

DIDEEBYCHA

GMCA Newsletter

Getting Ready for Mosquito Season

Mosquito control programs prepare for mosquito season by focusing on finding and eliminating breeding sites, controlling mosquito populations at both larval and adult stages, and educating the public about mosquito control measures. These measures include removing standing water, conducting larval and adult mosquito surveillance, larviciding/adulticiding appropriately, and promoting public awareness about safe mosquito-avoidance practices.

1. Prevention of Breeding Sites:

Remove standing water:

Mosquitoes lay eggs in standing water, so eliminating these breeding grounds is crucial. This includes emptying birdbaths, changing pet water bowls regularly, and disposing of items that can hold water, like tires, buckets, gutters, and flowerpot saucers.

Maintain public spaces:

Cleaning up parks, greenways, and other public areas helps prevent mosquito breeding by removing potential water sources.

Educate the public:

Public awareness campaigns can encourage individuals to take steps to eliminate mosquito breeding sites in their own yards and neighborhoods.

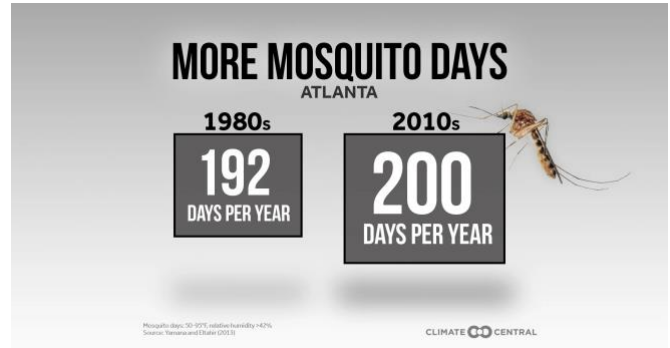
continued on page 2

INSIDE THIS ISSUE

- 1 Getting Ready for Mosquito Season
- 1 Climate Change and Mosquitoes
- 4 What if we killed all the mosquitoes?

Climate Change and Mosquitoes

The climate is getting warmer, and more warm days means more days for mosquitoes.



This might not seem like much of a change here in the southeast, but other parts of the country are showing more extensive changes in the length of mosquito season. In California, mosquito days have increased by more than a month; and the same is being seen across the north, from west to east.

Mosquito season generally begins in spring when temperatures consistently reach 50° F and above, causing eggs to hatch and adults to emerge. Peak activity occurs during the hot, humid summer months (June–August), with activity lasting from March through November in the southeast.

Worldwide, climate change is allowing species like *Aedes aegypti* and *Ae albopictus* to move into new regions, including temperate areas of North America and Europe that were previously too cold. These species can bring diseases such as dengue, chikungunya, and zika to new, susceptible populations.

Mosquitoes are found almost everywhere in the world, with the exception of Antarctica, and, until very recently, Iceland, due to their extreme cold. On Oct. 21, 2025, at 1:17 pm ET: Live Science (<https://www.livescience.com/about-live-science>) learned that Iceland is no longer mosquito-free. Three mosquitoes — two females and one male — were

continued on page 3

2. Larval and Adult Surveillance

Larval Surveillance:

Routine larval surveillance provides a more complete and accurate record of sources of mosquito breeding, thereby providing documentation of mosquito production as a basis for treatment. Ongoing larval surveillance allows for continuous evaluation of insecticide application and control results.

A clear understanding of species distribution, density and seasonal occurrence is facilitated through routine larval surveillance.

Routine larval surveillance enhances the knowledge provided by adult mosquito surveillance.

Adult Surveillance:

Adult mosquito surveillance involves monitoring and understanding adult mosquito populations to guide control efforts and assess disease risks. This includes trapping mosquitoes, identifying species, and analyzing data to determine the severity of outbreaks and appropriate management strategies.

Trapping:

Used to collect adult mosquitoes. Include CDC light traps, BG-Sentinel traps, Gravid traps.

