North Carolina Endemic Mosquito-Borne Disease Annual Report 2025

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NC DEPARTMENT OF HEALTH AND HUMAN SERVICES
Division of Public Health

Endemic Mosquito-borne Diseases Reported in North Carolina, 2025

Preventing and controlling mosquito-borne diseases requires consistent and coordinated efforts of health care providers, state and county health agencies, and local mosquito control agencies. Surveillance of human infections, animal infections and infected mosquitoes helps identify areas at risk of transmission. Local efforts to control mosquito populations, as well as personal protective measures such as applying EPA-registered insect repellents, are crucial for the prevention of bites from infected mosquitoes. Transmission of mosquito-borne diseases involves interactions between mosquitoes, humans, climatic and ecological conditions, and animal hosts (e.g., birds, chipmunks, deer). Therefore, case numbers can vary significantly from year-to-year and decade-to-decade. This annual surveillance report summarizes cases of disease caused by three mosquito-borne viruses – West Nile virus (WNV), La Crosse virus (LACV) and eastern equine encephalitis (EEE) virus – that are transmitted locally in NC. Detailed statistics and surveillance data for each of these diseases are presented on subsequent pages. While a fourth mosquito-borne disease caused by Jamestown Canyon virus (JCV) is also transmitted in NC, a detailed report of this disease is not presented here because only a single case has ever been reported and no cases were identified in 2025.

2025 Surveillance Highlights

- All disease case counts declined in 2025 compared with the elevated levels observed in 2024. However, WNV was the only disease to show a statistically significant decrease between 2024 and 2025.
- No human or equine EEE cases were reported in 2025.
- LACV cases were high for the U.S. as whole, but lower than the NC 20-year average.
- Neuroinvasive WNV total cases were lower than 2022-2024 case counts, but NC experienced a small cluster for the second year in a row with several neuroinvasive cases occurring within the same square mile.
- Hospitalization rates remained high in 2025, occurring in 90% of neuroinvasive WNV cases and all LACV cases; however, no deaths were reported.
- WNV mosquito testing showed abnormally high infection rates in association with a small cluster of cases in Durham County.

Important Mosquito Vectors of North Carolina

Mosquito Species	Disease(s)	Primary hosts	Adult Habitat	Larval Habitat	Biting Time	Distribution in NC
Eastern Treehole Mosquito *(Aedes triseriatus)*	LACV	Small mammals, Humans	Hardwood forest & Residential	Treeholes & small man-made containers	Daytime	Statewide in low numbers
Asian Tiger Mosquito *(Aedes albopictus)*	WNV & LACV	Humans, Birds, Mammals & Other (Opportunistic)	Thick vegetation; Urban to Rural	Small natural and man-made containers	Daytime	Common Statewide in high numbers
Northern and Southern House Mosquito *(Culex pipiens complex)*	WNV	Birds, Mammals, and Humans	Urban; Suburban; Homes	Small stagnant pools; Man-made containers	Dusk & night	Common Statewide
Florida SLE Mosquito *(Culex nigripalpus)*	WNV	Birds, Mammals, Humans, & Reptiles	Thick vegetation; Urban to Rural	Large stagnant vegetated pools	Dusk to dawn	Primarily Southeastern, Statewide
Unbanded Saltmarsh Mosquito *(Culex salinarius)*	WNV & EEE	Birds, Humans, Mammals & Other	Lowland forest, Open marshes; Homes	Large fresh to brackish pools and marshes	Sunset to early night	Primarily Coastal and Piedmont; Statewide
Culex erraticus	WNV & EEE	Birds in spring; Mammals and Humans in late summer and fall	Thick vegetation; Urban to Rural	Large stagnant pools with heavy vegetation	Dusk & dawn	Primarily Coastal and Piedmont; Statewide
Black-tailed Mosquito *(Culiseta melanura)*	WNV & EEE	Passerine birds	Hardwood swamps	Acidic stagnant pools in swamps or bogs	Sunset to sunrise	Primarily eastern coastal plain; Isolated swamps west to foothills

Endemic Mosquito-borne Diseases Reported in North Carolina, 2025

Number of Cases of Mosquito-Borne Diseases Reported in North Carolina, 2015-2025													
Disease	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Previous ten-year average	2025	Significant Change
WNV	4	2	8	10	1	1	8	12	15	27	8.8	11	--
LACV	11	8	21	24	6	21	10	2	5	15	12.3	8	--
EEE	1	2	0	0	1	0	1	0	0	1	0.6	0	--
JCV	0	0	1	0	0	0	0	0	0	0	0	0	--

⇧=significant increase *(≥ 2 standard deviations above average)* ⇩*=significant decrease (≥ 2 standard deviations below average)* *-- = no significant change*

Notable information about this report includes:

- In North Carolina, only neuroinvasive disease caused by West Nile virus, Eastern Equine encephalitis virus or La Crosse encephalitis virus is reportable. Therefore, total case numbers may not be directly comparable with other states that also report non-neuroinvasive disease.
- Cases include those classified as confirmed or probable, per the surveillance case definitions, and are only among North Carolina residents.
- County data are based on the patient's home address at the time of reporting, not necessarily the county or state where they were infected.
- Cases are counted using the earliest date of illness identification. This is most frequently the symptom onset date. Therefore, case counts in this report may differ slightly from those published in national summaries or state dashboards, which can be based on other dates such as the date of initial report or the date when cases were closed and reported to the Centers for Disease Control and Prevention (CDC).
- Cases with an earliest illness onset date in 2025 that were closed as of March 20, 2026, are included.
- Ages are based on the date the case was entered in the North Carolina Electronic Disease Surveillance System (NCEDSS).
- Incidence rates are based on data obtained from the U.S. Census Population Estimates Project. Note that estimates of rates based on a small number of cases are unstable and can fluctuate widely. Therefore, these estimates should be interpreted with caution.
- Only mosquito-borne diseases that are transmitted in North Carolina are included in this report. Data for tickborne diseases and travel-associated mosquito-borne diseases in North Carolina are summarized in separate reports. Additional data can be found on the North Carolina Disease Data Dashboard (NCD3).
- Please note that case classification criteria are subject to change and counts may fluctuate based on these changes.
- Population data were obtained from the U.S. Census Bureau. For statewide population totals, annual North Carolina population estimates as of July 1, 2025, were used. For county-level and demographic-specific population totals, 2025 estimates were not available at the time of this analysis; therefore, annual North Carolina population estimates as of July 1, 2024, were used.

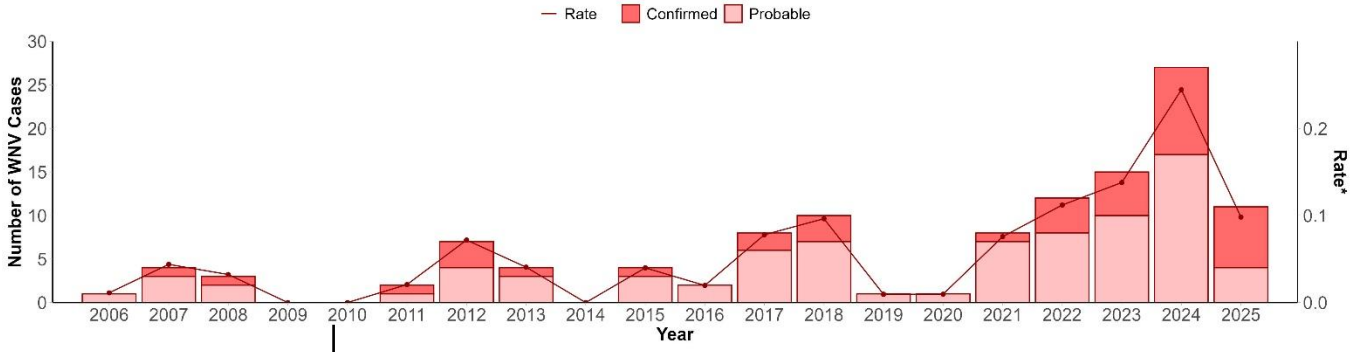
West Nile Virus (WNV)

2025 Key Points

- Total 2025 WNV cases were near average, but Durham County had a cluster with three neuroinvasive human cases in close vicinity. This is unusual.
- Targeted mosquito testing in Durham County showed 15.7% WNV positivity, far exceeding rates in other counties (0% - 5.3%).
- WNV can cause severe illness. 91% of cases in 2025 were hospitalized, though no deaths were reported.

West Nile virus (WNV) is an arthropod-borne virus (arbovirus) in the genus Flavivirus that arrived in NC in 2002 through migrating birds. WNV is spread to humans and other mammals (e.g., horses) by the bite of a mosquito after the mosquito is infected by a wild or domestic bird. WNV has been rarely transmitted through blood transfusions, organ transplants, breastfeeding and during pregnancy from mother to baby. Most people infected with WNV will have no symptoms, but approximately 20% of infected people will experience fever, headache, body aches, vomiting, diarrhea and/or rash. About 1% of infected people will develop a serious neuroinvasive form of the disease that can include high fever, convulsions, paralysis, lasting neurological effects, and death. There are no vaccines available for WNV in humans, but a vaccine is available for horses.

