



BEE NEWS & VIEWS

Biochemistry, Molecular Biology,
Entomology and Plant Pathology
Mississippi State University, MS 39762



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Mississippi Beekeepers Association's Newsletter

August 2012

2012 State Convention

By John Tullos

This year's MBA convention date and site has been set: Friday and Saturday, October 26-27, 2012 in the Bost Extension Center auditorium on the Mississippi State University campus in Starkville, MS. You will receive more details later, but mark your calendars now. Do not wait to put the convention on your schedule.

Some of the program presenters are "old reliables" like Dr. Clarence Collison, Mr. Harry Fulton, and scientists from the Baton Rouge Bee Lab. Among others that will speak are Randy Oliver, a terrific lecturer whose articles appear regularly in the *American Bee Journal*, and Dr. Mike Hood, a Small Hive Beetle (SHB) expert and extension entomologist from Clemson University, SC. These folks are an "all-star" lineup of speakers.

Even though I do not go to the conventions to be entertained, I always am. My purpose is to socialize with people who have the same obsession with honey bees as I, and to learn from beekeepers and scientists who know what they are talking about.

When scientists at the convention report that no solution has been found to control SHB or eradicate *Varroa* mites, I become frustrated, thinking I am hearing the same old things year-after-year, even though this is not the case. I am certain that we will not hear of any outright cures for our common problems, but we will hear firsthand from those researchers about the status of the best management practices for dealing with pests and parasites.

It is while dealing with these emotions associated with frustration that I remind myself that finding a safe and effective remedy for SHB and *Varroa* is much like discovering a cure for cancer. To make a breakthrough, many possible methods and chemicals for treatments are eliminated through exhaustive laboratory and field trials. When one trial results in failure, that method is no longer a possible solution. With each failure, progress is made and the scientific focus narrows: "success by elimination," so to speak.

At the convention, we will be informed by our guests about current progress toward better methods for controlling hive pests and parasites. All of us can save money and time by not using anecdotal treatments which have not been scientifically proven to be either safe or effective. Keep informed. Attend the convention.

Preregistration is requested. A block of rooms have been reserved at the Microtel Inn & Suites in Starkville, MS to accommodate attendees. Contact Jeff Harris (Ph. 662.325.2976; email jharris@entomology.msstate.edu) for copies of the agenda, registration forms and other details of the event.

New Bee Club in Southeast MS

By Judy Breland

The Red Creek Beekeepers Association is the newest bee club to form in Mississippi. Twenty-one people attended the inaugural meeting on Monday, July 30, at the Fairgrounds Building in Wiggins, MS. Officers include Claire Shafer, President; Tommy Cowart, Vice President; Judy Breland (temporary) Secretary; and Chuck Lopez, Treasurer.

The group will meet regularly at 7:00 PM on the fourth Monday of each month. Location at present is the Stone County Fairgrounds. For information contact the Stone County Extension Office at 601.928.5286.

Beekeeping Clubs & Activities

Marion County Beekeepers Association, By D. L. Wesley. We held our monthly meeting last night, (August 13, 2012) and it was attended by a great group, with numerous new and beginning beekeepers.

Charles Wilson, our State Apiary Inspector who lives in Glendale, MS was our guest Speaker. Charles spoke on what we should be doing to prepare for the fall honey flow, and what preparations we should be doing to get our bees in great shape for this coming winter. He did a great job explaining which chemicals could be used to combat insects and diseases in order to help keep our bees remain healthy. He also explained which chemicals should not be used in bee colonies, and why they should not be used.

Charles has the gift of explaining things so that new beekeepers can understand. With this talent, there was no trouble keeping every one's attention. Our meetings usually last one hour; however, last night it lasted over two hours, and even then some hung around and discussed bees with Charles.

Each new member was given an application to join our MBA association, and I explained how important it was for us to have a strong association with all of our support. Also, we had a brief discussion about the upcoming MBA annual conference that will be held on the campus of Mississippi State University in Starkville. Also, I reassured them that our MBA monthly newsletter, "*Bee News & Views*", would soon be revived.

Members attending were from Marion County, Lamar County, Walthall County, Pearl River County and Hancock County.

