Dallas County Health and Human Services
Arbovirus Surveillance Report

Week 44 ending November 5, 2016

- In week 43, 3 mosquito traps tested positive for WNV. In week 44 to date, 2 mosquito traps have tested positive for WNV in zip codes: 75060, 75063.
- Fifty one human WNV cases, including 30 patients with neuroinvasive disease have been reported.
- To date, 1059 Dallas County residents have been tested for Zika infection.
- Thirty six travel-associated confirmed cases and 9 probable cases of Zika infection have been identified in Dallas. A total of 24 pregnant women with laboratory criteria for possible Zika infection have been reported to CDC for US Zika Pregnancy Registry surveillance, 5 of whom had symptoms.[m]
- *Aedes aegypti* and *Aedes albopictus* continue to circulate in the area.

<Note: This is the last weekly surveillance report for 2016 although mosquito trapping will continue through the winter months. The final summary for this 2016 season will be published in January 2017.>

Table 1. Mosquito Laboratory and Human Case Surveillance Data for WNV, Dallas County

Week Ending	9/24	10/1	10/8	10/15	10/22	10/29	11/5	YTD
MMWR Week	**38**	**39**	**40**	**41**	**42**	**43***	**44***	
Total Traps Placed in Dallas County [a]	240	238	241	229	156	224	54	6,508
Number of Positive Mosquito Traps (PHL; IL) [c]	18; 2	17; 3	9; 0	3; 0	2; 1	3; 0	2; 0	591†; 64
Number of Pools Tested (PHL; IL) [b,c]	211; 30	180; 40	199; 24	197; 27	125; 27	150; 29	59; 0	5,765; 755
Number of Trap Results Currently Pending	0	0	0	0	0	37	0	
Average Number of *Cx. quinquefasciatus* per Trap [d]	37.8	30.6	28.2	35.0	28.4	33.8	116.7	37.8
Total Number of *Cx. quinquefasciatus* Trapped and Tested	6,486	5,493	5,215	5,355	3,237	4,443	2,209	169,257
Number of Positive Mosquito Pools (PHL; IL) [c]	19; 2	17; 3	9; 0	3; 0	2; 1	3; 0	2; 0	628; 64
WNV Infection Rate per 1,000 *Cx. quinquefasciatus* [e]	3.45	3.92	1.78	0.57	0.94	0.68	0.92	
Weekly Vector Index (VI) [f]	0.13	0.12	0.05	0.02	0.03	0.02	0.11	
Presumptive WNV Viremic Blood Donors	0	0	0	0	0	0	0	2
WNV Human Cases (WNND; WNF) [g]	2; 1	0; 1	1; 1	0; 0	1; 1	1; 0	0; 0	30; 21

Table 2. Mosquito Laboratory and Human Case Surveillance Data for Chikungunya, Dengue and Zika Virus, Dallas County

Week Ending	9/24	10/1	10/8	10/15	10/22	10/29	11/5	YTD
MMWR Week	**38**	**39**	**40**	**41**	**42**	**43***	**44***	
Total Biogents Sentinel-Traps Placed in Dallas County [h]	40	36	37	37	25	35	0	963
Average Number of *Aedes per* Trap [i]	14.0	7.0	6.4	9.3	8.5	16.1	0	7.7
Chikungunya Human Cases (Confirmed & Probable) [j]	0	0	0	0	0	1	0	3
Dengue Human Cases (Confirmed & Probable) [k]	0	0	0	0	0	0	0	3
Zika Human Cases (Confirmed Only) [l]	0	2	1	0	0	0	0	36
Pregnant Women with Possible Zika Infection [m]	0	0	2	1	2	0	0	24

†One mosquito trap containing only *Aedes albopictus* was positive for WNV, and is not included in VI calculations.

***Data for most recent 2 weeks are preliminary, and reflect results reported as of 10:30 a.m. November 7, 2016.**

a. All traps deployed in municipalities submitting data to DCHHS since Week 13. Includes traps without mosquitoes, malfunctioning traps and traps with pending results
b. Excludes traps without female *Culex quinquefasciatus* identified. Maximum of 50 female *Culex quinquefasciatus* per pool; more than 1 pool may be tested per trap
c. PHL = Public health laboratory (DSHS, DCHHS) testing performed by viral culture or CDC RT-PCR protocol; IL = Testing from independent labs by alternate methods
d. Average abundance of female *Culex quinquefasciatus* mosquitoes per trap night/week (excludes non-working traps)
e. WNV Infection rates calculated using a Maximum Likelihood Estimation (MLE). *Biggerstaff BJ. PooledInfRate, version 4.0; Microsoft Excel Add-In; CDC 2007*
f. The Vector Index (VI) reflects the MLE adjusted for *Culex quinquefasciatus* abundance. VI= $\sum_{i=species} \bar{N}i\hat{P}i$, where *N* is the average number of *Culex quinquefasciatus* mosquitoes collected per trap night and $\hat{P}$ is the estimated infection rate
g. Human cases by week of report to health department. WNND = West Nile Neuroinvasive Disease; WNF = West Nile Fever
h. All Biogents (BG) Sentinel traps deployed in municipalities submitting data to DCHHS since Week 15. Includes traps without mosquitoes, malfunctioning traps
i. Average abundance of *Aedes albopictus* and *Aedes aegypti* mosquitoes per night/trap in BG-Traps (excludes non-working traps)
j. Human CHKV cases by week of report to health department (AT : Autochthonous case; I : imported)
k. Human Dengue cases by week of report to the health department
l. Confirmed human Zika cases by week of report to health department (Excludes any pregnant cases)
m. Possible Zika Virus Infection Among Pregnant Women — United States and Territories, May 2016, http://www.cdc.gov/mmwr/volumes/65/wr/mm6520e1.htm/