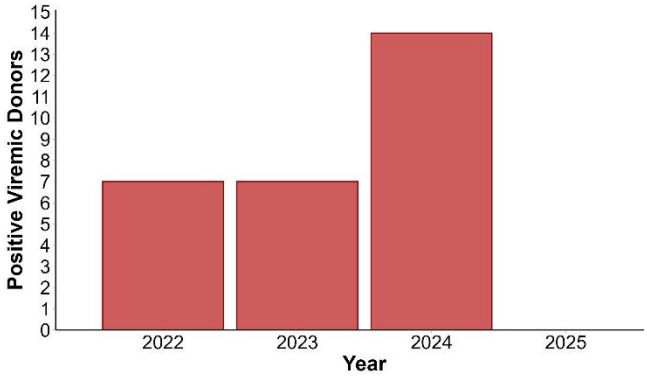
Confirmed and Probable Cases of WNV Neuroinvasive Disease and Rate Per 100,000 Residents, NC, 2006-2025



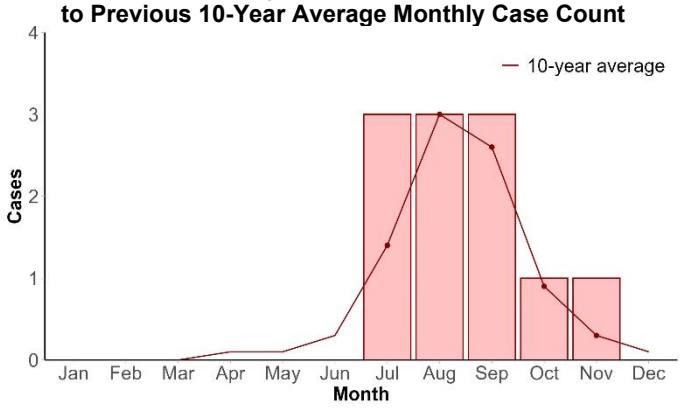
Following a 20-year high in reported neuroinvasive WNV cases in 2024, case counts declined in 2025; however, a cluster of neuroinvasive cases was detected for the second year in a row.

Screening of all transfusion-intended blood and blood components for WNV is recommended by the FDA. In 2022, the NCDHHS Division of Public Health implemented reporting of WNV-positive blood donors by donation centers. In 2025, no WNV-positive donors were reported, compared to seven or more positive donors each year from 2022 to 2024.

Reported WNV-positive viremic blood donors, NC, 2022-2025



2025 NC WNV Cases by Month of Illness Onset, Compared to Previous 10-Year Average Monthly Case Count

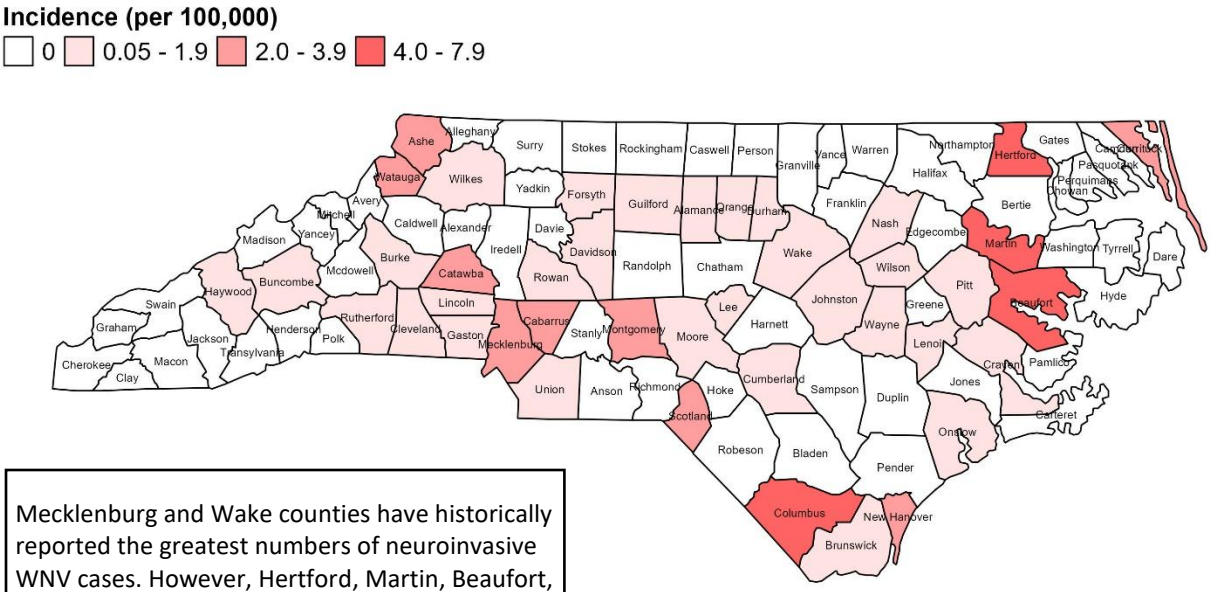


WNV neuroinvasive cases were reported from July through November 2025, returning to the typical seasonal pattern after the extended 2024 season. Cases did not show a distinct peak month, with elevated counts persisting from July through September.

*Rate calculated per 100,000 residents

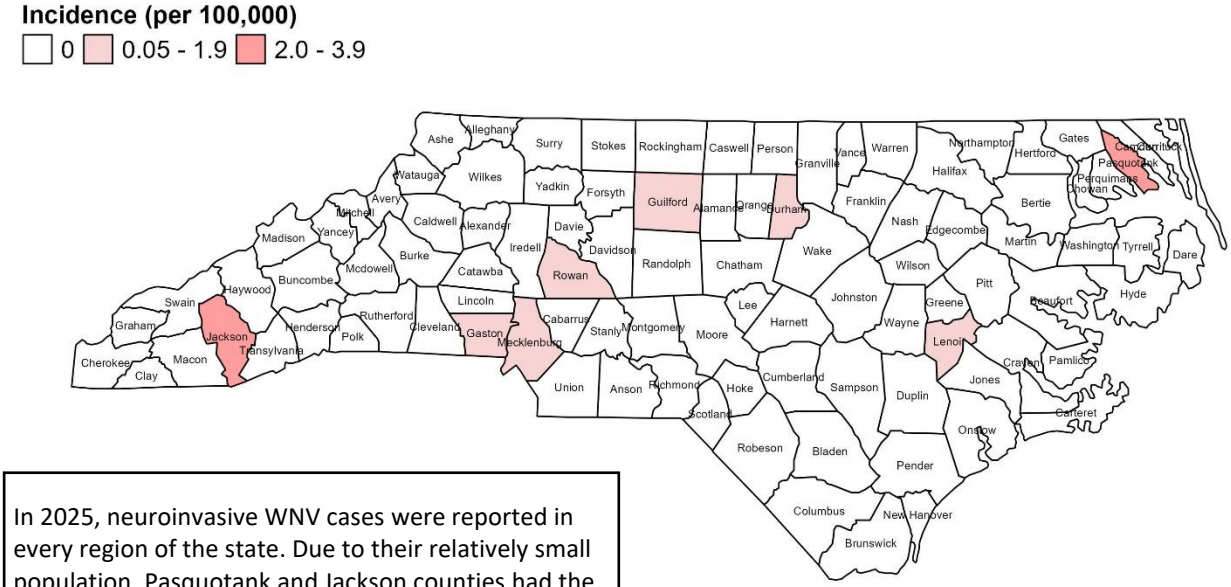
West Nile Virus (WNV)

Neuroinvasive WNV Incidence Rate by County, NC, 2006-2024



Mecklenburg and Wake counties have historically reported the greatest numbers of neuroinvasive WNV cases. However, Hertford, Martin, Beaufort, and Columbus counties have the highest incidence due to having smaller populations.

Neuroinvasive WNV Incidence Rate by County, NC, 2025



In 2025, neuroinvasive WNV cases were reported in every region of the state. Due to their relatively small population, Pasquotank and Jackson counties had the highest incidence rates, despite not reporting the highest number of cases. A cluster of neuroinvasive WNV cases was reported in Durham County (n= 3).

