
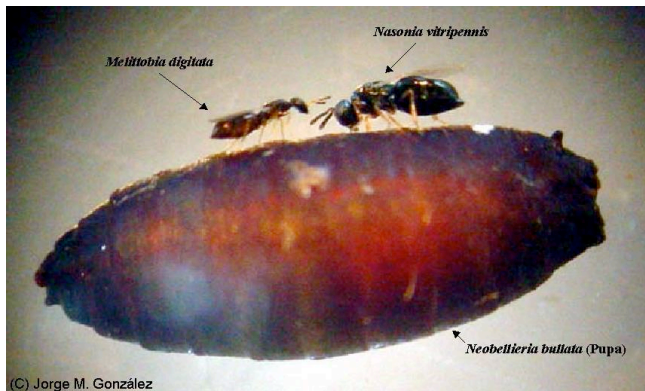


Wowbug (*Melittobia digitata*) classification

Taxonomic Category	Scientific Name	Common Name	Characteristics
Phylum	Arthropoda	Arthropods	Exoskeleton, segmented body, jointed appendages. Largest group of all animal phylums (~75% of all organisms)
Class	Insecta	Insects	3 body parts, 3 pairs of legs, 2 pairs of wings
Order	Hymenoptera	same	“membranous wings.” Includes ants, bees, wasps, horntails, and sawflies. Ovipositor on end of female’s abdomen. Wings joined by small hooks. Hind wings smaller than forewings. Females develop from fertilized eggs, males from unfertilized.
Family	Eulophidae	Eulophids	All 4 tarsi segmented 
Genus	Melittobia		fourteen species known around the world. At least 8 species occur in the U.S.
Species	digitata		

Life Cycle of *Melittobia digitata*

1. *Melittobia* finds the nest of a nonsocial bee or wasp, such as the mud dauber (*Trypoxylon politum*)
2. The adult female finds the unguarded young (in the larval stage) and lays many eggs.



(C) Jorge M. González

<http://www.discoverlife.org/nh/tx/Insecta/Hymenoptera/Chalcidoidea/Eulophidae/Melittobia/digitata/>

Life Cycle of *Melittobia digitata*

3. In 2 - 4 days the *Melittobia* eggs hatch and begin feeding on the host larva.



4. The larva feed on the host for 7 - 9 days, then either pupate or overwinter.

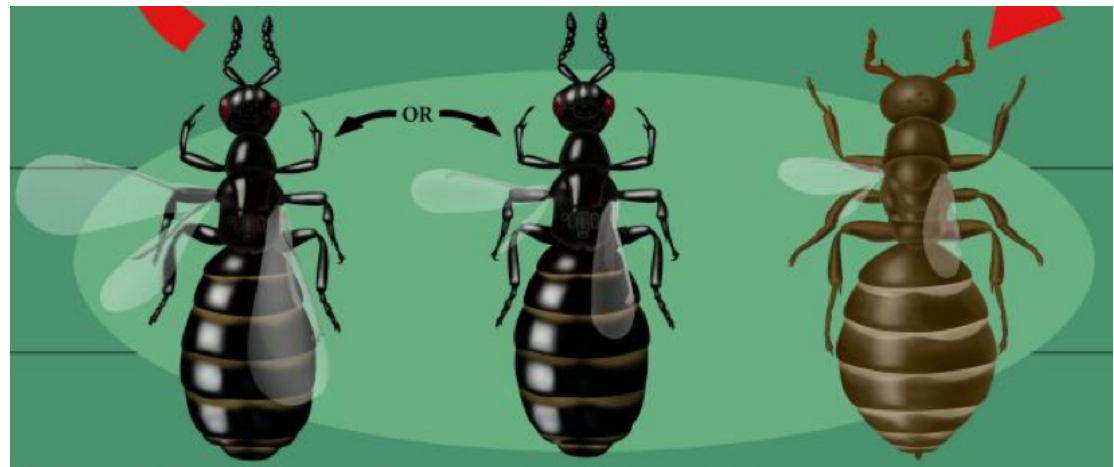


Life Cycle of *Melittobia digitata*

5. Over the next 5-8 days the pupae darken & mature into adults.



6. Males emerge first, then either long winged or short winged females. The males remain in the host nest, fighting their brothers and mating with their sisters. Short-winged females remain on the host, while long winged females search for a new host.



