

OCT 2007  
**Bee Culture**



**INSIDE IN OCTOBER**

CCD NEWS

NEW PRODUCTS

TWO DECADES OF VARROA

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A newly emerged bee reflects on CCD while standing on the surface of a DNA gel. The controversy surrounding the science of CCD, bees from Australia, a new virus, and what beekeepers can do begins on page 41. (USDA photo by Peggy Greb)

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#### Subscription Information

U.S., one year, \$25; two years, \$48. Newsstand price: \$4.99. All other countries, (U.S. Currency only), \$15.00 per year additional for postage. Send remittance by money order, bank draft, express money order, or check or credit card. Bee Culture (ISSN 1071-3190), October 2007, Volume 135, Issue 10, is published monthly by The A.I. Root Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices.

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#### Advertising

For information on advertising contact Dawn Feagan at 800.289.7668, Ext. 3220

**POSTMASTER: Send address changes to BEE CULTURE, The A.I. Root Co., 623 W. Liberty St., Medina, OH 44256**

Opinions expressed in articles or columns in this magazine are not necessarily those of the Editor or Publisher.

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# Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING  
OCTOBER 2007 VOLUME 135 NUMBER 10

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## Fall Reading From Bee Culture's Book Shelf

### 1926 Honey Plants of North America

John Lovel. A reprint of the original Honey Plants book, published by A.I. Root. Nearly 1,000 plants, 408 pages, paperback. Measure 6" x 9". Black and white. X74P **\$19.95**

### Honey Bee Pests, Predators & Diseases

Everything that bothers bees is covered in this scientific text. 22 chapters, 11 appendices, and 32 authors. Gold medal winner in 1999. Editors: Roger Morse and Kim Flottum. 718 pages, hard cover, black and white. 6" x 9" X59 **\$43.00**

### Observation Hives

The only book of its kind. How-to set up, manage and use an observation hive. Many useful experiments and tips. Webster/Caron. 112 pages, spiral bound for easy use. Soft cover, black and white, 8½" x 11". X87 **\$24.00**

### What Do You Know? - SPECIAL

Written by Bee Culture regular Clarence Collison. Over 1,500 questions and answers from his Bee Culture column. 430 pages, black and white line art, full 8½" x 11" big. X2 **\$20.00**

### Backyard Beekeeper

This introductory book is aimed at people who are interested in making creams and lotions and cooking with honey, and are curious about having bees in the garden. Kim Flottum, 169 pages, color, soft cover. X141 **\$25.00**

### 41st Edition of ABC & XYZ - NEW

The Brand New 41st Edition, over 1,000 pages, over 1,000 photos - most in color. Updated and all new - edited by Dr. H. Shimanuki, USDA Bee Lab Research Leader, retired and Kim Flottum, Editor of Bee Culture Magazine. X5B **\$59.95**

### From Our Authors -

#### Backyard Beekeeping - SPECIAL

Written by James E. Tew this 8" x 8", soft cover book is filled with beautiful color photos. It is for beginners with an emphasis on weather and management in the SE part of the U.S. X129 **\$10.00**

#### Increase Essentials - NEW

Bee Culture's Larry Connor explores the fundamentals of starting new, healthy and productive hives. Techniques, biology, regional differences, swarms and packages are covered. Glossary. 128 pages, soft cover, black & white. X163 **\$15.00**

#### From Where I Sit - SPECIAL

Written by Mark Winston, this unique collection of articles is gleaned from his column in Bee Culture magazine. All have been edited slightly, and pulled from several years to make a smooth flowing and enjoyable read. 171 pages. Soft cover, black and white. 5½" x 8½". X61 **\$15.00**

#### Honey Bee Biology

The best book on honey bee biology and how-to beekeeping for the beginner or intermediate level there is. Easy to use, perfect for classes and short courses. Dewey Caron, 355 pages. Hard cover, black and white, 9" x 12". X70 **\$40.50**

The price includes shipping in the U.S. For foreign postage please contact Bee Culture Magazine.

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## Kudos For August BC

Today I received the August 2007 issue of *Bee Culture* and, as usual, I started moving through the magazine from the back to the front. First, my attention was snagged by the drawing of an old robbing tent (pg. 52) and I read the last column, then moved forward column by column, turned the page and began at the beginning; same treatment for the picture showing a roll of wire in front of a hive (pg. 46); recycling old comb (pg. 40); photo of bees on pollen (pg. 38); an upper box moved to create additional ventilation (pg. 30); and last, on page 25, a bucket of dry brewers yeast for the bees.

This was the most exciting issue for me because the articles represented what I would consider respectful, common sense, all natural beekeeping. Treating the bees as you yourself would want to be treated. Thank you.

Tina Long  
Chesterfield, Virginia

## To Keep Bees Or Not

I didn't keep bees years ago! I have listened to beekeepers who did and heard stories of them setting up their hives in Spring, watching the colonies grow, handling any swarms that appeared, then removing the honey after the early nectar flow and again in Fall. Feeding was done to increase the bee population and no harsh chemicals were used to keep mites under control.

I started three years ago under the tutelage of my brother Gary. He set me up with two colonies, giving me the hive boxes, frames and foundation, bees and lots of expert information. He had me go with him to the Summit County (Ohio) Beekeepers Association where I met many other beekeepers. He recommended I purchase a subscription

to *Bee Culture* magazine, one I have kept ever since.

I am now able to read with understanding about 1/2 of the articles by authors writing for *Bee Culture*. Reading articles from other beekeepers in the Letters portion I find I am not alone nor all that ignorant.

My real purpose for writing this letter comes from the fact I have been up and down on a decision to continue to keep bees. In the past couple years I have been having a harder time keeping my colonies alive, let alone producing honey in any amount. I have tried to keep six hives going with varying success.

Recent articles and newscasts are calling the honey bee an endangered species. In some respects I agree! Honey bees can be independent (if the colony is doing well) and very dependent (if it isn't).

I have one 'super hive' that wintered over from last year out of seven. Six died off! I've made several early Summer splits from my super hive. Some have made their own queen and others were given queens purchased from a local dealer. I also purchased two Russian queens with 3# of bees each this Spring. One is now dead! I had no swarms this year, possibly because I was removing frames of bees for my splits.

Overall, I figure I have purchased or created 12 colonies this year, currently having six hives that seem to be surviving. *At least, last time I looked!*

Last year I fussed with my hives! This year I am taking the attitude Dr. Jim Tew has taken by leaving the hives alone as much as possible and not looking for queens, enough brood, stores or disease. I still feed sugar/water, substitute pollen, medicine if I see a need. I am not using herbicides, insect killers like last year and then only on a

## Bee Culture Information



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Suggestions

Comments

day there is no wind. I have thrown away lots of old frames and foundation, cleaning and dousing everything with Clorox, then rinsing after a few days. I am trying to make as clean an environment as possible for my bees.

So, in closing, knowing how independent the bee society can look to the keeper at times, I also understand that today, bees can not live alone. They need my help! With all the new illnesses and diseases around, my bees need me and with the help of *Bee Culture* magazine, articles I can understand and employ, beekeepers whom I talk to in the SCBA, especially brother Gary, my bees and I will see this situation through together!

Bill Tompkin  
Cuyahoga Falls, OH

## Bee Buddies

Over a year ago, through this publication, we began a kid's club called **Bee Buddies**. We wanted an outlet, especially for kids, to share stories, questions, artwork, poems and photos about honey bees.

We now have over 325 Bee Buddies in 35 states and two countries. We would like to have Bee Buddies in all 50 states. Do you know any kids in the following

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states who would like to be a Bee Buddy?

Alabama, Alaska, Delaware, Georgia, Hawaii, Idaho, Illinois, Missouri, Montana, Nebraska, Nevada, North Dakota, Oregon, Utah, Wyoming

To become a bee buddy send two self addressed stamped envelopes to: Bee Buddies, PO Box 2743, Austin, TX 78768. Include: name, address, age, birthday and E-mail if available.

We will send out a membership card, a prize and a birthday surprise!

Here are some ways you can be involved in this fun beekeeping community for kids:

- Sign a child up to be a bee buddy.
- Volunteer to design and/or maintain a website.

- Share your ideas and thoughts.
- Make a donation for prizes and print costs. Tax-deductible donations can be made to the Foundation for the Preservation of Honey Bees at P.O. Box 1337, Jesup, GA 31598-1337 or call 912-427-4233. Specify Bee Buddies.

Our mascot Bee B. Queen says, "Go to the Kid's Bee Page in the center of this magazine to learn more."

Kim Lehman  
Austin, TX

## State of Denial

Thank you, the staff and the publisher for your excellent magazine.

I have followed the various comments about colony collapse syndrome. I gather the exact cause is still unknown except possibly for several environmental factors that occur simultaneously with outbreaks of the condition. Perhaps investigators are, like many of us, in a state of denial, that what we are seeing is a precursor of a collapse of our planet's capacity to tolerate further abuse or depletion of our

resources. Resources that were formerly thought to be inexhaustible or indestructible.

I have been a beekeeper off and on for over 60 years. My best nectar source in northern California, as were the clovers in Ohio, are no longer as productive as they once were. I no longer market honey since the yellow star thistle has virtually ceased to produce. At first I attributed the decline to physiological problems with the plant but with the subsequent appearance of colony collapse this may not be entirely correct. Colonies of normal strength did not forage during full bloom of the thistle. Yet, at some 7,000 feet altitude in nearby Lassen Volcanic National park isolated feral honey bees were fairly swarming over stands of Rabbit Brush along the roadside.

I used the term denial earlier, a condition of human behavior in which we tend to reject the truth about the consequences of our past and present actions that are self destructive. I don't presume to be a psychologist, sociologist, philosopher or apicultural scientist so please excuse my prognostications

As Fall arrives and Winter draws nearer, Can Spring be far behind?

- Percy Bysshe Shelley

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should they prove unjustified.

Beekeeping conditions may become better or worse regardless of whether we determine the exact cause of the present woes.

Larry Goltz  
Redding, CA

## AHPA & ABF - 2008

My compliments to the leadership of ABF and AHPA. I wrote several years ago expressing the need to have the Industry speak as one voice on the many issues it faces.

Sacramento! Or is it California here we come? Here will be an opportunity to make the necessary compromises, and set aside some of those concerns which divided the beekeeping fraternity such a long time ago.

John Straub  
Winnetka, IL

## How Long Do Bees Live?

Can an individual honey bee live longer than its time scale laid down by nature?

When we as a beekeeper make an artificial swarm, we remove the original colony to another site and introduce a new set of frames with the exception of the frames with eggs - brood & stores.

The bees that return from foraging will return to the original site, now the new hive. They in turn can and do revert back to the duties of feeding larvae, cell building, house bees etc.

How or what allows this to happen?

In part the answer is a reversal of the 'female-specific glycolipo-protein yolk' named vitellogenin. Vitellogenin appears to be a major player in the regulatory machinery that controls the aging of worker bees.

Whilst they are growing older the bees from the first day of emergence from the cell, begin to process Juvenile Hormone, (JH), which is a versatile hormone. This hormone plays a role in many aspects of honey bee development, reproduction and behavior.

In the early days of development JH represses vitellogenin (Vit) so the hypopharyngeal glands can produce 'brood food' & 'royal jelly'.

From the transitional period

of house bee to forager the role of JH and vitellogenin are reversed. The need for more physical endurance the greater the amount of vitellogenin is required. An offshoot of (Vit) is that it produces zinc through the hemolymph and the lack of zinc induces death.

Now comes the reversal due to the artificial swarm.

So now the honey bee has reverted to house bee duties, and the JH titer has become greater than the Vit titer, but once these duties have been performed and new brood are reared then the honey bee reverts back to a foraging bee. The greater the Vit and the less JH.

Just think if that individual bee was to perform the task of house bee to forager, then revert back to house bee (through the hive being moved) then on to forager. Could this happen more than once to an individual bee? Think about it.

This concept of epigenetic regulation of aging in the honey bee goes a lot deeper than I have mentioned.

I am not a scientist, but I want to know more about the honey bee than just how to obtain honey from my colonies. This little insect is a marvel when it spends a half its life (Winter bee) in darkness surrounded only by smells and other bees.

Now that brings me on to the difference between the Winter and Summer bee. Maybe another time.

Mo Vaughan  
England

## Blue Ribbon

Every beekeeper should be doing something to encourage either beekeeping or to make the public aware of the current problems associated with beekeeping.

Even though we are first-year

beekeepers in July my wife Mary and I took our observation hive to our local library (Groton, VT) for an afternoon about bees. I had prepared a slide show, took some equipment, clothing and some books along too. At the end of the slide show I raised the wooden partition showing the bees behind the plastic window and heard lots of "Oohs and Aahs" from those in attendance. (There were more adults than children.)

In late August we entered our honey at the Caledonia County (Vermont) Fair and won a blue ribbon for the "light taste and other characteristics of the honey." Because we have two colonies of fantastic bees it looks like we are beekeepers and not just bee havers. So if you didn't enter any this year mark it on your calendar to do it next year.

H. Paul Berlejung  
Groton, VT



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## THREE BANDED ITALIAN QUEENS



# INNER COVER

**A** recent AP news release talked about the decline in the numbers of hunters and fishers in the U.S. over the last 10 years. The article discussed numbers, reasons and the reactions of hunting and fishing groups to the trends. I found it interesting that many of the reasons that these groups are seeing fewer participants are basically the same reasons there's been a decline in beekeepers. Of course there are far more people who hunt and fish

than keep bees, but the similarities are scary. Now I don't have an agenda about hunting or fishing, people who do those activities, or the groups they belong to. I grew up with a fish pole in both hands and a dad who taught me how to use them, and took up small game and bird hunting with co-workers after graduating from high school. I have a history in the water-woods-and-ammo world, though, interestingly, have given up both of these activities for the exact reasons the news release listed.

The U.S. Fish and Wildlife states that the number of hunters 16 and older declined by 10% between 1996 and 2006 - from 14 million to 12.5 million. The drop was most acute in New England, the Rocky Mountains and the Pacific states, said the report. The primary reasons given were loss of land to urbanization, the perception by many that the cost in time and money has become too high, and that fewer hunting families mean fewer children recruited to the activity.

There are regional differences, of course. Nearly 20% of the residents in Montana and North Dakota over the age of 16 hunted last year, while only 1% of those in California, Connecticut, Massachusetts and New Jersey did the same. Nationally, 5% of the 16 and over population hunted in 2006, down from 7% in 1996, said the report. Meanwhile, the number of people who fish has dropped 15% in the same period said the report, from 35.2 million to 30 million, and for basically the same reasons.

Though internal politics of hunting and fishing groups is anything but smooth, overall public support for these activities remains strong, as evidenced by the antics and claims of presidential candidates in past and current campaigns. Too, hunting and fishing groups are striving to increase their numbers by holding introductory classes for children that don't have family experience, and especially for women. Not surprisingly, and almost exactly like beekeeping, more than 90% of U.S. hunters and fishers are male, and roughly 96% are white.

I doubt there is a connection here that could be used politically, other than having these folks support the pollinator funding currently in congress. That would be because all those animals they hunt eat the plants and seeds and fruit our honey bees pollinate. Or don't pollinate, because there aren't as many of them as there used to be because of, why? Well, the loss of land, the increased expense in time and money, and that there are fewer people who have family experience in beekeeping. If you hunt or fish, perhaps you can harness some of this similarity to our advantage, and yours.

You may or may not be aware of the fuss going on about the CCD paper published in Science magazine early in September. Jim Fischer's articles on the subject, plus the paper itself, plus all the supporting data, plus additional information on CCD and other related topics have been on our web page since the day the paper was released. And, there's some of that in this issue if you missed the web page information. These articles cover much of the discussions and controversy you will encounter on other web pages, discussion

lists and blogs.

If you find all of this interesting, for the sake of science, for the sake of the scientists, for the sake of world trade, almond pollination, or, goodness, for the sake of your bees, then pay attention to all of this. But, and you should pay attention here, don't let this distract you from what's really important.

What could be more important? Well, if you've been listening you know the work isn't close to being done. They don't know, really, what the cause of CCD is, they don't know what to do about it, they don't know how to treat it, and they don't know what not to do, either. They don't know it all, yet. But they do know some things. And those things are pretty interesting. Interesting enough to keep them looking until they do know more, that's for certain. As long as some money comes along. Don't forget to keep pushing for that money.

The article on what beekeepers can do bears mentioning here, and bears reading. But space and time, by necessity, cheated us of space on that page, so I'm supplementing it a bit here, even though it's October.

The connection between CCD  
*Continued on Page 16*

## Fewer Guns; Your Bees And CCD; Friends Who Have Gone.

# New - Reading & Watching

*THE ABC & XYZ of BEE CULTURE*, an encyclopedia pertaining to the scientific and practical culture of honey bees, written and edited by Dr Hachiro Shimanuki, Kim Flottum and Ann Harman. 41st edition, 2007, published by the A I Root Company.

It was a long time coming, it has arrived at last, and the wait was worth it. Weighing nearly one and a half kilos (heavy enough to keep a hive roof in place on a windy day) this 900+ page volume is a beekeeping giant. It is modern and fresh looking, yet it retains some delightful images from the past which remind us of its past in its many editions. The design is both bold and clear, pictures, charts and diagrams are well-grouped together and given plentiful space, and the addition of color enhances the pages enormously.

I also like the way that the various topics seem to be more inclusive than in previous editions, which means less to-ing and fro-ing in the book. You also need to be accurate in your search. I spent ages looking for 'hive beetles' in both the main section of the book as well as in the index with no success. The fault was mine, of course; I should have checked for 'small hive beetle' - and there I found it in its appropriate alphabetical place.

Something I often do when I get

a book to review is to check on subjects being covered in the current issue of the journal I am working on. What I like to find is that the information I have in my head is still correct, ie my memory is not failing me yet, or to be introduced to some new facts or a different line of thought on a topic. I looked up 'Foraging behavior' and found an interesting graphic created by Kim Flottum, which relates the distance travelled by any bee to the amount of foraging area available to it: a bee flying five miles would have 50,240 acres of land to forage in, or an incredible 79 square miles. A nightmare for organic beekeepers!

I also checked up on pollen substitutes and supplements and found a simple and interesting investigation which beekeepers could try out to see which type of food the bees preferred. This was retained from an older version of the book and I was pleased to see it there.

Generally, a beekeeper is most likely to look up information on beekeeping history, anatomy, the composition of honey, how to make up a colony and so on. The book remains much of its American charm, (with many interesting profiles of beekeepers and coverage of the Root family), though it is a suitable and up-to-date, reader-friendly reference work for beekeepers anywhere.

The authors and editors are well known experts in the field of beekeeping and of international repute - just to list their various positions held and services to beekeeping would occupy many columns of our journal. Whilst Dr Hachiro Shimanuki is now retired from full-time beekeeping work, Kim Flottum is the editor of *Bee Culture* and Ann Harman, their co-writer, spends much of her time on overseas aid projects. Both Kim and Ann contribute regularly to the *BKQ*. How they found the time to get together such a work one can but wonder, but altogether it is a commendable achievement.

The bad bits? Some of the photos are dreadful. However, the book is worth every cent of its \$59.95 U.S. price tag and a good contender for an Apimondia Gold.

John Phipps

Editor: *The Beekeepers Quarterly*



## NEW DVD

Instrumental Insemination Of Honey Bee Queens. With Susan Cobey.

This new release on the technique of instrumental insemination of honey bee queens

is a 30-minute, instructional DVD, bilingual in English and Spanish. It is designed to provide easy visualization of the insemination procedure, each step in the process is described and demonstrated.

The goal is to encourage beekeepers to use instrumental insemination to maintain and select for important characteristics.

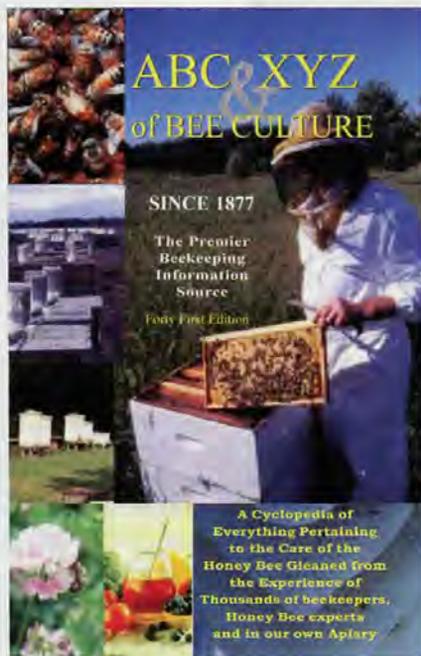
The procedure is presented in step by step detail and sectioned in chapters for easy review and quick reference. The chapters include: preparations of queens and drones; equipment choices; eversion of the drone; semen collection; positioning the queen; opening the queen featuring various sting hooks and forceps; bypassing the valve-fold; insemination of the queen; marking & clipping the queen; dissection of the spermatheca; and methods of shipping & storing semen.

