

## Missouri State Beekeepers Association

P.O. Box 448 Oak Grove, MO 64075

[www.mostatebeekeepers.org](http://www.mostatebeekeepers.org)

June 2009

Eugene Makovec  
Editor



### Blueberries and bees -- a pollination primer by Howard Thompson

*Editor's note: The following was adapted from the May 2009 newsletter of the Blueberry Council of Missouri. Howard Thompson is a member of the Missouri State Beekeepers Association and past President of the Joplin Area Beekeepers Association.*

As May rolls around, the blueberries have either just started to bloom if you are in the north, or have been blooming for the last few weeks if you are in the south. For Southwest Missouri, Earliblues to Nelson are in bloom with Earliblue and Legacy nearly finished blooming and the Nelson being a mixture of buds and flowers. This shows me that although I had some frost during the early bloom stage, the temp did not get down below 28 degrees F. It looks like I have dodged the bullet this year and am likely going to have an acceptable season. It looks like I will start picking around Memorial Day. I hope this holds true for the rest of the members.

As I was taking advantage of a pause in the rain on a weekend when we got four inches, I walked/waded through the field to remove flowers from my immature Dukes and Earliblues. The Dukes were planted in October 2007 and the Earliblues last October. During this walk, I roughly dissected a few flowers. Coming up through the middle is a single slender, almost translucent, light green, tubular structure that arises from the base of the flower and slightly flares at the other end. This structure, the *style*, is part of the female part of the flower, the *pistil*, which has the *ovary* (what becomes the fruit) at its base and the *stigma* at its tip. The stigma is slightly sticky to capture the pollen granules, the male gametes.

When you look further at that flower you will see a band of yellow that is about midway between the base and the stigma. These are the *stamens*, the male part of the flower. The yellow part is the

*continued on page 7*



### Missouri State Fair August 13-23

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The 2009 Missouri State Fair will be held August 13-23 in Sedalia. With the theme "MOre Fun Than Ever!", the annual event will feature carnival rides and games,

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## From the President

by Scott Moser

Spring has finally sprung! The birds are singing and building nests, the trees are beginning to leaf out, the flowers are starting to bloom, the rain is raining, and the bees are swarming. In the past couple of weeks, I have heard about a swarm a day. Every time we manage to get a nice sunny day, I always expect to get a swarm call or two. Hopefully, it isn't your bees that I am coming out to collect. With proper management, swarming is a fairly easy problem to avoid.

So much is going on right now in the Missouri beekeeping community already this year. One of the things I said when I took office this year was that I would like to see two new beekeeping associations formed north of the Missouri River. I am proud to announce that at least half of this goal has been met for this year! I want to welcome one new local to our beekeeping family. Three Rivers Beekeepers was recently formed in St. Peters, Missouri. They were formed to meet the needs of an existing and increasing number of beekeepers in the St. Louis metropolitan area. Three Rivers Beekeepers will be meeting at the University of Missouri Extension office in St. Peters. Their first meeting was held on Monday, May 18, at 7:00 pm. After that meeting, their regular meeting night will be the third Monday of the month. You can visit their website at [www.threeriversbeekeepers.com](http://www.threeriversbeekeepers.com).

In addition, there has been talk of a new local association forming in northwestern part of the state. The Northwest Missouri Beekeepers Association may form in Maryville, Missouri. Ray Werner is the contact, and can be reached at 660-937-2204.

As the summer approaches, things begin to really get busy in the world of honeybees and beekeeping. There are more and more opportunities to spread the word about beekeeping, honeybees and honey. Upcoming fairs and farmers markets are great ways to get out and meet and greet people and inform them about the world of beekeeping. Use every chance that you can to explain about bees, beekeeping and honey. I often find that once you begin talking about bees, you quickly draw a crowd.

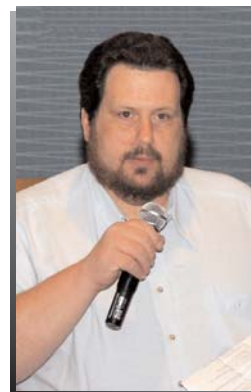
A perfect time to talk bees is at the Missouri State Fair. Last year, several Missouri beekeepers signed up to help out at the Missouri State Beekeepers booth. In addition to individuals, several clubs picked days to man the booth. Club days are perfect opportunities for your club to be recognized and get the word out to others who may be in your area and interested in keeping bees. If you have never spent time helping out at the State Fair, it is a lot of fun, and we could really use your help. If you or your local association would like to sign up to work the fair, contact Dean Sanders, our Fair Manager, at 816-456-4683. What a great way to volunteer your time, and help out the MSBA at the same time.

In closing, I have just a couple of reminders for our members and the local associations. First, each local in the state of Missouri is given two free memberships to the MSBA. You may use these as door prizes for meetings or beekeeping classes that you may be presenting. Please try and give these away early in the year, so that we can get the good word out about our state association. Next, be looking for upcoming information about our Fall Meeting. It will be held in Jefferson City on October 30-31, 2009. We will have a lot of exciting things planned for that meeting, including a tour of the Missouri State Capitol.

