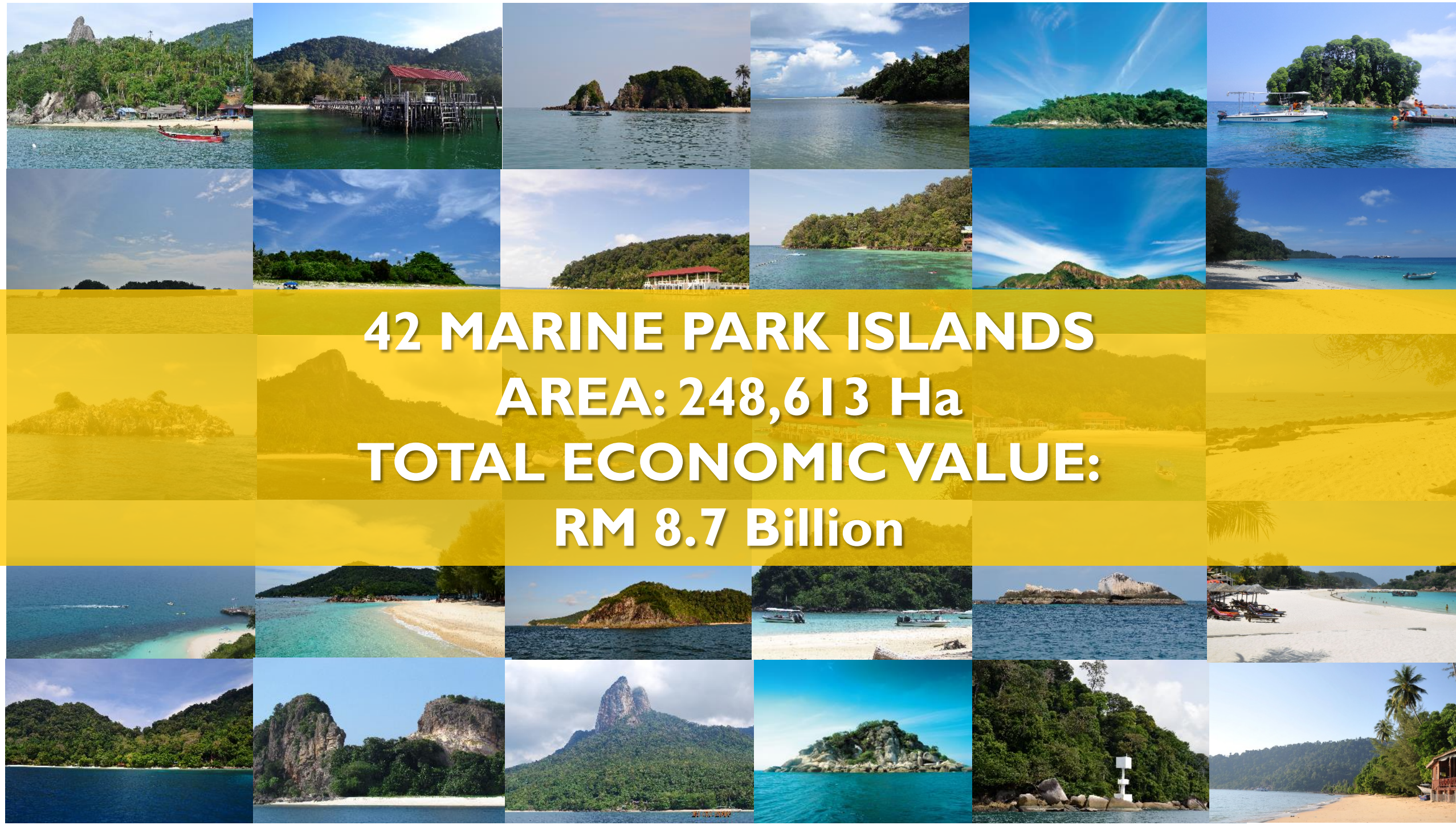# METHODOLOGIES & ASSESSMENT APPLIED FOR ISLANDS IN MALAYSIA

IZARENAH BINTI MD REPIN
MARINE PARK & MARINE RESOURCES MANAGEMENT DIVISION
DEPARTMENT OF FISHERIES MALAYSIA

42 MARINE PARK ISLANDS
AREA: 248,613 Ha
TOTAL ECONOMIC VALUE:
RM 8.7 Billion

Marine Debris in Marine Park?

