
2024 PMRS ANNUAL REPORT



OVERVIEW

Who We Are

- **Perhentian Marine Research Station (PMRS)** was established in 2017 by a conservation based social enterprise named Fuze Ecoteer Outdoor Adventures.
- The station aims **to better understand the marine ecosystems and to improve marine resource management** in Perhentian Islands.
- PMRS focuses on **monitoring the health of the island's marine ecosystems** and **committed to combine scientific findings with a bio-cultural conservation approach to sustain the dynamic and interdependence of social-ecological systems.**
- Throughout the establishment, PMRS has mapped marine habitats in the Marine Park to assess the health of coral reefs and actively engage the stakeholders toward the sustainable practices.
- In 2024, PMRS has able **to accelerate the execute of conservation strategies for marine conservation as a whole.**



OVERVIEW

Aims and Objectives

WE **EXPLORE** THE MARINE ECOSYSTEM CONSCIOUSLY

WE **EMPOWER** THE COASTAL COMMUNITY

WE **ENRICH** THROUGH CONSERVATION

- To preserve the reefs & marine life from tourism impacts, & create awareness to the community & stakeholders so we can eventually become obsolete.
- To create a baseline of data to continue to monitor the environmental impacts surrounding the islands.
- To integrate marine conservation into socio-economy of island community.



WHAT WE DO



ECOSYSTEM
SURVEYS

HABITAT
RESTORATION

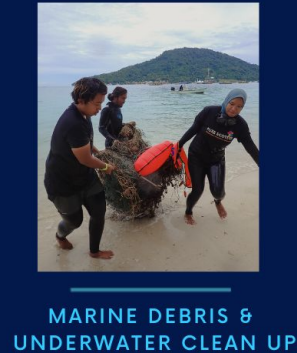


SCIENTIFIC
EXPLORATION

ECO TOURS &
VOLUNTEERING
PROGRAM



#ANAKPULAU



MARINE DEBRIS &
UNDERWATER CLEAN UP

CITIZEN SCIENCE



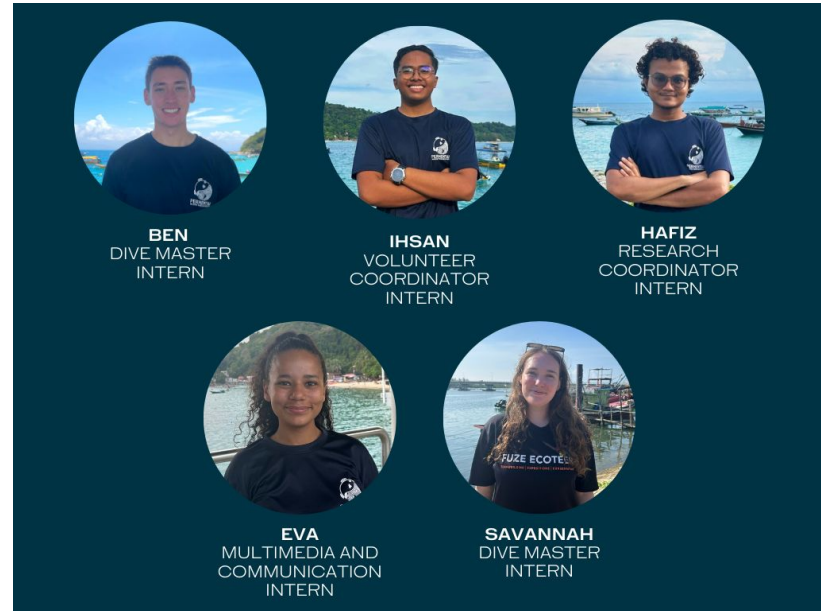
PUBLIC
AWARENESS



PMRS CREW

House of 2024

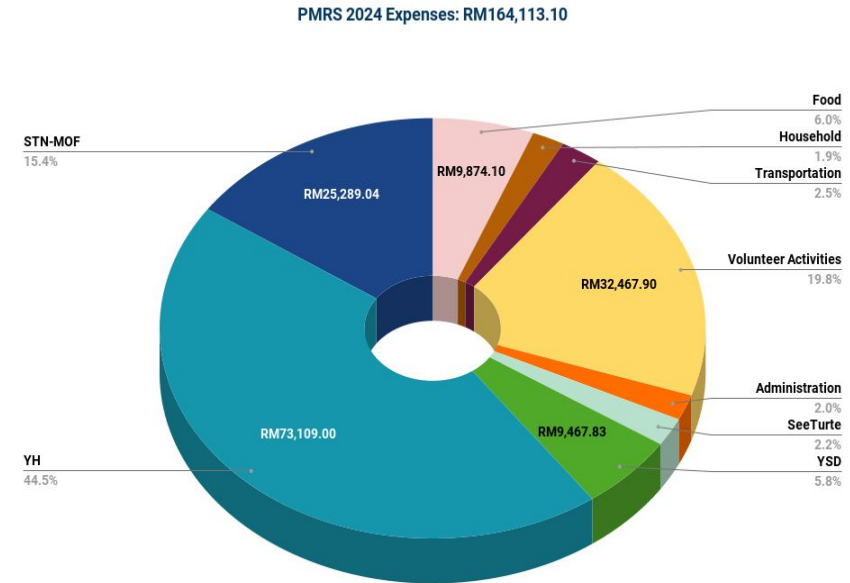
- Crew capacity: **3 staff and 5 interns.**
- PMRS 2024 operation was supported by the committed interns who has given a significant contribution to ensure PMRS run smoothly.



Finance

- The chart shows the breakdown of PMRS overall expenses in 2024 season.

TOTAL		HQ	GRANTS
Administration	RM3,224.00	1,709.00	1,515.00
Food Expenses	RM9,874.10	5,374.10	4,500.00
Household	RM3,156.09	3,156.09	
Transportation	RM4,035.00	4,035.00	
Volunteer Activities	RM32,467.90	32,467.90	
Reef Care - Yayasan Hasanah	RM73,109.00		73,109.00
Seagrass Research- YSD	RM9,467.83		9,467.83
Sustainable Tourism Network-MOF	RM25,259.04		25,259.04
See Turtle	RM3,540.14		3,540.14
OVERALL EXPENSES	RM164,113.10		