Finally, we will be holding an EBoard meeting on June 27 from 9am to 1pm, at the Ryan's Restaurant at 730 W Stadium Blvd in Jefferson City. Each local association may send an officer to attend the meeting on behalf of their local. I hope to see a representative from each local at the meeting.

Happy Beekeeping!

Scott



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# BEEKEEPING OF YESTERYEAR

A look back at the literature of the last century

## **Trials and tribulations of the hobbyist beekeeper**

by Elmer Headlee, newsletter editor, MO State Beekeepers Association  
September 1973

I am a hobbyist and have had a lot of time and experience to observe beekeeping by people who do not do it as a source of livelihood, but who hope to make part or all of the expenses on their hobby.

Every now and then someone starts out with two or three hives and after one or two successful years decides to go into it in a big way. Take the fellow whom I heard about a day or so ago. He bought a good hive and got all the honey he could use and give away to friends and relatives. The next year he caught two good swarms and by the third year he had several hundred pounds to sell. So he reasoned that if he would build a hundred hives during the winter, he could catch the swarms to fill them. So, he bought lumber and worked every spare minute. Spring came, but not enough swarms; so he did the best he could. Late in the summer he bought honey and set up a stand on weekends out on a secondary highway where he did rather well.

By spring half of his colonies were gone, since the previous summer was a poor one and his swarms hadn't done too well. But he tried again with about the same success. In late August, during the busiest time of his highway sales, the police shut him down and this left him with a lot of bought honey on hand. Also, his bees weren't doing so well, either.

Completely disgusted with hard luck, hard work, and high costs, he started to liquidate the business. Some time the next spring and several dollars in the hole, he left town and my friend who related this story said he had not been heard from since.

I talked to Joe Maher, Secretary of the MSBA, about writing an editorial in this newsletter about the problems and pitfalls of the hobbyist beekeeper. Joe told me that I dare not do it, since each beekeeper in the state would think that I was referring to him. If I am pointing anyone out, it is myself, for I have been guilty of many of the errors I am talking about.

When I got back into the business after I retired in the late 60s, I said I would have no more than four hives. Well, this year I have 12½. There is just no way one can compare the work and trouble between 2-3 good hives and 12. I am going back to four next year. (Maybe.)

I have written the following progress report of a hobbyist beekeeper since I have seen these things happen to so many people.

First, the hobbyist starts out by buying some equipment and bees. He or she has seen pictures of beekeepers working in shirtsleeves and just a veil for protection; so he says to himself, "If he can, so can I." The very first thing a beginner should buy is a good bee suit and high-top shoes. There is nothing that starts the downfall of the hobbyist faster than to get thoroughly stung the first time he encounters the bees. Some people find themselves highly allergic to the bee venom so it doesn't pay to take chances. You old-timers can get by with lesser equipment; but keep in mind that some people reach the place where they can longer take the stings. I doubt that bee stings are good for what ails

you.

Now the second year the bees do real well and you get some more. The work on three is not much more than one, but your wife begins to grumble and you spend more time and money. You have to have an electric knife and an extractor, etc. So, to pay for this, there must be more bees. Subsequently, you register with the city police and various other agencies and the swarms start to come in. By the end of the season you have 12 hives. You give them good care during the summer and by fall you have a good supply of honey and the swarms look like they will winter well. You treat them with disease preventative and give them good winter protection.

Spring rolls around and you only lost two hives. Feeding and taking care of 10 hives is more work than you can or care to do. Right here is where a wise person should wake up and run an ad in the paper and sell down to four hives. But he rationalizes, "No, let's go for another year and make a killing on the honey for the summer." The weather is cold in the early spring and it turns dry come summer. The bees don't do so well. Interest begins to lag and you let them go into the winter unattended. By the next spring you are down to six hives. The moths have had a banquet on four of them that were weak. You may be late on spring care such as feeding, checking the queens, providing medication, taking out entrance boards, checking for queen cells, and putting on supers. The moths have ruined the comb in about half the supers left in the garage without moth killer. Such calamities dampen the spirit and hinder the work.

Then, you figure you'll let them alone and see how they make out. Some of the hives swarm; others have worn-out queens. One hive is trying to get along with a laying worker, and you don't discover this until July. The dry weather and poor care bring the honey down to less than what two good hives should produce. So you take what you can get and forget them until spring. Mice, moths, disease, and star-

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## Bee Culture

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## New local association springs to life in St. Charles County

### Three Rivers Beekeepers draws 75 attendees to inaugural meeting

by Eugene Makovec

If you've ever witnessed a honeybee swarm in progress, you know how awe-inspiring it can be. Forget for a moment how it affects your parent hive - the birth of a new bee colony is a wonder of nature that is difficult not to appreciate.

