

AERIAL INTERVENTION: THE STATE RECLAMATION AND MOSQUITO CONTROL BOARD'S PERSPECTIVE

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ABSTRACT

For the first time in 16 years, aerial applications were conducted in Massachusetts to decrease the risk to humans of being bitten by mosquitoes carrying the Eastern Equine Encephalitis virus (EEEV) in areas in Southeastern Massachusetts. Aircraft treated approximately 140,000 acres starting on the evening of August 8th into the early morning of August 9th. A second aerial intervention targeting a much larger area of Southeastern Massachusetts approximately 410,000 acres beginning on August 22nd and finishing on August 24th. The State Reclamation and Mosquito Control Board oversaw and conducted this operation, which resulted in substantial reductions of mosquitoes infected with EEEV in treated areas with no detection of adverse effects.

During the past few years (2004 and 2005), Massachusetts has had its share of mosquito problems as Eastern Equine Encephalitis virus (EEEV) and West Nile Virus (WNV) have resulted in multiple human cases including fatalities. The 2006 mosquito season was no exception!

After a dry spring, things quickly turned around as Massachusetts experienced dramatic populations of spring brood mosquitoes due to unprecedented precipitation in the months of May and early June. Many of the regional mosquito control districts were dealing with record numbers of telephone complaints. Early July offered a reprieve for regional mosquito control districts as mosquito populations trended downward with only pockets of mosquitoes requiring control. Ultimately, July proved to be the calm before the storm.

In Massachusetts, the peak time for transmission of mosquito-borne viruses is generally in late summer and early fall. As early as July 19, 2006, mosquito control and state public health official's surveillance

efforts confirmed EEEV in a pool of *Cs. melanura*, our primary enzootic vector. WNV was also confirmed in an American crow around the same time. However, the real concern was EEEV! The general mosquito density of *Cs. melanura* was higher than normal, climbing above 5 and 10-year mean abundance levels. By early August, the number of EEEV isolations increased from 1 to 25! More importantly, the virus was being detected in epizootic vector species such as *Coquillettidia perturbans*, *Ochlerotatus canadensis*, *Aedes vexans*, as well as *Culex pipiens/restuans* complex. Finally, a horse was confirmed with EEEV with onset of symptoms July 24, 2006.

In response to this early and sustained viral activity, an aerial application was conducted for the first time in 16 years to minimize the threat of human biting mosquitoes that carry EEEV in areas in Southeastern Massachusetts. Two Beechcraft King aircraft treated approximately 140,000 acres starting on the

evening of August 8th into the early morning of August 9th. A second aerial intervention targeting a much larger area of Southeastern Massachusetts was implemented to respond to new mosquito collections found to be positive for EEEv on the edges of and beyond the area treated in the original aerial application. Three aircraft treated approximately 410,000 acres beginning on August 22nd and finishing on August 24th. Anvil ®10+10 ULV (Sumithrin and PBO) was applied at 0.62 ounces per acre by

Dynamic Aviation Company in both spray operations.

Overall, the aerial operations resulted in substantial reduction of mosquitoes infected with EEEv in treated areas with little, if any, environmental side effects.

To date (October 18, 2006), as the season finally comes to a close, five human cases of EEEv and three human cases of WNv including fatalities have been confirmed by the MA Department of Public Health.