Northeast Massachusetts Mosquito Control and Wetlands Management District
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In the first **District Bulletin** issued last week, we informed District Health Boards and residents on current mosquito, arbovirus, and mosquito control activities. In this issue, we wish to continue updating mosquito activities, especially major species now emerging, as well as our other current control operations. Also presented will be guides to looking around residents's home for mosquito activity and breeding, and how residents can protect themselves from mosquitoes and arboviruses. Residents should however be reminded that our District's operations is geared primarily towards "vector management"; i.e., our surveillance and control strategy is designed to identify, monitor, and control vectors or WNV and EEEV. We are not a nuisance control or mosquito eradication outfit; if residents live next to huge tracts of freshwater wetlands or forest swamps that are releasing thousands of mosquitoes by the second, there is very little we can do about that!

With Eastern Equine Encephalitis virus (EEEV), while it follows the same pattern of environmental amplification as does WNV (discussed last week), it is more difficult to control the breeding of its vector, the Cedar Swamp mosquito, ***Culiseta melanura***. This species breeds in water-filled holes in the ground formed usually by fallen trees ("tree crypts") along the boundaries of water-filled white-cedar and red-maple swamps. These are areas not easily accessible by District personnel and equipment and thus, control of its larvae is not readily feasible.

The numbers of ***Cs. melanura*** are currently increasing (although it forms a very small percentage of all local mosquitoes) and it is assumed that the spreading of EEEV to birds and back to mosquitoes is increasing as well. Now these increases and amplifications occur deep in the forests away from most residential areas but, as more and more people are moving deeper and deeper into wooded habitats, the risk for human infection also increases. And if other mosquito species, like the floodwater species, are abundant at the same time of maximum viral presence in birds, these species can become infected as well and pass the infection to humans at a later feeding.

Thus, we monitor the populations of ***Cs. melanura*** in the spring and early summer during the EEEV amplification phase. If we record unusual increases in their population in towns with recent EEEV history (or adjacent to NH towns with recent activity), we may recommend to the Boards of Health of the these towns that a limited local adulticide operation (truck-based spraying) may be activated to reduce these populations to lower more "normal" levels for that time of the year. If the adulticiding operation is approved, it will be done only at night and if favorable conditions prevail (over 60^{o} F. with wind speeds under 10 mph). The adulticide used is "Anvil", a pyrethroid-based product with no residual activity and which is totally deactivated in the presence of sunlight.

Another species that is beginning to emerge at this time is ***Coquillettidia perturbans***, commonly called the "Cattail Marsh Mosquito". At peak abundance, they are present in "astronomical" numbers, from about the third week in June until before the end of July, although many are still active until mid-September; they are probably overall the most abundant freshwater mosquito species in our District. These mosquitoes are large light-brown bodies with lighter-colored bands, especially on their legs; they are aggressive, have an extended flight ranges, and can be active (and bite most animals) even in daylight hours.

EEEV has been shown to multiply readily in ***Cq. perturbans***; i.e., this species is said to have a "high vector capacity" to transmit EEEV. This species, as well as for most of the other local mosquito species, does not emerge infected with the virus but must acquire it from infected birds. Once they have acquired the virus, their next blood-meal may be taken from town resident and therefore can infect this person. Several infected EEEV-mosquito samples collected from southeastern MA in 2006 consisted of ***Cq. perturbans***. Although the percentage of EEEV-infected ***Cq. perturbans*** may be lower than of the principal vector, ***Cs. melanura***, the explosive numbers of ***Cq. perturbans*** emerging in the summer and their longevity into early September increases the possibility of infection to residents. Older specimens (these have a greater probability of being infected) will be sent to the State Labs for testing of both WNV and EEEV.

As residents begin to spend more time outdoors, they must become more vigilant of protecting themselves from mosquito bites. The Northeast Massachusetts Mosquito Control & Wetlands Management District strongly encourages you to follow the recommendations outlined below to reduce your risk to exposure to mosquitoes and the viruses they can transmit:

1) WNV-carrier mosquito species are most active in late afternoons through the middle of the evening. If you are outdoors during this period, protect yourselves from potential mosquito bites. Apply insect repellents containing DEET to yourselves and your children; DEET is the only repellent that has been scientifically shown to be most effective in keeping mosquitoes away from you. However, it doesn't keep every single mosquito away and it must be repeatedly applied if you spend long periods of time outdoors. Follow **FAITHFULLY** the manufacturer's recommendations. If you do not want to use repellent, then keep your skin covered as much as possible while you are out. For more information on mosquito repellents, it is recommended you consult the Centers for Disease Control website, enter "Mosquito Repellent" in the "Search box" and follow the links or click the accompanying link (www.cdc.gov/ncidod/dvbid/westnile/mosquitorepellent.htm).

2) Periodically inspect your property for any structures that are holding water. These include containers, but also inspect uncovered garbage barrels, swimming pool covers, and discarded tires. An area NEVER inspected and a great breeding site is your rain gutter which when filled with leaves not only holds back water but becomes a wonderful nursery for raising mosquitoes. Check and clean those gutters on a regular basis. Also, place screens (and check for gaps!) on your windows and doors to keep mosquitoes from entering your homes. For more information about searching your property for mosquito breeding, check the New York State Department of Health website for the fact sheet entitled "Do Mosquitoes Love Your Home and Yard?" (www.health.state.ny.us/nysdoh/westnile/education/2747.htm

3) If you live next door to abandoned property (especially if there is an unused swimming pool) that you suspect may be a source of mosquitoes, contact your town's Board of Health. They will contact the District and inspectors will be sent to see and deal with any potential/actual breeding.

(http://bugguide.net; Photo#26972)

Coquillettidia perturbans ***Culiseta melanura*** (www.entm.purdue.edu)