Volunteering program

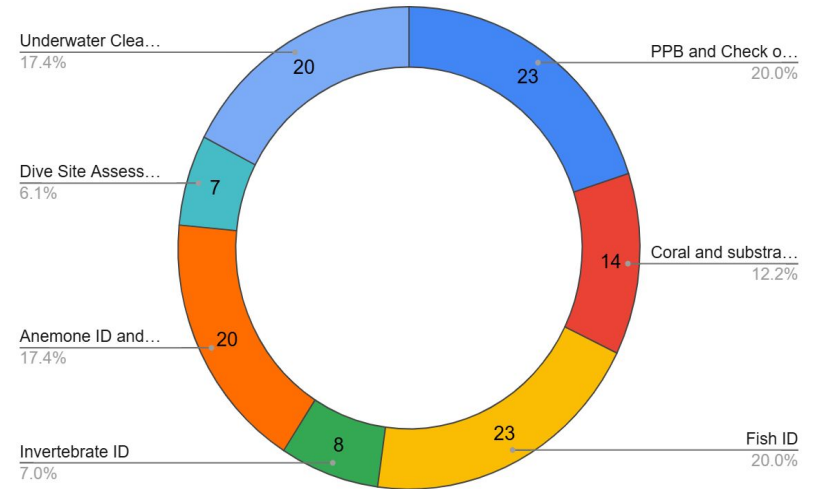


- In 2024, PMRS continuing its volunteering program with the capacity of **6 volunteers per week**. The program has been structured to support PMRS conservation strategies in 2024.
- Throughout the 2024 season, PMRS volunteering program has achieved the following:-
 - ❑ **14 volunteers** with **30 volunteering weeks**.
 - ❑ A total of **115 dives** conducted throughout the volunteering weeks.
 - ❑ **24 beach clean-ups** with a **total of 1184.34 kg** of trash.
 - ❑ **20 underwater clean-up** with **total of 118.48kg** of marine debris removed from the seafloor.



Volunteer's conservation dives

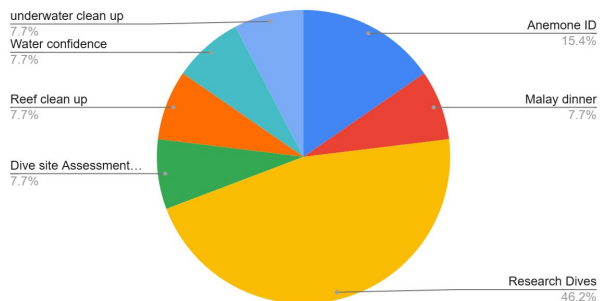
- PMRS volunteer's activities has been designed to contribute towards the conservation efforts in Perhentian Islands.
- **A total of 14 volunteers with 115 dives throughout 30 volunteering weeks.**
- The underwater activities covering;
 - Skill dives
 - Educational dives
 - Data collection dives
 - Action dives



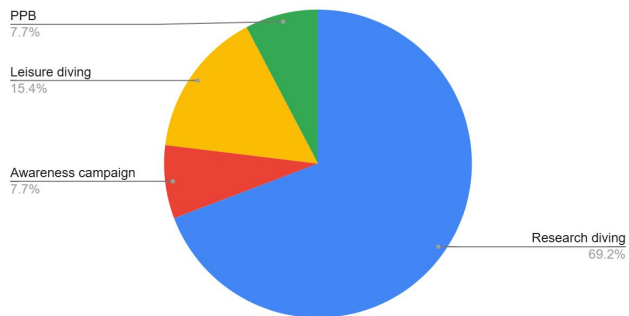
Volunteer's Feedback

➤ 13 feedback received out of 14 volunteers.

What did you enjoy from the most through your volunteer experience?



What did you benefit from the most through your volunteer experience?



Feedback

"I had zero knowledge about coral ID or fish ID before coming here, so learning those really benefited me"

"The presentations paired with learning through doing was very effective. I feel I'll be able to use these skills in the future. The divemaster, Ben, was able to answer all of my scientific questions and was very helpful."

"I came here to learn things about the marine life, and I can say I did !"

"I had a wonderful and diverse experience. I am very grateful for all I have learned and done here!"

"The whole team at PMRS made the experience worthwhile and rewarding"

Improvement

"It would be nice if the introduction also included how the data gets used for the projects/research. I understand training is necessary for me to be useful, but it also would have been nice if I could have been more useful sooner. I felt I was ready to conduct real surveys when we were still doing practice sessions."

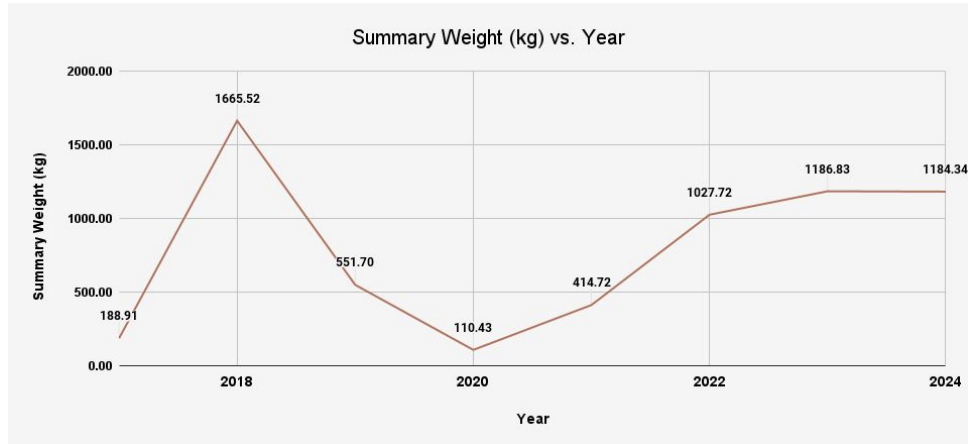
"A little improvement in the accommodation if possible : shelves in the bedrooms, a second bathroom, fixing windows..."

"Better accommodation"

"Volunteer accommodation"

Marine Debris: Beach Clean-up

- Under the Marine Debris Project, PMRS has conducted weekly beach clean up activity at the turtle nesting beaches around the island. This is our environmental commitment that we made as long as we are in Perhentian Island.
- Uninhabited beaches, also the turtle nesting beach around the island frequently received trash and debris carried by current, particularly during north east monsoon season.
- The BCU been conducted since 2017 and continues till 2024 with the average of 1 tonne waste every year (with exception of covid years)

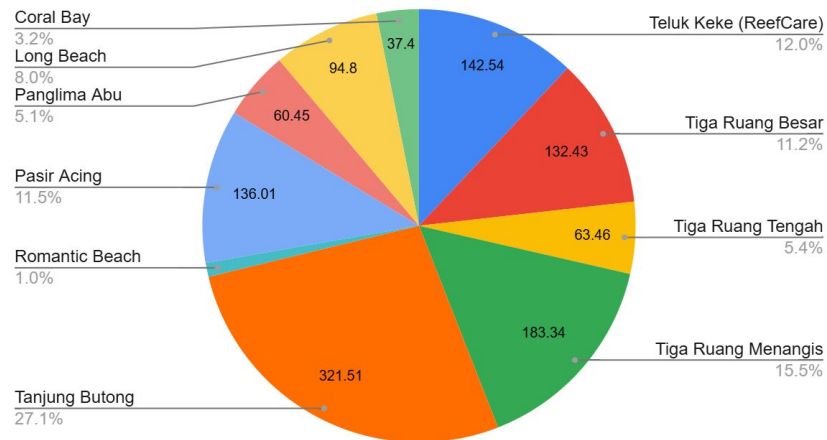


Marine Debris: Beach Clean-up

- **24 beach clean-ups** with a **total of 1184.34 kg** of trash.
- **36.45 kg** were recycled, **1147.89kg** were discarded.
- **214 person** including volunteers, FE team and public members participated in the weekly BCU.