The DVD covers queen introduction methods, reviews studies of queen performance compared to naturally mated queens and highlights the advantages of being able to make a wide range of specific crosses.

The chapters conclude with a summary of important points. Trouble shooting sections are devoted to potential problem areas, such as; testing the maturity of drones; avoiding mucus during semen collection; and bypassing the valve-fold of the queen. This is an excellent teaching tool for self-learning, provides a review for improving techniques and will enhance lectures and demonstrations.

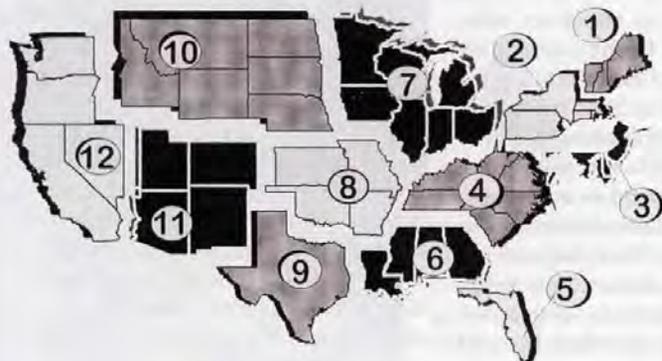
Susan Cobey brings more than 25 years Instrumental Insemination experience to this DVD.

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# OCTOBER - REGIONAL HONEY PRICE REPORT

## What's Bugging Your Bees? Across All Regions



Problem	Year				
	2003	2004	2005	2006	2007
Winter Weather	-	-	-	7	6
Spring Weather	-	-	-	2	3
Summer Weather	-	-	-	6	4
Varroa	1	1	2	1	1
Queens	2	3	3	3	2
Small Hive Beetle	8	7	10	4	7
Tracheal Mites	3	2	4	5	5
Low Prices	4(Tie)	5	5	8	8
Chalkbrood	4(Tie)	4	6	9	9
Skunks	5	8	8	10	10
Bear	7	9	9	11	11

1 = Worst Problem; 11 = Least Problem

Each year we poll our reporters to measure the degree of difficulty a variety of problems are causing. We tend to modify the survey on occasion as old problems go away – resistant American foulbrood, for instance, now that a new treatment is available – and add or refine new areas of trouble. We focused more on the weather the last two years than in years past because it seems to be more important.

If you teach a beginner's class the information here for your region is important. What you teach as important can make, or break new beekeepers.

Below is the score for each problem by region for the last two years, along with the rank of that problem. The scores are telling. The smaller the score, the worse the problem.

T = Tie

Rank	Region 1		Region 2		Region 3		Region 4		Region 5		Region 6		Region 7		Region 8		Region 9		Region 10		Region 11		Region 12	
	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007
Tracheal Mite	6	4T	6	6	3	5T	3	1	1	3	6	6	5	1	6	8	10	6	4	6	4	4T	3	2
Queens	3	1	2	1	4	4T	5	4	4	6T	4	3	3	3T	1	3	4	2	2	1	3	2	2	3T
Varroa	1	2	1	2	1	2	1	3	2	2	3	5	2	4	2	5	3	5	1	2	3	1	1	1
Small Hive Beetle	9	9	10	7	2	4T	6	5	1	1	2	1	9	7	5	7	6	1	9	3T	5	8	10	10
Spring Weather	2	6	2	3	3	3	2	2	6	7	1	2	1	2T	3	2	1	3T	3	3T	1	3T	4	6
Winter Weather	4	8	3	4T	6	5T	7	6	8	6T	8	7T	7	2T	8	4	5	4	6	5T	2	3T	7	5
Summer Weather	5	4T	4	8	5	6	4	8	5	4T	5	7T	4	5T	2	6	2	7	7	8	6	7T	8	7
Low Prices	7	5	5	5	3	7	8	7	3	4T	7	9	6	6	4	10	8	8	6	5T	5	6	6	8
Chalkbrood	5	7	8	9	7	9	9	9	4	9	9	10	8	9	7	11	7	10	5	11	6	7T	5	9
Bears	10	10	9	10	9	8	11	10	7	8	11	8	11	8	9	9	11	9	8	7	8	5	11	4
Skunks	8	3	7	4T	8	1	10	4	7	5	10	4	10	3	8	1	9	3T	7	4	7	4T	9	3T

### REPORTING REGIONS

### SUMMARY

### History

	REPORTING REGIONS												SUMMARY		History	
	1	2	3	4	5	6	7	8	9	10	11	12	Range	Avg.	Last Month	Last Year
<b>EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS</b>																
55 Gal. Drum, Light	1.05	1.35	1.00	1.21	1.21	1.15	1.13	1.20	1.15	1.03	1.14	1.17	1.00-1.35	1.15	1.07	1.06
55 Gal. Drum, Ambr	1.02	1.00	0.95	1.22	1.02	0.97	0.99	1.02	0.79	1.02	1.09	1.10	0.79-1.22	1.02	0.93	0.99
60# Light (retail)	113.54	122.00	120.00	110.75	110.00	115.00	117.20	105.90	110.00	113.54	119.33	115.25	105.90-122.00	114.38	114.77	111.89
60# Amber (retail)	109.86	113.33	112.00	108.75	109.86	110.67	118.00	125.00	109.15	109.86	106.67	119.70	106.67-125.00	112.74	109.76	105.89
<b>WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS</b>																
1/2# 24/case	62.59	57.98	50.00	42.62	62.59	52.25	39.39	62.59	62.59	65.76	54.40	96.50	39.39-96.50	59.11	51.24	46.35
1# 24/case	60.00	68.53	67.20	69.53	72.00	69.70	72.72	58.96	60.95	77.76	72.20	92.32	58.96-92.32	70.16	70.12	67.21
2# 12/case	71.66	63.72	61.80	65.20	72.00	65.60	64.77	72.00	56.50	57.84	52.80	77.04	52.80-77.04	65.08	60.30	58.20
12.oz. Plas. 24/cs	64.72	67.34	49.30	61.76	64.72	62.00	60.66	50.08	53.20	47.14	54.50	62.00	47.14-67.34	58.12	55.33	53.63
5# 6/case	66.00	70.99	71.20	61.88	68.97	63.50	71.99	70.00	60.00	56.43	58.50	84.50	56.43-84.50	67.00	68.74	60.85
Quarts 12/case	97.89	122.18	112.20	89.76	97.89	78.42	91.12	78.60	102.00	120.00	78.89	105.00	78.42-122.18	97.83	97.47	90.26
Pints 12/case	56.43	60.98	66.00	62.00	56.43	49.00	51.20	47.07	66.00	51.84	46.60	58.50	46.60-66.00	56.00	57.15	53.11
<b>RETAIL SHELF PRICES</b>																
1/2#	3.00	2.76	2.22	3.07	1.69	2.63	2.57	2.30	2.80	2.35	2.77	4.50	1.69-4.50	2.72	2.78	2.44
12 oz. Plastic	3.52	3.82	3.00	3.36	3.15	3.42	3.19	3.56	3.26	2.78	3.42	4.18	2.78-4.18	3.39	3.48	3.24
1# Glass/Plastic	3.75	4.40	4.13	4.63	3.85	4.05	3.67	4.32	4.11	3.99	4.49	5.64	3.67-5.64	4.25	4.31	3.98
2# Glass/Plastic	7.75	7.93	6.80	6.73	6.69	6.56	6.44	7.83	6.62	6.45	6.88	10.00	6.44-10.00	7.22	7.19	6.63
Pint	6.64	6.58	6.50	6.25	5.79	5.33	5.61	5.41	5.67	7.17	5.08	7.00	5.08-7.17	6.09	6.09	5.99
Quart	12.04	11.98	10.25	9.25	7.89	8.45	9.19	10.12	9.83	16.50	8.27	13.40	7.89-16.50	10.60	10.26	9.84
5# Glass/Plastic	14.50	14.36	15.65	14.24	23.00	15.00	13.65	17.00	15.00	12.72	13.68	19.33	12.72-23.00	15.68	16.18	14.70
1# Cream	4.75	5.81	5.45	5.32	5.83	3.80	5.34	4.20	5.83	5.55	4.60	6.17	3.80-6.17	5.22	5.13	5.05
1# Cut Comb	8.60	6.88	5.19	5.35	8.60	4.63	7.30	4.25	8.60	2.00	9.00	7.58	2.00-9.00	6.50	6.12	5.43
Ross Round	6.45	3.97	4.97	4.88	6.45	3.25	5.50	5.00	6.45	1.02	6.33	8.50	1.02-8.50	5.23	4.91	5.11
Wholesale Wax (Lt)	2.75	2.34	1.83	2.42	2.96	2.17	2.18	2.00	2.25	6.00	2.53	2.85	1.83-6.00	2.69	2.66	2.71
Wholesale Wax (Dk)	1.75	1.93	1.70	1.02	1.02	1.00	1.18	1.25	1.95	3.02	2.04	2.00	1.00-3.02	1.65	2.07	2.28
Pollination Fee/Col.	90.67	80.67	52.50	45.80	90.67	48.00	45.50	60.00	90.67	90.67	22.00	112.00	22.00-112.00	69.09	67.99	55.38

# Tom Ross & Ross Rounds

Lloyd Spear

*Tom was so caught up in this new way of producing comb honey he quit his job, built the molds and Ross Rounds came to be.*

On May 26, 2007 Tom Ross passed away and we lost a friend who forever changed beekeeping as we know it.

Until the early 1900s honey was harvested by taking combs full of honey from the bees. These were then sold with the honey still in the comb, or the combs were crushed or otherwise destroyed to release the honey for straining, packaging, and selling. There are still beekeepers who recall family stories of rail cars full of comb honey being shipped from California, Washington, and Idaho to the East Coast markets.

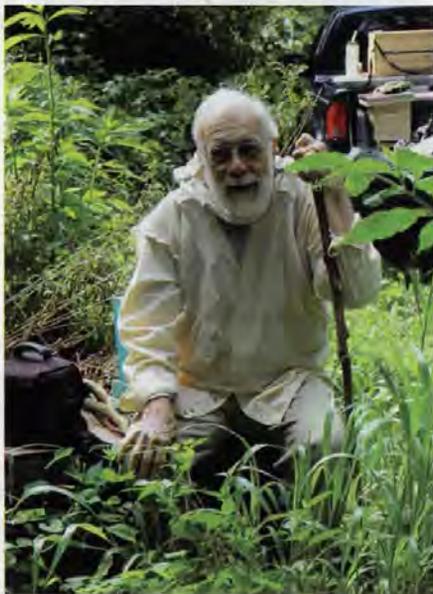
This process required the bees to annually replace their combs for storing honey, and was terribly inefficient. It is said that bees require as much as seven pounds of honey to produce a single pound of beeswax. The invention of the extractor in the late 1800s and its widespread acceptance during the early 1900s greatly reduced the practice of crushing combs and annually replacing them.

However, consumers quickly discovered that liquid honey sold in containers lacked the subtle tastes and delicate fragrance enjoyed with comb honey. Moreover, honey in its original comb often lasts as long as two years before granulating, while liquid blended honey that has not been subject to relatively high heat often granulates within six months. Early on there was also suspicion that liquid honey in a bottle or can had been adulterated with inexpensive sweeteners. And, as honey was then, and still is, an expensive alternative sweetener, consumers were wary of the liquid form of honey.

Until the 1950s or so the most common way of pro-

ducing non-destructive comb honey for sale to consumers was by having the bees put the combs in lightweight basswood boxes called Sections, originally invented by A.I. Root. However, demand was so strong that eventually, just in the United States there were several companies dedicated to producing such boxes and millions were used annually. But section boxes had several disadvantages. They had a tendency to break if too many were stacked on top of one another, and bees were reluctant to fill the corners with honeycomb (there are no 90° angles in nature). Many were made with a lack of proper bee space that resulted in heavy layers of propolis that had to be removed before sale, and there was a lack of a standardized size and shape. It came as no surprise that shortly after World War II plastics came into wide use in many industries, including agriculture, and comb honey production was one.

In the mid-1950s Dr. Wladyslaw Zbikowski, a retired physician and hobbyist beekeeper invented a way to use plastic to replace the wood boxes. He tried to advertise and sell the necessary plastic parts, but lacked the business knowledge to properly promote and describe the product, maintain inventory sufficient for seasonal needs, and invest in the proper tools to enjoy the benefits of mass production. However, his products were one day discovered by Dr. Richard Taylor, a retired professor of Philosophy, a sideline beekeeper, lecturer, and an accomplished author of beekeeping books and magazine articles.



*A basswood section box, wrapped and ready to sell. These boxes were often covered with propolis and needed cleaning. Note the unfilled edges and corners.*



A Ross Round 'Frame' consists of two halves with a sheet of foundation between them. The 'holes' are lined with removal rings. When the 'frame' is snapped together the foundation is in the center and the bees fill the 'holes' with comb and then honey. When complete, the now-filled 'ring' is removed, covers applied and it's ready for sale.



A few years after discovering Dr. Zbikowski's revolutionary product, Dr. Taylor converted his entire beekeeping operation to producing comb honey with the plastic round sections and started to promote them heavily in his monthly columns and speaking engagements. Tom Ross was one of Dr. Taylor's devotees and was caught up in the possibilities of this exciting new way of producing comb honey. At the time, Tom was a founding partner of an architectural firm in Ohio and personally specialized in churches. He was a hobby beekeeper and deeply interested in all things outdoors.

Tom was so convinced by the possibilities of the new round sections that he reached an agreement with Dr.

Lloyd Spear, left and Tom Ross.



Zbikowski to sell the equipment to other beekeepers. But he quickly learned that his sales successes were not followed by actual deliveries. After considerable discussion and thought, Tom decided to quit his profession, build his own molds for producing round comb sections, and sell his product as Ross Rounds. In designing his molds, Tom committed to maintaining exact bee space everywhere and, very important, to making his equipment 100% compatible with Dr. Zbikowski's. Moreover, as a skilled architect, Tom made certain to design molds that were very efficient and that resulted in parts that were not only interchangeable but would not 'fit' properly if they were incorrectly assembled. (I call such parts 'dummy proof'.)

Of course others had the same idea as Tom Ross, and by the time he set up in business in 1978, the field was crowded with three competitors. But Tom's efficient molds meant that he was able to lower the prices so that the product could appeal to a much wider range of beekeepers. Dr. Taylor continued to sing the praises of round section comb, he and Tom became firm friends, and within a few years Tom's Ross Rounds defined round section combs.

In 1998, I had recently retired from the corporate world and mentioned to Dr. Taylor that I was looking for a small business to purchase. He suggested I contact Tom Ross, and within six months we had a deal. Today, Ross Rounds are sold worldwide. They have largely replaced wooden boxes in the United States and Canada and in most of the developed world. Thanks to Tom Ross, honey connoisseurs are still able to enjoy the exquisite flavors of section comb honey, and both commercial and hobby beekeepers are able to produce (almost) enough sections at attractive prices. **BC**

Lloyd Spear is the current owner and operator of Ross Rounds in New York.

# RESEARCH REVIEWED

## The Latest In Honey Bee Research

Steve Sheppard

*“... seemingly simple behaviors (such as vibrating a nestmate) can help coordinate the collective activities of the colony.”*

One of the notable aspects of a social insect colony is that workers adjust their activities to address the needs of the colony. Honey bees gain information about these “needs” through interactions with each other and from cues they gather from the nest itself. One of the interactions known to occur among honey bee workers is the vibration signal. This behavior has been known in the past by a number of names, including joy dance, shaking dance, DVAV (dorso-ventral abdominal vibration), etc. and typically involves a worker grasping another worker with her forelegs and then rapidly vibrating up and down for one to two seconds. This activity has now been more generally recognized as a vibration “signal” rather than a “dance,” because it does not have the complexity of movements association with bee dances.

The vibration signal has been referred to as “modulatory” signal as it has been shown to cause a general increase in activity in the individuals that receive it rather than a eliciting a specific response.

Researchers from Arizona and North Carolina recently examined the role of the vibration signal on worker interactions in established and newly founded honey bee colonies (Cao et al., 2007). These researchers had previously reported that a greater proportion of workers in newly founded colonies perform vibration signals compared to established colonies. Compared to established

colonies, newly founded colonies have different requirements, including a greater need for comb building, brood rearing and foraging. The researchers hypothesized that increased signaling and the resulting heightened individual activity of workers might be associated with an increased flow of information about colony status and needs to individuals in newly founded colonies.

In the current study, researchers compared the actual behavioral responses of vibrated workers (recipients) and non-vibrated workers (controls) in both established and newly founded colonies.

The experimental design involved paired sets of four-frame observation hives. One hive of each set was composed of 6000-8000 workers and a

queen with four frames of honey, brood and comb transferred from their previous hive, while the other hive was composed of the same number of bees and a queen taken from an artificial swarm and placed on frames containing only starter strips of wax foundation. Artificial swarms were created by first moving 6,000-8,000 workers and their queen to a cage and feeding them with sugar syrup until the workers began producing a large number of wax scales. Individual adult workers from a third unrelated colony were marked with numbered plastic tags within 24 hours of emergence and

then added 100/day to each of the paired hives until 1100-1300 tagged bees had been introduced into each hive. Each experimental trial lasted for three weeks and four trials were conducted using different pairs of colonies. In each trial, tagged-bees that received a vibration signal were noted and then monitored for 20 minutes (or until they were lost to the observer). For each bee that received a vibration signal, a tagged bee that had not received a signal was also monitored for the same period. The data collected during the observation of each bee included the distance traveled (using a grid system marked on the glass), the number of times the worker inspected a cell (inserted its head in the cell), the number of short (< five seconds) and extended (> five seconds) worker-worker trophalactic exchanges (bees sharing food), whether the bee was a donor or receiver of food during the exchange and the proportion of time that was spent in such exchanges.

During the combined trials, the researchers spent over 267 hours observing a total of 894 individually tagged bees. They found that vibrated recipient bees in both the newly founded and established colonies traveled greater distances (exhibited increased locomotion rates) and inspected more cells than non-vibrated control bees. In addition, the vibrated recipient bees had higher rates of short and extended trophalactic interactions with other bees than did non-vibrated control bees. Vibrated individuals also spent a greater proportion of time involved in extended trophallaxis and receiving trophallaxis than did the non-vibrated control bees. Therefore, as a result of receiving a vibration signal, individual honey bee activities increased that, in turn, could provide



them with a greater opportunity to acquire more information about the status of the colony and possible colony needs. The researchers found that while receipt of a vibration signal by an individual bee increased the rate of or time spent in the above behaviors, there was no difference in the performance of these behaviors between vibration recipient bees in the two colony types (established vs. newly founded). That is, the effect of the vibration signal was the same to recipients in both colony types.

In previous work these same researchers have shown that, "newly founded colonies have greater numbers of vibrators that perform signals on larger proportions of the inactive bees they contact, resulting in significantly higher per capita rates of signaling and potentially the activation of a greater proportion of the workforce." One conclusion of the authors is that the adjustment of labor needs to colony developmental status (i.e. established vs. newly founded) occupied bees to acquire and respond to information about colony needs." The authors go on to point out that modulatory signals, such as the vibration signal of honey bees, are widespread in social insects and may be a "common mechanism for influencing the acquisition of information..." This work provides further insight in the fascinating world of honey bee behavior and serves as a reminder that seemingly simple behaviors (such as vibrating a nestmate) can help coordinate the collective activities of the colony. **BC**

Cao, T. T., K. M. Hyland, A. Malechuk, L. A. Lewis and S. S. Schneider. 2007. *The influence of the vibration signal on worker interactions with the nest and nest mates in established and newly founded colonies in the honey bee, Apis mellifera*. *Insectes Sociaux*, 54: 144-149.



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#### INNER ... Cont. From Page 10

and *Varroa* was less than expected – in fact, many of the suspect colonies didn't have *Varroa* at all. But it's been previously shown that many viruses are latent in our bees only to Spring forth when a particular bee is *Varroa* bitten. And it's also true that some of those viruses can then be passed bee to bee. They don't know if this new stuff works that way or not but are you willing to bet? *Varroa* control is critical, and possible and necessary. But October is tough to do anything except watch for invasion by bees from collapsed colonies. And just plain watch. If you're doing February pollination in California *Varroa* are a big deal, but so is nutrition.

Ah, there's an often overlooked necessity – nutrition. Healthy nurse bees are needed to raise healthy brood. Lots of food, lots and lots of food. Food is cheaper than buying an Australian package, a U.S. package, a split with a new queen, or finding a colony to replace the one you let starve.

But you already know all this. Pest and disease control; feed lots and feed often; rotate comb as often as every year, no less than every three years; use only legal chemicals and use them as seldom as possible; use IPM non-chemical controls as often as possible; use good equipment, get rid of the junk; wind breaks, high and dry, bear proof, mouse proof, skunk proof, vandal proof; queenright and the right queens. But you already know all that. It's in every beginner's book. It's taught in every beginner's class. Every one. Reduce stress. Keep healthy bees. Be a beekeeper, not a bee haver, keep fewer bees better, not more bees. This isn't rocket science.

