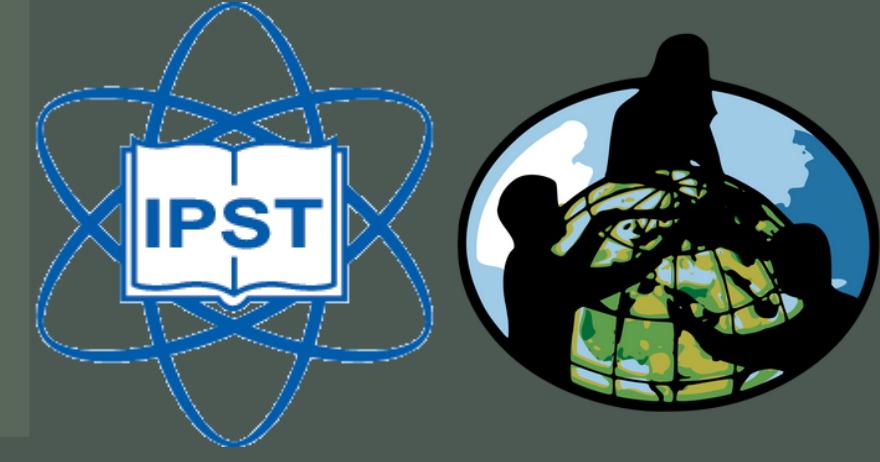




# Study of Microplastic Contamination in Soil, Seawater, Seagrass and Carbon Sequestration in Soil and Seagrass at Pak Khlong Beach and Mod Tanoi Beach, Trang Province



**Student name :** Mr. Jitpraphat Chanakul and Mr. Phakhin Chantayothin  
**Teacher name :** Mrs. Pacharee Chaipetch

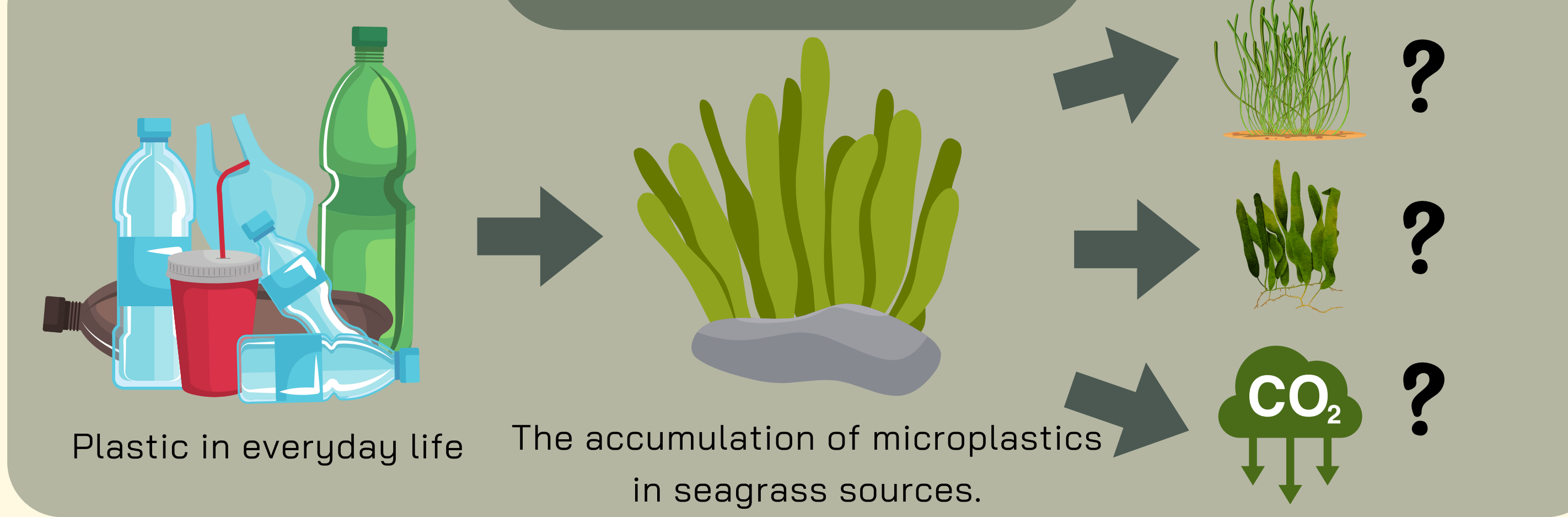
Princess Chulabhorn Science High School Trang Thailand