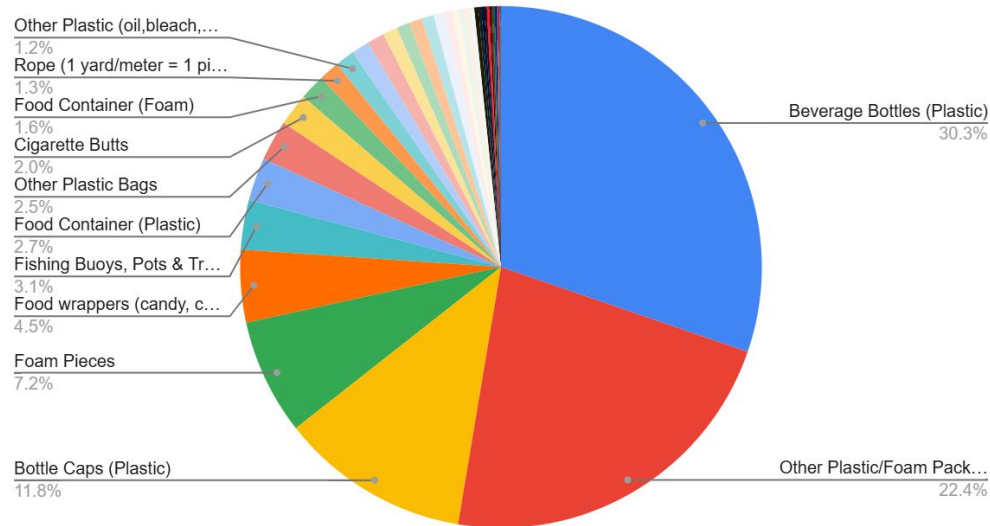
Nesting beaches	# Cleanups	Weight of Collected trash (kg)
Teluk Keke (ReefCare)	5	142.54
Tiga Ruang Besar	5	132.43
Tiga Ruang Tengah	2	63.46
Tiga Ruang Menangis	4	183.34
Tanjung Butong	3	321.51
Romantic Beach	2	12.40
Pasir Acing	2	136.01
Panglima Abu	2	60.45
Long Beach	1	94.8
Coral Bay	1	37.4
TOTAL	24+2	1184.34

Weight of Collected Trash during BCUs



Marine Debris: Beach Clean-up

Number of Overall Trash Collected



Marine debris travelled from Vietnam, Thailand, China, Philippines, Japan were among the trash collected around beach in Perhentian Islands



Marine Debris: Underwater Cleanup

- Stranded ghostnets and plastic waste are among the direct threat to the reef in Perhentian Island.
- Throughout 2024 season, ghostnet removal dives and underwater clean up has become a weekly activity as the stakeholder also playing a role in reporting the stranding.



Citizen science project & Public outreach

iNATURALIST Marine Biodiversity of Perhentian Islands Project

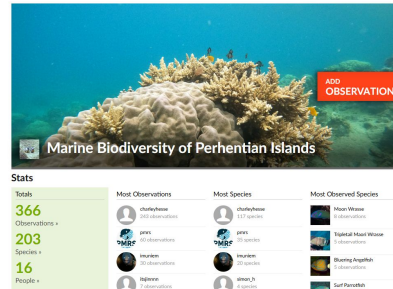
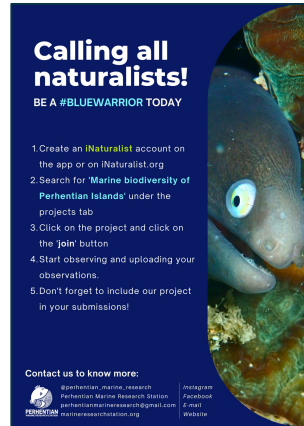
In 2023, PMRS has launched i-Naturalist citizen science project to map the marine biodiversity of Perhentian Island.

For this season, we continued the effort and received positive participation among the public members.

Public submission:

2023: 38 Observations

2024: 366 of total observations -
251 research grade observations of
145 species



AWARENESS TALK

Coral talk is an awareness sharing session with the stakeholders of Perhentian Island. The talk has been organised with the dive centers and resort around the island for their customers.

In 2024, we continue the awareness talk series with stakeholders around the island on weekly basis.



15 Awareness talk sessions.
covering stakeholders in Coral Bay, Long Beach and Pulau Besar.



Reef Monitoring: Dive Sites Assessment- ROLL 1

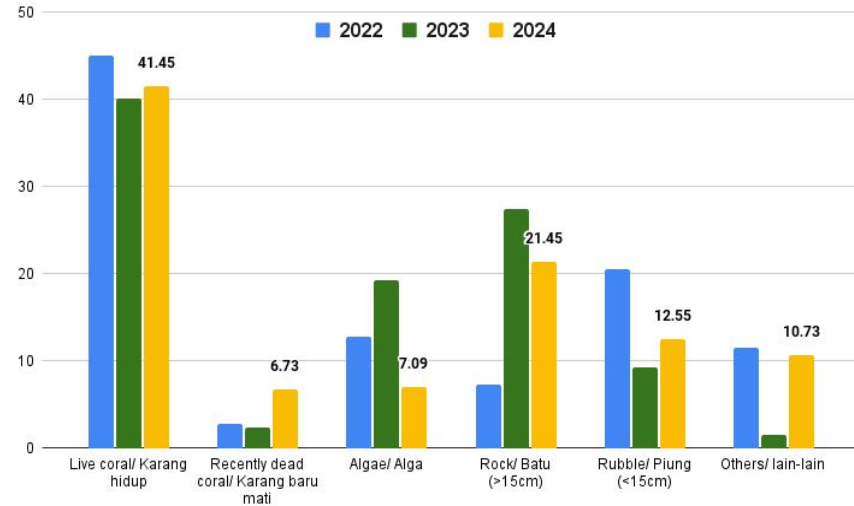
Objectives:

To assess the benthic coverage and destructive impact in Perhentian Island.