New Extension Apiculturist Selected

By John Tullos

Dr. Jeffrey W. Harris, formerly of the USDA Honey Bee Lab in Baton Rouge, LA, has been selected as Assistant Extension/Research Professor at Mississippi State University. Many of you personally know Jeff, and most of the rest of us are familiar with his work developing honey bees that are resistant to *Varroa* mites.

We are very fortunate in two critical ways with Dr. Harris' selection: (1) he is educationally and experience

qualified as an entomologist and insect physiologist; and (2) he is a "bee man." Dr. Harris actively began his duties on July 1, 2012.

A Great Opportunity

By Jeff Harris

I appreciate the confidence and trust in my abilities that various administrators at Mississippi State University have made by selecting me as the new assistant professor of extension/research in apiculture within the Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology (BCH-EPP). I am truly grateful for the opportunity, and I will work very hard to support the beekeeping industry in Mississippi.

One of my goals is to promote beekeeping among youth by reinvigorating 4-H programs related to beekeeping. The approach will be to focus on entrepreneurship that kids could develop using honey and beeswax that they harvest from hives. I will collaborate with Dr. John Guyton, an associate professor of entomological education with a proven record for stimulating interest in insects and science among young people.

I will also implement a Mississippi Master Beekeepers program. Program models developed by people like Dr. Keith Delaplane at the University of Georgia and Dr. Clarence Collison, retired from Mississippi State University, will serve as my design template. One ulterior motive is to use the service requirements of the program to encourage participants to support local and state-level beekeeping organizations. This participation could range from being an officer in a bee club, to giving presentations or workshops to other beekeepers at local meetings or the annual MBA convention. I would also encourage participants to stimulate 4-H programs by volunteering service and helping to teach kids about bees and beekeeping.

The bulk of my duties will be related to extension, which means that I will use various methods to communicate information that helps beekeepers with the many issues affecting them. I will conduct beekeeping workshops during the year, and I will give formal presentations on whatever topics are most important and current at local and state-level bee meetings. I will likely organize short courses on specific topics like queen rearing, basic beekeeping management, dealing with diseases, pests, and parasites, or even instrumental insemination of queen bees if there is enough interest. Of course, there will always be the phone calls from beekeepers and the general public that need immediate attention.

I will also conduct research and train graduate students on how to do scientific studies with honey bees. I am

still formulating specific research projects, but I will initially concentrate on problems with chemical residues in combs and how these residues affect bee health. In particular, I want to see whether residues of agrochemicals in beeswax are affecting the quality of queens or drones from commercial queen rearing operations. This research will involve collaborations with other faculty members of BCH-EPP that include Dr. Natraj Krishnan, assistant professor of insect physiology, Dr. Ashli Brown, assistant professor of biochemistry, and Dr. Darrell Sparks, an assistant professor of chemistry. I will also dabble in testing some existing stocks of bees for resistance towards Small Hive Beetles.

My job is to help Mississippi beekeepers, so please feel free to contact me with questions, concerns or issues that affect you. My contact information is listed on the first page of this newsletter.

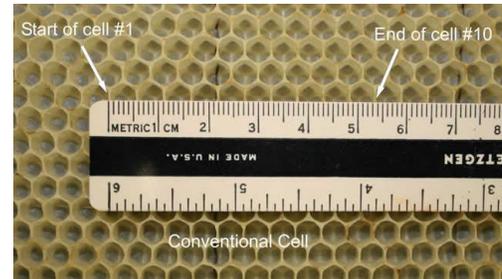
Bee Science Brief

By Audrey Sheridan

Small-cell bees. *Varroa destructor* control using small-cell foundation is a controversial topic, for the supporting evidence is largely anecdotal and highly variable. Holistic beekeepers are particularly interested in this non-chemical alternative approach to mite control. Our American standard comb cell size of approximately 5.3 mm wide was imposed upon bees with the advent of embossed commercial foundation. It is believed this was a deliberate attempt at producing larger bees. Although wild bee comb is quite variable in size, Africanized honey bees naturally construct cells approximately 4.9 mm wide. When taken with the average smaller body size, shorter post-capping development time, and lower incidence of *Varroa* in emerging adults, smaller cells appear to have some influence on the mite resistance in Africanized bees. Research endeavors have given us mixed results about the efficacy of using small-cell comb for this purpose. In one study, mites preferred small cells to normal-sized cells within the same colony (Coffey *et al.* 2010); in another experiment, colonies with small worker cells had higher rates of mite reproduction than colonies with normal-sized cells (Berry *et al.* 2010); in a third study, there was no significant difference in mite loads between small cell and normal cell European honey bee colonies over the course of a summer (Seeley and Griffin, 2011).

