

VECTOR SURVEILLANCE IN NEW JERSEY
EEE, WNV, SLE and LAC
CDC WEEK 27: July 5 to July 11, 2009

Culiseta melanura and Eastern Equine Encephalitis

SITE	Inland / Coastal	Historic Mean	Current Weekly Mean	Total Tested to Date*	Total Pools Submitted	EEE Isolations	MFIR
Green Bank (Burlington County)	Coastal	3.0	0.56	81	19	0	0
Corbin City (Atlantic County)	Coastal	0.8	0.28	18	9	0	0
Dennisville (Cape May County)	Coastal	3.9	0.53	428	24	0	0
Waterford (Camden County)	Inland	1.7	0	11	4	0	0
Centerton (Salem County)	Inland	2.7	0.28	166	21	0	0
Turkey Swamp (Monmouth County)	Inland	0.9	0.62	38	13	0	0
Glassboro (Gloucester County)	Inland	0	no collection	153	20	0	0

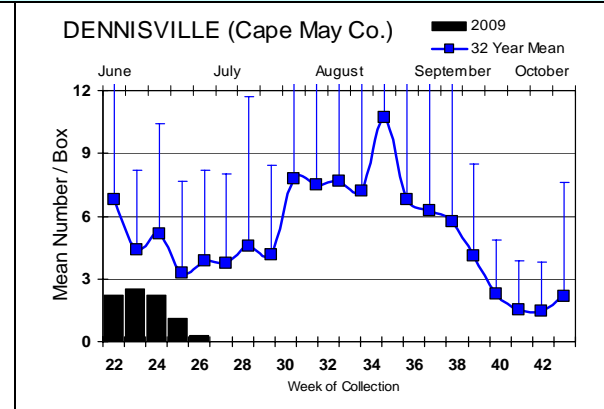
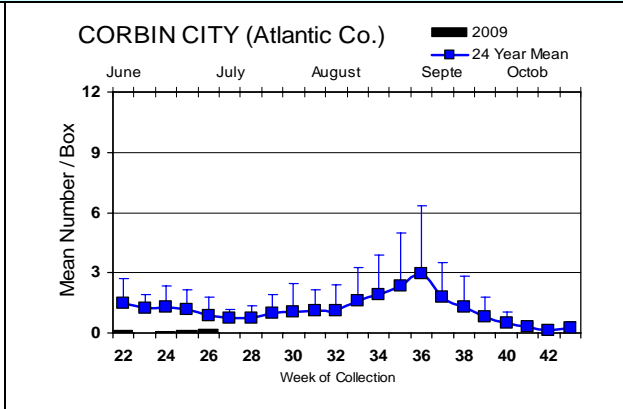
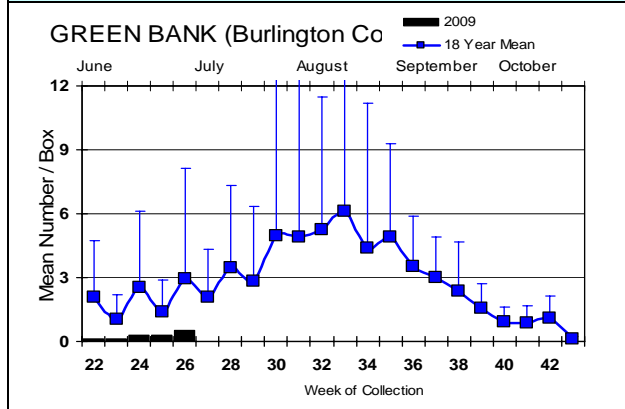
*Including trial run last week in May.

Remarks: *Culiseta melanura* populations continue to be lower than historical values. Normally, at this point in time, it would not be unusual to see small increases in the populations as the second generation for these southern New Jersey populations emerge. Cooler June temperatures may have an impact on the timing of emergence for this second (and amplifying) generation (Crans and Mahmood 1998 Does bi-voltinism in *Culiseta melanura* regulate the amplification of EEE? 86th Proceedings of the NJMCA 13-16). No eastern equine encephalitis virus has been detected at the six traditional resting box sites to this point in time. A collection was not made in Glassboro in anticipation of moving the site.

