BEE NEWS & VIEWS

The Mississippi Beekeepers Association Newsletter

JEFF HARRIS, Editor
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November-December 2012

MBA Award Winners 2012

The Mississippi Beekeepers Association recognizes deserving members with two awards at the annual convention every year. Individual MBA members or local beekeeping clubs can nominate someone for either award, and nominations should be written and sent either to Michael Everett, Chair of the MBA Awards Committee, or to one of the other MBA officers. The award winners for 2012 were presented plaques at the banquet of the MBA Annual Convention in Starkville, MS this last October.

2012 Master Beekeeping Award Recipient—Derwin Thrash

Derwin Trash, 49, has been a member of the MBA for 15 years and will be serving as the Vice President of our association for the 2012-2013 term. He began keeping bees at age 17 and currently runs 150 hives in and about Forest, MS, where he resides with his wife, Tina. Derwin has been actively involved in promoting beekeeping to all age groups for over 11 years. His outreach activities include teaching queen rearing at MBA workshops, presenting at schools and public libraries, and giving guest lectures on beekeeping to the Rotary Club, Lions Club and International Friends group. He enjoys mentoring new beekeepers, and has helped to grow a small-scale operation to 100 hives, get beekeepers certified with the state and even assist a handicapped beekeeper in his hobby operation. Derwin is an asset to our organization and to the beekeeping industry, and we are proud to present him with the Master Beekeeping Award.

2012 Young Beekeeper of the Year—Krista Thrash

Krista Thrash, 22, is the daughter of Derwin and Tina Thrash of Forest, MS. She began working with bees at the early age of 8, and has since been involved in every aspect of queen rearing and honey production. She is an experienced grafter and has assisted in the queen rearing class at MBA workshops. Krista has an outstanding academic record as well, having received multiple scholarships and national recognition for academic achievements. Krista has been involved in community outreach and charitable organizations, and has recently earned a BS in Nursing from University of Mississippi Medical College. Thank you, Krista, for inspiring the younger generation of beekeepers to participate in the beekeeping community!

MBA President John R. Tullos (left) presenting the Master Beekeeping Award to Derwin Thrash (right) at the MBA Annual Convention in Starkville, MS. There is no photo of the other awardee because Krista Thrash was unable to attend the event.

Food Defense Workshops

By Anna Hood

Mississippi State University Extension Service is providing FREE Food Defense workshops for producers, processors, and others involved in the food industry. This includes honey producers! The primary goal of these workshops is to help participants preclude and better prepare their operations/facilities in the event of intentional contamination and/or natural disasters that could affect the safety of their livestock/products and ultimately consumers. Five one-day workshops will be held throughout the state of Mississippi over the course of the next few months. The Food Safety Modernization Act as written, if fully enacted, will require all food related entities to have a food defense plan. I strongly encourage you to attend one of these workshops in order to better prepare your business for future potential regulatory requirements and help protect our food supply. Listed below are the dates and locations of the workshops.

December 5:	**Brandon, MS**	**Rankin County Extension Office**
January 17:	**Verona, MS**	**North MS R&E Center**
January 29:	**Hattiesburg, MS**	**Forrest County Extension Office**
February 7:	**Brookhaven, MS**	**Lincoln Civic Center**
February 21:	**Grenada, MS**	**Grenada County Extension Office**

To register, please visit our website at www.fsnhp.msstate.edu and click on the link under "Workshops and Events" on the left side of the screen and follow the prompts. You may also print the **attached brochure**, complete the registration information indicating your choice in date and location, and return to the address indicated on the form.

This workshop is made available **at no charge** to participants and is provided through funds from USDA-National Institute of Food and Agriculture (NIFA) through the Southern Risk Management Education Center (SRMEC).

Africanized Bees in Pass Christian, MS

By John Campbell & Kenneth Calcote

The Mississippi Department of Agriculture and Commerce (MDAC) located and destroyed a colony of Africanized bees at a residence in Pass Christian on October 29, 2012, as a result of a homeowner complaint issued concerning bees at the residence. During the investigation of the complaint, a colony of bees was discovered in the subfloor of the structure. According to the homeowner, the bees had arrived by swarm a few weeks earlier. Domestic European honey bees typically do not swarm this late into the fall season, which prompted MDAC to destroy the colony as a precaution and also collect a sample for analysis.

