Survey of mosquitoes prevalence and abundance in dumpsite within Port Harcourt metropolis, Rivers State Nigeria

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Abstract: **This study places emphases on preferred breeding grounds for mosquitoes in Port Harcourt metropolis . Refuse dump site is known to be a preferred breeding ground for various species of mosquitoes. Dump sites harbors containers, empty cans, tires, etc which contains water that enhances mosquito breeding. Stagnant water and drainages promotes mosquito breeding. Ten dump sites in towns within Port Harcourt metropolis were selected for the study. They includes Mile 1, water line, Mile 3, Rumeueme, Rumuokuta, Rumuokoro, Adageorge, Wimpey, D/Line and Agip . Mile 1 market has the highest mosquito prevalence rate followed by Rumumukuta and water lines. Aedes aegypti recorded the highest prevalence frequency, seconded by Aedes albopictus and culex trigripes. Block drainages is the highest most preferred microhabitat followed by tires and ground pools, living parts of plants has the list population of mosquitoes. Samples were assessed, monitored on bimonthly bases.**

Keywords: **Abundance, Mosquitoes, Prevalence, Dumps Sites, Port Harcourt Metropolis.**

I. INTRODUCTION

Mosquitoes are known as one of the deadliest insect globally. Their ability to carry and spread disease to humans is responsible for millions of mortality of adults and children every year. In 2015 malaria alone caused over 500, 000 deaths as reported by WHO. The global incidence of dengue fever has risen in many folds in the past 25 years, and more nations are reporting their first outbreaks of the disease. Zika virus diseases,, dengue fever, chikungunya, and yellow fever are all transmitted to humans by the *Aedes aegypti* mosquito. More than half of the world's populations live in areas where this mosquito species is present. Sustained mosquito control efforts are important to prevent outbreaks from these diseases. There are several different types of mosquitoes and some have the ability to carry many different diseases. Weidong (2005)

II. MATERIALS AND METHODS

Study Area

This study was carried out in Port Harcourt metropolis, from Jan to June, 2020.

Sample Techniques

Study was conducted in 10 selected dump sites within Port Harcourt and her satellite Towns, They includes Mile 1, water lines, Mile 3, Rumeueme, Rumuokuta, Rumuokoro, Adageorge, Wimpey, D/Line and Agip . The dump sites in the study area comprises of plastics, organic wastes , cans, tins and industrial and medical wastes.

Sampling of Mosquito Adult and Larvae

Biweekly investigations were conducted to ascertain the presence of stagnant water dwellings place. The mosquito larvae were sampled from their breeding place in the dump sites between 6 and 8 am, twice weekly. They were collected using a standard mosquito dipper (Clark USA) . The mosquito larval habitats were grouped into 3 groups: A 10m, B. 10-50m and C. greater than 50m.The range of 5, 20 and 50 dips were taken from these habitats respectively. Larvae were preserved in plastic jugs and taken to the laboratory for rearing according to Service, M.W. (1993). The larva were kept at room temperature and fed with glucose solution. Adults that emerged were harvested by anesthetizing using pyrethrum base aerosol

Identification of Mosquito

They were identify using methods adopted by Chidinma et'al, (2017) The mosquitoes collected were examined one after the other using a binocular stereomicroscope with x 40 objective and x10 eye piece. They were identified using there morphological features such as size, color, size of antenna, size of maxillary palps, color of the maxillary palps, size of proboscis, shape of abdomen, color of abdomen, color of wings and legs.

