

Beekeeping in Lake County, Illinois

An Overview for the Lake County

Planning, Building and Zoning Committee



The Lake County
Beekeepers
Association

August, 2011

The practice of beekeeping

Beekeeping is an important Lake County tradition with many benefits such as local food production, essential pollination of crops and garden flowers, and treatment of seasonal allergies, arthritis and other health conditions. In recent years, honeybees have made international headlines due to the mysterious collapse of great numbers of hives known as Colony Collapse Disorder, especially reported in large commercial operations. As a result, many are now looking to hobby beekeepers as critical partners in the survival of the nation's honeybees. With Lake County supporting the state's fourth largest amount of beekeepers, it is well positioned to play a helpful role in this issue.

The European honeybee is a social insect that is bred for a gentle disposition, hygienic behavior and honey production. Oftentimes mistaken for its aggressive cousin the yellow jacket, the honeybee rarely stings. Statistics reveal that people are more likely to die from lightning than from a honeybee sting.

The Illinois Department of Agriculture administers the Illinois Bees and Apiaries Act. Department Apiary Inspectors examine honeybee colonies around the state for the issuance of moving permits, to monitor the health of the honeybee population, to prevent the spread of diseases and pests of the honeybee and to provide advice on general honeybee management (see Appendix 2).

Beekeeping in Illinois continues to be a hobbyist endeavor with slightly more than 85% of the beekeepers managing 10 colonies or less (Appendix 2, Table 1). Just 18 beekeepers maintain 100 or more colonies in the state.

Since 2005, the number of registered beekeepers in Illinois has been steadily increasing.

- In Lake County in 2010, there were 102 registered beekeepers and 632 hives.
- Lake County thus ranks fourth in the state for number of registered beekeepers.
- Attendance at meetings of the Lake County Beekeepers Association (LCBA) has exploded in recent years, growing from an average attendance of 15 per meeting in 2007 to 60+ per meeting in 2011.

Why are Honey Bees and Beekeeping Important?

Honeybees do much more than just make honey: one third of the U.S. diet depends on honey bee pollination. Honey bees provide 80% of pollination for vegetable, fruit, seed and flower crops. They also pollinate the forage crops fed to dairy and meat animals.

Of course, bees provide honey; but it is their role as pollinator that is so crucial to America's food supply. They pollinate more than three quarters of our flowering crops. If flowers are not pollinated, they will not bear fruit. That means that honey bees are responsible for wild and domestic apples, pears, strawberries, oranges, cucumbers, blueberries, broccoli, almonds, and much more. The economically important soybean crop is pollinated largely by honeybees. Bees also pollinate alfalfa, a crop that farmers use to feed beef and dairy cattle. So honeybees have an effect on our steaks, burgers, cheese, milk, and other animal products. It has been said that, without honeybees, humans would have to survive on bread and water. And there would be no honey for the bread!

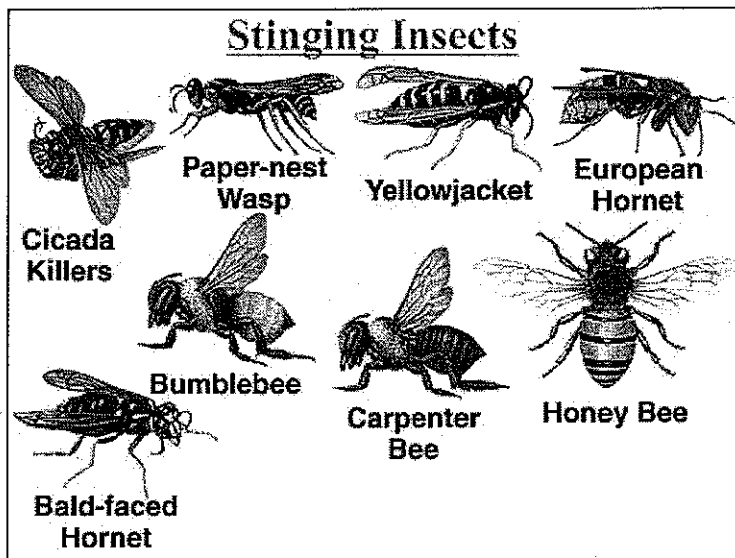
In this way, bees add at least \$10 billion to the value of more than 90 U.S. crops. Honey bees also generate \$150 million in honey each year, and at least another \$50 million in beeswax, used in cosmetics, polish, and candles.

