MOSQUITO KEY BREEDING SITES AT THE PA SAK JOLASID DAM IN SARABURI PROVINCE, THAILAND

Students (Grade 11)

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“ Chonprathanwittaya School ”

INTRODUCTION

Mosquitoes are vectors of diseases

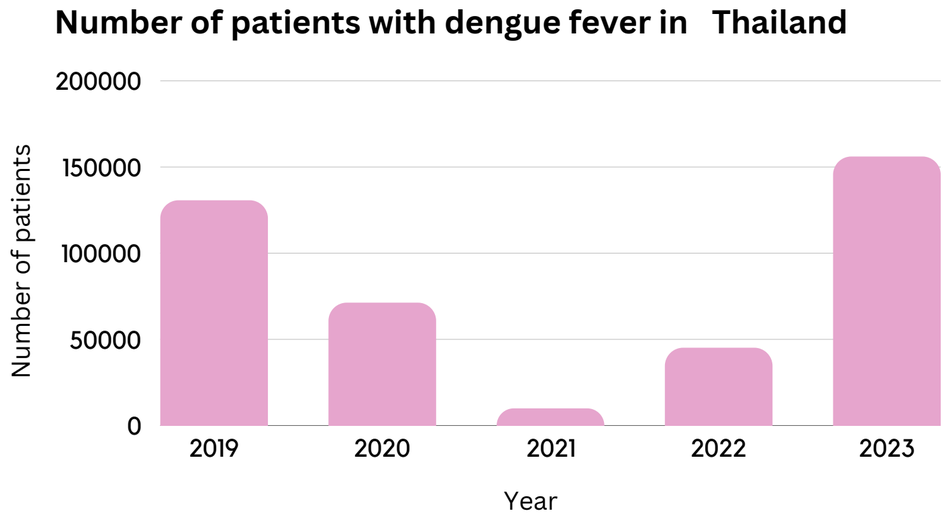
Dengue fever
Aedes
mosquitoes

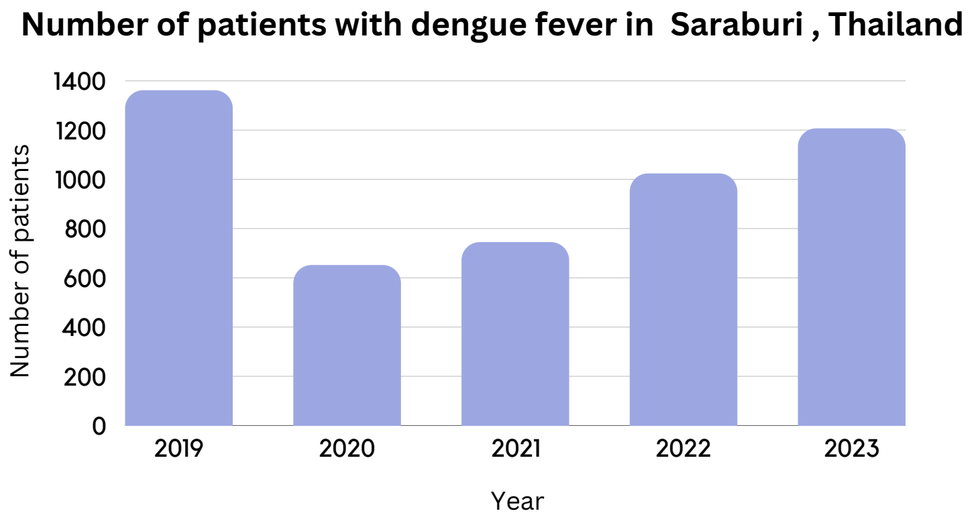
Zika fever
Aedes
mosquitoes.

Lymphatic
filariasis
Tiger
mosquitoes

Malaria
Anopheles
mosquitoes

INTRODUCTION

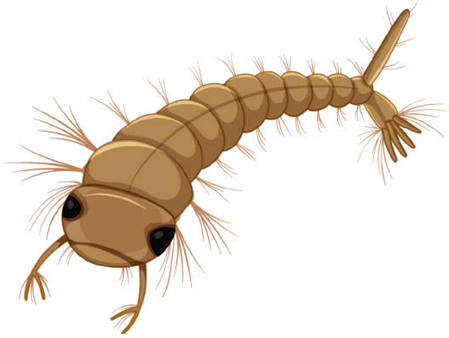




- According to statistics on dengue fever cases in 2023, the number of cases in Thailand has increased compared to previous years, with a total of 156,097 cases nationwide.

- Saraburi Province reported 1,207 cases of dengue fever in 2023, reflecting the continued spread of the disease in various parts of the country.