Last week I had the good fortune of witnessing the birth of a bee club. Three Rivers Beekeepers, based in St. Charles County, came about through the efforts of about a half dozen members of the Eastern Missouri Beekeepers Association, a long-standing club in neighboring St. Louis County. Members of this unofficial steering committee were quick to insist that the move was not a result of any animosity within the latter organization. It was a simple matter of geography. (I suspect it was also a matter of overcrowding in the parent "hive", which has added well over 100 members in the past 15 months.)

Eastern has long served beekeepers in St. Louis (city and county), St. Charles, Jefferson, Lincoln and parts of other Missouri counties, and even a few folks from Southern Illinois. I have always been amazed at how far some people drive for monthly meetings. And judging by last week's 75-head turnout, many of those members will now enjoy a shorter drive to Three Rivers meetings.

Other than this impressive opening night attendance, the club began,

I suspect, as most such clubs do, with high hopes and little structure. John Timmons called the meeting and referred to himself as nothing more than a "moderator". A four-year beekeeper along with his wife Jane, John is a veteran of Eastern's board of directors.

But the new club, he said, will start out with "no officers, no bylaws ... we'll figure it out as we go." Holding up a shiny paperback book, he intoned: "I have here a book on Robert's Rules of Order." Pause. "I've never opened it." Following some laughter and a smattering of applause, he raised another volume entitled something like "Polite Common Sense", and announced that the principles therein would guide this new organization.

As for funding, the club will require no dues for now, relying on a "pass the can" method of fundraising. Timmons said communications will be email- and internet-based, thus avoiding the often-substantial mailing costs incurred by most such organizations. The meeting room, a University of Missouri extension office, is provided at no charge at this time, with an informal understanding that members will help out with the upkeep of the grounds and building.

MSBA President Scott Moser and Vice President Grant Gillard both attended the meeting to offer support and advice, while also encouraging attendees to join the state association if they have not already done so.

When fog it lies on misty glen,  
And cattle low, with sheep in pen,  
The morning sun will warm the skep,  
With gilded wing, before my step.

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## BEEKEEPING OF YESTERYEAR

*continued from page 3*

vation take their toll and by spring there are only three hives left and they are not in good shape.

Here is where you should wake up and start being a beekeeper and not just one who “keeps” bees. With some early feeding and medication, these three could be put back on the winning track. You may need some new queens. All you have to do is look at the brood in the hive about March. If there is a good brood pattern, even though it may be small, the queen is adequate. If there are only drones or lots of drones and a poor brood pattern, you had best get a new queen. This should be done around middle of March or the first of April.

Brood rearing in the cities where there are lots of early flowering trees, shrubs and plants should be encouraged by early feeding. Your bees may be storing honey long before their country cousins begin to get any nectar. This year was a fine spring for the city bees inasmuch as the warm weather got the brood-rearing started early. My bees in Kirkwood were seen bringing in pollen from a soft maple tree on February 5th. The bees out of town, where they depend on sweet clover, reared so much brood early that they ate all of the honey and either starved or had to be fed for about a month. (One Illinois beekeeper reported the loss of 100 of his 400 colonies this spring. He attributed this to early brood-rearing, a May freeze, and starvation.)

A person starting out in beekeeping should have some sort of an advisor or helper who has had some good experience with bees. Many of the pitfalls that discourage beginning beekeepers can be avoided by reading a good book or bee journal before starting. One of the best aids for both beginners and old-timers is a membership in the local and state associations. In the local groups there are always people with experience who can and will give counsel.

Everyone who has bees for a year or more becomes an authority on how to keep bees. So, a beginner does well to have several with whom he can talk, ask questions, and get help – a stable of experts. You have noticed that there are usually several ways to do every job in beekeeping and the experts can't agree on which is the best. The fellow who attends a bee club and does a reasonable amount of reading and study has a good chance of success if he has the time and is willing to work.

Cleanliness is an important part of beekeeping. The bees may not know that they are living in a ghetto, but the accumulation of propolis and old wax in a hive makes the operation much harder. I went through some hives a few weeks ago that had had poor care for several years, and it was an almost impossible job to get the frames out. Had it also been poor equipment there would have been a lot of damage. These hives are now for sale. The buyer will get some good bees and have to do some work to get them into shape.

Last spring, one of our local people called and wanted me to come out and see if he had good queens in his hive. He told me that he had never been able to find the queen. I expected to find a new beekeeper. He had kept bees for over 30 years. So, we opened the hives which were in need of nailing and painting. The comb in the one super had

been cut out last fall and no new foundation put in. We finally found one frame in the first brood chamber that we could get out. It had a good brood pattern, so we judged that the queen was in good shape. The second hive was in the same condition with good brood in it. I took a super, frames and foundation home with me, put in the foundation, and wired it properly. When I returned it, he said that he didn't know how to put in foundation and wire it properly; so we had a lesson on how to put it in. Later, I visited him and he had caught a swarm and had it in a brood chamber with properly wired frames. He had never belonged to a bee club.

I am not so much concerned about beginners' mistakes as I am with the people who have had bees for years and do not know or don't do beekeeping in a reasonable way.

