The world’s largest wasps made their way from Asia to the U.S. Can scientists stop them?

One morning in early December 2019, Jeff Kornelis of Blaine, Washington, stepped outside to walk his dog. He noticed a wasp nearly the length of his pinky finger lying dead on his front porch. The wasp had an orange head, gigantic wings, and a tiger-striped abdomen. He’d never seen an insect like it.

Kornelis contacted state officials about the strange sighting. Scientists from the Washington State Department of Agriculture (WSDA) drove three hours from their office in Olympia to examine the huge bug. What they saw confirmed their worst suspicions: It was an Asian giant hornet, the largest type of wasp in the world.

Asian giant hornets are native to Japan and other parts of eastern Asia. They’d never been found in the U.S. before. The wasps, which prey on bees, could wreak havoc on local hives. The scientists quickly hatched a plan to hunt down where the hornets were nesting—and hopefully eradicate them before they could spread.

KILLER WASPS
Asian giant hornets grow up to 2 inches long—four times as long as a yellow jacket. Nobody knows how they reached North America. They likely nested in international cargo, says Todd Murray, an entomologist at Washington State University.

When attacked, giant hornets use their extra-long stingers to defend themselves. People have compared the pain of a sting to having hot nails driven into their skin. Repeated stings have occasionally caused fatal allergic reactions in people, earning the insects the nickname “murder hornets.” But human deaths are extremely rare, and the real threat isn’t to people—it’s to honeybees.

In the fall, Asian giant hornets seek out beehives. They kill bees and chew their bodies into “meatballs” to feed their young. Groups of hornets sometimes swarm a hive and kill every bee inside it. About 20 hornets can slaughter tens of thousands of bees within hours, says Murray. That’s a problem because approximately one-third of the food Americans eat comes from plants that honeybees pollinate. Food supplies could suffer if the Asian giant hornet spreads out of control.

ON THE HUNT
The WSDA scientists asked people to report giant hornet sightings. They plotted the sightings on a map, then drew circles around them based on how far the insects usually fly. That told them where to place traps to try to catch more hornets. Local beekeepers helped them set more than 2,500 traps that attract and kill the wasps.

Last September, WSDA scientist Chris Looney captured the first live hornet in a net. If his team could follow it, it would lead them right to its nest. The scientists tried gluing a tracking tag to the hornet, but that prevented it from flying. The next week, they used dental floss to tie a tag on another hornet, but it flew away so fast that they lost the signal from the tag.

In October, the team tried longer-range tracking tags. One hornet they tagged nearly got away. But then the scientists picked up a faint signal that led them to a large tree. They saw a hornet fly into a crevice in the trunk. They’d found the nest! “We were pumped,” says Looney.

HUMONGOUS HORNETS
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STOPPING THE HORNET INVASION
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To narrow down the location of an Asian giant hornet nest, scientists place traps in circular zones based on where live hornets have been spotted and how far the bugs can fly. A map’s scale tells you the ratio between the distance on the map and the real-world distance. You can use it to find the actual distances between places on a map.

**Example:** Asian giant hornets are most likely to attack beehives that are within 1 kilometer of their nest. How many units on the map is 1 km?

So, on this map, 1 km is equal to $\frac{1}{2}$ unit.

Look at the map key and identify the map’s scale:

Rewrite the scale as a proportion to find how many units represent 1 km.

Cross-multiply and solve the equation to find the value of the unknown variable.

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The map below shows the region around Bellingham, Washington, where an Asian giant hornet was spotted in July 2020. The coordinate plane is aligned so that the hornet sighting is at the origin (0, 0). Answer the questions to learn more about how scientists place traps and hunt a nest.

### Step 1

Look at the map key and identify the map’s scale:

$1 \text{ unit} = 2 \text{ kilometers}$

### Step 2

Rewrite the scale as a proportion to find how many units represent 1 km.

$\frac{1 \text{ unit}}{2 \text{ km}} = \frac{x \text{ unit}}{1 \text{ km}}$

### Step 3

Cross-multiply and solve the equation to find the value of the unknown variable.

$1 \text{ unit} \times 1 \text{ km} = x \text{ unit} \times 2 \text{ km}$

$2 \text{ km} = 2 \text{ km} + x \text{ unit}$

$\frac{1 \text{ unit}}{2} = x \text{ unit}$

### 1A

A. Asian giant hornets typically forage for food within 2 kilometers of their nest. What are the coordinates of the point farthest north they would travel from the sighting? Mark this as point A on the map.

### 1B

B. What are the coordinates of the distance farthest east they would travel? Mark this as point B.

### 1C

C. What are the coordinates of the distance farthest south they would travel? Mark this as point C.

### 1D

D. What are the coordinates of the distance farthest west they would travel? Mark this as point D.

### 1E

E. Draw a rough circle around these 4 points that you have marked on the map.

### 2B

Determine the following coordinates within the 8-km radius hornets can fly, mark the points on the map, and draw a rough circle around them:

### NORTH:

Point J

### EAST:

Point K

### SOUTH:

Point L

### WEST:

Point M

### 3B

If you were a scientist trying to locate the hornet nest using these data points, where would you focus your search? Explain on a separate sheet of paper.

—Mara Grunbaum