According to Ellis *et al.* (2009), most scientific investigations of the effect of cell size on mite populations have been made as comparisons between worker and drone cells, or between Africanized and European races. So far, there have been no refereed quantitative studies showing small worker cell size to be an effective mite control method. Ellis *et al.* (2009)

designed a year-long comparative study of whole-hive mite population dynamics in conventional versus small-cell hives. Thirty hives of equal size, all populated by a sister queen and a 1kg package of bees, were set up in two separate apiaries (15 hives to an apiary) to minimize transmission of *Varroa* between the two treatments (conventional foundation versus small-cell foundation).



Standard cell width is approximately 5.4 mm

All hives in each apiary were given new foundation. *Varroa* were initially removed from each package of bees via a sugar shake to minimize the starting mite population in all hives. Samples of adult bees and capped brood were taken at intervals during the year, from which estimates of mite numbers were made. Adult bee population and brood area were also recorded.

After one year, mite loads in all of the test colonies had exceeded the economic threshold of 3,000 mites/colony, and there was no statistical difference in most of the measured parameters over time between the two treatments. The only differences were observed in adult bee population in two sample periods. Overall, small-cell colonies did not fare better than standard colonies in this study.

The idea behind using small-cell bees for *Varroa* mite control in managed colonies is that the tight quarters and perhaps shorter development time of the bees should increase mortality of mite offspring, thereby decreasing reproductive success of the invading mother mites. There is some evidence of natural mite resistance in native South African honey bees that have relatively small cell size (*Apis mellifera scutellata*) or more rapid development time (*A. m. capensis*).

Martin and Kryger (2002) compared male mite survivorship in *A. m. capensis* and *A. m. scutellata* brood simultaneously within the same hive to quantify the effect of larva size on male mite survival. Queenless colonies of *A. m. scutellata* were used as host hives, and pseudo-clones of *A. m. capensis* were introduced into these for the comparison. Pseudo-clones are workers with developed ovaries that are capable of producing genetically identical daughters. They are larger than *A.*

m. scutellata workers, even when reared in a normal-sized *scutellata* worker cell.

The research team speculated that a larger *capensis* pupa in a normal sized *scutellata* worker cell may cause higher mite mortality—particularly for the male mite. Since only one male is produced per cycle, and he is required to mate with all of the subsequently-produced daughters, the feeding and breeding success of that male determines the continuity of the mother mite's lineage. Highest mortality of male mites occurred in cells containing *capensis* pupae, while the lowest male mite mortality occurred on *scutellata* pupae raised in their own natural sized brood cell. Mortality of mother mites that invaded *capensis* larvae housed in *scutellata*-size cells was also higher than for those that invaded *scutellata* larvae within their own cells. These mother mites tended to be trapped between the cell cap and the head of the bee pupae when trying to lay their first egg.

The lowest mortality rate of male *Varroa* mites occurs in the Asian honey bee, *Apis cerana*, which is the natural host of *Varroa* mites. Coincidentally, the highest reproductive success for *Varroa* also occurs when they invade drones of *A. cerana*. Although *A. cerana* drones are smaller than drones of any other *Apis* species (based on head width), they are reared in the widest drone cells (7.1-7.2 mm), which may effectively allow more room for the male mites to feed on the developing bee's abdomen (Martin and Kryger 2002).

Piccirillo and De Jong (2003) compared the invasion rate of adult female *Varroa* mites in three sizes of brood cells placed in Africanized honey bee colonies. Brood comb treatments were: 1) empty frame (no foundation), 2) a frame of Italian bee-sized commercial foundation, and 3) a frame of comb made naturally by Carniolan bees. The mean internal diameter of cells from each bee type was 4.84 mm (natural Africanized), 5.16 mm (Italian foundation) and 5.27 mm (Carniolan). Six Africanized colonies in a single apiary were given all three comb treatments plus sugar syrup in an otherwise normal 10-frame hive. When the worker bees from these combs began to hatch out, they were examined for *Varroa* infestation. One hundred workers and worker cells were examined from each of the three comb types for all six colonies. Four of the six colonies showed a positive correlation between cell width and number of invading *Varroa* females. In all six colonies, there was an average of 38% greater infestation of Carniolan comb than Italian, and a 13% greater infestation of Italian comb over Africanized; at least in this study, *Varroa* preferred the larger-sized comb cells.