Table 3. WNV Positive Gravid Mosquito Traps by City, Dallas County*

Week Ending			9/24	10/1	10/8	10/15	10/22	10/29	11/5	YTD
MMWR Week			38	39	40	41	42	43*	44*	
	# Human WNV Cases	Range Total # of Traps/Week[1]	# WNV+ Traps	# WNV+ Traps	# WNV+ Traps	# WNV+ Traps	# WNV+ Traps	# WNV+ Traps	# WNV+ Traps	
Addison	1	2	0	0	0	0	0	0	Pending	10
Balch Springs	0	1 - 3	1	0	1	0	0	0	0	13
Carrollton	1	7	0	0	0	0	0	0	Pending	37
Cedar Hill	0	2 - 5	0	1	0	0	1	0	0	9
Cockrell Hill	0	1	0	0	0	0	0	0	0	3
Coppell	4	6	1	1	0	0	0	0	Pending	32
Dallas	28	60 - 87	4	1	1	0	0	1	0	121
DeSoto	1	2 - 6	2	3	0	0	0	1	0	28
Duncanville	0	2 - 5	2	1	0	0	0	1	0	18
Farmers Branch	0	3 - 4	0	0	0	0	0	0	Pending	13
Garland	4	17 - 27	0	2	2	0	0	0	0	47
Glenn Heights	0	2	0	0	0	0	0	0	0	1
Grand Prairie	1	24 - 33	2	2	0	0	1	0	0	57
Highland Park	0	2 - 6	1	0	0	0	0	0	0	9
Hutchins	0	1	0	0	1	0	0	0	0	5
Irving	6	13 - 15	2	1	0	1	0	0	2	73
Lancaster	0	2 - 4	1	2	0	0	0	0	0	13
Mesquite	4	5 - 19	1	3	2	1	0	0	0	93
Richardson	0	8 - 12	1	2	0	0	0	0	0	22
Rowlett	0	2 - 7	1	0	1	0	0	0	0	22
Sachse	0	3	1	0	0	1	0	0	0	12
Seagoville	0	2	0	0	1	0	1	0	0	6
Sunnyvale	0	2	0	1	0	0	0	0	0	3
Unincorporated County	0	1	0	0	0	0	0	0	0	1
University Park	0	2 - 4	0	0	0	0	0	0	0	4
Wilmer	1	1	0	0	0	0	0	0	0	3
Total	51		20	20	9	3	3	3	2	655

***Data for most recent 2 weeks are preliminary, and reflect results reported as of 10:30 a.m. November 7, 2016. "Pending" indicates that no results for any traps have yet been received. [1]Range of numbers of traps placed weekly, in weeks 25-43.**

Figure 1: All WNV Negative and Positive Mosquito Traps Collected During 2016: Weeks 13-44* (N=6,508)

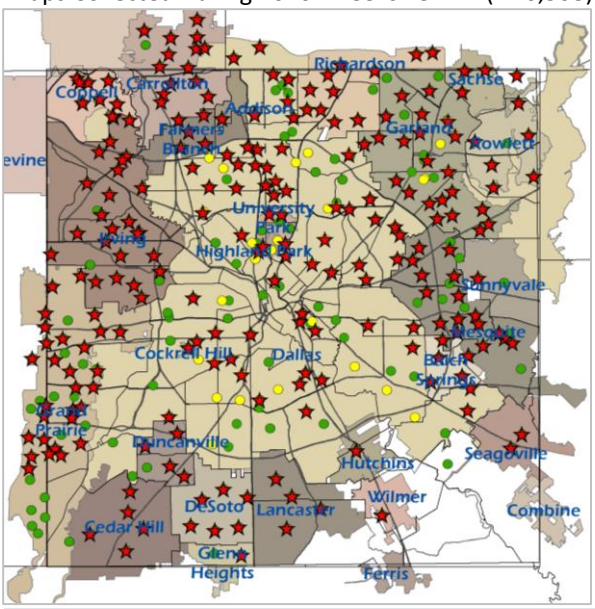
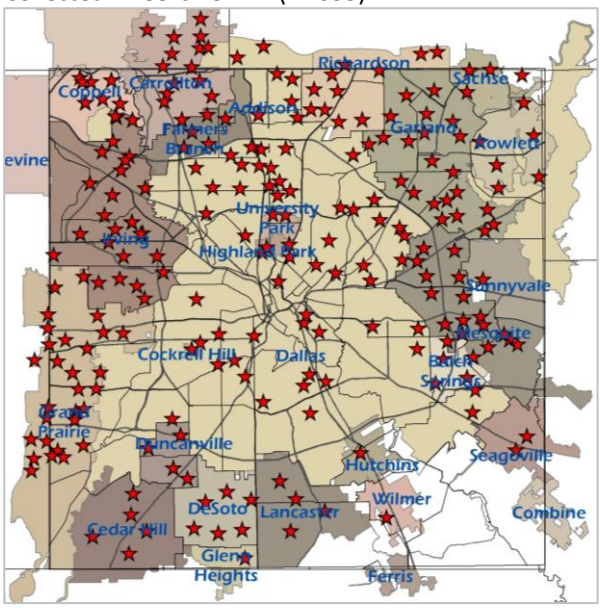