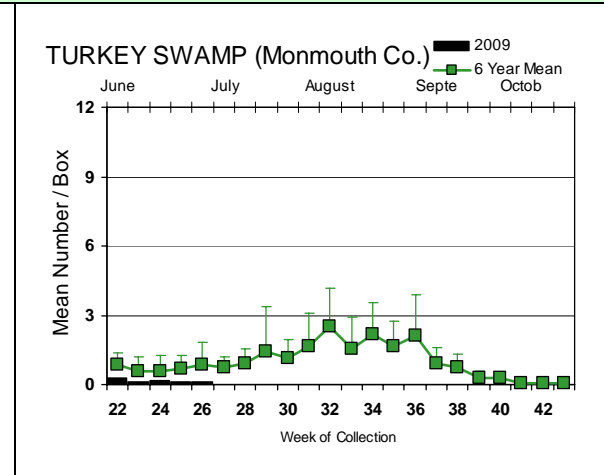
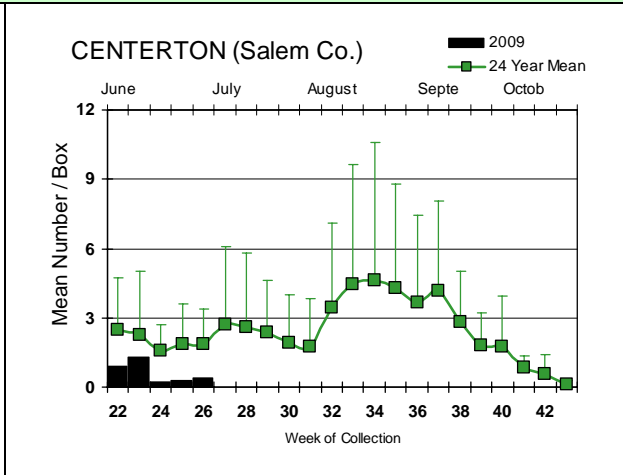
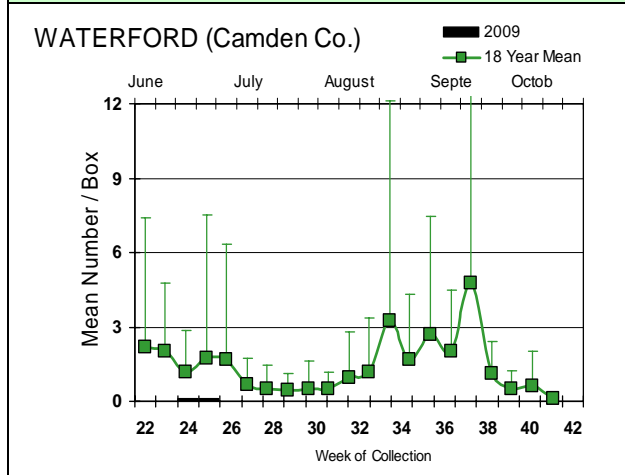
To date, 110 pools from 895 *Cs. melanura* mosquitoes have been sent for EEE testing from the seven resting box collections (NOTE: this value was re-adjusted from last week). Previously, Ocean County has submitted *Cs. melanura* samples collected from gravid and CO₂ traps while Gloucester County has sampled additional sites with resting boxes. Other species tested for EEE from resting boxes include: *Aedes atlanticus*, *Ae. japonicus*, *Ae. triseriatus*, *Anopheles punctipennis*, *An. quadrimaculatus*, *Culex erraticus*, *Cx. pipiens*, *Cx. restuans*, *Cx. salinarius*, Mixed *Culex* pools, and *Cx. territans*. Additional species from other trap types include: *Ae. abserratus*, *Ae. albopictus*, *Ae. canadensis*, *Ae. triseriatus*, *Ae. trivittatus*, *Ae. sollicitans*, *Ae. vexans*, *An. bradleyi*, *Coquillettidia perturbans* and *Culiseta inornata*. All 159 pools of 2019 mosquitoes are reported negative for EEE virus.

Culiseta melanura Population Graphs

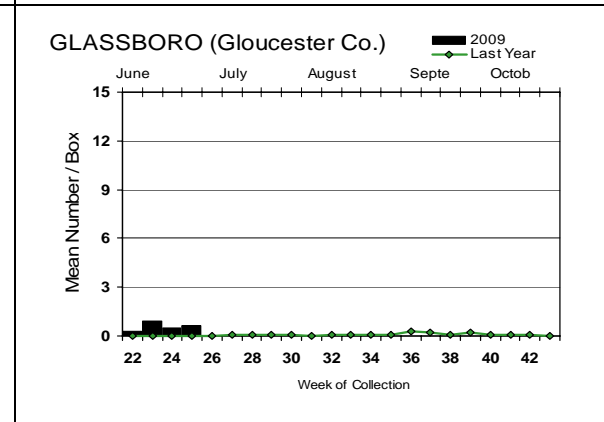
Coastal



Inland



Resting box populations of *Culiseta melanura* continue to track lower than recent historical trends at all sites. Patterns for this species in the Statewide Adult Mosquito Surveillance program reflect similar patterns. No EEE activity was detected.



