

**NORTH SHORE MOSQUITO ABATEMENT DISTRICT
2018 Surveillance Summary**

Date of Report: 10/12/2018

Vector Mosquito Surveillance

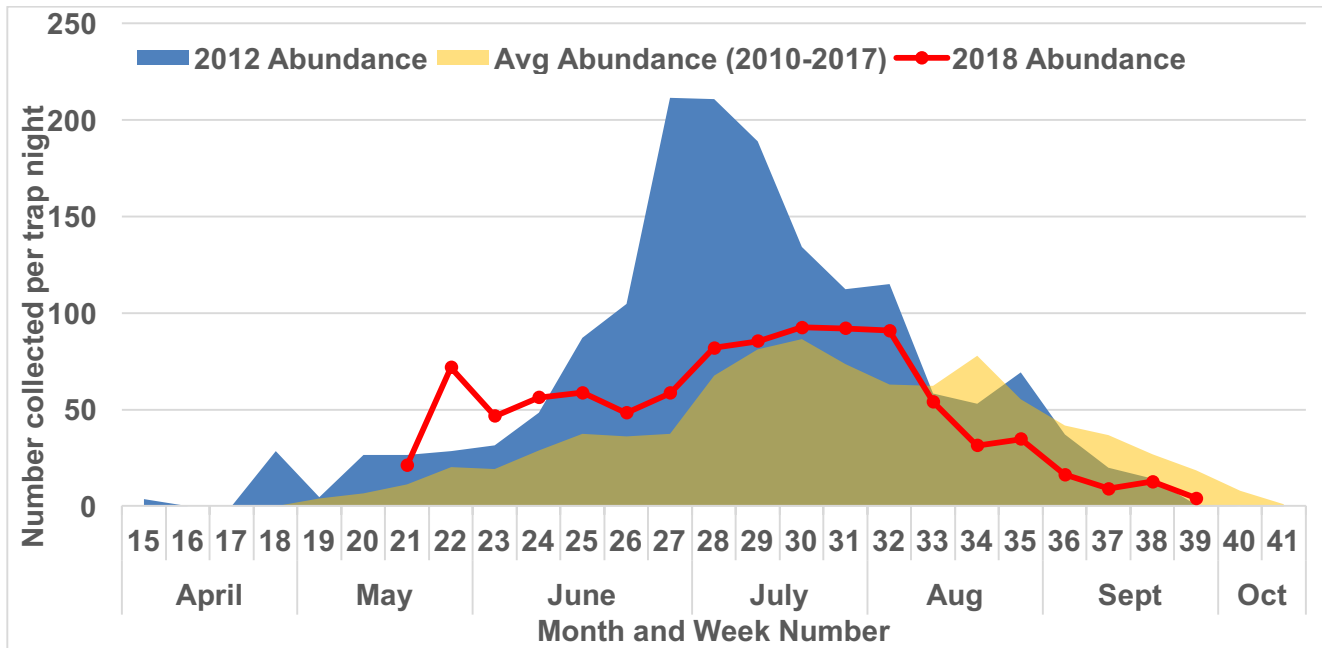
West Nile Virus: West Nile virus activity in 2018 was higher than the average level observed during non-outbreak years from week 27 through week 33. While we consider 2018 to be a high WNV activity year, the risk to humans did not reach the levels seen in 2012, the last outbreak year. Additionally, the peak of WNV activity in 2018 occurred several weeks later than during 2012.

Human WNV Cases: As of the date of this report, the [Illinois Department of Public Health](#) is reporting 103 human WNV cases statewide, 51 of which are from Cook County. Of the human cases reported in Cook County, six are from communities served by the NSMAD.

