



A Study of Water Quality and Biodiversity of Aquatic Organisms in the Wat Nam Phut Canal Area, Mueang District, Trang Province, Thailand

Senio High School

Wichienmatu School



Abstract

The study of water quality and biodiversity in the canal behind Wat Nam Phut, Mueang District, Trang Province, Thailand, aimed to investigate the water quality of the canal and the biodiversity of living organisms found in the area. The water quality assessment included measurements of water transparency, pH, water temperature, dissolved oxygen, and cloud cover at three sampling sites. The results showed that water quality at all sites was similar and generally at a fairly good level. The average water transparency was 57.91 ± 0.33 cm, the average pH was 6.0 ± 0.0 , the average water temperature was 27.89 ± 0.38 °C, and the average dissolved oxygen was 6.3 ± 0.0 mg/L. The biodiversity study identified a total of seven species of organisms: *Euglena* sp., *Netrium disitus* (Brekissen ex Ralfs), *Tabellaria flocculosa*, *Philodina* sp., *Keratella* sp., *Staurastrum* sp. In addition, cloud cover observations revealed four types of clouds in the study area: Altocumulus with an average value of 35, Nimbostratus with an average value of 35, Stratocumulus with an average value of 70, and Cirrus with an average value of 17.5. Overall, the water quality met the standard criteria of the Surface Water Quality Index, classified as Type 2.