*Rate calculated per 100,000 residents

West Nile Virus (WNV)

Annual Summary										
Year	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Cases	2	8	10	1	1	8	12	15	27	11
Rate*	0.02	0.08	0.10	0.01	0.01	0.08	0.11	0.14	0.24	0.10

Case Statistics, 2025				
Sex	**Category**	**Cases**	**%**	**Rate***
	Male	5	45.45%	0.09
	Female	6	54.55%	0.11
	Unknown	0	0.00%	N/A
Age Group	**Category**	**Cases**	**%**	**Rate***
	<5	0	0.00%	0.00
	5-17 yrs	0	0.00%	0.00
	18-24 yrs	0	0.00%	0.00
	25-34 yrs	1	9.09%	0.07
	35-44 yrs	2	18.18%	0.14
	45-64 yrs	2	18.18%	0.07
	65-84 yrs	6	54.55%	0.34
	85+ yrs	0	0.00%	0.00
	Unknown	0	0.00%	N/A
Race	**Category**	**Cases**	**%**	**Rate***
	White	9	81.82%	0.12
	Black or African American	1	9.09%	0.04
	American Indian/Alaskan Native	0	0.00%	0.00
	Asian or Pacific Islander	0	0.00%	0.00
	Multiple Races	1	9.09%	0.33
	Other or Unknown	0	0.00%	N/A
Hispanic Ethnicity	**Category**	**Cases**	**%**	**Rate***
	Yes	0	0.00%	0.00
	No	9	81.82%	0.09
	Unknown	2	18.18%	N/A
Hospitalization	**Category**	**Cases**	**%**	**Rate***
	Yes	10	90.91%	N/A
	No	1	9.09%	N/A
	Unknown	0	0.00%	N/A
Death	**Category**	**Cases**	**%**	**Rate***
	Yes	0	0.00%	N/A
	No	11	100.00%	N/A
	Unknown	0	0.00%	N/A

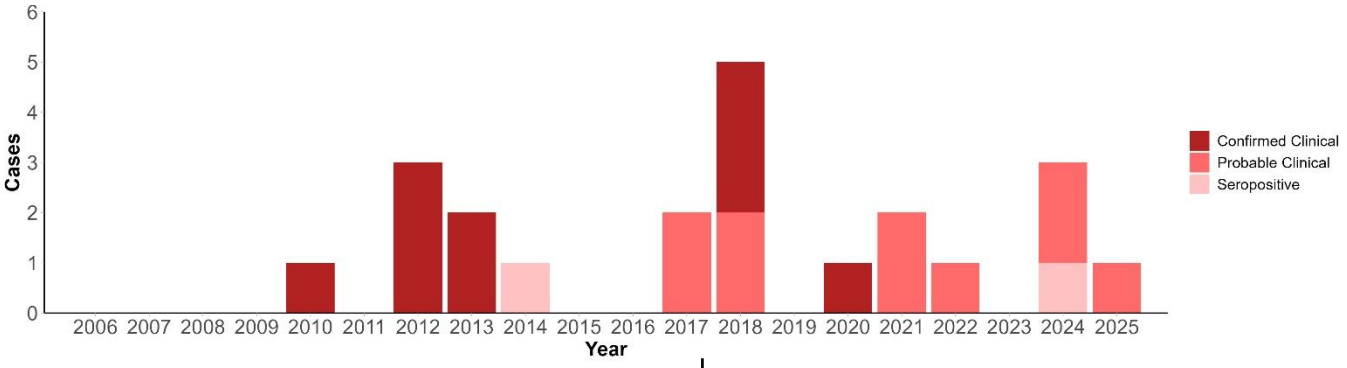
Annual Summary Key Points

- For the second consecutive year, NC experienced a cluster of human neuroinvasive cases living in close proximity. The 2024 cluster occurred in Columbus County. Typically, individual cases are widespread throughout counties and the state.
- More than half of reported cases occurred in females, a pattern that is atypical for WNV in NC. However, this distribution accurately represents North Carolina's population.
- WNV was only reported among adults age 25 years and older in 2025. The WNV incidence among individuals aged 65-84 was higher than the combined incidence observed across all other age groups. Older adults (>55 years) are at increased risk for severe WNV illness, which may be due to age-related declines in immune system function.
- In 2025, 82% of WNV cases were reported among white residents and 9% among Black/African American residents, indicating moderate overrepresentation and underrepresentation, respectively, compared with state demographics. The incidence rate for multiple races was almost three times higher than that of white residents and more than eight times higher than that of Black/African American residents.
- 82% of reported cases were non-Hispanic, though Hispanic ethnicity could not be determined for the remaining cases.
- Most cases (91%) were hospitalized with no fatalities reported. The prior 10-year fatality rate in NC of 19.7% highlights the severity of neuroinvasive WNV.

*Rate calculated per 100,000 residents

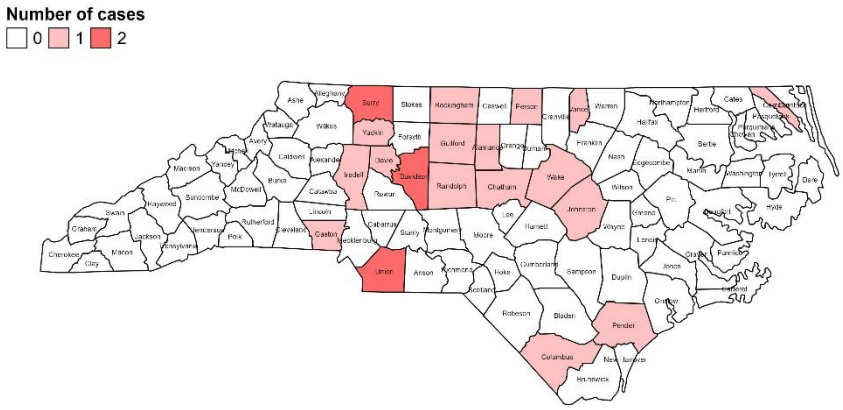
West Nile Virus (WNV)

Confirmed, Probable, and Seropositive Equine WNV Cases, NC, 2006-2025

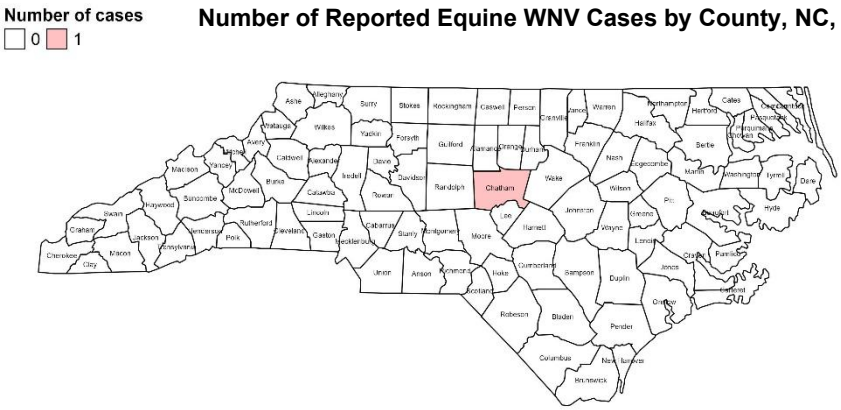


WNV infections in horses are reportable to the NC Department of Agriculture & Consumer Services. Few cases are reported each year with one probable clinical case being reported in 2025. No confirmed clinical cases have been reported since 2020. The highest number of cases seen in the past 20 years was five in 2018. A confirmed clinical equine case requires clinical illness and confirmatory laboratory testing. A probable clinical equine case requires clinical illness and virus-specific antibodies with no other testing conducted. Seropositive equine cases include those with virus-specific antibodies but no reported clinical illness.

Number of Reported Equine WNV Cases by County, NC, 2006-2024



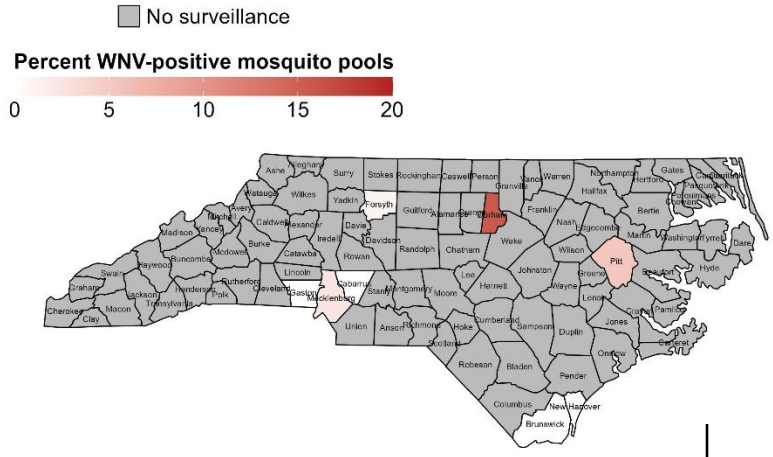
Number of Reported Equine WNV Cases by County, NC, 2025



Historically, most WNV-positive equines have been reported from unvaccinated horses in the Piedmont region of NC. It is noteworthy that no positive horses have been reported in the Mountains region of the state. This pattern may reflect local vaccination practices rather than the distribution of WNV-infected mosquito vectors. In 2025, one equine case was reported in Chatham County, increasing the county's cumulative total to two cases from 2006 through 2025.

