

Fewer parasitic wasps may affect the Earth's — and humans' — health

By Washington Post, adapted by Newsela staff on 11.13.19

Word Count **730**

Level **820L**



Image 1. A glyptapanteles is a type of wasp that stings other insects that then forces them to host its larvae, or wasp babies. Photo by: Cecilia Escobar/USDA Systematics Entomology Laboratory

A wasp's sting can be painful to humans. For some caterpillars, spiders and worms, a wasp's sting means death. By stinging them, the wasp can turn these bugs into a puppet for days or weeks until they die.

Does that sound like a Halloween nightmare? For bugs, it is just an ordinary day in the world of insects. About one-tenth of six-legged bugs, or about 120,000 different species, are parasitoids, pronounced pare-uh-si-TOID. Parasitoids are insects that take over and live off another insect, eventually killing it.

Parasitoid insects have existed for at least 100 million years. Floyd Shockley says they have been around since before dinosaurs. Shockley works with the insect collection at the Smithsonian National Museum of Natural History in Washington, D.C.

Chemicals Make Victims Follow Their Orders

Many parasitoids are types of ants, bees or wasps. Shockley says this makes sense because "they're already equipped with stingers to inject chemicals." The chemicals make their victims follow their orders.

Parasitoids take over other insects for one reason: to lay eggs in them. This means that parasitoids are always female. Once they lay the eggs, the hatched larvae munch on the insides of their still-alive host insect. When they have grown bigger, they eat their way out of the bug they are inside of.

Fly parasitoids take the heads off of fire ants. Hairworm parasitoids make grasshoppers jump into water and drown. There is even a fungus that pierces the heads of ants. The ants distribute the fungus spores. A spore is a tiny cell that grows into more of the fungus.

"But wasps," Shockley said, "do some of the coolest stuff."

Controlling Worm To Protect Brothers And Sisters

Glyptapanteles, pronounced glip-tuh-PAN-teh-leez, are wasp larvae. They feed on an inchworm's insides until they are ready to pupate. Pupate means the larvae are ready to live in a cocoon. Then the wasp larvae push their way out through the inchworm's skin. Once outside, it attaches to the outside of the worm's body. Two of the larvae stay inside, according to Shockley. They control the worm to protect their brothers and sisters.

Anelosimus eximius, pronounced an-eh-LOSS-ih-mus ex-IH-me-us, is a kind of Central and South American spider. It builds webs in groups and kills invaders. Zatypota wasps inject a chemical into a single spider that makes it wander off. The spider spins its web alone while larvae feed on its blood. Shockley says other parasitoids use their hosts' existing behaviors. This spider, though, does not know how to build a web by itself. "The wasp programs a totally new behavior in the spider that it wouldn't do on its own," Shockley said.

Shockley's favorite parasitoid might be the emerald wasp. It stings a much larger, heavier cockroach. The sting makes the cockroach obedient. Then the wasp climbs on the cockroach's head and steers it by its antennae back to its nest "like a dog on a leash," Shockley said. "It's weird."

Human Immune Systems

Scientists only recently developed the tools to study parasitoid wasp DNA. DNA holds information about a living being. It tells bodies how to grow and work.

Scientists want to know how the hatched parasitoid larvae avoid setting off reactions that would make their hosts kick them out. They think studying wasp DNA will teach them about human immune systems. Your immune system protects you from germs and other outside invaders.

Unfortunately, studying the insects might get harder. The number of insects around the world is going down. Shockley said parasitoid insects are particularly in trouble. Throughout time, they have usually only evolved with one or two other insects. They do not have other host insects they can lay their eggs in. If their host insect dies out, they cannot keep laying eggs and they might die



out, too. Experts are not sure what fewer parasitoid wasps will mean to the health of the Earth in the future. However, it will have an effect, possibly even on humans.

Quiz

1 Read the following paragraph from the article.

Shockley's favorite parasitoid might be the emerald wasp. It stings a much larger, heavier cockroach. The sting makes the cockroach obedient. Then the wasp climbs on the cockroach's head and steers it by its antennae back to its nest "like a dog on a leash," Shockley said. "It's weird."

Which statement summarizes the paragraph?

- (A) The emerald wasp and cockroach are Shockley's favorite insects to study.
- (B) The emerald wasp is much smaller and weighs less than a cockroach.
- (C) The emerald wasp looks like it is walking a dog with the cockroach.
- (D) The emerald wasp is a parasitoid that stings a cockroach and controls it.

2 Read the following paragraph from the article.

Parasitoids take over other insects for one reason: to lay eggs in them. This means that parasitoids are always female. Once they lay the eggs, the hatched larvae munch on the insides of their still-alive host insect. When they have grown bigger, they eat their way out of the bug they are inside of.

HOW does this paragraph support the main idea of the article?

- (A) It explains how parasitoids can make victims follow their orders.
- (B) It shows how the larvae of parasitoids live off the bodies of their hosts.
- (C) It explains how parasitoids are reacting to their numbers going down.
- (D) It shows how the larvae of parasitoids grow after they leave their hosts.

3 If this article were organized using chronological order, which paragraph would come FIRST?

- (A) A wasp's sting can be painful to humans. For some caterpillars, spiders and worms, a wasp's sting means death. By stinging them, the wasp can turn these bugs into a puppet for days or weeks until they die.
- (B) Does that sound like a Halloween nightmare? For bugs, it is just an ordinary day in the world of insects. About one-tenth of six-legged bugs, or about 120,000 different species, are parasitoids, pronounced pare-uh-si-TOID. Parasitoids are insects that take over and live off another insect, eventually killing it.
- (C) Parasitoid insects have existed for at least 100 million years. Floyd Shockley says they have been around since before dinosaurs. Shockley works with the insect collection at the Smithsonian National Museum of Natural History in Washington, D.C.
- (D) Many parasitoids are types of ants, bees or wasps. Shockley says this makes sense because "they're already equipped with stingers to inject chemicals." The chemicals make their victims follow their orders.

4 Read the article's introduction [paragraphs 1-3] and the final section "Human Immune Systems."

What is one connection between these two sections?

- (A) Both sections compare and contrast different types of parasitoids.
- (B) Both sections explain a reason why parasitoids may be in trouble.
- (C) The introduction shows a problem parasitoids cause for other insects, while the final section shows a problem that parasitoids face.
- (D) The introduction shows that scientists are studying parasitoid DNA, while the final section shows what they learned from the DNA.