The sample was sent to the Alabama Department of Agriculture and Industries, Bee Laboratory, for a quick screening test, which resulted in the high probability of Africanized bees. The sample was then sent to the Florida Department of Agriculture and Consumer Services, Bee Laboratory, who confirmed the sample positive for Africanized bees by using the USDA official identification test.

Africanized bees are a hybrid, or mixed breeding, of African and European honey bees. The most important difference in Africanized bees and domestic European honey bees is their behavior. Africanized bees are extremely defensive and will protect their nest or colony more fiercely and in greater numbers when disturbed or threatened. It is difficult to visually distinguish Africanized bees from European honey bees with the naked eye, and only through laboratory testing, can the species be verified.

Africanized bees originate from Africa and were imported into Brazil in 1956 for research where they escaped and have since migrated through South America and Mexico. Africanized bees were first detected in the United States in Texas in 1990 and have since spread to New Mexico, Arizona, California, Nevada, Utah, Oklahoma, Arkansas, Louisiana, Florida, and Georgia.

Coastal ports are major pathways for the introduction of Africanized honey bees. In the past, bee swarms have been intercepted and destroyed by the Department of Homeland Security and USDA

on ships and vessels entering the coastal ports of Mississippi. Since 2007, MDAC has deployed and monitored bee swarm traps with no positive interceptions of Africanized bees.

Based on the information available at this time, MDAC believes this is an isolated incident; however, trapping and surveying will continue in the area through the fall and spring. For additional information, contact MDAC's Bureau of Plant Industry at (888) 257-1285.

Renew Your Membership Now!

Since the last newsletter, MBA's 2012 membership has increased to only 210 members. We hope to see 600 members for 2013! Remember, our organization provides resources and support for you, the Mississippi Beekeeper, and draws attention to the beekeeping industry. Your MBA membership is proof to our legislators that beekeeping is an important aspect of Mississippi agriculture. Please keep renewals and new members coming! Contact Jeff Harris (jharris@entomology.msstate.edu) or Stan Yeagley (candsyeagley@att.net) for a membership application, or visit our website http://mshoneybee.org to download a registration form.

Help Us Update Information for Local Beekeeping Clubs in MS

By Derwin Thrash

I am trying to update the contact information for all of the local beekeeping clubs that exist in Mississippi. New clubs have formed recently, and some older clubs have dissolved. Additionally, the person to contact frequently changes in clubs over several years. I ask that the officers of each local club inform the MBA any time something changes. Collectively, we all need to do a better job in providing current information to new beekeepers as they seek people and clubs that can help them grow in beekeeping. If you can help edit the following list, send your corrections or edits to my email derwin_thrash@yahoo.com.

Local Beekeepers Assoc.	**Contact**
Central MS Bkprs. Assoc.	Walter McKay Ph. 601-856-1882 138 Old Orchard Rd. Madison, MS 39110 mckaywj@yahoo.com

Meeting Date: 3rd Thursday at 7:00 p.m. (except December)
Location: Highway 18 and Springridge Road

Delta Area Bkprs. Assoc.	Stanley Holland Ph. 662-303-0846 231 Blue Creek Rd. Drew, MS 38737 HollandStanley@bellsouth.net

Meeting Date: 1st Sunday at 2:00PM
Location: Location to be determined

East Central MS Bkprs. Assoc.	Derwin Thrash Ph. 601-204-9743 2032 Langs Mill Rd. Forest, MS 39074 derwin_thrash@yahoo.com

Meeting Date: 2nd Saturday at 9:00 a.m.
Location: Steele Baptist Church Family Life Center

Gulf Coast Bkprs. Assoc.	Dean Sellars Ph. 228-588-0856 7617 Carter Rd. Moss Point, MS 39562 dino@sellars.org

Meeting Date: ???
Location: ???