West Nile Virus (WNV)

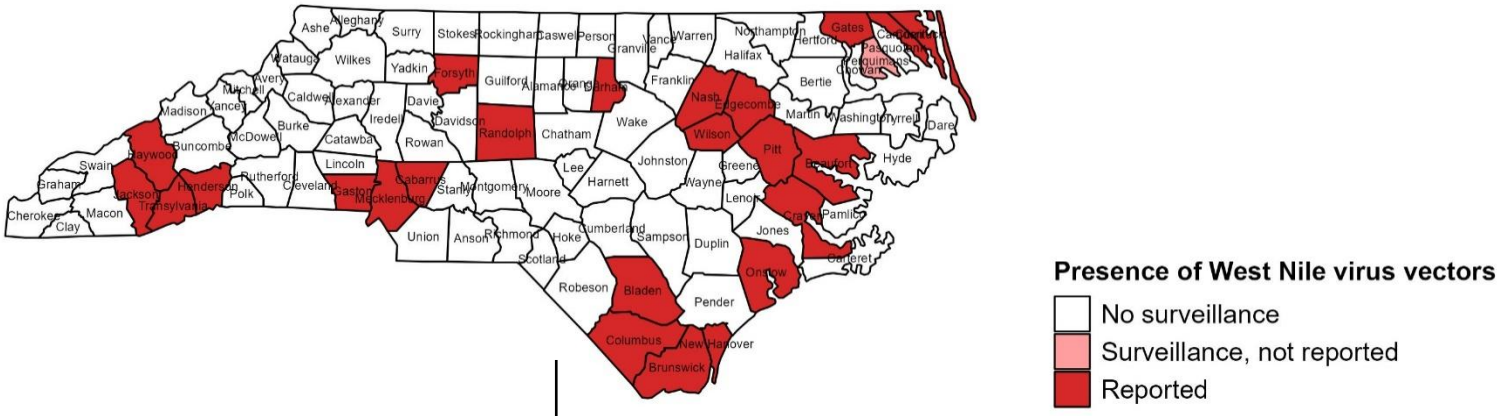
WNV Percent Positivity Among Mosquito Samples Tested by County, NC, 2025



County	Total Number of Samples Submitted	% Positive
Brunswick	25	0%
Cabarrus	28	0%
Durham	83	15.7%
Forsyth	679	1.0%
Gaston	4	0%
Mecklenburg	163	2.5%
New Hanover	135	0%
Pitt	19	5.3%
Total	**1136**	**2.2%**

Local vector control programs from eight select counties identify and submit mosquito samples (each consisting between 1-50 mosquitoes) to the NC State Laboratory of Public Health for WNV testing. In 2025, mosquito surveillance detected elevated vector infection activity, with 2.2% of mosquito samples testing positive for WNV, compared with a positivity rate of 0.7% in 2024. A cluster of neuroinvasive WNV cases was reported in 2025 in Durham County. Excluding 2011 and 2015, for which submission data were unavailable, statewide WNV positivity rates ranged from 0% to 2.8% during 2003-2024.

Distribution of WNV Mosquito Vectors, NC, 2017-2025



Mosquito species capable of transmitting WNV to humans, consisting of *Aedes albopictus*, *Culex pipiens, Cx. pipiens complex, Cx. nigripalpus, Cx. salinarius, Cx. coronator,*and *Cx. restuans*, have been documented statewide in reports published through 2010. From 2017 to 2025, at least one of these species was detected in every county conducting active surveillance except Perquimans County.

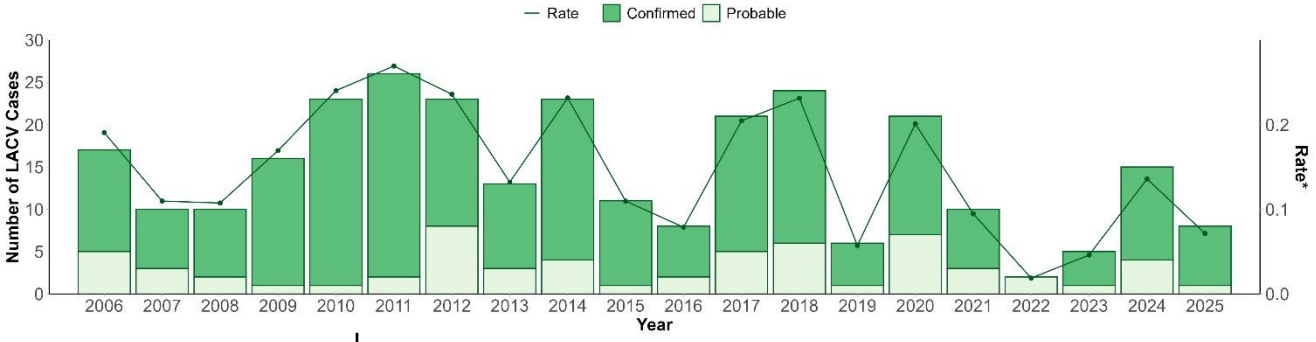
La Crosse Virus (LACV)

2025 Key Points

- Since the peak in 2011, case counts have shifted downward with more years recording below-average levels.
- Native Americans remain disproportionately impacted by LACV.
- New Hanover County reported its first case, but the disease was most likely acquired outside the county.

La Crosse virus (LACV) is the most common arbovirus in North Carolina. It is a member of the genus *Orthobunyavirus* and is most commonly transmitted by the eastern treehole mosquito. LACV infections occur primarily in the western part of North Carolina. Most people who are infected with the virus do not experience any symptoms, but it can cause severe disease including inflammation of the brain (encephalitis). Symptoms may include fever, fatigue, headache, nausea and vomiting, and may progress to more severe symptoms including seizures, paralysis and coma. Children under the age of 16 are at highest risk for severe disease. There are no vaccines or treatments available for LACV.

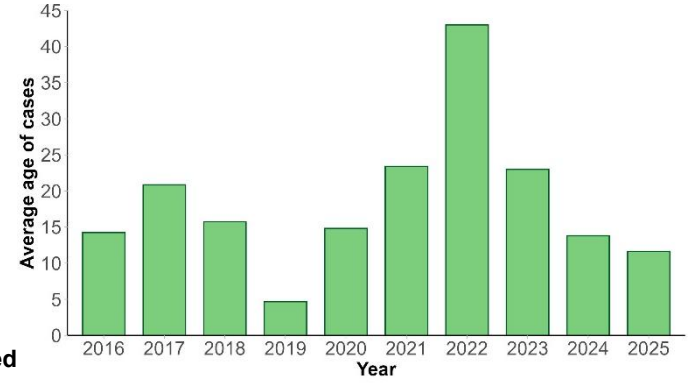
Confirmed and Probable Cases of LACV Neuroinvasive Disease and Rate Per 100,000 Residents, NC, 2006-2025



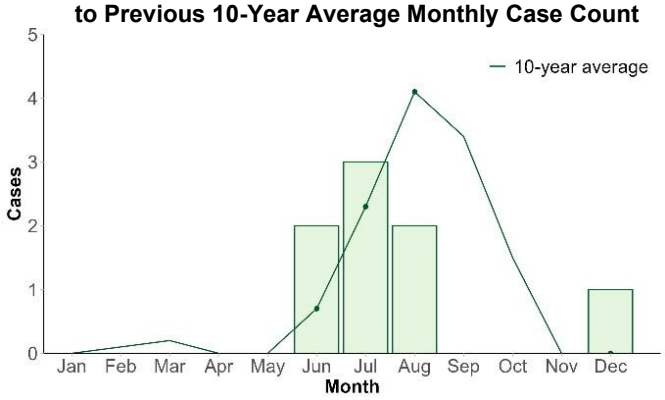
In 2025, eight neuroinvasive LACV cases were reported, a decrease from the higher case count observed in 2024. Case counts have fluctuated over the past two decades with a peak of 24 cases in 2011. Consistent with historical patterns, the majority of 2025 cases were confirmed.

Neuroinvasive LACV Cases by Average Age, NC, 2016-2025

In 2025, the average age of reported neuroinvasive LACV cases was 11.6 years, representing the second lowest in the past decade. Children <18 years may be at higher risk for neuroinvasive LACV because of developing immune systems and greater time spent outdoors. Infections in this age group may be severe with potential long-term neurological effects.