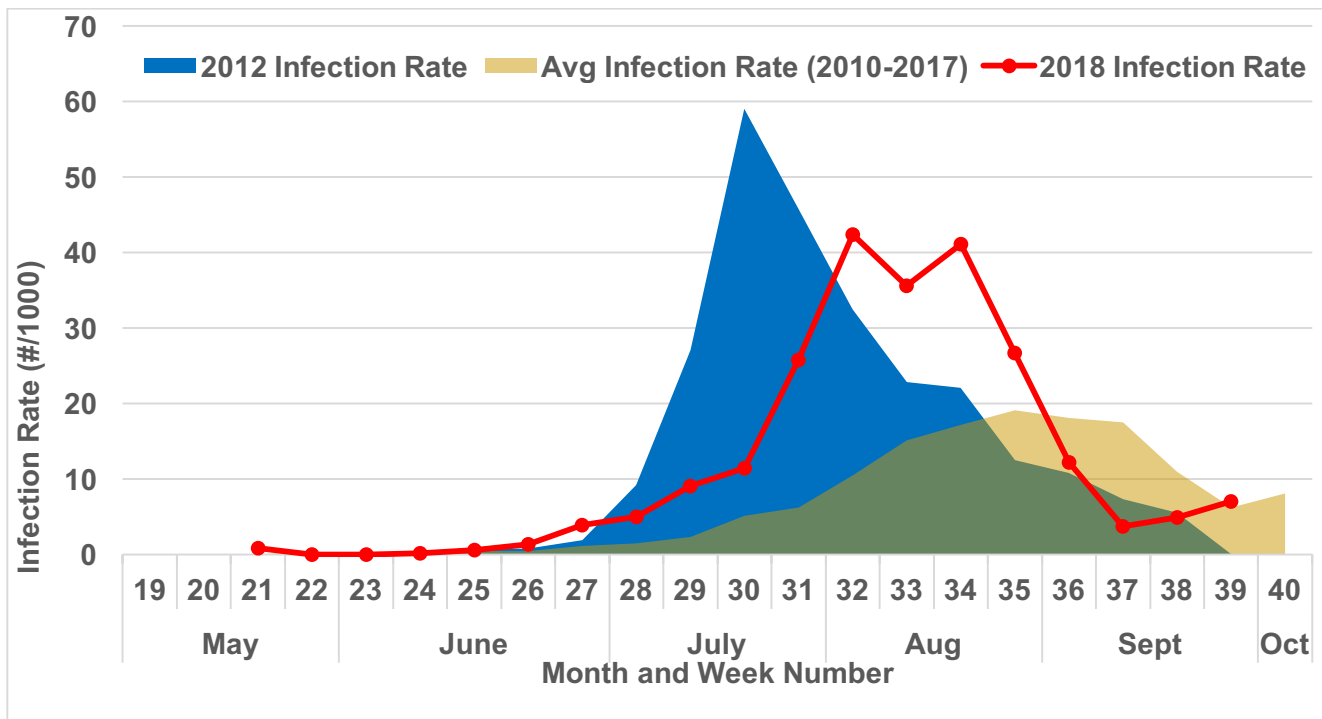
WNV Testing: During 2018, a total of 77,053 mosquitoes were tested in 1,705 batches. Of these, 581 batches were positive for evidence of WNV using the RAMP assay.

2018 Municipality	Batches Tested Season Total	
	# WNV Positives	Number Tested
Evanston	102	372
Glencoe	16	62
Glenview/Golf	90	186
Kenilworth	16	51
Lincolnwood	32	111
Morton Grove	38	103
Niles	30	91
Northbrook	27	78
Northfield	25	84
Skokie	130	357
Wilmette	18	75
Winnetka	57	135
Total	581	1705

Vector Species Abundance: An unusual, early season spike in the *Culex* population occurred in late May, causing us to be concerned that 2018 could be a high WNV activity year. *Culex* abundance in gravid traps remained above average for most of the 2018 season. The highest populations occurred during weeks 30, 31 and 32. WNV surveillance ended on Sept. 28, 2018 (week 39) as abundance and infection indicators showed a low risk to humans.