Lafayette Bkprs. Assoc.	Harold Brummett Ph. 662-234-4378 alt. 662-816-8078 25 CR. 4009 Oxford, MS 39655 denmarkmississippi@hotmail

Meeting Date: ???
Location: ???

Marion County Bkprs. Assoc.	D. L. Wesley Ph. 601-736-3272 17 East Jackson St. Foxworth, MS 39486 dwesley39483@msn.com

Meeting Date: 2nd Monday night at 7:00pm (except February)
Location: Foxworth Methodist Church Fellowship Hall

Meridian Bkprs. Assoc.

Gary Smith
Ph. 601-846-0260
P.O. Box 278
Stonewall, MS 39363
gary@accessdrive.net
www.meridianbeekeepers.com

Meeting Date: 1st Thursday of each month at 5:30 p.m.
Location: Farm Bureau's Conference Room at 2408 4th Ave. Meridian, MS 39301

N.E. MS Bkprs Assoc.

Gerald Jetton
Ph. 662-652-3446
20495 Hwy 23 N.
Tremont, MS 38876
mascadine@yahoo.com

Meeting Date: 2nd Tuesday of each quarter at 7:00 PM
Location: Itawamba Co. Extension Office, 304 W.Wiygul S., Fulton, MS 38876

Red Creek Bkprs. Assoc.

Tommy Cowart
Ph. 601-528-9240
1404 Highway 15
Perkinston, MS 39573
lindantommy@att.net

Dr. Judith Breland
Ph. 601-928-5776
214 N. Critz, Suite A
Wiggins, MS 39577
Judith@ext.msstate.edu

Meeting Date: 4th Monday of each month at 7:00 p.m.
Location: Stone County Fair Grounds/ Sunflower Community Center

Southeast Bkprs. Assoc.

Troy Parker
Ph. 601-764-2940
588 Highway 18
Bay Springs, MS 39422
tcparker@bayspringstel.net

Meeting Date: 4th Saturday of each month at 7:00PM
Location: Dixie Electric Power Association, Old Hwy 184, East Laurel, MS

Queen Quality

A Science Brief—*by Jeff Harris*

The question of queen quality arises every few years in the U.S. beekeeping industry. Recent surveys of beekeepers place questions of queen quality at the top of the list of explanations and/or symptoms for diminished colony performance or poor health. The top four complaints about commercial queens are (1) premature supersedure of queens, (2) inconsistent or poor brood patterns, (3) early drone laying, and (4) the inability of colonies to requeen upon loss of an installed queen (van Engelsdorp *et al.* 2008, 2010 and 2011).

The importance of good queens cannot be overstated. There is an often unspoken tenet in beekeeping that improving colony performance is synonymous with improving queen quality. Colonies with the most productive egg-laying queens grow the fastest and store the most honey. Colonies with poor performing queens grow more slowly, and they may fail to store a surplus honey crop. Additionally, it is a common practice to mitigate certain problems such as high incidence of chalkbrood by requeening a colony. The presumed source of genetic problems is removed and replaced with a queen from a genetic source which is not susceptible to chalkbrood. Similarly, perhaps the best way to change the chronically defensive colony of honey bees is to requeen it with a queen from a gentler stock.

If chronic problems in commercial queens occur, failures in one or all areas of queen production may be to blame. These compartments of activity include queen cell production, mating of the virgin queens, and genetic pedigree or history of the stock. In many ways, it is difficult to say which of these has the greater influence on queen quality, and ultimately on the quality of the colony produced by the queen. One can raise queens from highly selected stocks of bees having the best genetics and never attain the promise of those good genes if the cell builders used to produce queens are not optimal or if there are not enough drones available to produce fully mated queens. Poorly mated queens are chemically less attractive to worker bees, and they are often quickly superseded. Additionally, small sized queens derived from poor cell builders will have less stored sperm and often have a shorter lifespan than queens which are raised under ideal conditions.

Dr. David Tarpy (North Carolina State University) and co-authors recently published an assessment of commercial queens that were produced in the U.S. (Tarpy *et al.* 2012). The team purchased 80 queens from 7 commercial producers of queens in California, and they measured various morphological and physiological indicators of queen quality. Queen size was compared among

the different commercial sources by measuring head width, width of the thorax, body weight of the queen at emergence from the queen cell, and volume of the spermatheca, which is the specialized organ in which spermatozoa are stored within the mated queen.