EEE in US (2009 cumulative cases): (Red = new reported cases occurring)

- equine: 6(AL) 34(FL) 15(GA) 3(LA) 1(MO) 6(MS) 1(VA)
- mosquito: 1(LA)
- sentinel: 2(AL) 69/39wild(FL)
- human:

West Nile Virus

West Nile in US (2009 cumulative cases): Single black values indicate no change from previous week. Black values / red values equals previous week/**New totals**.

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Alabama					
Alaska					
Arizona	0	26/39	3	0	1
Arkansas					1
California	139	97/120	5	0	0
Colorado		1			2
Connecticut	0	0	0	0	0
Delaware					
DC					
Florida	2	0	1	0	0
Georgia				2	
Hawaii					
Idaho		2 counties			1
Illinois	2	12/21	0	0	0
Indiana					
Iowa	0	0	0	0	0
Kansas					
Kentucky					
Louisiana					
Maine					
Maryland	0	0		0	0
Mass.		0		0	0
Michigan		0	0	0	0
Minnesota					
Mississippi		1		0	2
Missouri		+?			
Montana					
Nebraska	0	0		0	0

	Mosquito		Sentinels	Horses	Humans
	Birds	Pools			
Nevada		4+			1
New Hampshire					
New Jersey	0	2	0	0	0
New Mexico				0	0
New York	0	1	0	0	0
North Carolina					
North Dakota	0	0		0	0
Ohio	0	3		0	0
Oklahoma	0	0	0	0	0
Oregon	0	1	0	0	0
Pennsylvania	1	5	0	0	0
Rhode Island					
South Carolina					
South Dakota	0	0	0	0	1/2
Tennessee	0	0	0	0	1
Texas	1	8	0	1	1
Utah		16/31		0	0
Vermont	0				
Virginia	0	1+	0	0	0
Washington	0	15/63	0	0	0
West Virginia	0	7	0	0	0
Wisconsin	0	0	0	0	0
Wyoming		3			

Note: Some data reported by states are provisional and are subject to change. Sources for this table can be found [here](#).

Protocol: New Jersey Department of Health and Senior Services (NJDHSS Public Health and Environmental Laboratories, PHEL) and the Cape May County Division of Mosquito Control tests mosquito pools using RT-PCR Taqman techniques.

Mosquito Species Submitted for West Nile Virus Testing through 11 July 2009

Species	Pools	Mosquitoes	Positives	MFIR
<i>Aedes abserratus</i>	1	1		0
<i>Aedes albopictus</i>	85	571		0
<i>Aedes atlanticus</i>	2	2		0
<i>Aedes canadensis canadensis</i>	62	1831		0
<i>Aedes cantator</i>	25	162		0
<i>Aedes cinereus</i>	2	7		0
<i>Aedes grossbecki</i>	3	35		0
<i>Aedes japonicus</i>	192	1200		0
<i>Aedes sollicitans</i>	5	34		0
<i>Aedes sticticus</i>	6	68		0
<i>Aedes taeniorhynchus</i>	3	58		0
<i>Aedes thibaulti</i>	5	8		0
<i>Aedes triseriatus</i>	50	169		0
<i>Aedes trivittatus</i>	13	312		0
<i>Aedes vexans</i>	53	978		0
<i>Anopheles bradleyi</i>	11	96		0
<i>Anopheles punctipennis</i>	40	109		0
<i>Anopheles quadrimaculatus</i>	39	742		0
<i>Coquillettidia perturbans</i>	27	357		0
<i>Culex erraticus</i>	7	92		0
<i>Culex pipiens</i>	307	7374		0
<i>Culex restuans</i>	308	4274		0
<i>Culex salinarius</i>	19	166		0
<i>Culex spp.</i>	920	40129	2	0.050
<i>Culex territans</i>	19	51		0
<i>Culiseta inornata</i>	1	2		0
<i>Culiseta melanura</i>	164	1623		0
<i>Culiseta morsitans</i>	1	3		0
<i>Psorophora columbiae</i>	1	1		0
<i>Psorophora ferox</i>	4	26		0
State Total	2373	60,481	2	0.033

Remarks: The number of pools positive for West Nile virus remains at two, one each from Mercer and Bergen counties. These two counties include highly urban/suburbanized areas typical of WNV activity in New Jersey. Activity last year at this time was much higher: there were 35 positive pools from 10 counties.

