

# Comparative Study of Mosquito Larvae Species in the Vicinity of Varee Chiang Mai School, Mueang District, Chiang Mai



## Background and Rationale

Mosquitoes are vectors for serious diseases like dengue, malaria, and Zika, posing a significant public health challenge, especially in tropical and subtropical regions.

Mosquito-borne diseases strain public health systems and cause economic damage. Despite advancements in mosquito control, these diseases remain a persistent problem.

In Thailand, re-emerging infectious diseases (REID), including dengue and malaria are a priority for the Ministry of Public Health.

Climate change exacerbates the issue by accelerating mosquito development and increasing their range and feeding frequency.

Varee Chiangmai School has potential mosquito breeding grounds in its workshop area due to accumulated water, limited sunlight, and the presence of microorganisms that serve as food for larvae.

## Scope of Study

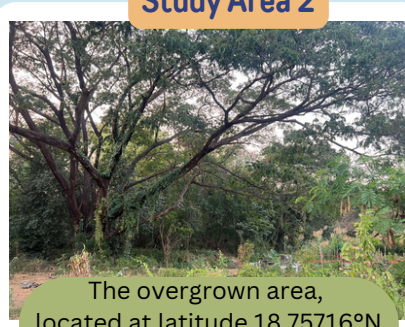
Varee Chiangmai School, 59 Moo 6, Mahidol Road, Nong Hoi Subdistrict, Mueang Chiang Mai District, Chiang Mai 50000

### Study Area 1



The workshop area, located at latitude 18.75663°N and longitude 99.01499°E.

### Study Area 2



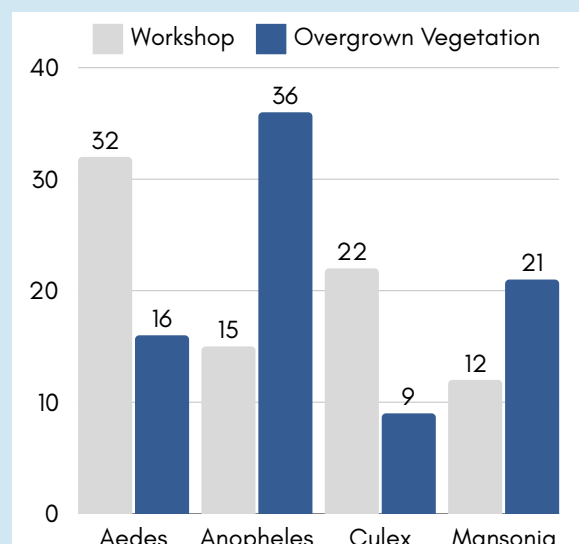
The overgrown area, located at latitude 18.75716°N and longitude 99.01350°E.

## Equipment and Materials

- |                       |                |                        |
|-----------------------|----------------|------------------------|
| 1. Beaker             | 2. Bucket      | 3. Dropper             |
| 4. Inoculation needle | 5. Petri dish  | 6. Spoon               |
| 7. Stereo microscope  | 8. Thermometer | 9. Universal indicator |

## Results

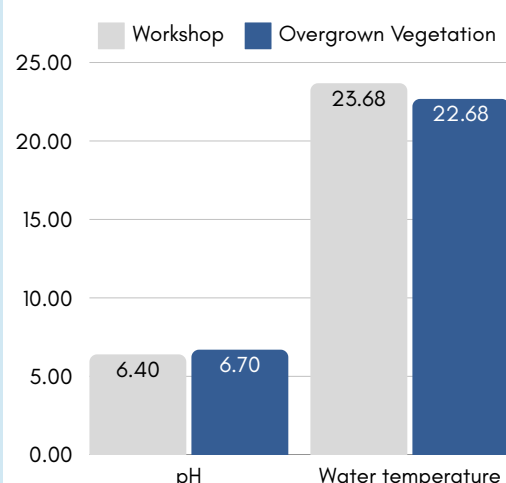
### Mosquito larvae species in the survey areas



The mosquito larvae survey revealed that a total of 81 mosquito larvae were found in the workshop area, comprising 32 Aedes larvae (39.5%), 15 Anopheles larvae (18.5%), 22 Culex larvae (27.2%), and 12 Mansonia larvae (14.8%) and in the overgrown vegetation, a total of 82 larvae were found, consisting of 16 Aedes larvae (19.5%), 36 Anopheles larvae (43.9%), 9 Culex larvae (11%), and 21 Mansonia larvae (25.6%).

The mosquito larvae survey revealed that the average pH value in the workshop area was 6.4, classified as slightly acidic.

