

Dallas County Health and Human Services Arbovirus Surveillance Report



Week 40 ending October 3, 2020

- In week 40, eight mosquito traps tested positive for West Nile Virus (WNV). A total of 454 mosquito traps have tested positive for WNV to date in 2020.
- Eighteen human WNV cases have been reported to date for 2020, including 5 deaths.
- No chikungunya or Zika cases have been reported year to date in 2020 in Dallas County.
- *Aedes albopictus* and *Aedes aegypti* are currently circulating in the area.

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

| Week Ending | 8/22 | 8/29 | 9/5 | 9/12 | 9/19 | 9/26 | 10/3 | YTD |
|---|--------|--------|--------|--------|--------|--------|--------|-----------|
| MMWR Week | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| Total Traps Placed in Dallas County ^a | 247 | 252 | 238 | 217 | 250 | 241 | 251 | 6,371 |
| Number of Positive Mosquito Traps (PHL; IL) ^c | 41;1 | 54;1 | 31;1 | 27;2 | 24;2 | 11;1 | 8;0 | 436;18 |
| Number of Pools Tested (PHL; IL) ^{b,c} | 209;21 | 227;18 | 212;15 | 179;17 | 227;28 | 219;20 | 245;16 | 5,651;421 |
| Number of Trap Results Currently Pending | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Average Number of <i>Cx. quinquefasciatus</i> per Trap ^d | 20.9 | 23.2 | 27.2 | 36.6 | 47.8 | 38.9 | 52.2 | 43.4 |
| Total Number of <i>Cx. quinquefasciatus</i> Trapped and Tested | 4,539 | 5,161 | 4,510 | 5,152 | 7,410 | 6,248 | 7,558 | 165,547 |
| Number of Positive Mosquito Pools (PHL; IL) ^c | 41;1 | 56;1 | 33;1 | 27;2 | 25;2 | 11;1 | 8;0 | 448;18 |
| WNV Infection Rate per 1,000 <i>Cx. quinquefasciatus</i> ^e | 11.00 | 13.19 | 8.50 | 6.27 | 3.89 | 1.97 | 1.08 | |
| Weekly Vector Index (VI) ^f | 0.23 | 0.31 | 0.23 | 0.23 | 0.19 | 0.08 | 0.06 | |
| Presumptive WNV Viremic Blood Donors | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 5 |
| WNV Human Cases (WNND; WNF) ^g | 0;0 | 0;1 | 5;0 | 4;1 | 2;1 | 0;1 | 1;1 | 13;5 |

Table 2. Mosquito Laboratory and Human Case Surveillance Data for chikungunya, dengue and Zika virus, Dallas County

| Week Ending | 8/22 | 8/29 | 9/5 | 9/12 | 9/19 | 9/26 | 10/3 | YTD |
|--|------|------|-----|------|------|------|------|-----|
| MMWR Week | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| Total Biogents Sentinel-Traps Placed in Dallas County ^h | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 100 |
| Average Number of <i>Aedes</i> per Trap ⁱ | 1.8 | 2.8 | 0.3 | 4 | 6 | 0.8 | 4.5 | 1.5 |
| Chikungunya Human Cases (Confirmed & Probable) ^j | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dengue Human Cases (Confirmed & Probable) ^k | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Zika Human Cases (Confirmed & Probable) ^l | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pregnant Women with Possible Zika Infection ^m | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

*Data for most recent 2 weeks are preliminary, and reflect results reported as of 12:30 p.m. October 5, 2020.

a. All traps deployed in municipalities submitting data to DCHHS since January 1, 2020. 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. $VI = \sum_{i=1}^{n-species} \bar{N}_i \bar{P}_i$, where \bar{N} is the average number of *Culex quinquefasciatus* mosquitoes collected per trap night and \bar{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.