Year: 2017

Marine Debris in Marine Park? Pulau Payar

Year: 2009

Technical Report:
ABUNDANCE AND DISTRIBUTION OF MARINE DEBRIS ON SELECTED BEACHES OF MARINE PARK ISLANDS

DEPARTMENT OF FISHERIES MALAYSIA
Ministry of Agriculture and Industry Based

1. **Fauziah Shahul Hamid**
Institute of Biological Sciences, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia
Center for Research in Waste Management, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia

2. **Siti Suhaila Harith**
Fakulti Sains Gunaan, Universiti Teknologi MARA, Cawangan Pahang

3. **Japareng Lalung**
School of Industrial Technology, Universiti Sains Malaysia

4. **Auwalu Hassan**
Institute of Biological Sciences, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia

5. **Agamuthu Periathamby**
Institute of Biological Sciences, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia
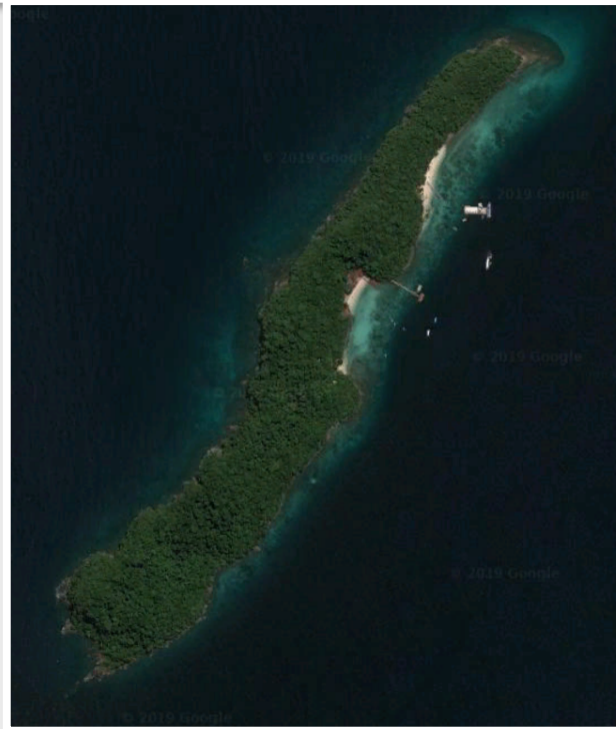Center for Research in Waste Management, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia

6. **Izarenah Md Repin**
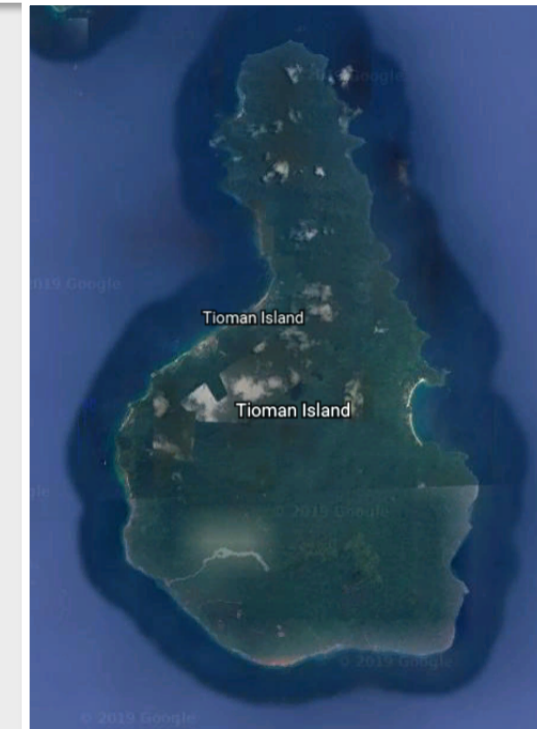Division of Marine Park and Marine Resource Management, Department of Fisheries Malaysia

OBJECTIVES:

❖ To determine the density and distribution of various types of marine debris in the study areas.

❖ To investigate the composition of marine debris collected from selected beaches within the Marine Park.