But what is CCD? Is all this enough to stop it, staunch it, reduce it, avoid it? That's the 64 dollar question at the moment.

A few months ago I speculated that CCD was actually caused by the accumulation of many, many small problems, finally adding up to just one thing too many. I called it then "Death By A Thousand Cuts". I still think it is. Now they simply know one more of the cuts.

Right at press time this month news of the passing of two no-

table beekeeping personalities came across.

Eva Crane was the Director of IBRA (the International Bee Research Association) from 1949 until 1983. She was without doubt one of the most productive writers of our generation, and certainly one of the brightest stars in beekeeping's small universe.

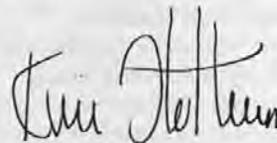
Though officially retired her influence at IBRA never completely relaxed, and she kept writing, writing and writing. She authored or co-authored many, many books, pamphlets, directories, dictionaries and other material in the field of apiculture. And her Association was dedicated to, among other things preserving the best of the past so it didn't get lost.

I only met her once, but we were kindered spirits in the regard of keeping what has been. We'll have more next month.

George Imirie, too, left the demonstration tent for the last time in early September. Failing health had slowed George considerably the past year or so, and problems with his speech required him to withdraw even more in recent months.

A teacher of beekeepers and a founder of bee associations, George was a scourge to beekeepers, and was determined we should not keep bees the way our fathers kept bees. Of that you were certain after spending only minutes with him. We hope to have more about George next month.

In the meantime, check out your itinerary so you can make it to the January meeting in Sacramento. It'll be worth every dime and every day. I'll see you there.



I have been informed that my pending visit to Australia will be like a beekeeping journey back in time. "Down Under" in "Oz" beekeepers continue to enjoy being free of beekeeping's greatest nemesis, the *Varroa* mite (*Varroa destructor*). I look forward to seeing and experiencing beekeeping as it once was in the United States, a simpler time, when the honey bee was a more "wild" (feral) animal that could look after itself without being actively aided by the beekeeper. For, truthfully, this insect is now a much more "domestic" animal in most of the world than previously because of this mite.

In recent years, there appears to be a resurgence of hobby and sideline beekeeping according to my sources. I have seen corroborating evidence of this by seeing who is in attendance at various association meetings, and have recognized the emergence of two populations of beekeepers, which I characterize as before *Varroa* (BV) and after *Varroa* (AV). The AV folks really have no idea of what beekeeping used to be like for us that are in the BV community, and shouldn't, for the landscape has inalterably changed with introduction of the *Varroa* mite, except for a few places like Australia.

*Tempus fugit (el tiempo vuela)* "time flies" as this month (October 2007) is the 20th anniversary of the first detection of the *Varroa* mite in North America. As one of those on the front lines at that time, I have seen and felt the invasion first hand. It is worth looking back on this singular episode and subsequent events in a series of articles in order to get a historical perspective of what beekeepers have gone through in the last two decades. Much of this one can still find in my old, but still live, web site at the University of Florida, the pages of the *Apis* newsletter, and now in my site, The Apis Information Resource Center and associated "lenses" at Squidoo.com.<sup>1</sup>

I wrote the following in the *Apis* newsletter, then published by the University of Florida: "Introduction of the Asiatic bee mite (*Varroa jacobsoni*) is a nightmare come true for the North American beekeeping industry. Even as I write this, many persons are in a state of shock. As of this date (October 20, 1987), some 19 of Florida's 60 seven counties have had positive finds. Latest information

Malcolm T. Sanford

## Two Decades of *Varroa*, Part I



"This month is the 20th anniversary of the first detection of the *Varroa* mite in North America."

is that there has been confirmation of the mite's presence in the states of Pennsylvania, Ohio, Illinois and Wisconsin. The great majority of finds so far have had some kind of Florida connection.

"As a first step in attempting to assess the situation, the Commissioner of Agriculture on the advice of *Varroa* Mite Task Force and the Honey bee Technical Council has placed a two-week moratorium on bee and beekeeping equipment movement. This is to try to get an idea of the mite's present distribution. Emergency teams made up of Florida bee inspectors and APHIS (Animal Plant Health Inspection Service) of the U.S. Department of Agriculture are now combing the state for infested colonies.

"It is extremely important to ensure that *Varroa* is not confused with the tracheal honey bee mite (*Acarapis woodi*), first found in 1985. There has been and continues to be a great deal of controversy about the latter mite which lives in the breathing tubes of bees. It is difficult to find and the damage it inflicts on colonies is a matter of great debate. At present there is no legal chemical control and experiments on a number of aspects of the biology and control of this mite are continuing. Both the general and beekeeping public, however, may think the present mite crisis is a continuation of the tracheal mite affair. THIS IS NOT SO!

"The Asiatic bee mite (*Varroa jacobsoni*) is another story entirely. There is near unanimous support that it is potentially the most serious pest ever to threaten U.S. beekeeping. As evidence for this, consider that both Canada and Mexico have sealed their border to U.S. bees because of the recent finds. Reports from other

areas where the mite has been introduced, especially temperate climatic regimes, indicate great losses of colonies have occurred"<sup>2</sup>

The next month, I reported the following: "On November 9, a *Varroa* Mite Research Work Group was created, chaired by Frank Robinson, Secretary-Treasurer of the American Beekeeping Federation and retired Professor of Apiculture from the University of Florida, the purpose of the group is coordination of research, regulatory and extension activities related to the *Varroa* mite situation in the state. The following is a brief summary of the research activity going on in Florida at the present time:

"To address the short-range problem of bee movement around the state, which is a top priority, Drs. Harvey Cromroy, IFAS (University of Florida) and Everett Nickerson (Methods Development, Division of Plant Industry, FADCS) have initiated paperwork which is being assembled in Tallahassee by Jim Downing, FADCS to request a Section 18 Specific Exemption label for the miticide, Amitraz. This is to develop the necessary information on the material's dosage (how much material should be applied and in what manner), efficacy (how many mites are killed during treatment of a colony) and residues (how much miticide might get into bees, honey and wax).

"In conjunction with this effort, Drs. Cromroy and Nickerson, with the help of Dr. Elton Herbert, Beneficial Insects Laboratory, Beltsville, Maryland, have embarked on a screening program to examine a number of different chemicals now in use in Europe and elsewhere to control mites. These include Apitol, Apistan, Folbex VA, and Varamit. In addition, they will also be looking

“Introduction of the Asiatic bee mite (*Varroa jacobsoni*) is a nightmare come true for the North American beekeeping industry. Even as I write this, many persons are in a state of shock. As of this date (October 20, 1987), some 19 of Florida’s 67 counties have had positive finds. Latest information is that there has been confirmation of the mite’s presence in the states of Pennsylvania, Ohio, Illinois and Wisconsin.”

American foul brood reservoirs. Many beekeepers emphatically state that if they see a colony with AFB, they immediately destroy it themselves, even in states like Florida where an indemnity is paid if a bee inspector burns a colony for AFB.

“It’s important to realize that the management system to control AFB did not come about overnight. It is the result of a good deal of learning on the part of beekeepers, scientists and others since the 1920s, when thousands of infested colonies were routinely burned in an effort to control infestation.

“And as effective as it appears to be at present, use of Terramycin® is not without possible future complications which run the gamut from contaminated honey to an antibiotic-resistant bacterium strain. Fortunately, the causative organism, *Bacillus larvae* (now named *Paenibacillus larvae larvae*), has not shown resistance to Terramycin®. Routine treatment for American foul brood also means that the line between bees which have some innate resistance to the disease and those that are susceptible becomes fuzzy. Nevertheless, colonies continue to be routinely treated despite proof that resistance to the disease by several mechanisms does exist within some bee populations. Thus, should *Paenibacillus larvae larvae* eventually become immune to Terramycin®, bee populations which are resistant to AFB might be difficult to find.

“In *Varroa* control, resistance by mites to chemicals improperly used and/or applied has already been established, particularly phenothiazine in Japan and amitraz in Israel. This means that pesticides must be used far more judiciously within the

closely at the use of various dusts, which on a preliminary basis appear to be effective as mechanical controls for mite populations, as proposed by Dr. William Ramirez, University of Costa Rica.”<sup>3</sup>

In spite of all the regulatory effort noted above, it was too late. The *Varroa* mite literally was everywhere and no amount of expense or effort would limit its spread. It still remains incredible to me the rapidity of the mite’s spread; it seemed to spring up everywhere once first detected. The above paragraph contained something extremely significant, the beekeeping industry was embarking on a road to chemical treatment. This paradox was not lost in my statement/question in December 1987, “Pesticide Use Inside Beehives?”<sup>4</sup>

“Some years ago the above statement would have raised more than a few eyebrows. Many questions by beekeepers each year concern using pesticides to rid colonies of invasions by ants, wasps, wax moths and on rare occasions, beetles. No answers, however, ever indicated pesticides were to be used near colonies, much less inside them. The closest to this was wax moth control which involved fumigating empty supers with pesticides. To most beekeepers, pesticides

were an anathema, responsible for killing untold numbers of colonies in agricultural and urban areas, and agriculturalists and mosquito controllers were considered a collective enemy for using them.

“The worm has turned. With detection of the tracheal mite and now *Varroa jacobsoni* (the Asian honey bee mite), the hue and cry for pesticide use within the hive by beekeepers has reached a crescendo. This irony has not been lost on some of my colleagues, who’ve been plagued with beekeeper complaints about pesticide use over the years. Not that pesticides don’t have a place in control of mites, but the all-too-prevalent view that they are somehow a ‘magic bullet’ which will mean the end of the pest and a return to business as usual is a bit disconcerting.

“This philosophy may come from the experience with Terramycin®, which is now routinely used as a preventative treatment for American foul brood (AFB). As successful as this has been, it has not entirely eliminated the disease. Most bee inspection services are in place today specifically because American foul brood is still a threat. Hundreds, perhaps thousands, of colonies nationwide are burned each year to eliminate

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colony than is currently done with Terramycin or resistant mite strains will quickly develop."

Looking back on these statements reveals how prophetic they were. The beekeeping community adroitly clambered aboard what many have called the "pesticide treadmill" in a futile effort to find a "magic bullet" for *Varroa* control. The first candidate was quickly approved by the authorities on an emergency basis, using Mavrik® (active ingredient fluvalinate) soaked on plywood strips. I had first seen this technology in Italy in 1989, although the material had the brand name Klartan® in that country.

On March 21, 1988, it became no longer legal to use fluvalinate-treated wood sticks. Instead, only plastic strips manufactured to slowly release small quantities of fluvalinate, were legal and had to be used under an emergency compliance agreement with the Division of Plant Industry. Apistan® indeed appeared to be a magic treatment and the industry was to get 10 good years of use from this material.

The use of Apistan® did not fully alleviate the fears of many that honey could be contaminated by fluvalinate, which might morph into a big problem for the honey market. And in August of 1990, I wrote the following, "It was only a matter of time. The Boston Herald reported that honey from a specific outfit had been contaminated with fluvalinate, the active ingredient in Zoecon's Apistan® plastic strips. Taking this conclusion further, the newspaper then implied that the

contamination came from the strips themselves. The facts do not bear this out, the Corporation says, in a packet of information sent to industry leaders. According to the Corporation, it would take some 96 strips placed into a colony all at once to reach contamination levels reported by the newspaper (1.14 parts per million). If used according to the label, Zoecon points out, honey cannot be contaminated using the strips.

"There are a number of ways that honey might become contaminated with fluvalinate. This active ingredient, also marketed in other products to control insects on ornamentals or turf, may be applied to beehives in many ways. Plastic Apistan® strips can be left in the brood nest too long. It is not legal, nor wise, to leave the strips in a colony longer than listed on the label. Wax and honey contamination, as well as build up of resistant mite populations, are the likely outcomes of this practice. Experience in Israel, where fluvalinate impregnated in wooden strips are often used to control *Varroa*, indicates the material builds up in wax and possibly honey. The result of this episode of contaminated honey and the attendant press coverage will be increased testing of product destined for the consumer market. The state of Florida has added fluvalinate to its honey testing protocol and this will probably be the case in other states as well."

I, therefore, concluded: "The message is clear: all misuse of fluvalinate (that includes at the present

time, ANY USE EXCEPT Apistan® strips applied ACCORDING TO THE LABEL accompanying the product) will be sought out by the authorities and is potentially damaging to the beekeeping industry."<sup>5</sup>

This sets the scene for the next article on this important event in U.S. beekeeping. It will reveal how among other things, the fluvalinate silver bullet has lost much of its effectiveness to be replaced by even more toxic materials, while at the same time a variety of so-called "soft" chemicals have come on the scene. In addition, the move toward integrated pest management, something well known in other agricultural areas, will be described. **BC**

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Sideline beekeepers – Where do they fit into the fabric of the beekeeping industry in the United States? Who are these people and how can we best describe them?

For me, sideline beekeepers offer their own bees' honey for resale (and most often a lot of other hive products) and offer it for sale locally; a few offer their honey for sale via the Internet. They do not produce honey to put it into drums, but use five-gallon (60 lb) buckets to store and later process their honey. From the buckets they process honey for clarity (or not, in the case of some who sell "really raw honey", complete with bee parts and pollen), or make it into creamed honey, infused honey, or use some in cosmetic or health food products.

Sideline beekeepers are too big – have too much honey sales, too much income, or too much something – to be considered a hobby operation. Maybe they never were a hobby operation, but jumped into beekeeping with profit in their eyes from the very start. From an accounting perspective, a sideline beekeeper is one that seeks to make enough from his or her bees that they must keep detailed financial records and report income to taxing agencies, filing either schedule C (business) or F (farm) to report their beekeeping income and expenses. Since the Internal Revenue Service has its own rules for defining a business, I tend to avoid this aspect of describing the parameters of sideline beekeeper's activities. But I do know that the IRS requires hobby beekeepers to report income, but not expenses, from their bees. This differs for the sideline and commercial beekeeper – folks who are running the bees as a business, or at least trying to do so.

Our two national beekeeper associations consider sideline beekeepers as those that seek income and profit from their beekeeping activities. This differs from hobby or amateur beekeeping, where any financial income is minor and insignificant to the beekeeper. In the American Beekeeping Federation, Sideline Dues cover beekeepers who have 26 to 300 colonies. So, by their thinking if you have 25 colonies you are a hobby beekeeper, and if you have 301 colonies you are a commercial beekeeper. But there is little difference from a beekeeper owning 24 colonies, and one owning 25, or between 300 and 301. This is a self selected category anyway, and is not the result of an audit by the hive census committee ...

Here's a definition I like: *a sideline beekeeper is one that actively seeks income from bees, AND has another source of income.* This may be another job, retirement income, winnings from a lotto prize, or whatever. This means that a sideline beekeeper is under less pressure to turn a profit on everything they do. They can travel to meetings and participate in the leadership of local and state organizations because their beekeeping time is what they want to make of it. If they want to spend more time with bees, honey, beekeepers they can elect to do so. Or they can trim back drastically when something else comes along that peaks their interest.

Regardless of the number of colonies a person owns or the percentage of their working time they put into bees and beekeeping, it is clear that sideline

beekeepers are major participants in the diverse aspects of the craft. It is my opinion that they are the most rapidly growing part of beekeeping in the United States and control a critical part of the growth and success of national beekeeping.

They are not the most numerous beekeepers. There are more hobby beekeepers than sideline beekeepers, but the hobby group is very fluid, with perhaps a third to a half of them starting or restarting beekeeping every year. They start a hive or two, get involved with a local beekeeping club, but then the bees die for some reason. After a couple of times they give up for a bit, but may start another hive in a future year. We are seeing a growing number of hobby beekeepers who have just recently entered beekeeping because they want to help bees and overcome the decline in hive numbers as reported by the media this year. I applaud their efforts, but know that there will be a significant number who will lose interest after a year or two of tough beekeeping conditions, no honey crop, and dead bees.

There are, certainly more sideline beekeepers than commercial beekeepers. It is pretty clear to

## SIDELINE BEEKEEPERS

### Where Do They Fit In?

Larry Connor

me that the number of commercial operations is shrinking while the number of colonies owned by each remaining commercial beekeeper is growing. We are entering the era of large corporate beekeeping, although they are often family-owned businesses. This provides stability to the honey production and pollination needs of the country. But these are barrel beekeepers, selling their product wholesale to industrial honey buyers. They are often migratory so are not often in one place long enough to become an important part of local associations fighting for legislation or funding needed by that particular state. They are, however, the beekeepers who write the large checks that support national beekeeping programs and agendas.

Besides honey production in all its diversity, sideline beekeepers generally provide pollination services for local growers, produce queens, nuclei and packages for local beekeepers, and provide a huge spread of bee hive products, from skin and beauty preparations to wax products, for local consumers. Generally these beekeepers sell their products at a price between wholesale and full retail, although many have learned that local means profitable, and sell their products at a premium price because they

*Here's a definition I like: a sideline beekeeper is one that actively seeks income from bees, AND has another source of income.*

know that production is limited and consumer expectations are high. They have learned that buyers in some farm markets are not looking as much for a bargain as for local and fresh. With so many food groups tainted in the minds of the consumer with a possible link with China, the buyer is looking for local honey – honey produced in the same town or county as the farm market, and from a honey producer who can look them in the eye and say that they have never purchased any honey from outside the state.

#### **So, you want to be a sideline beekeeper?**

If you want to be serious about becoming a sideline beekeeper, there are two factors that you must consider: First you **MUST** be serious about keeping bees and making top quality honey and selling it for the maximum amount of money. One way to do this is to find local roadside farm markets where you sell your honey to the farmer/operator; or find a city or town sponsored farmers' market where you sell your honey yourself. The roadside market owner will want to purchase honey at the local wholesale rate and you can use this magazine's market report to get an idea how much honey sells for in your zone. A good thing about selling to a farmer's market is that once the honey is sold your job is done.

On the other hand, if you decide to rent a booth at a local farmer's market you need to look at the contract, evaluate the number of days you are required to be at the booth, be available for the hours of operation, and have enough product to supply the needs for this particular setup. The good news is that you have the right to charge whatever the local economy will support for your local honey. It may be different in different markets just a few miles apart because the buyers' perspectives about honey are different. Costs will add up: you will

have booth rental, the booth itself (purchased or constructed yourself), labor and the family cost in terms of lost soccer games, missed birthday parties, etc.

If you currently have five or 10 colonies, you need to develop a plan to grow to about a hundred colonies, the final number depending on your total time commitment and potential market. Perhaps you will decide to build up gradually, adding ten to twenty hives per year, and get into a comfortable place with each out-apiary location and their owners. Or maybe someone has given you a golden offer, a series of locations to place your bees in safe and secure areas surrounded by great nectar sources. Maybe someone has offered you money to purchase equipment and bees to meet their pollination needs (this seems to happen more and more with the shortage of bees). So you may decide to jump in and get in over your head (as far as experience is involved) and hope you float upwards rather than sink to the bottom.

I tell folks new to beekeeping to find a mentor. The same advice holds true for a beekeeper who is trying to develop a sideline business. Outside of beekeeping you may be a teacher, an accountant, a fire fighter, a contractor, or a stay-at-home parent. You are probably very good at being a teacher, accountant, firefighter



*Filling honey drums is what most commercial honey producers do, without regard for local or self sales. These drums of honey become part of the international commodity HONEY and are usually sold for large food processors and honey packers.*

contractor, or parent, but you don't know a great deal about running a business or bees on a large scale. This is where a mentor may be of great help to you.

A mentor should be someone who is doing or has done what you want to do. Maybe they appear to be, at first glance, your most direct local competition. But they may suggest markets where you can move into because they feel they are too busy



*Jim Baerwald of Michigan demonstrates a multiple extractor uncapping facility for his commercial operation.*



Buzz Riopelle (Ohio) filling buckets (sixty pound). This is the usual size of sideliner beekeepers, and are avoided by commercial beekeepers.

and cannot service another account. Or they could be someone you met at a regional or national meeting that you pumped dry and then visited on a trip so you could see and touch the things he, or she, is doing.

I do not have a list of folks that would fill that need. But they are out there and you only need to start asking folks for their help and see how they respond.

Recently I visited a sideline beekeeper (by my definition, since both he and his wife are teachers). It sure seemed like they were doing everything, from honey production, crop pollination, varietal honey, queen

rearing, agri-tourism, cosmetics, related food lines (dressings, sauces), creamed honey, flavored honey, and a lot more. They employ three folks as needed to help them run four farm markets a week. That's a week. And they have a stand at the State Fair where they sell product like mad, requiring weeks of packing and labeling to meet the needs for this intensive

sales period. Yet all the equipment was neat, the operation was clean, and the bee droppings were cleaned off the windows. Pretty amazing, and reflecting a lot of energy going into the business.

Okay, some of you will call this beekeeper a commercial beekeeper. I don't want to quibble about it. But I do want you to understand that every item they sell there was a decision made at some point, and the decisions were made to continue selling a particular line (should we dip candles this year or stick with molded candles) or drop it.