To establish citizen science program through conservation dives.

- **10 dive sites** were assessed throughout the 2024 season
- **Live coral** make up the majority of the benthic coverage with **41.45% coverage**, the live coral coverage has slightly increase from 2023.
- However, **recently dead corals** has significantly **increase to 6.73%** compared to 2.44% in 2023
- This season, Perhentian Island experienced **mass bleaching event** started from May onward. The reef around the island severely impacted by the high sea water temperature. **Batu Layar, Shark Point and D'lagoon** each recorded almost **45% bleaching corals** during the ROLL 1 survey.
- **Batu Layar** recorded to has the **highest levels of anthropogenic impacts**, with a cumulative impact score of 9 and **D'lagoon, and Terumbu Tiga** each were having 5 points respectively out of 45 points score.

Average Benthic Coverage (2022-2024)

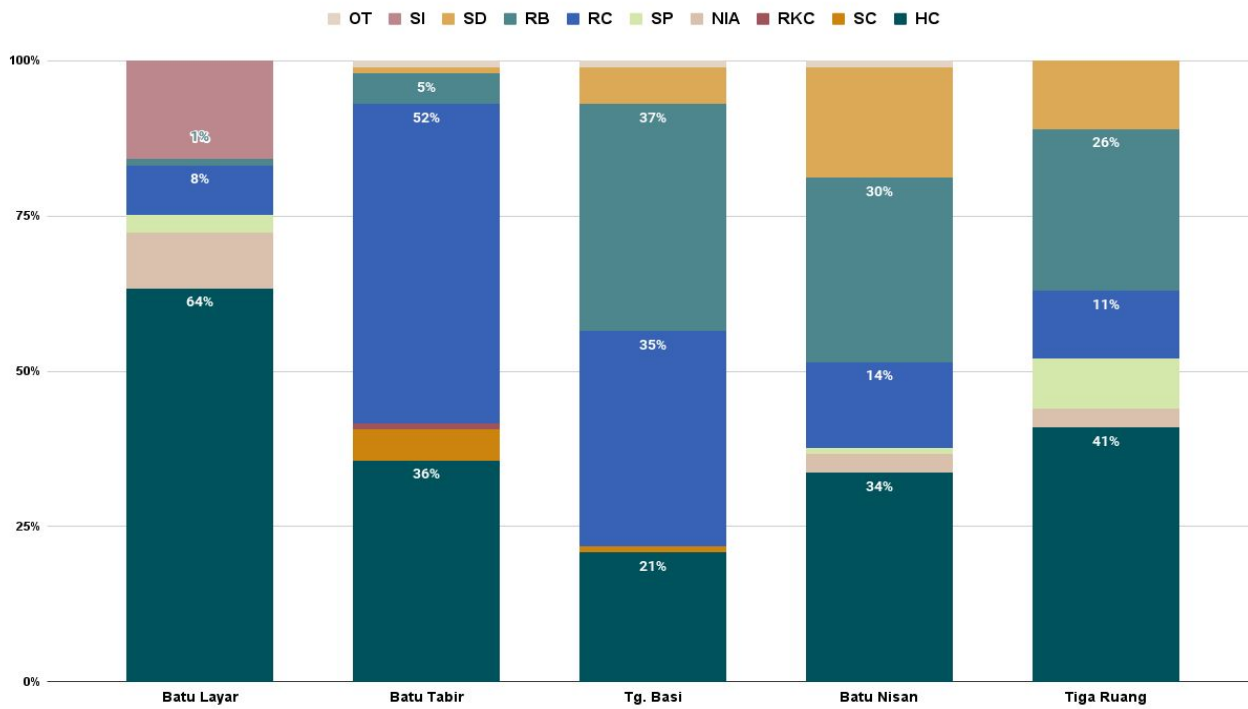


Reef Monitoring: Spawning Events

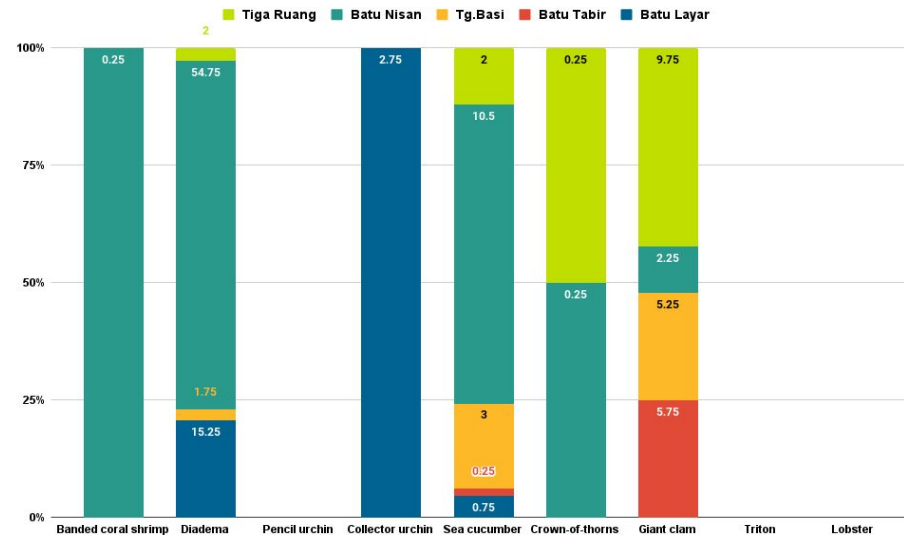
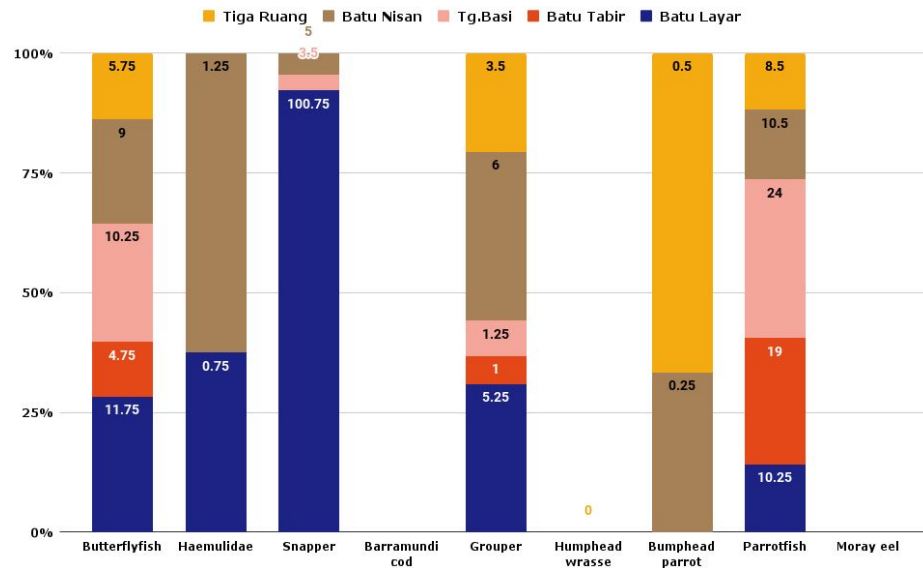
- Coral spawning is an **annual event where corals simultaneously reproduce**. Spawning follows a **full moon** and **water temperatures must have risen enough to stimulate the maturation of the egg and sperm bundles**. **Different species of coral spawn on different days to prevent cross-breeding**.
- In 2024, coral spawning event has occurred in April, PMRS managed to record the event on **25-27th April 2024**.
- **Tanjung Butong, Batu Nisan and D'lagoon** were assessed for the spawning event. Coral at Tanjung Butong and Batu Nisan were successfully broadcasting the spawning event during the night dives.
- **Favite sp. were recorded to spawn** on the assessment dives, in comparison to **2023 event, Porites sp. were recorded to spawn**.