2025 NC LACV Cases by Month of Illness Onset, Compared to Previous 10-Year Average Monthly Case Count

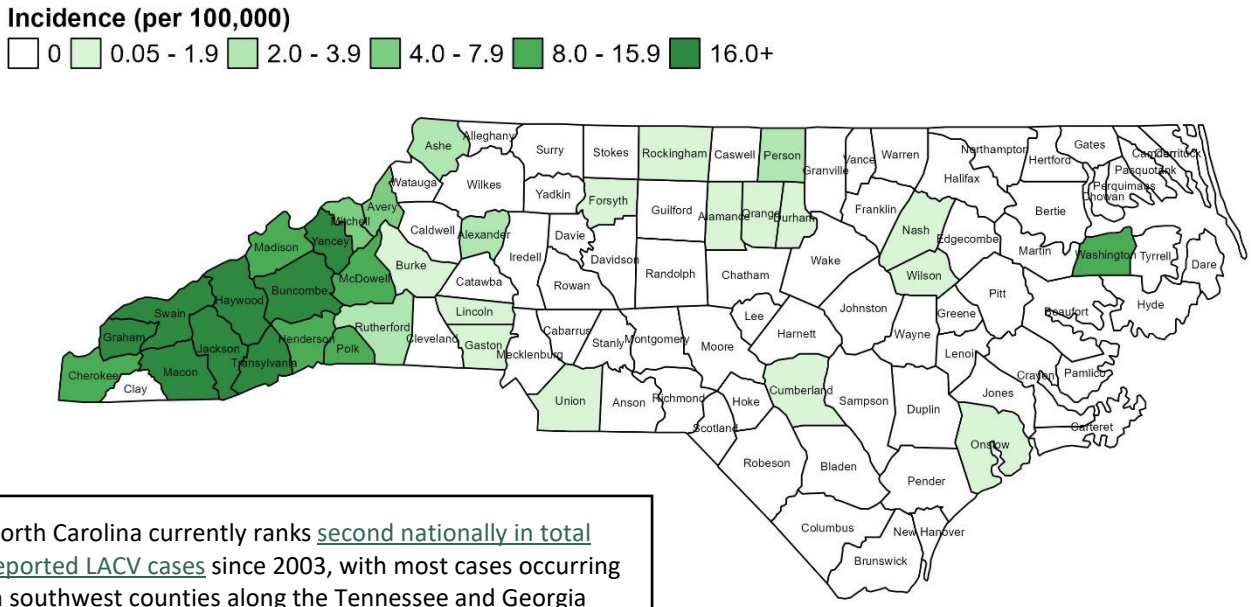


In 2025, LACV cases peaked in July, occurring one month earlier than the previous 10-year average but aligning with the 2024 peak month. An increase in reported cases was observed in June, July and December relative to the historical average.

*Rate calculated per 100,000 residents

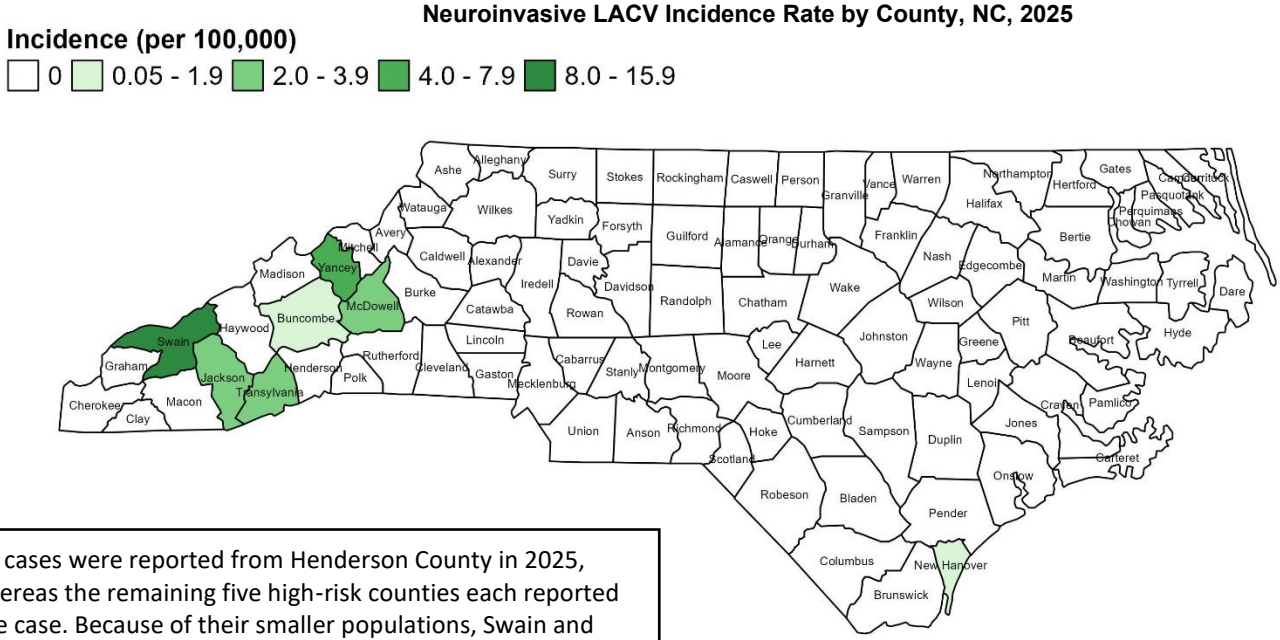
La Crosse Virus (LACV)

Neuroinvasive LACV Incidence Rate by County, NC, 2006-2024



North Carolina currently ranks second nationally in total reported LACV cases since 2003, with most cases occurring in southwest counties along the Tennessee and Georgia borders within the Appalachian Mountains. Cases reported in residents from other parts of the state are typically associated with travel to these higher-risk counties. Swain, Transylvania and Jackson counties have the three highest incidence rates in the country.

Neuroinvasive LACV Incidence Rate by County, NC, 2025



No cases were reported from Henderson County in 2025, whereas the remaining five high-risk counties each reported one case. Because of their smaller populations, Swain and Yancey counties had the highest incidence rates despite not reporting the highest number of cases. In 2025, New Hanover County reported its first case; however, the patient reported exposure in Haywood County.

*Rate calculated per 100,000 residents

La Crosse Virus (LACV)

Annual Summary										
Year	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Cases	8	21	24	6	21	10	2	5	15	8
Rate*	0.08	0.20	0.23	0.06	0.20	0.09	0.02	0.05	0.14	0.07

Case Statistics, 2025				
Sex	**Category**	**Cases**	**%**	**Rate***
	Male	7	87.50%	0.13
	Female	1	12.50%	0.02
	Unknown	0	0.00%	N/A
Age Group	**Category**	**Cases**	**%**	**Rate***
	<5	2	25.00%	0.32
	5-17 yrs	5	62.50%	0.29
	18-24 yrs	0	0.00%	0.00
	25-34 yrs	0	0.00%	0.00
	35-44 yrs	0	0.00%	0.00
	45-64 yrs	1	12.50%	0.04
	65-84 yrs	0	0.00%	0.00
	85+ yrs	0	0.00%	0.00
	Unknown	0	0.00%	N/A
Race	**Category**	**Cases**	**%**	**Rate***
	White	6	75.00%	0.08
	Black or African American	0	0.00%	0.00
	American Indian/Alaskan Native	2	25.00%	1.11
	Asian or Pacific Islander	0	0.00%	0.00
	Multiple Races	0	0.00%	0.00
	Other or Unknown	0	0.00%	N/A
Hispanic Ethnicity	**Category**	**Cases**	**%**	**Rate***
	Yes	0	0.00%	0.00
	No	6	75.00%	0.06
	Unknown	2	25.00%	N/A
Hospitalization	**Category**	**Cases**	**%**	**Rate***
	Yes	8	100.00%	N/A
	No	0	0.00%	N/A
	Unknown	0	0.00%	N/A
Death	**Category**	**Cases**	**%**	**Rate***
	Yes	0	0.00%	N/A
	No	8	100.00%	N/A
	Unknown	0	0.00%	N/A

Annual Summary Key Points

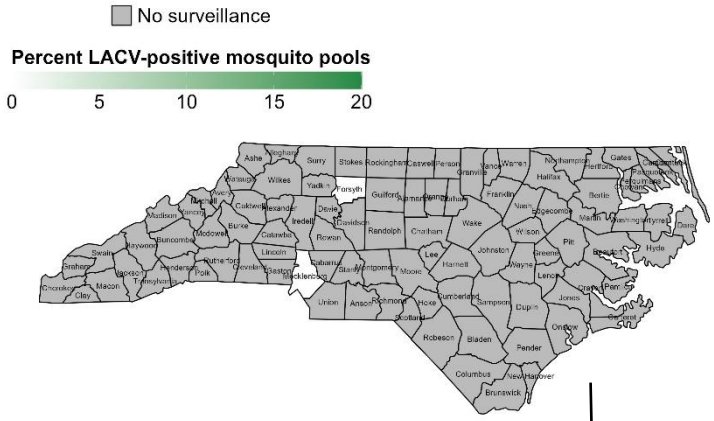
- In 2025, males had an incidence rate more than six times higher than females, consistent with the historical distribution of cases.
- LACV rates among children <5 and among children 5-17 years of age were approximately eight times higher than rates among adults 45-64 years of age. LACV was not reported among any other age groups in 2025. This trend aligns with prior years, except for 2022 when both cases were reported among unusually older individuals.
- Although American Indian/Alaskan Natives make up less than 2% of the population of North Carolina, the rate of LACV among this group was nearly 14 times higher than the rate among white NC residents. This may reflect the presence of the Qualla Boundary in high-incidence areas. White residents accounted for 75% of cases likely reflecting the population demographics of western NC.
- No reported LACV cases occurred among residents of Hispanic ethnicity.
- While all LACV cases were hospitalized in 2025, there were no reported deaths.

