EFFECTIVENESS OF OVITRAP FOR MONITORING POPULA TION OF *AEDES* SPP. IN BAITUSSALAM DISTRICT ACEH BESAR

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ABSTRACT

Ovitrap is a tool used to trap *Aedes* mosquito eggs. The ovitrap used must be able to compete with natural containers that previously served as breeding grounds for *Aedes*. This research aims to determine the characteristics of ovitraps effective in trapped *Aedes* eggs. This research method is descriptive observational using 50 ovitraps. The selection of the house wh3ere the ovitrap was placed used the purposive sampling method. Data analysis uses descriptive statistics. The results show that the effective ovitrap used to trap *Aedes* eggs is plastic, black in color, sourced water from a well, PDAM and rain, and placed in a shady and dark place. The *Aedes* egg species found was *Aedes albopictus*. An ovitrap that is effective and able to compete with other containers in the environment must pay attention to the characteristics of the base material of the container, color, placement position, and water source in the ovitrap. Abstracts are written briefly and describe the entire contents of the research results, starting from the introduction, research methods, and results/conclusions. Abstracts must be written in a maximum of 250 words (including conjunctions and prepositions)

Keywords**:** *Aedes* spp**.,** effectiveness, monitoring, ovitrap, population.

ABSTRAK

Ovitrap adalah alat yang digunakan untuk memerangkap telur nyamuk *Aedes. Ovitrap* yang digunakan harus mampu bersaing dengan wadah-wadah alami yang menjadi tempat berkembangbiak *Aedes* sebelumnya. Penelitian ini bertujuan untuk mengetahui karakteristik *ovitrap* yang efektif untuk memerangkap telur. Metode penelitian ini adalah deskriptif observasional dengan menggunakan 50 ovitrap. Pemilihan rumah tempat peletakkan ovitrap menggunakan metode *purposive sampling*. Analisis data menggunakan statistik deskriptif. Hasil penelitian menunjukkan bahwa *ovitrap* yang efektif digunakan untuk memerangkap telur *Aedes* adalah bahan dasar plastik, berwarna hitam, sumber air sumur, PDAM dan hujan, peletakkan ditempat yang teduh dan gelap. Spesies telur *Aedes* yang ditemukan adalah *Aedes albopictus*. *Ovitrap* yang efektif dan mampu bersaing dengan wadah lainnya di lingkungan harus memperhatikan karakteristik bahan dasar wadah, warna, posisi peletakkan dan sumber air dalam *ovitrap*.

Kata kunci**:** *Aedes* spp., efektivitas, *ovitrap*, pemantauan, populasi.

A. INTRODUCTION

Indonesia is one of the tropical countries in the world. Daily life in Indonesia generally involves the use of containers for storing water, both inside and outside the home. These containers can pose a problem as they may become breeding sites for mosquitoes (WHO, 2005). Mosquitoes are one of the vectors for diseases in the community, and one of the diseases transmitted by mosquitoes is Dengue Hemorrhagic Fever (DHF).

Dengue Hemorrhagic Fever (DHF) has become one of the endemic diseases in tropical and some subtropical regions. The disease, transmitted by Aedes spp., has garnered special attention from both the public and the government due to its rapid transmission within a community. Cases of DHF in endemic areas are consistently reported every year (Syamsir, 2018).

The Ministry of Health of the Republic of Indonesia recorded a significant increase in DHF cases from the previous year, with 28,579 cases reported from January to April 2023, and this number skyrocketing to 88,593 cases during the same period in 2024. One province that consistently reports DHF cases is Aceh. The Aceh Provincial Health Office noted that there were no recorded DHF cases throughout 2023-2024 in Aceh Besar Regency. However, in 2022, Aceh Besar reported 157 cases of DHF, a significant increase from just 37 cases in 2021. Therefore, various efforts are needed to control the increasing number of DHF cases each year, and effective control methods must be identified.

Several methods are used to detect the presence of Aedes spp. populations, including larval surveys, pupal surveys, and egg surveys. Egg surveys have proven effective in detecting Aedes spp. using ovitraps as mosquito egg traps (Mochammad Choirul, 2021). The use of ovitraps is considered effective for monitoring Aedes spp. populations because they are easy to create and can be made using readily available materials. To date, there has been no use of ovitraps by officials or the public as an alternative means to reduce mosquito density.