Honey is a very important bee product. It is very nutritious, containing at least 75 active compounds in its raw, unfiltered state. It has vitamins, antibacterial action, and is even an exceptional treatment for burns. A spoonful of honey will quiet a night-time cough. If you

have allergies, honey can be beneficial. If you eat honey that is local to your area, it may help prevent your seasonal allergies.

Why are bees feared?

Because they can sting. **But most people who get stung are not being stung by honeybees.** Honeybees are feared primarily because of mistaken identity. The vast majority of people mistake the yellow jacket wasp for the honeybee. This aggressive wasp spends a great deal of time around people because they eat the same things people eat whereas honeybees are generally gentle and visit flowers for their sole foods of pollen and nectar. Yellow jackets dine on picnic foods, soda pop, fallen fruit, garbage, etc. To make things worse, the wasp population peaks in late summer when many people like to eat outside. Whereas a honeybee dies if provoked to sting, the yellow jacket wasp can sting unlimited times and does not die from it.



Finally, fear-mongering reports of Africanized killer bees and tabloid-style reporting of their spread have not helped. The reality is that these relatives of European honeybees were imported into Brazil in the 1950s. They escaped into the wild and spread throughout the country. While these bees are aggressive, they are being successfully kept domestically in Brazil. The Africanized hybrid has been in several southern U.S. states for over 10 years but don't seem to have the ability to overwinter and their migration north has slowed. The Africanized hybrid is no more venomous than the European honeybee, yet they react much more aggressively to threats with higher number of individuals responding. Africanized bees would not be appropriate for urban beekeeping. **The hobby beekeepers are keenly aware of the temperaments of their colonies and replace the queens in hives deemed aggressive, quickly returning its members to a gentle temperament.**

Actually, the European honeybees that beekeepers keep are extremely gentle. The honeybee worker has the capability of stinging just one time, after which she dies. There are only two reasons a honeybee might sting. One is self-preservation: if you step barefoot on a honeybee that is foraging on a clover flower, you are likely to get stung. The second reason is to protect their hive. Just as it's not unusual for humans to have guard dogs to protect property, honeybees post guards at their hive entrances. The beekeeper's decision regarding entrance direction to the hive does much to reduce potential protective reactions by guard bees.

Are you really allergic?

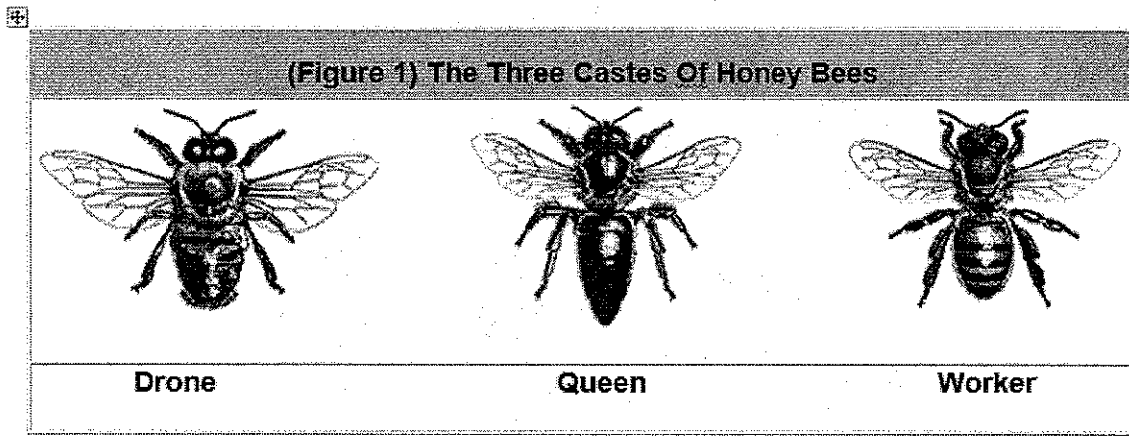
Many people believe they are allergic to stings. **In reality, the vast majority of these people are not allergic at all.** Stings are painful, to be sure, and do cause localized pain, swelling and itching. However, the average adult can tolerate up to 1000 stings and survive.