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 and probable human Zika cases by week of specimen collection date

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 and Human WNV Cases by City, Dallas County, 2020

| Week Ending | | | 8/22 | 8/29 | 9/5 | 9/12 | 9/19 | 9/26 | 10/3 | YTD |
|-----------------------|---------------|-----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|
| MMWR Week | | | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| | # Human Cases | Range Total # of Traps/Week | # WNV+ Traps | # WNV+ Traps | # WNV+ Traps | # WNV+ Traps | # WNV+ Traps | # WNV+ Traps | # WNV+ Traps | |
| Addison | 0 | 2-5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Balch Springs | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 12 |
| Carrollton | 0 | 4-7 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 8 |
| Cedar Hill | 0 | 0-5 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 10 |
| Cockrell Hill | 0 | 0-1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 5 |
| Coppell | 0 | 0-8 | 0 | 2 | 0 | 4 | 1 | 1 | 1 | 12 |
| Dallas | 15 | 53-86 | 17 | 23 | 12 | 5 | 8 | 6 | 1 | 170 |
| DeSoto | 0 | 0-6 | 3 | 1 | 0 | 1 | 0 | 1 | 0 | 16 |
| Duncanville | 0 | 0-5 | 5 | 2 | 1 | 4 | 0 | 0 | 0 | 23 |
| Farmers Branch | 0 | 3-5 | 0 | 3 | 2 | 1 | 4 | 1 | 2 | 17 |
| Garland | 0 | 27-31 | 0 | 1 | 2 | 0 | 1 | 1 | 1 | 11 |
| Glenn Heights | 0 | 0-2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 5 |
| Grand Prairie | 0 | 24-27 | 1 | 1 | 1 | 2 | 2 | 1 | 0 | 18 |
| Highland Park | 1 | 0-3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| Hutchins | 0 | 0-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Irving | 1 | 18-19 | 0 | 4 | 2 | 0 | 1 | 0 | 0 | 16 |
| Lancaster | 0 | 0-4 | 3 | 2 | 1 | 3 | 1 | 0 | 0 | 19 |
| Mesquite | 0 | 21-25 | 8 | 10 | 6 | 5 | 3 | 0 | 0 | 81 |
| Richardson | 1 | 12 | 1 | 1 | 2 | 0 | 1 | 1 | 1 | 11 |
| Rowlett | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Sachse | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Seagoville | 0 | 1-2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Sunnyvale | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Unincorporated County | 0 | 1-4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| University Park | 0 | 0-4 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 7 |
| Wilmer | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 18 | | 42 | 55 | 32 | 29 | 26 | 12 | 8 | 454 |

*Data for most recent 2 weeks are preliminary, and reflect results reported as of 12:30 p.m. October 5, 2020. †Range of numbers of traps placed weekly, in weeks 1 - 40.

Figure 1: All WNV Negative and Positive Mosquito Traps Collected During 2020: Weeks 1-40* (N=6,371)

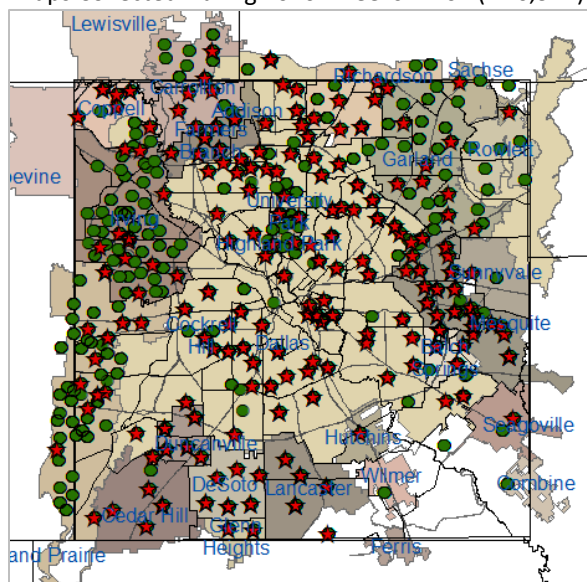
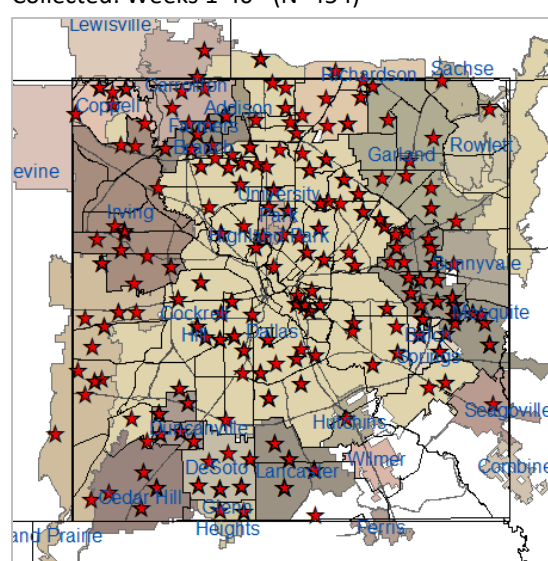