Based on this background, this research was conducted to analyze the utilization of ovitraps for monitoring in one of the sub-districts of Aceh Besar, namely Baitussalam. The aim of this study is to determine the characteristics of effective ovitraps for capturing Aedes eggs in efforts to monitor the population of Aedes spp. in Baitussalam, Aceh Besar Regency.

B. RESEARCH METHOD

1. Research Method

This study employed a descriptive observational method, which involves describing a situation or issue based on observations made in the field. The research was conducted in the Baitussalam sub-district of Aceh Besar Regency, focusing on five villages: Blangkrueng, Baet, Cadek, Kajhu, and Lam Ujong. The purposive sampling technique was used, where ovitraps were placed only in houses whose owners agreed to participate in the study. The ovitraps utilized in this research were made from plastic and cans, aiming to test which materials would be more effective in capturing Aedes eggs.

2. Location of the study

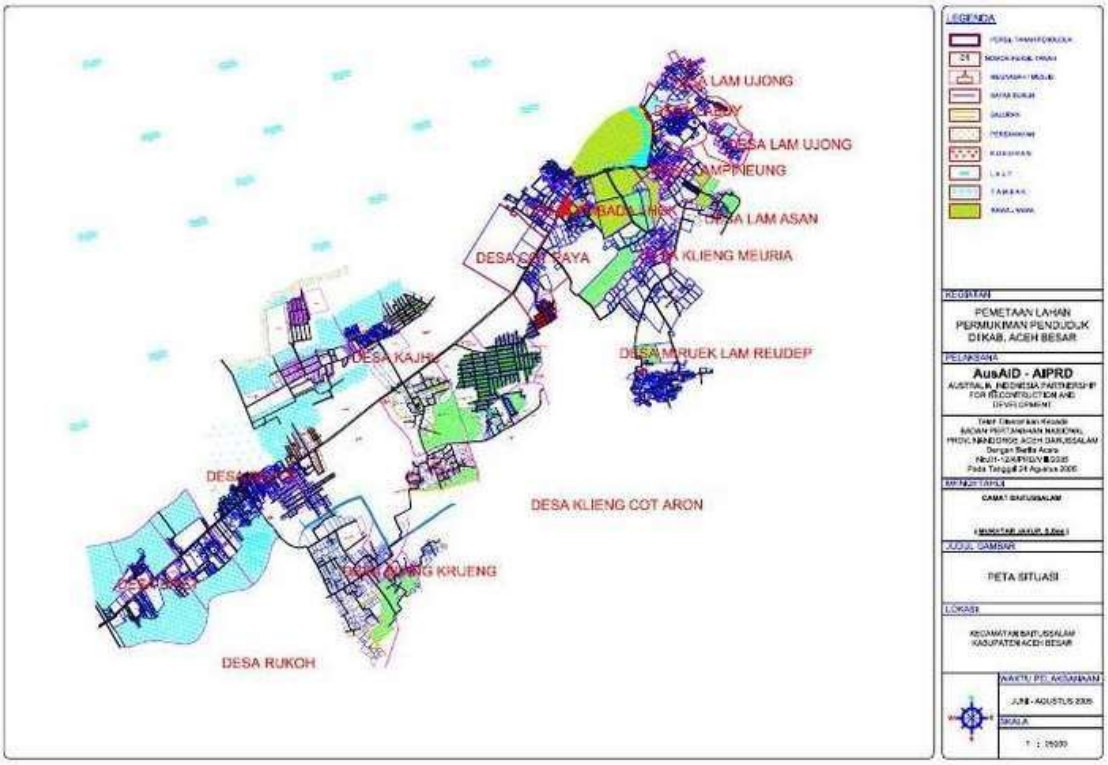


Image 1. Location of ovitrap placement in Baitussalam District, Aceh Besar.

The ovitraps that have been created are placed in the yards of residents' homes. Each house is allocated only 1 ovitrap, resulting in a total of 50 ovitraps across 50 homes, which are the subjects of the study in the five villages. Inspections and sample collections are conducted three days after placement.

3. Ovitrap Production

Ovitraps are made using two main materials: plastic and cans. Here are the steps in the production of ovitraps:

1. Prepare plastic containers and cans.
2. Cut the plastic container into two halves.

3. Clean the plastic containers and cans.
4. Fill each plastic container and can with water, about halfway full.
5. Attach filter paper slightly above the water surface, lining the inside of the plastic container and can.
6. Wrap the ovitrap container with black paper.