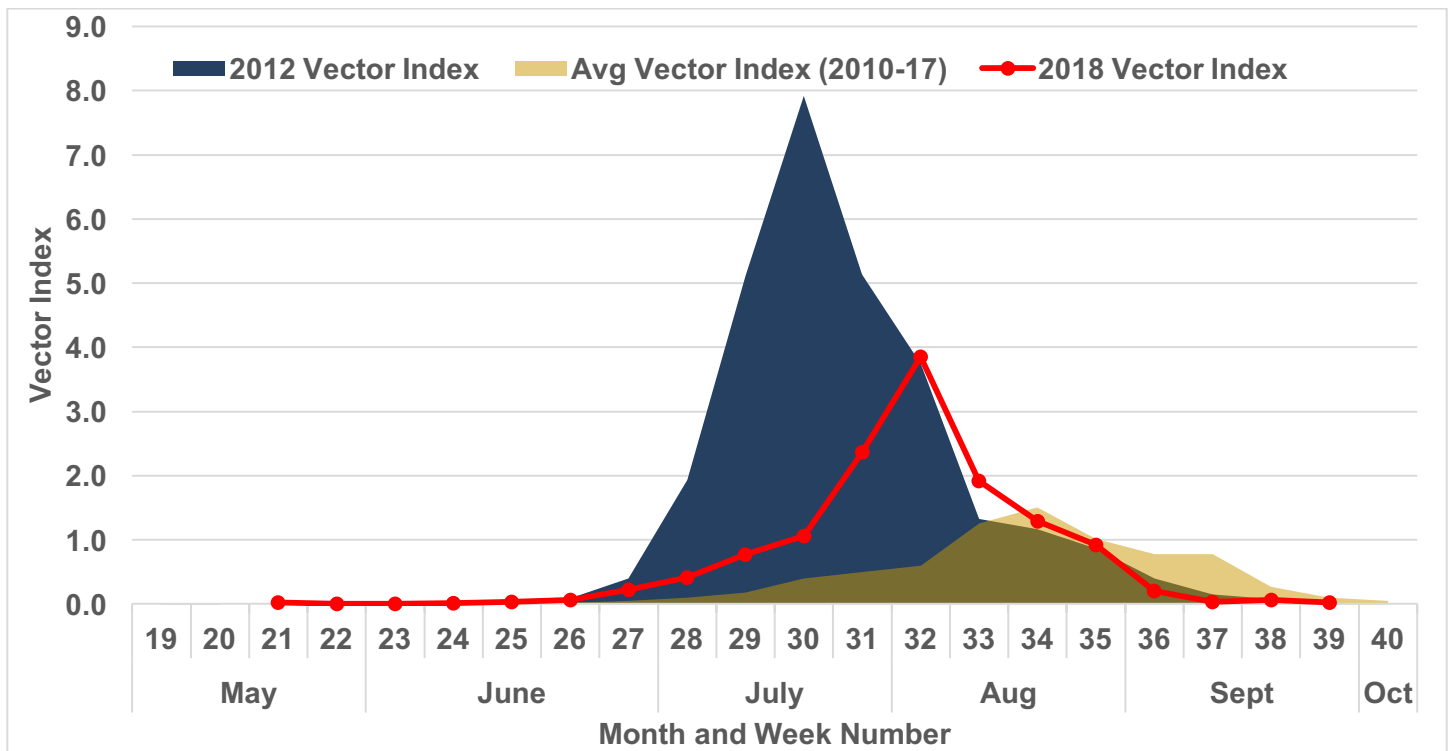


WNV Infection Rate: WNV infection in *Culex* was first detected during week 21. At that time, the infection rate was approximately 1/1000 mosquitoes. WNV infected mosquitoes were not found in our traps again until week 25. The infection rate stayed at relatively low levels from week 22 through week 29 before increasing rapidly between weeks 30-32 when it reached 42/1000. This very high infection rate lasted for approximately four weeks. Infection rates during that period were considerably above the non-outbreak-year levels. By week 36, the infection rate had decreased to average levels and remained there for the rest of the season.