And the formula they use to operate is one all sideline beekeepers could easily use. Each product line was added when they were ready for it, and not before. They took their time, grew slowly, relied on family for support labor, and seem to enjoy every minute of it. Maybe that is why sideline beekeepers seem to be so happy, they enjoy what they are doing, because if they did not enjoy it, they would get out of it and do something else. **BC**

*There will be a Sideliner Symposium in Sacramento in conjunction with the joint industry meeting in January. For further information, contact Dr. Connor at Wicwas Press, 1620 Miller Road, Kalamazoo, MI 49001. Email ljconnor@aol.com.*

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# THE CLASSICAL BEE

## Honeyed Wine & Lost Wax

John Koster

*There was an obsession with bees and honey, and of course beeswax.*

Aesop and Anacreon both come at the beginning of the Greek alphabet, and each of them had something important to say about the bee as a metaphor for life.

Aesop, or one of the writers who collected Aesop's fables, tells the story of how the bee got its sting. The busy little creature offered Zeus some of its honey, and Zeus was so delighted that he granted the bee whatever it wished for. The bee, eager to protect its honey, asked for a sting that would be lethal. Zeus, appalled by the violent desires of such a tiny animal, granted its wish with a twist: the bee's sting would be lethal only to the bee itself, although it might be painful to anyone who tried to rob the hive. The bee would have to disembowel itself to merely wound its enemies – a perfect example of the Greek belief in moderation in all things and avoidance of *hubris*, or arrogance.

Anacreon, the Greek poet of wine, women, and song, also used the bee as a metaphor in a poem often studied by first-year Greek scholars: Eros (Cupid), fondling the roses, is stung by a bee and runs weeping to his mother Aphrodite (Venus) asking for her sympathy and consolation. "How much..." Aphrodite asks "...do you think it hurts when *your* arrows hit someone?"

Aesop and Anacreon wrote at the beginning of classical times, but even in the 7<sup>th</sup> Century B.C., the bee, honey, and beeswax were vital components of pre-classical culture. Humans had been robbing beehives since Mesolithic times, but by the days of Solon, the law-giver of Athens, regulations for bee-keepers were already part of the civil code.

Aristotle also describes beekeeping. The Greeks made beehives out of bark, wood, reeds and basketwork, but they also often made their beehives out of ceramic pottery, rather than fiber or wood, and the pottery hives were grooved or combed internally so the bees could spend more time on honey production and less on construction work. The Greek hives were often made with detachable cylinders so that honey could be harvested without smoking. In Hellenistic times, at the end of the classical period,

whole texts had been written on beekeeping, and ratings developed on the best breeds of bees and the best honey. The Athenians argued that the best bees and honey came from Attica – the countryside around Athens – but a whole roster of other apiaries claimed their honey was as good or better: Sicily, a Greek culture in pre-Roman times and southern Spain were among the strongest contenders.

There was, of course, a practical reason for the obsession with bees and honey: cane sugar was unknown in the ancient world and all sweeteners came either from honey or from fig juice, which wasn't a particularly palatable substitute. The word "sugar," in fact, comes from the Greek *sukas*, which means fig. The ancients didn't have many dental cavities – their teeth were so much better than modern Europeans that when the 19<sup>th</sup>-Century German archaeologist Heinrich Schliemann claimed to have "gazed upon the face of Agamemnon," his critics howled their derision because the skeleton he found had a full set of teeth – Agamemnon, the critics said, must have been at least 50 so the full set of teeth wouldn't have been possible. Schliemann had the wrong skeleton, but most ancient people outlived their teeth unless they were seriously under-calcified, in which case the teeth simply wore out. Then as now, honey was good for your teeth.

Honey was important enough so that some tricky foreigners even tried to fake it, according to Herodotus,

"the father of history," who wrote that "...by the river Meander...at the city of Callatebus (in Lydia)...there are craftsmen who make honey from tamarisk-tree and wheat flour..." Nobody today is sure how this might have worked but the real thing can only have been better.

The bees also produced another substance that the ancients couldn't do without: beeswax. The cycle of the Greek tragedies in classical times begins with the use or abuse of wax for a rather deadly practical joke by the mythical Pelops, founder of the tragic dynasty of Atreus and namesake of the Peloponnesus, where the Spartans came from and where Corinth, through control of the



*A bull's head made with the lost wax process by the Romans.*



Lost Wax  
process figure.

isthmus between northern and southern Greece, became a world trade center. Pelops had gotten himself into one of those nasty contests where the rivals for a princess bride have to risk their necks for her hand: he had to take on the bride's father, Oenomaeus, in a chariot death race. "When he saw the heads of his conquered predecessors stuck up over the door of Oenomaeus, he was seized with fear, and endeavored to gain the favor of Myrtilus, promising him half the kingdom if he would assist him in conquering his master..."

Myrtilus, a man with his eye on the main chance, pulled the linchpin that held the horses to Oenomaeus' chariot and replaced it with a substitute made of beeswax. Coming into the stretch, the wax linchpin gave out and Oenomaeus went over the high side and came down dead. Pelops got the girl, but Myrtilus didn't get half the kingdom because Pelops shortly pushed him over a cliff. The family got cursed and posterity got to read the tragedies of classical dramatists like Sophocles who describe the curse working its way down the family tree.

Daedalus, the mythical inventor, also had trouble with the fact that beeswax is more malleable than durable. After designing the life-size maze known as the Labyrinth, he was imprisoned on Crete with his son Icarus until he fashioned wings to fly away and escape. "The larger ones he secured with thread and the smaller with wax," Thomas Bulfinch tells us. Icarus, however, wouldn't listen to his father and flew too near the sun. "...The nearness of the blazing sun softened the wax which held the feathers together, and they came off..."

Sometimes the wax lasted just long enough. Odysseus, that hero of boundless curiosity, was told by his lover Circe the enchantress that he might be able to hear the song of the Sirens and live if he keep his oarsmen from being distracted as well. She told him to stop up their years with wax and to leave his own ears unstopped while he remained bound to the mast of his ship. "I with my sharp sword cleft in pieces a great circle of wax and with my strong hands kneaded it..." Odysseus says in the Samuel Butcher-Andrew Lang translation of Homer. "And soon the wax was warm for that my great strength

constrained it, and the beam of the Lord Helios, (the sun), son of Hyperion. And I anointed therewith the ears of all my men in their order, and in the ship they bound me hand and foot to the mast-stead..."

Odysseus then hears the songs of the Sirens, whose voices are "sweet as the honeycomb" – so much so that he gestures for his oarsmen to cut him loose. But they obey orders and he alone hears the song of the Sirens, who promise him all wisdom and knowledge. "Forthwith, my dear company took away the wax wherewith I had anointed their ears and loosed me from my bonds..." Then they all got killed except for Odysseus.

Honey and wax made a smooth transition into Roman times and were perhaps even more important in Rome than they had been in Greece. The Romans, for one thing, were far more fond of elegant cuisine than the Greeks and honey figured in their kitchens as well as in the sweet wines they were fond of. One favorite from Marcus Gavius Apicius, the first cookbook author – he killed himself when somebody told him to go on a diet – was a fresh ham seasoned with a mixture of dried figs, honey, and bay leaves pressed into slices in the meat and then baked into a pastry crust. Dessert might include a cooked mixture of beaten eggs and olive oil served with cracked pepper and honey on top. This delight was called *ova melitta* –honeyed eggs. Today we call it an omelet.

Excavators at Pompeii have found a mundane but pragmatic use for beeswax: one merchant left behind 154 wax tablets – planks smeared with smoothed wax – that he had used to keep the inventory of his successful *garum* business: *garum* is a condiment made from the rotten bodies of small fish. The Romans loved it as an appetizer. Perhaps they used honey to sweeten their breaths afterwards.

The Romans had another use for beeswax that explains one of the mysteries of the Renaissance a thousand years after the Fall of the Roman Empire. In 1485, some masons breaking up a Roman tomb beside the Appian Way discovered a sarcophagus marked "Julia, Daughter of Claudius" and opened it to find the body of a 15-year-



"Cupid  
Complaining  
To Venus"  
by Lucas  
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old Roman girl reported as perfectly preserved, with her eyelids and mouth half open and her limbs still supple. "She was more beautiful than can be said or written," one romantic Renaissance Italian wrote. "And, were it said or written, it would not be believed by anyone who had not seen her." Pope Innocent VIII was so disturbed by the popular veneration of her body at the Capitol that he had it removed at night and secretly buried outside the city at the Pincian Gate. He kept the sarcophagus.

Jacob Buckhardt, as tough-minded a Swiss as ever set foot in Italy, provided an explanation in 1860: "The body had been coated with an antiseptic essence...probably a colored mask of wax...was modeled in the classical style on the face of the corpse, with which the gilded hair of which we read would harmonize admirably."

Wax may have preserved the mysterious beauty of Julia, but it definitely preserved much of the statuary that graces modern museums. The ancient sculptors depended on the Lost Wax method to produce the bronzes that decorated many ancient cities and which decorate so many museums today. Artists molded the ideal figures we admire so much today in beeswax, covered the beeswax figure in a clay slip, or coating, and left risers or sprues reaching the exterior of the clay mold. The clay mold was then baked, which hardened the clay into pottery and melted the wax, which ran off and escaped. In the 'direct' process, the mold was filled with molten bronze and then broken up after the bronze had had a chance to cool. This produced superior likenesses but it obviously destroyed

the mold, which could only be used once before it was broken into rubble. The 'indirect' process involved making a cast from the original wax figure and then splitting the clay mold into two separate pieces that could be re-joined multiple times and filled with molten metal before the surfaces started to wear and cause inferior copies. This process was used for more mundane artisan work - axe-heads and other metal tools - and mass-produced art for private homes.

The Lost Wax method had originated in Asia Minor long before the great days of Greece and Rome, but improved Greco-Roman techniques made it possible to produce temple-quality art that became the museum-quality art of today. Lost Wax was state-of-the art in Greece, where in classical times the majority of statues were bronzes displayed in full color, rather than the monochrome patina we see in museums today. The fact that we think of Greek statues as being marble, rather than Lost Wax bronzes, has to do with the wars between the Turks and the Venetians in later Renaissance times: the Turks smashed up marble and bronze alike as graven images, and the Venetians melted down the disfigured bronzes to cast cannons, but left the marble where they found it.

Every Greek city in ancient times was a monument to the symbiotic relationship between humans and bees - honeyed pastries, sweet wines, and statues that wouldn't have been possible without beeswax. **BC**

*Research and transmission by Minjae Kim - August 4, 2007*

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# BLOGS & WEB PAGES

Gerry Gomez

## BLOGS

I've been impressed with the range of beekeeping blogs out there. Some are helpful how-to blogs where new and experienced beekeepers freely share their tips, discoveries, and yes, their mistakes. Others are news-oriented, providing good sources of bee-related information drawn from various parts of the web. Still others are eccentric in the best sense of the word, covering whatever happens to interest the author at any given time, from bee-related art to spiders in the hive to powerful essays on beekeeping and environmental protection. Below are some of the blogs I find myself returning to again and again.

### Linda's Bees

<http://beekeeperlinda.blogspot.com/>

Linda, an Atlanta-based beekeeper now in her second year of beekeeping, runs a nicely written, content-rich site on the ups and downs of her beekeeping experiences. Here you'll find how-to videos and slideshows on constructing a small hive beetle trap, assembling a low-tech solar wax melter, and other topics. The topics discussed are eclectic—recent posts discuss pollenology, robbing, the finer points of packaging cut comb honey, and close encounters with a bald-faced hornet. Links to many lovely beekeeping blogs from around the world, including Greece and Turkey, are included.

### Hive Mind Presents Backyard Beekeeping

<http://www.hive-mind.com/bee/blog/>

This entertaining blog covers plenty of ground, from honey-tinged ginger ale recipes to flesh-eating bacteria, plastic foundation to swarm-catching. Most unique are the posts on the beekeepers' artistic "collaborations" with the bees. Various objects (such as glow-in-the-dark skulls and wedding cake decorations) are coated in beeswax and placed in the hives, inviting the bees to create honeycombed sculptures from the objects. The bees usually comply, and the results make this blog a most unusual stop along the Information Superhighway.

### Beepocalypse

<http://www.beepocalypse.com/>

With tongue firmly planted in cheek, this newsy site pegs itself as "Your source for the latest info on the next end of the world." Featuring brief commentary on everything from conspiracy theories surrounding CCD to food politics, the site includes a legislation tracker pertaining

to honey bees and pollinators, links to many interesting news articles, and info on the latest scientific research on honey bees, biodiversity, and related topics.

### City Bees

<http://citybees.blogspot.com/>

This blogger writes, "I am a secret city beekeeper, just starting out with two colonies of honey bees on an urban roof deck. I am unafraid of my bees, but am a bit worried about the neighbors." The site provides an urban perspective on the art of beekeeping and is rich with observations about pollination, colony management, and the importance of using our beekeeping experience as a springboard for educating the public and fostering goodwill toward bees.

### The Beekeeper

<http://www.thedailygreen.com/2007/06/21/the-daily-green-saves-the-bees/2813/>

The Daily Green: The Consumer's Guide to the Green Revolution is a Hearst online publication launched earlier this year. It's host to many resources, including an environmental news section, eco tips, and "green cuisine."

It's also home to *Bee Culture* editor Kim Flottum's new blog on beekeeping and CCD. To find the blog, use the link above and scroll down to "The Beekeeper." There, you'll find Flottum's

straight-shooting essays on various topics, from "Post Office Snubs Honey Bees With Pollinator Stamp" to his recent report on the Eastern Apicultural Society Conference, "Scientific Silence, Amid Incessant Chatter About Bees."

I'd also like to give "honorable mention" to three new sites that don't yet have enough content yet to warrant a full review, but are promising enough to check out for yourself.

### The Eye of the Bee Holder

<http://eyeofthebeeholder.blogspot.com/>

### Top-Bar Bees (Beekeeping in Top-Bar Hives)

<http://topbarbees.wordpress.com/>

### Canaries in a Coalmine (Notes and jottings from a new beekeeper committed to sustainable living and an ecologically just environment)

<http://canariesinacoalmine.blogspot.com/>



# & WEB PAGES

We often hear how the art of beekeeping is passed along through mentorship. As a new beekeeper, I know this to be true. Books are great, but guidance from experienced beekeepers is invaluable.

Mentorship is especially important for beekeepers choosing "the road less traveled": organic, sustainable beekeeping; the use of top bar hives (an increasingly popular alternative to the Langstroth hive); and other less "conventional" methods that may offer new hope during these trying times in the beekeeping world.

For me, this all-important mentorship has come through the good graces of the Internet, where I have found dozens of helpful resources, along with a generous, well-informed online community of beekeepers forging alternatives in a world badly in need of them. Here are some of the resources I have found most useful and engaging. Most should be of interest to new and experienced beekeepers alike.

## Organic Beekeepers

<http://pets.groups.yahoo.com/group/Organicbeekeepers/>

With the conviction that "healthy, happy bees don't need any additives," this vigorous online discussion group is home to many pioneers in the organic beekeeping community and much spirited discussion. The group's mission is to "establish a community where beekeepers can learn Organic Beekeeping field management without the use of drugs, chemicals, essential oils, herbs, food grade mineral oil (FGMO), acids, fungicides, bacterial/viral inhibitants, micro-organism stimuli, and artificial feeds." The group features discussions on management techniques, honeybee behavior and biology, and guidance for "newbees" starting out on an organic track and experienced beekeepers looking to leave "Additive Avenue" behind.

## Bush Bees

<http://www.bushfarms.com/bees.htm>

Michael Bush's website has a wealth of information you won't find elsewhere. A proponent of raising honey bees on natural-sized cells (as opposed to the cell size found on most commercial foundation), Bush reports having virtually eliminated problems with *Varroa* and Tracheal mites in his hives. His site explains natural-sized cell, top bar hive beekeeping methods, and unlimited broodnest management, among other topics. The site also includes links, a glossary of beekeeping acronyms, a discussion of beekeeping myths, transcriptions of classic books on beekeeping, and a useful essay for newcomers to the honeybee lifecycle entitled, "Bee Math."

## Feral Bee Project: Preserving the Feral Honeybee

<http://pets.groups.yahoo.com/group/FeralBeeProject/>

This discussion group focuses on beekeeping in feral and untreated survivor honey bee colonies. With an emphasis on sustainable beekeeping practices, this group

will appeal to beekeepers who already forego or wish to transition away from treatments. The Feral Bee Project, in a nutshell, is about encouraging and breeding only the fittest honey bees – those that will thrive without treatments and be productive for the beekeeper; those that involve more "natural" breeding methods; and those that promote the highest genetic variability and productivity.

The Hive and the Honeybee: Selections from the E.F. Phillips Beekeeping Collection at Mann Library  
<http://bees.library.cornell.edu/>

"Those who cannot learn from history are doomed to repeat it," said poet-philosopher George Santayana. Perhaps in our quest for a brighter beekeeping future, we can take a bit of direction from the past. The historically minded will revel in the treasure trove at Cornell's Albert R. Mann Library, touted as one of the world's largest apiculture collections. The site features digitized, searchable versions of 30 rare books from the collection of E.F. Phillips, a professor of apiculture at Cornell University, who set out in the mid-1920s to amass a comprehensive library on beekeeping. (See the "About page" for an entertaining story about how Phillips went about this ambitious project.)

## Historic Honeybees Article & Archives

<http://pets.groups.yahoo.com/group/HistoricalHoneybeeArticles/>

For a fascinating experience of virtual time-travel, check out this database of historical bee articles, folklore, images, and writings gleaned from old newspapers, magazines, and other sources. The archive runs the gamut from "Bee Articles 100 Million Years B.C.-1599" all the way up to "Bee Articles 1950 to Present Day."

## The Appropriate Beehive by Marty Hardison

<http://home.comcast.net/~topbarbeehives/wsb/html/view.cgi-home.html.html>

The Langstroth hive is the industry standard, but there are other options out there and options are good. Enter the top bar hive (TBH) and this introduction to the topic by TBH pioneer Marty Hardison. The site includes a history of the TBH, articles on TBH seasonal management, and a photo gallery with construction plans for building your own hive.

## The Sustainable Beekeeping Project

<http://www.biobees.com/>

Phil Chandler's new site on "chemical-free, low-maintenance, top bar beekeeping for everyone" includes a free, downloadable e-book on how to build your own top bar hive and an interactive forum on with threads on biodynamic beekeeping and TBH management, among other topics. The site promotes Chandler's primer on small-scale top bar hive beekeeping, *The Barefoot Beekeeper*, which includes one of the most eloquent arguments for sustainable beekeeping I've seen. **BC**

*Gerry Gomez Pearlberg keeps bees in the Catskill Mountains and is the author of Global Swarming Honeybees (www.globalswarminghoneybees.blogspot.com), a blog about organic beekeeping, pollination, biodiversity, and related issues. His blog on organic beekeeping and bee-nature is called Global Swarming Honeybees (http://globalswarminghoneybees.blogspot.com).*

# All The BUZZZ in...



*Hello Friends,  
Here's hoping you had plenty of  
bees to pollinate your pumpkins.*

*Your Friend,  
Bee B. Queen*

Hannah,  
age 7  
from  
Kalkaska,  
MI.



Katie, age 7 from Praque, OK.



Sejbëll, age 7 from McCleary, WA.  
Sejbëll, writes, "Të dua Baba"  
which in Albanian means "I love  
you Daddy."

How many  
other words can  
you make from the letters in  
**POLLINATION?**  
Send us your list  
to be included in a drawing  
for a cool prize!

When someone says,  
"keep your antennae up"  
it means pay attention or  
be aware.

**All Antennae  
Are Not Created Equal**

Insect's antennae are adapted to their  
specific needs. A male moth has  
feathery antennae. A dragonfly's  
antennae are short and bristle like.  
Coachroaches antennae are long. Can  
you match the antennae to the insect?



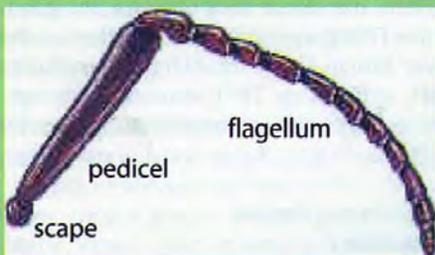
10



Can you read this?

## Antennae Up

Antennae help insects find out more about what is happening around them. It is a sensing device. The antennae are covered in thousands of small sensory hairs that respond to touch and odor.



Look carefully at the head of a  
bee. Do you see a nose? There  
is no nose  
you know.  
(Say that 10  
ten times.)  
The bees use  
their  
antennae to  
sense smell.  
Make scents, I  
mean sense?



### What Does the Antennae Do?

Bees use their antennae to help measure  
the size and depth of each cell while  
building comb. They communicate by touching  
their antennae during the bee dances.

### Antennae Facts

A drone bee has 12 segments. The worker and queen have 11.

The antennae are set in small sockets on their head to be able to move freely.

