

# STUDY OF PHYSICAL FACTORS AFFECTING BIODIVERSITY IN NONG CHUM SAENG PUBLIC PARK, YANTAKHAO DISTRICT, TRANG



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## ABSTRACT

THIS RESEARCH AIMS TO STUDY THE PHYSICAL FACTORS AFFECTING BIODIVERSITY IN NONG CHUM SAENG PUBLIC PARK, YANTAKHAO DISTRICT, TRANG PROVINCE. THE STUDY EXAMINES TEMPERATURE, PH, DISSOLVED OXYGEN IN WATER, CLOUD TYPES, HUMIDITY, AND AIR TEMPERATURE. THE STUDY FOUND THAT PHYSICAL FACTORS INFLUENCE BIODIVERSITY IN NONG CHUM SAENG PUBLIC PARK, YANTAKHAO DISTRICT, TRANG PROVINCE. THE AVERAGE WATER TEMPERATURE WAS 29.20 °C, THE AVERAGE PH WAS 6.93, THE AVERAGE DISSOLVED OXYGEN (DO) WAS 6.70 MG/L, THE AVERAGE AIR TEMPERATURE WAS 29.67 °C, AND THE AVERAGE HUMIDITY WAS 54.00%. NIMBOSTRATUS AND CUMULONIMBUS CLOUDS WERE OBSERVED, INDICATING CLOUD FORMATION AND VARIABLE WEATHER. ORGANISMS FOUND INCLUDED PROTOZOA, ALGAE AND CYANOBACTERIA, ZOOPLANKTON, SMALL AQUATIC ANIMALS, AND AQUATIC INSECT LARVAE. THE MOST ABUNDANT WERE SMALL AQUATIC ANIMALS, WITH AN AVERAGE OF 14.33 CELLS, FOLLOWED BY ALGAE WITH AN AVERAGE OF 4.00 CELLS. PROTOZOA WERE THE LEAST ABUNDANT, WITH AN AVERAGE OF 1.33 CELLS. THE WATER QUALITY OF NONG CHUM SAENG PUBLIC PARK, INFLUENCED BY PHYSICAL FACTORS SUCH AS TEMPERATURE, PH, AND DISSOLVED OXYGEN, AS WELL AS AIR TEMPERATURE AND HUMIDITY, AFFECTS BIODIVERSITY, LEADING TO A BALANCED ECOSYSTEM THAT SUPPORTS AQUATIC LIFE.

## RESEARCH QUESTIONS

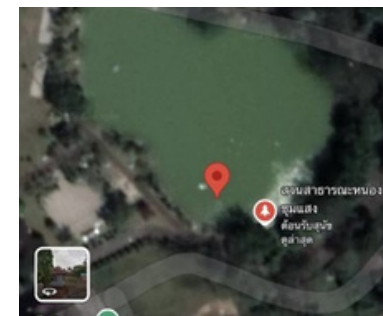
DO PHYSICAL FACTORS AFFECT BIODIVERSITY?