Vector Index during most recent outbreak year (2012), average of non-outbreak years 2010-2017 and current year 2018. Vector Index = estimate of the number of WNV-infected *Culex pipiens* collected per trap, per day.

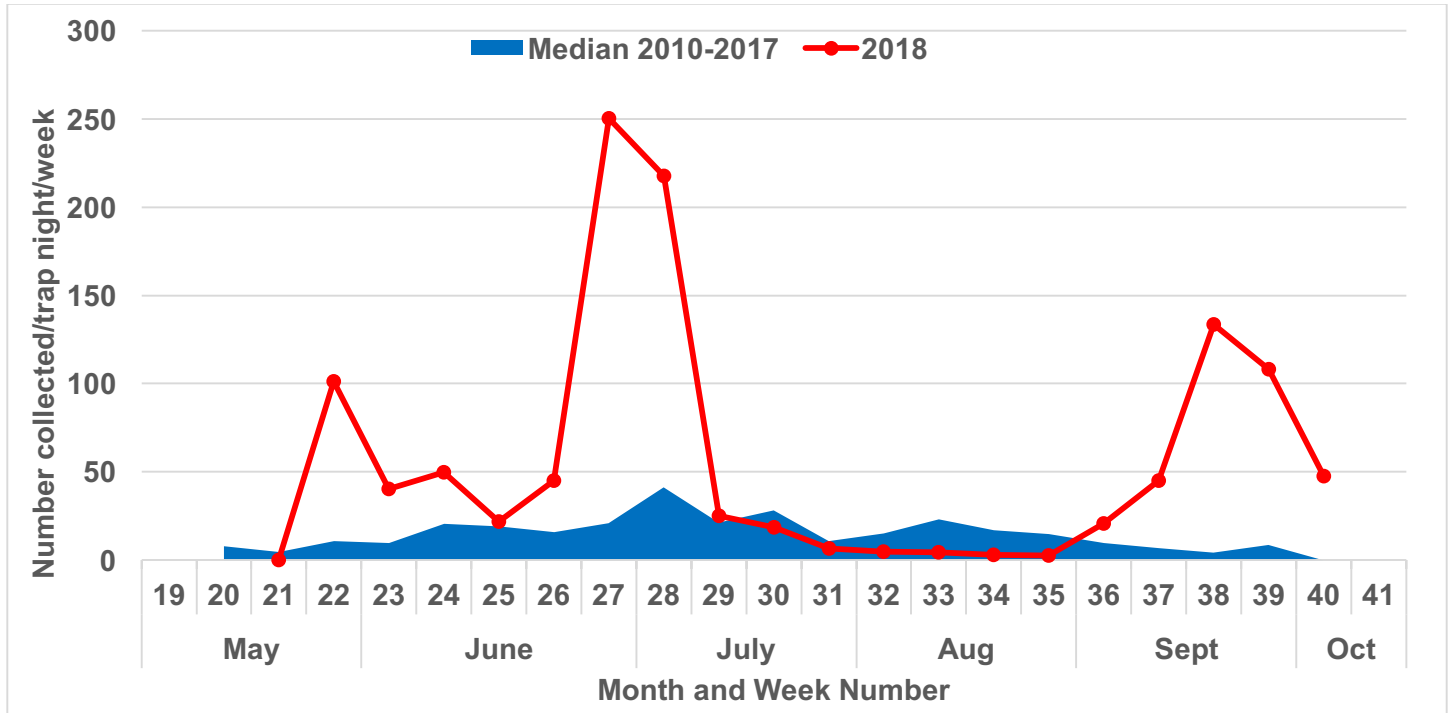
WNV Vector Index: The Vector Index combines the *Culex* mosquito abundance and infection rate data to produce an estimate of the number of WNV infected mosquitoes in the area. This index is associated with human risk of WNV infection and helps us identify locations and time periods when risk is increasing. In the NSMAD surveillance program, a vector index >1 occurring early in the season is associated with an increased risk of multiple human WNV cases. During 2018, the Vector Index exceeded 1.0 in week 30 and remained at increased human risk levels through week 35.



