THE STUDY ON WATER QUALITY AND PHYTOPLANKTON SPECIES IN KHLONG CHANTRANG TRANG PROVINCE

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Abtract

The study of water quality and phytoplankton types in Khlong Chang,, Trang Province aimed to 1) study the water quality in Khlong Chang, Trang Province, which found that the average pH was 8, the average temperature was 26 degrees Celsius, the transparency was 60 centimeters, and the average dissolved oxygen was 6.27 mg/l. The measured values indicated that the water quality was good because the water source was rich in pH between 7.5 and 8.5, which is the range where plankton can be found, which is consistent with the research of Thiraphon Malikongsingh (2022). 2) To study the types of plankton in Khlong Chang, Trang Province, it was found that there were 5 types of plankton: *Cosmarium, Surirella, Aulacoseira, Oscilatoria, Spiurlina,* where *Cosmarium* is found in abundance in clear water with nutrients, Oscillatoria can survive in clear water, Spirulina is found in abundance in clear water with high nutrients and high pH, more than turbid water with a lot of suspended sediment.

Introduction

Water is an important component of the phytoplankton ecosystem. Therefore, the distribution of plankton depends on physical factors in the water, such as temperature and transparency. Therefore, plankton are more diverse, resulting in greater abundance. The researchers are interested in studying water quality and types of phytoplankton, using the plankton and plankton data obtained as indicators of water quality in Khlong Chang area, Trang Province.

Research Objectives

1) To assess the water quality in Khlong Chang, Trang Province.
2) To identify the phytoplankton Species present in Khlong Chang ,Trang Province.

Study Area

The geographic coordinates for the study of the diversity of plankton and water quality in the Khlong Chang Trang Province.

Materials and Equipment

1.Plankton net (10 micrometers)
2.Amber sample bottles
3.Sample collection bottles
4.pH meter
5.Dissolved oxygen test kit (DO)
6.Secchi disk
7.Thermometer
8.Hydrometer
9.Beaker
10.Measuring tape
11.Microscope
12.Microscope slides
13.Droppers

Research Question

1) Does the water quality in Khlong Chang ,Trang Province, affect the diversity of phytoplankton species?

Acknowledgements

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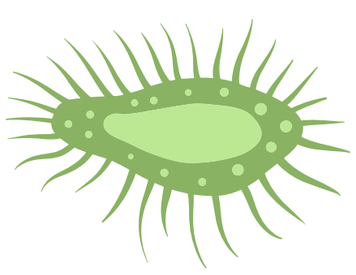
Research Preparation Phase

1. Research Preparation Phase
1. Set the research topic: Choose the topic or issue you wish to study.
2. Review and gather relevant knowledge and theories: Collect information and theories related to your research topic.
3. Define the objectives of the study: Clearly specify the objectives and goals of the research.
4. Determine the sampling locations for data collection: Decide where to collect the samples within the study area.
2. Research Implementation Steps
1. Plan the research: Develop a research plan outlining the methods, timeline, and resources required.
2. Survey the study area: Conduct a survey of the area where the research will take place.
3. Collect water samples for studying plankton: Collect water samples from the Chang Canal, Na Toa Ming Subdistrict, Mueang District, and Trang Province for plankton study.
4. Survey the clouds and measure the average cloud cover: Measure the cloud cover in the area where water samples are collected and classify the clouds using a cloud classification manual.
5. Collect water samples to study water quality and plankton types: Test the water quality based on GLOBE methodology by measuring the water's pH, temperature, transparency, and dissolved oxygen levels.
5.1 Measure the water's pH: Use a pH meter to measure and record the pH value of the water. Take three readings.
5.2 Measure the water's temperature: Use a thermometer to measure the temperature at each point and record the data. Take three readings.
5.3 Measure water transparency: Use a Secchi disk to measure and record the transparency of the water. Take three readings.
5.4 Measure the dissolved oxygen levels: Use an iodometer to measure and record the dissolved oxygen in the water. Take three readings. Water Sample Collection
Measure the water's pH, temperature, transparency, and dissolved oxygen levels.
1. Survey and collect water samples: In the Chang Canal, Na Toa Ming Subdistrict, Mueang District, Trang Province, from November 23 to December 23, 2024, over a period of 1 month and 4 weeks.
2. Study plankton types: In the Chang Canal, Na Toa Ming Subdistrict, Mueang District, Trang Province, to classify plankton species using a plankton identification manual.