OBJECTIVES

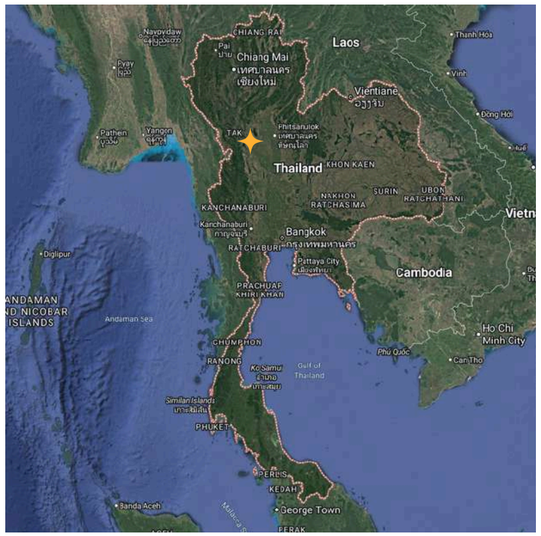


1. To study the number and types of mosquito larvae found in 2 study areas

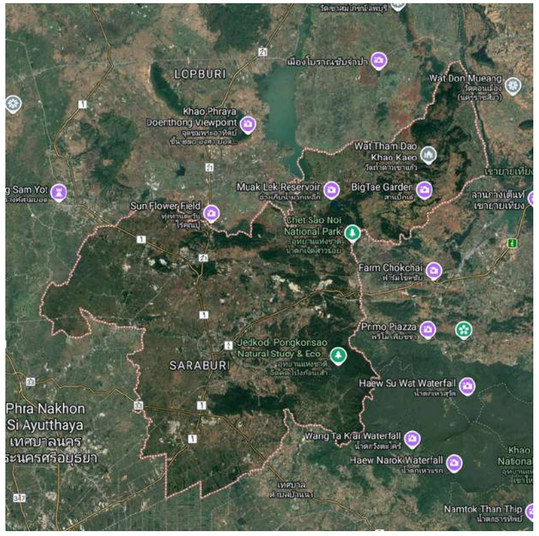
2. To compare data from the GLOBE database with the study sites

MATERIALS AND METHODS

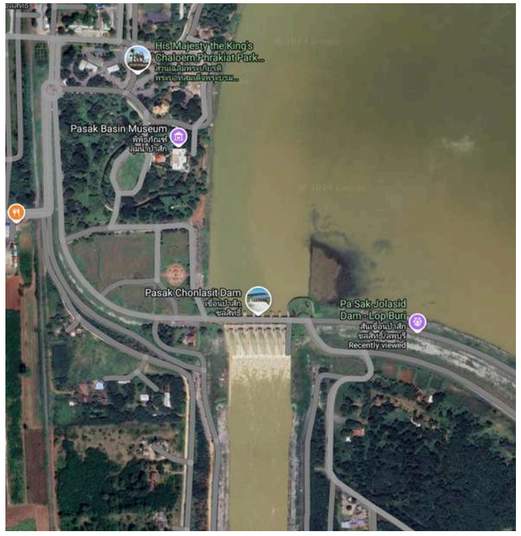
Study site



Thailand country



Saraburi Province



Pa Sak Jolasid Dam

Survey of mosquito larvae was conducted at Pa Sak Jolasid Dam Saraburi Province, the Central region of Thailand.

Methods

1. Prepare all equipment for catching mosquito larvae.

- Plastic bag.
- Fish net
- 70% alcohol
- plastic spoons
- clip on lens 60x
- rubber band and pen




2. Explore houses around Pa Sak Jolasit Dam and collect larval samples for classification.

Inspect every container → Measure the amount of water found in the container.  → for scooping and put the scooped organism in a plastic bag. → Classification