How well queens were mated was gauged by the total number of spermatozoa stored within the spermatheca of each queen. Typically, well mated queens will store between 5 and 7 million spermatozoa. Additionally, sperm viability was measured using differential dyes to indicate live and dead sperm in each spermatheca. Live sperm were stained with a green florescent dye, and dead sperm were stained simultaneously with a red fluorescent dye. The percentage of viable sperm was found by dividing the number of green-dyed sperm by the total number of stored sperm.

The final measurement was an estimate of the number of drones to which each queen had mated. Honey bees have evolved to be multiply mated, and each queen typically mates with *ca.* 15-20 individual (and hopefully, unrelated) drones. The paternity number is an estimate of the number of worker bee sub-families that are sired by different fathers within a colony. Standard DNA genotyping procedures (similar to determining paternity in human children for court cases) were used on a random sample of worker bees to identify the number of patrilines represented within each colony.

The question of multiple mating is extremely important with regards to overall colony health and performance. Multiple mating increases the genetic diversity within the worker population. Each drone fathers a sub-family of workers produced by the queen. Queens that mate with only a few drones will have only a few sub-families of workers; thus, the full range of behaviors or genetic qualities expressed by worker bees that make a colony of bees strong and able to survive various disease may not be fully expressed in such a colony.

Queens mated with *ca.* 20 genetically different drones or more will have the best brood patterns, and they produce pheromone blends that are most attractive to worker bees. In addition, mating with *ca.* 20 drones or more assures the highest level of

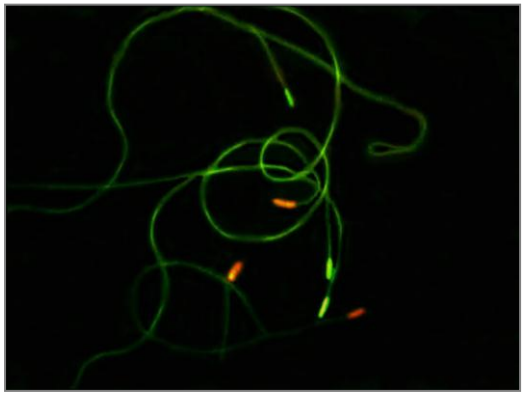

Figure 1. Sperm viability is estimated using different fluorescent dyes. Live sperm stain green, while dead sperm stain orange-red. (Photo from M. A. Taylor at the University of Guelph, Ontario, Canada)

stored spermatozoa within a queen, and queens with the highest amounts of stored sperm tend to live longer. In addition, queens mated with high numbers of drones will produce colonies with lower pathogen loads (Tarpy 2003), presumably because they have a greater arsenal of beneficial genes that help the colony resist diseases. Similarly, it has been recently shown that high multiple mating in honey bees increase the abundance and variety of beneficial microbes (e.g. those that convert bee pollen to bee bread via fermentation) within the hive (Matilla *et al.* 2012).

The Tarpy research team found statistically significant variation in size of queens among the 7 commercial suppliers. This variation was found in all measures of queen size including head width (avg. 3.45 ± 0.23 mm), width of the thorax (avg. 4.34 ± 0.23 mm), body weight at emergence (avg. 218.7 ± 20.7 mg) and volume of the spermatheca (avg. 0.94 ± 0.18 mm^3) (all reported as mean ± standard error). Although queen size varied among producers, there was no significant variation in number of stored sperm (avg. 4.37 ± 1.45 million per queen), and there was only a weak statistical correlation between size of queen and amount of stored sperm (a stronger correlation was found by Delaney *et al.* 2011). Although the average number of stored sperm was below 5-7 million, the authors considered the queens in this study to be more than adequately mated queens.

The total numbers of stored sperm did not vary significantly among producers, but there were significant differences in sperm viability among

producers. One producer in particular had average sperm viability just under 60%; however, the overall average viability for all queens (83.7 ± 13.3 % viable sperm) was considered respectably high.