❖ To establish the frequency of occurrence of these marine debris according to seasons.
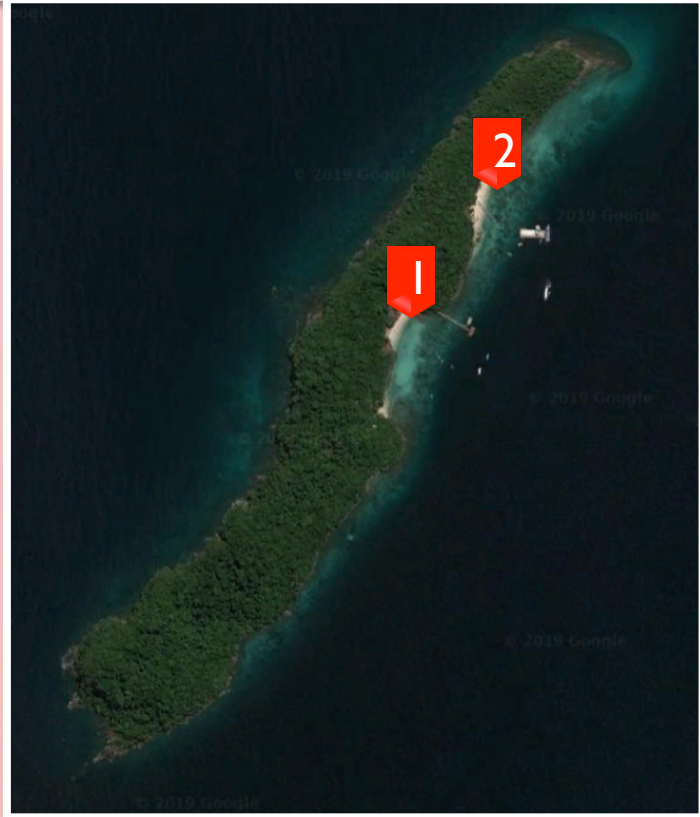
Pulau Payar

Pulau Tioman

- Located on the north of Peninsular Malaysia
- No permanent residents or local communities inhabit the island.
- Tourism activities: tourist came to the island in a short period (5 hours visitation) and back to Langkawi or P.Pinang.
- ~60,000 tourist a year

- Located on the east of Peninsular Malaysia.
- The largest island gazetted as marine park.
- 6 villages, resort operator
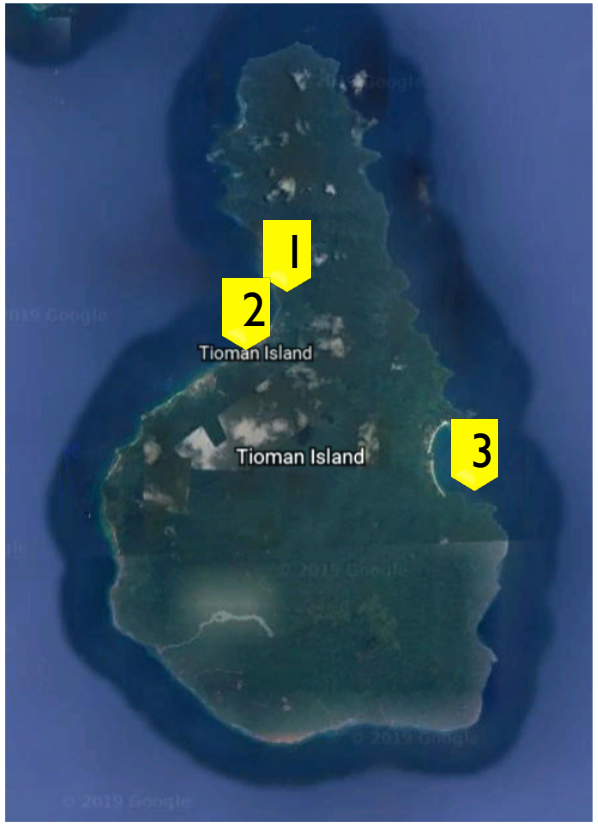- ~160,000 tourist a year