True life-threatening allergic reactions to honeybee venom are rare (on the order of the chances of being hit by lightning), and for those who truly are susceptible to the life-threatening reaction to insect stings known as anaphylaxis, an injectable syringe containing epinephrine (commonly called an Epipen) should be carried any time there is a potential for stings, just as people who have severe peanut allergies do.

The Basics of Beekeeping

Basic beekeeping doesn't require huge amounts of money, time or space, and it can be done just about any place where flowers bloom. Honey bees are social insects. This means they live together in a colony and depend on each other for survival.

A hive is made up of one queen, a small number of males (known as drones), and a large number of females (known as workers).



Worker bees are sexually underdeveloped females. They may number as many as 60,000 in a colony. The population of a colony depends on a number of factors such as: the egg laying ability of the queen, the space available in the hive and the incoming food supply. They are called workers because that is what they do. They care for the queen, eggs and larvae, collect food and water for the colony, build wax comb, do the housework, maintain the interior temperature of the hive and guard the hive against intruders such as wasps.

Drones are the males in the colony. They have no stinger and cannot sting. Although they are considered by some to be worthless, they contribute to the continuation of one generation to the next by impregnating virgin queens. The worker bees usually determine the number of drones that can be found in a colony. A strong healthy colony may have as many as 300 or more drones. As winter approaches, the workers drive the drones from the hive to starve.

The queen is a mature female. She lays thousands of eggs during her lifetime. A good queen may lay over 2000 eggs in a single day! A queen has the longest lifespan in the colony, living up to five years compared to one or two months for workers. She does have a stinger, but uses it only in battle with other queens as part of a natural selection process.

What do bees need?

Honey bees need shelter, nectar, pollen, propolis, and water.

Shelter -- In the wild, the honey bee uses natural cavities to build their hive. The reason we can keep bees is because honey bees will adapt to man-made hives for shelter.

Nectar -- Bees can't make their food, honey,



without nectar, the liquid sugary substance produced by flowers. Often we refer to honey as "wildflower honey." What that means is that the honey produced by the bees comes from a number of nectar sources. However, bees do produce crops of honey from certain major nectar sources and these are easily identified by taste and color. Examples include buckwheat, clover, fireweed, goldenrod, locust, tulip popular, tupelo, sage, sourwood and star thistle. Since their food comes from flowers, honeybees have no desire to be around peoples' picnics.

Pollen -- As worker bees gather nectar from flowers, tiny particles of pollen stick to their bodies and are accumulated in pellets on their hind legs. Pollen is high in protein and is fed to young larvae. It is this collection of pollen that fertilizes flowers and stimulates fruit, vegetable and seed growth.

Propolis -- Propolis is pitch, resin and other sticky secretions of trees and shrubs, and used by bees to cement holes and cracks in their hives.

Water -- Water is essential for survival of the hive. The bee colony's internal structure -- the honeycomb -- is made from wax (beeswax). When wax gets hot it melts so honeybees use evaporative cooling to reduce the temperature of the hive and keep the wax from melting. If honeybees do not have a source of water close to their hive they will find one -- with ponds, puddles, birdbaths or swimming pools a possibility.

What does the beekeeper do?