Last spring, I was called to pick up a swarm. The lady had two strong hives with one brood chamber and one super each. She said one of her hives didn't produce much honey last year because it swarmed three times. Later, she had another swarm which we put in one of my empty hives and left at her house. I put two supers on her other hives and they are almost full. I am to get some of the honey for care and extraction. She had never belonged to a bee club.

There are literally hundreds of hives setting around houses that could be producing honey if people cared for them in a mindful way.

I have a hive with a horseshoe print on it. The bees got to bothering this man's wife, so he put the hive in the horse pasture under a tree. The end of the story is self-evident. He gave me the hive which had a queen excluder on it completely closed by wax and gum. It is now my best hive, and I have it in front of my house behind some bushes. The former owner of this hive never belonged to a bee club.

Any beekeeper can come up with many stories of neglect of bees. Bees can stand a lot of inattention, but if one wants them to do their best for him, he must do the best he can for them.

Neighbors with bird baths and swimming pools may be bothered by bees. It is hard to tell whose bees they are since they don't wear labels. Before I had bees where I live, we had bees on the flowers and garden, and around water. This can be partially avoided by keeping water near the hive, and giving the neighbors a quart of honey now and then. It sure sweetens their disposition toward your hobby.

There are literally hundreds of hives setting around houses that could be producing honey if people cared for them in a mindful way.

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## Blueberries and honeybees -- a symbiotic relationship

*continued from page 1*

*anther* where the pollen develops and, when mature, is released. Each anther is attached to the base of the flower by one of the 8-10 *filaments*. One source stated that a single blueberry can have up to 65 seeds in that tiny fruit, though usually less than 30. That means at least one grain pollen per eventual seed has to be transported from the anther, UP to the stigma so the pollen grain can tunnel down through the style to the *ovules* in the ovary to make the seed and trigger fruit development. Since the blueberry flower is pointed to the ground, if the pollen granule is mature at the same time the stigma is receptive, it can fall on the stigma when the blueberry flower is vibrated by the wind or a large vibrating bee, giving rise to self-fertility. There are some cultivars that are only partially self-fertile or sterile, which means the pollen and stigma in that flower are not mature at the same time, or the pollen has to come from a different plant. This requires cross-pollination. Cross-pollination requires six-legged friends and results in a larger berry.

Bumblebees, ants and other bees are less concerned about the weather than my girls, the honeybees. (I presently have 30+hives.) The bumbles and their smaller cousins, the carpenter bees, will work in a light mist, at 50 degrees F and overcast. Given the same weather, the honeybee would prefer to be in the hive cuddling with the other bees to stay warm, and may advance no more than a few feet from the hive entrance to go potty. But the native pollinators are neither controllable nor predictable. If your field is in the middle of flat land and miles from a wooded area, your native pollinators are likely going to be lower than a field that abuts the woods. This means that the way to improve pollination is to increase the number of pollinators, i.e., honeybees, that visit the flowers.

Even though you may not be able to see the difference, each of the blueberry cultivars has a slightly different shaped flower. If you were the size of a honeybee you would be able to see, feel and taste the difference. This translates to the size of the *corolla* (the opening) and its relationship to the stigma, anthers and *nectaries*. In other words, how easy is it for the bee to get into the flower and make contact with the reproductive parts of the flower on its way to and from its ultimate goal, the nectaries?

Because of these structural differences, to get optimal pollination one needs different numbers of hives for each cultivar grown. Adapting the list presented yearly by Gary Pavlis, PhD, the Atlantic County Extension Agent in New Jersey who writes weekly in the Blueberry Bulletin for Rutgers University, to the cultivars grown in Missouri, the recommend number of hives per acre becomes: One hive for Rubal, two hives for Bluetta, Bluejay and Darrow; 2.5 hives for Duke; three hives for Berkley, Coville and Elliot; and 3.5 hives for Jersey and Earliblue. This recommendation is based on hives that have wintered over and are filled with bees (30,000 or better). If you are thinking of renting bees in the future, that would translate to a laying queen with at least 4+ frames of capped brood and at least 10 frames of bees (10 frames fill a hivebody). This may not occur in many hives in Missouri until the honey flow starts with the white clover bloom, about 2-3 weeks AFTER blueberry bloom.

The bees will hit on the more mature flowers, which will have more nectar as compared to the younger flowers. Even though the

bees can forage up to three miles from the hive, they will hit more of the flowers in their "front yard". To ensure maximum pollination and maximum berry size, the above recommendation is just the minimum standard. It has been shown that having more hives of bees per acre than the minimum results in larger berries, which are what your customer is after.

All these pollinators are after the nectar, which is in the nectaries. These nectaries are located in the crevices of the base of the flower where the petals, pistil and filaments meet. This means that unless they drill a hole in the side of the flower (some insects do), they have to pass the stigma and anthers (pollen) coming in, which can lead to cross-pollination from the pollen granules on their bodies from other flowers. On the way out they take pollen from that flower up to the stigma, resulting in self-pollination and continuation of the cross-pollination process on subsequent flowers.

From a pollinator's point of view, they couldn't care less about pollination. They are after the pollen, which is a protein and fat source for them, but mostly they are after the nectar. As a beekeeper, I especially want them to get the nectar.

