Colony Collapse Disorder And What You Can Do To Help!

By Deborah Rankin

In November, 2006, a Pennsylvania commercial beekeeper, David Hackenberg, discovered some 400 hives he had placed in a Florida field for pollination dead or dying. The cause of this disaster was later named "Colony Collapse Disorder" (CCD) for then and now, researchers and scientists do not know the exact cause of CCD. This is but one incident in a long list of similar events that would unfold all across the United States over the next few years.

The grim truth is bee populations have been declining on at least four continents, including North America, for several decades with a 40% decrease in U. S. hive numbers between 1947 and 2005. The decline in hive numbers can be attributed to any or a combination of several different reasons – pesticides, the introduction of bee parasites and diseases, and even urban sprawl. Dramatization and misinformation regarding bees has prompted many non-commercial beekeepers to forsake beekeeping for fear of law suits resulting from alleged bee stings.

The characteristics of CCD have been clearly documented and are all atypical to the "bee yard" - the absence of adult bees in the hive with little or no dead bees in the hive or near the hive entrances, and the presence of capped brood (pupae) and food stores of pollen and honey in the abandoned hive. Probably one of the most significant factors is the reluctance of other bees and common hive pests to enter an abandoned hive for a significant period of time. This suggests the presence of some type of disease or toxin.

With U. S. beekeepers reporting unexplained hive losses of 30 to 90%, ranging all across the continent, there is definitely reason for alarm. Several theories have been circulating as to the cause of CCD – cell phone transmissions impairing the bee's ability to navigate back to their hive after foraging for nectar and pollen, environmental toxins and pesticides destroying the bee's immune system to viral and fungal infections, the introduction of unknown pathogens, genetically modified plants, and magnetic pole reversal, just to name a few.

Based on samples taken from infected colonies, the CCD Working Group, appointed by the U. S. House of Representatives to research this disaster, is mainly focusing on viruses, fungi, and pesticides as likely suspects for the cause of CCD as they may be killing the bees directly or suppressing their immune system. Bees seem to possess little ability to tolerate pesticides; some appear to damage the bee's neurological functions which may be impairing the bee's ability to remember the location of water, food, and its hive.

The decline of the bee population can produce far reaching and negative affects on both the health and economy of the United States. Although the honey bee is but one of many pollinators found in the United States, it is a prized pollinator, contributing over $14 billion annually to the U. S. economy by pollinating some 130 different crops, including many fruits, nuts, vegetables, and forage crop seeds for beef and dairy animals.

In addition to crop pollination, bees produce their own crops – honey, beeswax, pollen, royal jelly, and propolis. Many of these products are highly sought after in today's marketplace as a natural sweetener, in cosmetic production, as health food sources, etc.

Honey bees desirability as pollinators stems from the fact the colonies can be moved to crops requiring pollination – approximately 1.2 million colonies were necessary just to pollinate one 2008 crop - California's $3 billion almond crop.

Plants have different "pollination windows". For example, the pollination window for apples is several days, but for some varieties of pears pollination must take place in as little as 24 hours of flowering for the plant to reproduce and set fruit. Each honey bee colony contains large populations of foragers (60,000 – 80,000 during heavy nectar flows) capable of effectively working crops, especially those with a narrow pollination window.

Honey bees will usually work only one type of flower on each trip not mixing pollen types - this is known as flower fidelity or being "flower true". When the honey bee flies out to gather nectar and pollen from an apple blossom, for example, this is the only type of flower she will visit on this flight and because of this tendency towards flower fidelity crops can be sprayed with certain attraction pheromones assuring the bees will work only the target crop.

What's all the "hoopla" about CCD?

Without honey bees many of the foods you enjoy regularly would be greatly reduced in numbers – which negatively impacts availability and ultimately, cost to the consumer. Access to a variety of affordable food is important to the overall health of the American people. And lastly, a nation's sovereignty and security is dependent upon its ability to produce food in sufficient quantities to support its population.

Additionally, if bees continue dying in significant numbers to compromise crop pollination, greater importation of bees from foreign countries may be required to sustain crop growth which means the possible introduction of new diseases and pests, along with the importation of additional fruit, nuts, and vegetables.

This has the ability to negatively affect the quality of food available in our groceries and increase our foreign trade deficit. Who would have thought the absence of such a tiny creature could topple entire industries and affect U. S. and world markets. Each of us should be concerned about the survival of the honey bees, as well as the other pollinators.

Scientists have yet to determine a single cause of CCD. Many believe it is a combination of factors that under the right circumstances weaken the bees and cause colony collapse. The CCD Working Group is working diligently to provide beekeepers with as much direction as possible in the management of hives and containment procedures in hopes of reducing the instances of CCD until a clear cause and cure can be determined.

What can you do to help?

The completion of the Honey Bee Genome Sequencing Project provided some valuable information to the beekeeping industry, for example, honey bees have a very low tolerance to pesticides. So, reducing your impact on the environment is one of the best ways individuals can help mitigate the loss of pollinators, such as the honey bee.

Consider adopting an organic approach to gardening and lawn maintenance to help reduce the amount of pesticides (herbicides and insecticides are pesticides) in the environment. If you feel compelled to use pesticides, do so responsibility. Read all product labels thoroughly and follow the directions carefully. Never apply or spray pesticides outdoors during the times when bees are most active – between 10:00 AM –

2:00 PM. Early morning, late evening, or night application will mitigate the negative impact of the pesticides on the honey bees to some degree.

Learn about bees and other pollinators and teach others about their importance to human health and our nation's economy.

Plant lots of pollen and nectar bearing plants with differing bloom periods to provide year round food sources for the bees. Re-think weeds; many flowering plants that humans consider weeds, such as the dandelion or "volunteer" clover, serve as valuable sources of nectar and pollen for honey bees. For honey bees to be healthy, their diets must contain nectar and pollen from a variety of different plants. So, weeds can be instrumental in contributing to their dietary requirements.

Talk to representatives of your local and state government about changing their approach to maintenance of public lands. In the past, governments seeded parks and other public lands bordering highways with wild flowers and clover. This is no longer a common practice; it has been replaced by mowing and the use of chemicals to kill what in many cases represent valuable sources of nectar and pollen for pollinators. With the price of gasoline and the environmental impact of herbicide usage, it makes more sense to consider using those lands as "pastures" for our pollinators once again.

If "city folks" want their gardens to flourish, especially their vegetable gardens, they need pollinators in the area. Talk to representatives of your local government about common sense regulation with respect to beekeeping in urban and suburban areas. Keeping bees in these areas can be done safely; it's just a matter of common sense. Additionally, local beekeepers are the best defense against the Africanized honey bees populating an area. Beekeepers capture bee swarms; if the swarm proves overly aggressive the beekeeper takes steps to manage the situation properly.

Consider taking up beekeeping as a hobby. It is fun, interesting, and challenging. Beekeeping helps increase the number of available colonies - and you get the benefit of your own honey and beeswax.

Reverend L. L. Langstroth, often called the "father of modern beekeeping", said it simply – "How doth the little busy bee improve each shining hour!"

The survival of the human race may well depend upon the survival of our honey bees and other pollinators.