Humans, Horses and Wild Birds: No humans have been reported positive for WNV by PHEL. For more details plus information about WNV, see the PHEL's West Nile Virus Alert and FAQ Sheets:

<http://www.state.nj.us/health/cd/westnile/enceph.htm>

No confirmed horse cases have occurred. No positive birds have been detected as of this week.

2009 Positive Mosquito pools to date / Total Mosquito Pools Submitted	This time last year* * 2008 started later (at least one month) last year than in 2009
2 / 2394	35 / 1963

2009 Positive Birds to date / Total Birds Submitted	This time last year* * 2008 started later (at least one month) last year than in 2009
0 / 31	0 / 62

WNV Results by County through 11 July 2009

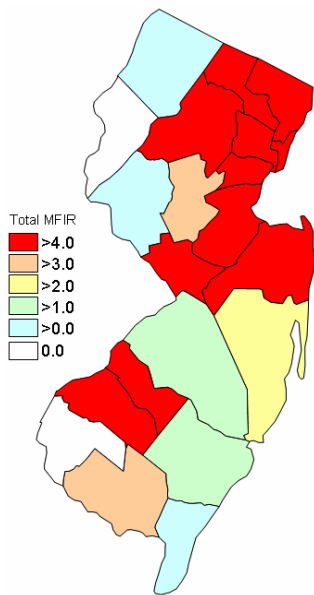
County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		73	1745		
	<i>Aedes albopictus</i>	2	17		
	<i>Aedes canadensis canadensis</i>	3	34		
	<i>Aedes cantator</i>	3	70		
	<i>Aedes grossbecki</i>	1	8		
	<i>Aedes japonicus</i>	1	2		
	<i>Aedes sticticus</i>	2	18		
	<i>Aedes taeniorhynchus</i>	1	10		
	<i>Aedes thibaulti</i>	3	3		
	<i>Aedes triseriatus</i>	1	2		
	<i>Aedes vexans</i>	7	254		
	<i>Anopheles bradleyi</i>	1	9		
	<i>Anopheles punctipennis</i>	3	6		
	<i>Anopheles quadrimaculatus</i>	2	3		
	<i>Culex restuans</i>	2	5		
	<i>Culex salinarius</i>	1	1		
	<i>Culex spp.</i>	29	1280		
	<i>Culex territans</i>	1	1		
	<i>Culiseta melanura</i>	10	22		
Bergen		38	2778	1	0.36
	<i>Aedes japonicus</i>	1	3		
	<i>Culex spp.</i>	37	2775	1	0.36
Burlington		161	3242		
	<i>Aedes abserratus</i>	1	1		
	<i>Aedes albopictus</i>	14	70		
	<i>Aedes canadensis canadensis</i>	16	793		
	<i>Aedes cantator</i>	3	21		
	<i>Aedes cinereus</i>	1	6		
	<i>Aedes grossbecki</i>	1	26		
	<i>Aedes japonicus</i>	14	44		
	<i>Aedes sollicitans</i>	2	22		
	<i>Aedes sticticus</i>	1	44		
	<i>Aedes taeniorhynchus</i>	1	47		
	<i>Aedes triseriatus</i>	7	29		
	<i>Aedes trivittatus</i>	1	6		
	<i>Aedes vexans</i>	12	383		
	<i>Anopheles bradleyi</i>	2	18		
	<i>Anopheles punctipennis</i>	4	10		
	<i>Coquillettidia perturbans</i>	9	155		
	<i>Culex pipiens</i>	1	75		
	<i>Culex restuans</i>	1	3		
	<i>Culex salinarius</i>	2	24		
	<i>Culex spp.</i>	36	1045		
	<i>Culex territans</i>	1	6		
	<i>Culiseta inornata</i>	1	2		
	<i>Culiseta melanura</i>	30	412		