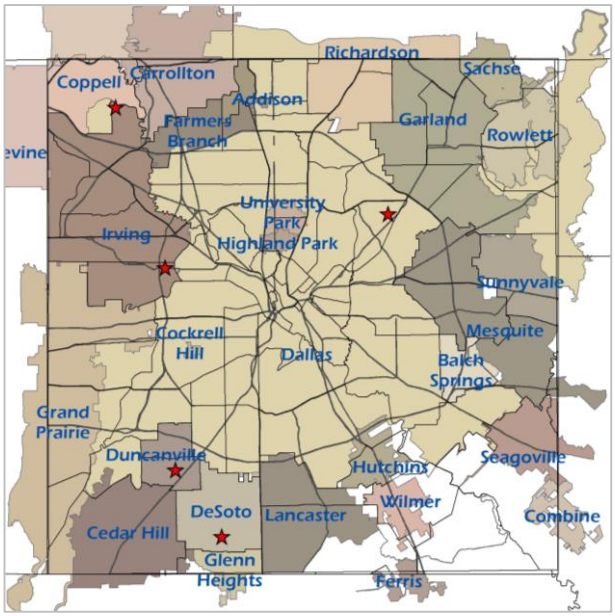
Figure 2: Cumulative WNV Positive Mosquito Traps Collected: Weeks 13-44* (N=655)



Positive Traps Negative Traps Pending Traps

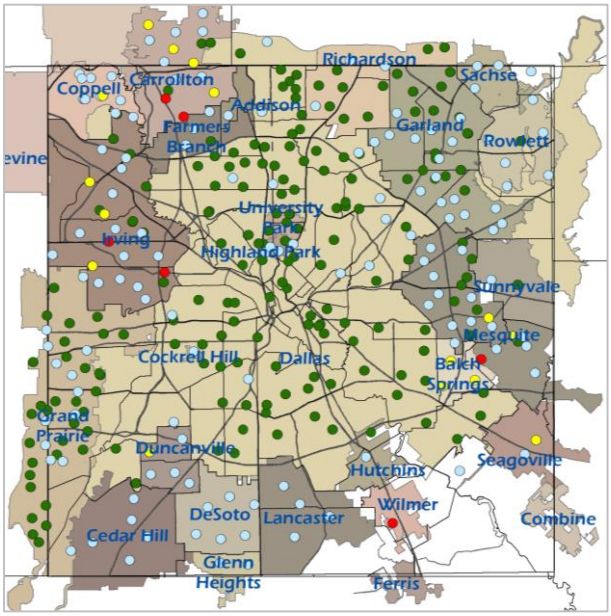
*Data for most recent 2 weeks are preliminary

Figure 3: WNV Positive Mosquito Traps Collected During 2016: Weeks 43 and 44* (N=5)



Positive Traps

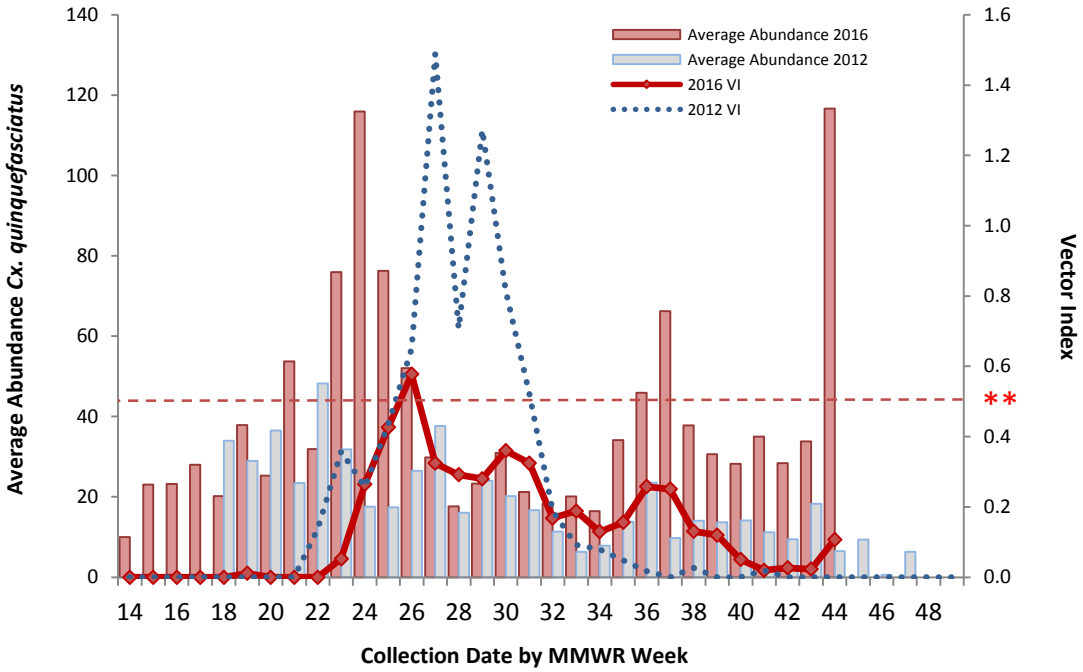
Figure 4: Trap Counts of Female *Cx. quinquefasciatus* from 2016 Season: Weeks 13-44*