Finally, the total number of drones (avg. 18.2 ± 4.8) that had mated with each queen was not significantly different among queen producers. Thus, the overall conclusion is that despite significant variation in the size of queens from different producers, the mating success of queens among the different producers was similar.

Figure 2. A well mated queen produces pheromones that attract a worker court, stimulate comb production, and inhibit queen rearing and worker ovary development. All of these processes help sustain basic colony order and function. (USDA, ARS stock photo)

This study found that mating success in commercially produced queens was relatively high among several commercial queen producers. Variation in size of queens (one measure of quality) was higher within each of the different operations than the variation found between different producers. Thus, the researchers suggest that overall queen quality could be improved industry-wide if each of the producers culled the lower 15% of queens that they produce. This recommendation is more likely to improve queen quality than wholesale changes in production methods. Additionally, the overriding conclusion is that the perceived reduction in queen quality is not related to poor mating of queens. If the perceptions of reduced queen quality are real, other factors related to either genetics or to environmental effects on queen physiology after mating has occurred must be at the root of the problem.

Delaney, D. A., J. J. Keller, J. R. Caren, and D. R. Tarpy. 2011. The physical, insemination, and reproductive quality of honey bee queens (*Apis mellifera*). *Apidologie* 42: 1-13.

Mattila, H. R., D. Rios, V. E. Walker-Sperling, G. Roeselers, and I. L. G. Newton. 2012. Characterization of the active microbiotas associated with honey bees reveals healthier and broader communities when colonies are genetically diverse. PLoS ONE 7(3): e32962. doi:10.1371/journal.pone.0032962.

Tarpy, D. R. 2003. Genetic diversity within honeybee colonies prevents severe infections and promotes colony growth. *Proceedings of the Royal Society London Series B-Biological Scien*ce 270: 99-103.

Tarpy, D. R., J. J. Keller, J. R. Caren and D. A. Delaney. 2012. Assessing the mating 'health' of commercial honey bee queens. *Journal of Economic Entomology* 105(1): 20-25.

van Engelsdorp, D., J. Hayes, R. M. Underwood, and J. Pettis. 2008. A survey of honey bee colony losses in the U.S., fall 2007 to spring 2008. *PLoS ONE*. doi:10.1371/journal.pone.0004071.

van Engelsdorp, D., J. Hayes, R. M. Underwood, and J. S. Pettis. 2010. A survey of honey bee colony losses in the United States, fall 2008 to spring 2009. *Journal of Apicultural Research* 49: 7-14.

van Engelsdorp, D., J. Hayes, R. M. Underwood, D. Caron, and J. Pettis. 2011. A survey of managed honey bee colony losses in the USA, fall 2009 to winter 2010. *Journal of Apicultural Research* 50: 1-10.

Upcoming Events

American Beekeeping Federation: Make your plans now for the 2013 North American Beekeeping Conference & Tradeshow, which will be held January 8-12, 2013, at the Hershey Lodge® in Hershey, Pennsylvania. Visit www.abfnet.org for more information.

The 44th Annual Convention of the **American Honey Producers Association** will be held at the Sheraton San Diego Hotel & Marina in San Diego, California, January 8-13, 2013. Visit www.americanhoneyproducers.org for more information.

Roger Bemis will teach the basics of Queen Rearing at the public library (www.foleylibrary.org) in Foley, AL on March 1-2, 2013. Cost for the course is $50.00. If interested contact Roger at bemisroger@yahoo.com or 251-213-0168.

Buy and Sell

Open mated VSH Queens for sale. Breeders purchased from Glenn Apiaries and Adam Finkelstein. Queens kept in mating nucs 3 weeks until laying well. Free marking of all queens. Queens are $20 each. Shipping will be by express mail every Monday starting the first Monday in April. Shipping fee is $20 per order with free shipping on orders of 10 or more. Contact Johnny Thompson at broke_t@bellsouth.net or call 601-562-0701.

