

Bug of the Month

by Jim Revell

“Bombus impatiens” Common Eastern Bumble Bee

Class:	Insecta (Insects)
Order:	Hymenoptera
Family:	Apidae
Genus:	Bombus (Bumble bees)
Species:	Impatiens



It was getting crunch time to make our newsletter deadline (I thank Mary Boone, our Editor, for her patience) when I read an article in the Thursday, February 20 (yes, that's right - *on* the deadline) edition of *The Roanoke Times* entitled "Bumblebees getting stung bad by sickness." It was under "Disease" in the Nation & World section of the paper. The four-paragraph article was about the world's bumblebee population being in trouble due to their contracting deadly diseases from their cousins, the commercialized Honeybees.



"Cousin" Honeybee

The article referenced a new study by Mark Brown of the University of London, wherein he found that wild populations of bumblebees are in significant decline across Europe, North America, South America and Asia. In his study, Brown cited pathogens, diseases and parasites from managed Honeybee hives as primary sources for the decline.

I found a few more details in another article, "Bumblebees infected with honeybee diseases," published in the *BBC News Science & Environment* (Feb 19, 2014). Science reporter, Rebecca Morelle, stated that two pathogens, the (1) DMV (Deformed Wing Virus) and the (2) "Nosema ceranae," a fungal parasite, were studied and found to infect adult bumblebees, with both impacting the longevity of the bumblebees.

In yet a third article, "Wild bumblebees falling victim to honeybee diseases worldwide," (published in *The Washington Post*, Feb 19, 2014), Seth Borenstein said that "Smaller studies have shown disease going back and forth between the two kinds of bees."

The Brown study was the first to look at the problem on a larger, nationwide, scale. The study did not definitively prove that the diseases go from honeybees to bumblebees; however, the final analysis pointed heavily in that direction (to the tune of.....*if it looks like a duck, quacks like a duck and swims in a pond, it is most likely a duck!*). Of interest, also, this study indicates the diseases were more harmful to the bumblebees than to the honeybees. On average, bumblebees live 21 days; however, the lifespan of infected bees was closer to only 15 days.

There are 50 species of bumblebees in North America, and most of us are familiar with at least a few of these (even if we didn't know we were viewing different species). Bumblebees are big, bright, fuzzy and, dare I say, cute. They're a wonderful part of Spring and Summer, yet most of us probably don't give a thought to their many good deeds.

The *Bombus impatiens* (Common Eastern Bumblebee) is, as the common name implies, the bumblebee we most often see in our gardens. It is native from Ontario to Maine and south to Florida and has been introduced in California and British Columbia. They're easy to recognize because of the pollen baskets found on the hind tibiae of the females. This "basket" is much larger than those found on the honeybee.



Bumblebees are great native pollinators of fruits, vegetables and wild flowers. Studies show they provide \$3B worth of fruit and flowers for U.S. consumers.

These bees have a unique behavior called "buzz pollination." This is where the bee grabs the pollen-producing structure of the flower in her jaws and, with her wings, vibrates the structure, shaking out pollen that, otherwise, would remain trapped.

Tomatoes are especially noted to require "buzz pollination" for effective fruit to set. Adaptable to greenhouse environments, they are, also, a major pollinating force in the greenhouse industry.

Bumblebee colonies house 50-500 insects compared to 20,000-80,000 honeybees in a colony. Bumblebees are social insects. Their mated queens overwinter and emerge in Spring to collect pollen and nectar before searching for a suitable nest site. After the nest is built and the queen is laying eggs, and after the first and second groups of workers are hatched, all the workers take over the task of foraging, and the queen can focus on laying eggs and caring for the larvae.

The queen, through pheromonal signals and aggression, suppresses the first workers from laying eggs. She is the mother to all of the first males hatched. Later in the season, once she begins to lose her "suppression" ability, the workers start laying male eggs. New queens and males leave the colony after maturing; males, in particular, are forced to leave if they don't do so on their own. With the coming of Fall, mated queens find a place to hibernate (an abandoned rodent hole is ideal accommodation) while the males die off. *And the cycle continues.*

References:

<http://www.washingtonpost.com/national/health-science/wild-bumblebees/>; <http://www.bbc.co.uk/news/science-environment>
<http://bugguide.net/node/view/>; http://www.nsf.gov/news/news_summ.jsp; <http://en.wikipedia.org>
<http://edis.ifas.ufl.edu>; <http://www.extension.umn.edu/garden/insects/find/bumblebees/>
The Ultimate Guide to Backyard Bugs / Garden Insects of North America by Whitney Cranshaw
Photo references: redandthepeanut.blogspot.com; bugguide.net



SAVE OUR BUMBLEBEES!

Here are some things you, as a gardener, can do:

- 1) Don't spray or use neonicotinoids insecticides. If it is a "must," read directions carefully and try not to use during the flower stage of plants.
- 2) Be careful using other insecticides (whether organic or not), and check the label - - anything affecting honeybees will also affect bumblebees.
- 3) Provide food and shelter for the bumblebees - - leave some areas of tall unmowed grass and untilled sections of your yard or garden.
- 4) Plant flowers, trees and shrubs to provide constant sources of pollen and nectar. Examples:
 - Spring - - plant Rhododendrons and Azaleas; Willows; Gooseberry
 - Early Summer - - Clover
 - Mid-Summer - - Anise Hyssop; Bee Balm; Joe-pye Weed
 - Late Summer - - Aster; Goldenrod

Jim Revell is a Bedford Extension Master Gardener Volunteer.
Read more of his articles on the "Jims Bugs" page @ www.BedfordMasterGardeners.org