Reef Monitoring: 2024 Reef Check Survey



Reef Monitoring: 2024 Reef Check Survey



Reef Monitoring: Biodiversity Survey

- In 2024, PMRS has conducted Biodiversity survey (ROLL2) at 12 reef locations around Perhentian Island.
- The surveys includes
 - **Line Intercept Transect** - Substrate surveys at every 0.5m.
 - **Fish biodiversity:** Indicator species within 2.5 m³ along the transect.
 - **Invertebrate:** Indicator species within 2.5m area along the transect line
 - **CVT: Coral Video Transect** 100m transect, perpendicular at 0.5m distance 4mins video per segment (every 20 meter/25 meter)
 - **Impact Assessment:** Coral predator & disease Anthropology activities and damage

Sampling Location



Coral Restoration: Artificial Reef Blocks

- Total number of coral blocks: **48 bottle reef blocks.**
- Total number of recruits: **67 coral baby (natural recruitment).**
- Number of nubbins: **90 fragments are thriving.**
- Severe coral bleaching occurred this year has affected the coral nursery; resulting in **the death of 149 corals** and **bleaching of 8 encrusting and massive corals.**



Porite sp.



Pocillopora sp.



Acropora sp.



Pocillopora sp.



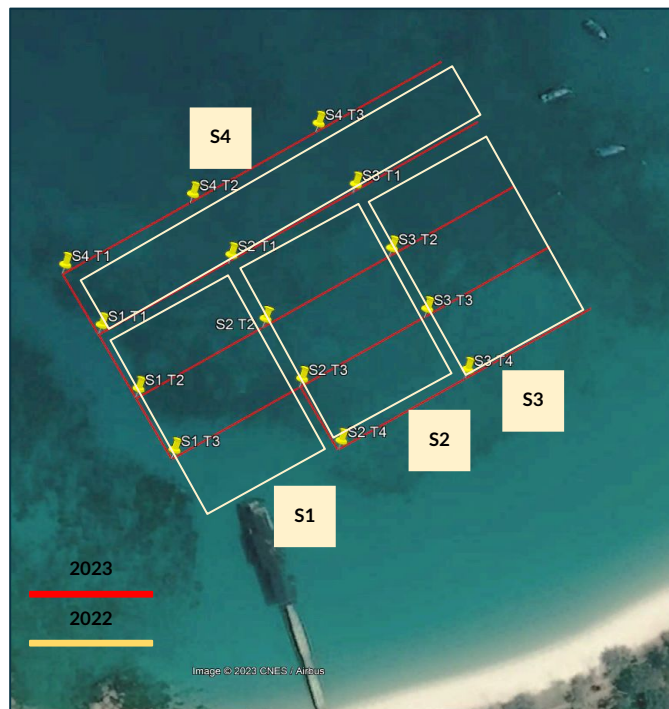
Seagrass Monitoring Research : Perhentian Island

Objective: To establish the methodology for seagrass survey and monitoring in Perhentian Island & Redang Island

Seagrass survey in Perhentian Island has entered the second year.

This study was done using modified methodologies and a datasheet from Seagrass Watch

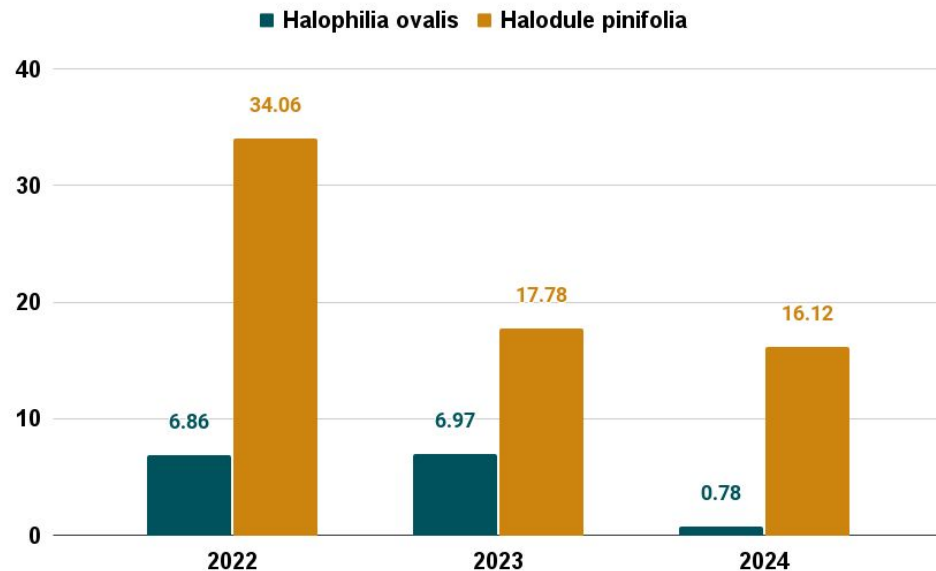
In 2024, three seagrass bed has been surveyed on for the annual monitoring survey.