< 100 Mosquitoes/Trap
100 - 499 Mosquitoes/Trap
500 - 1000 Mosquitoes/Trap
>1000 Mosquitoes/Trap

*Figure 4 only shows traps for which results were available; malfunctioning traps were excluded. Almost all traps are at fixed sites.
***Note**: Most recent 1-2 weeks data are preliminary and subject to change following receipt of data still pending.*

Figure 5: Average Numbers of Female *Cx. quinquefasciatus* per Trap-night and WNV Vector Index by Week: 2012 Season and 2016 Season (through Week 44*)



** Vector Index of 0.50 is the historical threshold associated with larger local epidemics of WNV illnesses in humans.
***Note**: Most recent 1-2 weeks data are preliminary and subject to change following receipt of data still pending.*
*Data for most recent 2 weeks are preliminary

Figure 6: WNV Vector Index by Week: 2012 - 2016 Seasons

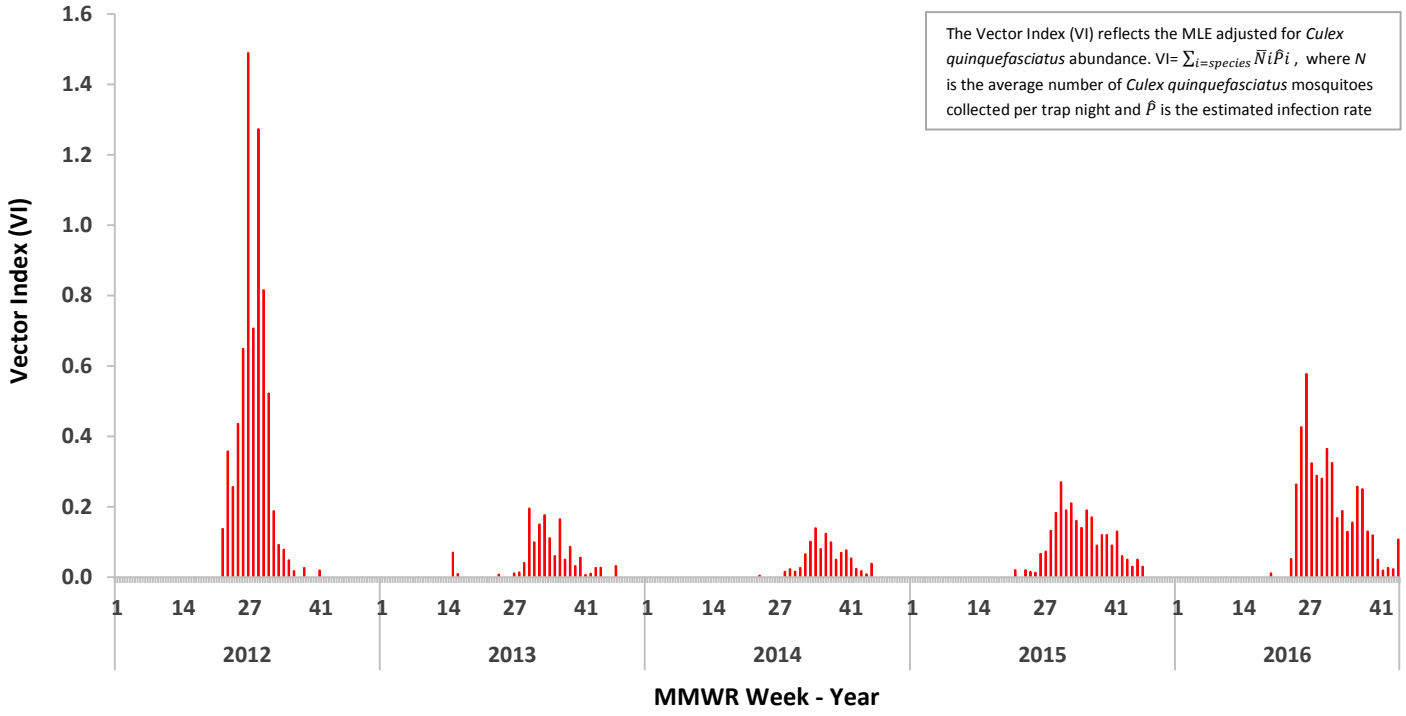


Figure 7: Average Numbers of Female *Cx. quinquefasciatus* per Trap-night by Week: 2012 - 2016 Seasons