Discussion

Table1 : Geographic coordinates

Study Area	Geographic Coordinates	
	Latitude (N)	Longitude (E)
Chang Canal, Na Toa Ming Subdistrict, Mueang District, Trang Province	7.55330° N	99.55591° E

According to Table 1, the geographic coordinates for the study on the diversity of plankton and water quality in the Klong chang,Trang Province were collected from three locations. Each location has the latitude (N) 7.55330° N and longitude (E) 99.55591° E.

Table 2: Water Quality

Parameter	Location 1	Location 2	Location 3	Average
Water pH	6	9	10	8
Water Temperature (°C)	24	26	28	26
Water Transparency (cm)	65	50	55	60
Dissolved Oxygen (mg/l)	6.26	6.30	6.25	6.27

From Table 2, the water quality study at all three sample points shows that the average water pH is 8, indicating that the water is slightly alkaline to neutral. The average water temperature is 26°C, which is within the normal temperature range for aquatic environments. The average water transparency is 60 cm, indicating a moderate level of water clarity. The dissolved oxygen level is 6.27 mg/l on average, which is at an appropriate level for supporting aquatic life.

Table 3: Cloud Cover

Could Type	Location 1	Location 2	Location 3	Average
Cirrostratus	35	40	25	33.33
Cumulus	45	35	30	36.66
Stratocumlus	10	15	20	15

From Table 3, it was found that the amount of cloud cover in the surveyed area,considering 3 types of clouds—cirrostratus, cumulus, and stratocumulus, which had different average values, namely cumulus clouds had the highest average value, cirrostratus clouds had moderate average value, and stratocumulus clouds had the lowest average value, which may indicate the weather conditions in the area. Cumulus clouds are fluffy clouds that often occur in weather conditions with high temperatures and sufficient relative humidity, resulting in frequent occurrences and higher average values than Stratocumulus clouds are sheet cloudsthat occur in stable weather conditions and may not develop into rain clouds, resulting in
lower average values.

Table 4: The Relationship Between Plankton and Water Quality

From Table 4, it was found that five types of plankton were identified: Cosmarium, Surirella, Aulacoseira, Oscillatoria, and Spirulina. This shows that the water quality in the study area contains a mixture of plankton species, which may affect the balance of the ecosystem in the long term. These plankton species were found in the Klong chang, Trang Province

Discussion of the Research

The study of the natural relationship between phytoplankton and water quality in the Klong chang ,Trang Province, found that certain factors affect the natural relationship between plankton and water quality. The study showed that water quality has an impact on this relationship, including parameters such as water pH, water temperature, transparency, dissolved oxygen levels, cloud cover, and overall water quality. The five identified plankton species were observed in the study area. The findings indicate the key factors that influence the relationship between plankton and water quality

Research Conclusion

From the study of the physical characteristics of water quality and its relationship with the natural environment of phytoplankton in the Klong chang, Trang Province, Area 3 has the highest pH value of 10, indicating that the water in this area is more alkaline than the other areas. Area 1 has the lowest pH value of 6, indicating that the water in this area is more acidic than the other areas. For the water temperature, Area 3 has the highest temperature. Area 1 has the highest water transparency due to the lower amount of foreign material in the water. Area 2 has the lowest water transparency.Area 1 had lower dissolved oxygen levels, possibly due to poor water circulation. Cumulus clouds had the highest average percentage at 36.66%, while stratocumulus clouds had the lowest average percentage at 15%.

From the study of the natural relationship between phytoplankton and water quality in the Klong chang, Trang Province, five species of plankton were identified: Cosmarium, Surirella, Aulacoseira, Oscillatoria, and Spirulina. These species were found in the Chang Canal area, which is fertile and suitable for the growth of aquatic life, especially phytoplankton.

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