

species.

DOH WNV Surveillance, Prevention and Response

Objective: Continue implementation of effective surveillance, prevention, and control of WNV in Hawaii.

DOH continues to maintain and improve its current surveillance and prevention efforts, and establish greater capacity for responding if WNV is detected, to prevent the establishment of the virus in the State.

WNV poses a serious threat to Hawaii for several reasons. Given the tropical climate of the State, mosquito populations are present throughout all seasons, suggesting the potential for year-round transmission and prolonged human disease outbreak. Direct medical costs will be significant. With regards to wildlife, WNV will probably extinguish several endangered and endemic bird species in Hawaii, and may cause irreversible damage to the ecosystem. Additionally, Hawaii's economy is dependent on tourism, and its beautiful and safe environment is attractive to many visitors. Establishment of a mosquito-borne disease with no cure or prophylaxis currently available would have a negative impact on the state's economy.

DOH focuses its efforts in various areas:

1. Prevention activities continue to focus on source reduction, and source treatment with larvicides. Hawaii's mosquito species are container breeders, so reducing the number of water-collecting items from property reduces the breeding sites for the mosquitoes. Public outreach is critical for source reduction, and is discussed below. In addition, treatment of standing water with larvicides greatly enhances the reduction of the adult mosquito population, especially because standing water cannot be eliminated in many areas. Mosquito suppression is targeted so that, if the virus is introduced, there will not be a sufficient mosquito population to establish the disease cycle.
2. Educating the public is another significant activity for prevention of WNV. DOH shared WNV information through various venues, including health fairs, pet shows, neighborhood boards, association and group meetings, and the main public library. Other outreach activities included radio public service announcements, production and dissemination of informational brochures. Outreach efforts will continue with the first basic concept of informing the public of the need for mosquito control. DOH seeks HISC funds to maintain its level of effort.
3. Source reduction. DOH's Vector Control Program continues to implement strategies of reducing mosquito populations to a level of no more than 5 mosquitoes per trap per night, with surveying for breeding sites triggered by higher counts. Maintaining low mosquito counts has proven more difficult in some areas than others. Surveillance of an approximate radius of two miles of all major ports of entry, to detect and reduce breeding

sites continues. As a significant focus on prevention, DOH seeks HISC funds to maintain its level of effort in the area of source reduction. Ports of entry, both air and sea, will continue to be the primary focus of DOH mosquito surveillance and reduction.

4. Dead bird surveillance is accomplished through a contract established with Aloha United Way to operate a public hotline, accessible statewide, to report dead birds. Birds collected were tested by the RAMP (Rapid Analyte Measurement Platform) WNV Test, which is a rapid antigen detection assay. This is treated as a screening test, providing more rapid results. DOH needs the option to conduct live bird testing, and has developed such capabilities. DOH seeks HISC funds to increase its level of effort in dead bird surveillance, particularly in the area of RAMP WNV testing protocols.
5. Detection of WNV in a timely manner is critical in preventing the establishment of WNV or, if it is established, minimizing the public health impact in humans and animal species. Due to relative remoteness, efforts have been made to ensure that a full menu of WNV testing is available within the State. Protocols for performing enzyme-linked immunosorbent assays (ELISA) for WNV antibody in humans were established at the DOH's State Laboratory Division (SLD), and will continue to be used for the diagnosis of WNV human infections. SLD will continue to perform Real Time RT-PCR tests for the detection of WNV nucleic acid in human cerebral spinal fluid specimens, dead bird organs, and mosquito pools. DOH seeks HISC funds to increase its level of effort, primarily due to anticipated increasing requirements for dead bird and mosquito testing.

DOH WNV– Measures of Effectiveness

Vector Control Branch

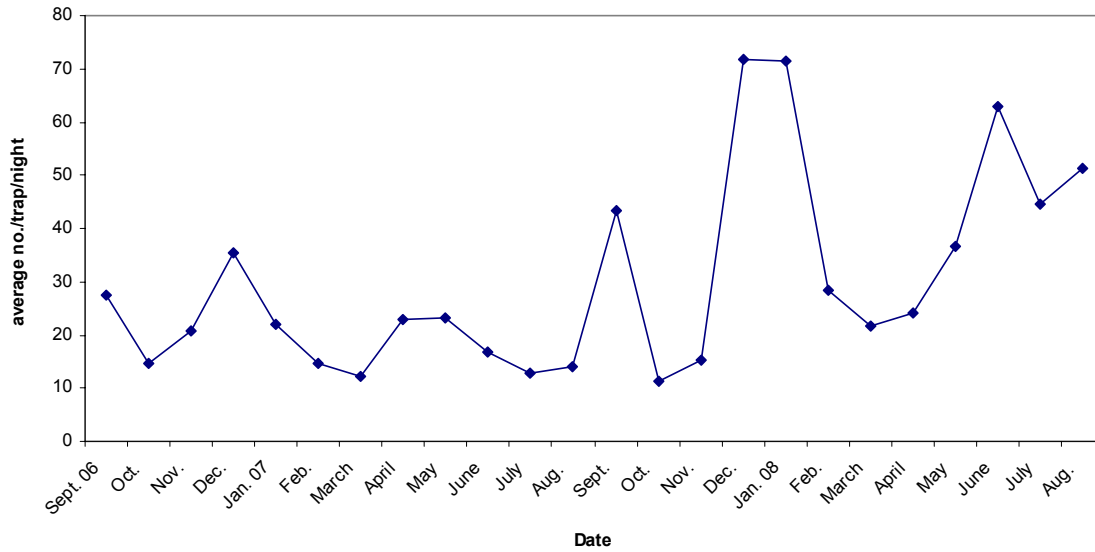
Goal: Enhance capacity to identify WNV in mosquitoes and dead birds, prevent establishment of WNV by maintaining a statewide integrated mosquito management (IMM) program, and maintain and provide resources for a ground-based response to WNV introduction.