Each antenna is connected to the brain by a double nerve.



Mosquito \_\_\_\_\_



Cockchafer of (May Bug) \_\_\_\_\_

Bee \_\_\_\_\_



Moth \_\_\_\_\_

(Illustrations from  
www.arthropod.net.)



### English Lesson

Antennae are  
both of the  
antennas.

Are bee antennae's  
like radio and TV antennas?

No comparison. Don't worry the bees are  
not picking up the Discovery Channel or listing  
on your phone calls with their antennae.

# ... Bee kid's corner

Produced by Kim Lehman - [www.beeladyprograms.com](http://www.beeladyprograms.com)

[www.beeulture.com](http://www.beeulture.com)

October 2007

Casey, age 2,  
from Grand Forks, MN.



One person dresses up like an animal trainer with a top hat, cape and cane - like in the circus. The second person dresses like a bee. Do corny tricks like "roll over", "speak", "take a bow", and "do the waggle dance". Afterwards the trainer can give the bee a treat as a reward. If you don't have a willing partner, use a bee puppet to do all the tricks.



Kids and Bees  
Austin, TX

Make a bee costume out of a yellow and black striped shirt, sweater or sweatshirt. You can make antennae and wings out of cardboard or foam sheets and chenille sticks or wire.

Dress up like a flower. Make a bee sock puppet to go with it. Make a bee hat or a hat covered with many bees. Buy little chenille bees or make you own.



## Bee costumes

Here are some ideas of ways you can dress up to have a honey of a time on Halloween.

## Tips

Use recycled materials or old socks, hats, and gloves. Go to thrift stores and yard sales. Paper and cardboard can be made into almost anything. Most important of all **HAVE FUN!**

Have one person dress up as a beekeeper while the rest of the family can be the bees.

Cut a big honey bear out of cardboard. Wear it around your neck. Make a cone shaped hat for the lid.

Do a take off of "The Terminator" but instead be "The Pollinator". Cover yourself in foods that bees help to pollinate. You can make the food by stuffing old socks or cutting out cardboard.

Have one person dress up as a bee while the other family members dress up as flowers. Attach Velcro around the bee's leg so when they go from flower to flower they can collect felt pollen. Another idea is to make pollen pillows for the bee to collect in a decorated basket.

Instead of just collecting treats, surprise people by giving away treats like honey sticks.

## Meet a Bee Buddy

Bryce Jeffers, age 11, lives in Tennessee with his parents, one brother, one sister, 3 cats, 2 dogs, a cockatiel and 150 aquarium fish. He loves watching the bees and putting together hive equipment. Bryce and his dad have been keeping bees for about three years.



When he's not working bees or researching about bees on the Internet, Bryce likes to read, swim and watch TV. Last summer he was a huge help to his family. His dad could not work due to wrist surgeries so Bryce built and painted the hives and did the carrying and lifting.

Bryce writes, "I LOVE bees sooo much but I am a little afraid of them though... This year we saw our bees SWARM! There were SO many it was crazy! They flew up in a tree. (We could reach it though.) My dad shook the bees in the new hive."

## Bee Buddy Pen Pals

Are you interested in being a Bee Buddy pen pal? Let us know and we will hook you up with another bee lover like yourself.

## Become a Bee Buddy



Send two self addressed stamped envelopes and the following information to: Bee Buddies, PO Box 2743, Austin, TX 78768. We will send you a membership card, a prize and a birthday surprise!

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, state, Zip code \_\_\_\_\_

Age: \_\_\_\_\_ Birthday: \_\_\_\_\_

E-mail (optional) \_\_\_\_\_

Send all questions, photos and artwork to:  
[beebuddies@hotmail.com](mailto:beebuddies@hotmail.com) or mail to the above address.

# Low-Impact Beekeeping

*Is less sometimes more?*

James E. Tew



## The concept?

There may very well be no concept. It could just be me and where I presently am on my beekeeping journey. Low impact beekeeping<sup>1</sup> could be called "non-invasive beekeeping" or by any of several devised names. Essentially my perception of the concept is to be helpful to the bees but leave them to their own ways as much as possible. If I have opened a colony and have brood frames out of the hive, I am causing stress to the colony. Do my reasons for opening the colony outweigh the stress that I cause by over-running the colony's defenses? It's a conundrum – if I open the colony needlessly, I cause unintended injury but if I don't open enough, other problems such as mites, brood diseases, or queen problems drag the colony down. No easy answers here, but there rarely are.

## A quiet reason for my philosophical change

I need to confess, before I make more comments, that every year, I am a year older and every year honey weighs the same. Last July and August, my colonies were powerful and fully populated with deep supers full of honey. It would have been a hot, sting-laced, miserable task to open those big colonies to implement various seemingly important management tasks. What better time to embrace the principle that the bees do better if I work them less? Very possibly my truest intentions are not true bee intentions at all, but just me adapting to my present place in life. I have opened hives many, many, times. While I still enjoy the suspense and wonderment of looking to see how the colony has fared since the last time I was there, I don't need the

task as much as I once did. Newer beekeepers who are still learning the basics and acquiring experience and, importantly, are not as long in the tooth as I am, might profit from more hive openings – even if the colony is somewhat set back by the intrusions. Maybe low-impact beekeeping is good for me, but not for everyone.

## Justifying my uncertainty

For many years – even during the *Varroa* establishment years - management recommendations were fixed and traditional. For example, you should requeen your colonies every two years (*now probably every year*). You should treat regularly for mites (*now treat only if the colony needs it*). Apistan® strips were essentially the only control for *Varroa* we had; therefore, treatment recommendations

were easy (*Now the list of control materials changes every year*). You should feed weaker colonies at the onset of Winter (*I did that last Fall and killed more bees than I fed*). You should install screened bottom boards (*I did with mixed results*). Then last Winter hit and I lost more colonies that I have lost in years. Using traditional methods, the path to good beehive management became cloudy.

## The Survivor Hive saga

More uncertainty developed when I stumbled onto the hive that I named the *Survivor Hive*. For those who missed my previous writings on this event, I found a thriving colony, that had not been worked for as long as 16 years, living in abandoned equipment in an abandoned yard. The combs had never been exposed



*Look at this photo from the bees' standpoint. Enjoyable day?*

<sup>1</sup> Thanks to Ohio beekeeper Ben Slay for the term, "low impact beekeeping." I liked it immediately and have permission to use it.

to any mite chemicals. Never treated for mites. Never requeened. Nothing had ever been done. It was exactly the colony that I needed to justify my growing beliefs that, in many instances, we are overworking our hives. I mentioned this colony in several previous articles and readers responded instructing me to leave it alone. With its bee-made propolis outer cover and completely rotted bottom board, it was making its way very well without me. I did just that – left it alone. This single survivor colony became a testimony for the way bees could run their lives without our constant intervention. This past Winter, like so many other colonies, it died – apparently of starvation. Like a popular musical band without a lead singer, what management lessons had I learned from this single, unusual hive? It was confusing.

### **The Winter of 2006-2007**

My uncertainty was only fueled by the dramatic die-off that so many of us experienced during the past Winter. Due to routine colony dwindling, my colony numbers had dropped to something like 45 or so. At that time, I felt like I could manage about 80 hives on my own. During the Spring of 2006, I made splits and bought packages and pushed my number to 80. The Spring nectar flow never came – I mean did not come at all. Not a drop of surplus honey did my bees make. Just about a year ago, I wrote about feeders, feeding techniques, and robbing. I knew robbing would be a problem, but if one is feeding 40 colonies in two yards, robbing can become an unmanageable problem. It was very easy to tell that the traditional recommendation to “feed light colonies” was causing much more harm than good. Bees were killing each other by the pound. I stopped the feeding effort and hoped that the Fall flow would be miraculous. Of course, it was not. In fact, it too was nothing. I went into Winter with about 65 of my 80 colonies light in stores. I hoped for a mild Winter and for a while it was, but then it turned into a real Winter. Though I didn't open colonies, I knew that my light colonies were dying in significant numbers. Seemingly, Spring arrived and my 40 remaining colonies tried to get their year started, but then another two weeks of hard cold hit and killed those remaining

colonies back to 27. That remains my trauma today. What should I be doing differently? Twenty-seven of my original 80 colonies survived. And those surviving colonies were ragtag. Sixty-six percent of my colonies died – most with new queens – after I had tried to implement “traditional” management recommendations. There were extenuating circumstances, and I am not truly as inexperienced as I sound, but to go into all the details would be tedious. Suffice it to say that too many of my colonies died last Winter. I have essentially spent all Spring, Summer, and Fall preparing for the upcoming Winter. I do not want a repeat of last Winter.

### **If you have made it to this point**

I have used more than half of my article space to justify why I feel differently about the annual management scheme for my bees in my location and at my age. I am not commercial nor do I frequently move my colonies for pollination. I make no pretense of offering advice for beekeepers in those enterprises. For a variety of reasons I have made or am considering making the following changes.

#### **Low-impact beekeeping procedure #1**

So much as possible I have left my 37 colonies alone all Spring, Summer and Fall. When supering I looked at a frame or two of brood in the upper brood body, but I tried to keep my intrusion minimal. I did stagger the upper supers to allow for more ventilation. I supered pretty much on time and did a reasonably good job of keeping the grass knocked down. Otherwise, I have not intruded on my bees.

#### **Low-impact beekeeping procedure #2**

I have tried to earnestly review my concerns about requeening. The queen needs to be truly a bad queen before I elect to put the colony through the confusion and disruption of requeening. I suspect that the occasional marginal queen is as good as one that I can quickly get and install. By the time the requeening procedure has finished, the nectar-flow will have essentially passed and I am left with a new queen in a weak colony that has missed the season. Would it be fair to say that a minimally invasive

recommendation would be to requeen once per year and, unless disastrous, to live that year with the queen you get?

#### **Low-impact beekeeping procedure #3**

I try to treat for mites in the Fall of the year. I try to treat correctly and keep my hive openings to a minimum. I realize that mites and bees are developing both good and bad resistance to each other and to chemicals, but for the present, I am assuming that my bees will need some kind of mite treatment at least once per year.

#### **Low-impact beekeeping procedure #4**

So much as possible, I have eliminated supplemental carbohydrate feeding for both survival and Spring stimulation. I can't stop it all together and am not suggesting you do, either. At times it is necessary, but I have completely stopped allowing bees to rob extracted supers or honey cans. Robbing is a vicious behavior that results in weaker colonies (sometimes even stronger colonies), if not killed outright, becoming so depleted that they have little hope of surviving the upcoming Winter.

#### **Low-impact beekeeping procedure #5**

For colonies that you really care about, prepare for the hive opening event. Have extra equipment on the truck to replace worn or broken hive parts. In a perfect bee world, you would even have access to a spare queen from nucs that you set up earlier in the Spring. A working number is about one nuc per 10 colonies. I presently have two nucs for 37 colonies. When the hive is open, perform as many chores as possible in order to reduce future trips. On double-sided bottom boards, I use the shallow side (3/8" opening) year round. That way, I avoid having to install and remove entrance reducers.

#### **Low-impact beekeeping procedure #6**

Set up an observation hive. Not yet, but maybe soon, I will come around to saying that observation hives are presently undervalued as a management tool. Currently, they are used as educational devices or as novel seasonal hives. They could be

so much more. Rather than opening full-sized colonies, I can get an idea of the field events by looking at the observation hive activity. Pollen collection, nectar collection, drone production, and the status of the queen are readily viewable in an observation hive. The performance of a new queen can be evaluated before transferring her to a full sized colony. Brood from the observation hive can be used to subsidize needful field colonies. As it were, both observation hives and nucleus hives provide living spare parts. Plus, after looking at bees in an observation hive I've satisfied a bit of my beekeeper need to see the inside of a hive. Should the recommendation be one observation hive for every 10 colonies rather than a nucleus hive per 10 colonies?

**Low-impact beekeeping procedure #7**

Consider putting on some deeps as supers in order to have spare honey for the Winter months when things go particularly bad. Deep supers are heavy – even difficult to handle, but wintering bees can readily use bee-stored honey when nearly nothing else will do. If stored properly, deep supers can be held for several years without undue harm. If stored pollen is minimal, wax moths will not do much damage to stored comb. Not only useful as Winter feed, deep supers of honey can be used during Spring seasons to make splits or to boost Spring colonies needing some help.

**Low-impact beekeeping procedure #8**

I top super rather than bottom super, but I provide upper entrances. To decrease the distance bees must travel to store nectar, bottom supering stipulates that the empty super goes just above the brood nest and partially full supers are placed above the empty super. It's considerable work for me and much more disruptive to the bees to remove all supers before adding a new one and frequently burr comb must be removed or a poor fit results and bees are crushed. Top supering is easier for me and causes less disruption to the colony.

**Low-impact beekeeping procedure #9**

Don't use any more smoke than

*Bees don't like smoke any more than you. Be considerate.*



necessary and only blow cool, white smoke. I'm afraid that too often rather than *work our colonies*, we *bully our colonies*. With our protective gear and our smokers ablazing, no doubt we are the bees' most formidable enemy. Use only the smoke you need so the colony can recover as quickly as possible. Though it's common sense, don't kill any more bees than necessary to open and close the colony. With their sensitive olfactory systems, the bees know you've just killed several hundred of their kin. You think that makes them appreciate your efforts?

**Low-impact beekeeping procedure #10 (totally impractical but interesting)**

I enjoy working my colonies on nice memorable days, but these are the very days that bees should be out

foraging for Winter stores. We cause our bees to lose a significant part of a good foraging day when we choose that day to open colonies. Should we select cooler, rainy days or possibly go for late afternoon sessions or could such tasks as adding supers or filling feeders even be done at night? *It could be done then. (Just so you know, I will not be adding supers or filling feeders at night. If you want to, have at it.)*

My point: So much as possible, let your *bees be bees*. I'm afraid that many times we hurt more than we help. **BC**

Dr. James E. Tew, State Specialist, Beekeeping, The Ohio State University, Wooster, OH 44691, 330.263.3684, [Tew.1@osu.edu](mailto:Tew.1@osu.edu); <http://www2.oardc.ohio-state.edu/agnic/bee/>; <http://beelab.osu.edu/>

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# Sundown Splits

*Spring was here. The bees would have no hesitation, in the morning, in discovering their new home. The orange flowers would seduce them.*

Dick Marron

The book says take two frames of brood, one of pollen and one of honey. Dump in some extra bees. Give them a queen in a candied cage and set the nuc box aside and don't disturb for a week. Your directions may vary.

That's not exactly how it's done by the man I'll call "keeper." For one thing, hives may not be split in two. Two hives may end up yielding only three splits if the bees are poorly. In bad years two may morph into one. Decisions are made with a glance. Several hives are open at the same time. Between the smoke and the clatter the bees are so confused they forget to fight. Their home has been moved and they start clusters in many places. The air is thick with them and the hum is electric.

The scene is a beeyard in Florida in late Feb. The bees have been idling along on keeper provided food. It's time to make up for Winter's losses and get ready for a new year. It's a scene repeated amongst keepers across the state. (And most of the south) Some keepers live in the north and only the bee's travel south in Winter. The two get together for this Spring ritual. The orange blossoms are opening.

"I don't have what I need!" "Need a frame of honey here!" "That pallets all set. Let's set up over there." "Don't get too far ahead of me." "Where's the damn smoker?" This is the music to this dance-macabre. The hooded figures forged toward the far end of the yard all day. As if the day would ever end. Finally though, it did. We stopped this work sometime in the afternoon. We adjourned for supper. We dined as the bees organized themselves. Then we went back for a second shift.

The sun was going down when we started to load. We sat for an extra minute to let the bees finish coming home for the evening before disrupting them again. 128 new splits, made today, were about to move to oranges. It was a soft evening. While the sun may have seemed to set slowly for some - for us it went down quickly. The keepers' ugly loading machine snorted among the pallets looking for the chosen among the buzzing silhouettes. Finally the net was cast over all and the load strapped down. Bee suits were shaken off in the headlights and truck doors slammed. The bees are supposed to fly toward

the lights. Some of them actually did.

Now the smallest unit of bees that would be referred to for the rest of the year is the pallet. These hold four colonies. Soon 32 pallets of nature's pollinators were bouncing over county roads, through the twilight, on the way to the next phase of their existence. Today they had been rudely split in twain. Meager stores of honey, pollen and brood had been divided. Half were queenless. None were happy!

It was full dark when we reached the orange grove. The lights caught a few blossoms that were gently waving in anticipation. The rattle of the diesel finally quit and we sat for a moment in the not-quite silence, the work waiting. The bees were restless under their net after being handled in such a humiliating fashion.

The Bobcat clattered off the trailer, again bringing its will of steel to the nature of the evening. The harmony of man and machine could be appreciated as the clumsy looking beast gently un-perched the bee-skyscrapers from the truck. As gently as could be imagined, 128 boxes of bees were set down; closer, perhaps, than nature would have imagined...but with room to fly in and out. Bees are good at that.

Spring was here. The bees would have no hesitation, in the morning, in discovering their new home. The orange flowers would seduce them. Caught between them, the beekeeper could only yearn to be as much a part of things as the bees and the blossoms were. Why else would he be working his 13<sup>th</sup> hour that day?

The Bobcat grumbled itself back up on its trailer. The truck bounced across the field headed for home. One could imagine the bees sighing with relief. The beekeeper had removed himself - *the unnatural, yearning creature*

*that he was* - from the confused and disgruntled bees. He'd return shortly with queen-cells and try to make amends while the bees were working.

Thirty-six hours later the keeper appeared with an incubator full of queen cells, a smoker, a hive tool...and a helper. I had ridden in the truck with the future matriarchs of 128 colonies balanced in a little box on my lap. It gave me a strange feeling. I can't put my finger on it. It was smug

Making splits by day . . .





... and moving them at sundown.

mixed with glad-to-be-there. We had been destroying up to now. Finally we were building.

The keeper had things to accomplish. I saw poetry in the day. Then we simply started working. "Put the lid over there, you won't have to bend to pick it up!" That's not smoke! Get it right in there!" "Handle the cell gently. It just sets into the brood frame, then close up the frames." It was the gentlest thing we did to these little empires.

I thought the bees were very understanding, considering the week they were having. It was easy to hear the roar of those without a queen; it was easy to feel the anger when we opened those hives. Like a democratic bulldozer the keeper gave them each a queen cell. The bees would sort it out. If an existing queen could find her replacement and kill her then she could carry the colony forward another year. Keeper thinks most of the time she is replaced by the new queen. No one would be around to tally.

No one tallies keeper hours either. I didn't know so much beekeeping was done in the dark. The future's in the dark as well. The price of pollinating hasn't risen to keep up with costs. The price of honey is going down again. Two new diseases (CCD, *Nosema ceranae*) are looking for a home. So are AHBs. And, of course, nature isn't sentimental. She can withhold her rewards on a whim. Or, like any woman, she can lavish sweets - seducing keeper into another year; another year of sunrises and sunsets; of starting over by finding himself standing amid his February splits. For some keepers the victory is like that of the cat on a hot tin roof; it's "just staying on." **BC**

Dick Marron is a retired psychologist living in a backyard in CT.

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# COLONY COLLAPSE DISORDER, DISORDER

Jim Fischer

**The publication of the CCD paper in *Science Magazine* has only asked more questions than it has answered. What is the cause of CCD? What about trade? And what can beekeepers do?**

## 4TH DOWN

All Summer, we patiently waited. Perhaps you've been waiting too. We've heard all the rumors, and we watched everyone from the *Wall Street Journal* to the *Lancaster Farming Journal* print quotes from researchers coyly hinting about having found "the cause of Colony Collapse Disorder (CCD)" and the paper they were about to publish in the prestigious journal, *Science*.

We've been restrained – we did not want to jeopardize the paper's chances of being published, nor did we want to embarrass the authors. We beekeepers want quality work, and are willing to wait for it. Many of us engage as beekeeping as our livelihoods, so we are deadly serious about CCD. So, beekeepers kept mum, and *Bee Culture* magazine printed only what had appeared elsewhere, not wanting to be the source of "leaks."

**A fat lot of good that did us.** The paper may turn out to be a much bigger embarrassment than anything that might have resulted from our actions. While the paper contains much that is new and compelling, what is compelling is not new, and what is new is not compelling.

The subject of all the hush-hush and anticipation turns out not to be an announcement of the "cause of CCD," but a tentative statement merely confirming the preliminary results announced back in April by representatives of the Army, BVS Inc, the University of Montana, and UC-San Francisco. The paper makes very similar observations that there is an apparent correlation between a specific set of bee pathogens and CCD. It also suggests that these pathogens can be linked to imported bees from Australia.

But the authors consistently failed to supply convincing evidence to support the claims they made.