## INTRODUCTION

WATER IS AN ESSENTIAL RESOURCE FOR THE SURVIVAL OF ALL LIVING ORGANISMS, PARTICULARLY FRESHWATER ECOSYSTEMS THAT SERVE AS HABITATS FOR MICROORGANISMS, PLANKTON, AND SMALL AQUATIC ANIMALS. STUDYING WATER QUALITY IN NATURAL WATER SOURCES, SUCH AS PONDS, CANALS, OR SWAMPS, IS CRUCIAL FOR MONITORING POTENTIAL IMPACTS FROM HUMAN ACTIVITIES, SUCH AS WASTE DISPOSAL INTO WATER SOURCES, WHICH CAN AFFECT THE ECOSYSTEM OF THESE WATER BODIES. PLANKTON ARE ORGANISMS THAT DRIFT IN THE WATER COLUMN WITH MINIMAL RESISTANCE TO CURRENTS. THEY ARE EXTREMELY SMALL AND CANNOT BE SEEN WITH THE NAKED EYE. PLANKTON REPRESENT A HIGHLY DIVERSE GROUP OF ORGANISMS IN TERMS OF SPECIES RICHNESS. NONG CHUM SAENG PUBLIC PARK IS A WELL-KNOWN RECREATIONAL AREA AMONG PEOPLE IN THE MUNICIPALITY. IT IS A NATURAL POND THAT SERVES AS A FRESHWATER SOURCE, MAINTAINING WATER THROUGHOUT THE YEAR, EVEN DURING THE DRY SEASON. MANY PEOPLE USE IT AS A RECREATIONAL SPACE DUE TO ITS LUSH ATMOSPHERE AND ITS LOCATION WITHIN THE COMMUNITY. THIS HAS LED THE RESEARCHERS TO STUDY THE PHYSICAL FACTORS AFFECTING BIODIVERSITY IN NONG CHUM SAENG PUBLIC PARK, YANTAKHAO DISTRICT, TRANG PROVINCE.

## RESEARCH METHODS

1. RESEARCH PREPARATION STAGE
  - 1) DEFINE THE RESEARCH ISSUE AND SELECT THE TOPIC OF STUDY.
  - 2) CONDUCT RESEARCH, GATHER KNOWLEDGE, AND COMPILE THEORIES RELATED TO THE RESEARCH.
  - 3) DEFINE THE OBJECTIVES OF THE STUDY.
  - 4) DETERMINE SAMPLING POINTS WITHIN THE STUDY AREA.
2. IMPLEMENTATION STAGE
  - 1) PLAN THE RESEARCH IMPLEMENTATION:
  - 2) SURVEY THE RESEARCH AREA:
  - 3) COLLECT WATER SAMPLES TO STUDY PLANKTON SPECIES USING A LIGHT MICROSCOPE:
  - 4) STUDY THE PHYSICAL FACTORS THAT AFFECT PLANKTON DIVERSITY IN NONG CHUM SAENG PUBLIC PARK:
  - 5) ANALYZE BIOLOGICAL WATER QUALITY FROM WATER QUALITY INDICATORS OR PHYTOPLANKTON IN NONG CHUM SAENG PUBLIC PARK BY FINDING THE SCORE OF EACH PHYTOPLANKTON SPECIES TO FIND THE DIVERSITY INDEX:



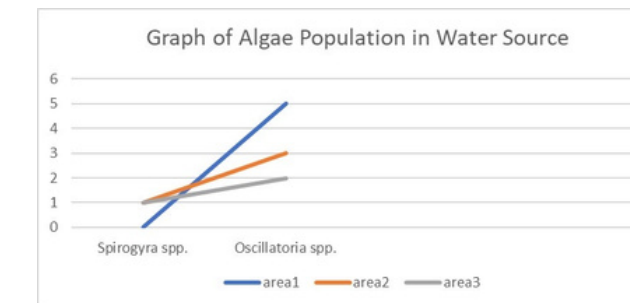
GEOGRAPHIC COORDINATES: THE STUDY AREA IS LOCATED IN NONG CHUM SAENG PUBLIC PARK, YANTAKHAO DISTRICT, TRANG PROVINCE. LATITUDE 7.3800680, LONGITUDE 99.6775489.

## RESULTS

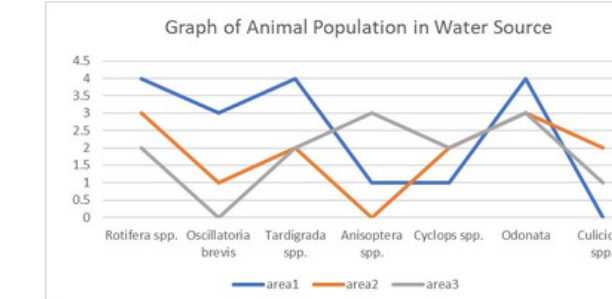
Results  
Physical Water Quality Analysis  
Table 2: Physical Factors of Water Quality in Nong Chum Saeng, Yan Ta Khao District, Trang Province.