The beekeeper provides the box for the hive, monitors its health and temperament; increases the size of the shelter when needed, and collects honey when sufficient surplus is available. The bees must have about 100 pounds of honey to survive an Illinois winter. The beekeeper must be sure that enough is available for winter after he/she takes any honey. If insufficient stores exist, the beekeeper can, if necessary, feed the bees table sugar in either a syrup or candy form.

Hive inspection by the beekeeper is generally done with the use of smoke. Smoke causes the bees to start consuming honey, which both distracts and quiets the hive down while the beekeeper does necessary inspections. Proper use of smoke will leave the hive in good spirits after the beekeeper does his work. The bees are at their happiest when the weather is warm and the flower nectar is strong. They can be crabbiest on cool rainy days when they cannot get outside and work. Beekeepers can help keep their bees happy by avoiding inspections on cool days.

The beekeeper tends the colony through the summer and the major nectar producing period. Regular inspections are performed wearing protective gear: white suit, veil for eye protection, gloves and smoker. If a surplus exists at the end of the season, the beekeeper can take this surplus honeycomb and centrifuge the honey from it. Alternative ways of producing honey would be to cut up the wax comb for consumption or squash and filter the wax from the honey.



Where can hives be placed?

Honey bees can be kept almost anywhere there are flowering plants that produce nectar and pollen. Beekeepers generally try to choose sites for bee hives that are discrete, sheltered from winds and partially shaded. They avoid low spots in a yard where cold, damp air accumulates in winter.

Hive location -- Beekeepers place hives so flight paths do not cross sidewalks, playgrounds or other public areas. Hive entrances are pointed away from

walking paths, toward objects that force bees to fly upward such as a fence, bush, or house.

Bees under threat

Keeping bees holds intrigue and interest for many, but the practice of beekeeping is more than just a pastime: it is becoming vital. Honeybee numbers have significantly dwindled over the last five decades. Their decline has been variously attributed to disease, exposure to pesticides, climate change, and a monoculture approach to agriculture. Regardless of the causes, the decline of the honeybee - officially called Colony Collapse disorder, or CCD - has the potential to profoundly affect humanity through loss of essential pollination services.

Our nation could certainly use more beekeepers. According to Troy Fore, executive director of the American Beekeeping Federation, there are an estimated 100,000 hobby beekeepers in the United States, down from 200,000 in the 1970s.

Urbanization has played a role in this decline, along with the spread of parasitic mites that have decreased production while increasing beekeeping costs. On a local note, in 2011, members of the Lake County Beekeepers Association had to invest about \$25,000 in bees to repopulate their winter losses.

After four years of intense study, research and sampling, scientists have made more discoveries in the last year than all the honey bee research in the last 25 years put together. Still, Colony Collapse Disorder remains a mystery. What they have found, though, is helping honeybees and beekeepers. Here's a look:

- **Nosema pest.** Nosema is a widespread protozoan disease of adult bees.
- **Varroa mites.** Female mites cling to adult bees and suck their blood.
- **Pesticides** Incredibly small amounts of new pesticides like clothianidan,
- **Fungicides** like prochloraz, they tend to harm the digestive systems of bees
- **American and European Foulbrood** This is a bacterial disease of larvae and pupae.
- **Chalkbrood** This is a fungal disease of larvae.
- **Wax Moths** These moths are a notorious pest of beekeeping equipment.
- **Tracheal Mites** These microscopic mites enter the breathing tubes of young bees.

All Together Now

By themselves, none of the above issues are generally fatal to honey bees or their young. But more and more evidence is piling up that when bees are exposed to three or four of these at the same time, an individual bee is essentially overwhelmed. But rather than all die at once, they simply live shorter lives. Shorten the life of a typical honey bee by 5 or 6 days (out of a possible 45 or so in the summer), and you destroy the complex society of the colony, and soon, there are no bees to carry on the work.

Colony Collapse Disorder, it seems, is simply a symptom of too much of all of these in some combination. Researchers haven't found the complete answer yet... which virus, disease, chemical and immune system assault is the most lethal, but they are closer to the answer, and more importantly, have better advice for beekeepers on how to avoid these problems.