Camden	101	3035		
<i>Aedes albopictus</i>	2	8		
<i>Aedes japonicus</i>	13	30		
<i>Aedes thibaulti</i>	1	1		
<i>Aedes trivittatus</i>	2	2		
<i>Aedes vexans</i>	1	1		
<i>Anopheles punctipennis</i>	3	8		
<i>Anopheles quadrimaculatus</i>	3	4		
<i>Culex pipiens</i>	3	107		
<i>Culex restuans</i>	2	2		
<i>Culex spp.</i>	66	2860		
<i>Culex territans</i>	1	1		
<i>Culiseta melanura</i>	4	11		
Cape May	567	8615		
<i>Aedes albopictus</i>	1	2		
<i>Aedes canadensis canadensis</i>	1	6		
<i>Aedes cantator</i>	1	1		
<i>Aedes japonicus</i>	7	17		
<i>Anopheles bradleyi</i>	6	67		
<i>Anopheles punctipennis</i>	4	16		
<i>Anopheles quadrimaculatus</i>	14	691		
<i>Culex pipiens</i>	11	73		
<i>Culex restuans</i>	29	230		
<i>Culex salinarius</i>	4	16		
<i>Culex spp.</i>	1	4		
<i>Culex territans</i>	7	29		
<i>Culiseta melanura</i>	24	428		
Cumberland	19	254		
<i>Aedes japonicus</i>	1	2		
<i>Anopheles punctipennis</i>	1	1		
<i>Culex pipiens</i>	1	2		
<i>Culex restuans</i>	2	6		
<i>Culex spp.</i>	12	234		
<i>Culex territans</i>	1	1		
<i>Culiseta melanura</i>	1	8		
Essex	44	758		
<i>Aedes albopictus</i>	2	3		
<i>Aedes japonicus</i>	7	13		
<i>Aedes triseriatus</i>	3	6		
<i>Aedes vexans</i>	4	15		
<i>Culex spp.</i>	27	719		
<i>Psorophora ferox</i>	1	2		
Gloucester	268	6565		
<i>Aedes albopictus</i>	15	266		
<i>Aedes atlanticus</i>	1	1		
<i>Aedes canadensis canadensis</i>	2	2		
<i>Aedes japonicus</i>	27	228		
<i>Aedes thibaulti</i>	1	4		

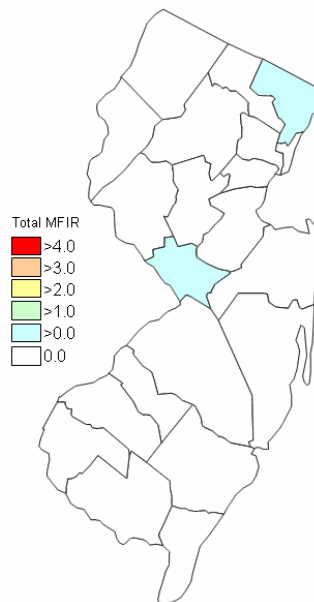
	<i>Aedes triseriatus</i>	1	1		
	<i>Aedes trivittatus</i>	1	75		
	<i>Aedes vexans</i>	6	57		
	<i>Anopheles punctipennis</i>	8	34		
	<i>Anopheles quadrimaculatus</i>	12	22		
	<i>Coquillettidia perturbans</i>	2	2		
	<i>Culex pipiens</i>	144	5607		
	<i>Culex restuans</i>	12	41		
	<i>Culex territans</i>	4	9		
	<i>Culiseta melanura</i>	32	216		
Hudson		64	2891		
	<i>Culex</i> spp.	64	2891		
Hunterdon		61	2991		
	<i>Aedes albopictus</i>	1	45		
	<i>Culex</i> spp.	60	2946		
Mercer		174	3005	1	0.333
	<i>Aedes albopictus</i>	9	25		
	<i>Aedes japonicus</i>	8	13		
	<i>Aedes triseriatus</i>	2	2		
	<i>Culex erraticus</i>	1	1		
	<i>Culex pipiens</i>	50	342		
	<i>Culex restuans</i>	67	1082		
	<i>Culex salinarius</i>	2	2		
	<i>Culex</i> spp.	35	1538	1	0.650
Middlesex		153	8516		
	<i>Aedes japonicus</i>	9	156		
	<i>Culex</i> spp.	144	8360		
Monmouth		128	709		
	<i>Aedes albopictus</i>	10	77		
	<i>Aedes canadensis canadensis</i>	14	143		
	<i>Aedes cantator</i>	7	33		
	<i>Aedes japonicus</i>	10	30		
	<i>Aedes triseriatus</i>	6	39		
	<i>Aedes trivittatus</i>	3	3		
	<i>Aedes vexans</i>	5	49		
	<i>Anopheles punctipennis</i>	3	3		
	<i>Anopheles quadrimaculatus</i>	1	1		
	<i>Coquillettidia perturbans</i>	3	11		
	<i>Culex erraticus</i>	1	2		
	<i>Culex pipiens</i>	1	1		
	<i>Culex restuans</i>	9	22		
	<i>Culex</i> spp.	40	255		
	<i>Culex territans</i>	2	2		
	<i>Culiseta melanura</i>	13	38		
Morris		33	1356		
	<i>Aedes japonicus</i>	5	39		
	<i>Culex</i> spp.	28	1317		
Ocean		181	3846		