Type	Area 1	Area 2	Area 3	Average (0 ± S.D.)
pH Level	6.40	7.40	7.00	6.93±0.50
Temperature (°C)	27.20	31.00	29.40	29.20±1.91
Depth (cm)	35.80	33.60	35.00	34.80±1.11
Dissolved Oxygen (DO)	6.70	6.50	6.90	6.70±0.20

ACCORDING TO THE PHYSICAL WATER QUALITY TABLE, THE FOLLOWING RESULTS WERE OBSERVED AT NONG CHUM SAENG: THE AVERAGE PH WAS 6.93 (STANDARD DEVIATION 0.50), INDICATING A SLIGHTLY ACIDIC ENVIRONMENT. THE AVERAGE TEMPERATURE WAS 29.20°C (STANDARD DEVIATION 1.91). THE AVERAGE DEPTH WAS 34.80 CM (STANDARD DEVIATION 1.11). THE AVERAGE DISSOLVED OXYGEN (DO) LEVEL WAS 6.70 (STANDARD DEVIATION 0.20).



FROM THE TABLE SHOWING THE NUMBER OF ALGAE FOUND IN THE WATER SOURCE, IT WAS FOUND THAT THERE ARE SPIROGYRA SPP. AND OSCILLATORIA SPP. THE HIGHEST NUMBER WAS FOUND IN AREA 1, WITH 5 CELLS, FOLLOWED BY AREA 2 WITH 4 CELLS, AND THE LOWEST NUMBER WAS FOUND IN AREA 3 WITH 3 CELLS. THE AVERAGE CELL COUNT IS 4.00 CELLS.



FROM THE TABLE SHOWING THE NUMBER OF ANIMALS FOUND IN THE WATER SOURCE, IT WAS FOUND THAT: THE HIGHEST NUMBER WAS FOUND IN AREA 1, WITH 17 CELLS, FOLLOWED BY AREA 2 AND AREA 3, BOTH WITH 13 CELLS. THE AVERAGE CELL COUNT IS 14.33 CELLS.

## DISCUSSION

A STUDY OF PLANKTON DIVERSITY IN THE WATER SOURCE, FOUND: 2 SPECIES OF PHYTOPLANKTON, INCLUDING SPIROGYRA SPP. AND OSCILLATORIA SPP. 8 SPECIES OF ZOOPLANKTON, INCLUDING ROTIFERA SPP., COPEPODA SPP., TARDIGRADA SPP., ANISOPTERA SPP., CYCLOPS SPP., ODONATA, CULICIDAE SPP., AND PARAMECIUM SPP.

## CONCLUSION

FROM THE STUDY OF WATER, THE AVERAGE DISSOLVED OXYGEN WAS FOUND TO BE 6.70 MG/L, WHICH IS CONSIDERED NORMAL ACCORDING TO THE SURFACE WATER QUALITY STANDARD TYPE 3. THE PH VALUE WAS 6.93, INDICATING THAT THE WATER IS SLIGHTLY ACIDIC. AT AN AVERAGE DEPTH OF 0.35 METERS, THE AVERAGE WATER TEMPERATURE WAS 29.20 °C, WHICH IS CONSIDERED HIGH ACCORDING TO THE SURFACE WATER QUALITY STANDARD TYPE 3. THIS HIGH TEMPERATURE AFFECTS THE DIVERSITY OF PLANKTON IN THE NONG CHUM SAENG PUBLIC PARK AREA. INFORMATION ABOUT CLOUDS, SOURCED FROM [HTTPS://NGTHAI.COM/SCIENCE/2949/TYPE-OF-CLOUDS/KNOWLEDGE-OF-PLANKTON-DATABASES](https://ngthai.com/science/2949/type-of-clouds/knowledge-of-plankton-databases)