

PDC helps an island community deal with Dengue Fever

In Spring 2001, the first significant outbreak of Dengue Fever in nearly 50 years broke out in the Hawaiian Islands. Between May 2001 and May 2002, 119 confirmed positive cases of Dengue were identified by the Centers for Disease Control and Prevention (CDC).

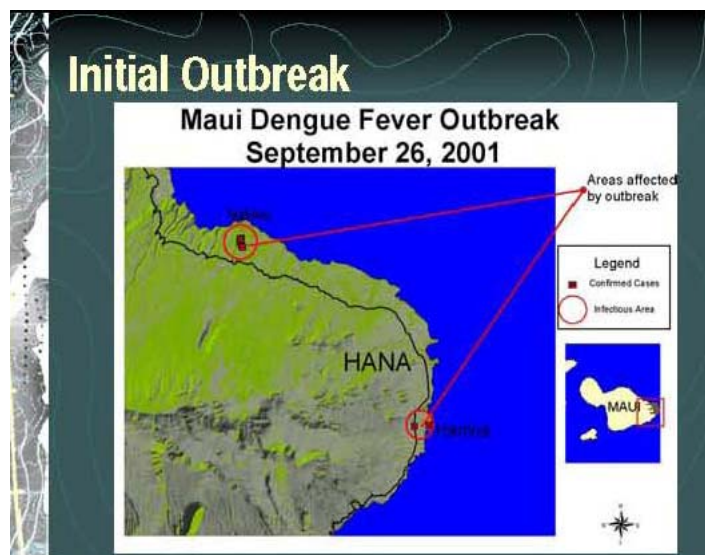
Although Dengue may not seem like a disaster in a classical sense, it has major financial and social impacts on the affected communities, and the entire state. As Dengue continues to establish itself as a pandemic in the Pacific, it is crucial to study the disease, monitor its spread, and develop information products to help support mitigation efforts.



Decision and Policy Support



Security and Sustainability



ABOVE: A PDC specialist collects geospatial information to support state and federal public health agencies during a Dengue fever outbreak in Maui, Hawai'i.

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Dengue case locations were pinpointed using Global Positioning System (GPS) collection systems and incorporated into a Geographic Information System (GIS) for spatial analysis and presentation.

Data collection and field mapping teams were challenged by dense tropical vegetation, heavy rainfall, and a lack of street addresses in the remote windward communities of Nahiku, Hamoa, and portions of Hana on the Island of Maui.

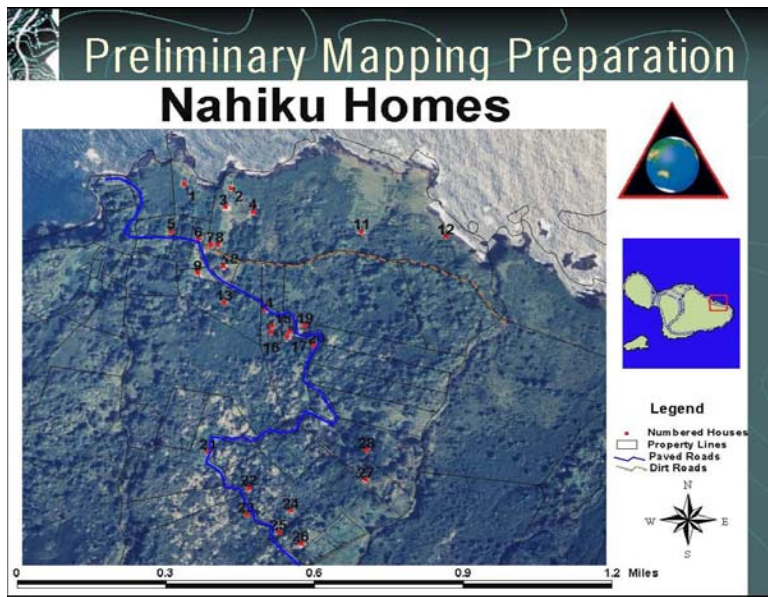
PDC deployed staff using ruggedized field data collection system, specifically designed to collect, analyze, and transmit spatial data in such remote areas. These data were used in spatial analysis, eradication mapping, mosquito larvae trapping, and a seroepidemiological survey.

The work was conducted jointly by the PDC, the CDC, the Hawai'i State Department of Health Epidemiology Branch, Hawai'i State Department of Health Vector Control Branch, County of Maui Department of Health, and the County of Maui Vector Control Branch.

Information products to support a wide range of activities

PDC information products supported a wide range of activities during the planning, operational, and analytical phases of this project.

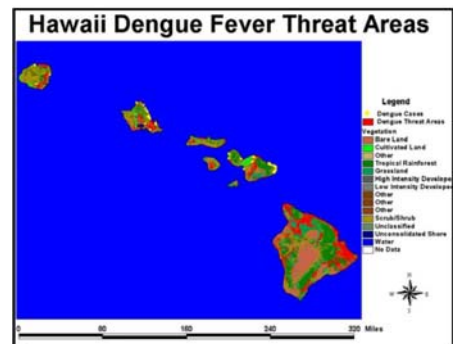
- GIS tools were used extensively to map and analyze spatial and temporal relationships among the data.
- GPS and aerial photography were used to code Dengue-positive households located along previously unmapped four-wheel drive roads.
- Mapping efforts aided in identifying the Dengue transmission vector and the location of mosquito larvae. It also assisted Maui County Vector Control in identifying areas requiring insecticide spraying.



High-resolution aerial photography served as the base for mapping seroepidemiological survey results.



GIS maps established 200-yard zones around Dengue positive households for Maui County spraying.



Rainfall, temperature, elevation, demographic, hydrological, mosquito density, and Dengue case point data, as well as vegetation classes were integrated within a GIS environment. Data were analyzed collectively to determine areas susceptible to future Dengue outbreaks.

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