

## A Bee or Not a Bee? Bee and Wasp Mimics

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Many people are startled and frightened by bees. This is a natural reaction because some bees and wasps sting to defend their colonies. But, there are a number of insects that look like bees and wasps but aren't. This is called *Batesian mimicry*, which means something harmless is imitating something dangerous. This type of mimicry is thought to be an anti-predator adaptation.

Most of the bee and wasp mimics are either flies, beetles or day-flying moths.

**Flies.** The best bee mimics are hover flies because they look and sound very similar to bees. They are also often found in flowers. They are called syrphid flies because they belong to the family Syrphidae.

Hover flies have a characteristic flight pattern—hovering in one spot, moving suddenly forwards or sideways, then hovering again. They have black and yellow-striped abdomens and can



Syrphid fly

occur in large numbers. Like bees, hover flies are important plant pollinators, but they are completely harmless and have

no stinger.

There are several ways to tell a hover fly from a bee. First, look at the wings: bees have four wings, but flies only have two wings. Second, look at the antennae: bees have elbowed antennae, while many flies have short, stubby or hair-thin antennae. And, finally flies have much larger eyes than most bees and wasps.

**Beetles.** A few beetles mimic wasps. The photo below is of a redheaded ash borer,



Redheaded ash borer

a longhorned beetle in the family Cerambycidae. It is a pretty convincing wasp mimic.

But, if you look closely, you'll find the shell on this beetle's back is actually the first pair of wings, called the elytra. The second pair of wings is folded underneath the elytra. They are only extended and used when the beetle flies. On the other hand, wasps have four thin, translucent wings and use all of them for flying.

**Day-Flying Moths.**

There are also some day-flying moths which mimic wasps for protection against predators. These clear-winged moths belong to the family Sesiidae. They have many superficial features of a bee: four translucent wings and a furry,

black-and-yellow or black-and-orange coloration. The antennae even look like wasp antennae, but the mouthparts of a moth clearly identify it as being different from bees and wasps. The mouthparts consist of a long, slender tube (the proboscis). The long proboscis is coiled under the head, but elongates when the moth feeds.

Some of the more common clear-winged moths include some common pests: squash vine borer, ash and lilac borer. During the summer



Ash and lilac borer



Oak clearwing borer

months, the female moths lay eggs on the host plant, the eggs hatch and burrow into the plant where they develop. The next year, they will emerge as adult moths.

It is always good to be cautious around insects that are colorful, especially black and yellow, orange or red. But, if you look carefully, you will come to recognize these insects as not being dangerous at all.

## Triangulate Household Spider: A Common Harmless Spider

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The triangulate household spider, *Steatoda triangulosa*, is a very common house spider and one many homeowners see hanging in irregular webs in dark corners

of houses, basements, garages and outbuildings. It is quite small—the body is only about 1/8- to 1/4-inch long. The cephalothorax is brownish orange. The center of its

brown abdomen has several distinctive white and yellow triangular spots, which explains its common name. Its legs are light yellow, with slightly darker rings at the ends of the joints.

This species is probably native to Eurasia and was probably introduced to the U.S. in the early days of colonization. It is found throughout the U.S. and is a very common spider found in Nebraska.

The triangulate household spider belongs to the family of comb-footed spiders, Theridiidae. Like other members of this group, these spiders build irregular webs and hang upside down while waiting for unsuspecting prey to approach. Using a comb of serrated

bristles on their hind legs the spider covers its prey in sticky silk and waits for it to stop moving before biting. The triangulate household spider has been found to prey on many kinds of arthropods, including ants, spiders (including the brown recluse), ticks and pillbugs.



Triangulate household spider (highly magnified)

This spider mates and produces egg sacs from late spring through early fall. An egg sac is about the size of the adult spider and is made of loosely woven white silk. About 30 eggs can be seen in each sac.

Recently, we have had a number of phone calls asking about the seriousness of this very common spider. There have been no known cases of human envenomation by *S. triangulosa*. Experts don't consider it to be a medically important spider.

No extraordinary measures are needed to control this spider. The best way to deal with web-building spiders is to knock down the webs and step on the spider or use a vacuum cleaner to remove both spider and web.

## Steps Businesses Can Take to Prevent Pollution

**Kate Johnson**  
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Pollution has become a topic of interest in the past 15 years or so. We know we create pollution every day but what can we do about it? Pollution Prevention is an idea that goes beyond recycling. But what exactly is it? How do you prevent pollution?

### Being Proactive on Pollution

Pollution prevention is also known as source reduction. It is considered a type of "front-end" environmentalism because it attacks the pollution before it even occurs. Recycling is a reactive approach that tries to help the problem down at the end of the pipe; whereas, pollution prevention is a proactive approach which eliminates or reduces it at the start.

Most states have their own definition of pollution prevention. Nebraska's definition is "All activities that lead to the

elimination or reduction of waste quantities and toxicity at the site of generation." In-process recycling, or recycling at the site, is included in many of these states' definitions of pollution prevention. This type of recycling is included because if they can reuse materials instead of throwing them away, the business has to buy fewer raw materials and reduces waste. Off-site recycling is not considered pollution prevention in many states because it is not proactive.

### UNL Partners in Pollution Prevention Intern Program

The University of Nebraska-Lincoln's Partners in Pollution Prevention (P3) Program has been helping businesses look beyond recycling for 11 years. During the 11 years, P3 interns have worked with 444 clients in 59 different Nebraska communities. The P3 program has diverted over 43 million pounds of solid waste from landfills and saved clients



Partners in Pollution Prevention interns visit businesses to perform waste assessments or other waste reduction projects (pictured is a visit to an electronics company in Lincoln).

an estimated \$13.4 million through waste reduction. More information about the program is available online at [www.p3.unl.edu](http://www.p3.unl.edu)

### 10 Steps for Businesses

Here are 10 easy ways for businesses to implement pollution prevention on their own.

1. Create a written environmental policy that reflects your business's commitment to pollution prevention.
2. Select a head of pollution prevention who takes suggestions and tracks progress to ensure pollution prevention suggestions are put into practice.
3. Switch to low-flow toilets
4. Change to energy efficient compact fluorescent lights.
5. Install motion detectors for turning on lights to conserve energy.
6. Replace incandescent exit signs with more energy efficient LED exit signs.
7. Switch to non-hazardous products and cut down on the cost of disposing properly of hazardous waste.
8. Have your compressed air system checked often for leaks. Compressed air efficiency becomes quite low due to leaks.
9. Regularly check Keep Nebraska Beautiful's Materials Exchange Program to find someone who can reuse your waste or find someone's waste you can use. Web site is <http://www.knb.org/exchange.html>
10. Become a Groundwater Guardian Green Site and conserve water. More information on how to participate is online at <http://www.groundwater.org/gg/greensites.html>