Nectar is a complex solution made up of glucose, fructose, sucrose (a disaccharide of fructose and glucose), flavonoids, amino acids and salts. The solution is unique to each plant species and cultivar, which the bees will remember and communicate to the colony. This also accounts for the different tastes and colors of different honeys.

The field bee might have visited a hundred flowers on her trip away from the hive to fill her honey crop before returning and passing its contents off to a house bee (less mature than field bees), who may place it in a nectar cell or pass it off to another house bee to store it away. With multiple 20-40 microliter (1000ul = 1ml with 28ml/oz) additions, the nectar cell is filled. Due to the enzymes from the bee's honey crop and via evaporation in the hive, the nectar is converted to honey. Once the water content is down to around 15-17%, the bees will cap the cell. Whatever is NOT stored in the main hive body, but in the extra honey "supers", is free for thievery, which is likely not until after the 4th of July.

A quarter of our members are beekeepers. For a beekeeper nearest you, contract the Missouri State Beekeepers Association at [mostatebeekeepers.org](http://mostatebeekeepers.org).



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## Honeybees time foraging trips to exploit daily blooming cycles

by Leon Kreitzman

NYTimes.com, April 28, 2009

Gardeners know that plants open and close their flowers at set times during the day. For example, the flowers of catmint open between 6:00 a.m. and 7:00 a.m.; orange hawkweed follows between 7:00 a.m. and 8:00 a.m.; field marigolds open at 9:00 a.m.

In “*Philosophia Botanica*” (1751), the great taxonomist Carl Linnaeus proposed that it should be possible to plant a floral clock. He noted that two species of daisy, the hawk’s-beard and the hawkbit, opened and closed at their respective times within about a half-hour each day. He suggested planting these daisies along with St. John’s Wort, marigolds, water-lilies and other species in a circle. The plants’ rhythmic opening and closing would be the effective hands of this clock.

Plants have carefully timed routines determined by internally generated rhythms. In 1729, Jean-Jacques d’Ortous de Mairan, a French astronomer, put a Mimosa plant in a cupboard to see what happened when it was kept in the dark. He peeked in at various times, and although the plant was permanently in the dark its leaves still opened and closed rhythmically, as though it had its own representation of day and night. Its leaves still drooped during its subjective night and stiffened during its subjective day. Furthermore, all the leaves moved at the same time. It took another 230 years or so to come up with the term circadian – about a day – to describe these rhythms.

In a similar vein, tobacco plants, stocks and evening primroses release their scent as the sun starts to go down at dusk. These plants attract pollinating moths and night-flying insects. The plants tend to be white or pale. Color vision is difficult under low light, and white best reflects the mainly bluish tinge of evening light.

But plants cannot release their scent in a timely manner simply in response to an environmental cue, like the lowering of the light levels. They need time to produce the oils. To coincide with the appearance of the nocturnal insects, the plant has to anticipate the sunset and produce the scent on a circadian schedule.

Flowers of a given species all produce nectar at about the same time each day, as this increases the chances of cross-pollination. The trick works because pollinators, which in most cases means the honeybee, concentrate foraging on a particular species into a narrow time-window. In effect the honeybee has a daily diary that can include as many as nine appointments — say, 10:00 a.m., lilac; 11:30 a.m., peonies; and so on. The bees’ time-keeping is accurate to about 20 minutes.

The bee can do this because, like the plants and just about every living creature, it has a circadian clock that is reset daily to run in time with the solar cycle. The bee can effectively consult this clock and “check” off the given time and associate this with a particular event.

Honeybees really are nature’s little treasures. They are a centimeter or so long, their brains are tiny, and a small set of simple rules can explain the sophisticated social behavior that produces the coordinated activity of a hive. They live by sets of instructions that are familiar to computer programmers as subroutines – do this until the stop code, then into the next subroutine, and so on.

These humble little bees have an innate ability to work out the location of a food source from its position in relation to the sun. They do this even on cloudy days by reading the pattern of the polarization of

the light, and pass this information to other bees. In the dark of the hive, they transpose the location of a food source in the horizontal plane through the famous “waggle” dance into communication in the vertical plane of the hive.

Honeybees can tell their sisters how far away the food is up to a distance of about 15 kilometers. For good measure, they can also allow for the fact that the sun moves relative to the hive by about 15 degrees an hour and correct for this when they pass on the information. In other words, they have their own built-in global positioning system and a language that enables them to refer to objects and events that are distant in space or time.

German scientists in the early part of the last century called this ability of bees to learn the time of day when flowers start secreting nectar and visit the flowers at appropriate times *Zeitgedächtnis*, or time-sense. But the species of flowers in bloom, say, this week, is likely to be replaced by a different species at a different location next week or the week after. The bee needs a flexible, dynamic appointments system that it continually updates, and it has evolved an impressive ability to learn colors, odors, shapes and routes, within a time frame, quickly and accurately.

