

# MALARIA SURVEILLANCE WITH REMOTE SENSING AND GIS IN OWERRI, NIGERIA

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**Abstract:** Malaria is a disease that gains promotion by different disturbance regimes of landscape and land use due to congested population growth and climatic changes. Its afflictions account for increasing reports of yellow fever (malaria), which causes the death of many infant babies in Owerri. Seasonal fluctuation of moisture-laden landscape plays important role on centuries of history of human health in this region. The change includes flooding, lack of drainage or improper drainage discharge/flow, poor housing and congested living conditions. The main objective of this study was to vectorize the ecology and transmission of the disease: 1) Identify the disease as a health risk vector and the temporal and spatial resolutions of the habitats, 2) Evaluate the vector's machine space, and 3) Classify the changing land use and landscape features with prevalence of malaria in Owerri urban. The long-term objective of the study is to spearhead research initiatives and government support systems on the eradication of malaria in Owerri urban by 2020. The methodology included the use of time series of satellite images, which were acquired and processed for land use and land cover change classifications; micro-terrain analysis using; multiple regressions statistical analysis; optimum index factoring, and rasterization of the land use corridors. ERDAS IMAGINE software and Geostatistics+ for the Environment, and ArcGIS were used for mapping and geospatial analysis. In addition to the land use classification, the study used a local search engine--land abstract and GPS, to map malaria foci (trace and routes) in Owerri. The result included a GIS analysis, where the study reported higher malaria afflictions in land use adjacent/abutting moistened than drier landscapes; result of the vector rasterization-raster contouring of Owerri urban, and the inverse transformation of relative abundance used to express the impact due to land use development intensity criteria. The production of the vector was based on ten factors of the urban development and primitive patterns of human healthcare in Owerri; the transmission risks for humans were based on environmental attributes of the communities studied. The approach recommended for malaria mitigation in Owerri is the recognition of health risks posed by this disease; involvement of the state government to come up with supporting and active land use legislations--zoning resolutions;

employment of appropriate technologies, and education of the masses to highlight public awareness and interest. Such highlights include the fact that malarial is an old disease associated with high infant mortality in African nations; it is now prefaced with modern medicine and technology, and Owerri has the facility to promote and support the research initiatives. Owerri, is therefore, spearheading this malarial mitigation research project, with full knowledge of the challenges the project brings and dependence on the local decision support system to advise on the needs for effective environmental legislations, political and health constructs, and public participation in order to achieve the 2020 mitigation goals.

Keywords: Yellow fever, Infant mortality, and mitigation.