4. Identification of Aedes Eggs

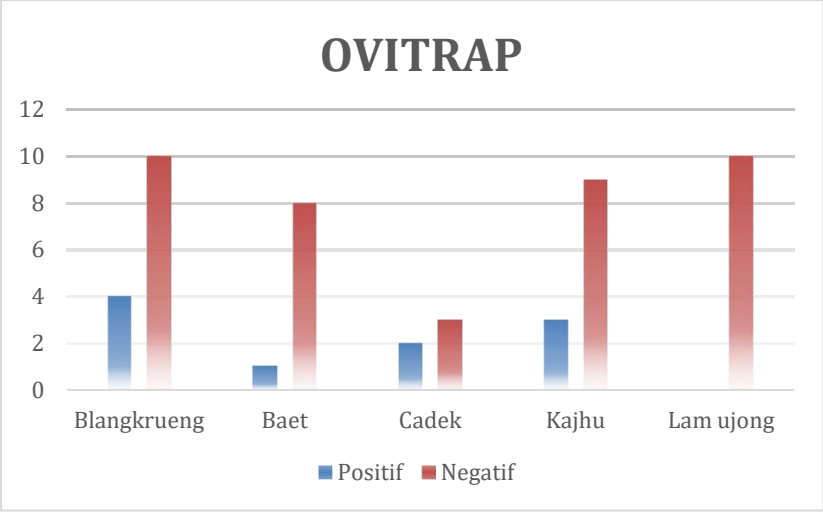
The identification of Aedes eggs trapped on filter paper in the ovitrap is conducted in the Biology Education laboratory at the Tarbiyah and Teacher Training Faculty of UIN Ar-Raniry, Banda Aceh. The filter paper taken from the ovitrap is examined using a stereo microscope to check for the presence of Aedes eggs. Filter paper that tests positive for Aedes eggs is then submerged in a container of water for hatching over several days.

Once the Aedes eggs hatch into larvae, the Aedes larvae are collected for a second identification to determine the species of Aedes trapped, using a microscope at a magnification of 10x10 to observe the shape of the Aedes comb. All results from the first identification of eggs on the filter paper through to the identification of Aedes larvae comb are recorded.

C. RESULTS AND DISCUSSION

Based on the identification results, it was found that the trapped Aedes eggs belong to the species Aedes albopictus, as determined by the shape of the comb. The comb in Aedes larvae is located on the 8th segment of the larval abdomen. In Aedes albopictus, the comb has a serrated, pointed shape without branches. In the adult phase, Aedes albopictus is characterized by distinct morphological features, including white stripes on the scutum of the dorsal side. Aedes albopictus can thrive at temperatures ranging from 28-32°C with humidity levels reaching 75%.

1. Number of Positive Ovitraps At the Research Location



Graph 1. Number of Positive Ovitraps

The results of the ovitrap placement study conducted in Baitussalam District, Aceh Besar, included 5 villages: Blangkrueng, Baet, Cadek, Kajhu, and Lam Ujong. In the village of Blangkrueng, 14 ovitraps were placed in 14 houses, resulting in 4 positive ovitraps containing Aedes eggs. In Baet village, 9 ovitraps were placed in 9 houses, with only 1 ovitrap testing positive. In Cadek village, 2 out of 5 ovitraps were positive for Aedes eggs. In Kajhu village, there were only 3 positive ovitraps out of 12 placed in 12 different houses. No positive results were found in Lam Ujong village, where none of the 10 ovitraps placed contained Aedes eggs, indicating a negative result. Overall, there were 10 ovitraps that tested positive for Aedes eggs.