METHODOLOGY & ASSESSMENT

SAMPLING LOCATION

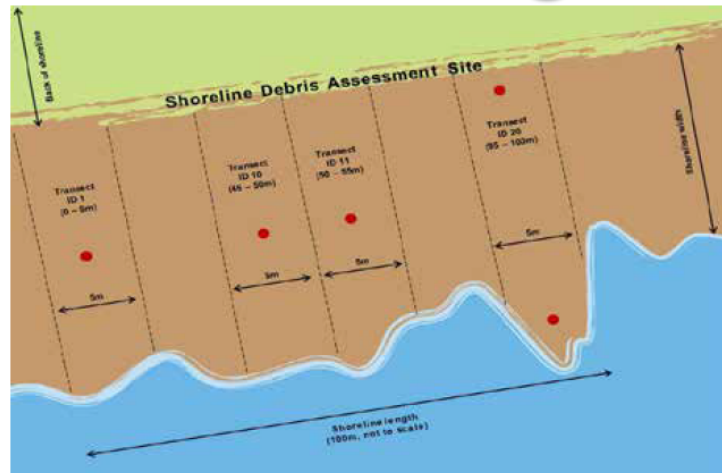## Pulau Payar

Pulau Tioman

Methodologies

Figure 4.11 NOAA protocol for shoreline monitoring. Shoreline section (100 m) displaying perpendicular transects from water low tide to the first barrier at the back of the shoreline section. Red circles indicate marked GPS coordinates. Shoreline width location and number of GPS coordinates. Figure not to scale. (from Lippiatt *et al.* 2013, images ©NOAA).
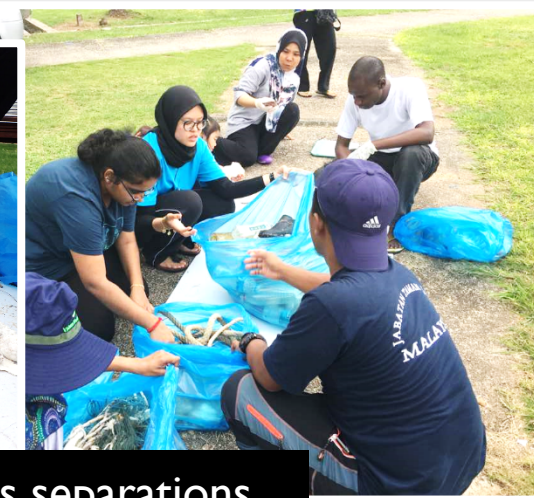
Lay the transect

Collecting the marine debris

Marine debris separations
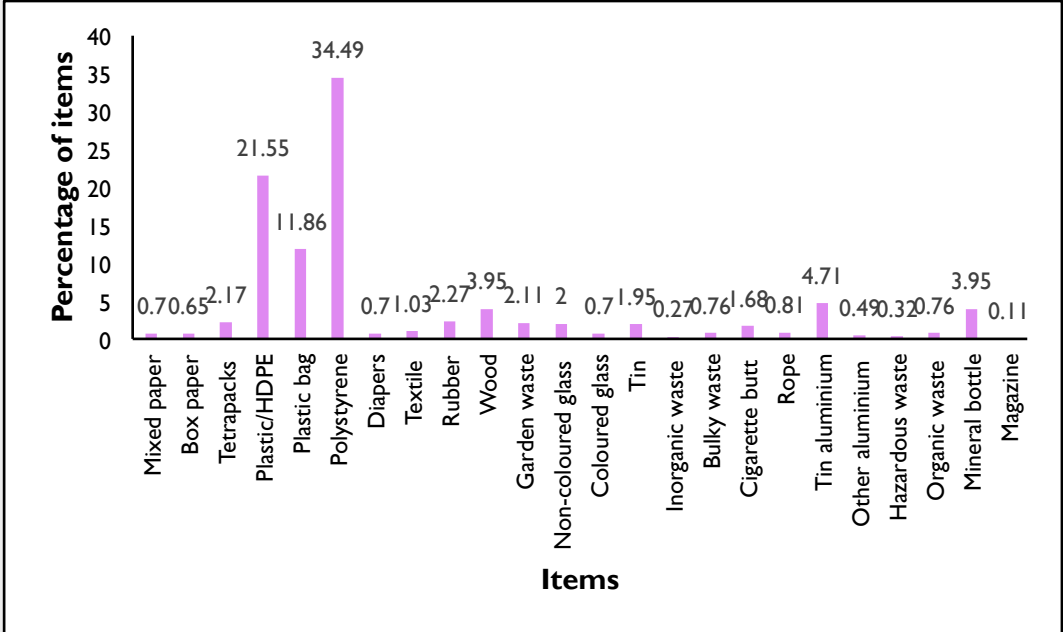
Weigh and volume