Nuisance Mosquito Surveillance

During 2018, sampling using New Jersey Light Traps (NJLT) began in mid-May (week 21). High spring rainfall amounts (>2.5 inches) produced a brood of mosquitoes in late May. Further heavy rain and flooding events in June produced mosquitoes far above the long-term average. A final rainfall event in early September produced a third and final brood of nuisance mosquitoes. In general, biting mosquito activity becomes very noticeable to residents when the abundance reaches 20-30 per trap night.

New Jersey Light Trap Collections

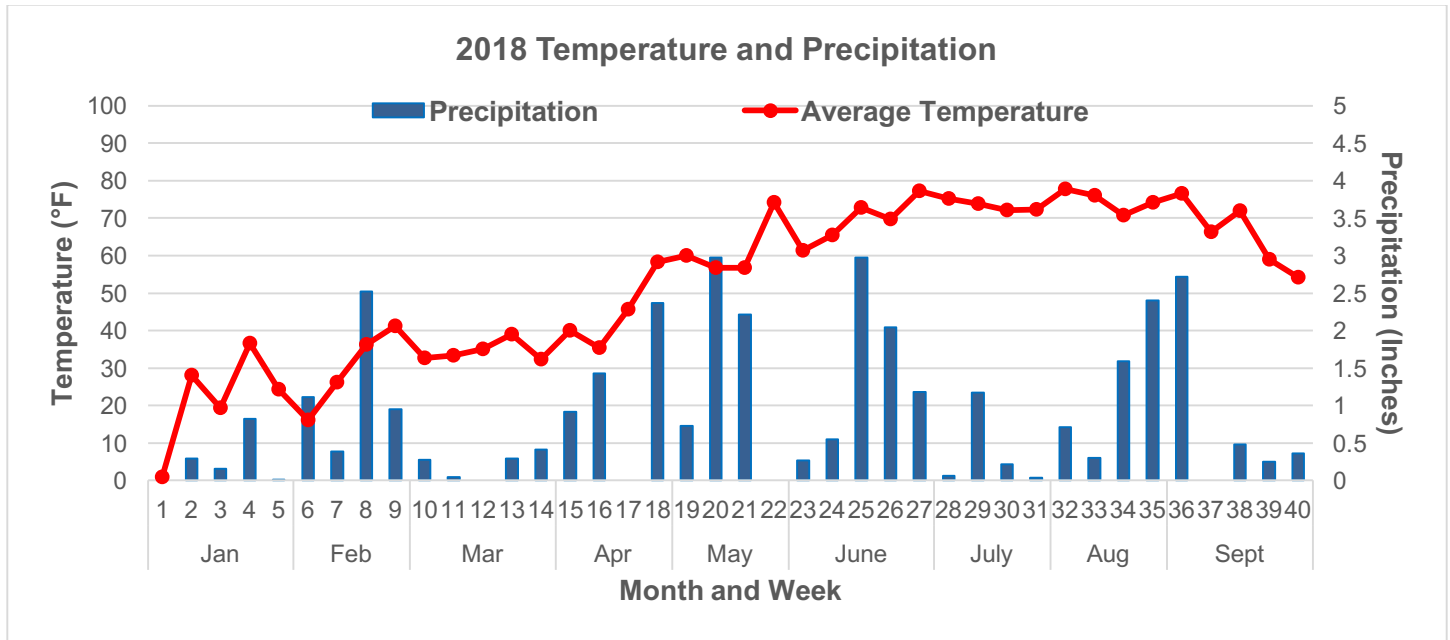


Aedes albopictus in NSMAD

Late in the 2016 season, a small population of *Ae. albopictus* was found in a neighborhood in the northeast portion of Skokie. A total of only 64 *Ae. albopictus* was collected in 2016, suggesting that this was a relatively low abundance population. In 2017 only two adult *Ae. albopictus* mosquitoes were collected. No *Ae. albopictus* adults were collected in any of our traps during the 2018 season.