Despite the serious defects in methodology, the assumptions made without sufficient basis, and the presentation of speculation as if it were fact, there is significant value among the defects. It is the first complete report on what pathogens have been found in all those samples contributed by so many beekeepers.

year. The paper offers no help at all to beekeepers. The researchers still don't have a clue about what to do to avoid CCD or how to react to CCD. I'll say it yet again: "All we can do is watch hives die." How many times can beekeepers attempt to rebuild operations devastated by CCD before they go broke? How many beekeepers can suffer this kind of devastation before growers can't get pollination for their crops at any price? We might

**The researchers still don't have a clue about what to do to avoid CCD or how to react to CCD. I'll say it yet again: "All we can do is watch hives die."**

In short, the disease data is useful, even though it may not be as accurate or as relevant as we might have wanted.

But Fall is here again. Fall was when CCD hit beekeepers hard last

see the answers to both questions this fall. We'd rather not find out, thank you very much.

So, in terms of tangible results, the ball has not been moved a single yard from where it was in April. In summary, what we have is:

### APRIL

Nosema ceranae found all over  
Of course Nosema apis is still around  
A new Iflavirus found in CCD colonies

Deformed Wing Virus Found  
Sacbrood Virus Found  
Kashmir Bee Virus Found  
We found lots of other pathogens, too  
Findings shared openly

### SEPTEMBER

Nosema ceranae found all over  
Nosema apis found all over  
The virus is "Dicistroviridae", not "Iflavirus"

Deformed Wing Virus Found  
Sacbrood Virus Found  
Kashmir Bee Virus Found  
So did we.  
Findings not shared until published in "Science"

So, maybe it is more accurate to say that it is fourth down, and we have lost yardage. We certainly have used up all our time outs. While the mainstream press is cheering the play, we beekeepers are much less enthusiastic.

# WORLD TRADE

The recent paper "**A Metagenomic Survey of Microbes in Honey Bee Colony Collapse Disorder**" (*Science*, 09/06/07) mentions Australia in connection with Colony Collapse Disorder (CCD). Mention is made of Australia sixteen times in a paper that is only fourteen paragraphs long, to be exact.

What's up with that? Australia hasn't reported any cases of CCD.

The authors of the paper have pointed an accusing finger at Australia as being the source of CCD. That's a pretty amazing trick for a paper that stops far short of having found any specific cause or causes for CCD.

The paper claims that samples of "**apparently healthy bees imported from Australia**" were found to have at least one virus said to be "strongly correlated with CCD", a bee virus named "Israeli Acute Paralysis Virus" (IAPV).

Israelis? Australians? What possible connection could either country have to a problem that has yet to be confirmed as existing anywhere except in the U.S.? Before this turns into a John le Carré spy novel, let me make it clear up front that all the evidence upon which these claims are based is in need of further confirmation before any of us should believe any of it.

The reason to be very sure about this evidence before making such accusations is that there are implications for World Trade. The WTO has rules that would force the U.S. to provide clear and compelling proof of any such claim. If we are serious about this, there's a process to handle it. Step one is to have facts, rather than mere speculation. Step two is to have very clear proof, as anything less won't convince anyone at the WTO.

The central accusation was: "**All CCD operations sampled used imported bees from Australia or were intermingled with operations that had done so.**"

That's a statement with pretty serious implications, given that beekeepers in Australia make good money selling bees to U.S. and Canadian beekeepers who want to expand the number of colonies they have, or merely repopulate hives that died from any one of dozens of things that can kill a bee colony.

Does the paper substantiate the accusation it makes? No, it doesn't.

First, the virus named in the paper may well be nothing but a variant of another fairly common virus that's been known for a while, Kashmir Bee Virus (KBV). It is difficult to say for sure, as the two are very closely related. This is not my speculation; these are the open admissions of the authors of the paper. They didn't put it in the paper, but they talked about it in the press conference held when the paper was announced to the press. The "press" did not pick up on the admission as important, even though the difference between the two viruses was described as "a moot point" by Dr. Edward Holmes of Penn State.

Second, the methods used to detect the viruses and other pathogens of bees can't differentiate between the actual virus itself and mere evidence of prior exposure to the virus, perhaps several bee generations back. (All this is addressed in the section "A Beekeeper Reads the Paper," which covers the technical details. Available at [www.BeeCulture.com](http://www.BeeCulture.com))

I have to note that even *Science Magazine*, published by the same organization that publishes the journal *Science* ran an article with the headline "**Puzzling Decline of U.S. Bees Linked to Virus From Australia.**" Now, if *Science* can't read the paper they themselves published, and take the time to understand what is proven versus what is not, or bother to listen and comprehend what is said in the press conference they themselves held, can we expect any other media outlet to "get the story right"? I don't think so. So, you read it here first, and you likely won't read a word of it anywhere else.

But let's pretend to blindly accept (for the moment) the technical claims of the paper:

- That a virus was actually found by the methods used
- That the virus "strongly correlated" to cases of CCD
- That the virus was also found in samples from Australian hives

How do they claim that Australia is to blame for this exotic invasive bee disease?

They said: "**Importation to the United States of bees from Australia began in 2004, coinciding with early reports of unusual colony declines.**"

## So, you read it here first, and you likely won't read a word of it anywhere else.

But wait, that's wrong. Completely wrong. Hives of bees from Australia were ending up in the U.S. as early as 1987. What happened was that Canadian beekeepers were importing packages of bees from Australia and New Zealand, and some hives were trucked down to the U.S. from time to time, as Canadians sold hives to U.S. beekeepers, and in at least one case, a Canadian beekeeper decided to move from Canada to the U.S., bees and all. Some of those bees may also have been ancestors of replacement queens sold to U.S. beekeepers as "Canadian Cold-Hardy Bees."

So "Australian bees," and any diseases of those bees, have had ample time to make their way into the U.S., and would have been noticed long before Australia started shipping bees directly to the U.S. in 2004.

Now, it is true that the quantity of "Australian bees" coming into the US has been much larger since 2004, but they've clearly been shipped to Canada in large quantities for 20 years, and even today, Canadian beekeepers don't seem to have CCD-like symptoms in their hives.

What alternative source of Israeli Acute Paralysis Virus might exist? Might Australia and the U.S. have each been victimized by this source? One answer appears in the supplemental materials released with the paper, and available from the website associated with the journal *Science*. There we can read:

**"...four samples of imported royal jelly from China, were also tested as potential sources of pathogens... queen breeders in the U.S. and in other countries use purchased royal jelly to wet-graft and promote queen production."**

Before anyone asks, no, beekeepers do not put Royal Jelly on their toast, even if we might use margarine from

the Imperial Margarine company. Royal Jelly is another name for "Queen's food", fed to honey bee queen larvae by adult bees. China has always been the biggest supplier of this substance, as it is very labor-intensive to scoop tiny amounts of it out of queen cells, and China specializes in low-cost, labor-intensive operations like these.

Some queen producers buy royal jelly from China, as it is cheaper to buy it from China than to take the time and effort to collect it from their own beehives. They use it in queen breeding. It's likely that Australian queen producers do too.

Two of four samples of Chinese royal jelly were found by the researchers to contain evidence of the Israeli Acute Paralysis Virus.

So, it is just as possible that queen producers in both

the U.S. and Australia infected their queens with royal jelly from China as it might be that the U.S. was infected by bees shipped from Australia. But somehow, Australia alone is blamed.

Note the use of the term "**apparently healthy**" in the accusatory phrase "**apparently healthy bees imported from Australia.**" The term "Kangaroo Court" seems to somehow be appropriate here.

I'd like to apologize to the beekeepers of Australia for the public bashing they are about to endure due to the groundless accusations made in the paper.

In an ironic twist, Australia is the host country for this year's "Apimondia", an international beekeeper's convention. I hope that the *Science* paper does not dampen the festivities.

## PRACTICAL APPLICATIONS

While the central claim made in the paper "**A Metagenomic Survey of Microbes in Honey Bee Colony Collapse Disorder**" (*Science*, 09/06/07) is that a specific virus is a "significant marker for CCD," that information won't help us to diagnose our hives even if it does turn out to be valid. The virus is described as "Israeli Acute Paralysis Virus" in the paper, but even the identification is uncertain at this time. It may be a variant of "Kashmir Bee Virus." It doesn't matter either way, as there aren't any visible symptoms that we beekeepers can look for in our hives.

The familiar litany of generic advice was offered to beekeepers by Jeff Pettis of the USDA-ARS Beltsville Bee Lab in the press conference held to announce the paper: "**Maintain healthy colonies. Keep parasitic varroa mites [and] Nosema levels low, do the things that beekeepers know how to do to manage healthy colonies. Because if we're right, that there's multiple factors involved, most of those factors... beekeepers may be able to manage... even supplying supplemental nutrition when need be.**"

This advice is much like telling us to get lots of sleep, drink plenty of fluids, and eat our vegetables as a way of avoiding being hit by meteors, but let's take Jeff seriously, as he really doesn't have any better advice to offer.

### Varroa Levels

Not surprisingly, *Varroa* remains the bane of the beekeeper's existence, and there is no question that high *Varroa* levels result in multiple viruses spreading throughout the colony, the apiary, and even to other colonies nearby. We have to do our best on this. If you treat we have multiple treatments, so rotate those treatments. We have practical IPM techniques at our disposal that reduce *Varroa* levels that require *NO* treatments, so use those techniques. And we are smart enough, now, to watch and count and measure *Varroa* levels in our colonies so we know what's going on — *all the time*. We can avoid those sudden *Varroa* populations, and we can handle them when they arrive. But you have to do it.

### Test And Treat For Nosema!

Although the authors dismissed *Nosema* as a possible correlating factor for CCD, their tests found *Nosema* to be surprisingly common. Nearly universal. Every apiary affected by CCD was found to have *Nosema*, and 90% of them had both types of *Nosema* at the same time. Even among apiaries said to be "free of CCD," 92% of them were found to have *Nosema ceranae*, and 47% of them had *Nosema apis*.

	Apiaries With CCD	Apiaries Free Of CCD
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<i>Nosema apis</i>	90%	47.6%
<i>Nosema ceranae</i>	100%	92.1%

With numbers like these, odds are you need to seriously consider sending some bees in for analysis, or screening for *Nosema* yourself with a child's inexpensive microscope. Fumagillin works equally well in treating both types of *Nosema*, and despite decades of use, *Nosema* have not become resistant to it. (See Kim Flottum's May 2007 *Bee Culture* article, "[Know About \*Nosema ceranae\*](#)" for details.) *Nosema* being found in nearly every apiary tested is very significant news for beekeepers. We can do something about *Nosema*, and while treating *Nosema* may not prevent CCD, it certainly can't hurt.

### Reduce "Stress"

What sort of "stress" could we eliminate from the lives of the bees under our stewardship? Accomplishing all the other tasks in this list will go far in reducing stress, but making the bees' environment more livable will also help. One big step would be to get serious about replacing old brood comb on a regular basis.

### Getting Down To Brass Tacks On Stress

My own approach to comb replacement is typical, and requires no

recordkeeping at all. I buy flat metal thumbtacks in colors that match the queen marking colors, and use them to track the age of each comb. Every year, I replace two of 10 brood combs, pulling the combs that match that year's queen color, and replacing them with frames that have been cycled through a solar wax melter to remove all the old wax and reworked with new foundation. With this approach, all comb is replaced every five years.

### Wooden? Where?

Colony stress can also result from your reluctance to scrap those rotten brood chambers that have unintentional entrances at every corner. Admit it, we all tend to keep using woodenware long after it should have been recycled into firestarters. Too many entrances, and the colony has guard bees patrolling right in the midst of nurse bees. Imagine a SWAT team bursting into the middle of a neonatal intensive care ward, and asking everyone who walks by to show ID. Someone's bound to get intimidated, if not hurt. Force the SWAT team to keep bumping into the nurses all day, every day, and that would be some significant stress for all involved. Both sets of bees are very busy, and consider their tasks to be "a priority." Plus, it's a waste of energy and a source of continuous 'tension' throughout the whole hive, instead of only at the entrance.

I should offer a hint about using old brood chambers and supers as kindling in your fireplace – a little bit goes a long way. Old bee boxes are very dry, and tend to be well-coated with a layer of propolis "varnish" on all inner surfaces. The flames that result

are impressive. Break or cut them into small chunks, and use them with care in the fireplace or wood stove. Or, in your smoker.

### Nutrition

I can't really offer much about nutrition that won't start multiple arguments, except to point out that some seasons require one to feed one's bees. Some beekeepers feed syrup in the Fall, some don't. Some feed pollen supplements every Fall, and others never do. There's no easy way to check pollen for protein content, but one can at least heft colonies and know which ones are "light" going into Fall. When in doubt, feed your bees.

Feeding sugar syrup now is inexpensive insurance as far as carbohydrate stores are concerned. Having a colony starve next Spring is certainly stressful on the bees, and the beekeeper who needs to replace them.

As far as protein – if you look and don't see a lot of pollen stored, the cost of a pollen patty is, again, cheap insurance for saving a hungry colony.

### Hospice Yards?

Given that there is no known method of diagnosing CCD before the affected colonies are doomed, and no known way to "save" a colony showing CCD symptoms, one might want to remove colonies that look weak from apiaries that are otherwise filled with strong colonies. It is generally agreed that CCD can spread between colonies, even though the mechanics of the process are still unknown, so maybe we should start our

own "quarantine" yards for weaker colonies. (That faint sound you hear is me, grasping at straws for pragmatic approaches in the absence of conclusive facts. We know isolated operations have been safe from CCD, so it seems reasonable that we can each create a certain level of isolation between clearly healthy and weak hives.)

### Know Your Neighbors

If you pollinate, check with the grower and find out who is placing his hives near yours in adjacent fields. Keep in touch with your fellow beekeepers, as their problems are likely to become yours, and visa-versa.

### Know Your Hives

Get serious. Go buy some stencils and come up with a hive numbering system if you have more hives than you can count on your fingers. It is likely that your record collection is better organized than your beekeeping records, so buy a spiral-bound notebook while you are at it, and don't rely on the same memory that can't even remember where you put your car keys twice a month. Keep track of where you placed which hives, and what you did to which hive when. Yeah, I'm being insulting here. Tough. I'm suggesting that if we all simply kept copious notes over the next year, we might have information of value to those who are trying to solve this problem for us. This thing doesn't seem to be going away by itself, and we have no idea what might turn out to be important. So start writing stuff down. Even things that you don't think are all that important. The bees you save just might be your own.

*For an indepth analysis of this CCD paper, please visit [www.BeeCulture.com](http://www.BeeCulture.com).*

*James Fischer is a beekeeper who writes. Or maybe we should call him a writer who keeps bees. Regardless, he's one of the few people who: knows beekeeping, is not snowed by scientific jargon, and is willing to call 'em as he sees 'em.*

# GOURDS



Connie Krochmal

What would Fall be like without goblins and ghosts and snaggletoothed jack-o-lanterns? Gourds play a role in Autumn fun as well. These are used as seasonal decorations this time of year.

Among the most useful crops one can grow, gourds can serve many purposes. Some are edible. Others become birdhouses or baskets. With certain exceptions, these are excellent nectar and pollen plants for bees.

There are two types of gourds based on their origins – the Old World and the New World.

If necessary, grow gourds on a trellis, arbor, or fence to save space.

## Growing Conditions

Gourds are much like the other vine crops when it comes to their growing requirements. They need plenty of space in a sunny spot. A rich, well drained soil is best. These prefer a fertile loam.

Sensitive to cold, gourd plants like warm days and warm nights. So, wait until all danger of frost has passed. Those in the North should choose short season varieties, such as small fruited gourds.

## Planting

Prepare the soil well, adding some compost or composted manure along with a balanced fertilizer.

To minimize the need for watering and weeding, use black plastic mulch in the rows. Cut large holes or slits at appropriate intervals for the plants. Space Old World gourd plants about 15 feet apart. The others only need six to eight feet between plants.

Plant the seeds one inch deep. These usually germinate in about five to seven days. Direct sowing is done in areas with long growing seasons. In northern climates, gardeners may prefer to start their seeds indoors about four weeks before the expected transplant date.

After the seedlings are hardened off, transplant them to the outdoors. Avoid damaging the roots during this process.

If the weather turns unusually cold after you've planted the gourds, cover them with a garden cloche, Wall O' Water, or hotkaps.

## Caring for Gourd Plants

Once the seeds or plants are in place, spread straw or other organic mulch between the rows.

To keep the plants bushy, pinch the tips of the first stems when they reach about 10 feet in length. This will encourage branching and promote earlier flowering and fruiting.

Keep the soil moist for best results. Like all vine crops, gourds will need watering during dry periods. They require at least an inch of water every seven to 10 days. Water on an as-needed basis until about Labor Day. Then, reduce watering somewhat so the gourds can begin to ripen.

For best results, fertilize gourd plants on a regular basis unless a slow release formula is used at planting time. Apply this every three weeks or so until the end of the Summer. Compost tea, manure tea, and fish emulsion are often used successfully. If applying a chemical fertilizer, select a balanced one for high nitrogen can interfere with flowering and fruiting. Nitrogen is the first number listed in the fertilizer formula.

For perfectly shaped gourds, turn them every week so that all sides of the fruits will be exposed to sunlight. Otherwise, they may become discolored or flattened on one side. If the plants are trained on a trellis or other

support, this is unnecessary.

Regarding insect and disease problems, the Old World gourd plants tend to experience fewer outbreaks. On the other hand, the New World gourds suffer from the usual organisms that attack squash, such as squash bugs, since these plants are related to squash.

To prevent the fruits from rotting, place clean straw, plastic mulch, or a board under each one.

For the very large fruited varieties, thin the fruits, leaving only one per plant.

### Pollination and Nectar/Pollen Status

Gourd plants require pollination. New World gourd blossoms are yellow and very large. Opening during the daytime just like squash flowers, these are pollinated by honeybees. On the other hand, the large, fragrant, white flowers of many Old World species emerge during the night for pollination by moths and other night flyers.

As with other vine crops, the first flowers to open are the male ones. You can easily identify the females by looking at the base of the blossoms for a very small swelling. Later, this will expand to become the gourd. The female blossoms usually occur on the side shoots, while the males appear on the main stems.

Like pumpkins and squash, New World gourd blossoms provide nectar and pollen for bees. Typically, there aren't enough of the blossoms to yield pure gourd honey.

### Harvesting and Drying Gourds

New World and Old World gourds are harvested at different times. Pick the former before the first frost. If exposed to cold, they won't last as well. At this stage, the stems should be yellow or brown, while the skins will be at their brightest.

The Old World gourds can tolerate more cold. These fruits can be left on the vines until the stems change color. Typically, this will be after a light frost.

Cut the gourds from the vines, leaving four inches or so of the stems on the fruits. This helps prevent the gourds from rotting. At this point, the fruits will be heavy. Handle carefully to avoid damaging or scratching the surface.

Wash the gourds in soapy wa-

ter to remove any soil or dirt. Rinse carefully. Next, disinfect them with a bleach solution made from one part bleach to 10 parts water. Rinse, and place them on newspapers or on a slatted shelf to dry. Don't allow them to touch, and turn them each day. Discard any that shrivel or develop soft spots as they might cause the others to spoil.

Proper curing can require anywhere from one to six months, depending on the size, kind of gourd, and weather conditions.

The New World gourds will rarely dry as well as the Old World types. For that reason, they will only last for about four months. To hold New World gourds longer than that, apply clear shellac or paste wax. These tend to lose their color as they age unless they're waxed.

### The Types of Gourds

As mentioned earlier, there are two broad groups of gourds – the New World and the Old World. You can easily tell the two apart by touching the plants. The latter will have soft, velvety foliage, while that of the New World feels very prickly. Of the two, the New World species tend to be easier to grow. They require a shorter growing season – only 95 days or so.

Most gourds are named either for their shape or typical use, such as the sponge gourd or the snake gourd.



Luffa gourd.

### New World Gourds

Related to squash and pumpkins, all New World gourds are some type of *Cucurbita*. They come in a wide variety of shapes and colors. The skin can be smooth or warty. Of the New World gourds, the following varieties are the most popular.

Finger gourd (*Cucurbita pepo* var. *ovifera*) is known by various other names, such as crown of thorns, and the Ten Commandments. This is easily recognized by the 10, thorn-like prongs around the edges. These gourds can be solid, striped, or multicolored. They can be waxed as well.

Flat striped gourds (*Cucurbita pepo*) are small, round, and somewhat flattened. These grow to five inches tall and about a foot across. They're multicolored, mostly green with cream and white.

Nest egg gourds (*Cucurbita pepo*) have a surprising, egg-like appearance, which explains the name. They're also called goblin eggs. Though these tend to be pretty small, they can range in size from that of a bantam egg to a duck or goose egg. This gourd comes in various colors, including solids and bicolors.

Orange gourds (*Cucurbita pepo*) are also known as orange balls. Small, round, and perfectly smooth, these look like an orange. They're about three inches wide.

Pear gourd (*Cucurbita pepo*) is a smooth, pear shaped gourd. The top and the bottom are different colors. Decorated with stripes that run lengthwise, this is only around five inches wide.

Small warty gourds (*Cucurbita pepo*) are sometimes called African warty though they're native to the New World. These small fruits are covered with warts.