Data Analysis

Data obtained in this study were analyzed using simple percentage and the SPSS

III. RESULTS

A total of 3000 mosquitoes were surveyed from the study sites. The highest number of collections is 460 (14.7%) was made in the month of Feb, while JUN has (11.5%) while the least abundance was 143 (4.5.2%). Mile 1 recorded the

highest number of mosquitoes 460 (14.7%) A close range was Rumukuta with a total of 299 (9.1%) mosquitoes. The least collection 150(4.5%) was recorded in Rumueme. The species of mosquitoes abundant in the study area includes *Anopheles* species and *Culex* . These species were mostly collected in ground pools and blocked drainage. Other species identified in the study area includes *Aedes* species, *Culex tigripis*, *Anopheles gambiae*, *Culex quinquefasciatus. Aedes albopictus*, *Culex vittatus Aedes aegypti*, *Eretampodites species* and *Toxorhynchites* .
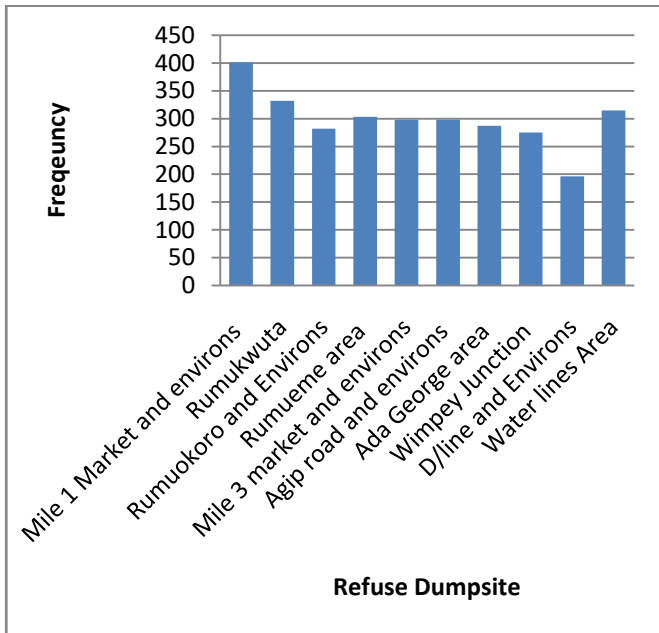

Fig 1: Abundance of different species of mosquitoes in refuse dump sites in Port Harcourt
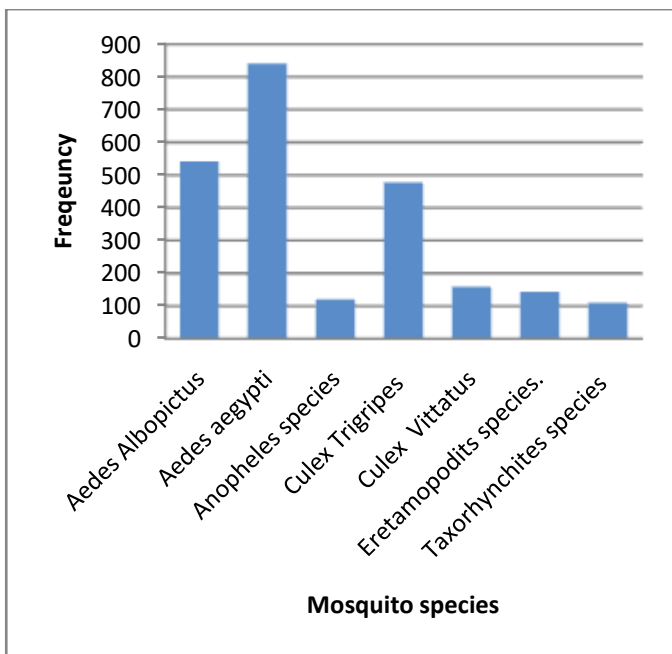