Methodologies

30 categories

Table 2: Catagories of waste for marine debris survey

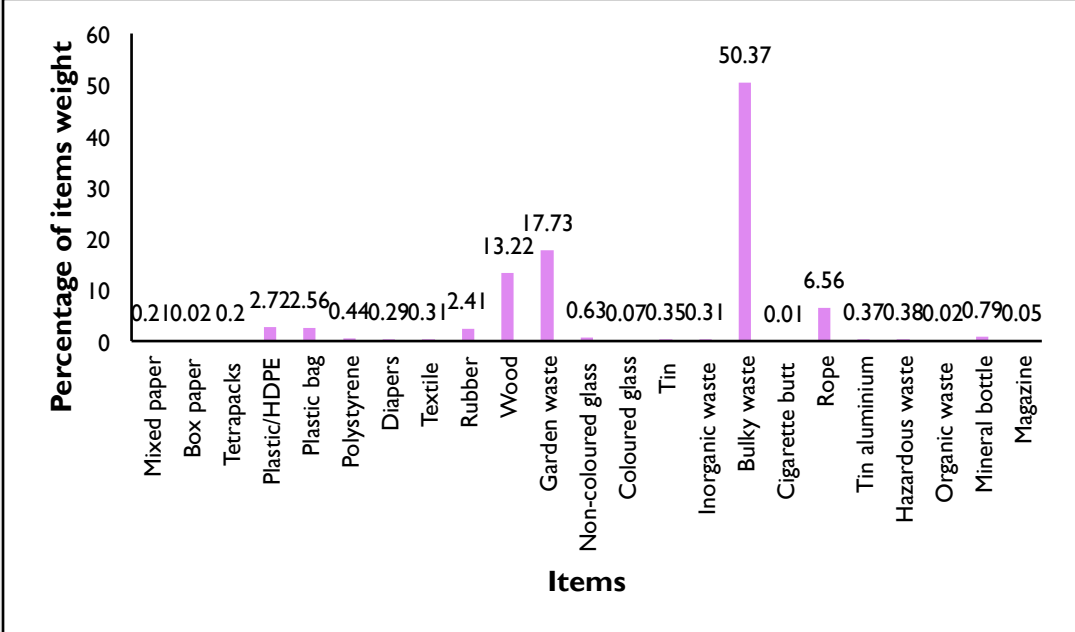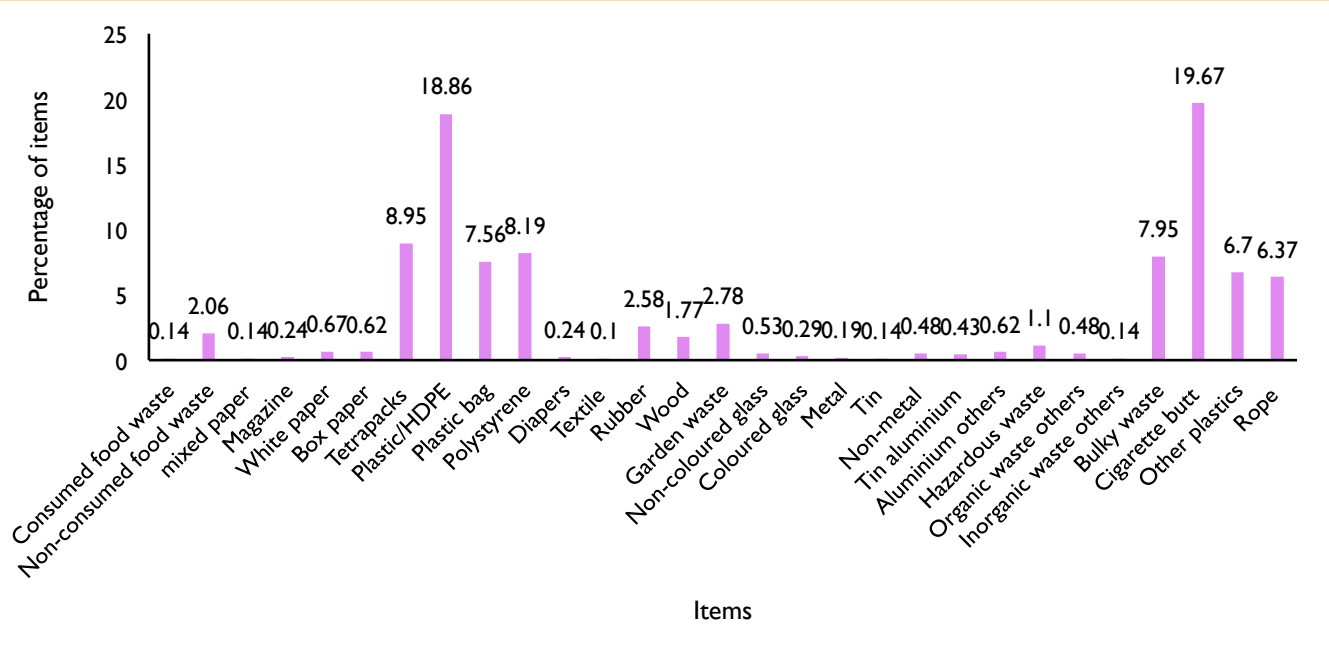| ITEM	ITEM
Food waste	Wood
Unconsumed food waste	Garden waste
Mixed paper	Non-coloured glass
Newspaper	Coloured glass
Phone directory	Metal
Magazine	Tin
White paper	Mon-metal
Box paper	Tin aluminium
Tetra Pak	Other aluminium
Plastic/HDPE	Hazardous waste
Plastic bag	Organic waste
Polystyrene	Inorganic waste
Diapers	Bulky waste
Textile	Cigarette butt
Rubber	Rope