<i>Aedes albopictus</i>	14	49		
<i>Aedes atlanticus</i>	1	1		
<i>Aedes canadensis canadensis</i>	24	826		
<i>Aedes cantator</i>	7	27		
<i>Aedes cinereus</i>	1	1		
<i>Aedes grossbecki</i>	1	1		
<i>Aedes japonicus</i>	18	120		
<i>Aedes sollicitans</i>	3	12		
<i>Aedes sticticus</i>	3	6		
<i>Aedes taeniorhynchus</i>	1	1		
<i>Aedes triseriatus</i>	9	16		
<i>Aedes trivittatus</i>	1	1		
<i>Aedes vexans</i>	15	64		
<i>Anopheles bradleyi</i>	2	2		
<i>Anopheles punctipennis</i>	7	9		
<i>Coquillettidia perturbans</i>	5	9		
<i>Culex restuans</i>	2	2		
<i>Culex salinarius</i>	5	42		
<i>Culex</i> spp.	54	2625		
<i>Culiseta melanura</i>	5	10		
<i>Psorophora columbiae</i>	1	1		
<i>Psorophora ferox</i>	2	21		
Passaic	37	896		
<i>Aedes albopictus</i>	1	7		
<i>Aedes canadensis canadensis</i>	1	20		
<i>Aedes japonicus</i>	7	77		
<i>Aedes triseriatus</i>	2	3		
<i>Culex</i> spp.	26	789		
Salem	50	676		
<i>Aedes albopictus</i>	4	24		
<i>Aedes japonicus</i>	2	6		
<i>Aedes triseriatus</i>	1	1		
<i>Aedes vexans</i>	2	150		
<i>Anopheles punctipennis</i>	5	17		
<i>Anopheles quadrimaculatus</i>	3	6		
<i>Coquillettidia perturbans</i>	2	64		
<i>Culex restuans</i>	2	2		
<i>Culex</i> spp.	6	238		
<i>Culex territans</i>	2	2		
<i>Culiseta melanura</i>	21	166		
Somerset	70	2199		
<i>Aedes albopictus</i>	1	2		
<i>Aedes canadensis canadensis</i>	1	7		
<i>Aedes japonicus</i>	11	193		
<i>Aedes triseriatus</i>	6	19		
<i>Aedes trivittatus</i>	5	225		
<i>Aedes vexans</i>	1	5		
<i>Anopheles punctipennis</i>	1	2		
<i>Coquillettidia perturbans</i>	2	3		
<i>Culex</i> spp.	41	1740		
<i>Psorophora ferox</i>	1	3		

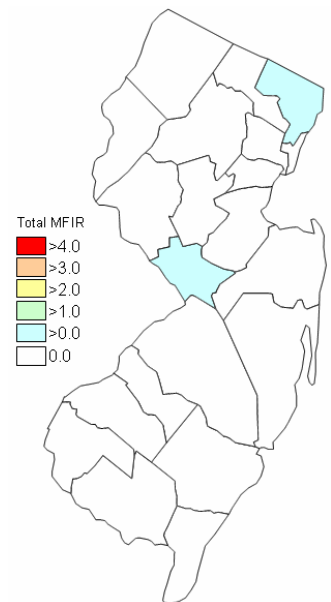
Sussex	45	871		
<i>Aedes japonicus</i>	3	3		
<i>Coquillettidia perturbans</i>	3	94		
<i>Culex pipiens</i>	3	7		
<i>Culex restuans</i>	6	190		
<i>Culex salinarius</i>	3	3		
<i>Culex spp.</i>	25	562		
<i>Culiseta melanura</i>	1	9		
<i>Culiseta morsitans</i>	1	3		
Union	40	1687		
<i>Aedes japonicus</i>	4	30		
<i>Culex spp.</i>	36	1657		
Warren	68	3846		
<i>Culex spp.</i>	68	3846		
Grand Total	2375	60,481	2	0.033