While the initial dance by a returning scout bee informs her sisters of the location and distance of food plants and the quality of their nectar, bees that visit the food source learn to synchronize their behavior with daily floral rhythms, foraging only when nectar and pollen are at their highest levels. At other times, they remain in the hive, conserving energy that otherwise would be exhausted on non-productive foraging flights.

Although most animals, including humans, cannot sustain long-lasting periods of activity without circadian rhythms, honeybees have developed a marked flexibility in their circadian rhythm that depends on the job they are doing. Whereas a particular circadian determined behavior is usually fixed to a certain phase of the cycle, in honeybees the circadian rhythm is dependent on the job the bee is doing.

Adult worker bees perform a number of tasks in the hive when they are young, like caring for eggs and larvae, and then shift to foraging for nectar and pollen as they age. However, if the hive has a shortage of foragers, some of the young nurse bees will switch jobs and become foragers. The job transition, whether triggered by age or social cues, involves changes in genes in the honeybee brain; some genes turn on, while others turn off.

Young worker bees less than two weeks of age who typically nurse the brood around-the-clock display no circadian rhythms. Older workers (more than three weeks) typically perform foraging activities and have strong circadian rhythms that are needed for the time-compensated sun-compass navigation and timing visits to flowers.

Recent research in Israel has shown that when young worker bees are removed from caring for the brood and placed in individual cages, they rapidly show circadian rhythms in their behavior. Newly emerged bees isolated in individual cages typically show circadian rhythms in locomotor activity when at 3 days to 14 days old, ages at which most bees in the hive perform around-the-clock nursing activities as mentioned above. Older foragers who revert to nursing duties switch back to around-the-clock brood care activity similar to

*continued on page 14*



## Local clubs needed to staff State Fair beekeepers booth

*continued from page 1*

rodeos and tractor pulls, musical acts including Brooks & Dunn and Kansas, and a plethora of agricultural exhibits.

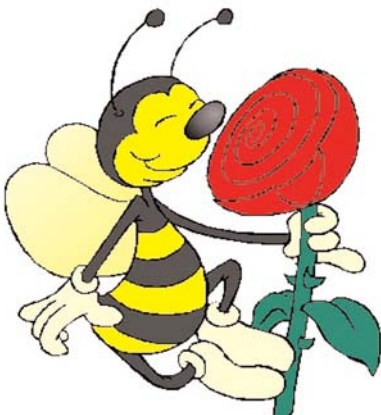
As always, the MSBA will host its Honey Booth to promote honey and beekeeping to the public. Missouri beekeepers will again have an opportunity to supply honey and related products for sale at the booth. Anyone interested is asked to submit bids by June 26 to Ron Vivian, Treasurer; Missouri State Beekeepers Association; PO Box 448; Oak Grove, MO 64075. A bid sheet is printed on page 4 of this newsletter.

Beekeepers can also enter the fruits of their labor in competition. Categories include everything from extracted and comb honey to beeswax and even observation hives. For a list of categories, visit [www.mostatefair.com/premium.html](http://www.mostatefair.com/premium.html). Click on "Agriculture, Crafts, Arts and Culinary", then download the "Agriculture Entry Blank" PDF. Be sure to supply your Social Security number on the form in order to be paid for any winnings.

In addition to individual entries, local clubs will compete against each other. Last year's club winner was the Midwestern Beekeepers Association, based in Raytown, while Midwestern member Roger Nichols took the Individual Grand Champion award.

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### Booth Workers Needed

As always, our Honey Booth cannot operate without the generous help of MSBA members. Dean Sanders, our Fair Chairman, is recruiting volunteers now. It's a great excuse to spend a couple of days in Sedalia taking in all that this wonderful state has to offer.

Last year one local club volunteered to take over the booth for a day, displaying its own signage alongside that of the state organization.

Please call Dean at 816-456-4683 to volunteer your time.

### **For sale: Maxant series 500 30f extractor**

\$1450 417-753-5164 or [lym95@att.net](mailto:lym95@att.net) for pics

## Cookin' with honey!

by Carrie Sayers

### Asian Chicken Wings

3# chicken wings	1/3 C HONEY
1/3 C soy sauce	1/2 t garlic powder
2 T veg oil	1/2 t ginger
2 T chili sauce or catsup	1/4 t cayenne

Rinse & pat dry wings - place in large bowl/marinating vessel.

Mix all remaining ingredients together in a separate bowl. Pour over wings in vessel, making sure all wings are covered in marinade.

Cover and refrigerate up to two days -- tossing occasionally. When ready to bake, preheat oven to 375. Line cookie sheet/pan with foil.

Place wings on sheet (minus the excess marinade) and bake for 20 minutes. Turn and bake for another 30 minutes. Serve room temp or warm.....enjoy!

**Carrie Sayers** ([www.sayerscatering.com](http://www.sayerscatering.com)) is a second-year beekeeper in Glendale, MO, and has been cooking with honey for years.

## Fall Meeting Preview October 30-31, Jefferson City

Capitol Plaza Hotel

Featuring **Marla Spivak**, Professor, Apiculture and Social Insects, University of Minnesota. Developer of the Minnesota Hygienic line of varroa-resistant honeybees.