Figure 2: Cumulative WNV Positive Mosquito Traps Collected: Weeks 1-40* (N=454)



Positive Traps

Negative Traps



Pending Traps



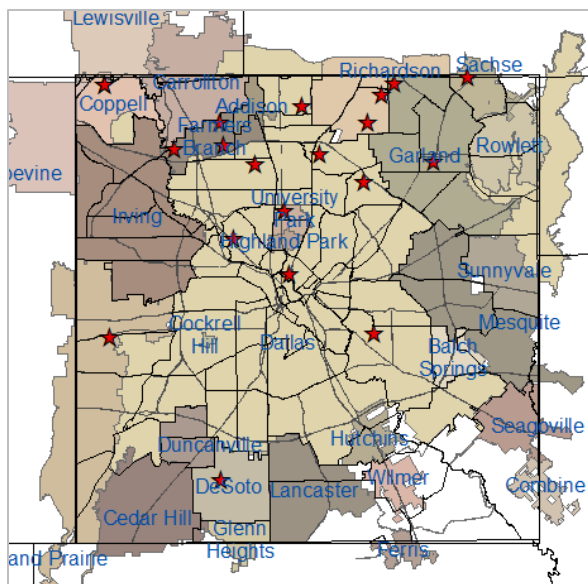
*Data for most recent 2 weeks are preliminary.

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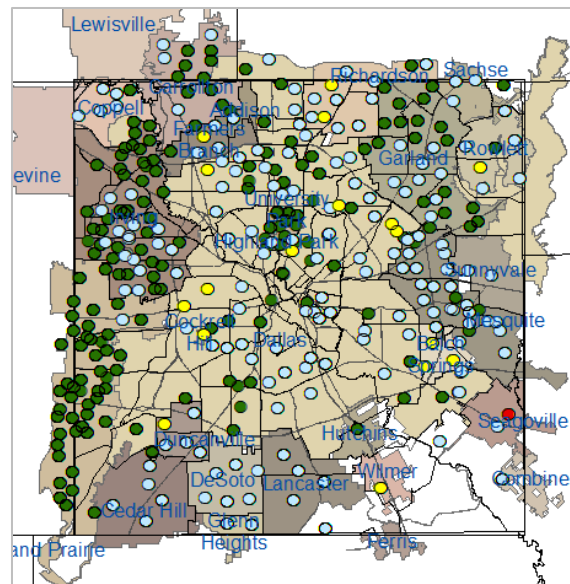
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Figure 3: WNV Positive Mosquito Traps Collected During 2020: Weeks 39 and 40* (N=20)



★ Positive Traps

Figure 4: Trap Counts of Female *Cx. quinquefasciatus* from 2020 Season: Weeks 1-40*