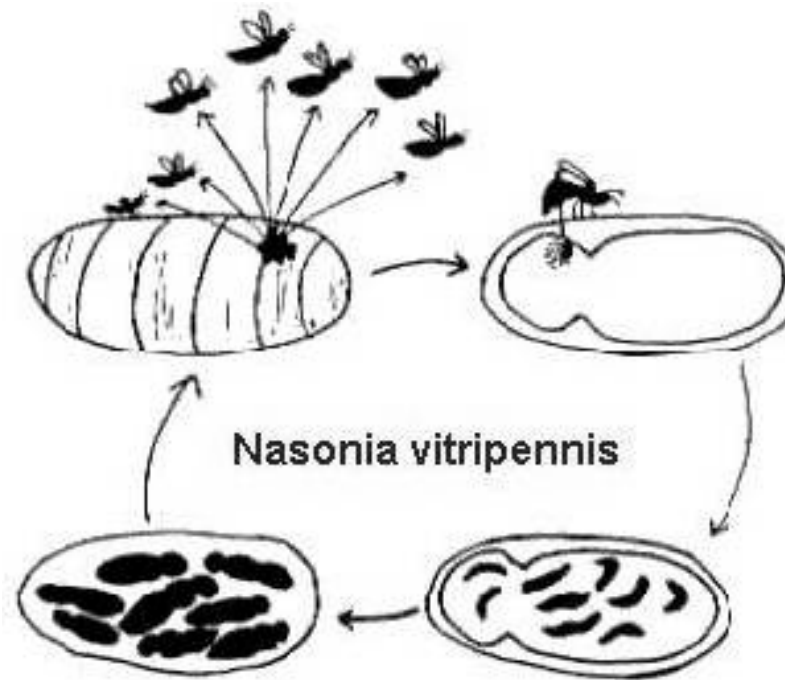
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Life Cycle of *Melittobia digitata*

4. Males stay. Long winged females leave to find a new host.

3. Larva pupate and mature into adults.



1. Female lays egg with her ovipositor into the host larva.

2. Larva hatch and feed on host for energy.

Can you make a sentence with 4 – 5 of the following words?

- Zombie
- Hive
- Bee
- Plastic bag
- Corpse
- Colony
- Inject
- Infected
- Parasite

Article Vocab

- Erratic
- Succumb
- Novice
- Ailment

Zombie distribution map - <https://www.zombeewatch.org/map/public>

Washington state's first 'zombie bees' reported; parasite causes bees to fly erratically, die By Associated Press, Published: September 24

SEATTLE — The infection is as grim as it sounds: “Zombie bees” have a parasite that causes them to fly at night and lurch around erratically until they die. And experts say the condition has crept into Washington state. “I joke with my kids that the zombie apocalypse is starting at my house,” said Mark Hohn, a novice beekeeper who spotted the infected insects at his suburban Seattle home.

Hohn returned from vacation a few weeks ago to find many of his bees either dead or flying in jerky patterns and then flopping on the floor. He remembered hearing about zombie bees, so he collected several of the corpses and popped them into a plastic bag. About a week later, the Kent man had evidence his bees were infected: the pupae of parasitic flies.

“Curiosity got the better of me,” Hohn said.

The zombie bees were the first to be confirmed in Washington state, The Seattle Times reported (<http://is.gd/ji7UNX>).

San Francisco State University biologist John Hafernik first discovered zombie bees in California in 2008. Hafernik now uses a website to recruit citizen scientists like Hohn to track the infection across the country. Observers also have found zombie bees in Oregon and South Dakota.

The infection is another threat to bees that are needed to pollinate crops. Hives have been failing in recent years due to a mysterious ailment called colony collapse disorder, in which all the adult honey bees in a colony suddenly die. The life cycle of the fly that infects zombie bees is reminiscent of the movie “Alien,” the newspaper reported. A small adult female lands on the back of a honeybee and injects eggs into the bee’s abdomen. The eggs hatch into maggots. “They basically eat the insides out of the bee,” Hafernik said.

After consuming their host, the maggots pupate, forming a hard outer shell that looks like a fat, brown grain of rice. That’s what Hohn found in the plastic bag with the dead bees. Adult flies emerge in three to four weeks.

There’s no evidence yet that the parasitic fly is a major player in the bees’ decline, but it does seem the pest is targeting new hosts, said Steve Sheppard, chairman of the entomology department at Washington State University.

“It may occur a lot more widely than we think,” he said.

That’s what Hafernik hopes to find out with his website, [zombeewatch.org](http://www.zombeewatch.org). The site offers simple instructions for collecting suspect bees, watching for signs of parasites and reporting the results.

Once more people start looking, the number of sightings will probably climb, Hohn said.

“I’m pretty confident I’m not the only one in Washington state who has them,” he said.

Life Cycle of the Zombie Fly *Apocephalus borealis*

Female flies find a bee.



A Female Zombie Fly



A Female Zombie Fly Laying Eggs inside a Honey Bee

Fly larvae (maggots) eat the insides of a bee, killing it.



A Maggot Emerging from a Honey Bee



A Honey Bee Surrounded by Zombie Fly Pupae

Maggots pupate nearby.



Adult flies emerge from pupae and mate.