Forcing honey bees to rear drones in worker-sized cells might be a way to control *Varroa*; however, the

reproductive quality of drones may be diminished. Schlüns *et al.* (2003) reared drones in either worker or drone cells within the same colonies and compared sperm production between the two sizes of drones. Smaller drones produced more sperm per body weight than large drones; however, small drones produced 37% less spermatozoa than the large ones. Given a choice, honey bees prefer rearing a few large drones rather than a lot of smaller drones. This may be, in part, due to an advantage the larger drones have in mating flight endurance. Unfortunately for the honey bee, *Varroa* prefer larger drones better, too.

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- Seeley, T. D. and S. R. Griffin. 2011. Small-cell comb does not control *Varroa* mites in colonies of honeybees of European origin. *Apidologie* 42: 526-532.

Mississippi Sales Tax Issue

By John Tullos

During the 2011 MBA annual convention, Stan Yeagley informed us that the Mississippi Department of Revenue officials were of the opinion that direct sales of honey and other hive products were subject to sales tax payments. MBA's position is that honey bees are livestock, and interpret the statutes that exempt from the payments of sales tax for the sale of honey bees and honey bee products such as honey, beeswax, propolis and pollen in their original state. The Honorable Cindy Hyde-Smith, Mississippi Commissioner of Agriculture and Commerce, posed this question to the Mississippi Attorney General, Jim Hood. His opinion is that these commodities are exempt from sales tax.

An Attorney General's opinion **is not** law, but is only the opinion as to what the law is based upon thorough research and thoughtful consideration. The Mississippi Department of Revenue must agree with the Attorney General's opinion before exemptions from sales tax for honey bees and hive products are implemented.

The Department of Revenue's opinion, as stated in a letter on June 22, 2012, is quoted below:

"This is in response to your letter dated April 10, 2011, requesting a ruling concurring that honey bees and bee products sold by the producer are exempt from Mississippi sales tax..."

Miss. Code Ann. Section 27-65-103(b) provides that "sales by producers of livestock, poultry, fish or other products of farm, grove or garden when such products are sold in the original state or [unprocessed] condition...[not] sold by a producer through an established store" are not subject to Mississippi sales tax. Accordingly, the sale [sic] honey bees and raw-unprocessed honey bees products (e.g. honey, honey combs, wax, etc.) sold by the producer not through an established store are exempted from Mississippi sales tax. Other honey bee based products may or may not [sic] eligible for this exemption. Processed products resulting from honey bees' yields are taxable at the regular 7% retail rate of sales tax when sold by the producer.

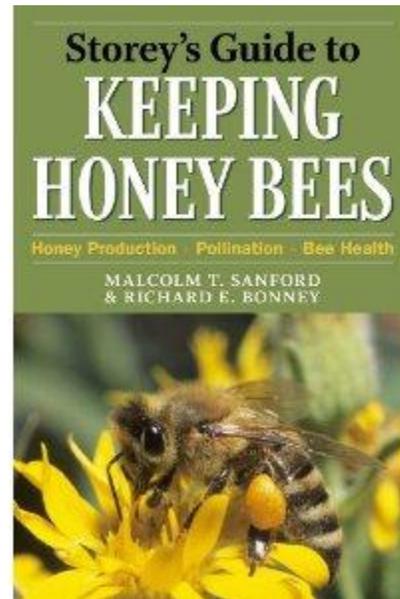
Book Reviews

Storey's Guide to Keeping Honey Bees by Malcolm T. Sanford & Richard E. Bonney (Storey Publishing, 2010; 244 pages; \$19.95 for paperback, 6" x 9" layout).

In recent years many of us have heard and read about the troublesome bee decline known as "Colony Collapse Disorder". That is why educating ourselves about bees

and how to safely be around them, how to attract them, how to provide a safe environment for them to thrive in, and how to even start a bee hive in your own backyard if you so choose to, is an important lesson to learn.

With one third of human food relying upon pollination to keep it going, we humans owe an awful lot to the humble, yet hard working, bee. We also owe it to ourselves to be educated and informed about our natural world and the creatures that play an important role in our food supply.