Seagrass Monitoring Research : Perhentian Island

TELUK PAUH

- Total of **4 sections**, similar transect line as 2022 survey with **25m transect interval** and **5m data interval**.
- Percentage species coverage of **HP is higher than the coverage of HO with HP at 16.12% and HO only 0.78%**
- The seagrass coverage for Teluk Pauh this year has **significantly drop for HO species** compared to percentage in 2023 from 6.97% to 0.78%.
- Also, the majority of the seagrass blades are **overgrown with epiphytes and covered underneath the algae**.
- **Overall percentage cover** of seagrass in Teluk Pauh has **decreased to 18.79%**



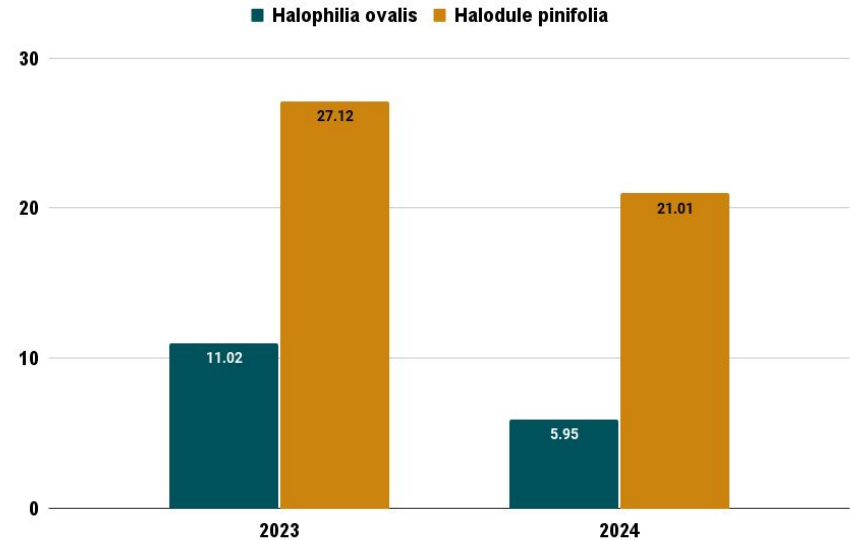
The pictures below showed the algae and epiphytes cover at the seagrass bed.



Seagrass Monitoring Research: Perhentian Island

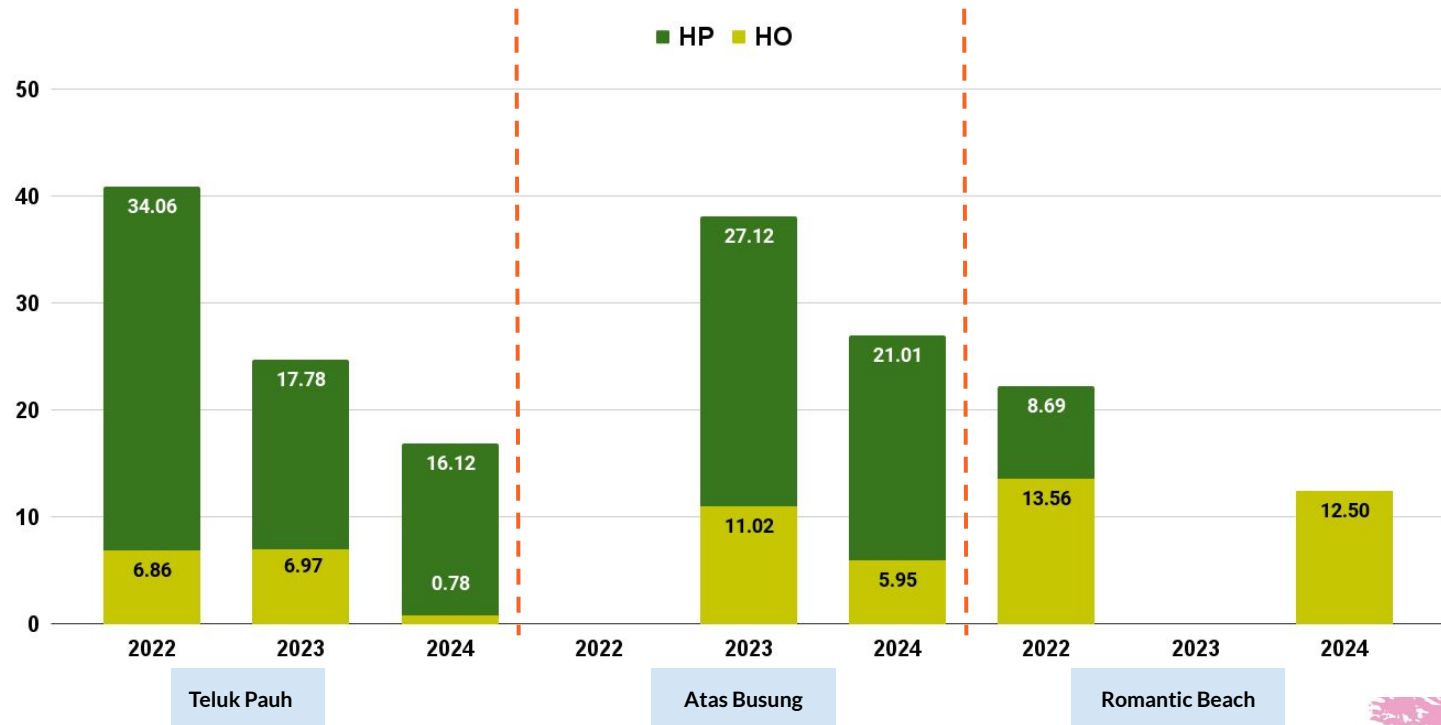
ATAS BUSUNG

- This season, there have been an increase of turtle sightings in the area, however the turtles are more timid compared to the turtles in Teluk Pauh.
- Total of **8 transects of 100m** with **25m transect interval** and **5m data interval**.
- Overall percentage of seagrass coverage is **26.96%**. **HP has higher species percentage of presence compared to HO.**
- **Two species of seagrass** found in Atas Busung. The seagrass bed is **quite dense and is not patchy**.
- Towards the end of every transect, there were **hydroids** present and at the end point of transect 8, there is a huge area where **Avrainvillea sp.** is present, where seagrass is not growing in that area.



Seagrass Monitoring Research : Perhentian Island

Objective: To establish the methodology for seagrass survey and monitoring in Perhentian Island & Redang Island



*Detailed research report will be available on PMRS website



Seagrass Monitoring Research : Redang Island

Objective: To establish the methodology for seagrass survey and monitoring in Perhentian Island & Redang Island

In 2023, PMRS extended the seagrass survey in Redang Island. June was the first visit to recce the seagrass beds and in September 2023, PMRS team has surveyed 4 locations around Redang Island..

