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Plant Protection Today: PPQ Invests in Technology to Keep Hornet-Hunting Employees Safe

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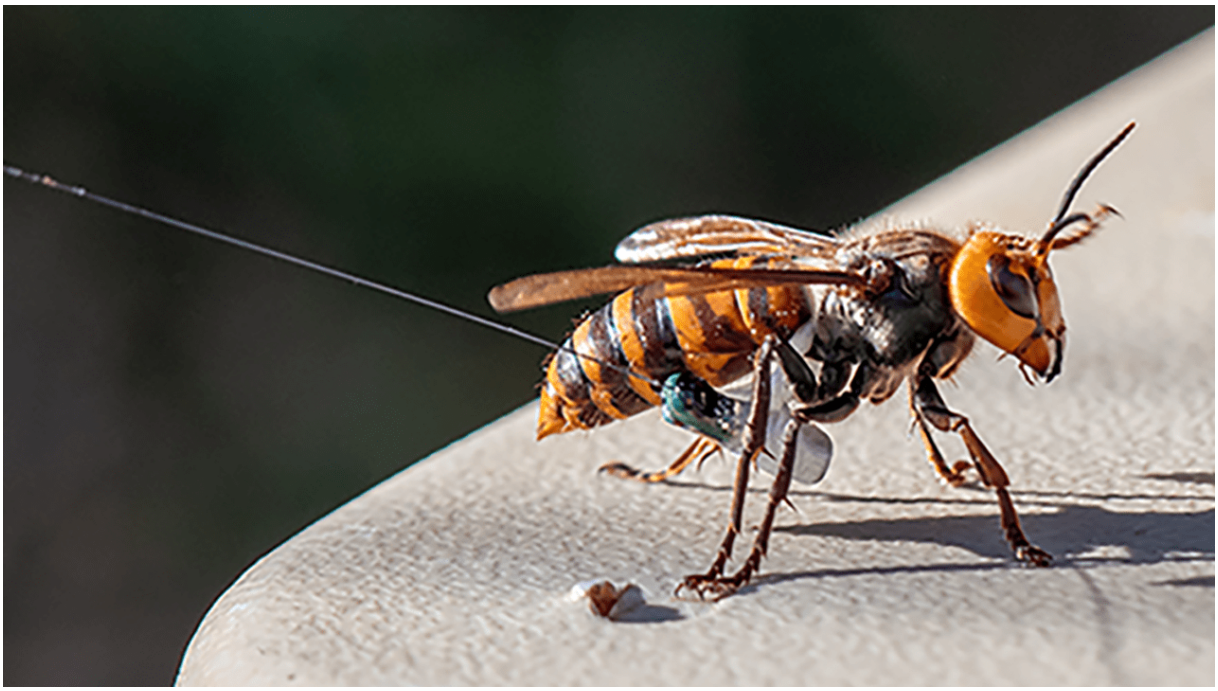

Cover Photo: So far, the U.S. Department of Agriculture’s Plant Protection and Quarantine (PPQ) program and Washington State Department of Agriculture staff have eradicated four Northern giant hornet nests by using a ground-based telemetry tracking system.

Leveling the Playing Field with a New Unmanned Aircraft System

By Sharon Lucik

The northern giant hornet (NGH) is about the size of a double-A battery. It has a long stinger and toxic venom. NGH is a serious threat to honey bees, and these hornets can decimate an entire honey bee hive in a matter of hours. Typically, it's not aggressive to humans unless it feels threatened. And while a chance NGH encounter would send most people running for the hills, the U.S. Department of Agriculture's Plant Protection and Quarantine (PPQ) program and their Washington State Department of Agriculture (WSDA) partners stand strong—and lean in.

The first NGH in Washington was detected in 2019, and two years later the staff had successfully eradicated four nests. "It takes grit, patience, and know-how to do the work, and that's why they've been so successful," said National Operations Manager Josie Ryan. "The process involves trapping a live hornet, attaching a small telemetry tag, releasing the hornet, and then following it back to its nest."

WSDA and PPQ staff have tracked and located the NGH nests around Blaine, WA, using a ground-based radio telemetry tracking system. Guided by the tag's signal, they navigate uneven terrain and hike through dense vegetation, poisonous plants, and thorny thickets to keep the frequency strong. As they get closer to the target, the staff tread lightly to avoid accidentally stepping on or stumbling into a nest, which could cause the hornets to attack.

"Tracking hornets through the Pacific Northwest landscape made it clear the ground-based tracking system had some drawbacks, especially concerning the staff's

safety,” said PPQ’s former Science and Technology NGH lead Todd Gilligan. “That’s why PPQ and WSDA pooled their resources two years ago and purchased an unmanned aircraft system, or UAS, combined with an advanced aerial telemetry tracking system The new technology enables staff to maintain a safe distance and track NGH through areas that were previously inaccessible. Combined with the ground-based system, it should ensure future success in rapidly finding and eradicating NGH nests.”

Although the UAS system has been extensively tested, it hasn’t been used to track a live hornet yet because no hornets were detected in 2022. But the staff is ready if they capture any NGH this year. Starting in July, PPQ and WSDA are planning to set more than 1,000 traps in Washington’s northern Whatcom County.

“Technology enables us to work skillfully, accurately, efficiently, and safely,” Gilligan said. “And implementing a technology-based solution such as the UAS tracking system is necessary to combat invasive species that threaten American agriculture and natural resources.”

Like Washington State, the province of British Columbia, Canada—which also had its first NGH detection in 2019—reported no new NGH detections in 2022 and will continue to survey for the pest again this year.

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This is the second article in a three-part Plant Protection Today series about the U.S Department of Agriculture's Plant Protection and Quarantine program and the Washington State Department of Agriculture, and their response to the northern giant hornet (NGH).

The NGH (Vespa mandarinia) is a social wasp species. Its native range extends from northern India to East Asia. This pest was first reported in the Vancouver Island area of Canada in August 2019 and was also detected in Washington State that same year in December.

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