Cumulative activity in 2008



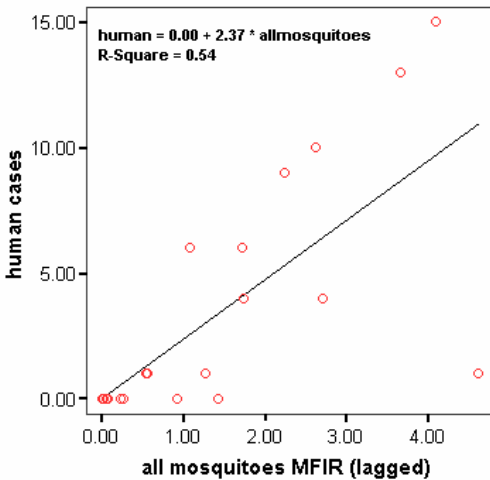
Activity last week



Recent Activity to 11 July 2009

WNV Risk of Exposure Model

This is Phase 1 of our WNV Risk Exposure model presentation. Our WNV risk model begins with a simple linear relationship we have found between overall mosquito MFIR values and the number of human cases that appeared two weeks later. This relationship was developed using statewide values from 2002 to 2006. The regression model, graphed to the left, explains over 50% of the variation observed. We've continued to explore the variables that contribute to WNV cases, and will present more precise models on this page in the future.

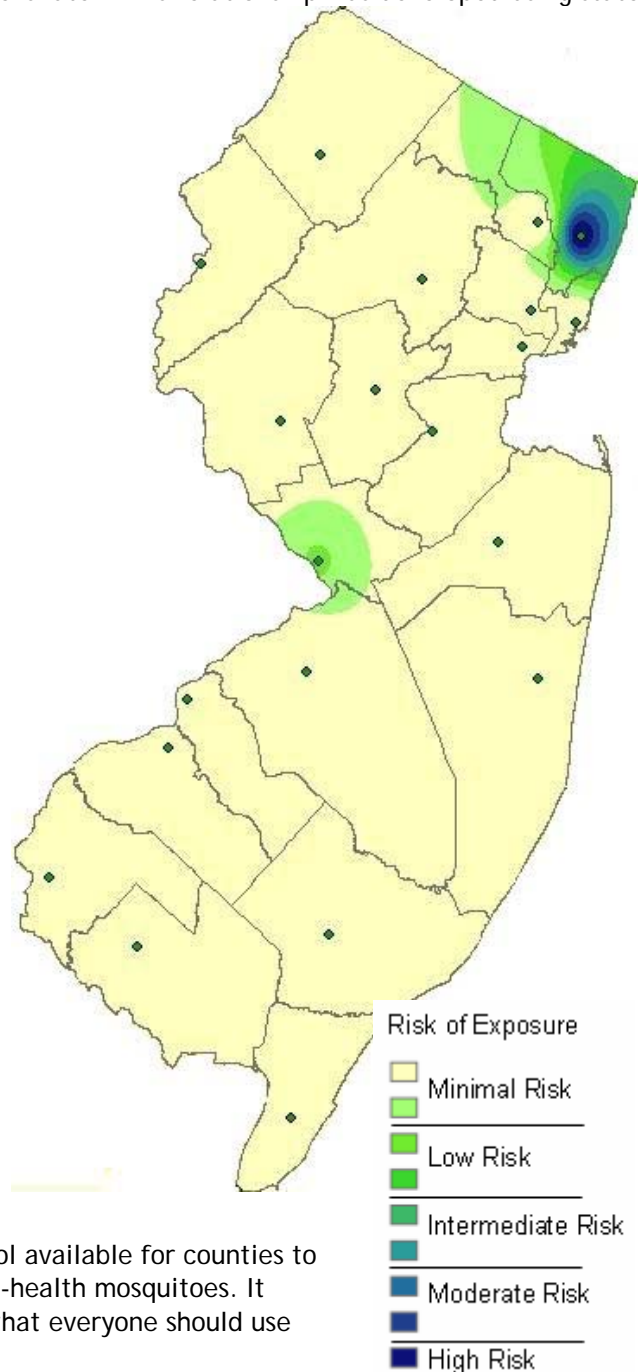


Using ArcMap 9.2, we applied this linear relationship of overall mosquito MFIR values at the county level to calculate a "risk of exposure." Since this calculation was for the county as a whole, each county point was fixed within the county using the county seat (green diamond symbols). The values used in the linear regression were reported during Week 25 (the two week lag) of the Vector Surveillance Program from the WNV Results By County table.

Risk is rated from minimal exposure (no positive pools found) through to high risk (positive mosquitoes found) with several risk levels in between. Risk is interpolated from each of the 21 county points in equal gradients. It should be noted that minimal risk does not mean no risk and that high risk cannot be mediated by mosquito bite avoidance behavior.