Methods

3. GLOBE Observer: mosquito habitat mapper app

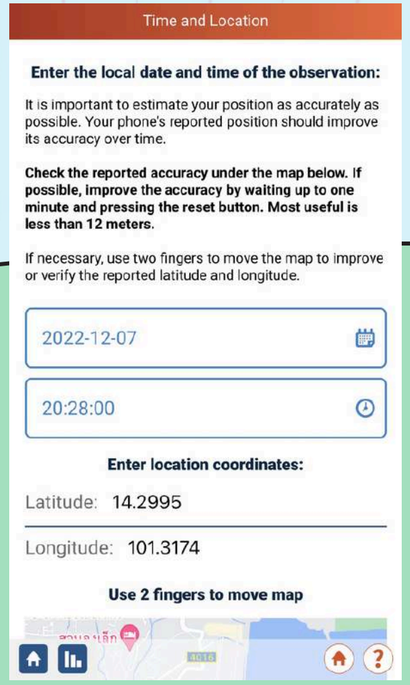
1

1. Choose mosquito item

2

2. Select the New Mosquito of observation habitat.

3



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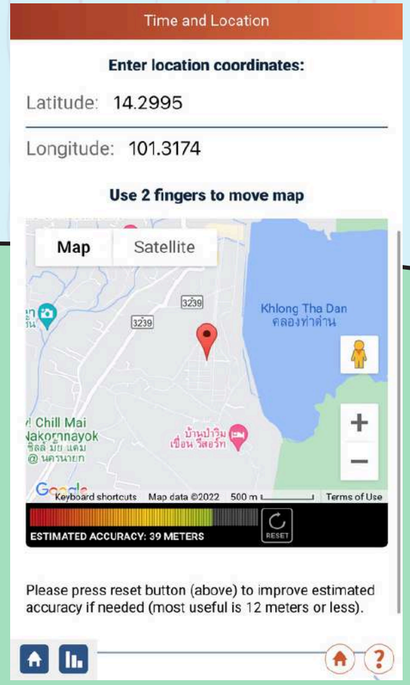
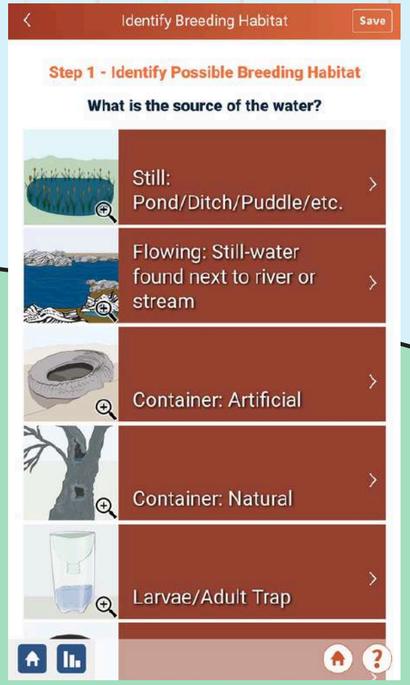


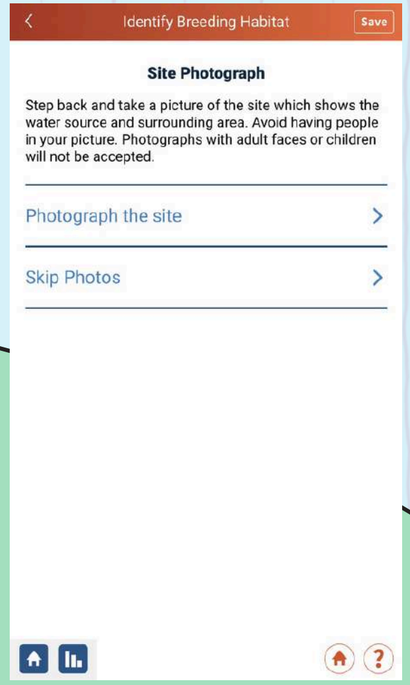
3,4 Observe the date and time and the latitude and longitude coordinates of the place where the mosquitoes were found.

5



5. Choose a container or source where mosquitoes are found.

6

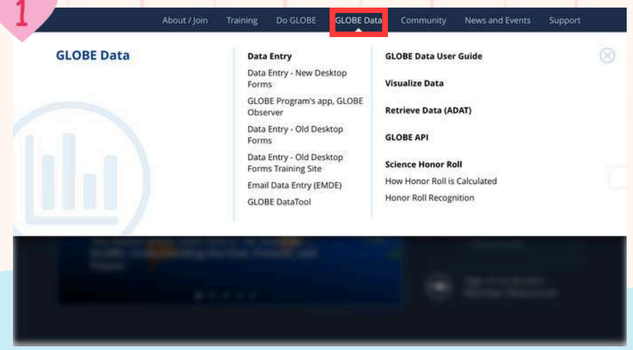


6.Take a photo of the mosquito larvae found in the container.

Methods

4. GLOBE Observer: mosquito habitat mapper : www.globe.gov

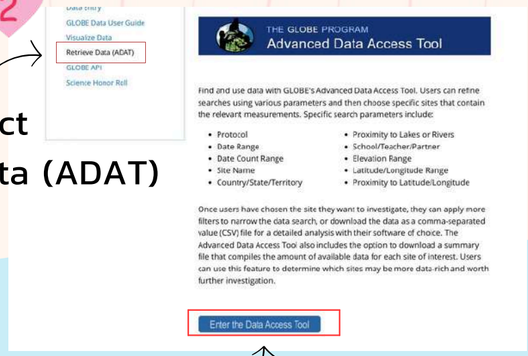
1



Choose globe data

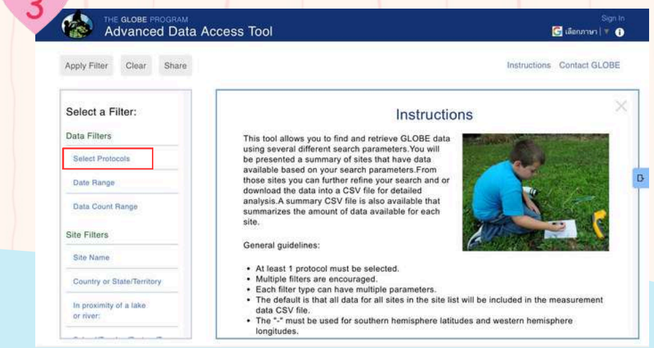
2

Select retrieve Data (ADAT)