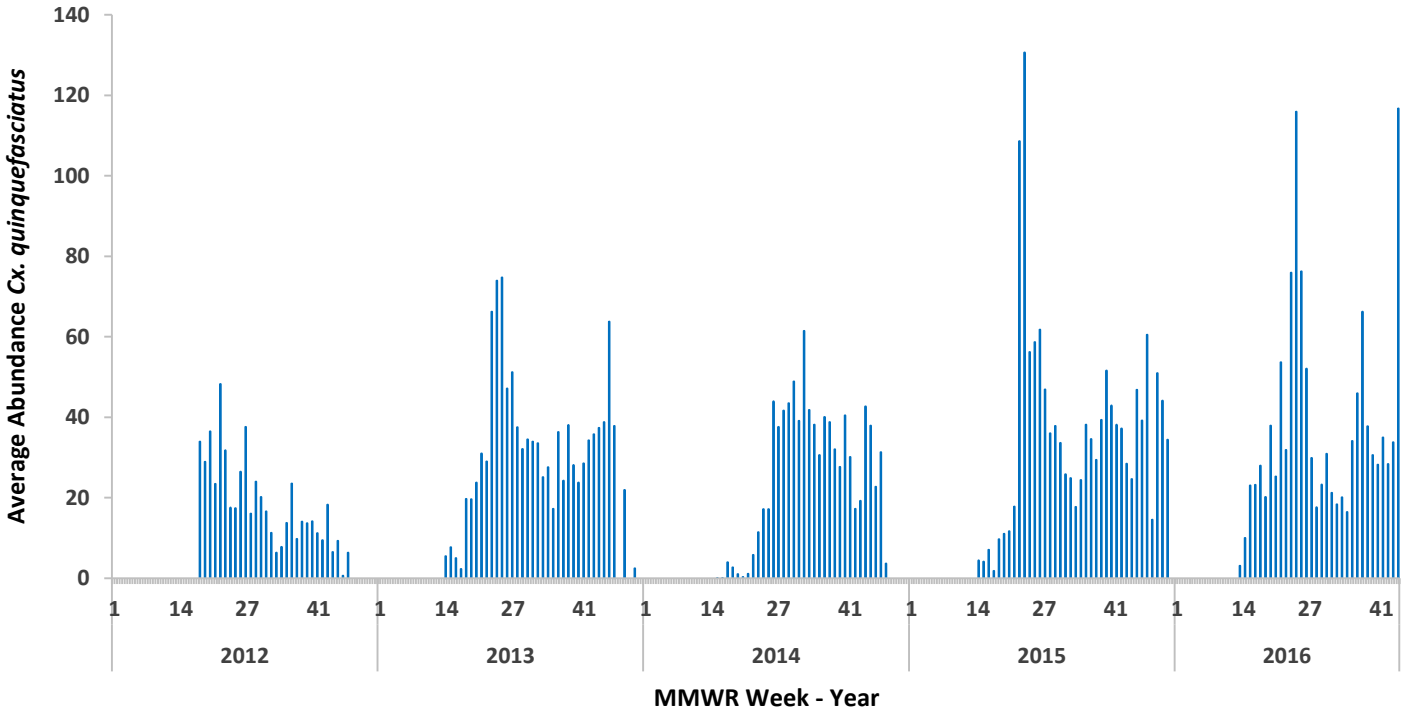


Figure 8: MLE (WNV Infection Rate per 1,000 *Cx. quinquefasciatus*) by Week: 2012 - 2016 Seasons