Landing Counts:

These involve counting mosquitoes that land on and attempt to bite a person in a specific area.

Resting Boxes:

These simulate the resting environments of certain mosquito species, like tree holes, to capture them.

Surveillance helps determine the size, distribution, and species composition of adult mosquito populations. By identifying mosquito species and their prevalence, surveillance helps assess the risk of mosquito-borne diseases. Surveillance data informs decisions about the best control methods, such as larvicide applications or adulticide spraying.

3. Larval and Adult Control:

Larvicides:

These pesticides kill mosquito larvae before they develop into adults. They are applied to standing water sources to prevent mosquito populations from increasing.

Adulticides:

These pesticides kill adult mosquitoes. They can be applied through various methods, including aerial spraying or ground-based spraying.

Integrated Mosquito Management (IMM):

This approach combines various control methods, including larval and adult control, as well as source reduction and education, to achieve the most effective and sustainable mosquito management.

3. Public Awareness and Education:

Promote responsible disposal of items that can hold water:

Encouraging proper disposal of tires, buckets, and other containers can help prevent mosquito breeding.

Provide tips on how to avoid mosquito bites:

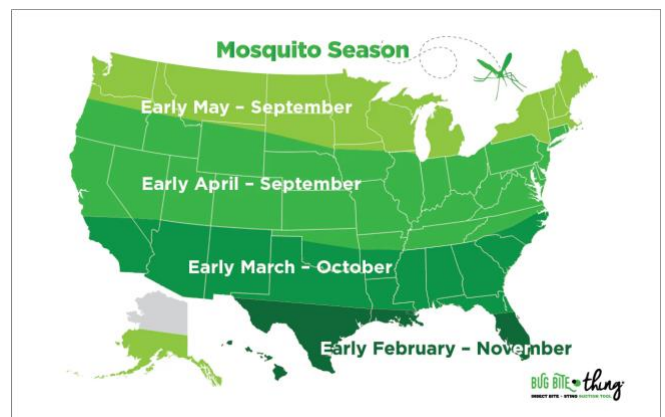
This includes wearing long sleeves and pants, using insect repellent, and avoiding peak mosquito activity times (dawn and dusk).

Inform the public about the risk of mosquito-borne diseases:

Public health organizations and local authorities can inform the public about the diseases that mosquitoes can transmit, such as West Nile virus, Zika virus, and malaria.

By focusing on these strategies, mosquito control programs can effectively prepare for mosquito season and protect communities from mosquito-borne diseases and bites.

<https://vectorbio.rutgers.edu/outreach/ipm.php>



found in the garden of a private residence between Oct. 16 and Oct. 18 in the municipality of Kjósarhreppur (also known as Kjós).

Global atmospheric temperatures are presently in a warming phase that began 250--300 years ago. Speculations on the potential impact of continued warming on human health often focus on mosquito-borne diseases. However, not everyone believes that warming temperatures are going to increase the range and incidence of mosquito-borne diseases. Elementary models suggest that higher global temperatures will enhance their transmission rates and extend their geographic ranges. However, the histories of three such diseases--malaria, yellow fever, and dengue--reveal that climate has rarely been the principal determinant of their prevalence or range; human activities and their impact on local ecology have generally been much more significant (Reiter, 2001).

Another prediction was that mosquitoes would move to higher altitudes and higher latitudes to escape warming temperatures. Extreme climate and weather patterns such as droughts, heatwaves, floods, and rainfall are increasing in severity and regularity across the globe. These provide favorable conditions for mosquitoes to breed and could help spread their viruses to higher latitudes and altitudes. However, a new study led by a UC Berkeley School of Public Health Environmental Health Sciences postdoctoral scholar shows that mosquitoes may be more able to adapt to climate change and rising temperatures than previously thought, suggesting that the potential increase in mosquito-borne diseases may be underestimated (Couper et al, 2025).

Climate change also increases mosquito-borne disease risk in less obvious ways. For example, when households store water in response to drought, this can increase local mosquito breeding sites and disease risk. Land use changes can also drive migration to cities, increasing the population at risk of explosive outbreaks of dengue and other mosquito-borne diseases.