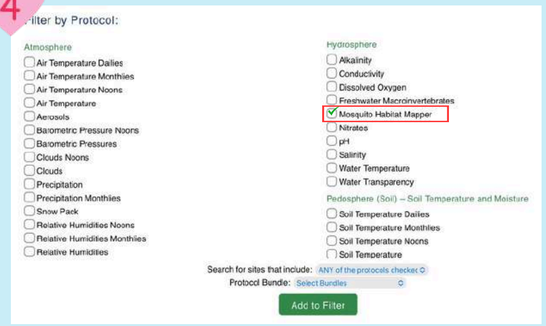
Click enter the Data Access Tool

3



select protocols

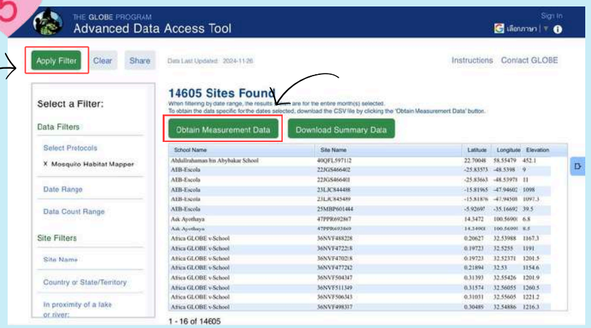
4



Choose Mosquito Habitat Mapper and click Add to filter.

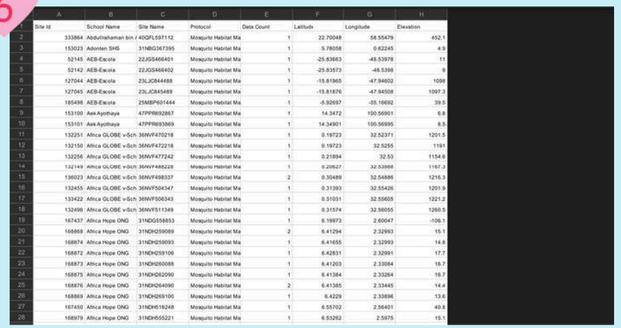
5

Select Apply Filter



Select Download Summary Data and Load files to drive

6



Data Mosquito Habitat Mapper

Methods

Container type

Man made

Man made

Natural

Natural

Methods

Metal/Plastic/Earthen

Metal

Plastic

Earthen

Other container

Methods

Mosquito species

Aedes aegypti

Aedes albopitus

Culex spp.

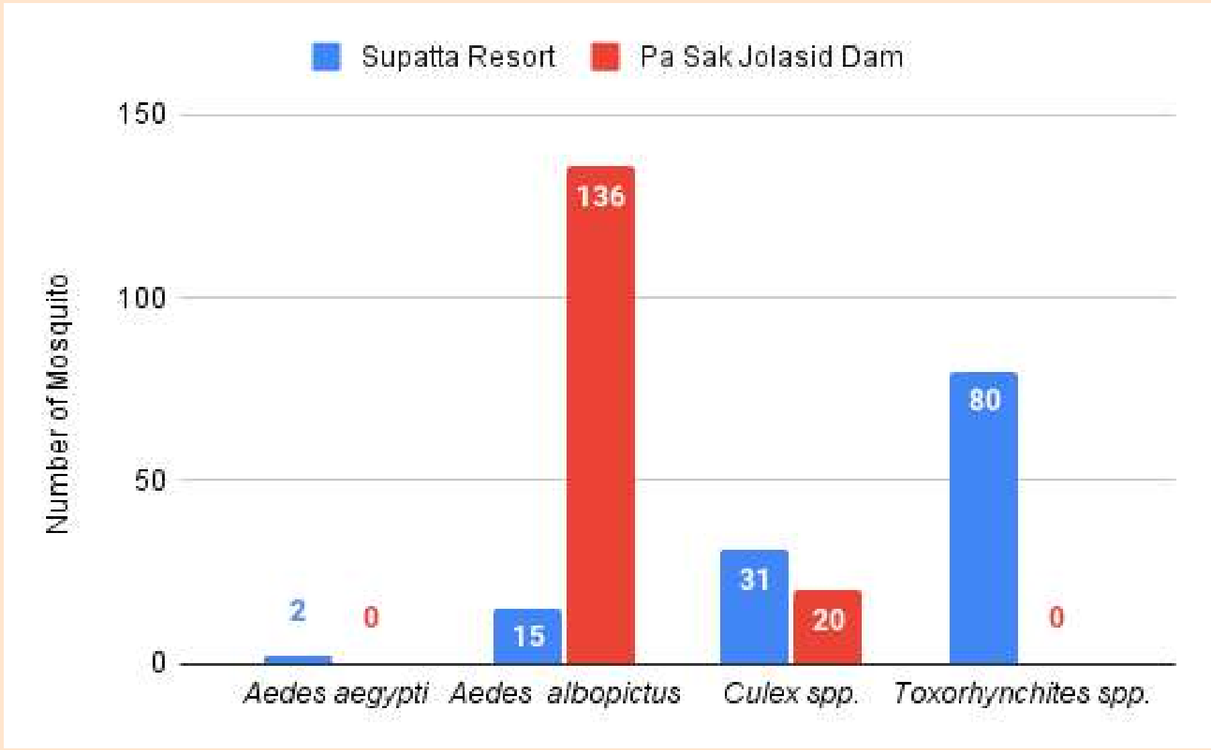
Toxorhynchites spp.