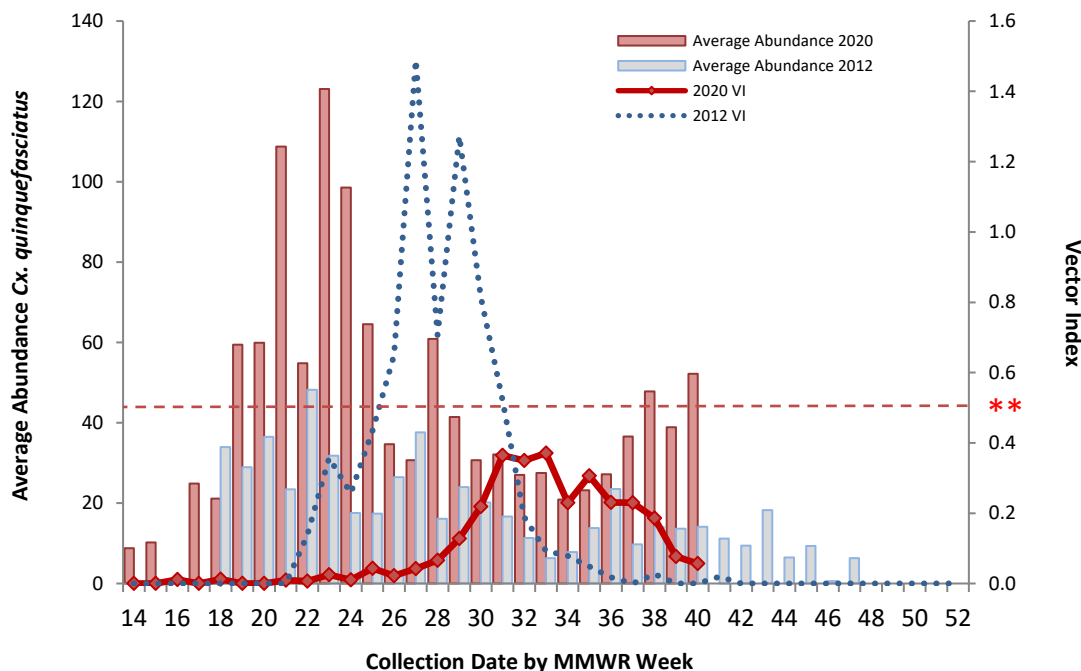


● < 100 Mosquitoes/Trap ● 100 - 499 Mosquitoes/Trap
● 500 - 1000 Mosquitoes/Trap ● >1000 Mosquitoes/Trap

*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 2020 Season (through Week 40*)



** 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.

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Figure 6: WNV Vector Index by Week: 2012 - 2020 Seasons

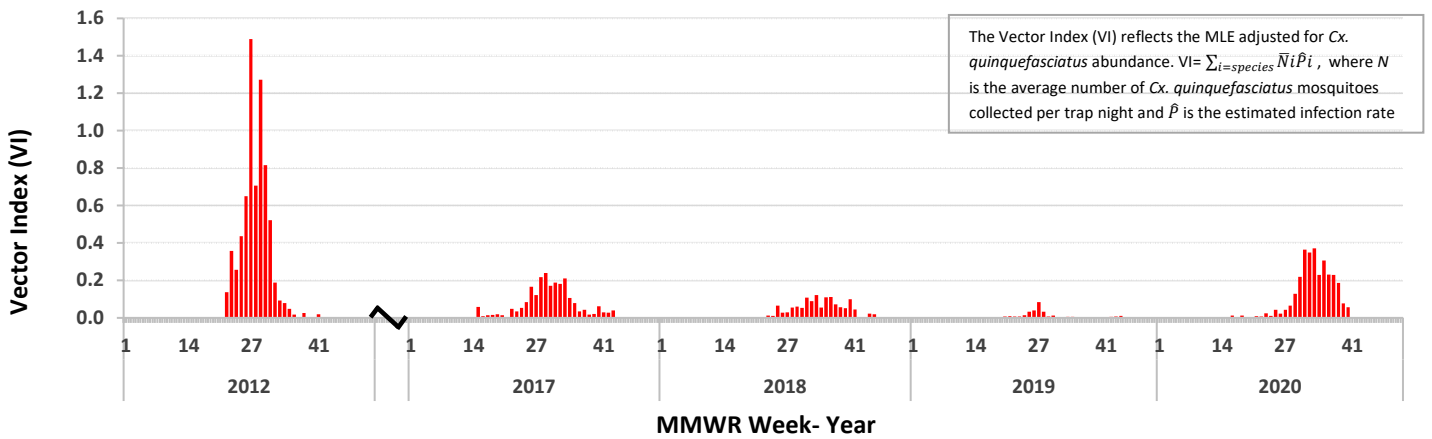


Figure 7: Average Numbers of Female *Cx. quinquefasciatus* per Trap-night by Week: 2012 - 2020 Seasons