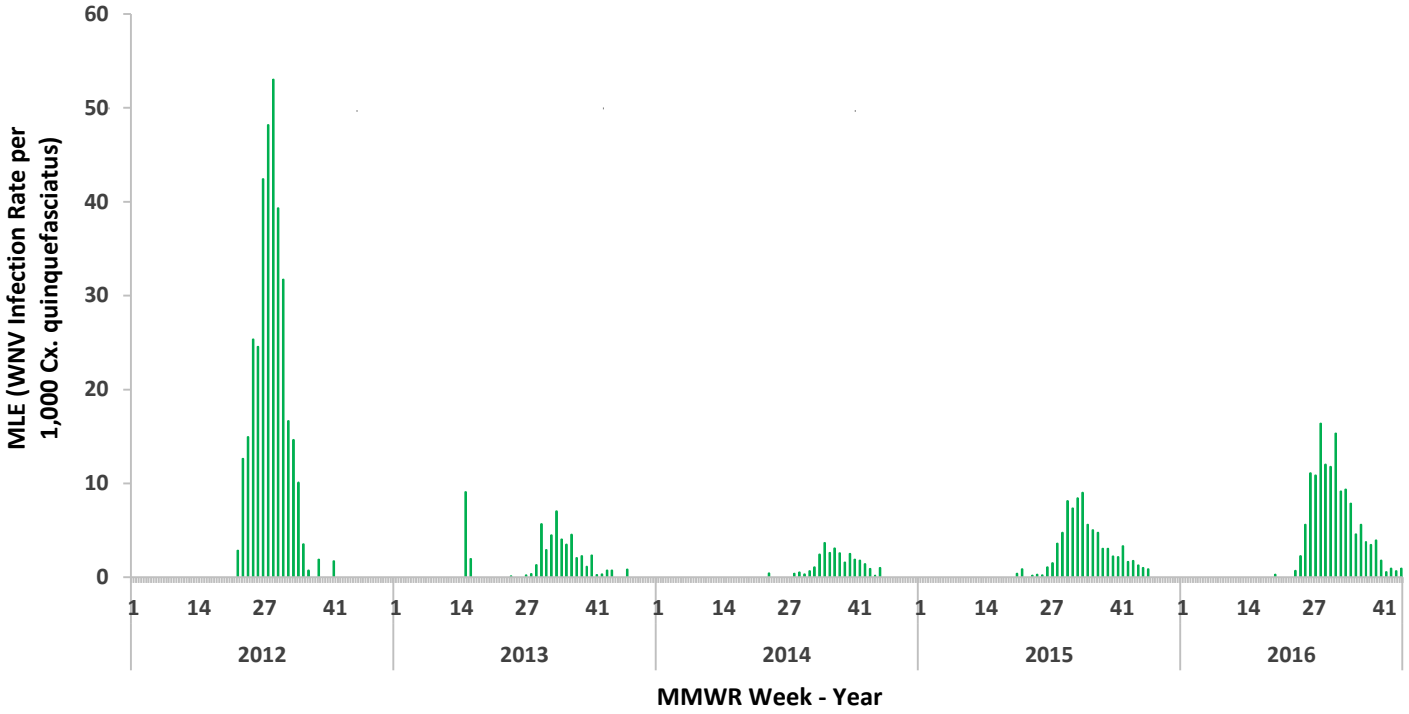


Figure 9: WNV Vector Index, Viremic Blood Donors, and Human WNV Cases by Week of Report: **2016 Season**

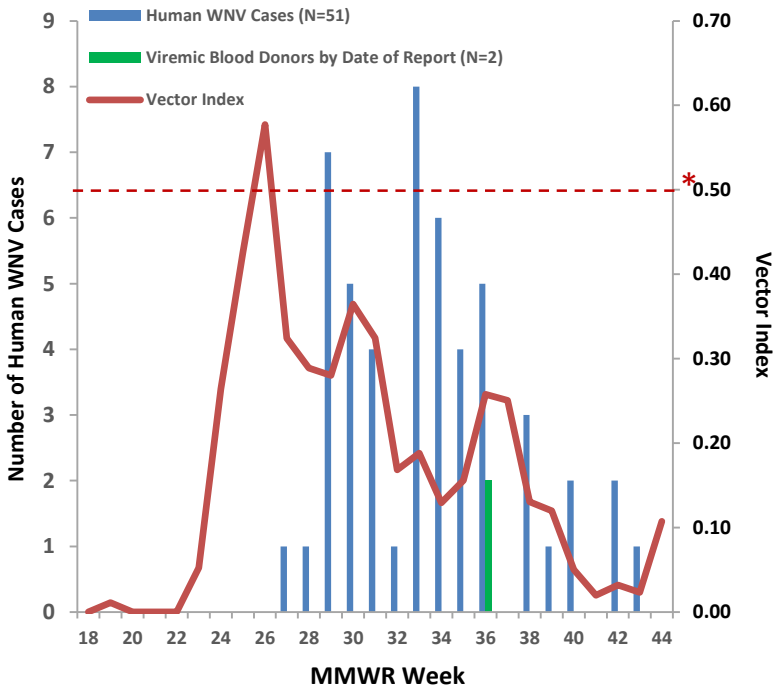


Figure 10: Human WNV Cases (WNND = 30; WNF = 21) During 2016 Season: Weeks 15 through 44

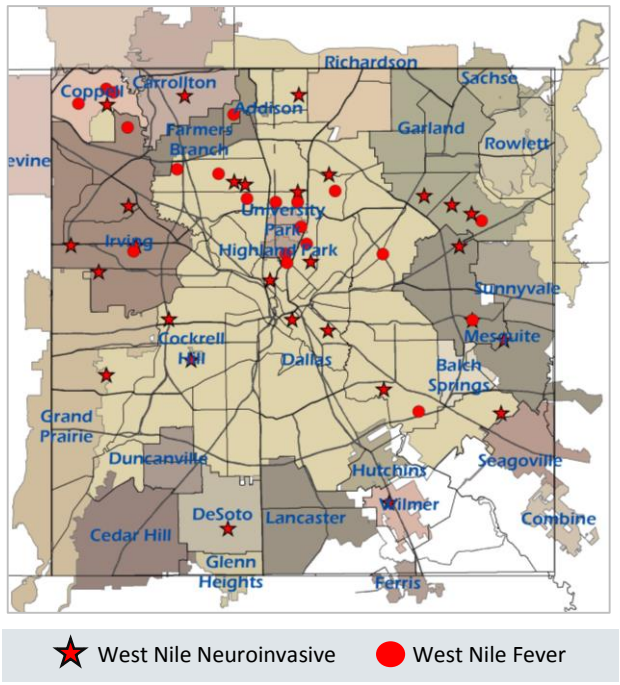


Table 4: Travel-Associated Zika Infections by Country/Territories: 2016 Season, Dallas County