Spoon gourds (*Cucurbita pepo*) have small, spoon shaped fruits with a long, curving neck. These grow to about six inches in length. They're multicolored with stripes.

Turban gourd (*Cucurbita maxima*) is also known as Turk's turban, or Turk's cap. This is actually a kind of edible buttercup Winter squash. However, it is often grown as a gourd and used for decorative purposes. Usually about 10 inches wide and almost as tall, this has a prominent turban or button that is highly striped. Turbans are mostly orange-red.

Winged gourds (*Cucurbita* spp.)

can be smooth or warted. Often bicolored, these come in a range of sizes and colors. The wings are very deep. These gourds grow to about eight inches tall.

#### Old World Gourds

There are three species of Old World gourds that are widely cultivated, including the luffa.

#### The Lagenarias

One of the most popular Old World species is *Lagenaria siceraria*. This Latin name means 'drinking vessel.' Apparently native to Africa, they've been in cultivation for around 8000 years. These require a longer growing season than the New World gourds, typically about 110 to 125 days.

Many varieties of *Lagenaria* are available, including the following.

Apple gourds are shaped just like very large apples. These reach eight inches in diameter with an equal height. Once they're dry, you can paint them the color of apples.

Basket gourds are basically round with no neck. Examples include the basketball gourds. Also called bushel basket gourds, these are almost perfectly round. They can reach two feet in diameter.

Bottle gourds, also known as martin house gourds, have a round, bottle-like base. They come in different sizes from four inches tall up to a foot or so in height. To use as a bottle, stand the young fruits upright to create a flat base.

The bule gourd is a French heirloom variety. Basically, it looks like an Osage orange or a fuzzy apple covered with warts. This reaches six inches in height and width.

Corsican, also called sugar gourd, is round and squat, tapering towards the stem. This reaches about a foot across and two feet tall. It is used mostly for boxes and bowls.

Dipper gourds, also known as club gourds, come in different sizes. Sometimes they're called caveman's club. These have a long, thin 'handle' that can reach two to four feet in length and a swollen base forming a dipper that is eight inches in diameter. For perfectly straight handles, you'll need to trellis the plant.

The penguin or powder horn gourds are curving, tapering towards the top. Reaching over a foot in height, they resemble a penguin

if they're painted black and white. These are also known as calabash.

#### The Snake Gourd

This species (*Trichosanthes cucurina*) is also called siphon and Italian edible gourd. These can be painted to look like real snakes. Long and curving, they reach three to five feet in length. The young fruits are edible.

This plant has pleasantly scented, white, fringed blossoms. Unlike some other Old World gourds, these flowers are very attractive to honey bees.

#### Luffa Gourds

Luffa is also called sponge gourd or dish rag gourd (*Luffa spp.*) These are most commonly used as sponges. However, several species (*Luffa cylindrica*, *Luffa acutangula*) are eaten as

a cooked vegetable when the fruits are only six to eight inches in length. With a mild flavor, these are prepared much like squash.

#### Speckled swan gourd

Also known as crookneck swan, this is truly shaped like a swan. With a curving neck, this is green with white specks. It is also known as cobra or gooseneck. They reach eight inches in diameter and up to 1 1/2 feet tall.

Experts disagree as to the whether this is a *Cucurbita* or *Lagenaria*. In either case, the fruits are ready to harvest in about 100 days, which sounds more like a New World gourd. **BC**

*Connie Krochmal is an award winning garden writer and a beekeeper in Black Mountain, South Carolina.*

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# STAY DRY

## with office supplies

Karen Edmundson Bean

### *Easy prep for a wet Winter*

It is amazing what you can achieve with roofing tar paper and a few simple "tools" that just might be lying in your desk drawer. The tar paper, a pair of scissors, a stapler, and some push pins you can keep a hive quite dry in torrential rains.

It rains a lot where I live. We can see 70 to 140 inches in a year. It became clear very early on in beekeeping that I had to find a way to keep water from seeping into my hives during the extreme downpours that can set up our area in the foothills of the Cascades in western Washington. To make this more challenging, the rain often comes with high winds. In November of 2006 we had gales that toppled 70 foot cedars, and peaked at 85 miles per hour. All this was followed by white-out conditions as the snow arrived. But through all the wind, rain, and three months of my hives stayed dry.

What follows is how I managed to keep them dry with a few office supplies.

1) Assemble the "tools"

2) Roll tar paper over the top of a covered, *empty* hive. You could use a hive with bees, but using scissors in gloves is a real challenge. Leave enough paper hanging over each narrow side of the hive to allow the paper to go beyond the where the top and bottom box meet.

3) Cut the paper.

4) Fold the edges of the paper down two adjacent sides. Pull the resulting triangular flap over to one side just like you were wrapping a gift and staple two or three times.

5) Repeat on all four corners. The resulting "hat" will now lift off of your empty covered hive and can be set aside until needed.

6) Roll out enough tar paper to wrap around the hive below the cover. Make sure you have a bit of overlap. I like to put the over lap at one of the corners.

With your length(s) of tar paper and tar paper hat in hand, now head for the hives.

7) This is where the push pins come in. Wrap the



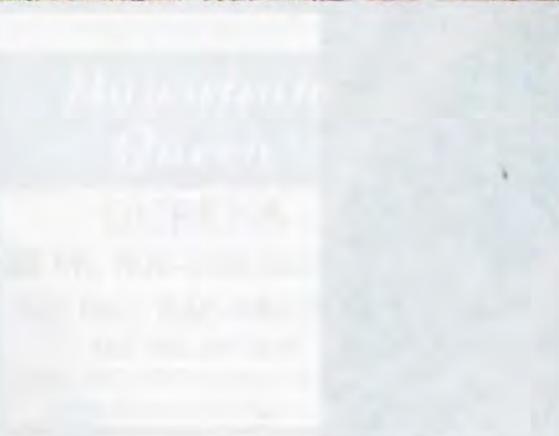


straight piece of tar paper around the hive. Let it overlap on one corner. Grab the push pins and fasten the paper down. If you push the pins in on the rough cut edges of the joins they slide in quite nicely.

8) Set the tar paper hat on top.

I like to put a piece of scrap plywood on the top overhanging the front. I figure the bees hate to step out directly into the rain as much as I do. You can usually pick this up for free at construction sites.

Through wind, rain, and snow this simple creation, made with tools most of us have lying around, keeps my hives dry so the girls are healthy and active when the storms clear and the trees bud in the Spring. **BC**



# Let's Get Cleaning!



Ann Harman

## Be Ruthless - Give It Away, Sell It, Or Trash It!

In the comic strip, Dagwood is frequently getting ready to clean out the attic or the garage. But first he has to take a nap on the couch. I am suggesting that you, at last, clean up all your beekeeping junk - sorry, equipment. Your stash of bee stuff probably resembles the back room of an antique shop or more likely Dagwood's attic. No, you cannot take that nap on the couch. Leave that to Dagwood.

If cleaning up seems like too daunting a task, may I suggest a radio turned to your favorite station, some of your favorite beverage and a dreary day with no escape to the outside. You say you need help? Well, just ask your spouse to give you a hand. I am sure help will be speedily and cheerfully provided. If snide remarks get out of hand, just turn the radio volume up.

Let's start with those shelves. Here's one lefthanded bee glove. You say you are certain that the righthanded one exists? OK, set this one aside and maybe we'll find it. In that case you would be ready for requeening that nasty hive. You have put that task off, you know.

Oh look! In a corner of a shelf is a brand new spur embedder. Remember, you bought that when your electric embedder did something unforgivable and quit working. That was some time ago. You've been using plastic foundation for...let's see, about eight years. Now what to do with a spur embedder? It won't make a good pizza cutter - not sharp enough. Probably wouldn't work for crimping piecrust - teeth not long enough. Besides the kitchen drawers are overrun with less-than useful-gadgets.

It's time to get a large empty box. This one will hold the perfectly useful items - useful for somebody else - and will go to your local beekeeping association. Perhaps some can be

sold; perhaps others could be given away. Some might even qualify as door prizes.

That electric embedder is on the top shelf. All it needs is a sign that says "non-working condition" or "as is." And it can go in the association box. Look what's underneath it - a brand new hive tool won as a door prize three years ago. That's an item to save.

An interesting thought enters here. Perhaps cleaning up equipment could be a local association project. Two or three get together and help clean up one place. Then the next week move on to the second equipment shed. Then on to the third. One drawback is that such a project will take much longer than with a spouse's help. But beekeeping stories are so funny. Remember that swarm that moved into the....

Back to work!

Whew! That's a dusty mess in the corner of that shelf. Looks like some of it fell on the floor. Oh yes. You just found some odd bits and pieces of frames - top bars that lost an ear, side bars with broken-off ears, split bottom bars that really did split. Now look here. Winter is coming and you will need some nice kindling for the fireplace. Brush off the dust with the bee brush that lost its handle (that's from the time you ran over both the smoker and the bee brush with your friend's pickup) and put the kindling over by the woodpile.

Do you remember what you put in that three-pound coffee can right there on a shelf? You are not going to find a gold mine but dump it out anyway. What did you plan for three badly-bent hive staples? Two little red

caps for bear spouts? An "automatic" grafting needle that lost its automatic properties? And countless queen cages? Aw - a little spider is living in a queen cage. Do you really have need for all the queen cages you receive? No, you don't. You can offer them, free, to your beekeeping association - everyone needs a queen cage or two (notice the number of queen cages needed). So the excess goes into the association box.

Doesn't that look like lumps of white cloth stuffed around a crack in the window frame? Go over and see what it is. Oh oh. Remember the elderly beekeeper who died a year ago and his widow wanted to get rid of his bees and "beekeeping things?" You were so glad to help. After all you are the only beekeeper she knows. So you came home with two boxes of his "beekeeping things."

That white cloth turns out to be his beekeeping coveralls that you stuffed into cracks around the window frame one horrible winter day. My, he must have been a big man - the height and width of the coveralls are certainly impressive.

Oh - in the keeper is a hive tool with a bit of red paint. Perfectly good. Oh dear - a mouse has chewed a large hole in the seat of the coveralls. Clean, repair and put in local association box. Keep the hive tool. That's number two.

Before you tackle another box that the widow's things came in you better look into that black plastic trash bag in the corner - the one your spouse insisted was "yours," "not mine."

Oh the Treasures of the Deep! The black plastic trash bag holds 10 frames of wax-moth-ravaged frames and wax foundation. When did you say you last used wax foundation?



Yes, about eight years ago. Exactly what were you saving these for? Let's go back to the cozy fireplace on a chilly winter day. There might be enough wax left to start a fire. Did you find something heavy at the bottom of the bag? Yes, the hive tool you were going to use to clean up the frames and a frame cleaner. Well, the frame cleaner can go into the local association box. But save the hive tool! (That's number three.)

You need to examine the two boxes of "beekeeping things" from the widow. At the bottom of one of them is an old, warped plastic bottom board. He probably bought it when plastic equipment first appeared. Now is that really salvageable as an antique? No. Would you really pass it on to any beekeeper as a serviceable bottom board? No. Stick it under a downspout and drain the water away from the house foundation.

Look over there on the third shelf. There's an unopened cardboard box. Clean off the accumulated dust. Square section equipment: basswood boxes and window cartons. All brand new. No, no – resist the temptation! If you have not had time in the past to use these, do you have time now? Think carefully. And put the box in the local association box. True, you may be helping a beekeeper three years from now and encounter the box with a new layer of dust. But now that it is someone else's you can cheerfully suggest to discard it or to pass it on.

There! Down on the floor under the bottom shelf – looks like a can of paint. What a great find. You can refurbish your hives this Winter with a nice coat of paint. Oops – that can is empty. But on top of it is a hive tool, probably intended to pry the paint can open. Oh well, at least you now have hive tool number four.

Let's have another dig into the "beekeeping things" boxes. Here is a slightly dented coffee can, fairly heavy. A look inside shows that it is full of nails. Rusty nails, frame nails, bent nails, wedge nails, hive body nails, nails from the hardware store bins and some thumbtacks. You have not just discovered the Mother Lode of nails. What you have found is something to put in the local association box with a note that says: "the contents need sorting." Perhaps the new owner will be someone who has endless time and loves to tackle

little bits and pieces. You have now made someone happy.

Great – here's an electric uncapping knife that looks hardly used. Better plug it in. You can't tell from the outside whether it will work or not. It works! That is something to save.

Down in the bottom of one box is a fragile paper bag, not too heavy. You just found about a dozen bee escapes. They do look used, not new. Better check the little springs inside. Most of them seem well-gummed together. No escape here – either for the bees or you. Look in the catalogs at the price of Porter bee escapes. Is it worth trying to clean these up? Since you use a blower for your bees the bee escapes need to be put in the trash.

Time to check if anything is left in the two boxes of "beekeeping things." Dust, a few dead moths, bits of crumbly newspaper and something that goes "clunk" when you picked up



the last box. It's a hive tool! You now have five hive tools.

Move on to the stack of queen excluders. These need careful review. Those with the wood frames need to be examined for rotten frames. You can buy wood replacement frames – but will you replace them during the Winter months? Are you certain? If you have had them for six years and they are still in a state of disrepair, what makes you think you will fix them up this Winter? Think carefully – and listen to your spouse. Now put them in the local association box.

Rusty excluders and those with bent rods do not help either the bees or the queen. In fact one of those might have been your problem with brood in honey supers.

Well, it's the end of the day. Productive? Certainly. In fact now you are so proud of your clean, organized beekeeping equipment that you can't stop admiring your work. Furthermore you now have five hive tools. It will take you all beekeeping season to lose those.

Wait! Just wait a minute! Sitting over here is that lefthanded beekeeping glove. It's partner, the righthanded one, never appeared. Now what? TRASH IT! **BC**

*Ann Harman tries to keep a handle on her beekeeping equipment at her home in Flint Hill, Virginia.*

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# ? DO YOU KNOW ?

## Nutrition

Clarence **Collison**  
Mississippi State University

Having just completed another excellent EAS short course and conference, attention now turns to dealing with the extensive heat wave (100+°F for several consecutive days) and drought in the southern U.S. What little bee forage that remains is quickly drying up and no longer providing nectar and pollen for the foragers. Many beekeepers are indicating that they are going to have to start

feeding in order to keep their colonies alive. At the recent EAS meeting, the topic of bee nutrition was of interest to many beekeepers; lack of adequate nutrition is another form of stress that colonies have to deal with.

Please take a few minutes and answer the following questions to determine how familiar you are with basic beekeeping knowledge.

### Level 1 Beekeeping

1. \_\_\_ A forager with a load of nectar significantly reduces the water content of her load while returning to the hive. (True or False)
2. \_\_\_ A method of raising a few queens in which a frame of eggs and young larvae are placed face down on the top bars of a brood nest in a queenless colony and completed queen cells are cut from the frame.  
A. Smith Method  
B. Doolittle Method  
C. Miller Method  
D. Hopkins Method  
E. Alley Method
3. \_\_\_ Once a honey bee queen starts laying eggs she will never mate again. (True or False)
4. \_\_\_ An adult bee louse has eight legs. (True or False)
5. \_\_\_ MegaBee™ is a new pollen substitute that was developed at the Tucson Bee Laboratory. (True or False)
6. \_\_\_ Pollen supplies the honey bee with energy. (True or False)
7. \_\_\_ Dried pollen has greater nutritional value than frozen pollen from the same floral source. (True or False)
8. \_\_\_ The attractiveness of pollen in the hive declines as the distance from the brood area increases. (True or False)
9. \_\_\_ Bees use water to maintain the proper colony temperature in hot weather and maintain the proper relative humidity in the brood nest. (True or False)
10. \_\_\_ Brood care by nurse bees has two distinct phases. A nurse bee initially secretes royal jelly and feeds young larvae and as she ages switches to feeding nectar, diluted honey and pollen to older larvae. (True or False)
11. \_\_\_ The rate of hypopharyngeal gland development is related to the protein content of the worker honey bee's diet. (True or False)
12. Water is a vital element in the honey bee diet. Name two ways that the honey bee uses this dietary component. (2 points)

### Advanced Beekeeping

13. Explain the difference between a humoral and a cellular immune response. (2 points)
  14. \_\_\_ Drone honey bees produce a pheromone in their mandibular glands that attracts flying drones in their congregation areas. (True or False)
  15. Please give two possible causes for honey bee adults having deformed wings. (2 points).
- Group A- Abaecin, Defensin, Hymenoptaecin, Apidaecin,  
Group B- Phenol Oxidase, Glucose Dehydrogenase, Glucose Oxidase, Lysozyme
16. The above chemicals are associated with the honey bees \_\_\_\_\_ system. (1 point)
  17. Group A chemicals are known as \_\_\_\_\_. (1 point)
  18. If you offered honey bees equal concentrations of glucose, sucrose and fructose, which one would the foragers prefer? (1 point)
  19. What honey bee body part is associated with the detection of heat, perception of carbon dioxide and relative humidity levels? (1 point)
  20. \_\_\_ Queen fecal pheromone is produced by virgin queens and released during queen fighting. (True or False)
  21. What is believed to be the function of the queen egg-marking pheromone? (1 point)
  22. \_\_\_ The chemical that inhibits pollen germination in stored pollen within the comb is produced by the worker's \_\_\_\_\_ gland(s).  
A. Hypopharyngeal  
B. Salivary  
C. Dufour  
D. Mandibular  
E. Tergite
  23. \_\_\_ Vitellogenin is synthesized in the abdominal fat body of adult bees. (True or False)

ANSWERS ON NEXT PAGE

# ?Do You Know?

## Answers

- False** In several instances, it has been shown that the honey bee does not appreciably change the concentration of nectar while gathering a load and carrying it back to the hive. No increase in sugar concentration occurs while the bee is en route to the hive with her load, as was suggested for many years.
- D) Hopkins Method
- True** A queen's entire supply of spermatozoa is limited to those obtained during her mating flight(s) before she begins egg laying. Once she begins laying eggs, she will never mate again.
- False** The honey bee louse, *Braula coeca*, is a wingless fly. Since it is a true insect, it will have three pairs of legs.
- True** The USDA ARS Tucson Bee Laboratory has been developing a new pollen substitute during the last several years. Research and development have been completed and the new product is now available and being sold with the trade name of MegaBee™.
- False** Pollen supplies the honey bee with protein, fats, vitamins, minerals, amino acids and sterols, however, is a poor source of food energy. The active adult needs to consume honey or nectar to obtain adequate energy.
- False** Freshly trapped pollen is perishable and must be either frozen or dried. Several researchers have shown that the nutritional value of pollen decreases upon storage. The nutritional value of dried pollen decreases faster than when it is stored frozen.
- True** The location of pollen stored in the hive determines how quickly it will be consumed. Pollen disappears most rapidly when it is adjacent to unsealed brood. Research has shown that the attractiveness of pollen in the hive declined as the distance from the brood area was increased. Honey bee's response to pollen declined significantly when the distance was increased from 1.0 to 1.5 cm, and even more at 1.5 and 2.0 cm. Pollen is unlikely to be used by nurse bees unless it is very close to the brood.
- True** Water is collected by honey bees to maintain the proper colony temperature in hot weather. The higher the temperature, the greater the water requirement. Honey bees cool the inside of the hive by putting droplets of water on the comb and cause evaporative cooling by fanning their wings. Honey bees also use water to maintain the proper relative humidity in the brood nest to insure egg hatch and to prevent larval dessication.
- False** When a young worker begins caring for brood (within a day or so after emergence) they initially begin to feed nectar, diluted honey and pollen to larvae more than three days old. When the worker is six to 12 days of age, their brood food (hypopharyngeal) glands become mature and they begin to feed royal jelly to larvae less than three days old.
- True** It has been found that the rate of hypopharyngeal gland development is related to the protein content of the worker's diet. The best development is normally obtained at the highest levels of protein. The complete morphological development of the glands, however, cannot serve as an indicator of the suitability of the glandular secretion for brood rearing. Well developed glands may secrete a product that is deficient in a factor(s) essential for normal larval development.
- Carrying dissolved food materials to all parts of the body  
Assists in the removal of waste products  
Involved in digesting and metabolizing food
- Honey bees exhibit defensive responses when their tissues are invaded by other organisms. It is common to recognize two types of immune processes, cellular and humoral (hormonal), although they are probably not entirely independent. Cellular immunity involves amoeboid like cells that can ingest foreign particles. Humoral is applied to any immune response due to factors in the hemolymph separate from the cells. Within mammalian systems humoral immunity would involve the production of antibodies, however, the existence of antibodies within insect systems has not been shown.
- True** The mandibular glands of drones contain an extractable pheromone that attracts flying drones in their congregation areas. This pheromone could promote the formation of drone aggregations at sites that are very suitable for mating.
- Damage associated with *Varroa* mite feeding during pupal development  
Deformed wing virus
- Immune
- Antimicrobial Peptides
- Sucrose
- Antennae
- True** Queen fecal pheromone is produced by virgin queens. This chemical complex is repellent to workers, increases grooming and reduces aggression. It is released during queen fighting.
- Queen egg-marking pheromone is believed to be used by policing workers to distinguish between queen-laid and worker-laid eggs. Workers destroy a high proportion of worker-laid eggs.
- D) Mandibular
- True** Vitellogenin, best known as yolk protein, and the main storage protein in honey bee hemolymph is synthesized in the abdominal fat body.