## Abstract

This research aims to study the amount of microplastics in soil and water. Including the size, shape and color of microplastics in seagrass above the ground and underground. Including comparing the ability to capture carbon in the above ground and underground seagrass in Pak Khlong Beach and Mod Tanoi Beach. By studying in the Pak Khlong Beach area, 2 types of sea grass were found, namely sea grass and round-leaved shadow grass. As for Mod Tanoi Beach, only one type of sea grass was found, which is sea grass. The results of the study showed that seagrass in the above the soil, there are the highest amount of microplastics. And the area of Mod Tanoi Beach has the highest amount of microplastics. Which the microplastics found is from 1 mm. Up to 20 micrometers, most of the shapes are long and black, which may be sourced from plastic waste used for fishing in the area. Microplastics in the soil are the most common, followed by seagrass and water, respectively. In the study of carbon capture in seagrass, it was found that the underground seagrass has the ability to capture more carbon than both types of northern seagrass. In addition, Pak Khlong Beach has a higher carbon storage capacity than Mod Tanoi Beach, which found that the amount of carbon storage of seagrass is inversely with the amount of microplastics found in that area. The Pak Khlong Beach area has a lower amount of microplastics in the soil than Mod Tanoi Beach, which is a community area with occupational fishing. Causing the accumulation of microplastics in that area compared to Pak Khlong Beach, which is a closed area and has no tourism or occupation in the same way.