The average pH value in the Overgrown Vegetation was 6.7, classified as neutral. Notably, the workshop area exhibited a higher acidity level than the Overgrown Vegetation and the average water temperature in the workshop area was 23.68 degrees Celsius, while the average water temperature in the Overgrown Vegetation was 22.68 degrees Celsius.



### The comparison of water pH and temperature in the survey areas

## Research

### Research Objective

- To study and compare the species of mosquito larvae at Varee Chiangmai School, Mueang District, Chiang Mai Province between The workshop area and The overgrown vegetation area.
- To disseminate the study's findings within the school and community.

### Research Questions

- How does water temperature affect mosquito larvae breeding?
- Does the study area affect the species of mosquito larvae found at Varee Chiangmai School?

### Research Hypotheses

- Mosquito larvae breeding will decrease as water temperature increases.
- The study area affects the growth of mosquito larvae.  
To be specific, if the water temperature increases, the number of mosquito larvae will decrease, depending on the study area.



## Research Methodology

This research project employed a survey methodology, involving a comparative study of mosquito larvae species.

The research process was conducted according to the following sections:

### Part 1: Collection of Mosquito Larvae

- Defining the Study Area for Mosquito Larvae :
  - 1.1 Prepare equipment for collecting mosquito larvae samples.
  - 1.2 Survey the environment within the school vicinity.
  - 1.3 Define study points: the workshop area and the overgrown vegetation area near the school.
  - 1.4 Mosquito larvae were collected and placed in prepared containers every Friday for five weeks, commencing on January 17, 2025, and concluding on February 14, 2025.

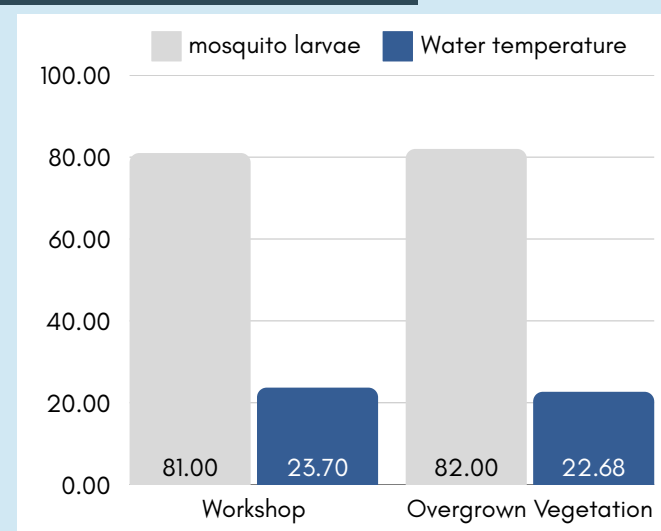
### 2. Studying Mosquito Larvae Species:

- 2.1 Prepare equipment for studying mosquito larvae characteristics: stereomicroscope, petri dish, beaker, inoculation needle and dropper.
- 2.2 Place mosquito larvae in the petri dish and add a small amount of water.
- 2.3 Place the petri dish onto the stage plate of the stereo microscope.
- 2.4 Study the characteristics of the mosquito larvae.
- 2.5 Record the results on GLOBE Mosquito Habitat Mapper

### Part 2: Studying Water pH and Temperature in the Survey Area

- Studying Water pH using a Universal Indicator:
  - 1.1 Prepare the universal indicator for studying water pH.
  - 1.2 Immerse the universal indicator in water at three different points.
  - 1.3 Compare the universal indicator with the pH scale and record the results
- Studying Water Temperature in the Survey Area:
  - 2.1 Prepare a thermometer and tie a string to it to avoid direct hand contact.
  - 2.2 Hold the string and immerse the thermometer in the water at three different points.
  - 2.3 Record the results.

## Discussion and Conclusions



The study revealed that the water temperature in the workshop area was 23.68 degrees Celsius, with a total of 81 mosquito larvae. The most prevalent species was Aedes aegypti larvae, accounting for 39.5% of the total. In the overgrown vegetation area, the water temperature was 22.68 degrees Celsius, with a total of 82 larvae. The most prevalent species in this area was Anopheles larvae, comprising 43.9% of the total. These findings indicate that the water temperature in the overgrown vegetation area was lower than in the workshop area, resulting in different dominant mosquito larvae species. This suggests that environmental conditions influence the breeding of different mosquito larvae species, supporting the research hypothesis that higher water temperatures correlate with a decrease in mosquito larvae populations, depending on the study area.