2. Penelitian Materials Of Positive Ovitraps in The Research Location

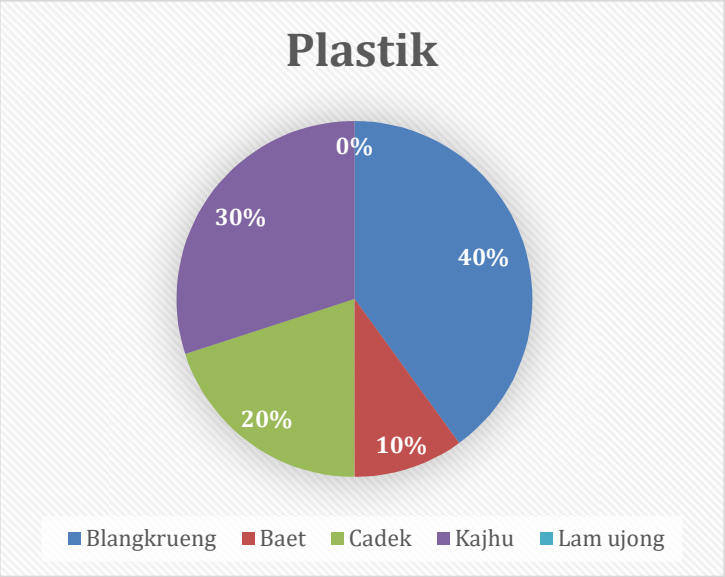


Figure 2. Materials of Positive Ovitraps

The research results indicate that all 10 ovitraps found positive for Aedes eggs were made of plastic, and none of the ovitraps made of metal were positive. This suggests that plastic ovitraps are considered more effective than those made of metal, based on the observation of whether or not Aedes eggs were found in both types of materials. All positive ovitraps containing Aedes eggs were made of plastic, with none found in the metal ovitraps.

The selection of egg-laying sites by female Aedes is influenced by several factors, including water cleanliness and temperature. Ovitraps placed outdoors and exposed to direct sunlight can become very hot, as metal is a good conductor of heat. The immersion of water in metal ovitraps can lead to corrosion, causing the water to become murky and dirty. These factors may explain why no positive results were found in the metal ovitraps.

3. Water Sources of Positive Ovitraps

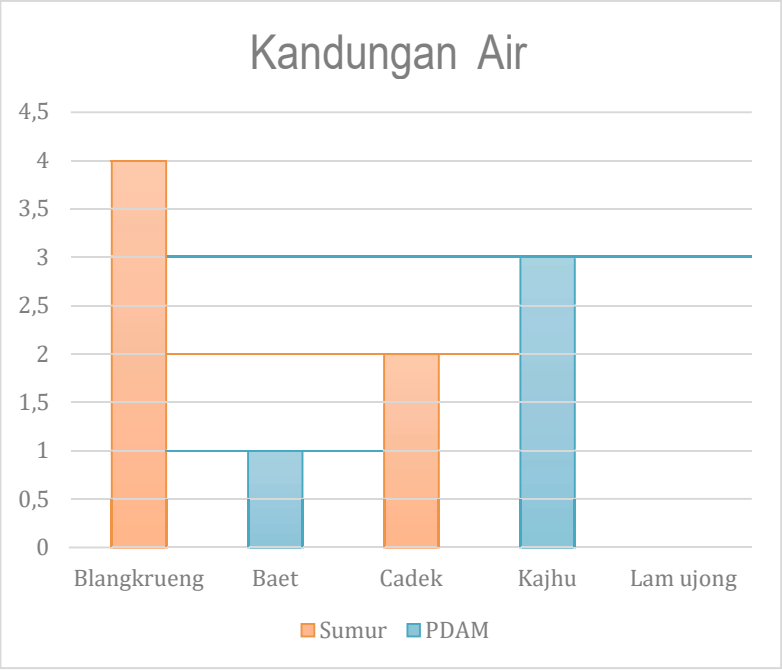


Figure 3. Water Content in Positive Ovitraps

From the graph above, it can be seen that the water sources in ovitraps from both well water and PDAM (regional water supply) are equally effective in attracting Aedes mosquitoes to use these ovitraps as egg-laying sites. The water source itself does not significantly affect Aedes in choosing where to lay their eggs. Female Aedes will lay their eggs in ovitraps containing clean water, as they prefer clean water

D. .CONCLUSION

The use of ovitraps as a simple tool for monitoring and controlling the spread of Aedes spp. populations, which are vectors for dengue fever (DBD), is highlighted. Plastic ovitraps are considered effective and can compete with other containers found around the research location in attracting and trapping Aedes eggs. The species of Aedes found trapped in the ovitrap is Aedes albopictus. Water cleanliness and temperature are factors contributing to the absence of positive results in metal ovitraps containing Aedes eggs.

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