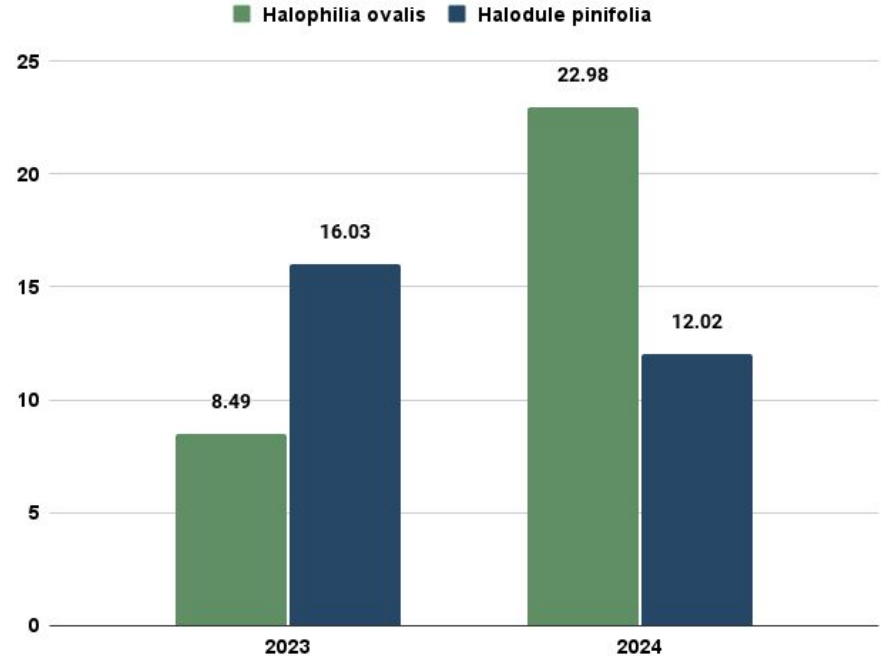


Seagrass Monitoring Research : Redang Island

TAMAN LAUT

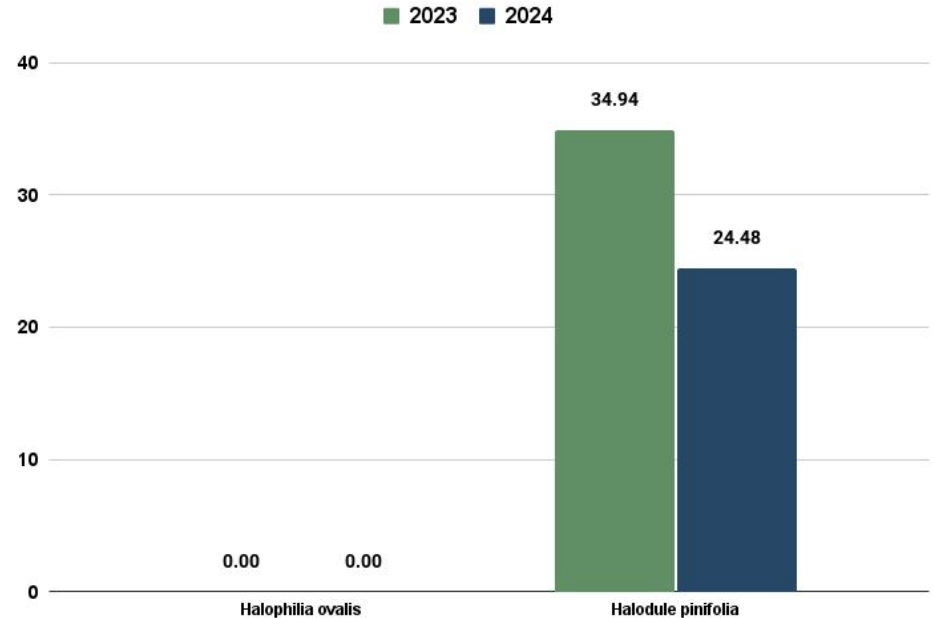
- 2 transect laid along the coastline following the seagrass bed.
- Taman Laut has both **HP and HO species** growing in the seagrass bed at **35.50% coverage**. Slightly increase than 2023 survey at 24.54%
- Taman Laut survey point is an area which is **affected by the current movement**, however with the **24.54% of seagrass percentage** and the **presence of different seagrass species** makes it a **possible option for long term monitoring**,
- **Two turtles were observed** during the survey. Cruising around the seagrass bed at Taman Laut.

At the end of the survey, **2 end bed points were recorded** for future reference.



Seagrass Monitoring Research : Redang Island

- In 2024, seagrass survey in Teluk Dalam develop into detailed survey with 4 transects points been marked for long term monitoring survey.
- **Only HP** is observed growing in the water of Teluk Dalam over two years of seagrass survey in the area.
- **Grazing turtles** been sighted over the two days survey with **1 adult male and two adult female in the area.**
- The seagrass bed stop at **8 meter depth.** At the end of the survey, **three end bed points were recorded.**



#ANAKPULAU

#ANAKPULAU is an initiative dedicated to empower the youth of Perhentian Islands. The initiative was developed to provide a platform for the local youth to learn and involve in marine conservation activities in Perhentian Islands. The members are equipped with diving qualifications and training to join conservation activities with PMRS



Rapid Response Team

- ❑ 31 trained RRT members.
- ❑ 13 certified RCM Eco-Diver
- ❑ Perhentian 2024 Reef Check surveys, Marine Biodiversity survey, Bleaching monitoring

Junior Diver

- ❑ 7 Junior Diver members
- ❑ 2 learning dives conducted in 2024



Rapid Response Team (RRT)



Ghostnet Removal & underwater Clean-Up

- ❑ 95% success response to stakeholder reports.
- ❑ 1 ghostnet removal dives, amounting 200kg of ghostnet.

Safety bouyline & mooring line installation

- ❑ 4 safety buoy line installation.

Coral Restoration

- ❑ 7 restoration and coral planting dives.
- ❑ 98% nubbin impacted by bleaching event.

