

STATUS OF THE YELLOW-LEGGED HORNET, *VESPA VELUTINA* Lepeletier, IN NORTH AMERICA

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CHRONOLOGY OF DETECTION AND RESPONSE

2023

In July of 2023, a novice beekeeper near Savannah, Georgia, a historic port city on the southeastern coast of the United States, observed an unfamiliar predatory insect hovering at the entrance of his beehives catching forager honey bees. The beekeeper collected the insect and contacted authorities to get it identified. The insect was identified by entomologists at the Georgia Department of Agriculture (GDA) and the University of Georgia and later confirmed by the US Department of Agriculture's Animal and Plant Health Inspection Service (USDA APHIS) as a yellow-legged hornet (YLH), *Vespa velutina* Lepeletier, the first record of a living yellow-legged hornet in North America.

The Georgia Department of Agriculture issued a press release (Aug. 15) and launched a website for public outreach and reporting (<https://agr.georgia.gov/yellow-legged-hornet>). They contacted beekeepers directly in the area and deployed Traps baited with a combination of grape juice and brown sugar. Traps began collecting hornets, and public reports confirmed YLH activity in and around Wilmington Island just southeast of downtown Savannah, GA. The first nest was located and removed from Wilmington Island on August 25. Traps in the area continued to collect YLHs after the nest was removed. Through trapping and public assistance, investigators located and removed four additional nests, but traps continued collecting hornets into winter.

Savannah rests on the Savannah River, the border with the neighboring state, South Carolina. Upon learning of the confirmed sighting, officials with the South Carolina Department of Plant Industry (SCDPI) launched similar measures to monitor YLH activity, deploying traps, conducting outreach, contacting beekeepers, and launching a webportal for public reporting (<https://www.clemson.edu/public/regulatory/plant-industry/invasive/invasive-spotlights.html>). No YLHs were collected in SC traps until November when several drone hornets were caught. Despite nearly 300 submissions, no plausible YLHs were confirmed through public reporting nor were any nests located in South Carolina.

By the end of 2023, hornets had been confirmed only in Chatham County, Georgia (near Savannah) where five nests had been located and in Jasper County, South Carolina, just across the river from Savannah where only drones were collected. It is suspected that the initial introduction occurred in Savannah, which is a busy international shipping port.

2024

Monitoring, trapping, and public outreach efforts expanded significantly in 2024 with emergency funding provided through the USDA APHIS. Georgia's Department of Agriculture expanded trap numbers from 170 to 1,243, and the SC DPI expanded from 35 to 796. Both states increased trapping area well beyond the expected area of hornet activity to determine the range of expansion. Trapping data and public reporting led to the capture of more than 3,000 hornets and removal of 49 nests in GA. The range of YLH detections expanded nearly 45 km (25 mi) west and north from the area of first detection. In March 2024 South Carolina recorded its first nest, an embryo nest reported by a homeowner in the city of Bluffton, Beaufort County. This location marked an expansion of approximately 27 km (17 mi) east of the original sighting in Savannah. By the end of 2024, more than 4,000 hornets were trapped and 16 nests removed in South Carolina with hornet activity being confirmed in Jasper and Beaufort counties, approximately 32 km (20 mi) east of the original sighting.

Outreach efforts also intensified in both states with trainings and displays at the Georgia and South Carolina beekeeper associations conferences, presentations to local beekeeper clubs across both states, an expanded social media campaign, and additional education materials posted to websites. YLH teams in both states began sharing observations through newsletters, the Georgia "Yellow-legged Ledger" <https://agr.georgia.gov/yellow-legged-hornet> and the South Carolina "Hornet Herald" <https://blogs.clemson.edu/regulatory/category/yellow-legged-hornet/>. Beekeepers in the vicinity of the YLH traps were contacted directly to serve as sentinel hives for monitoring hornet activity and were instrumental in tracking hornet activity.



2025 (as of August 20th)

Trapping was again expanded in both states (GA 2,065 traps, SC 1,147). Georgia expanded trapping to include most of the coastal region. South Carolina expanded trapping into Charleston county. Hornet activity and nest eradications expanded beyond the previous year's reports, mostly along the coast in South Carolina approximately 20 km (14 mi) northeast to St. Helena Island, SC. Just over 1,000 adult hornets have been trapped and 18 nests removed in GA, and just over 500 hornets, including more than 300 spring dispersing queens, have been trapped and 27 nests removed in South Carolina this year. Traps continue to collect adult hornets, and teams are preparing to remove additional nests that were recently located. Hornet activity remains concentrated in the Savannah, Bluffton, and Beaufort areas.