One recent study, led by the London School of Hygiene and Tropical Medicine (LSHTM), predicted that more than eight billion people could be at risk of malaria and dengue by 2080. The research found that global temperature rises could lengthen annual transmission seasons by more than a month for malaria and four months for dengue over the next 50 years. These were based on projections of population growth of roughly 4.5 billion over the same period, and a rise in temperature of 3.7C by 2100.

So, can climate change be causing more mosquitoes? Changes in temperature, precipitation, and humidity brought about by climate change can create more favorable conditions for mosquitoes to breed, survive, and proliferate. These conditions can also lower mosquito populations due to less precipitation, making some environments less favorable for mosquito breeding. Warmer temperatures can accelerate mosquito breeding cycles and extend their active seasons, while increased rainfall may increase the number of breeding sites available to mosquitoes. Consequently, regions previously too cold or dry for mosquitoes may become more hospitable, potentially leading to an increase in mosquito populations and potentially, mosquito-borne diseases. This could have significant implications for the spread of mosquito diseases such as dengue fever and West Nile virus, posing new challenges for public health systems.

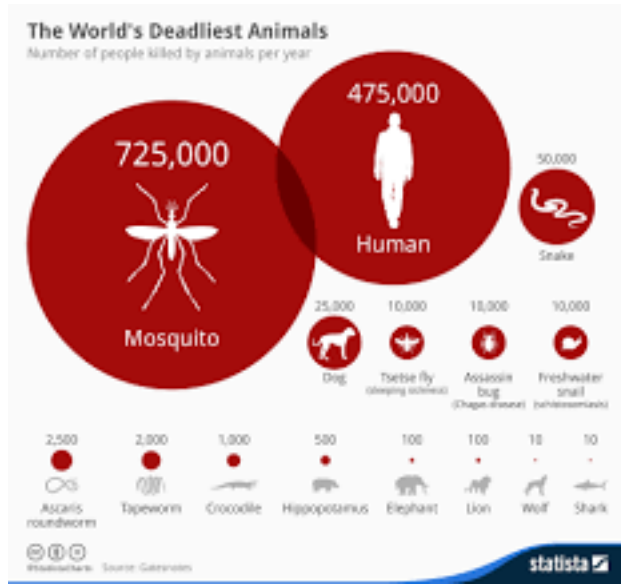
References

- Climate Change and Mosquito-Borne Disease. 2001. P Reiter. *Environ Health Perspect.* 109(Suppl 1):141–161. <https://pmc.ncbi.nlm.nih.gov/articles/PMC1240549/>
- Evolutionary adaptation under climate change: *Aedes* sp. demonstrates potential to adapt to warming. 2025. Lisa I. Couper, Tristram O. Dodge, James A. Hemker, Bernard Y. Kim, Moi Exposito-Alonso, Rachel B. Brem, Erin A. Mordecai, and Mark C. Bitter. *PNAS.* 122(2): 1-12. <https://www.pnas.org/doi/epub/10.1073/pnas.2418199122>
- Projecting the risk of mosquito-borne diseases in a warmer and more populated world: a multi-model, multi-scenario intercomparison modelling study. 2021. Felipe J Colón-González, PhD, Maquins Odhiambo Sewe, PhD, Adrian M Tompkins, PhD, Henrik Sjödin, PhD, Alejandro Casallas, MS, Prof Joacim Rocklöv, PhD, Cyril Caminade, PhD, Rachel Lowe, PhD. *The Lancet* 5(7): 404-414. [https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(21\)00132-7/fulltext](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(21)00132-7/fulltext)
- <https://www.vdci.net/blog/could-climate-change-be-causing-more-mosquitoes/>

What if we killed all the mosquitoes?