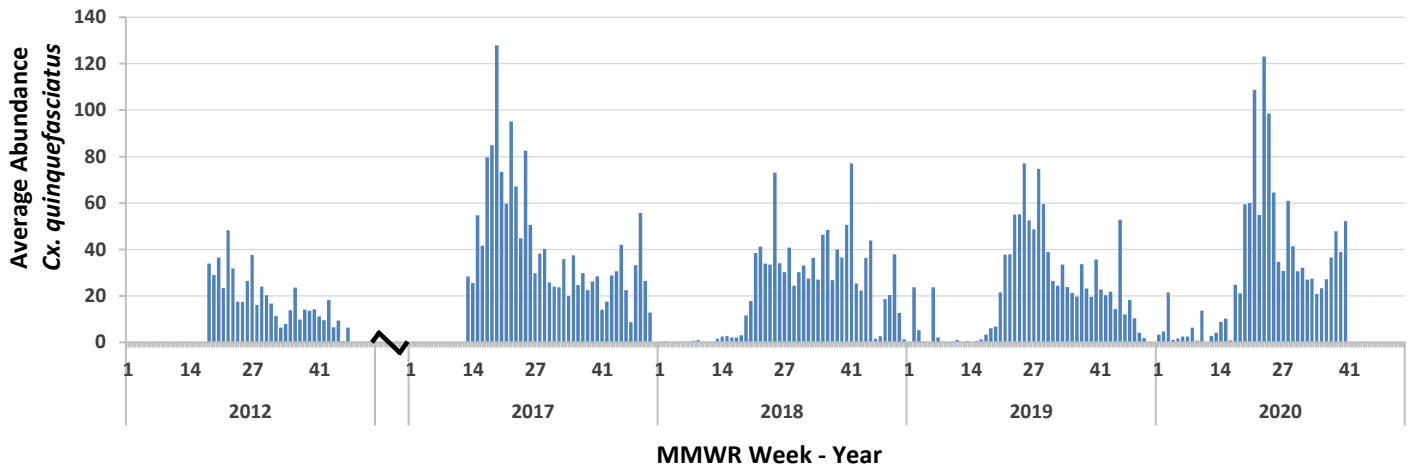
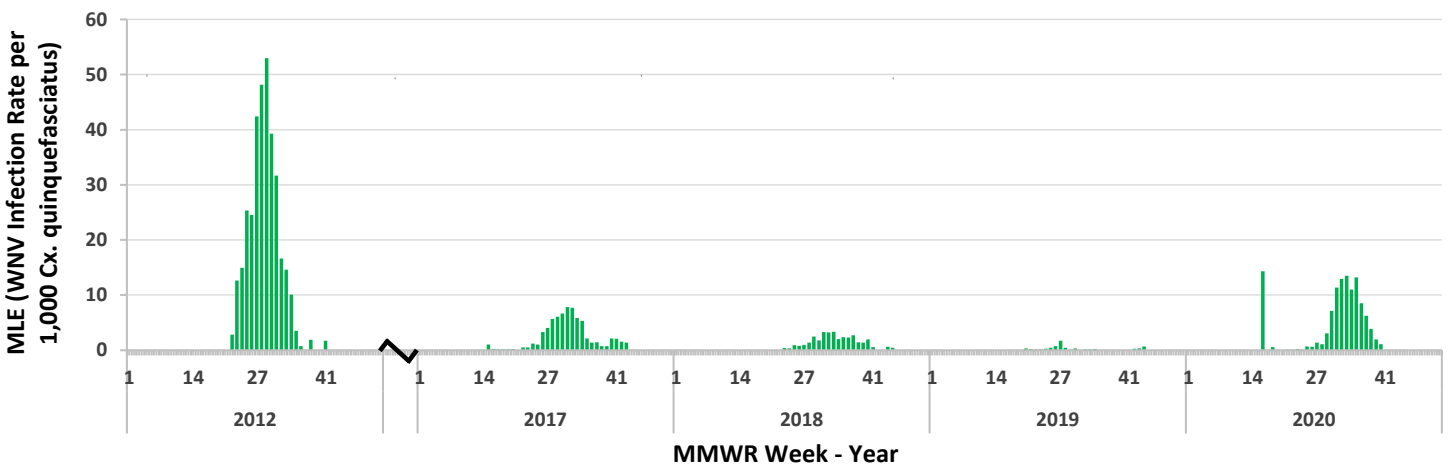


Figure 8: MLE (WNV Infection Rate per 1,000 *Cx. quinquefasciatus*) by Week: 2012 - 2020 Seasons



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Figure 9: BG-Sentinel Trap Counts of Female *Aedes aegypti* and *Aedes albopictus* during 2020: Weeks 15 through 40[†]