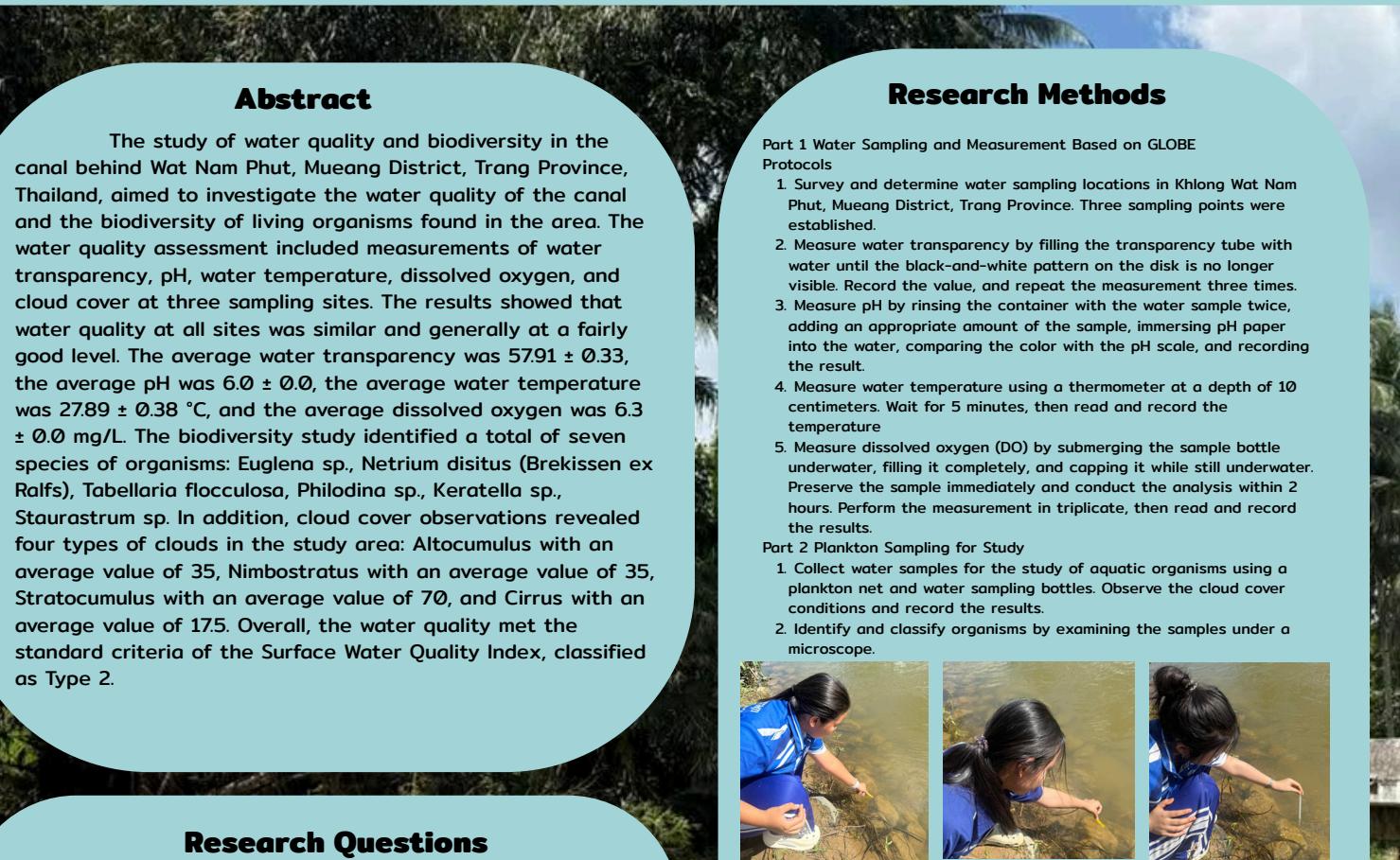
Research Questions

Does water quality affect the biodiversity of organisms

Introduction

Water resources are essential for the survival of living organisms and the sustainability of ecosystems. Freshwater canals provide important habitats for many organisms, especially phytoplankton, which play a key role as primary producers in aquatic food chains. Changes in water quality, such as pH, transparency, and temperature, can directly affect aquatic organisms and ecosystem balance.

Wat Nam Phut Canal in Mueang District, Trang Province, is an important freshwater resource used for agriculture, livestock farming, and other human activities, which may influence water quality. Therefore, this study aims to examine water quality and aquatic biodiversity in the canal to provide baseline data for assessing environmental conditions and supporting future conservation and management efforts.



Research Methods

Part 1 Water Sampling and Measurement Based on GLOBE Protocols

- Survey and determine water sampling locations in Khlong Wat Nam Phut, Mueang District, Trang Province. Three sampling points were established.
- Measure water transparency by filling the transparency tube with water until the black-and-white pattern on the disk is no longer visible. Record the value, and repeat the measurement three times.
- Measure pH by rinsing the container with the water sample twice, adding an appropriate amount of the sample, immersing pH paper into the water, comparing the color with the pH scale, and recording the result.
- Measure water temperature using a thermometer at a depth of 10 centimeters. Wait for 5 minutes, then read and record the temperature.
- Measure dissolved oxygen (DO) by submerging the sample bottle underwater, filling it completely, and capping it while still underwater. Preserve the sample immediately and conduct the analysis within 2 hours. Perform the measurement in triplicate, then read and record the results.

Part 2 Plankton Sampling for Study

- Collect water samples for the study of aquatic organisms using a plankton net and water sampling bottles. Observe the cloud cover conditions and record the results.
- Identify and classify organisms by examining the samples under a microscope.



Carrying out Investigations

Latitude (N)	Longitude (E)
7.6976817	99.7008033

Globe Badges

I Am a Collaborator

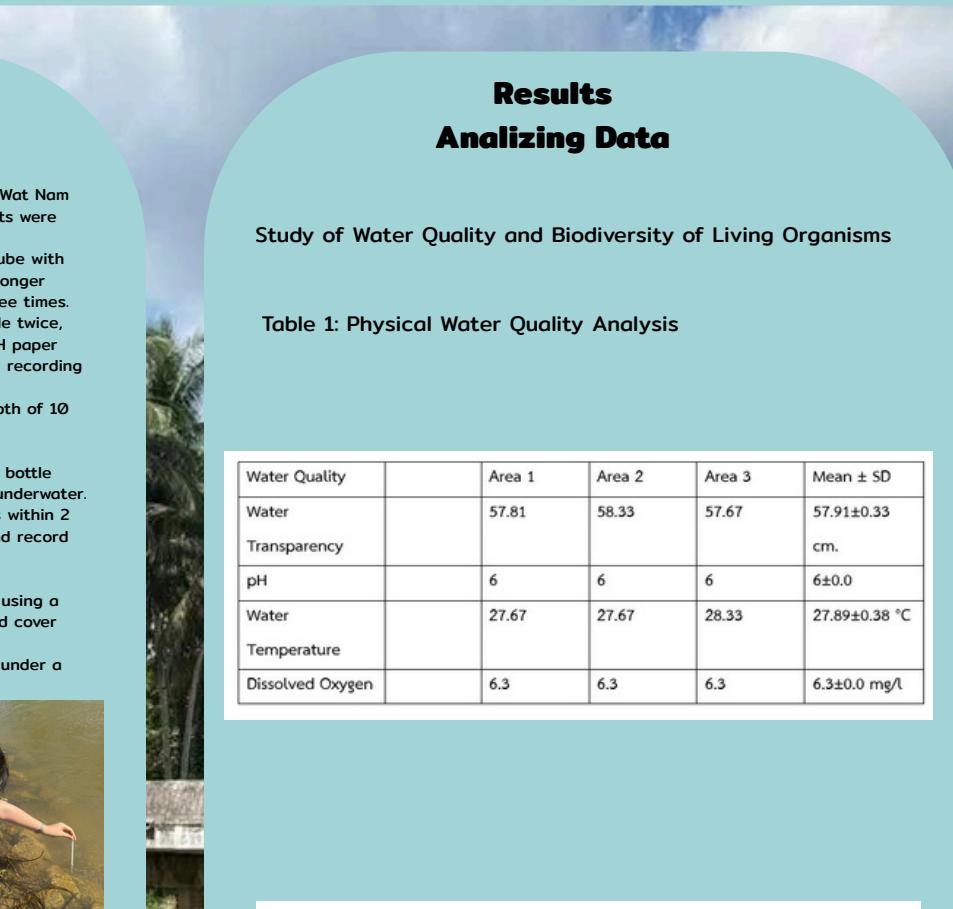
This research was conducted through collaborative scientific teamwork. The process involved joint planning, fieldwork, data collection, and data analysis. Collaboration among team members helped enhance data quality and strengthened teamwork skills. As a result, the research achieved a level of quality suitable for sharing and dissemination.

