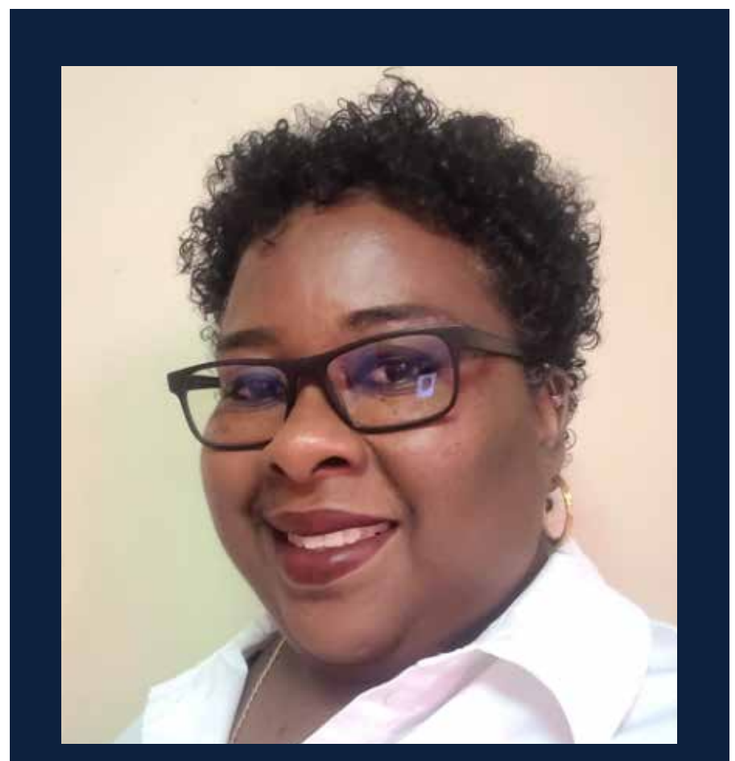
THE UNIVERSITY OF TRINIDAD AND TOBAGO

Office of Research, Impact and Postgraduate Studies

presents a **Postgraduate Seminar** titled

Spatial analysis of mosquito species distribution and habitat overlap using GIS technology

by **Mrs Isabella John**



Mrs ISABELLA JOHN has been an Environmental Health Officer for the past twenty-four years and now holds the position of Senior Environmental Health Officer. Under the supervision of the Chief Environmental Health Officer, she co-ordinates and supervises five Environmental Health Officers, and environmental programme activities connected with Occupational Health & Safety, Recreational Hygiene, Institutional Hygiene and Disaster Preparedness, promotes recreational and institutional hygiene, prepares project profiles and performs other related activities. Her dedication and interest in the field of public health and the environment has empowered her in pursuing studies to understand the health threats and the role of mosquitoes in the environment, focusing on their distribution, interactions and environmental significance.

She pursued an Associate Degree in Environmental Health at the Dominica State College (DSC), a Bachelor of Science in Occupational Health and Safety at the University of Technology, Jamaica and a Master of Science in Environmental Sustainability, Health and Safety Management at the Rochester Institute of Technology, USA. Throughout the years at the Department, she has received extensive training in the subject areas of radiation and nuclear technology, chemical management, disaster preparedness and vector control. She is the former President of the Dominica Association of Environmental Health Officers and is a current member of the National Chemicals Steering Committee, IAEA Technical Committee, Occupational Health Safety and Environmental Management (OHSEM) Undergraduate Programme Course Advisory Committee at The University of Trinidad and Tobago (UTT). Mrs John is also a Hazard Material (HAZMAT) First Responder and Instructor.

Ecological and climatic diversity, coupled with anthropogenic activities, provide an environment conducive to proliferation, an emerging diversity of mosquito species, and an increased occurrence of arboviral diseases. The current public health threats associated with the abundance, frequent mosquito disease outbreaks, and altered distribution of species have impacted Dominica's health system and the global community, contributing to a burdened healthcare system and substantial morbidity and mortality. A comprehensive understanding of mosquito ecology is essential for implementing effective control and disease management.

This research investigates the spatial distribution and coexistence of mosquito species in Dominica, considering the hypothesis that there is a significant spatial overlap of species and implying probable hybridisation. The aim is to generate geographic information system (GIS) maps to illustrate the distribution of species and overlapping habitats, and to investigate species interrelation for hybridisation, using the polymerase chain reaction (PCR) method.

To fulfill the objectives of the research, six communities will be selected based on varying geographic areas, and mosquito household indices. Mosquito sampling will be done during the wet and dry seasons, using larval surveillance and ovitrapping, to collect samples from natural and artificial breeding sites. Householders' awareness and knowledge of mosquitoes and control practices will be assessed using interview questions, administered to a member of each household. Species richness and diversity will be analysed using environmental parameters and surveillance data collected during sampling. This analysis will provide an overview of the different species in each geographic location and the risk for disease transmission. GIS will enable spatial analyses to establish different mosquito species and potential hybrid zones within specified locations. The significance of the research is to contribute knowledge to the scientific community on the ecology of mosquitoes, and to provide recommendations for mosquito control interventions aimed at mitigating the risk of mosquito-borne disease transmission.

Wednesday 27th November, 2024 at 1:00 p.m.

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