There were a possible 13 points in each test level this month. Check the table below to determine how well you did. If you scored less than six points, do not be discouraged. Keep reading and studying- you will do better in the future.

Number Of Points Correct	
13-11	Excellent
10-8	Good
7-6	Fair

Clarence Collison is a Professor of Entomology and Head of the Department of Entomology and Plant Pathology at Mississippi State University, Mississippi State, MS.



# GLEANNINGS

OCTOBER, 2007 • ALL THE NEWS THAT FITS

## NZ BEEKEEPERS WANT OZ HONEY BANNED

New Zealand beekeepers want biosecurity officials to ban imports of Australian honey because of suspicions that a virus in Australian bees is triggering the widespread collapse of bee colonies in the United States.

"Because it's a pathogen, it means we are at risk of getting it here," Hortresearch honey bee scientist Mark Goodwin is quoted as saying.

"It's very suggestive that this is the cause—the next thing the American researchers have to do is to try to deliberately infect bee colonies with the virus and get the same effect," Goodwin says.

The National Beekeepers Association says it will ask the Ministry of Agriculture to take precautions against accidental import of the virus.

New Zealand allowed imports of Australian honey late last year over the objections of the industry, which now has a case before the country's Appeal Court.

The association is arguing that the ministry does not have the power to permit entry of "passenger" mi-

croorganisms it knew would be in the honey. That argument was made before the association knew that Israeli acute paralysis virus (IAPV) in Australia might be a factor in colony collapse.

An association spokesman says the possibility the virus is triggering colony collapse in bees already affected by *Varroa* calls for immediate action by the ministry.

"If it (IAPV) is present in Australian bees, then there is a need to define the parts of Australia where it is found and the extent to which it is a risk for New Zealand, where bees are already weakened by *Varroa*," he says.

But ministry biosecurity senior policy analyst Paul Bolger says New Zealand does not import live bees or bee semen from Australia and this was the most likely way bee viruses might be spread.

"The report in Science has only just been published and we are still assessing it to determine the appropriate steps to take," he says.

—Alan Harman

## NATIONAL BEEKEEPING CONFERENCE: DON'T MISS THIS ONE

The 2008 National Beekeeping Conference -- the joint conventions of American Beekeeping Federation and American Honey Producers Association will truly be a not-to-be missed event, one that will not be repeated in the foreseeable future.

The Conference will feature:

- The largest U.S. beekeeping trade show ever.

- All the top industry speakers.

- In addition to ABF and AHPA, the meetings of American Bee Research Conference, American Association of Professional Apiculturists, Apiary Inspectors of America, and National Honey Packers and Dealers Association.

- Tours to the University of CA Bee Biology Facility in Davis and to the CA operation of Mann Lake Ltd. and the Hedrick Ag History Center -- both tours include dinner.

- Opportunities to learn new techniques at interactive workshops, to exhibit your best honey and beeswax in the American Honey Show, to expand your horizons at the parallel program for sideliners, and -- perhaps most enjoyable of all -- to meet new beekeepers -- people you don't usually see at the convention you

usually attend.

The Conference will be Jan. 8-12 at the Doubletree Hotel in Sacramento, Calif. It opens on Tuesday evening with a Welcome to California reception hosted by California beekeepers and concludes on Saturday evening with the annual ABF and AHPA banquets. In between are four days packed with fun, fellowship, and information.

Watch for the developing details to be posted on the AHPA and ABF websites: [www.americanhoneyproducers.org](http://www.americanhoneyproducers.org) and [www.abfnet.org](http://www.abfnet.org). Ask to be put on the pre-conference mailing list by contacting ABF at 912-427-4233 or email: [info@abfnet.org](mailto:info@abfnet.org) or email: [brownhoneyfarms@hotmail.com](mailto:brownhoneyfarms@hotmail.com).

Information is available at the same numbers on how you can promote your business or service at the Conference.

The reserve a hotel room for the Conference, call the Doubletree at 916-929-8855 or 800-222-8733. The group rate is \$95 for up to four persons per room. There are a limited number of rooms available at the Doubletree, but a nearby hotel will house the overflow.

## MANUKA HONEY REALLY WORKS

Manuka Health New Zealand Ltd. and Germany's Technical University of Dresden are working to set industry standards for the use of manuka honey products to heal wounds, overcome stomach and skin problems -- and potentially in the fight against cancer.

The move comes after the discovery by the university's researchers of the compound responsible for manuka honey's anti-bacterial activity.

Manuka Health chief executive Kerry Paul says the university's Institute of Food Chemistry was the first to identify the compound methylglyoxal (MGO) and prove its

high levels in some New Zealand manuka honeys.

Paul says the discovery that honey's anti-bacterial ability is directly related to MGO levels is highly significant for the industry.

"We have known for some time that manuka honey has this property," he says. "The term Unique Manuka Factor is used to describe this honey's consistently reliable anti-bacterial effect and UMF has been trademarked by the Active Manuka Honey Association.

"But we haven't known until the German discovery what the com-

*Continued on Next Page*

## RESISTANT AMERICAN FOULBROOD

American researchers have discovered why the American foulbrood (AFB) causing bacteria has suddenly developed resistance to the only treatment approved for use in the United States.

ARS molecular biologist Dan Murray, Weslaco, Texas, has figured out why.

Murray and molecular biologist Katherine Aronstein discovered in *P. larvae* a natural plasmid -- dubbed pMA67 -- that contains an OTC resistance gene. Plasmids are small DNA molecules containing up to several dozen genes that bacteria pass on when they reproduce.

This is the first report of any tetracycline resistance gene being found in any *Paenibacillus* bacteria.

Among 35 *P. larvae* strains tested from across the U.S. and one from

Canada, all 21 OTC-resistant strains possessed this plasmid and all 15 OTC-sensitive strains did not.

"This finding was unexpected," Murray says. "Other scientists have found plasmids in various AFB bacterial strains but none of them conferred antibiotic resistance. This plasmid is significant because it has rendered useless what until very recently has been the only effective preventive treatment for AFB."

There are two likely reasons for the relatively rapid spread of OTC resistance: First, bees from broad geographical areas are brought together for pollination.

It is the same phenomenon largely responsible for spread of antibiotic resistance among disease-causing bacteria in humans.

## BEES UP ON THE ROOF

Bees operating from two hives on the roof of Chicago's City Hall are expected to produce a combined 200 pounds of honey this season.

Veteran beekeeper Michael Thompson, who operates the hives, tells reporters the state average is 40 to 50 pounds a hive.

"They're doing well, and we're happy about it," Thompson says.

The harvest by the bees on Mayor Richard Daley's 20,300-square-foot green roof is about the same as last year but this time the honey is a rich amber color — a change from the light yellow-green color of previous seasons.

Thompson is quoted as saying he thinks the change is because the bees are going to Millennium Park and the prairie wildflowers and ornamentals planted there.

"I walk through and see thousands and thousands on the plants," he says. "They're especially going to the mint family."

There are also four hives on the roof of the Chicago Cultural Center.

The six city hives are expected to

produce more than 300 pounds of honey this year.

The roof top honey, with a sweet, fruity taste, is sold in two-ounce jars for \$2 each. The money raised is used to support various city groups.

The \$1.5-million rooftop garden on the 11-story city hall in Chicago's Loop was first planted in 2000 as a demonstration project to test the benefits of green roofs and how they affect temperature and air quality.

The beehives were added in 2003.

The garden consists of 20,000 plants of more than 150 species, including shrubs, vines and two trees. The plants were selected for their ability to thrive in the conditions on the roof, which is exposed to the sun and can be windy and arid. Most are prairie plants native to the Chicago region. The low-maintenance garden relies on a special blend of compost, mulch, and sponge-like ingredients that weighs less than regular topsoil and retains more water. It can retain 75% of an inch of rainfall before there is storm water runoff into the sewers. — Alan Harman

## REPORT HELPS SMALL, MEDIUM-SIZED FARMERS IN RETAIL MARKET MEET TECH NEEDS

USDA's Agricultural Marketing Service (AMS) today released Supply Chain Basics: Technology — How Much, How Soon, a report focusing on helping small and medium-sized farmers understand the technological requirements of today's retail food marketplace.

The guide is a streamlined, ground-level introduction to technologies used to inventory, move and track food products from producer to retail outlets. From bar codes to Radio Frequency Identification (RFID) to Global Positioning Satellite (GPS) tracking, the report not only explains the technology, but also provides information on implementation and user costs.

Technologically advanced labeling, stickers and package marking on agricultural products are required by many retailers, and farmers and processors not using them find it increasingly difficult to compete in today's retail market. Because many small and socially disadvantaged farmers and processors are not familiar with current logistics technology, they are hampered in their efforts to build farm marketing capacity and/or improve food marketing practices. Supply Chain Basics gives them a guide to help understand and adopt these technologies in such areas as logistics, inventory

control and product merchandising.

*Supply Chain Basics: Technology — How Much, How Soon* is available online at [www.ams.usda.gov/tmd/MSB/PDFpubList/SupplyChainTechnology07-07.pdf](http://www.ams.usda.gov/tmd/MSB/PDFpubList/SupplyChainTechnology07-07.pdf) and will soon be available in print form on request from Sharon Williams, Marketing Services Branch, Transportation and Marketing Programs, AMS, Room 2646-South, STOP 0269, 1400 Independence Ave., SW, Washington, D.C. 20250; by phone at 202/720-8317; fax at 202/690-0031; or e-mail to [SharonC.Williams@usda.gov](mailto:SharonC.Williams@usda.gov).

## EVA CRANE

It is with much sadness that we report that Dr. Eva Crane, founder of IBRA and inspirational bee scientist, passed away peacefully on the afternoon of Thursday 6th September 2007 at the age of 94. She had become increasingly frail over the past few months and was admitted to Wexham Park Hospital in Berkshire on Monday. A complete obituary will appear next month.

## NEW NATIONAL HONEY BOARD OFFICERS ELECTED & NEW BOARD MEMBERS SEATED

New officers were elected at the National Honey Board's (NHB) recent meeting in Denver, CO, June 21-22.

The new Chairman is Buddy Ashurst, El Centro, CA. Ashurst has been a beekeeper for 47 years and owns Ashurst American Honey, which packs and imports honey.

NHB Vice-chairman is Clint Walker III. He is from Temple, TX, and owns and operates Walker Honey Company with his wife Janice.

Nancy Gamber-Olcott was elected as Secretary/Treasurer. She is President and CEO of Dutch Gold Honey, Inc. of Lancaster, PA.

Reg Wilbanks and Mark Mammen were elected to the Executive Committee. Wilbanks, Claxton, GA, is President of Wilbanks Apiaries,

Inc. Mammen is Executive VP of the Sioux Honey Association.

Two new members were seated at the meeting: Zac Browning, ND, Producer Region Three; and Jim Rodenberg, MT, Producer Region Two. Re-seated for a second term was George Hansen, OR, Producer Region One.

NHB holds three board meetings each year, generally in June, October and February. NHB's next meeting is October 11-12 in Denver, CO.

NHB conducts research, advertising and promotion programs to help maintain and expand domestic and foreign markets for honey. These programs are funded by an assessment of one cent per pound on domestic and imported honey.

## MANUKA ... Cont. From Page 57

pound is that is responsible.

"The next step is to put a standards process in place with the industry which independently certifies MGO levels in honey-based health products," he says.

Paul says manuka honey is already well known for its reliable anti-bacterial activity, making it highly effective for overcoming gastro-intestinal and skin health problems and improving wound healing.

However, with the identification of MGO, further applications for manuka honey were possible, including use as a potential tumoricidal agent to fight cancer.

A research team led by Prof. Thomas Henle of the Institute of Food Chemistry at Dresden tested more than 80 honeys from around the world and found MGO levels as high as 700 mg/kg in some New Zealand manuka honeys, more than 70 times higher than ordinary honey. Previous research had shown the highest concentrations in any food or drink were about 100 mg/kg in cocoa and coffee.

Paul says during the research, Henle's team developed assays for measuring MGO in honey.

The medical researchers had found MGO had the potential to act specifically against malignant cells in the body and has a significant curative effect on a wide range of cancers in animals, he says.

Derma Sciences Inc. receives clearance from the U.S. Food and Drug Administration (FDA) to market and sell its API-MEDTM active manuka honey absorbent dressing.

It is the first FDA clearance of a honey-based product for the management of wounds and burns.

New Zealand-based Comvita Ltd., which owns the patented advanced wound care dressing, says the FDA approval is an important milestone for Comvita because the U.S. advanced wound-care market is worth US\$2.3 billion.

"An ageing population and increase in diabetes will continue to be strong drivers for this fast growing category," Comvita chief executive Brett Hewlett says.

Biologically active honey gathered from some manuka trees contain the compound methylglyoxal, which helps it to battle bacteria causing stomach ulcers, and to promote wound healing. Wound-care products using the honey have also proven effective against some antibiotic-resistant strains of bacteria.

Hewlett said the U.S. approval means revenues from a licensing agreement with Derma Sciences in the U.S. would begin to come on stream later this year from a range of products that had been waiting in the pipeline.

Comvita has a 14% stake in publicly owned Derma Sciences, a marketer of advanced wound-care products. Derma recently won clearance to sell Comvita's anti-microbial dressings with manuka honey in Canada. Similar dressings are already approved as anti-microbials in Europe, Canada, Australia and New Zealand.

*Continued on Next Page*

Hewlett says the company has spent up to NZ\$10 million over five years to get to this point but he expects the investment would pay itself off fairly quickly once the product took root in the U.S. market.

Derma Sciences will launch the API-MED product to medical suppliers, hospitals and care facilities at a wound care conference this month.

Derma Sciences chief executive Ed Quilty says the FDA clearance marks a significant milestone in Derma's plan to use the cash flow from its base business to fund the development and promotion of novel advanced wound care products.

"Based on what we have seen in the European market, we are confident that honey, like silver, will become a rapidly growing category within advanced wound care dressings," he says. "With significant data and evidence being published about Active Manuka Honey, our dressing should do well."

Active Manuka Honey (*Leptospermum scoparium*) is honey that is produced from the nectar of the manuka bush, a tea-tree variety indigenous to New Zealand.

While New Zealanders have long used this honey for medicinal purposes, only in the last 15 to 20 years has it been established that this particular honey has unique charac-

teristics making it commercially viable as a wound and burn dressing.

Many honeys produce low levels of hydrogen peroxide – enough so to provide an antimicrobial effect. However, this hydrogen peroxide is rapidly decomposed into water and oxygen upon contact with catalase, an enzyme present in blood and wound fluid. This makes the antimicrobial activity from typical honeys short-lived, and requires repeated and frequent dressing changes.

Active Manuka Honey has been shown to continue to provide a strong antimicrobial effect, even in the presence of catalase. This allows for dressings comprised of a high volume of Active Manuka Honey to be left in place for several days, a necessary feature for widespread adoption of a topical antimicrobial dressing. Additionally, Active Manuka Honey has been shown to be non-toxic to tissue, a distinct advantage over current topical antimicrobials. – Alan Harman



## QUEEN PHEROMONE AFFECTS LEARNING

Honey bee queens control their offspring with pheromones that alter the chemistry of the honey bee brain. New Zealand researchers have discovered.

Alison Mercer and her research team at the Univ. of Otago showed that a major component of queen pheromone, homovanillyl alcohol, alters the function of dopamine pathways in the brain.

This study provides a direct link between changes in brain biochemistry and complex behavior.

In a study published in *Proceedings of the National Academy of Sciences* the researchers report that in young workers exposed to their mother's pheromone, levels of dopamine in the bee brain, as well as the levels of dopamine receptor gene expression, are reduced.

As a result, the brain's responses to this important modulator are changed dramatically. The effects on brain function are profound and researchers decided to extend their study to explore the effects of queen pheromone on learning in bees.

In *Science* magazine the researchers say aversive olfactory learning in young worker bees is completely blocked by queen pheromone.

Young bees exposed to their mother's pheromone cannot learn to associate odors with a nasty or negative outcome. The effect is not per-

manent, nor is it a general learning deficit. The pheromone's effects on aversive learning are age dependent, and appetitive - food related - learning in young bees is not affected.

The researchers say there is a reason for the queen to block aversive learning in young workers.

Young workers perform many tasks. Their most important role is to feed and groom the queen, and distribute her pheromones throughout the colony. By blocking aversive learning in young workers, the queen may be making her own life and that of the colony more secure.

Exposure to their mother's pheromone prevents young workers from developing an aversion to odors in the hive, including odors produced by the queen. With increasing age, however, worker bees start to leave the colony in search of food.

For foragers, aversive learning is an important survival tool and researchers have found that by the time bees begin foraging, their ability to learn and recall information about noxious stimuli is no longer affected by the pheromone bouquet.

"We've linked events at the cellular and molecular level with changes in behavior," Mercer says. "Finding out how queens use chemicals to manipulate the behavior of offspring is creating a window into the brain of this remarkable animal." – AH

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**M**y Flat Tops bees produce the most delicate and distinctive honey – when they produce. Nine thousand feet is pushing it for honey bees in Colorado. This year a June frost killed the dwarf waterleaf. It didn't rain until almost the end of July, and there was a plague of grasshoppers.

By August 20, I figured it was over and headed to the high country to pull honey. That way I could move my hives to Silt Mesa, where they might make a little rabbit brush honey yet.

At the first yard, I took 14 supers off 23 hives.

At my other yard, I was surprised to discover that there was a honey flow. I couldn't tell you what it was on. It's all wildflowers up there, some with the most fragrant nectar. Once my honey tasted like mint.

After such a dismal Summer, I wasn't about to take bees off a honey flow to gamble they'd make honey somewhere else. Besides, they were plugging my pollen drawers. I thought I'd give them another week.

Paul extracts for me. I was headed down the road to his place with my honey, when it hit me that I left my smoker back at the beeyard. I was pretty sure it was out, but I wouldn't have bet my life on it. I didn't think there was any reasonable possibility that it might start a fire, and we had had some rain. I worry, however, so I made a U-turn. I figured I'd ditch the flatbed at home and drive back to the Flat Tops in my pickup.

But a mile down the road the pickup sputtered and died. OK, this truck is 20 years old. When it breaks down, it's always for the same reason – it won't pump gas from the tank to the injectors. A hundred years in the automotive business, and Ford still can't figure this out? This truck has let me down so many times, I joke with the tow truck company that they should just bill me by the month.

I walked home. When I got there, my tenant was in the backyard. He was teaching his one-year-old to walk. They looked beatific together, father and son. His future ex-wife was coming to pick up both kids. Life's not fair, and my own problems suddenly didn't seem very big.

By this time, the smoker was no longer on my radar. I needed a beer. But the tenant's wife had arrived for the kids, blocking my Toyota in the driveway. So I thought I'd take the flatbed to town, even though I don't ordinarily drive around in that beast with a load of honey.

The perky liquor store clerk is either the cutest 50-year-old who ever sold a six-pack, or she's only 35 but has smoked a few thousand too many Marlboros, which might actually be the case.

I told her, "I've had a bad day. I need a big beer," as I set my 24-ouncer on the counter.

She laughed and said, "Maybe you need two! Don't worry! Things will get better!"

But they didn't. When I got back to the flatbed, the key wouldn't turn. I took it out and looked at it. It was the right key. Was I in "park?" My automatic transmission column is squirrely, and I wondered if I'd finally broken it.

I was sitting in a truck that wouldn't start, at night, two miles from home, on a city street, with a load of honey in the bed, and one beer. There was only one logical first course of action: I drank the beer.

Then I got out of the truck and put the key in my pocket. I had tools in the cab, so I decided to lock it. Since I rarely lock this truck, I decided to make sure the key worked. I tried it, and it did.

A block away, at a house that sits practically on Main Street, I could see J.D. watching T.V. in his living room. I knocked, be-

cause what are friends for, anyway? It was 9 p.m., and he was still up, which was lucky, because he's out of bed by 4:30.

J.D. is a beekeeper, and people mix us up. It's uncanny how much we look alike, although neither of us likes to admit that.

I explained that I'd just broken two trucks in three hours, and naturally he agreed to drive me home. On the way, he set forth his theory on the interrelationship of men and women – a weighty topic, to be sure – but he wrapped it up just as he pulled into my driveway.

I called Paul, and he kindly agreed to loan me a truck the next morning, so I could at least get my honey off the street.

Then, emptying my pockets onto the kitchen table, I pulled out two sets of keys – one for the pickup, one for the flatbed. Both Fords. The rings looked practically identical. The light popped on – the truck wouldn't start, but the door locked. Two sets of keys. Of course.

I drove back to town in the Toyota and unlocked the flatbed cab. I took a deep breath before I put the key into the ignition, but it started right up.

Ed Colby

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