Electronic Newsletter Reaches You Faster

The MBA electronic newsletter is available to members and will get to you faster than regular mail. The quality is also better than the hardcopies we mail out. Pictures are in color and are very sharp. As well as being more convenient to members, the electronic newsletter helps save on the labor and expense involved in preparing and sending our members hardcopies. Contact Jeff Harris (jharris@entomology.msstate.edu) to submit your e-mail address and request electronic delivery.

Test Your Knowledge of Honey Bees
(True or False)

_____ Worker bees must contact queen substance, or 9-ODA, in order for their ovary development to be inhibited.

_____ *Apis dorsata* is known as the Giant Honey Bee, and its nest size often exceeds 100,000 individuals.

_____ Western honey bees were well established in the United Sates by 1622.

_____ Most races of western honey bees have laying workers that produce drones parthenogentically (asexually).

_____ The honey bee's heart, being a closed system, can generate a substantial blood pressure during a contraction.

_____ A worker in the queen's court will contact her for 20-30 minutes during a single encounter before interacting with other bees in the colony.

_____ A worker from an Africanized honey bee colony can deliver a fatal sting to the average person.

_____ European bees are less likely to abscond a nest site due to poor food resources than Africanized bees.

_____ Queen rearing begins 10-12 days before a primary or reproductive swarm.

_____ Africanized bees convert more of their food resources into brood than do European bees.

Answers to these questions and a new set of questions will be provided in the December 2012 newsletter.

Answers to last month's questions:

False – the original host for *Varroa* mites is *Apis cerana*

True – this can be debated, but Italian honey bees are good starter bees for most people

False - not sure what crop is the major spring-summer flow in MS, but corn does not provide much nectar to bees

Either answer – the data is mixed; some beekeepers claim that bottom supering gives higher yields, while others show no difference between the two methods

False – 60 lbs. is the upper limit of food needed for surviving the winter; 35 lbs. is probably the minimum necessary to survive the winter (more is better, but you may have old honey remaining after the winter)

False – although consumers do not like it, granulation is not spoilage.

False – unmanaged, feral colonies almost never have enough space to yield more than 30-40 lbs. surplus honey (probably less than that)

False – parasitic mite syndrome is a collective group of viral diseases associated with *Varroa* mites (not tracheal mites)

True – terramycin cannot reverse American foulbrood; however, it can reverse European foulbrood.

True – vegetable oil can be an effective treatment against tracheal mites – it confuses the ability of mites to smell the hydrocarbons on young bees, which they need to invade (the prothoracic airways or breathing tubes) for reproduction.

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

"Bee News & Views" is brought to you by the following:

MISSISSIPPI STATE UNIVERSITY EXTENSION SERVICE

MSU Department of Biochemistry, Molecular Biology, Entomology and Plant Pathology

The Song of Bees

By Kirsten Traynor

On a midsummer day the heat rises
snaking upwards in waves that distort the landscape
until the distance mirrors a mirage
and we lose all sense of what we know.

Seeking solace from the sun we retreat,
find shade beneath an old oak tree
beside a buzzing honey hive,
where we watch the nectar laden ladies struggle in,
weighed down from smelling too many flowers.

As we watch, we can not help but wonder
what bloom did they feast on today?
Subtle scents to be fanned into honey gold, perhaps?
Or potent, heady brew that will dry down,
molasses brown, thick and pungent?

Standing in the shadow of an ancient canopy
unfurled brand new this spring
we can take a moment to pause,
ponder a life so different from our own,
a life we think we understand,
but can never fully grasp.

Beauty exists in these unknowns-
our imaginations soar with the nubile queen
seeking out the light on her single mating flight,
and though our passions soar with the young queen
we admire her working sisters too,
the countless daughters that will follow soon,
for they remind us that hard work
bears sweetness, liquid gold.

As the summer seeps away,
our oak's lush green canopy changes hue,
slips away leaf by leaf
leaving us to admire aged bark standing stark
against the snow white fields of winter.

The wind howls cold,
sneaking through chinks and window panes,
but in defiance we spoon into our honeyed gold,
crystallized into creamy smoothness,
nourishing our souls,
as we remember last year's flowers
and our bees

For they are surely ours,
hard toiling ladies
we thank in our hearts
for their delicate confection
and the dream of the all the flowers yet to come.