I Am a Problem Solver

Through the research process, including data collection and experimentation, the results obtained can be used as part of solutions to address water quality issues in the canal. Improving water quality supports the growth and survival of aquatic organisms and allows the water to be utilized effectively for agricultural purposes.

I Am a Data Scientist

This research involved collecting data on water transparency, pH, temperature, and dissolved oxygen. The collected data were used to calculate mean values presented in each table, and the results were subsequently analyzed to assess overall water quality.

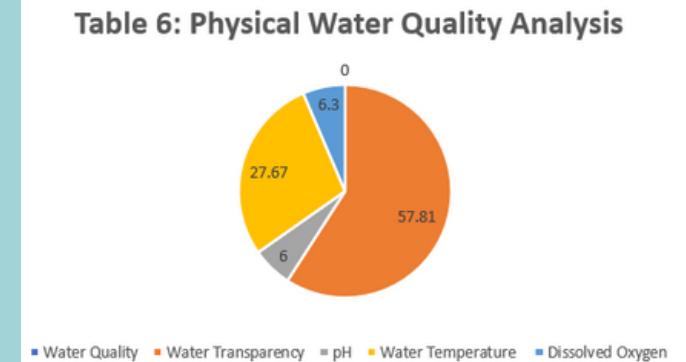


Results Analizing Data

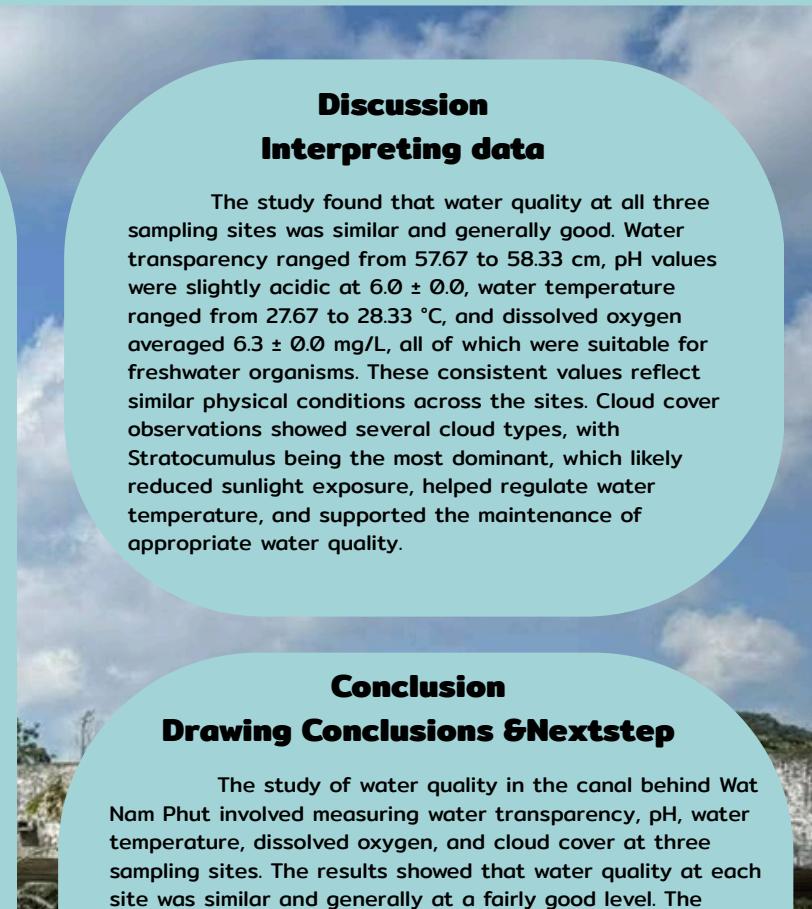
Study of Water Quality and Biodiversity of Living Organisms

Table 1: Physical Water Quality Analysis

Water Quality	Area 1	Area 2	Area 3	Mean \pm SD
Water Transparency	57.81	58.33	57.67	57.91 ± 0.33 cm
pH	6	6	6	6 ± 0.0
Water Temperature	27.67	27.67	28.33	27.89 ± 0.38 °C
Dissolved Oxygen	6.3	6.3	6.3	6.3 ± 0.0 mg/L