In "**Storey's Guide to Keeping Honey Bees**", Dr. Malcolm Sanford and Richard Bonney will take you through the wonderful world of the honey bee as you learn such things as:

the origin and history of beekeeping, bee anatomy, how the nest is constructed, metamorphosis and development, the caste of members in a hive (queen, workers, house bee, foragers, winter bees, drones, and varroa mites), bee communication, patterns of behavior, choosing hive location (where to place your honey bee hives), popular nectar sources, getting equipped and setting up a hive, tools of the trade, introducing the bees to the hive, how to perform your first hive inspection, how to capture a swarm of bees, managing your hive throughout the year, how to mark a queen, feeding your bees, harvesting of honey, pollination, and diseases and pests.

You'll also be able to read comments from folks that have taken up bee keeping. These comments and stories are scattered throughout the book and make for extremely interesting reading as you learn how and why others were drawn to keep bees.

"Storey's Guide to Keeping Honey Bees" does not sugar coat the fact that if you do choose to raise bees and to keep a honey bee hive or two in your backyard, that

you must be prepared to be dedicated to the task. Bees require a genuine full commitment, an ongoing passion, and time to maintain a healthy and active hive. As the book states there is a vast difference between being a “bee -keeper” and a “bee- haver”.

Not only is this book an awesome resource for those looking to start a backyard bee hive colony, but it is also a very handy educational tool for teaching children about the honey bee. Children too can learn such things as honey bee anatomy and the workings of a bee hive (a great tool for a home schooling unit study about bees).

At the back of the book you will find a resource list that provides the contact information to U.S. Beekeeping Supply Houses, a list of recommended books, blogs, and beekeeping organizations.

If you are passionate about wanting to truly learn more about the honey bee, and how to begin keeping honey bees in your own back yard this book is without a doubt the book you will want and need to have on hand.

As a lover of the honey bee, and having been fascinated with them for a number of years now, I found myself totally engrossed in this book for several hours. I do not yet have my own honey bee hives, but I am convinced that one day I shall, and this book without a doubt will be my “go to” book for advice and information. I highly recommend it. You will come away from this book with not only a new found knowledge on how to keep bees successfully (if and when you should pursue this type of venture), but with a new found awe and amazement towards the humble honey bee.

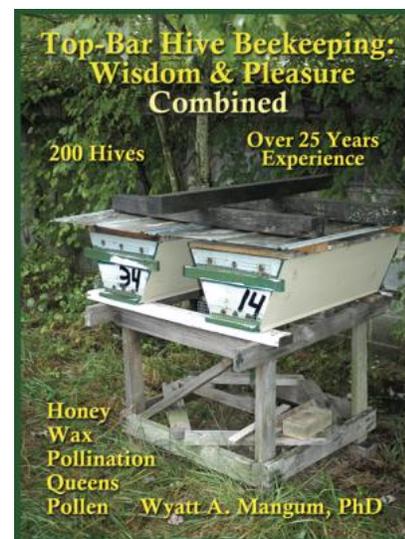
Review by **Tina Wilson** of “Small Town Living: A Simpler Life in Small Town America”; September 12, 2010; <http://stliving.com/?p=3531>.

Top-Bar Hive Beekeeping: Wisdom & Pleasure Combined by Wyatt A. Mangum (Stinging Drone Publications, 2012; 411 pages, 300+ color photos; \$45.00 for paperback, 8.5” × 11” layout). Order at www.tbhsbywam.com.

For many years, Dr. Wyatt Mangum has extolled the virtues of keeping honey bees in top-bar hives in his regular column of the *American Bee Journal* and his many presentations to beekeeping audiences. Now, his “**Top-Bar Hive Beekeeping: Wisdom & Pleasure Combined**” presents his lifetime of experiences in beekeeping and his passion for top-bar beekeeping to anyone wishing to explore this style of beekeeping. The book weaves the biography of a 10-year old boy growing up with Langstroth frame hives with the natural history of honey bees to explain Dr. Mangum’s ultimate transition to the use of top-bar hives exclusively for

honey production and pollination service. The book layout resembles a general textbook in biology, but the prose is loose and witty and engaging. So, although the book is packed with intricate details of all aspects of beekeeping from constructing top-bar hives, to stocking them with bees, and managing them for use in honey production, pollination service and queen production, the book is quite pleasurable to read because of the many stories of success and failure experienced by the author.