*Rate calculated per 100,000 residents

La Crosse Virus (LACV)

Note: *LACV does not infect horses, so equine surveillance data are not presented for this disease.*

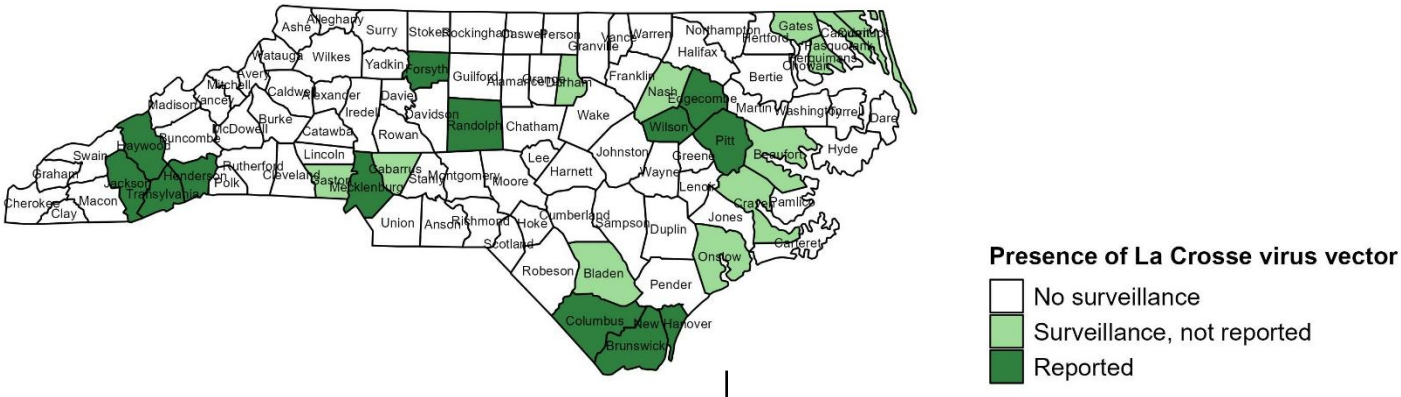
LACV Percent Positivity Among Mosquito Samples Tested by County, NC, 2025



County	Total Number of Samples Submitted	% Positive
Forsyth	48	0%
Mecklenburg	152	0%
Total	200	0%

Two-hundred mosquito samples (each consisting between 1-50 mosquitoes) from two counties were tested for LACV at the NC State Laboratory of Public Health; the virus was not detected in any samples. This is expected given that LACV infection rates in mosquitoes are typically below 0.1% and transmission risk occurs primarily at the household or neighborhood level. Mosquitoes from western NC counties with the highest LACV rates are not routinely collected or tested due to the absence of county-level vector surveillance programs in this region.

Distribution of LACV Mosquito Vectors, NC, 2017-2025



Even though no mosquito pool has tested positive for LACV since mosquito surveillance began in NC in 2003, the primary LACV mosquito vector (*Aedes triseriatus*) has been reported in every region of the state. Despite the LACV vector being found throughout the state, LACV activity remains concentrated in western NC where the virus is amplified through transmission between mosquitoes and wildlife reservoirs, such as squirrels and chipmunks.

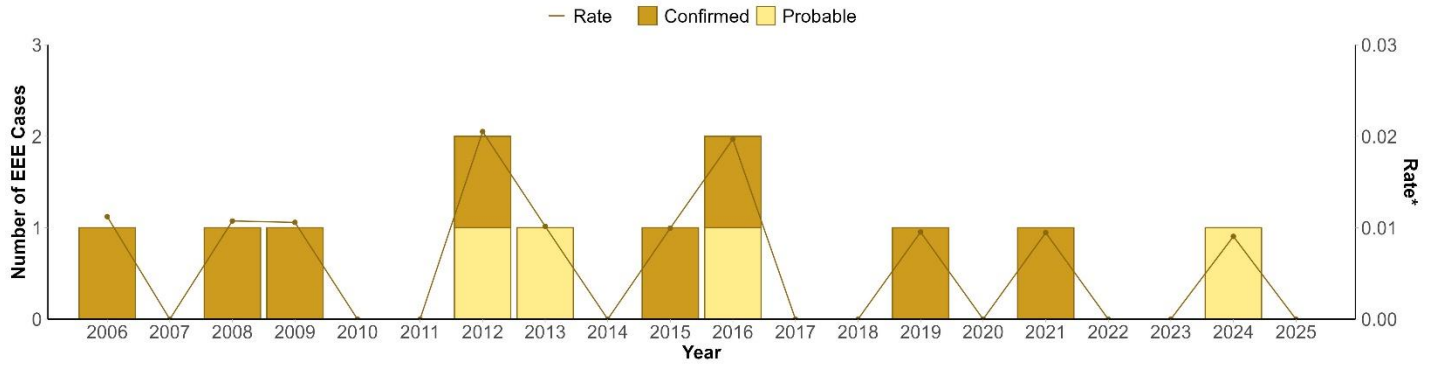
Eastern Equine Encephalitis (EEE)

2025 Key Points

- Neuroinvasive EEE is uncommon in NC with no cases reported in 2025.
- No equine cases were reported in 2025, following five cases reported in 2024.

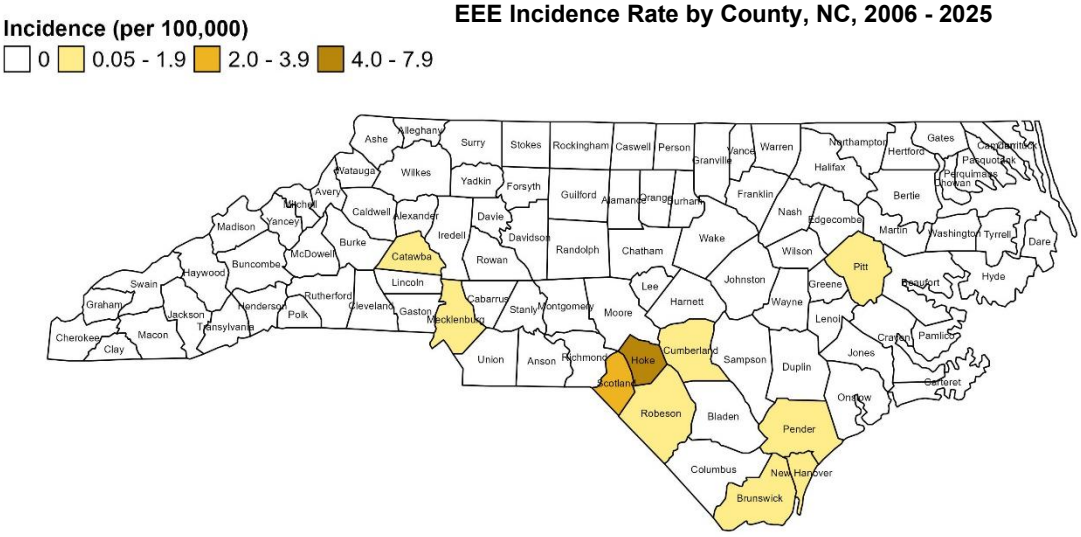
Eastern equine encephalitis (EEE) is caused by an arbovirus in the genus Alphavirus. EEE is transmitted within wild bird populations by the black-tailed mosquito (*Culiseta melanura*). While birds serve as the main host of the virus, the black-tailed mosquito and other mosquito species can also transmit the virus to other mammals, such as humans and horses. Most people who are infected with the virus do not experience any symptoms, but a small proportion of people develop severe disease, which may include swelling of the brain that can be fatal. Symptoms may include fever, headache, vomiting, seizures and coma. About one-third of severe cases result in death. There is no vaccine for EEE in people, but a vaccine is available for horses.

Confirmed and Probable Cases of EEE Neuroinvasive Disease and Rates Per 100,000 Residents, NC, 2006-2025



Neuroinvasive EEE has been reported intermittently in NC over the past 20 years with 0-2 cases identified per year. Although one case was reported in 2024 — the first since 2021 — no cases were reported in 2025.