**Mark your calendar!**

**Holds 2 frames**

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**Junior Bench Extractor Kit**—The Junior Bench Extracting kit is the perfect extracting set up for the beginning beekeeper. The kit comes complete with 1 Junior Bench two frame extractor and stand, 1 bottling bucket kit, 1 speed king electric knife, plastic uncapping tub and 1 capping scratcher.

**M00390KIT JB Extractor Kit . . . . . \$515.00**

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1 pkg @ 47#    1 pkg @ 8#  
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### Little Wonder Hand-Extractor Kits

Power style also available

**Little Wonder Extractor Kits**—A step up in size from the Junior Bench. The little wonder extracting kit is perfect for the hobby beekeeper. It is available in both hand and power styles. This four frame extractor comes complete with extractor and stand, 1 bottling bucket kit, 1 speed king electric knife, plastic uncapping tub and 1 capping scratcher.

**M00396KIT LW Hand Extractor Kit . . . . . \$559.00**

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**M00403KIT LW Power Extractor Kit . . . . . \$849.00**

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### Ranger Power Extractor Kit

Hand style also available

**Ranger Extractor Kits**—For those who prefer a radial extractor this is for you. The Ranger extracting kit is available in both the power and hand styles. It is capable of extracting 6 - 6 1/4" frames or shallow frames radially or three deep frames tangentially by using the optional baskets. The 6 frame radial extractor comes complete with extractor and stand, 1 bottling bucket kit, 1 speed king electric knife, plastic uncapping tub and 1 capping scratcher.

*\*Optional baskets for deep frames sold separately.\**

**M00400KIT Ranger Hand Extractor Kit . . . . . \$639.00**

**This ships in 4 pkgs.**

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2 pkgs @ 35#

**M00401KIT Ranger Power Extractor Kit . . . . . \$925.00**

**This ships in 5 pkgs.**

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**M00402 Optional Baskets, for Deep Frames, Ship Wt. 8 lbs. . . . \$84.75**



## Local bee associations

### Beekeepers Association of the Ozarks

4th Tuesday of each month, 7:00 p.m.  
The Library Center, 4653 S. Campbell, Springfield  
[www.ozarksbeekeepers.org](http://www.ozarksbeekeepers.org)

### Boone Regional Beekeepers Association

3rd Sunday of odd months, 1:00 p.m., Columbia Insurance Group, 2102 Whitegate Dr. (back door), Columbia  
Contact Art Gelder 573-474-8837  
<http://beekeeper.missouri.org>

### Busy Bee Club

4th Tuesday of each month, 7:00 p.m., Cedar County Health Center, Owens Mill Road, Stockton  
Neal Lee 417-276-3090 Neil Brunner 314-276-4252  
[grnthumb@alltel.net](mailto:grnthumb@alltel.net)

### Eastern Missouri Beekeepers Association

2nd Wednesday of each month, 7:00 p.m., Powder Valley Nature Center 11715 Craigwood Rd., Kirkwood  
Bob Sears, President 314-479-9517  
[www.easternmobeekers.com](http://www.easternmobeekers.com)

### Jackson Area Beekeepers

4th Tuesday of each month, 7:00 p.m.  
First Pres. of Jackson, 206 E. Washington  
Contact Grant Gillard 573-243-6568  
[gillard5@charter.net](mailto:gillard5@charter.net)

### Jefferson County Beekeepers Association

2nd Tuesday of each month, 7:30 p.m., Hwy B & 21 Jefferson County Extension Center, Hillsboro  
Contact Scott Moser 636-285-7295

### Joplin Area Beekeepers Association

Last Tue. of each month, 7 pm, SM Bank Community Building (7th and Duquesne Rd), Joplin  
Contact Gene Foley 417-624-6831

### Mid Missouri Beekeepers

3rd Sunday of each month, 2 pm, St. James Tourist Ctr.  
Contact Don Moore 573-265-8706

### Midwestern Beekeepers Association

Nov-March, 3rd Sunday of each month, 2:30 p.m.  
April-Oct, 3rd Thursday of each month, 7:00 p.m.  
Bass Pro Shop, Independence, Conservation Room  
Cecil Sweeney, President 913-856-8356

### Mississippi Valley Beekeepers Association

Last Tuesday of Month in Quincy, IL  
Contact Debi Bridgman 573-439-5228

### Missouri Valley Beekeepers Association

3rd Monday of each month, 7:00 p.m.  
Scenic Regional Library, Union  
Contact Rodney Angell 573-764-2922  
[beel43@fidnet.com](mailto:beel43@fidnet.com)

### Parkland Beekeepers

3rd Tuesday of each month, 108 Harrison, Farmington  
Contact Gene Wood 573-431-1436

### Pomme de Terre Beekeepers

2nd Thursday of each month, 7 pm  
Missouri Extension Office, Hermitage  
Contact Bessi Shryer 417-745-2527

### South Central Missouri Beekeepers Association

1st Friday of month, Howell Electric Coop, West Plains  
Monty Wiens, President 417 257-3994

