

C  
616  
MAI

ay

**DENGUE INCIDENCE IN MAWANELLA AREA  
- A CASE STUDY**

**A PROJECT REPORT PRESENTED BY**

**MADUNI PAVITHRA MADANAYAKE**

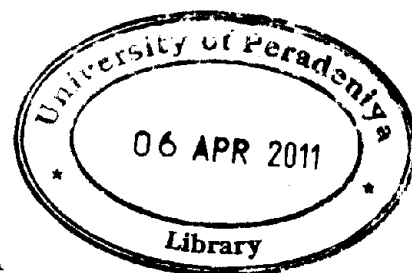
to the Board of Study in Earth Sciences of the  
**POSTGRADUATE INSTITUTE OF SCIENCE**

*in partial fulfilment of the requirements  
for the award of the degree of*

**MASTER OF SCIENCE IN GIS AND REMOTE SENSING**

of the

**UNIVERSITY OF PERADENIYA  
SRI LANKA  
2010**



**645729**

## DENGUE INCIDENCE IN MAWANELLA AREA - A CASE STUDY

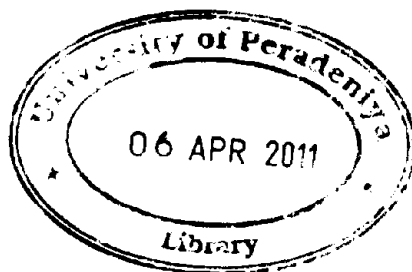
**M.P. Madanayake**  
Postgraduate Institute of Science  
University of Peradeniya  
Peradeniya  
Sri Lanka

### ABSTRACT

Dengue is a mosquito borne viral disease in Sri Lanka. There were more than 35,000 reported patients and over 340 deaths in 2009. The number of reported dengue patients has rapidly increased during the past few years, particularly due to socio-cultural and environmental factors. In this study, Geographical Information System (GIS) was used to link and update information on environment and climate parameters, hospital reports of dengue patients, and potential breeding locations in urban and semi urban areas. The purpose of this study was to prepare a Dengue Risk Map (DRM) to identify areas of high, moderate and low risk and to identify the localities where most attention should be given for control measures. This would enable decision makers to strategize and take preventive action to control dengue transmission.

Risk areas were determined by identifying the direct breeding locations and socio-economic variables contributing to breeding locations of the vector mosquito. Dengue incidence and socio-economic variables were merged with base maps of the study area using ArcGIS (Version 9.2).

The ambient temperature and the rainfall gave a significant relationship. High temperature was associated with a number of dengue incidences and optimum pH for larvae breeding was a neutral pH.



A significant association was identified for the age classes of 11-20 and 21-30. Among the socio-economic factors, correlations were found between dengue incidences and sanitation, types of housing roof and education levels of the people living in the area. Contrary to expectations, a higher education level was associated with high dengue incidences which emphasized the importance of socio-economic conditions.

The distributions of patients were analyzed with the Moran's I auto-correlation. It gave a significant pattern. Except in 2005, the dengue incidences were clustered in other years from 2004 to 2009.

The identified high risk areas from the generated DRM in Mawanella region are Mawanella city limit, Alagalla and Hingula during the study period of October to December 2009.