(Excerpts from The Daily Star, May 13, 2026)

The most dangerous animal in the world is the mosquito, responsible for killing an estimated 750,000 to 1,000,000 people annually through the transmission of diseases such as malaria, dengue fever, and Zika. While they are small, their ability to spread fatal illnesses makes them far deadlier than any large predator.



Mosquitoes account for more than 17% of all infectious diseases world-wide. And as the world warms due to climate change, mosquitoes are moving into new areas.

Mosquito eradication has long been a dream of humankind. While local elimination is possible, at least for short periods, complete species eradication is likely impossible. Mosquitoes are incredibly resilient, and some, like *Aedes aegypti*, thrive in urban environments. Effective control requires continuous, consistent effort rather than a single, one-time treatment. And that requires consistent support and funding.

Mosquito eradication history has evolved from early, localized drainage efforts in the late 19th century to, by the 20th century, targeted chemical controls and advanced genetic technologies.

With the success of DDT, the advent of less toxic, more effective synthetic antimalarials, and the enthusiastic and urgent belief that time and money were of the essence, the World Health Organization (WHO) submitted at the World Health Assembly in 1955 an ambitious proposal for the eradication of malaria worldwide.

This was reflected in a belief that mosquitoes could be eradicated using pesticides. However, pesticide resistance soon made that idea unlikely if not impossible, and it became obvious that mosquito control was likely to be the best that could be done.

Key Historical Eras & Developments

- **Early 1900s (Mechanical Control):** Following the discovery that mosquitoes transmit diseases like yellow fever and malaria, efforts focused on draining swamps and oiling water surfaces to kill larvae, most notably in Panama.
- **1940s–1960s (The DDT Era):** DDT was heavily used as a "miracle insecticide" to fight malaria globally. However, environmental concerns and mosquito resistance led to a global ban on widespread use by the 1970s.
- **1970s–Present (Integrated Management):** Modern efforts emphasize an integrated approach: using safer insecticides, larvicides, mosquito abatement districts, and public education to reduce populations.
- **21st Century (Genetic & Smart Tech):** Modern techniques include using gene-drive technology, releasing sterile male mosquitoes, and developing AI-powered laser systems to target mosquitoes mid-flight.

But is there a safe way we could eradicate mosquitoes -- and should we? How bad would that be for the environment?

Realistically, not all mosquitoes need to be eradicated. Out of roughly 3500 mosquito species, only about 100 species bite humans, and just 5 species are responsible for ~95% of human infections. Losing those 5 species could probably be tolerated environmentally, as those 5 species have evolved to be very closely associated with humans. This should mean that eradicating them should not have a major impact on the broader ecosystem.

Do we actually know enough about the ecology of mosquito species to make the decision for eradication? Most research on mosquitoes has focused on the disease transmission capabilities, not on their place in the ecosystem. Mosquitoes do transfer nutrients from their aquatic larval habitats to other areas, and serve as food for insects, fish and other animals. They also play a role in plant pollination, although this is not well understood.

A better approach is likely to be a more holistic one, with better access to diagnosis, treatment, and vaccines on the human side, as well as consistent funding to support new means of removing mosquitoes from the equation.

<https://www.thedailystar.net/news/world/news/what-if-we-killed-all-mosquitoes-4173746>