### Southern MO Beekeepers of Monett ("MOBees")

3rd Tuesday of each month, 7:00 p.m.  
Monett High School VO-AG Building  
Robert Sperandio, President 417-235-6959

### Southwest Beekeepers Association

1st Tuesday of month, Neosho High School FFA Building  
Contact Herb Spencer 417-472-7743

### Three Rivers Beekeepers

3rd Monday of month, University of Missouri Extension, 260 Brown Road, St. Peters, Missouri, 7:00 p.m.  
For info: 2952 Greenleaf Drive, St. Charles, MO 63303  
[info@threeriversbeekeepers.com](mailto:info@threeriversbeekeepers.com)

Can't find a club near you? Contact President Scott Moser for help getting one started.

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**MSBA Membership Application**

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Make check payable to: Missouri State Beekeepers Association

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## Honey Queen Report

by Tara Fisher

Hello Everyone!

Well it seems that Spring has finally sprung!! The weather is looking better and better each day! I have finished my finals and am ready for Summer!!

In April, I got the chance to attend a Beginners Beekeeping Workshop in Union, MO. Given by the Missouri Valley Beekeepers Association. I gave a presentation on the history of beekeeping. In preparing for this, I learned a lot about the history of beekeeping myself!! They had a great attendance of people interested in beekeeping. I met a couple who could only stay for part of the day because they had to go pick up their package of bees that afternoon. They were very excited to become beekeepers!

I went to Häagen-Dazs at the beginning of May. They were giving away a free scoop of "Bee Built" ice cream. Häagen-Dazs has donated a lot of money to bee research and wanted to make beekeeping more visible to the public. Not only did they give away free ice cream, they gave each customer a packet of seeds to plant at home for the honeybees. Dick and Kathie Scott set up a table and they also brought their observation hive. There were so many people that came with questions that we were able to answer. As with any observation hive, the kids were very interested. They also enjoyed answering trivia questions that Kathie asked to get a free honey stick!

As the 2009 Missouri Honey Queen, I am here to promote honey and beekeeping! If you have any fairs, festivals, meetings, or activities that you would like for me to attend, please contact Joyce Justice, Queen Chairperson. Her contact information appears in the column at right.

Enjoy the warmer weather!!

Tara



## Directory of Officers

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## Honeybee foraging timed to take advantage of daily nectar flows

*continued from page 8*

that of young nurses in typical colonies.

The molecular clockwork mechanism that produces the circadian rhythm works by a series of feedback loops in which the proteins produced by several genes feedback to repress their own production. It is a complicated system, but the end result is a near-24-hour cycling in the levels of various proteins that in turn result in the cycling of the secretion of hormones and other substances.

It seems that there is a plasticity, or flexibility, in the organization of this molecular clockwork mechanism in honeybees, and that the social factors that influence division of labor in honeybee colonies are important also for the regulation of this circadian mechanism. As there is mounting evidence for increased pathologies and deterioration in performance when around-the-clock activity is imposed on most animals, including humans, detailed study of the plasticity of the circadian organization in honeybees may provide pointers for ways for us to have our 24/7 cake and eat it.

Honeybees are remarkable not just for the organization of their circadian clockwork. James Gould of Princeton first studied bees as an undergraduate. It was his pioneering study that showed conclusively that Karl von Frisch, who won a Nobel Prize for elucidating the wag-

gle dance, had been right in concluding that the dance was a means of conveying information.

Ironically, an allergy meant that Gould had to stop working directly with the creatures, but his respect for them is enormous. As he has pointed out:

When a human decides whether to recommend a restaurant, taking into account its menus, the tastes of the friend being advised, the cost of the food, the distance to the establishment, the ambience of the dining room, the ease of parking and all the other factors that enter into such a decision, we have little hesitation in attributing conscious decision-making to the calculation. When a small frenetic creature enclosed in an exoskeleton and sprouting supernumerary legs and a sting performs an analogous integration of factors, however, our biases spur us to look for another explanation, different in kind.

We have been exploiting honeybees for thousands of years by systematically robbing them of their honey. The least we can do is take proper care of these wondrous creatures. Instead we are killing them off in their billions through our befouling of their environment. The honeybee brain has only a million or so neurons, several orders of magnitude less than ours. It is a moot point as to whether humans or honeybees make the best use of their neuronal resource.

This newsletter is published six times per year, in even months. Submissions are due by the 15th of the month prior to publication.

The email edition is in color, and contains hyperlinks and bonus back-page material, while the print version is in black-and-white. If you are a member currently receiving the printed newsletter and you wish to upgrade, just send an email to [editor@mostatebeekeepers.org](mailto:editor@mostatebeekeepers.org) with "email newsletter" in the subject line. I'll reply with confirmation, and add you to my list.

### Advertising rates are as follows:

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**Honey Trading Post:** This is a free service to members wishing to buy or sell honey on a wholesale basis. Just email or call the editor with contact information and whether you are buying or selling. Pricing is between the interested parties.