Results & Discussion

Ae. aegypti, Ae. albopictus, Culex spp.Armigeres spp. and Toxorhynchites spp.

- Most of the larval species in Pa Sak Joalasid Dam is *Aedes albopictus*. Because they feed on the blood at the mammals near the dam which makes them breed fast

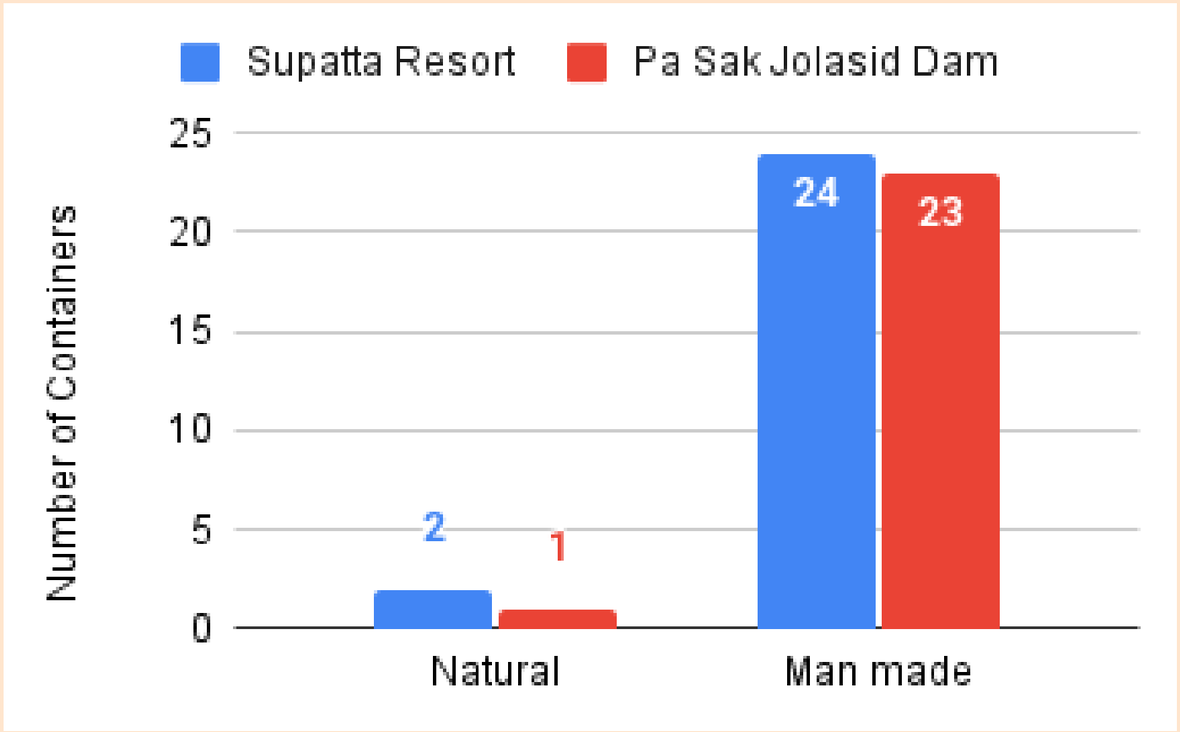
- Most of the larval species in Supatta Resort is *Toxorhynchites* because this species of larvae's prey on other larvae's to survive