The Georgia Mosquito Control Association



www.GAmosquito.org

GMCA c/o Misty McKanna
1386 Kelly Rd
Statesboro, GA 30461

912-670-1140

Misty.Mckanna@dph.ga.gov

DIDEEBYCHA

GMCA Newsletter Supplement

Volume 33, Issue 1s

May 2026

A summary of the 2025 mosquito season for Chatham County, Georgia

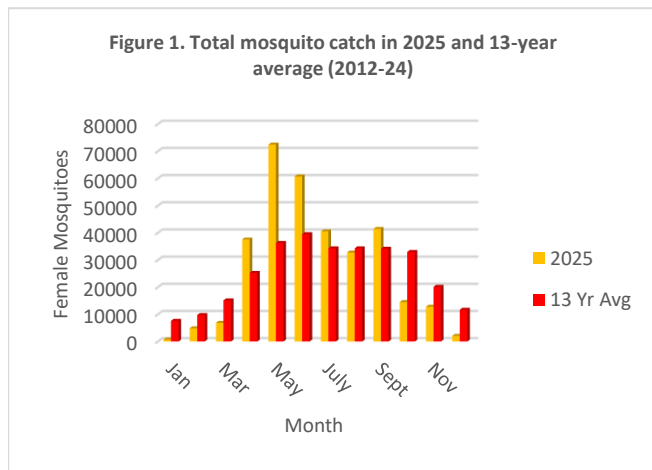
Robert A. Moulis

Chatham County Mosquito Control

65 Billy B. Hair Drive

Savannah, Georgia 31408

The beginning of 2025 was marked by a slow start to the mosquito season, and ended in much the same manner. However, the period from late spring to early summer (April through July) saw a substantial rise in mosquito populations when compared to the average from the previous 13 years (Figure 1). Trapping efforts in 2025 began in early January when temperatures favored mosquito activity and continued until the end of December.



Although trapping was primarily accomplished with gravid traps (47.02%) or CDC light traps (47.37%), exit traps (5.54%) affixed to our sentinel

chicken cages, and BG Sentinel traps (0.06%) were also used to a much lesser degree in 2025 (Table 1).

Table 1. Trap type and total mosquito catch in 2025.

Trap Type	Trap Nights	Total ♀♀'s	Total ♂♂'s
BGS	2	27	9
CDC	1470	182593	133
Exit	172	224	1
Gravid	1459	142630	8549

A total of 325,474 female mosquitoes was caught in 2025 over the course of 3103 trap nights at 112 sites across our service area. This total was comprised of 37 species from 10 genera. The four species most often encountered were *Culex quinquefasciatus* (38.46%), *Ochlerotatus taeniorhynchus* (17.65%), *Culex salinarius* (7.29%), and *Ochlerotatus atlanticus* (6.81%). *Aedes vexans* (3.08%), *Coquillettidia perturbans* (2.80%), *Culex erraticus* (3.19%), *Culex nigripalpus* (3.73%), *Ochlerotatus sollicitans* (2.17%), and *Psorophora ferox* (2.65%) were also captured at moderate rates (Table 2). The combined total also includes one *Psorophora cyanescens*, a species that has not been recorded in the county since 2007.

Table 2. Mosquito species collected in 2025.

Species	Total	Percentage
<i>Ae albopictus</i>	2909	0.89%
<i>Ae vexans</i>	10039	3.08%
<i>An atropos</i>	486	0.15%
<i>An crucians</i>	5560	1.71%
<i>An punctipennis</i>	9	0.00%
<i>An quadrimaculatus</i>	340	0.10%
<i>Cq perturbans</i>	9127	2.80%