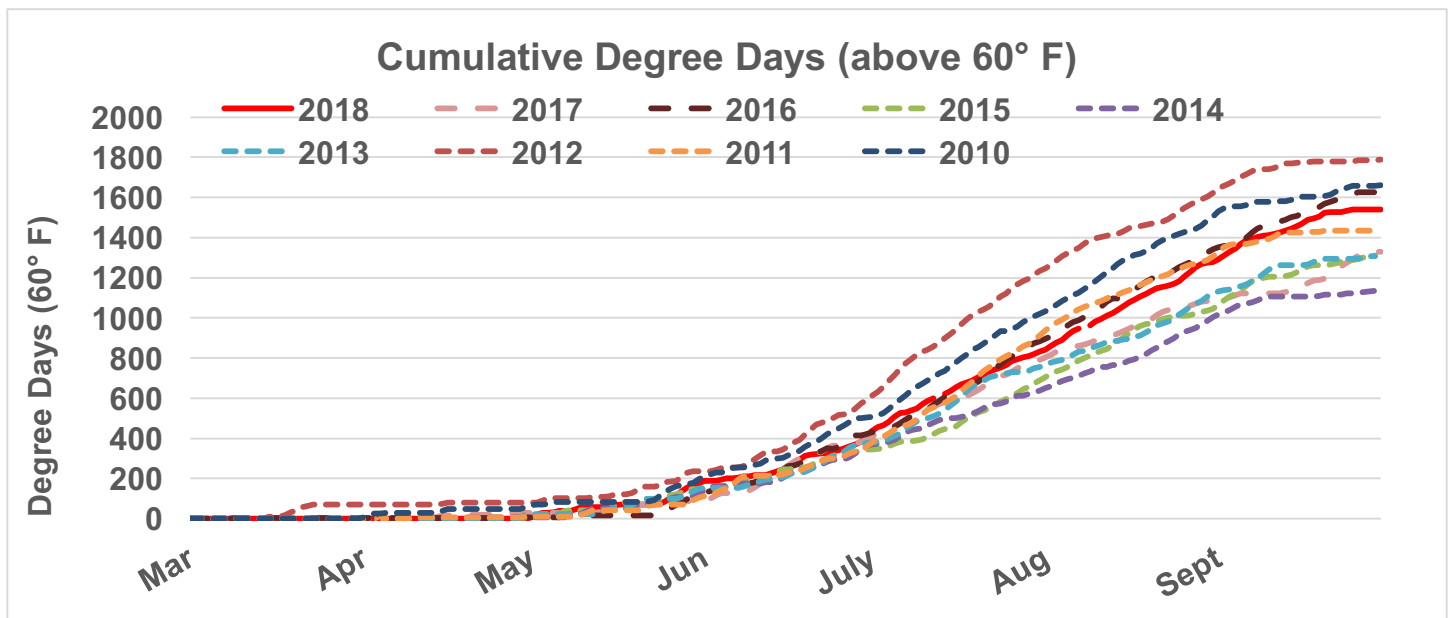
Weather Monitoring

The graph below shows the weekly precipitation and average temperature for the 2018 season from January through October. Temperature and rainfall patterns were relatively normal in the spring. There was an abrupt increase in average temperature in late April, with relatively high temperatures persisting through August. Heavy rainfall events occurred in May, June and August. Rainfall events >2.5 inches are associated with large emergences of floodwater mosquitoes throughout the district. The hot dry period during the end of July and into August was associated with increases in *Culex* mosquito abundance, WNV infection rate and risk to humans.

