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# Vespa mandarinia in the Pacific Northwest - Initial responses to an invasion by the world's largest hornet

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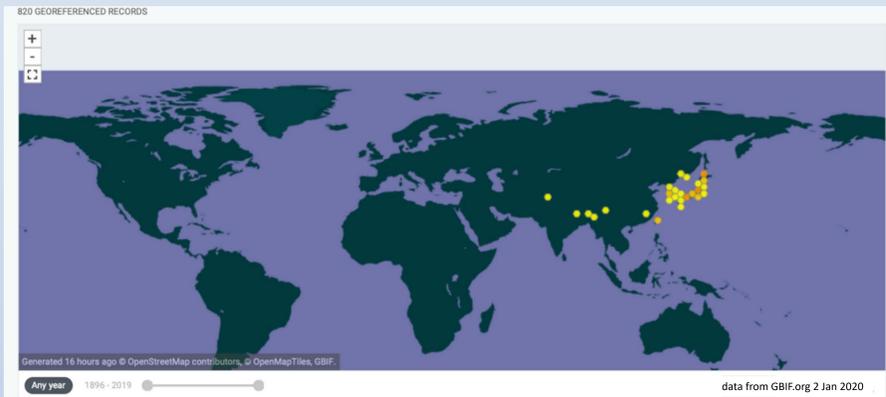
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Learn more at: [www.agr.wa.gov/hornets](http://www.agr.wa.gov/hornets)



## Overview

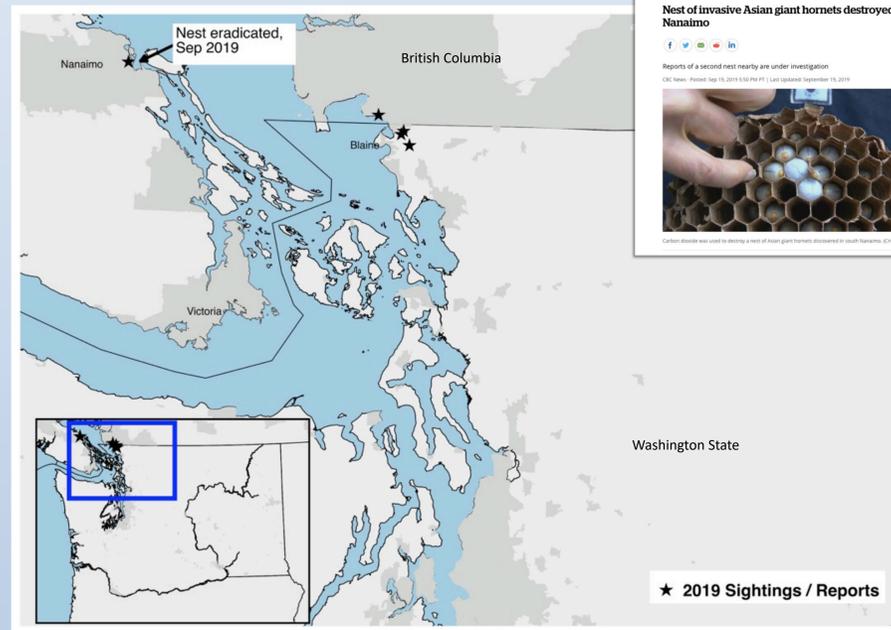
In 2019, *Vespa mandarinia* Smith, 1852, was detected at two sites each in British Columbia, Canada, and Washington State, USA. One of the detections led to the location and destruction of an active nest in Nanaimo, BC, raising concerns that the species may be established in the region. The human health danger, ecological risk, and impacts on apary management make **eradication** of this species a priority for both countries. This is challenging because of the cryptic nesting habits and a lack of species-specific lures. Both countries have mobilized extensive outreach campaigns to alert broad sectors of the public to the pest and our response activities.



*Vespa mandarinia* queens can be almost 5cm long – the largest hornet on earth. Their native range is the subtropical to moderate temperate parts of Asia. They appear to prefer forested habitats<sup>1</sup>. The hornets nest almost exclusively in the ground, with only a handful of nests ever recorded in human structures or hollow trees<sup>2</sup>.