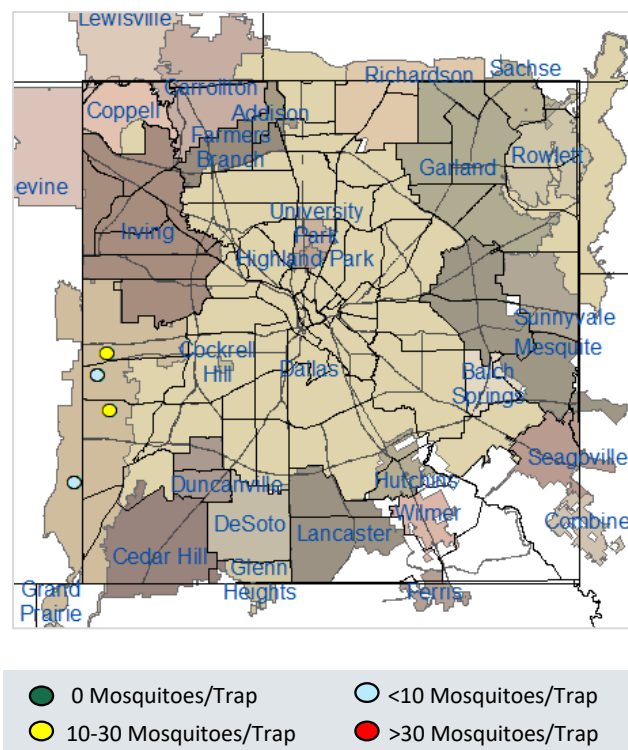


Figure 10: Average Numbers of *Ae. aegypti* per Trap-night: 2019 and 2020 Seasons^{*,†}

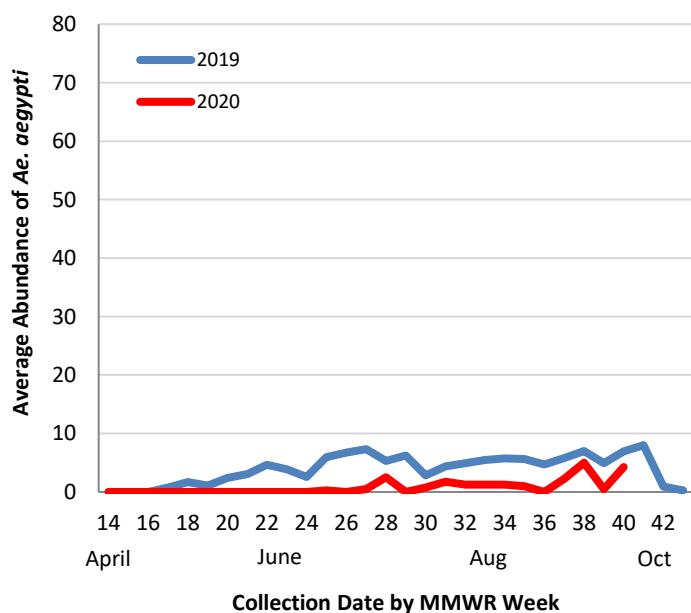
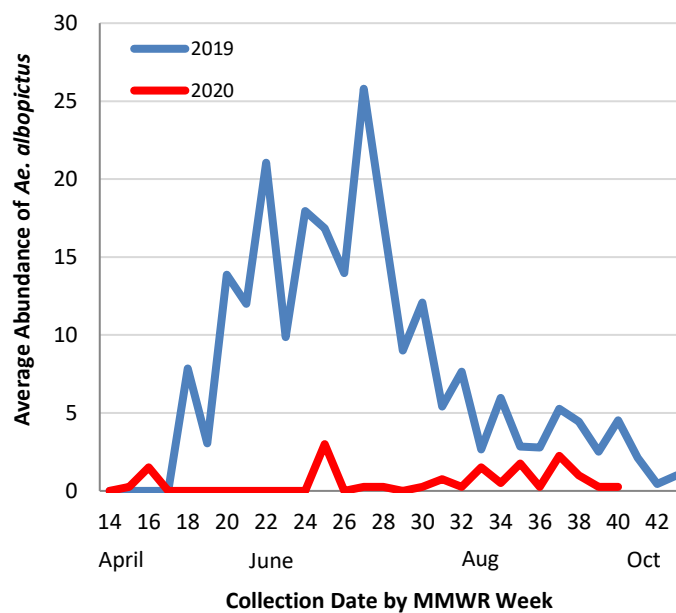


Figure 11: Average Numbers of *Ae. albopictus* per Trap-night: 2019 and 2020 Seasons^{*,†}



^{*}Data for most recent 2 weeks are preliminary
[†]Routine *Aedes* BG-Sentinel trapping was conducted during week 15 - 40 in 2020

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Acknowledgements:

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

Mosquito Trapping and Data from Environmental Health

Services Divisions of the Following Cities:

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

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

Arbovirus Case Investigation and Clinical Inquiries Team

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