Methodologies

Result: Pulau Payar
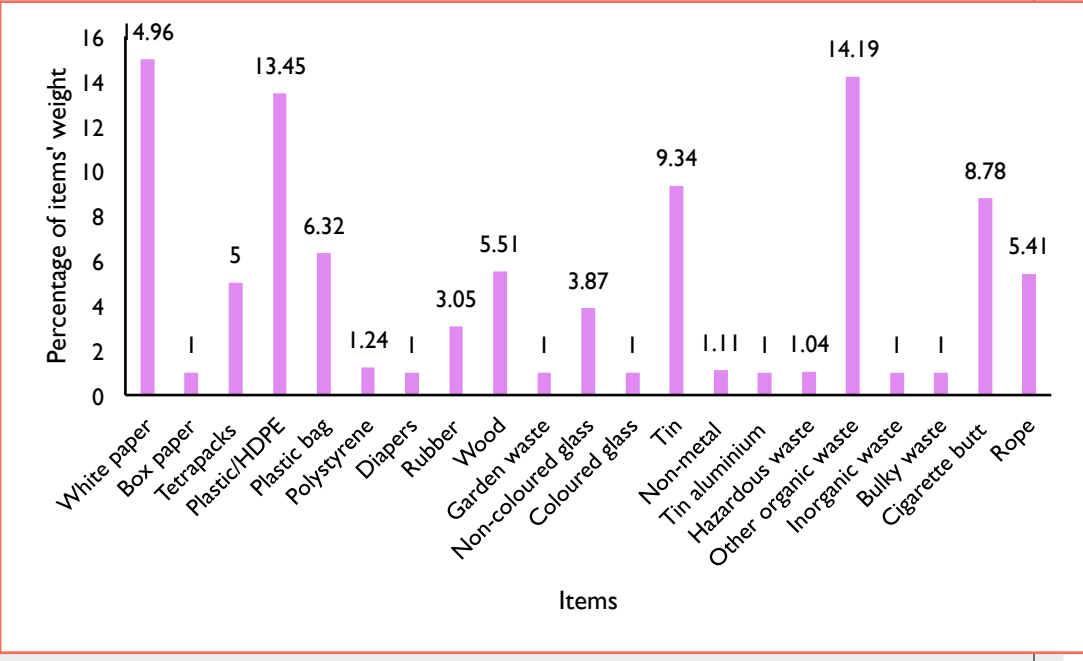

Percentage of items

Percentage of items' weight according to types

Result: Pulau Tioman

Percentage of items

Percentage of items' weight according to types

Research findings:

◦ The **<u>marine debris are present in the study areas.</u>**

◦ **<u>Main types are HDPE,</u>** polystyrene, cigarette butt.

◦ There was **<u>no significant variation in the abundance</u>** between the debris collected in the rainy season and those collected in the dry season in both islands (P > 0.05).

◦ **<u>Pulau Payar (PP) was cleaner than P. Tioman (PT)-</u>** most debris found in PP were lighter in weight and low of densities. This showed that the amount of debris that enter or reside in PP marine park were considerably lower than those from PT, which might be attributed to anthropogenic activities within the area.

1) We need **more data-** Seasonal variations, source, transboundary
2) Enhanced the methodologies
3) More monitoring transect
4) Citizen science approach
5) Continue the monitoring and replicate to other marine park islands.
6) Team from FRI- Microplastics (sea surface, mollusc, beach)

LESSON LEARNED & WAY FORWARD

TERIMA KASIH

Dinner 2011 By JA Kim