Lake County's current regulations and concerns held by local beekeepers

Current Lake County Unified Development Ordinance regulations

6.3.3.2 Non-Exempt Uses

c. No farm animals, other than equine or beekeeping as an accessory use to a principal agricultural use, shall be kept on zoning lots less than 200,000 sq ft in area.

6.3.6 Apiary (Agricultural Use Category)

The minimum lot size for an apiary use shall be 200,000 square feet

In simpler terms, the above language states that beekeeping in unincorporated Lake County can take place only on lots that are at least five acres in size.

Beekeepers' concerns with the current regulations

Beekeepers feel that the 5 acre minimum is overly restrictive and unnecessary. 10 square feet provides enough space to keep bees. With the hive entrance properly located away from walk paths and the entrance shielded, people working nearby would not be exposed to any threat. Bees do not congregate around the outside of the hive. They will fly out from this secluded entrance and fly up to two miles in search of nectar, pollen, water and propolis. The current 200,000-square-foot requirement seems to be a carryover from livestock and is wholly unnecessary to safely keep bees.

As bees continue to die off in America due to Colony Collapse Disorder, and their essential pollination services are lost, the hobby beekeeper in urban and suburban areas can play an extremely important role in maintaining local populations of pollinators.

Other regulatory approaches to beekeeping and how these approaches have performed in both accommodating the practice of beekeeping while preventing harm to neighbors

Regulations from Minneapolis, Salt Lake City, Cleveland, Evanston and Milwaukee were reviewed by representatives of the Lake County Beekeeping Association. Of these, the Salt Lake City ordinance seems to be the most reasonable. Best practices are referenced without being overly restrictive or adding additional layers of registration to systems already in place.

These best practices refer to:

- Restricting the number of colonies
- Requiring "flight screens" such as shrubs or fences near hive entrances so bees are forced to fly upward when leaving their hives rather than flying outward toward people
- Requiring a water source with some type of float in it so that bees can land on and drink water while not drowning.
- Requiring replacement of any queens that begin to produce aggressive hives

Most beekeepers already employ these best practices.

The LCBA team was able to reach people in Salt Lake City planning department last week. They have indicated a very positive reception there. Bridget Stuchey, Outreach Program Manager for the Sustainability Division of the Salt Lake City Planning Division, discussed the "Birds and the Bees" ordinance (<http://www.slcgov.com/slccgreen/food/birdsandthebees.htm>) passed in December 2009. 55 hives in the city have been registered since the ordinance passage (there are 300 registered beekeepers in Utah according to their state beekeepers association). No complaints have been registered to her knowledge, except one "concerned" email which was addressed with educational information (no actual stinging occurred). During the process to pass the ordinance, the city council was very receptive to the whole concept. Along with beehives, the ordinance allows keeping chickens, which has proved to be very popular (contrast that with recent action by the City of Crystal Lake, IL to vote down keeping chickens in backyards at this time). Bridget also said that this ordinance and other sustainability efforts will help make people aware of and the importance of knowing where their food comes from and help them to take responsibility for such choices. Bridget also said she would be happy to talk with anyone from Lake County about the ordinance.

Summary of recommended changes from the Lake County Beekeepers Association

It should come as no surprise that, ideally, beekeepers would like to see no restrictions.

However, if it is deemed necessary for regulations to be put into place, then the objective would be to create recommendations that beekeepers employ reasonable best practices that minimize the interaction between people and the hive itself.

Quantity

- **HIVES ON RESIDENTIAL LOTS:** An apiary, consisting of not more than five (5) hives or an equivalent capacity, may be maintained in a side yard or the rear yard of any residential lot. On a residential lot which is larger one-half (0.5) acre or larger, the number of hives located on the lot may be increased to ten (10) hives.