## Introduction



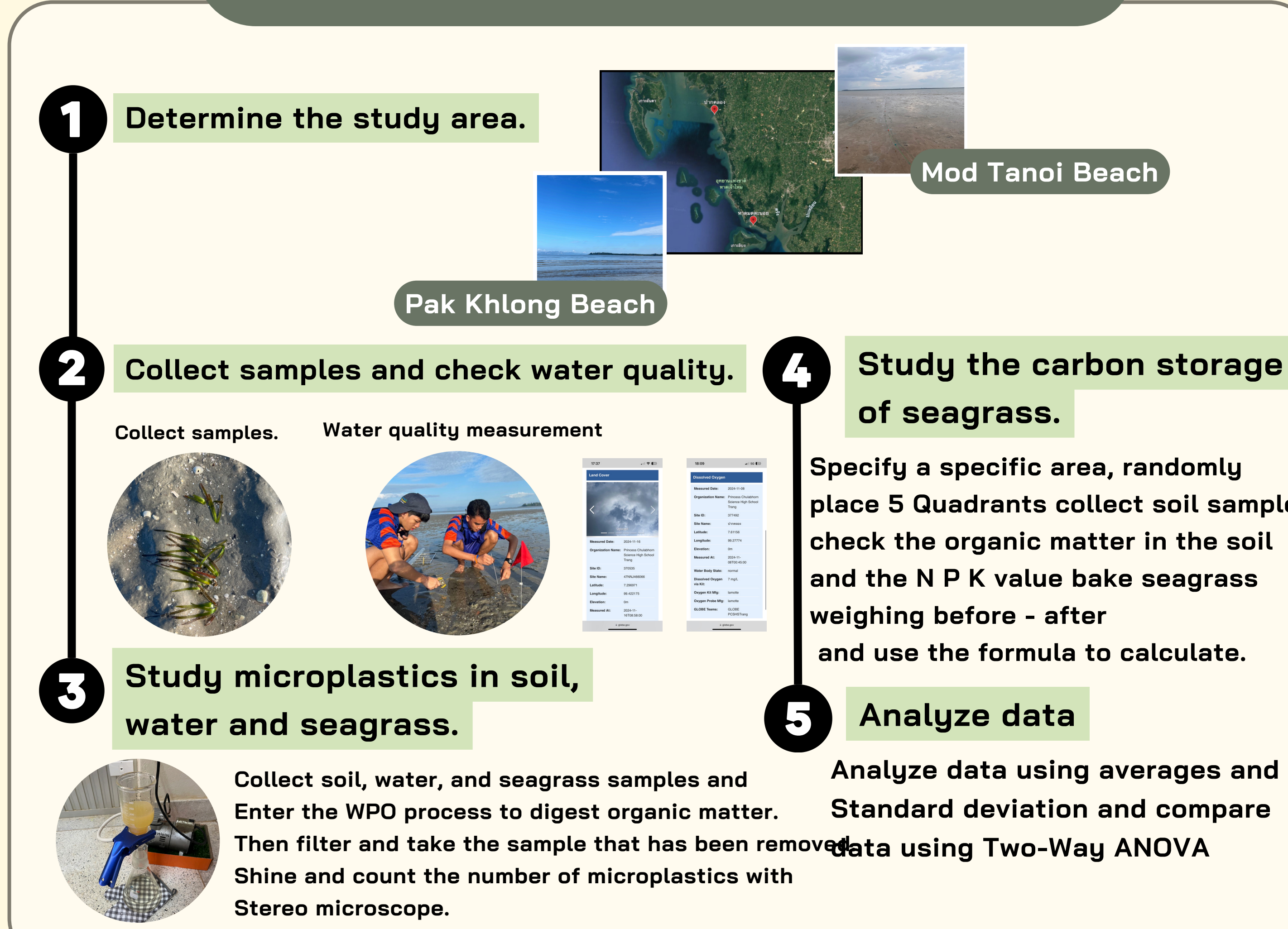
## Research Questions

1. Microplastics in the soil and in water around Pak Klong Beach and Mod Tanoi Beach is there a difference?
2. Is there a difference in the amount of microplastics, size, shape, and color in the above-ground and underground parts of the same and different types of seagrass?
3. Is the amount of microplastics, size, shape, and color in the same type of seagrass, above-ground and underground parts in Pak Klong Beach and Mod Tanoi Beach different?
4. Seagrass above the ground and underground have the ability to store carbon is it different?
5. Seagrass in Pak Klong Beach and Mod Tanoi Beach has the ability to is carbon storage different?