continued on page 2

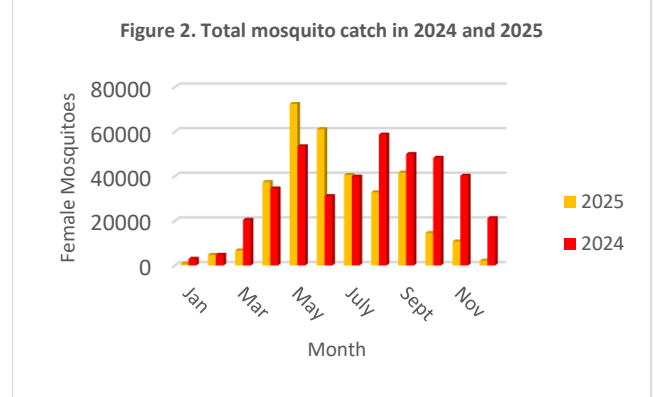
continued from page 1

<i>Cx coronator</i>	273	0.08%
<i>Cx erraticus</i>	10390	3.19%
<i>Cx nigripalpus</i>	12124	3.73%
<i>Cx quinquefasciatus</i>	125164	38.46%
<i>Cx restuans</i>	4471	1.37%
<i>Cx salinarius</i>	23720	7.29%
<i>Cx territans</i>	33	0.01%
<i>Cx spp</i>	8989	2.76%
<i>Cs inornata</i>	9	0.00%
<i>Cs melanura</i>	163	0.05%
<i>Ma titillans</i>	230	0.07%
<i>Oc atlanticus</i>	22149	6.81%
<i>Oc canadensis</i>	1160	0.36%
<i>Oc dupreei</i>	7159	2.20%
<i>Oc fulvus pallens</i>	118	0.04%
<i>Oc infirmatus</i>	3625	1.11%
<i>Oc mitchellae</i>	7	0.00%
<i>Oc sollicitans</i>	7061	2.17%
<i>Oc sticticus</i>	154	0.05%
<i>Oc taeniorhynchus</i>	57448	17.65%
<i>Oc triseriatus</i>	139	0.04%
<i>Or signifera</i>	29	0.01%
<i>Ps ciliata</i>	542	0.17%
<i>Ps columbiae</i>	2899	0.89%
<i>Ps cyanescens</i>	1	0.00%
<i>Ps ferox</i>	8635	2.65%
<i>Ps horrida</i>	10	0.00%
<i>Ps howardii</i>	120	0.04%
<i>Ps mathesoni</i>	21	0.01%
<i>Ur lowii</i>	35	0.01%
<i>Ur sapphirina</i>	126	0.04%

Over the course of the year, fewer mosquitoes were collected in 2025 compared to 2024. In 2025, monthly totals were higher in four months (April, May, June, and July), but lower in all other months (Figure 2). After September, the lack of rainfall in the area limited mosquito production throughout the region. The total number of mosquitoes captured during the fourth quarter of the year (Oct-Dec) was the lowest in the last fifteen years.

We submitted 1341 pools for testing to the Southeastern Cooperative Wildlife Disease Study (SCWDS) at the University of Georgia, and an

additional 2614 pools were tested in-house. Of the 1341 pools sent to Athens, two pools were detected



with West Nile virus (WNV) and 32 pools with Flanders virus. In addition, two pools tested in-house were positive for WNV. The full complement of pools (all 3955) were derived from 21 species of mosquitoes, although the majority of these samples consisted of *Culex quinquefasciatus* (60.99%), *Culex erraticus* (9.86%), *Culex nigripalpus* (6.57%), and *Ochlerotatus atlanticus* (4.20%). Groups of *Culex* individuals too damaged to accurately identify to species were also included among our samples (5.87%). It should be noted that because of its known involvement with local eastern equine encephalitis (EEE) transmission, *Culiseta melanura* specimens were actively targeted by staff for PCR analysis. Thus, this species made up almost 2.5% of our pool composition despite accounting for only 0.05% of the total mosquito catch in 2025. Other species contributed to a much lesser amount of the overall species makeup of samples (Table 3).

Species	Pools	Percentage
<i>Ae. albopictus</i>	10	0.25%
<i>Ae. vexans</i>	47	1.19%
<i>Cq. perturbans</i>	110	2.78%
<i>Cs. melanura</i>	95	2.40%
<i>Culex</i> spp.	232	5.87%
<i>Cx. coronator</i>	22	0.56%
<i>Cx. erraticus</i>	390	9.86%
<i>Cx. nigripalpus</i>	260	6.57%
<i>Cx. quinquefasciatus</i>	2412	60.99%
<i>Cx. restuans</i>	32	0.81%
<i>Cx. salinarius</i>	78	1.97%

continued on page 3

<i>Ma. titillans</i>	1	0.03%
<i>Oc. atlanticus</i>	166	4.20%
<i>Oc. canadensis</i>	18	0.46%
<i>Oc. dupreei</i>	6	0.15%
<i>Oc. infirmatus</i>	31	0.78%
<i>Oc. sollicitans</i>	1	0.03%
<i>Oc. sticticus</i>	1	0.03%
<i>Oc. taeniorhynchus</i>	6	0.15%
<i>Oc. triseriatus</i>	33	0.83%
<i>Ps. columbiae</i>	2	0.05%
<i>Ps. ferox</i>	2	0.05%