Areas of higher risk are noted in Bergen and Mercer counties. These are both counties that reported a single positive *Culex* pool during the past few weeks. Because Bergen County had fewer overall mosquitoes submitted, their risk value for the same number of positive mosquito pools (i.e., 1) is higher than for Mercer County.

NOTE: These maps are presented as an additional early warning tool available for counties to use as part of their decision-making processes for controlling public-health mosquitoes. It should be understood that *minimal risk does not mean no risk* and that everyone should use [personal protection](#) to avoid mosquito bites.



Saint Louis Encephalitis (SLE) through 11 July 2009.

New Jersey will be selectively testing for SLE this year. SLE has had previous activity in New Jersey, most notably in 1964 and 1975 (CDC's SLE [website](#)), the latter prompting the surveillance reporting by Rutgers. SLE is a flavivirus and has a similar transmission pattern to West Nile, with *Culex* species as the predominant vectors.

County	Species	Pools	Mosquitoes	Positives	MFIR
Burlington		116	2083		
	<i>Aedes abserratus</i>	1	1		
	<i>Aedes albopictus</i>	14	70		
	<i>Aedes canadensis canadensis</i>	4	52		
	<i>Aedes cinereus</i>	2	20		
	<i>Aedes cantator</i>	1	6		
	<i>Aedes japonicus</i>	13	43		
	<i>Aedes sollicitans</i>	2	22		
	<i>Aedes taeniorhynchus</i>	1	47		
	<i>Aedes triseriatus</i>	6	28		
	<i>Aedes trivittatus</i>	1	6		
	<i>Aedes vexans</i>	8	140		
	<i>Anopheles bradleyi</i>	2	18		
	<i>Anopheles punctipennis</i>	2	4		
	<i>Coquillettidia perturbans</i>	9	155		
	<i>Culex pipiens</i>	1	75		
	<i>Culex restuans</i>	1	3		
	<i>Culex salinarius</i>	2	24		
	<i>Culex spp.</i>	34	1036		
	<i>Culiseta inornata</i>	1	2		
	<i>Culiseta melanura</i>	11	331		
Camden		20	848		
	<i>Aedes japonicus</i>	1	7		
	<i>Aedes vexans</i>	1	1		
	<i>Culex pipiens</i>	2	95		
	<i>Culex spp.</i>	16	745		
Cape May		152	3639		
	<i>Aedes cantator</i>	1	2		
	<i>Aedes triseriatus</i>	2	11		
	<i>Anopheles quadrimaculatus</i>	1	1		
	<i>Coquillettidia perturbans</i>	1	19		
	<i>Culex pipiens</i>	36	630		
	<i>Culex restuans</i>	54	706		
	<i>Culex spp.</i>	57	2270		
Essex		44	758		
	<i>Aedes albopictus</i>	2	3		
	<i>Aedes japonicus</i>	7	13		
	<i>Aedes triseriatus</i>	3	6		
	<i>Aedes vexans</i>	4	15		
	<i>Culex spp.</i>	27	719		
	<i>Psorophora ferox</i>	1	2		

Mercer	156	2903		
<i>Aedes albopictus</i>	9	25		
<i>Aedes japonicus</i>	4	9		
<i>Aedes triseriatus</i>	2	2		
<i>Culex pipiens</i>	47	331		
<i>Culex restuans</i>	63	1039		
<i>Culex spp.</i>	31	1497		

Specimens submitted by the counties continue to be negative for SLE.

La Crosse Encephalitis (LAC) through 11 July 2009.

New Jersey will be selectively testing for La Crosse (LAC) virus this year. New Jersey has had 3 cases of this encephalitic disease since 1964 (see CDC's LAC [website](#)). The mortality is low but like other encephalitides, LAC can have both personal (lasting neurological sequelae) and economic impacts. LAC is a bunyavirus with a transmission cycle involving mosquitoes such as *Aedes triseriatus* and small mammals such as squirrels and chipmunks. LAC can also infect *Aedes albopictus* and transovarial transmission was demonstrated (Tesh and Gubler 1975 Laboratory studies of transovarial transmission of La Crosse and other arboviruses by *Aedes albopictus* and *Culex fatigans*. American Journal of Tropical Medicine and Hygiene 24(5):876-880).

County	Species	Pools	Mosquitoes	Positives	MFIR
Cape May		45	160		
	<i>Aedes albopictus</i>	10	21		
	<i>Aedes japonicus</i>	25	98		
	<i>Aedes triseriatus</i>	10	41		