“**Top-Bar Hive Beekeeping: Wisdom & Pleasure Combined**” is an excellent resource for all beekeepers, even those with no desire to try top-bar beekeeping. The image of top-bar hives as primarily useful only in developing countries of the world is dispelled. The lower costs in building and maintaining top-bar hives and the relative ease to which colonies can be worked are incentives for people everywhere to use top-bar hives. As I get older, honey supers from traditional frame hives seem to become heavier and heavier, and the back relief offered by a horizontally expanded honey storage arrangement that involves no heavy lifting is tempting. Another appeal is the placement of top-bar hives on stands that eliminates the need for bending to work bees. The top-bar hive design also allows for minimal disturbance of the broodnest during colony manipulations because only one comb is exposed at a time, and additional space for honey storage is added to the end of the hive away from the entrance. Another significant advantage is the lack of the need for beeswax foundation, which is relatively expensive and may contain residuals of agro-chemicals derived from rendered combs.



Pollination is perhaps the most important aspect of beekeeping, and Chapter 7 emphasizes the use of top-bar hives in pollination service. Dr. Mangum details everything from how to position top-bar hives in fields

and relative to roads to the importance of understanding basic principles involved in farming of the crop being pollinated. He offers sage advice, with cucumber pollination as his prime example, in which everything from problems with dirt roads and irrigation systems to how and when to ask for payments of pollination service from a grower. His approach to pollination is no nonsense and pragmatic.

Dr. Mangum's book provides a complete case for use of the top-bar hive in all beekeeping arenas, but the section (Chapter 11) that I as a scientist found most enjoyable was his description of his special house that contains up to 30 observation hives. He details all aspects of the observation hive design, including special exit pipes that allow for ventilation and easy attachment and detachment of each hive. The house is a wonderful hide-away where a lover of bees could spend endless hours of fascination just watching honey bees do the intricate things necessary to sustain colony life. I remember watching bees intently as a kid, which is something that Dr. Mangum also described of himself in the book. I would pay money to spend a few hours in his house of observation hives.

Review by **Jeff Harris**

4-H Bee Essay Contest - 2013

Sponsored by The Foundation for the Preservation of Honey Bees, Inc.

Topic for 2013:

Reducing the Usage of Bee-Killing Pesticides in my Community

Length:

750 to 1000 words (This does not include references and Biographical sketch.)

Format:

Submit as Microsoft Word compatible document, double spaced in 12-pt Times

Due Date:

January 10, 2013, before 5:00 PM

Contest is open to active 4-H Club Members only.

Submit Mississippi essays to the e-mail address shown below. **Do not** send to the national Foundation office. (The first place essay for Mississippi will be submitted for national competition.)

Submit Essays Electronically to:

Sherry McMullin (smcmullin@entomology.msstate.edu) or Jeff Harris (jharris@entomology.msstate.edu). Please write "4-H Beekeeping Essay" in the subject line. Be sure to include your biographical sketch.

State Level Prizes:

First Place: \$100

Second Place: \$75

Third Place: \$50

Sponsored by the Mississippi Beekeepers Association

National Level Prizes:

First Place: \$750

Second Place: \$500

Third Place: \$250

Sponsored by the American Beekeeping Federation

Visit the following web address for more details on rules, requirements, and judging criteria:

http://honeybeepreservation.org/wp-content/uploads/2012/05/2013_4H_beekeeping_essay_rules.pdf

Buy and Sell

Used bee keeping equipment for sale.

Deep with frames and foundations - \$25.00, medium with frames and foundations \$20.00. Also tops, inner liner, top feeders and bottoms. Call 662.312.5316. Please leave message if no answer.

Approximately 60 open mated VSH queens available first week of September. They will be \$20.00 each picked up in Philadelphia, MS. Shipping will be \$20.00 with free shipping on orders of 10 or more. All queens will be marked for free. Call Johnny Thompson at 601.562.0701.

Request for Submissions

Please contribute articles, stories, book reviews or news items that might interest your fellow beekeepers to my email (jharris@entomology.msstate.edu). If it interests you as a beekeeper, it will interest others.

Enjoy beekeeping!

Jeff Harris