In 2025, all West Nile virus positive mosquito samples were from pools containing *Culex quinquefasciatus*. These samples were collected from four different locations in the county (Figure 3). The total of four positive pools recorded in 2025 marked the lowest yearly total of positive WNV samples since 2021 (when only three were recorded). WNV locations were for the most part widely scattered in 2025, with two occurring in the historically high WNV “hot zone” within the metro Savannah region of the county.

Figure 3. Locations of positive mosquito pools for West Nile virus in Chatham County, 2025.



One positive sample was recorded in the Bloomingdale area, where the virus has been found during several different seasons. The other positive sample was from a location on Skidaway Island, where virus had not been reported in the past despite a trapping history dating back to 2016.

Antibodies to the virus that causes EEE were detected in one of our sentinel chickens in 2025 (Figure 4). This sentinel was stationed within the Ogeechee River Flood Plain, several miles downstream from a site where two of our sentinels were reported positive for EEE in 2023. Locally collected mosquitoes testing positive for this virus were obtained in both 2024 (1) and 2023 (1), but not in 2025.

Figure 4. Location of positive EEE sentinel chicken in Chatham County, 2025.



Flanders virus was found in 32 samples from 15 locations in Chatham County during 2024. All but one of these contained *Culex quinquefasciatus*.

Figure 5. Location of positive pools for Flanders virus in Chatham County, 2025.



The lone exception was a sample consisting of *Culex* mosquitoes too worn to be accurately identified to species. The distribution of mosquitoes carrying Flanders virus was mostly scattered throughout the central portion of the county in both suburban and rural areas (see Figure 5).

Technicians conducted 861 service requests that were generated through the county's citizen notification system (QAlert). Technicians also conducted 7705 ground inspections on known larval habitats throughout the year, and treated 252 acres by hand. An additional 333 sites encompassing 11,732 acres were treated by our aircraft for larval mosquitoes. Altogether, 372,426 acres were treated aurally for adult mosquitoes and another 18,912 acres were treated with ground ULV equipment. Staff also treated 9,216 catch basins in early June as part of our normal West Nile virus prevention program.

In addition to surveillance work, ground-based control efforts, and aerial operations, our source reduction staff ditched a total of 22,325 feet, and cleaned out another 30,445 feet of ditches. This work was confined to the Dredge Material Containment Area (DMCA) situated mostly along the South Carolina side of the Savannah River. The area consist of thousands of acres set aside for the deposition of sediment from dredging operations within the main channel of the river. In time these containment units become ideal salt marsh mosquito larval habitat capable of producing droves of hungry mosquitoes that easily transverse state lines into the historic district of Savannah and other popular visitor destinations over the course of the mosquito season.

Staff again assisted the Georgia Department of Agriculture with the collection of information on the accidentally introduced yellow-legged hornet (*Vespa velutina*). This is a continuation of work that began in 2024, soon after the invasive hornet was first recorded in the Savannah area in 2023 (Figure 6). The hornet (Figure 7) poses a serious threat to the ecosystem, particularly native pollinators, as well as established populations of either feral or farmed honey bees (*Apis mellifera*). A total of 68 sites were trapped during 2025 by Chatham County Mosquito

Control staff. Trap sites generally corresponded to locations where mosquito traps were deployed on a regular basis. Our trapping efforts began in January and continued through December. A total of 148 yellow-legged hornets were captured from 26 sites. The first hornet was caught on January 13 and the last on December 12. To learn more about the yellow-legged hornet in Georgia, please visit: [Yellow-Legged Hornet | Georgia Department of Agriculture](#).

Figure 6. Photograph of first yellow-legged hornet nest found in Chatham County in 2023.



Figure 7. Photograph of a yellow-legged hornet from Chatham County, 2025.