$X^2_4 = 14.000$ $P < 0.01$

Results & Discussion

Natural /Man made Containers



$X^2_4 = 14.000\ P < 0.01$

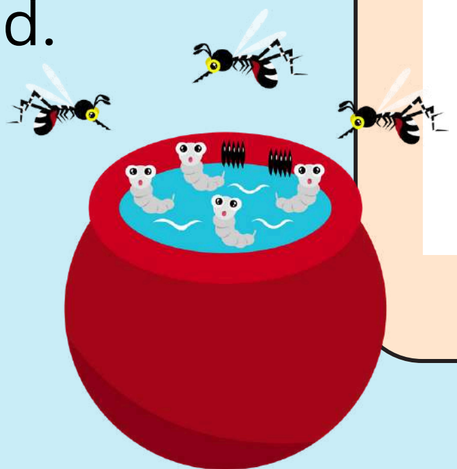
- Most of the containers found were man made containers

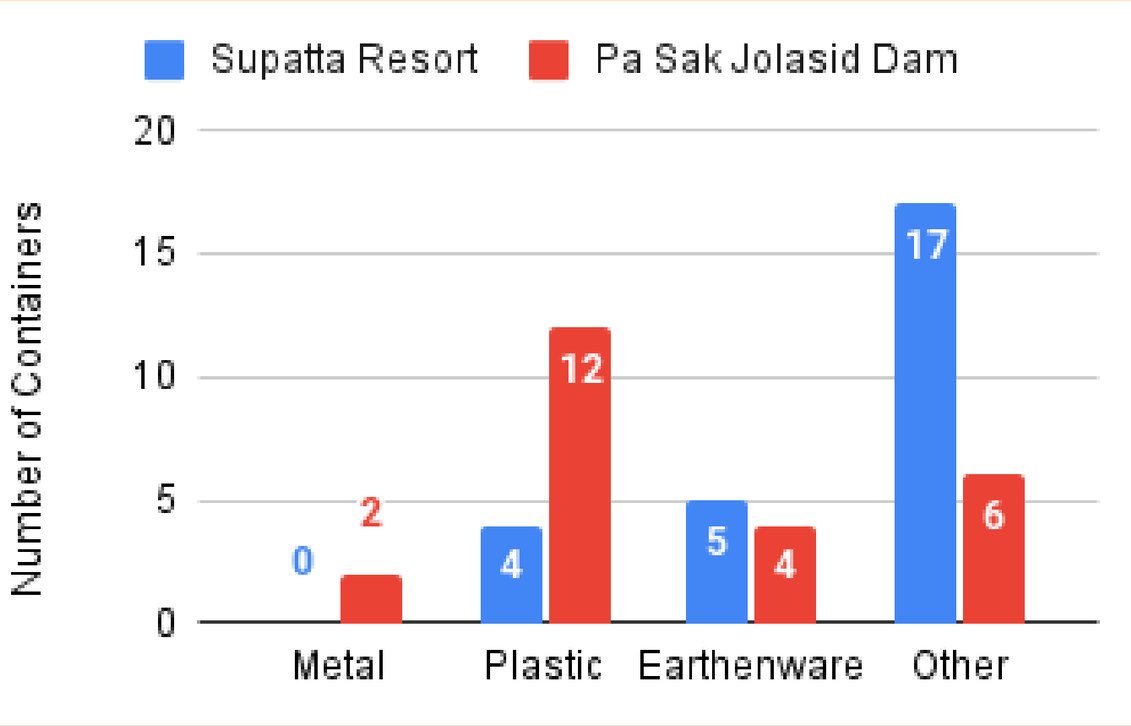
Results & Discussion

Metal/ Plastic /Earthen /Other Containers

- Most Other containers were found at the Supatta Resort.

- Most Plastic containers were found at the Pa sak Jolasid.