	Country/Territories	# Human Zika Cases (%)
North America	Mexico	9 (25.0)
Central America	Guatemala	5 (13.9)
	Honduras	3 (8.3)
	El Salvador	2 (5.6)
	Nicaragua	2 (5.6)
	Belize	1 (2.8)
Carribean	Jamaica	4 (11.1)
	Puerto Rico	4 (11.1)
	Dominican Republic	2 (5.6)
	Virgin Islands	1 (2.8)
	Trinidad	1 (2.8)
South America	Colombia	1 (2.8)
	Venezuela	1 (2.8)
	Total	**36**

Figure 11: BG-Sentinel Trap Counts of Female *Aedes aegypti* and *Aedes albopictus* During 2016: Weeks 15 through 44

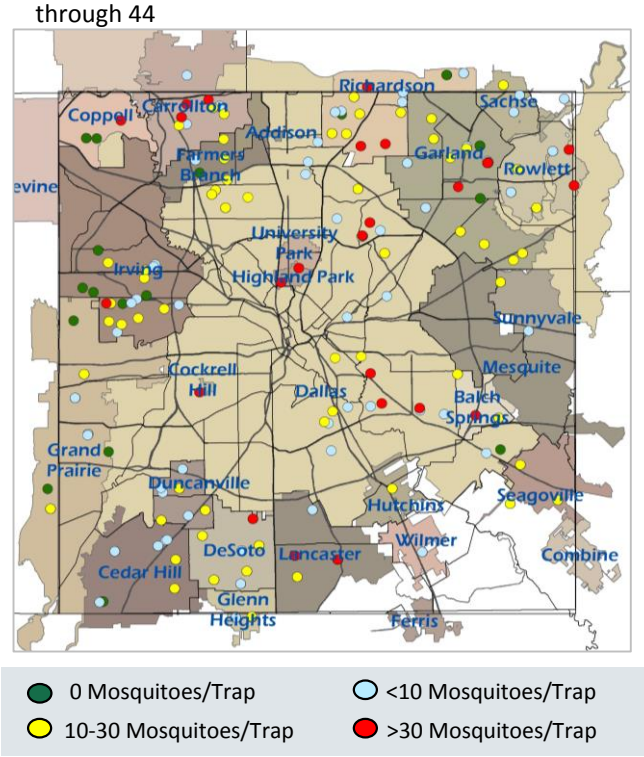


Figure 12: Average Numbers of *Aedes aegypti* per Trap-night: 2015 and 2016 Seasons*