Fig 2: Preference of micro-habitats by mosquitoes species in Refuse dump sites
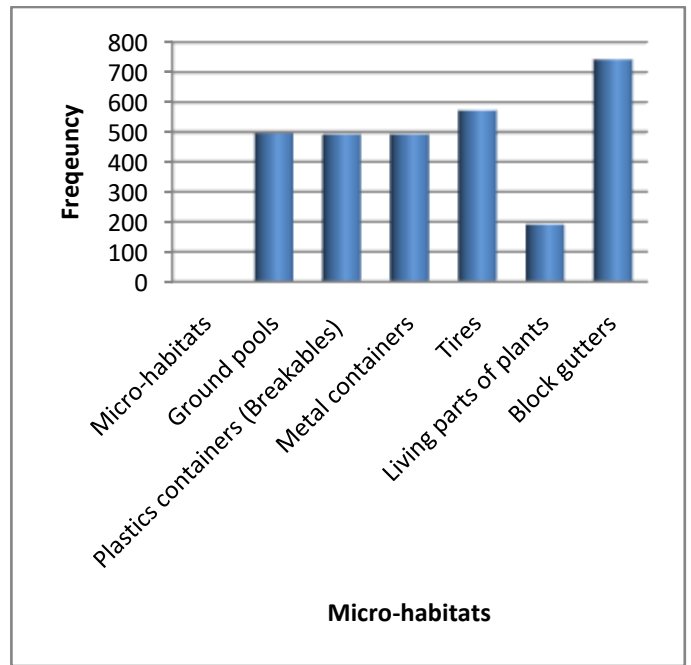

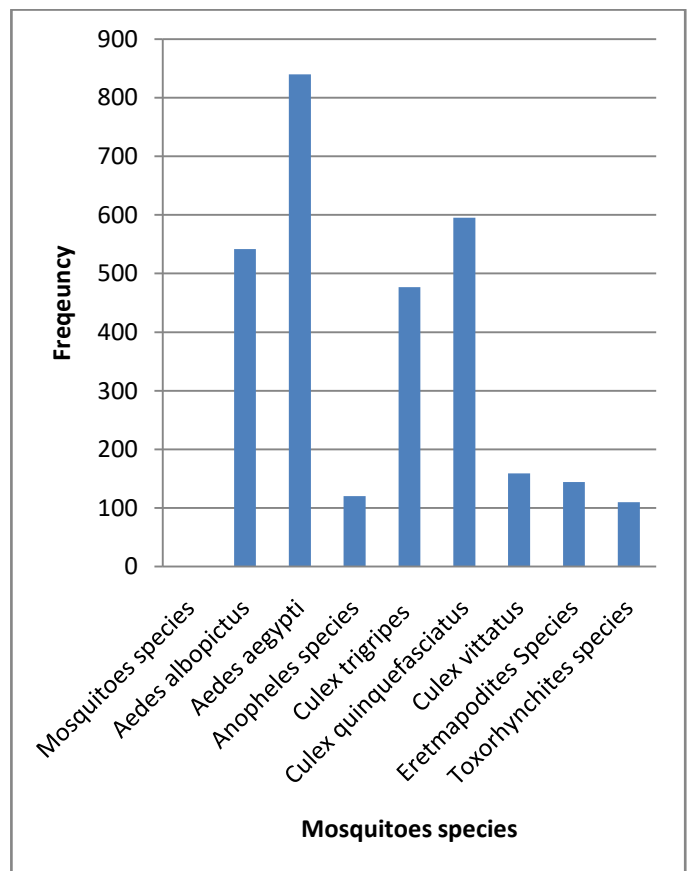Fig 3: Occurrence of mosquitoes in the different micro-habitat

Fig 4: Bimonthly related prevalence of the Relative abundance of mosquito species in Refuse dump sites

IV. DISCUSSION

The results of the study indicate a high occurrence of mosquitoes in the dump sites in mile 1 market area, followed by Rumukuta, this is possibly due to environmental conditions which favour the survival and proliferation of mosquito larvae in the various microhabitats within these study area. Simultaneously results were obtained by taking records of abundance and frequencies of different species within the study area. Identification of the various species was achieved using morphological features. However it was discovered that rainfall enhances breeding of mosquitoes throughout the period of the study. Water often from rain settles in tires, plastics can, drainages etc and encourage the breeding of mosquitoes. It is recommended that regular environmental sanitation be enforced to keep the environment clean.

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