EEE Incidence Rate by County, NC, 2006 - 2025



EEE incidence in NC over the last two decades has been largely confined to the Coastal Plains region with limited cases in the Piedmont region and no reports from the Mountain region. Hoke County has the highest incidence rate and is the only county with two reported cases.

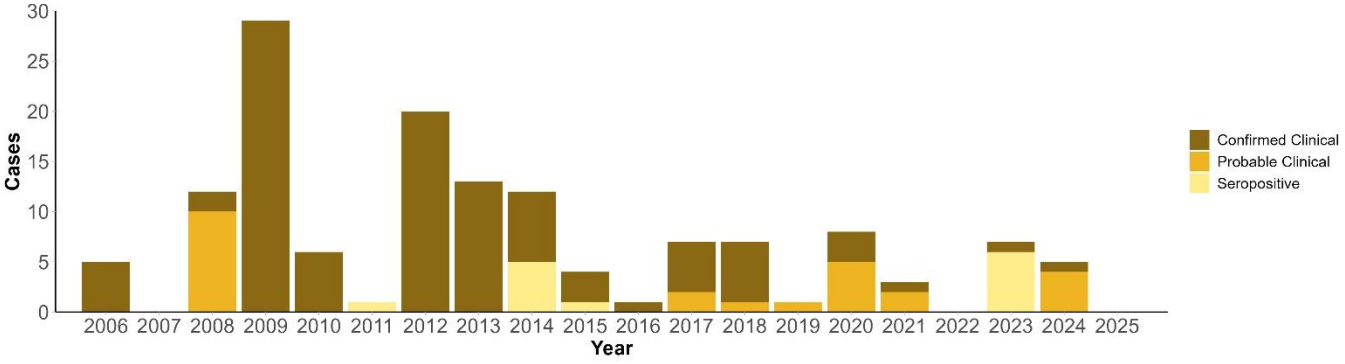
Annual Summary Key Points

- EEE rates in North Carolina have remained consistently low in recent years with a peak of 0.02 cases per 100,000 population in 2012 and 2016.
- No human or equine EEE cases were reported in 2025.

*Rate calculated per 100,000 residents

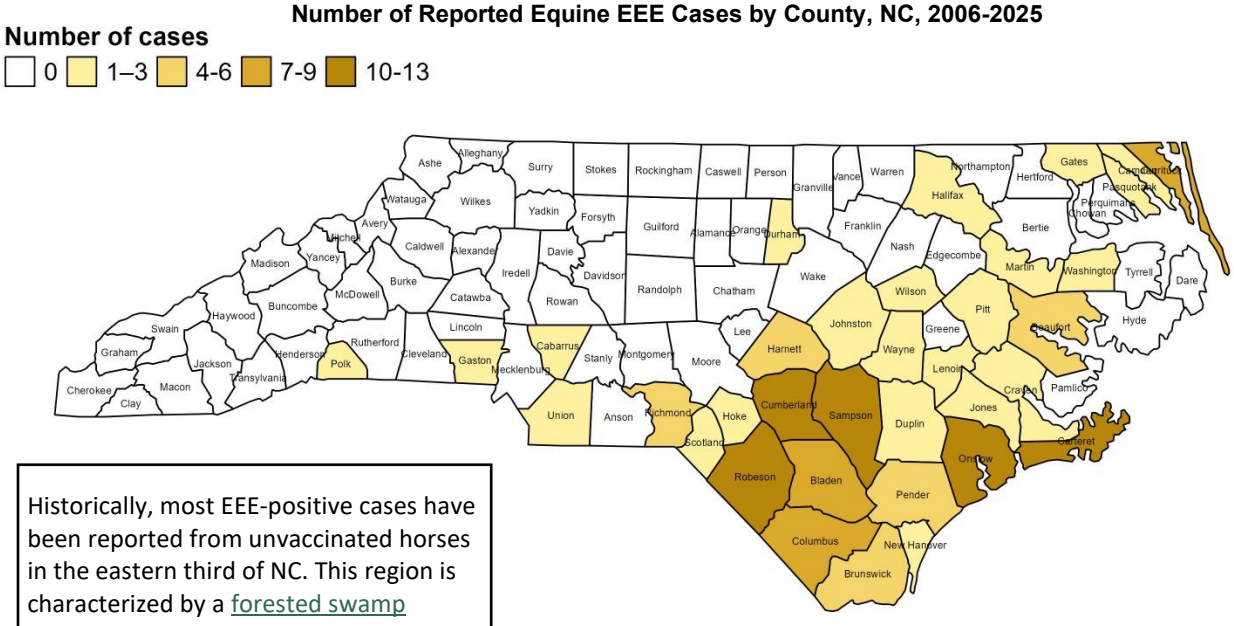
Eastern Equine Encephalitis (EEE)

Confirmed, Probable, and Seropositive Equine EEE Cases, NC, 2006-2025



EEE infections in horses are reportable to the NC Department of Agriculture & Consumer Services. Over the last two decades, EEE cases in horses have decreased, but this may be due to improved vaccination practices rather than a statewide decline in virus activity. No equine cases were reported in 2025. A confirmed clinical equine case requires clinical illness and confirmatory laboratory testing. A probable clinical equine case requires clinical illness and virus-specific antibodies with no other testing conducted. Seropositive equine cases include those with virus-specific antibodies but no reported clinical illness.

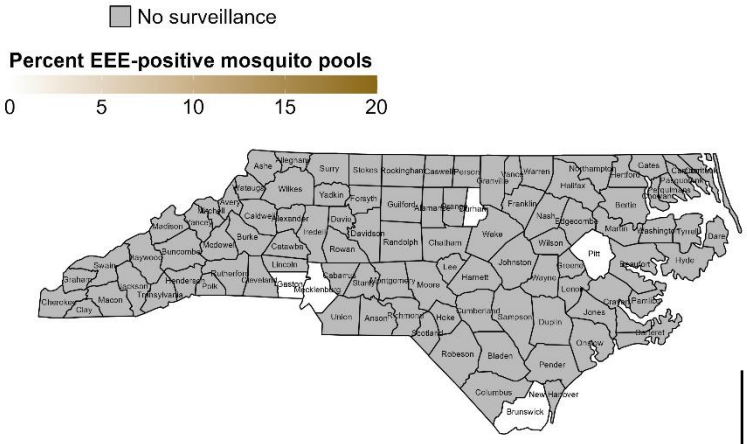
Number of Reported Equine EEE Cases by County, NC, 2006-2025



Historically, most EEE-positive cases have been reported from unvaccinated horses in the eastern third of NC. This region is characterized by a forested swamp habitat that supports the primary mosquito vector, *Culiseta melanura*.

Eastern Equine Encephalitis (EEE)

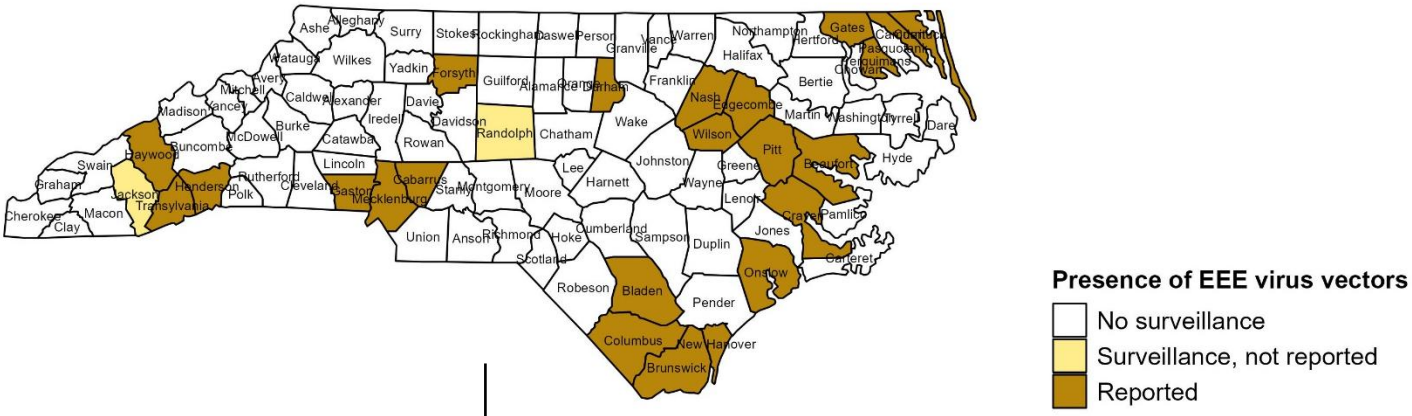
EEE Percent Positivity Among Mosquito Samples Tested by County, NC, 2025



County	Total Number of Samples Submitted	% Positive
Brunswick	25	0%
Durham	75	0%
Gaston	4	0%
Mecklenburg	171	0%
Pitt	11	0%
Total	**286**	**0%**

A total of 286 mosquito samples (each consisting between 1-50 mosquitoes) were submitted by local vector programs in five counties to the NC State Laboratory of Public Health for EEE testing. Infected mosquitoes were not identified in 2025 and have not been detected in the state since 2021.