Location

- A person shall not locate or allow a hive on property owned or occupied by another person without first obtaining written permission from the owner or occupant.
- A hive shall be placed on property so the general flight pattern of bees is in a direction that will deter bee contact with humans and domesticated animals. If any portion of a hive is located within fifteen (15) feet from an area which provides public access or from a property line on the lot where an apiary is located, as measured from the nearest point on the hive to the property line, a flyway barrier at least six (6) feet in height shall be established and maintained around the hive except as needed to allow access. Such flyway, if located along the property line or within five (5) feet of the property line, shall consist of a solid wall, fence, dense vegetation, or a combination thereof, which extends at least ten (10) feet beyond the hive in each direction so that bees are forced to fly to an elevation of at least six (6) feet above ground level over property lines in the vicinity of the apiary.

Water

- Each beekeeper shall ensure that a convenient source of water is available to the colony continuously between March 1 and October 31 of each year. The water shall be in a location that minimizes any nuisance created by bees seeking water on neighboring property.

Registration

- **BEEKEEPER REGISTRATION:** Each beekeeper shall be registered with the Illinois Apiary Division of the Department of Agriculture.

Aggressive hives

- The beekeeper shall Requeen (replace the queen of) aggressive colonies immediately.

Bees and Wasps

IDENTIFICATION

Though related, bees and wasps differ in important ways. Bees feed nectar and pollen to their young (larvae), while wasps feed their larvae insects and spiders. Yellowjackets and hornets also scavenge food including fruit, sweets, meats and carrion. One thing bees and wasps have in common is that some species are *solitary* and others are *social*. A *solitary* bee or wasp lives alone, making its own nest and raising its own larvae. Individuals of *social* species live together in colonies consisting of many “workers” and one or more “queens.” The workers specialize in different tasks, and cooperate to raise the queen’s offspring.

Honey Bee (Apis mellifera)



The honey bee is a half-inch long, hairy, honey brown insect. The nest consists of several tiers or “combs” made of beeswax. It is located in cavities of trees, rock formations and buildings. In spring, a colony may produce a “swarm.” This occurs when a newly produced queen flies off with about half the colony’s worker bees to establish a new colony. These swarms often come to rest on trees and houses while scout bees search for a good spot for a new nest. If possible, such swarms should be tolerated, as they are in transit and usually leave within two to four days.

Bumble Bee (Bombus spp.)



The familiar buzzing, fuzzy yellow and black striped bumble bee is unmistakable. Up to 200, ½- to 1-inch long bumble bees inhabit nests in old rodent burrows, under porches and in wall voids.

Carpenter Bee (Xylocopa virginica)

This bee is a bumble bee look-alike that has a shiny, all-black abdomen, whereas the bumble bee’s abdomen is fuzzy, black and yellow. Unlike bumble bees, carpenter bees are solitary. Females chew ½-inch diameter holes in wood and bore tunnels that run several inches into the wood.



Paper Wasps (Polistes spp.)



Paper wasps are perhaps the most common wasps around structures. They are also known as “umbrella wasps” because their nests look like umbrellas hanging upside-down from eaves and overhangs. There are many species, but the typical paper wasp is up to ¾-inch long, reddish brown in color with a long, cylindrical abdomen.

Yellowjackets (Vespula spp., Paravespula spp.)

More people are stung by yellowjackets than any other type of wasp or bee. Notoriously aggressive, the yellowjacket’s shiny yellow and black striped abdomen is an unmistakable warning. They construct paper nests up to several feet across that contain combs arranged like the floors of a building covered by a papery envelope. When disturbed, yellowjackets can sting repeatedly; their stingers are not barbed nor lost after stinging like those of honey bees.



Hornets (Dolichovespula maculata and Vespa crabro)



The so-called bald-faced hornet (*Dolichovespula maculata*), about ¾-inch long, black and white, with white face, is actually a larger yellowjacket species. Its nest is the familiar basketball-size papery oval hanging from tree limbs and sometimes structures. Colonies are relatively small, containing up to 700 wasps.

Bald-Faced Hornet