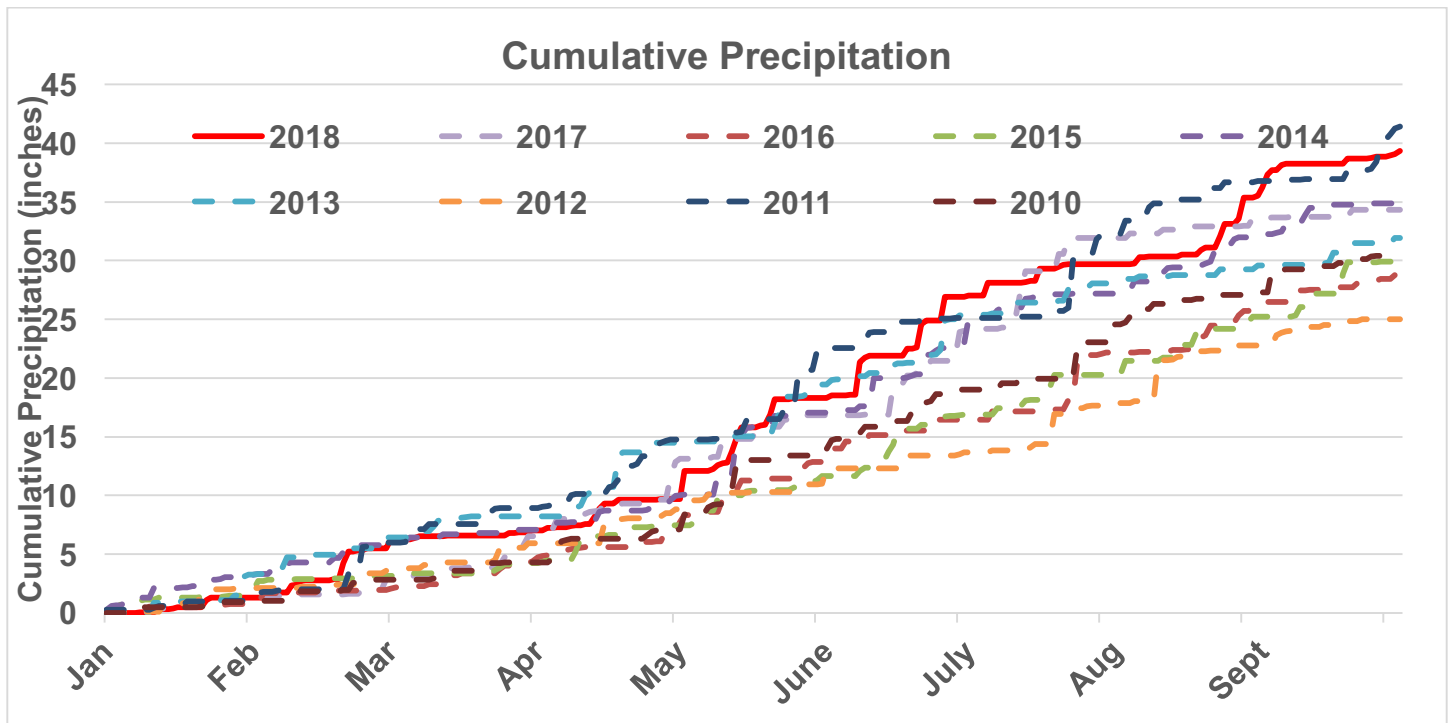


Source: NOAA Station: Chicago Botanical Garden, IL US GHCND:USC00111497

Cumulative degree days provide information about accumulation of thermal energy that is associated with shorter generation time (and faster growth) in mosquito populations and more rapid virus replication in virus-infected mosquitoes. The graph below shows that for much of the mosquito season, 2018 (solid red line) was average to below average and much lower than in 2012, which had the most rapid increase and highest level of cumulative degree days since 2010 and was the last WNV outbreak year in which 20 human WNV cases occurred in District.



The graph below shows cumulative precipitation levels and indicates that until late May, 2018 was a relatively average year for precipitation (solid red line). There was a rapid increase in cumulative precipitation through July, which moved 2018 closer the levels seen in some of our wettest years. This was followed by a relatively dry spell at the end of the season. In contrast, precipitation during the 2012 outbreak year (orange dashed line) was the lowest for cumulative precipitation since 2010.



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