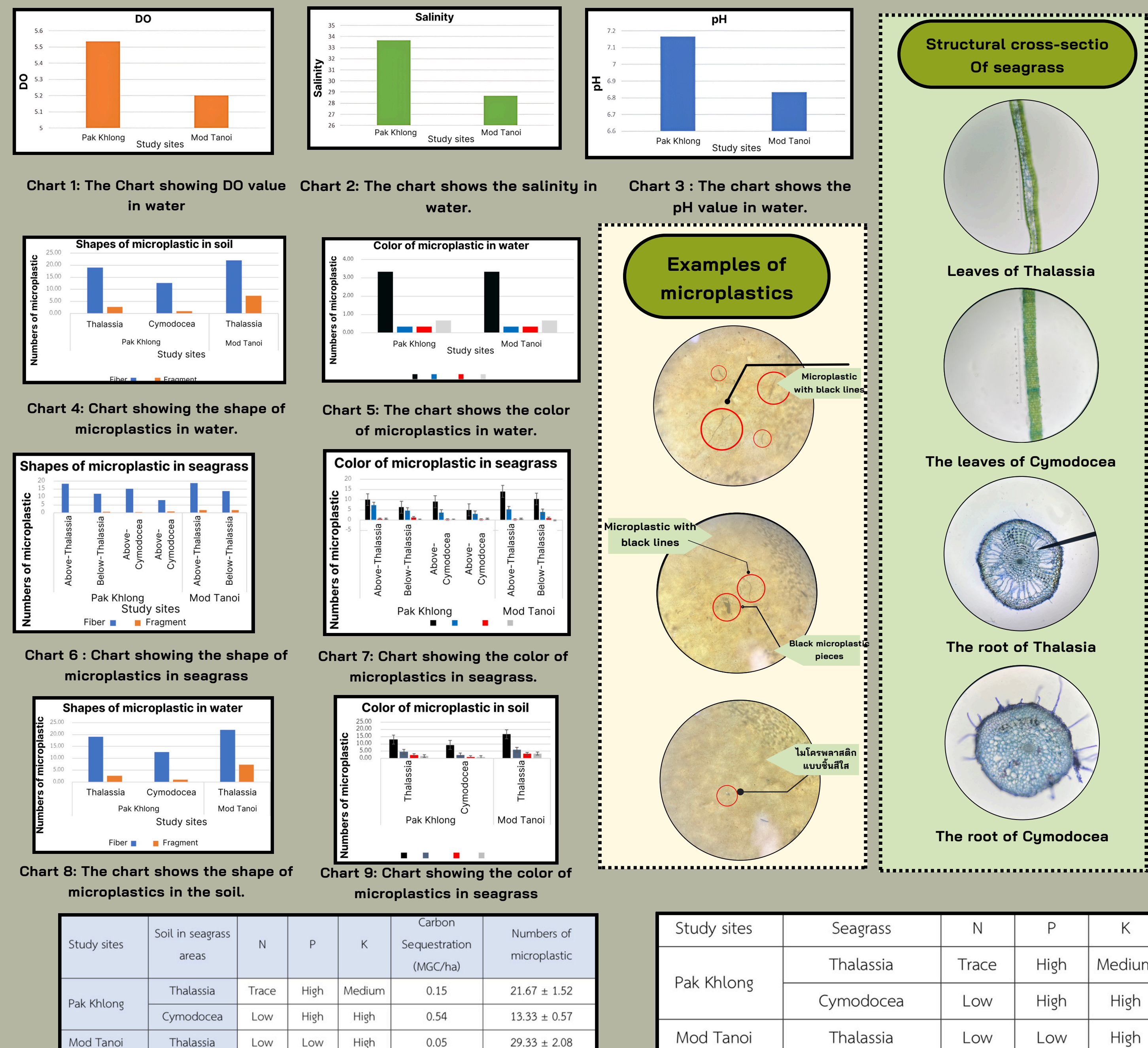
## Research Objectives

1. To study the amount of microplastics in different soil and water.
2. To study the amount of microplastics, size, shape and color of seagrass above the ground and the underground part.
3. To compare the amount of microplastics, size, shape and color of seagrass the above-ground part and the underground part are different.
4. To study the amount of carbon storage of seagrass above the ground and underground.
5. To compare the carbon capture capacity of the same type of seagrass, different species and different areas.

## How to conduct research



## Research results



## conclusion and discussion

The results of the study showed that the amount of microplastics in the water around Pak Klong Beach and Mod Tanoi Beach did not differ statistically significantly. Because the two areas have a similar geographical area But the soil in both areas has a statistically significant difference, which is caused by the use of different areas and locations. The Mod Tanoi Beach area has the highest amount of microplastics in the soil, followed by Pak Klong Beach and the soil around Pak Khlong Beach. The amount of microplastics in the northern part of microplastics in the soil has been found that there are more microplastics than the underground part. Both sea grass and round-leaved when comparing the types of sea grass, it was found that the seagrass in the northern and underground part contains more microplastics than round-leaved musk grass. The microplastics found range from 1 mm. Up to 20 μm and most of the shapes are black lines. Which may come from sources related to fishing such as fishing, nets or fishing equipment. The study also found that Mod Tanoi Beach also has more microplastics in the soil than Pak Khlong Beach. Because Mod Tanoi Beach is located in community and has fishing, which causes the accumulation of plastic waste from human activities and sea currents. While Pak Khlong Beach is a closed bay that has no community and is not a tourist attraction. The size of the microplastics found also affects the accumulation of carbon in seagrass. It was found that the underground seaweed has more carbon accumulation than the upper part of the soil. Finding microplastics in the soil will result in a decrease in the accumulation of carbon in seagrass. Therefore, areas with a high amount of microplastics such as Mod Tanoi Beach will find less carbon accumulation. While areas with less microplastics such as Pak Khlong Beach will find more

## Acknowledgements

We would like to express our gratitude to Bor Hin Farmstay, the Pak Khlong Community Enterprise, and the Mod Tanoi Community Enterprise for their kind support in providing both the location and facilities for sample collection and data gathering related to this research. We would also like to thank the administration and teachers of Princess Chulabhorn Science High School Trang, especially Mrs. Pacharee Chaipetch, our project advisor, as well as the parents who supported this research project.

## Reference documents

คริสมาส พัฒน์สิรินนท์ และ จริยวาทิ สุริยพันธ์. (2563). การสะสมของไมโครพลาสติกในดินตะกอนในแนวหญ้าทะเล (*Halodule uninervis*) อ่าวสัตหีบ จังหวัดชลบุรี. จาก <https://ag2.kku.ac.th/kaj/PDF.cfm>

เกียรติศักดิ์ หมั่นแอ. (2565). หญ้าทะเลกับการดูดซับคาร์บอน. จาก <https://ngthai.com/environment/45975/blue-carbon-seagrass-sing-r-sa/>