



# A Study of Water Quality and Soil Quality in Relation to Benthic Faunal Diversity in the Khok Ok Mangrove Forest, Hatsamran District, Trang Province

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### Abstract

This study aimed to 1) investigate the effects of water quality on the density and diversity of benthic fauna, and 2) examine the effects of soil quality on the density and diversity of benthic fauna in the Khok Ok mangrove forest, Hatsamran District, Trang Province. Water quality and soil quality parameters were measured and analyzed. The results showed that both water quality and soil quality significantly influenced the density and diversity of benthic organisms in the mangrove forest area.

### Research Methods

Part 1: To study water quality affecting the density of benthic fauna in the Khok Ok mangrove forest, Hatsamran District, Trang Province

- 1.1 Measure the pH of water using a universal indicator paper. Measurements were taken three times.
- 1.2 Measure water temperature using a thermometer. Measurements were taken during the second and third trials, and the values were recorded.
- 1.3 Measure dissolved oxygen in water using a dissolved oxygen test kit. The test was conducted three times and the average value was calculated.
- 1.4 Measure water transparency using a transparency tube. The experiment was repeated three times.
- 1.5 Measure water salinity by collecting water samples and placing drops on a pen-type salinity meter. Salinity values were read and recorded, with three repeated measurements.

Part 2: To study soil quality affecting the density of benthic fauna in the Khok Ok mangrove forest, Hatsamran District, Trang Province

- 2.1 Determine soil sampling points within the Khok Ok mangrove forest area, Hatsamran District.
- 2.2 Study the physical characteristics of soil, including soil structure, soil texture, and soil color, by comparing with a soil color chart.
- 2.3 Measure soil temperature using a soil thermometer at a depth of 10 centimeters. Data were collected three times.
- 2.4 Measure soil moisture at all sampling points using a multipurpose meter at a depth of 5 centimeters. Data were collected three times.
- 2.5 Measure soil pH by comparing the soil color with standard reference values on the test kit.



### Research Question

#### Asking Questions

- 1) Does water quality affect the density of benthic fauna in the Khok Ok mangrove forest, Hatsamran District, Trang Province
- 2) Does soil quality affect the density of benthic fauna in the Khok Ok mangrove forest, Hatsamran District, Trang Province?

### Introduction

#### Content Knowledge

Trang Province is a coastal province where mangrove forests are an important natural resource. Khok Ok Community Enterprise is one of the local community enterprises that promotes mangrove ecotourism. This mangrove area has an interesting ecosystem due to its high diversity of benthic fauna. Therefore, the research team conducted a study on water quality and soil quality in relation to the diversity of benthic fauna in the Khok Ok mangrove forest, Hatsamran District, Trang Province.

### Results Analyzing Data



### Discussion Interpreting Data

The results of this study indicate that water quality and soil quality affect the density of benthic organisms in the Khok Ok mangrove forest, Hatsamran District, Trang Province. It was found that areas with mangrove vegetation exhibited higher water transparency, higher nitrate concentrations, and higher dissolved oxygen levels. In addition, these areas showed higher ambient light intensity. These findings demonstrate that water and soil quality play an important role in influencing the diversity of benthic fauna in mangrove ecosystems.

### Conclusions

The results of this study indicate that water quality and soil quality affect the density of benthic organisms in the Khok Ok mangrove forest, Hatsamran District, Trang Province. It was found that areas with mangrove vegetation exhibited higher water transparency, higher nitrate concentrations, and higher dissolved oxygen levels. In addition, these areas showed higher ambient light intensity. These findings demonstrate that water and soil quality play an important role in influencing the diversity of benthic fauna in mangrove ecosystems.

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