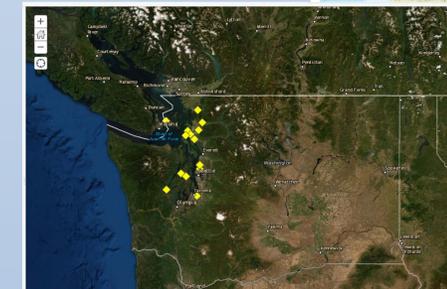
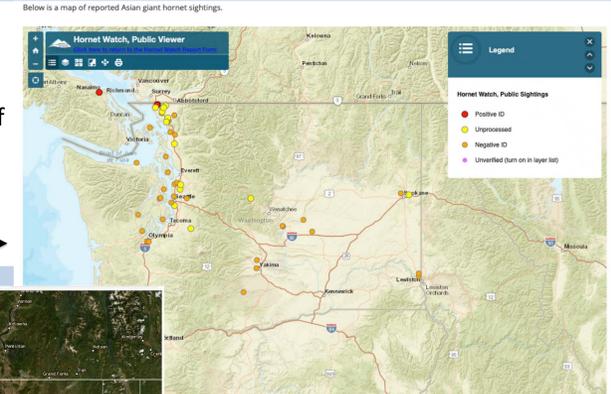
A nest was located and destroyed in Nanaimo, BC, in September 2019. An additional specimen was photographed in White Rock, BC, later that year. Two specimens were collected near Blaine, WA, in October and December of 2019. Taken together, these sightings raise the possibility that the hornet may be becoming established in the Pacific Northwest. There have also been credible reports of suspicious bee kills in the area. Hives are lost to many other causes with similar physical damage, including mammal predation, but these reports are being treated as potential hornet sightings in our response planning.



The lack of traps specific to this species makes survey difficult. Both British Columbia and Washington State have developed robust outreach programs to enlist the public in the search for these hornets. More than 1,100 stakeholders have registered for regular updates on WSDA's Facebook group.

Beekeepers are critical partners in this effort. The Mt. Baker Beekeepers Association is maintaining spring "sap traps" in WA and BC, for emerging queens seeking carbohydrate-rich sap. Agencies in both countries will deploy bottle traps targeting hornet queens and workers throughout the season. WSDA and USDA researchers will also test chemical lures in 2020.

WSDA maintains an online reporting site for suspect Asian giant hornet sightings. None of the ~150 submissions to date have been a credible sighting.



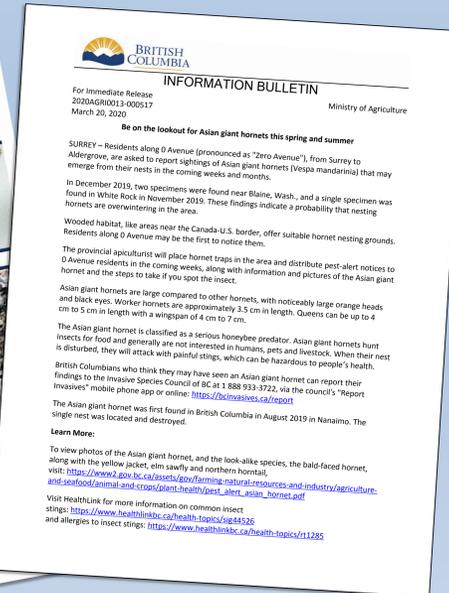
Washington and British Columbia will deploy bottle traps across the region. The public is very engaged via social media, and many volunteers will host their own bottle traps over the season.



*Vespa mandarinia* feeds on insects, and up to 60% of its diet in Japan comprises chafer beetles<sup>1</sup>. They are also known for group attacks on other social insects, including honey bees. *Apis mellifera* has no defense against this predator and hives are quickly destroyed by the hornets, which then eat the larvae and pupae<sup>3</sup>.

These hornets are also among the most venomous of stinging Hymenoptera<sup>4</sup>. Their 6 mm long stinger delivers large doses of venom, which can cause tissue necrosis and kidney damage in addition to anaphylactic shock. The hornets aren't especially aggressive, but will vigorously defend their nests and and beehives that they are attacking.

Photo credits (L-R, Top-Bottom)  
Col 1: Q. Baine, unknown, T. Mcfall, Q. Baine  
Col 3: C. Looney, Q., Baine, S. Spichiger, S. Spichiger, S. Spichiger, R. Wojahn



Eradication currently requires tracking hornet workers back to their nests. This will occur throughout the season, ideally before new queens are produced. We will use thermal imaging technology to help locate nests, which are usually at about 30°C. Special suits will be used to protect eradication teams from stings.

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