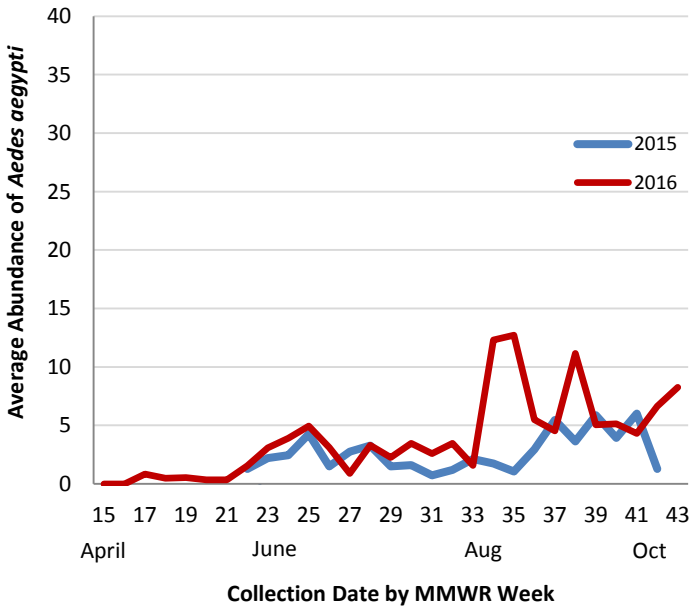
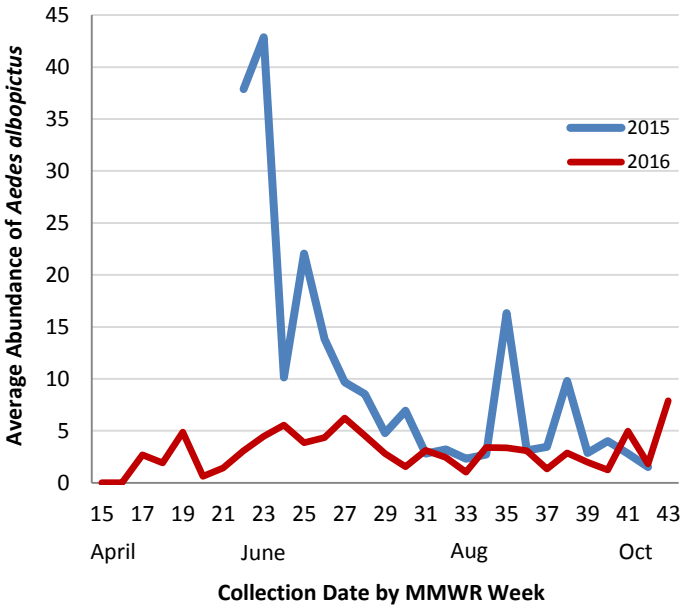
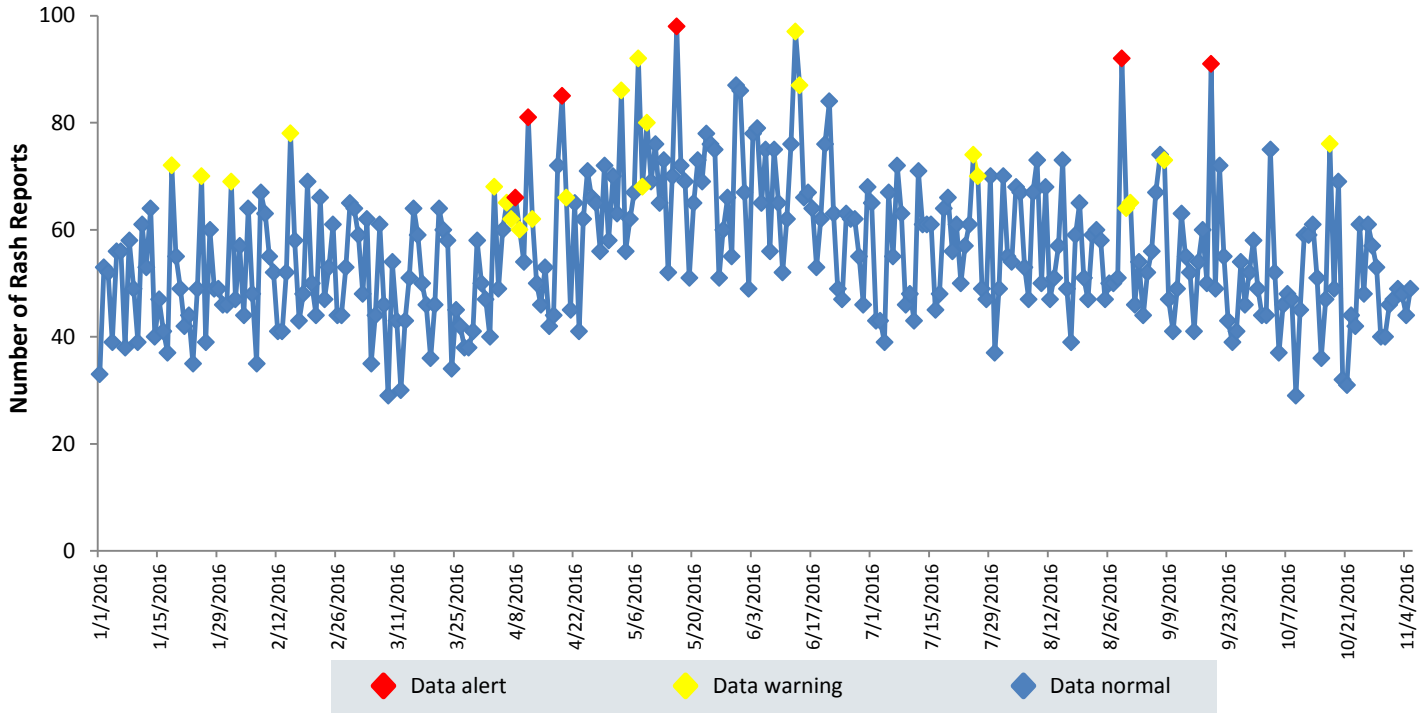


Figure 13: Average Numbers of *Aedes albopictus* per Trap-night: 2015 and 2016 Seasons*



*Routine Aedes BG-Sentinel trapping was conducted during Weeks 22 - 42 in 2015

Figure 14: Syndromic Surveillance of Emergency Department Visits for Chief Complaints of Rash, Dallas County: January 1, 2016 – November 5, 2016



Data source: 18 emergency departments in Dallas County hospitals participating in the Electronic Surveillance System for the Early Notification Of Community-based Epidemics (ESSENCE) voluntarily reporting the numbers of persons presenting with self-reported chief complaints of rash.

Acknowledgements:

We are grateful for the partnership of the following contributors to our county-wide Arboviral Surveillance Report:

Mosquito Trapping and Data from Environmental Health Services Divisions of the Following Cities:

Addison
Balch Springs
Carrollton
Cedar Hill
Cockrell Hill
Coppell
Dallas
DeSoto
Duncanville
Farmers Branch
Garland
Glenn Heights
Grand Prairie
Highland Park
Hutchins
Irving
Lancaster
Mesquite
Richardson
Rowlett
Sachse
Seagoville
Sunnyvale
University Park
Wilmer

Mosquito Trapping and Data From:

DCHHS Environmental Health Services: Vector Control Division
Municipal Mosquito
Vector Disease Control International

Mosquito Speciation and Laboratory Testing:

DCHHS Environmental Health Services: Mosquito Lab
DCHHS LRN Laboratory
DSHS Laboratory Services, Arbovirus-Entomology Team
Municipal Mosquito

Human Case Reports and Investigations:

Area Acute Care Hospitals and Healthcare Providers
Dallas County Medical Examiner's Office
City of Dallas Vital Statistics Unit
Carter Blood Care
American Red Cross
DCHHS Acute Communicable Disease Epidemiology Division
Zika Pregnancy Registry Team
Arboviral Case Investigation and Clinical Inquiries Team

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