Measures of Effectiveness:

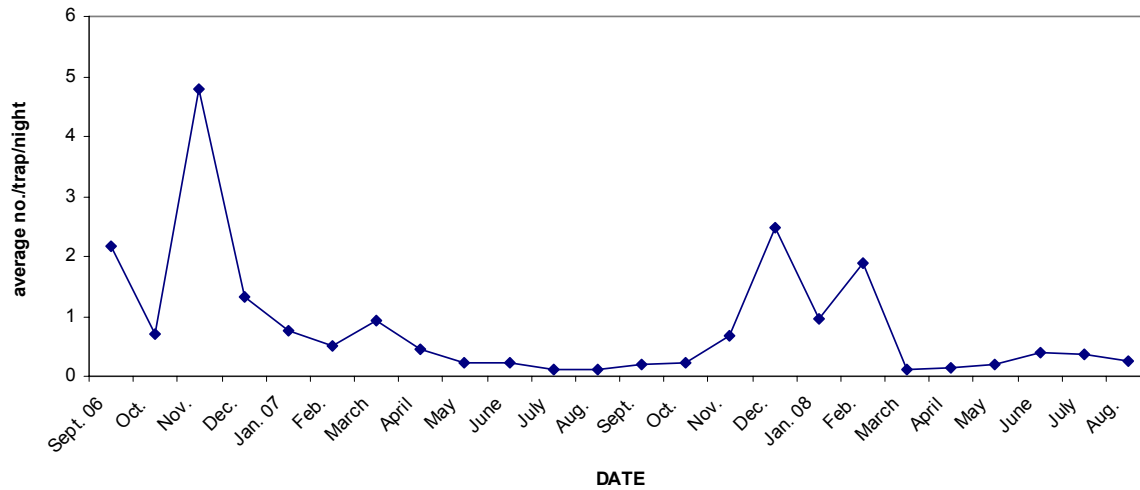
Objective	Measure	Detail
Maintain gravid traps at major ports of entry for collection of mosquitoes	Number of gravid traps at each port of entry	A total of 59 gravid traps are maintained on the four major islands. In addition, 122 New Jersey mosquito light traps monitor the <i>Culex</i> and <i>Aedes vexans</i> populations statewide. 194,903 mosquitoes were sorted. 4,636 pools were submitted to SLD.
Sort and pool mosquitoes for WNV testing	Number of mosquitoes sorted, number of mosquito pools submitted to SLD	
Necropsy dead birds for WNV testing	Number of dead bird necropsies with tissues submitted to SLD	207 birds were necropsied and submitted to SLD.
Identify sources of mosquito breeding within 2-mile radius of major ports of entry	Number of new mosquito breeding sites identified during surveys, total number of mosquito breeding sites	Oahu, Hawaii and Maui are conducting surveys within a 2-mile radius of ports of entry at the present time. All new breeding sites are documented, treated and added on to the routine list of treatment sites. Survey was last done in 2004.
Remove or eliminate sources of mosquito breeding	Number of mosquito breeding sites removed/eliminated	This data is unavailable. Eliminated sites are not archived as to date of removal.
Treat (larvicide) mosquito breeding sources Maintain database of mosquito trap data, and mosquito breeding sources (location, inspection, treatment)	Number of mosquito breeding sites treated Ongoing maintenance of database	1,058 mosquito breeding sites were treated 1,247 times. Statewide maintenance of the Vector Control Management System (VCMS) database is ongoing.
Report mosquito trap results in a timely manner	Mosquito trap results are reported to appropriate personnel monthly.	See attached graph for mosquito trap results.

Culex mosquito collection from gravid traps and NJ light traps
from September 2006 to August 2008 on Oahu

Gravid Trap Data



NJ Light Trap Data



State Laboratories Division

Goal: Enhance laboratory capacity to identify WNV in humans and other species (dead birds, equine, live birds' mosquitoes).

Measures of Effectiveness:

Objective	Measure	Data
Maintain real-time RT-PCR testing for avian samples and mosquitoes	Number of dead birds, mosquito pools tested statewide	Dead bird tested from Jan. to Aug. 2008 – 165; Mosquito pools tested – 3,179
Maintain Blocking ELISA test in support of live bird surveillance	Number of Blocking ELISA test performed	2,648
Maintain Plaque Reduction Neutralization Test (PRNT) for the confirmation of West Nile Virus detection by ELISA or MIA	Number of Proficiency testing performed and passed. Number of PRNT testing performed to rule-out West Nile Virus (WNV).	5 PT samples per year; 5/5 passed. 1 PRNT testing performed (July 2008)
Validate the MicroImmunoAssay (MIA) test in support of live bird surveillance activities	Validation/verification studies for the MIA performed within the budget period	TBD – this is for the 2009 budget period
Establish MIA as part of the live bird surveillance testing algorithm	Number of MIA tests performed on live birds sera	TBD – this is for the 2009 budget period
Maintain database of all laboratory results (surveillance, diagnostic tests)	Submit monthly lab data and post this on the DOH website.	Met

Prevention Measures of Effectiveness

Number of new invasive species detected at ports of entry.

See Invasive Species Overview below.

Current measures in place to prevent invasive species arrival and establishment

HDOA implements a plant and animal quarantine facility and runs a whole team of biosecurity inspectors; this is in addition to standard federal measures at the border for international goods. As regulations and logistics permit efforts are coordinated between, Homeland Security, USDA,