Distribution of EEE Mosquito Vectors, NC, 2017-2025

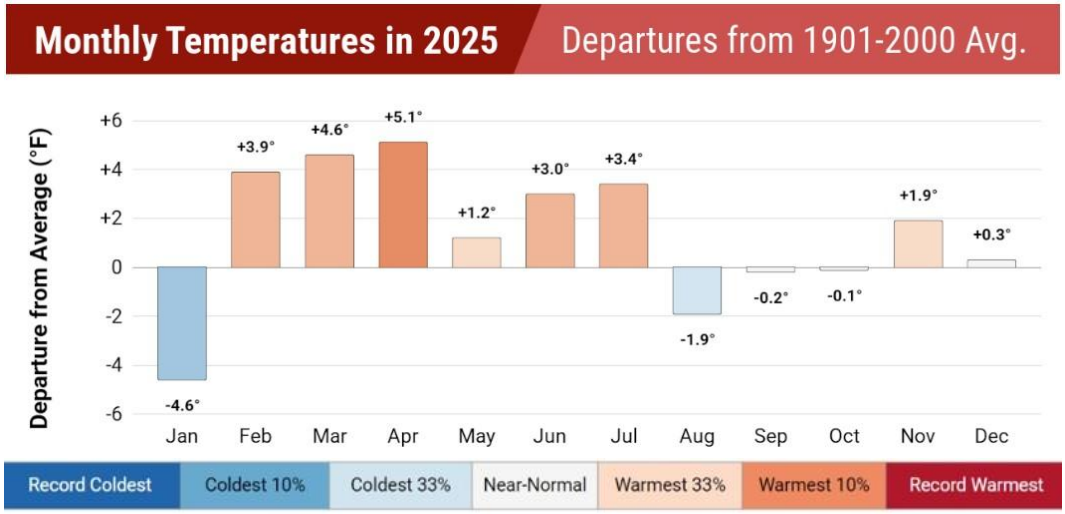


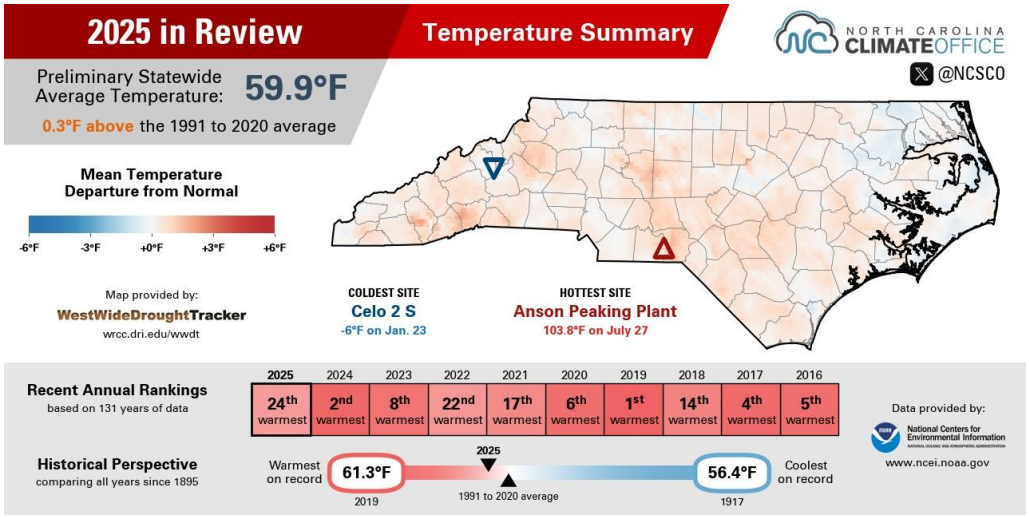
Mosquito species capable of transmitting EEE in humans, consisting of *Culex erraticus, Cx. nigripalpus, Cx. pipiens, Cx. pipiens complex, Cx. salinarius*, and *Culiseta melanura* (primary vector), have been detected in almost every county that conducted active surveillance between 2017 and 2025. However, the virus primarily affects the Tidewater and Inner Coastal Plain regions, where favorable habitats support viral amplification in local bird populations.

Environmental Conditions Impacting Transmission, 2025

Temperature

While 2024 was the second warmest year ever recorded in North Carolina, temperatures in 2025 were noticeably lower. The mean temperature for 2025 was 59.9°F, compared to 61.5°F in 2024, making 2025 the 22nd warmest year in recorded NC history. Despite this overall decrease, extreme temperatures still occurred across the state. April ranked as the second warmest since 1895, temperatures reached 100°F in June, and several locations recorded unusually warm conditions in December. Areas such as Wilmington, Goldsboro and Laurinburg recorded their earliest below freezing temperatures in November since the 1990s; however, the monthly mean temperature remained unusually high. Globally, 2025 ranked as the third warmest year and ocean temperatures reached their highest levels on record.

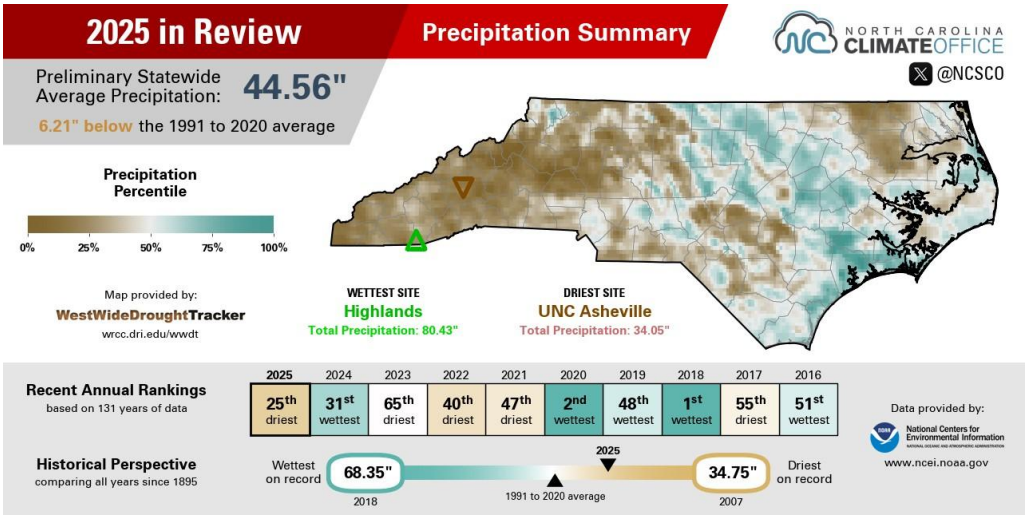




Environmental Conditions Impacting Transmission, 2025

Precipitation and Drought

Despite the snowfall early in the year — following multi-year deficits in some areas — North Carolina entered 2025 in drought that continued into spring. Conditions shifted abruptly in May, which became the fourth wettest on record, and by June the state emerged from eight months of drought. Tropical Storm Chantal brought more than 10 inches of rainfall to central counties, pushing the Haw and Eno rivers to record crests and major flood stage in July. The aftermath of Chantal produced unusually humid conditions and extremely high nighttime temperatures. Drought returned in the fall, reaching moderate (D1) statewide levels and severe (D2) levels in the Tidewater and Inner Coastal Plain regions. These alternating periods of drought and intense rainfall, together with warm temperatures, are associated with WNV outbreaks; however, no aerial adulticide spraying was conducted in the state in 2025. Although November was warmer and drier than normal, a cold front brought unusually early snowfall to much of the state. By December, drought covered 60% of the state, and snowfall remained below normal in many regions.



Environmental Conditions Impacting Transmission, 2025

Wind and Wildfires

The unusually dry and windy conditions in 2025 contributed to 6,651 wildfires across the state — the highest annual total since 2007 — which resulted in 35,817 acres burned. The Mountain region experienced the five largest fires, exacerbated by lingering damage from Hurricane Helene in 2024. Half of the total burned acreage occurred by March, a month marked by the highest average wind speeds recorded in some areas over the past 25 years and by statewide relative humidity levels below 25%. High winds have been shown to reduce WNV transmission by disrupting mosquito flight, decreasing mosquito densities and limiting their ability to feed on hosts; however, these findings should be interpreted with caution due to geographic variability. Additionally, wildfires have been shown to cause an immediate reduction in adult mosquito populations compared to unburned areas due to smoke exhibiting repellent effects.