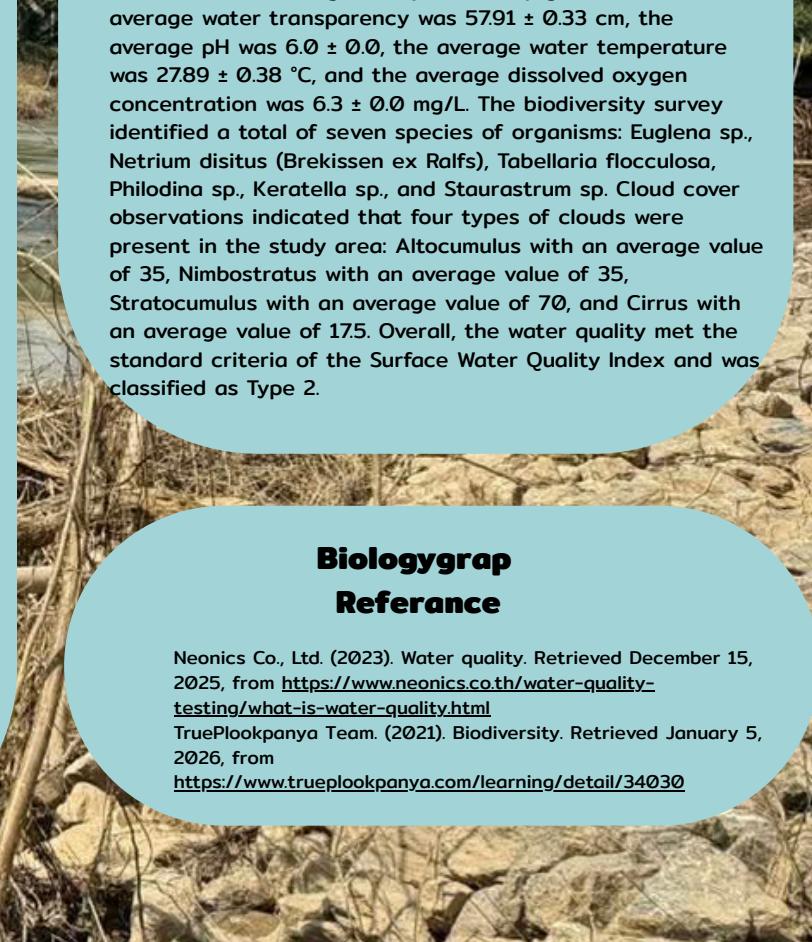


The study identified a total of seven species, including *Euglena*, *Netrium disitus* (Brekissen ex Ralfs), *Tabellaria flocculosa*, *Philodina* sp., *Keratella* sp., and *Staurastrum* sp.



Discussion Interpreting data

The study found that water quality at all three sampling sites was similar and generally good. Water transparency ranged from 57.67 to 58.33 cm, pH values were slightly acidic at 6.0 ± 0.0 , water temperature ranged from 27.67 to 28.33 °C, and dissolved oxygen averaged 6.3 ± 0.0 mg/L, all of which were suitable for freshwater organisms. These consistent values reflect similar physical conditions across the sites. Cloud cover observations showed several cloud types, with Stratocumulus being the most dominant, which likely reduced sunlight exposure, helped regulate water temperature, and supported the maintenance of appropriate water quality.



Conclusion Drawing Conclusions & Nextstep

The study of water quality in the canal behind Wat Nam Phut involved measuring water transparency, pH, water temperature, dissolved oxygen, and cloud cover at three sampling sites. The results showed that water quality at each site was similar and generally at a fairly good level. The average water transparency was 57.91 ± 0.33 cm, the average pH was 6.0 ± 0.0 , the average water temperature was 27.89 ± 0.38 °C, and the average dissolved oxygen concentration was 6.3 ± 0.0 mg/L. The biodiversity survey identified a total of seven species of organisms: *Euglena* sp., *Netrium disitus* (Brekissen ex Ralfs), *Tabellaria flocculosa*, *Philodina* sp., *Keratella* sp., and *Staurastrum* sp. Cloud cover observations indicated that four types of clouds were present in the study area: Altocumulus with an average value of 35, Nimbostratus with an average value of 35, Stratocumulus with an average value of 70, and Cirrus with an average value of 17.5. Overall, the water quality met the standard criteria of the Surface Water Quality Index and was classified as Type 2.

Biologygraph Reference

Neonics Co., Ltd. (2023). Water quality. Retrieved December 15, 2025, from <https://www.neonics.co.th/water-quality-testing/what-is-water-quality.html>

TruePlookpanya Team. (2021). Biodiversity. Retrieved January 5, 2026, from <https://www.trueplookpanya.com/learning/detail/34030>