Recruitment & Training

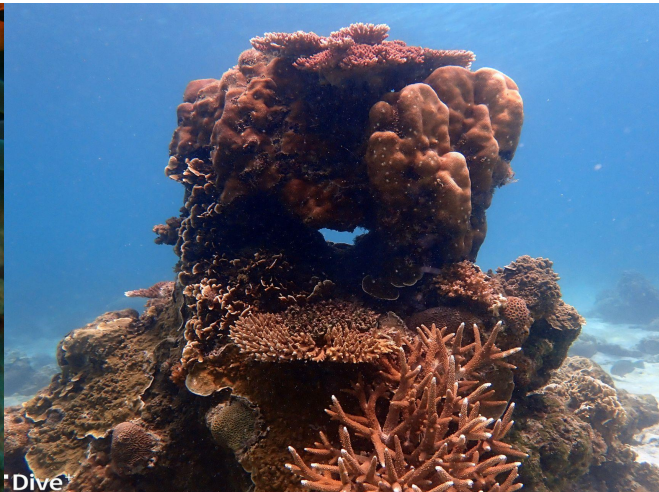
- ❑ 5 newly recruited members.
- ❑ Biodiversity training dives.
- ❑ Field trip to Tioman Island.
- ❑ Offered 2 paid working opportunity.



What we learnt

In conclusion, lesson learnt from this 2024 season,

- ✓ PMRS are able to focus on the management of the station, strengthen the portfolio of the station and develop our local empowerment program #ANAKPULAU.
- ✓ PMRS has broaden its presence beyond Perhentian Island by more external collaboration with other organisations.



Next year and beyond

- Strengthen our conservation strategies under the Reef Care program.
- Strengthen PMRS research portfolio and the establishment of marine research station on the island.
- Upgrading our volunteering program content to improve Volunteerism Experience with PMRS - Refining the experiential learning process.
- Improve our outreach program on marine and environmental awareness within the islands and beyond Perhentian Island.
- Strengthen our collaboration to external organisation for knowledge exchange and networking.



CONCLUSION



A big THANK YOU to

A HUGE thank you goes to our funders in 2024, without you we wouldn't have been able to achieve anything, our thanks goes to:

- ❖ Yayasan Hasanah
- ❖ Yayasan Sime Darby
- ❖ Sustainable Tourism Network
- ❖ See Turtle

Also thank you to our collaborators in 2024, without you we wouldn't have been able to achieve to this far. Our thanks goes to:

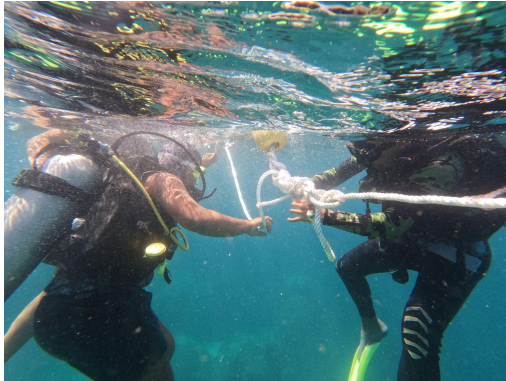
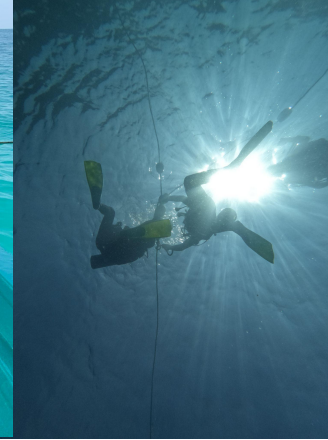
- ❖ Department of Fisheries Malaysia
- ❖ Reef Check Malaysia
- ❖ Dive centers & Chalets in Perhentian
- ❖ Boat operators
- ❖ Community of Perhentian Island



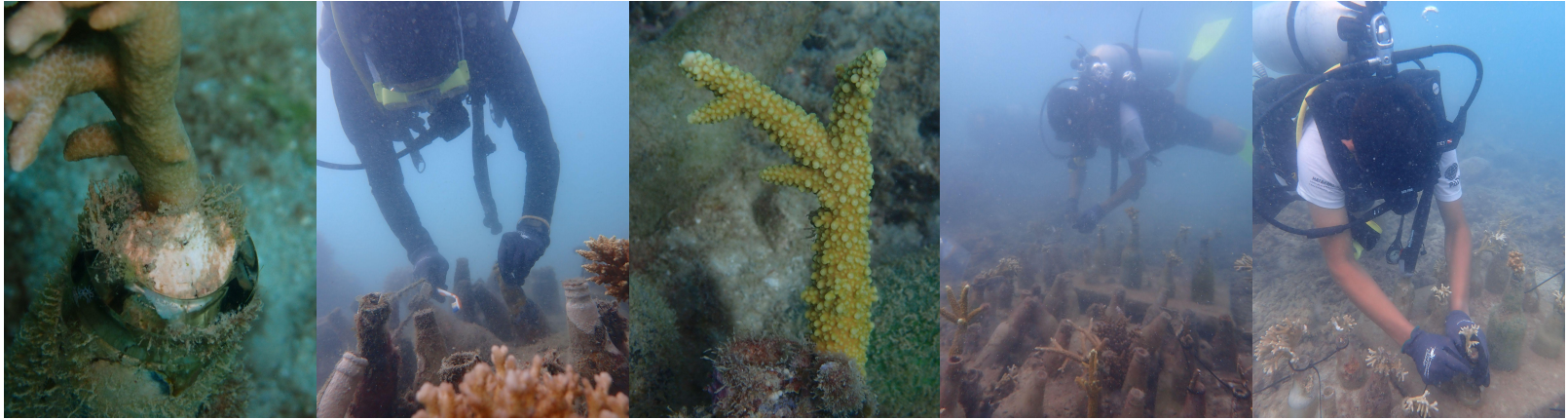
Ghostnet Removal & underwater Clean-Up



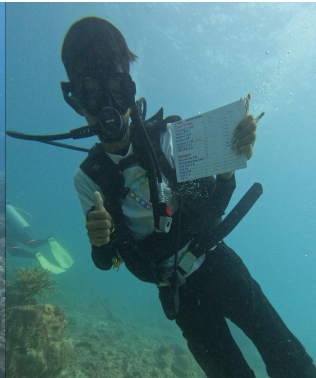
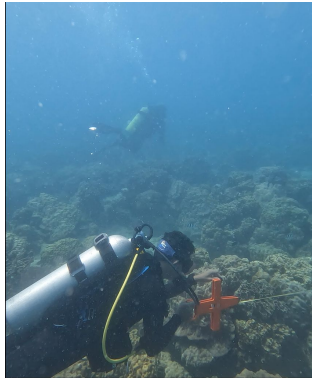
Safety bouyline & mooring line installation



Coral Restoration Project



Recruitment & Training



THANK YOU



PMRS
PERHENTIAN
MARINE RESEARCH
STATION



 **Dive⁺**
@reringgit



PERHENTIAN
MARINE RESEARCH STATION