Public outreach has been effective. The majority of nests removed have been reported by the public, especially the early season embryo and primary nests which are difficult to locate through trapping. Public outreach has been expanded on several fronts. In SC, 47,000 brochures were mailed to residents in Jasper and Beaufort counties with an additional 80,000 to be mailed in September. Both states launched citizen trapping programs, providing guidance to residents who wish to deploy traps and report captures. Training about YLH biology and identification was expanded to arborists, foresters, and pest control operators. Training also was given to local beekeepers, at the Apiary Inspectors of America annual meeting, and at the American Bee Federation annual conference.

Other states are also taking action. The Florida Department of Agriculture and Consumer Services (FDACS) initiated a limited trapping program near the border with Georgia and around the port of Jacksonville and is involved in several research projects. Florida included trainings at their summer bee college, annual beekeeper conference, and local bee club meetings. They have not collected any YLH in their traps or through citizen reports. Nationally, YLH specimens have been distributed to apiculture extension educators for training and use with Master Beekeeper Programs, and a regional training for agriculture inspectors and extension professionals across the southern region is being planned for early 2026.

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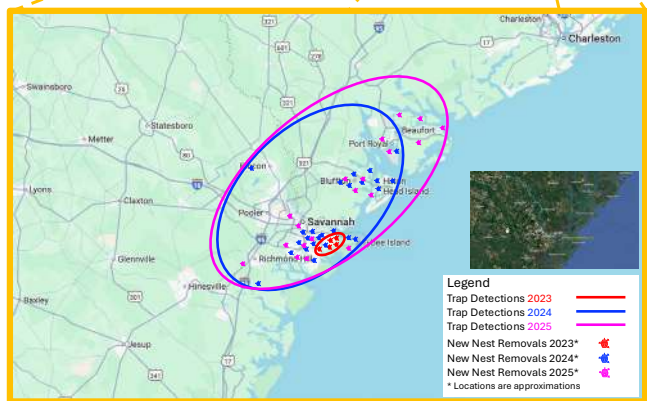


Table 1: Total YLH Detections and Removals

	Traps deployed	Hornets trapped	Nests removed	Total range of detections
2023	205	~ 100	5	30 km ²
2024	2039	7284	65	3000 km ²
2025 (as of Aug. 20)	3212 (as of Aug. 20)	1901 (as of Aug. 20)	45 (as of Aug. 20)	6000 km ² (as of Aug. 20)

CURRENT AND PROPOSED RESEARCH

Several labs are investigating methods to enhance early detection and rapid response.

Univ. of Florida, Honey Bee Research and Extension Laboratory (Kaitlin Deutsch, James D. Ellis)

- Use of eDNA for early detection of hornet activity
- Observations of life history and nest dynamics

Florida Department of Agriculture and Consumer Services (James C. Fulton)

- Microsatellite panels for individual nest identification
- Lures/pheromones for male annihilation control
- Risk prediction modelling

Univ. of Georgia, Bee Lab (Lewis J. Bartlet)

- Genomics for YLH origins and population diversity
- YLH Diet Characterization
- Distribution modelling and projection
- Pathogen detection

West Virginia Univ., Davis College of Agriculture, Natural Sciences and Design (Yong-Lak Park)

- Use of drones and artificial intelligence to detect YLH nests

Clemson Univ., College of Agriculture, Forestry, and Life Sciences (Benjamin A. Powell)

- Nest morphometrics, detection and removal strategies

Clemson Regulatory Services, SC Department of Plant Industry (Matt Howle)

- Hornet tracking technology

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The first sighting of live yellow legged hornets, *Vespa velutina* (Lepeletier), in North America occurred in July of 2023 near Savannah, Georgia, a busy port city on the southeastern coast of the United States when a beekeeper reported unusual predatory hawking behavior around beehives. This announcement raised very serious concerns across the apiculture industry because numerous large honey bee production operations use the region's mild climate and productive landscapes for overwintering colonies, early season queen production, and building colonies for pollination of early spring crops such as almonds. These concerns are justifiable because yellow legged hornets have a record of invasiveness following their introduction and establishment in France in 2004 and subsequent expansion across western Europe where negative impacts to honey bee health were reported. This hornet species also has invaded South Korea (2003) and Japan (2013). US state and federal agencies responded rapidly to confirm the identification and deploy an intensive trapping and nest removal program, but new hornets nests were found in 2024, indicating that the founder population was able to establish, overwinter, and expand its range to include the neighboring state of South Carolina. This presentation will detail the history of the invasion and regulatory response, report the current status of the hornet population, describe the hornets observed biology, and examine the local landscape and natural challenges for controlling this honey bee pest. The presentation also will discuss potential impacts for beekeeping in the region and implications for the entire US apiculture industry and will detail the foci of current and planned research and the expanding control program.