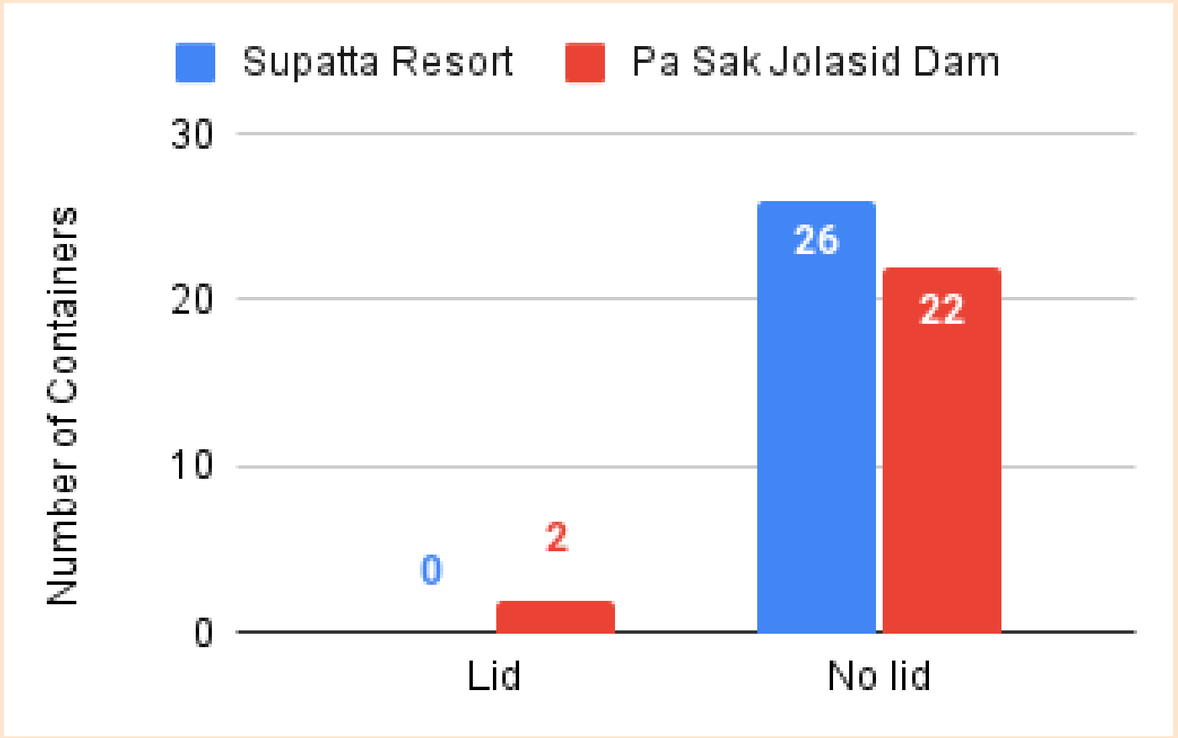




$X^2_4 = 14.000$ $P < 0.01$

Results & Discussion

Lid / without Lid Containers



$X^2_4 = 14.000\ P < 0.01$

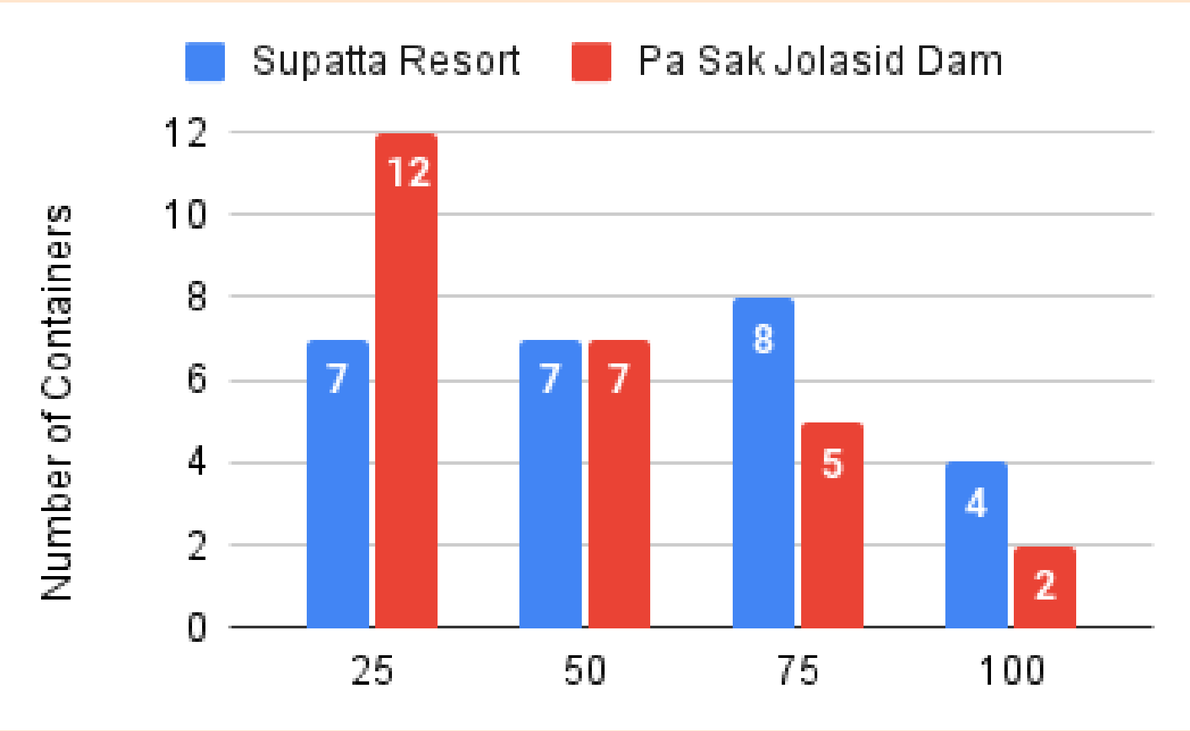
- Found that there were more containers without lids than those with lids.
- Found that the most containers at the Supatta Resort

