatmen, Below The Surface Divers, Sea Voice Divers, Flora Bay Divers and The Resthouse- Lang Tengah Turtle Watch for helping us in getting this data.

We responded to 10 of 10 reports of dead turtles (no injured/stranded cases reported). Fortunately, we received fewer cases than previous years, and we observed less dead immature individuals with boat strike injuries this year (2021: 3; 2020: 5; 2019: 3; 2018: 4; 2017: 1). Out of the 10 reported cases, none are from our database. The lesser death causes by a boat strike might due to the lockdown in the Perhentian Islands which slows down the movement of



# Project Activities

## Adopt-A-Turtle Program



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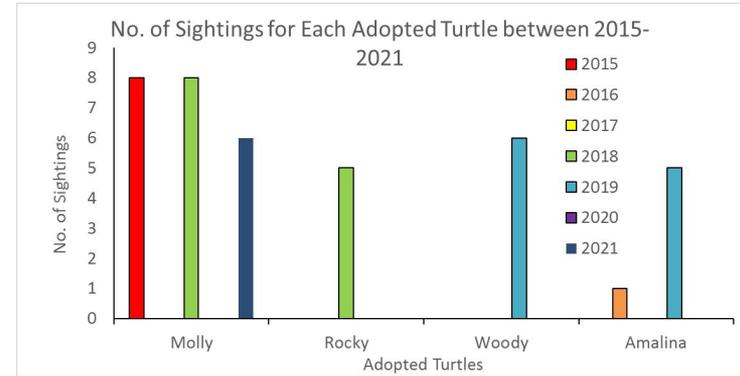
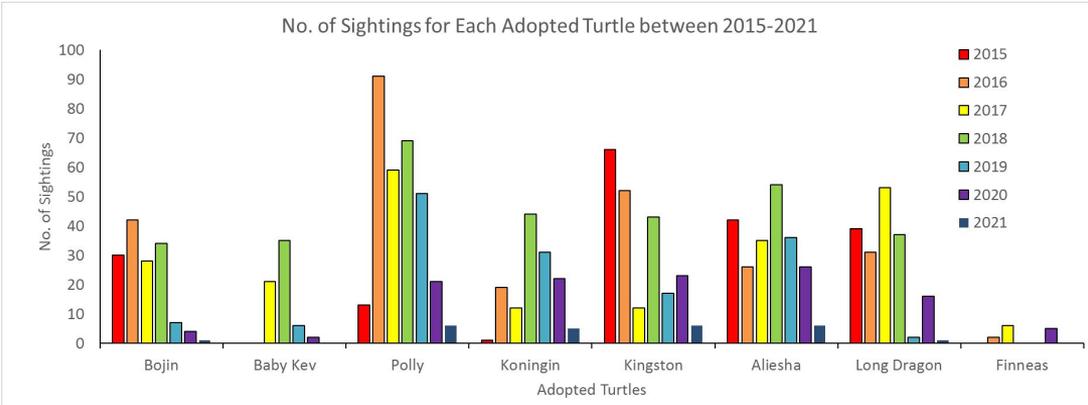


Figure 12: The number of times each adopted nesting turtle was sighted between 2015-2021. Rocky, Woody, and Amalina were named and adopted by previous volunteers, interns, and donors. None of them have yet to return to nest in 2021.

Figure 11: The number of times each adopted in-water turtle was sighted between 2015-2021. Finneas was named and adopted by the winner of a webinar Kahoot quiz

To remain engaged with our supporters and also fundraise, we launched the Adopt-A-Turtle Program in 2020, where the public can symbolically adopt any 7 pre-selected turtles from our database. In return, they receive an e-packet of their adoption certificate, adopted turtle bio, a “How to be a Penyu Warrior” guide, and a copy of our annual report with sighting info of their adopted turtle. We received 38 turtle adoptions, helping us raise RM3,350 (RM2,700 was used to purchase a new Olympus TG-6 to replace our previous GoPro which was unsuitable for close-up photography). For our adopters, please refer to Figure 11 and 12 for your respective turtle sighting data between 2015 and 2021.



# Conclusion

## What we learnt



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- Based on our in-water data, stranding data, and tourist movements (of lack thereof) in 2020 and 2021, we can infer that the Perhentian Islands' green turtles' foraging behaviour is highly influenced by the presence of people and boats, and may exhibit similar behaviours to those observed by Seminoff *et al.* (2002) and Senko *et al.* (2016)
- Based on the limited nesting turtle re-sighting data we obtained in 2021, we can infer that the Perhentian Islands' nesting green turtles have a wider range of nesting cycles (2-4 years vs 3 years) and if true, also a wider range (and preference flexibility) of nesting locations around the islands
- Based on our hatchery data
  - 2021 could either be a less nesting year, with only 216 nests relocated in the hatchery
  - The high hatching success rate can be attributed to a change in location, and thus sand quality (i.e. fresher/new), of the hatchery



# Conclusion

## Next year and beyond



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In addition to the lessons and plans stated in the 2019 report (which we were unable to act on due to COVID-19), we hope to:

- Develop more interesting and accessible material for our social media and website, focusing on the sharing of data, information, and project outcomes.
- Broaden and advertise options for the public to support us remotely in addition to our volunteer programme, especially if travel restrictions remain in the future, e.g. More focused fundraising activities, such as the Adopt-A-Turtle programme and merchandise sales.
- Continue to look at our data from different angles to see how we can effectively use, convey, and grow on it.
  - This might include reaching out to educational institutions and scholars more proactively for partnerships.
- Ensure that data collecting can continue, whether directly or indirectly (e.g., inferred from data analysis or submissions from the citizen science programme), in order to keep the momentum of establishing at least 10-years' worth of data going.



# Conclusion

## Reference List



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**FUZE  
ECOTEER**

**THANK YOU**