Results & Discussion

Water Levels (0%, 25%, 50%, 75%, 100%)

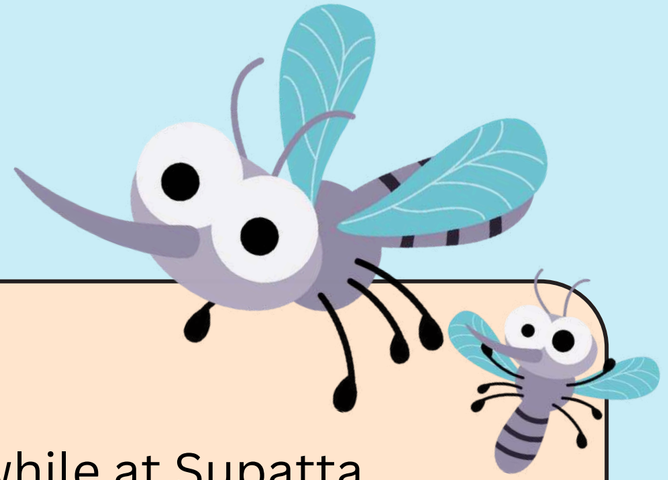
- Most containers with a water content of 25% are found in Pa Sak Jolasid.

- It was found that in the Pa Sak Jolasid the container with the least water was the one with 100% water.

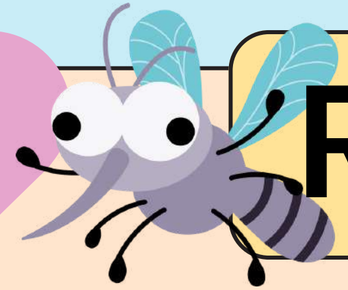


$X^2_{16} = 28.000\ P < 0.05$

Conclusion



1. At Pa Sak Jolasid Dam, Aedes albopictus was found the most, while at Supatta Resort, Toxorhynchites was found the most.
2. At Pa Sak Jolasid Dam and Supatta Resort, the most common containers found were man-made.
3. At Pa Sak Jolasid Dam, the most common material found was plastic, while at Supatta Resort, the most common containers were other types, such as used tires.
4. At Pa Sak Jolasid Dam, most containers no lids were found, while at Supatta Resort, only containers no lids were found.
5. At Pa Sak Jolasid Dam, the highest proportion of water found was 25%, while at Supatta Resort, the highest proportion of water found was 70%.



References

Adebote DA, Oniye SJ, Muhammed YA (2008) Studies on mosquitoes breeding in rock pools on inselbergs around Zaria, northern Nigeria. J Vector Borne Dis 45:21–28

Anderson MT, Kiesecker JM, Chivers DP, Blaustein AR (2001) The direct and indirect effects of temperature on a predator–prey relationship. Can J Zool 79:1834–1841, doi: 10.1139/cjz-79-10-1834

Knight RL, Walton WE, O'Meara GF, Reisen WK, Wass R (2003) Strategies for effective mosquito control in constructed treatment wetlands. Ecol Eng 21:211–232

McPeek MA, Miller TE (1996) Evolutionary biology and community ecology. Ecol 77:1319–1320

Mogi M (2007) Insects and other invertebrate predators. J Am Mos Cont Asso 23 (suppl 3):93–109

Munga S, Vulule J, Kweka EJ (2013) Response of Anopheles gambiae s.l. (Diptera: Culicidae) to larval habitat age in western Kenya highlands. Parasites & Vectors 6:13

Quiroz-Martinez H, Rodriguez-Castro A (2007) Aquatic insects as predators of mosquito larvae. JAm Mosq Control Assoc
23(2):110–117

Schlagenhauf-lawlor P, Scott J (2001) Traveller's Malaria. PMPH Publsher's, USA, p 155009157

Shaalan EA, Canyon DV, Reinhold M, Yones WFM, Abdel-Wahab H, Mansour A (2007) A mosquito predator survey in
Townsville, Australia and an assessment of Diplonychus sp. and Anisops sp. predatorial capacity against Culex annulirostris mosquito immatures. J Vector Ecol 32(1):16–21

Acknowledgements

We thank Assoc. Prof. Dr. Krisanadej Jaroensutasinee, Assoc. and Prof. Dr. Mullica Jaroensutasinee staffs of Walailak University for helping with experimental design, fieldwork, data analysis, and manuscript preparation. Chonprathanwittaya School, the Center of Excellence for Ecoinformatics, and Walailak University partly supported this work.

THANK YOU!