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The almond and the honey bee have both been in the news over and over the past few months. Here they are together – a honey bee pollinating that almond blossom. (photo by Jennifer Beck of Koehnen & Sons, Inc.)

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Publisher – John Root

Editor – Kim Flottum, Ext. 3214, Kim@BeeCulture.com

Production Coordinator – Kathy Summers, Ext. 3215, Kathy@BeeCulture.com

Circulation & Advertising – Dawn Feagan, Ext. 3220, Dawn@BeeCulture.com

Contributors

Clarence Collison James E. Tew Ann Harman

Malcolm T. Sanford • Steve Sheppard

Larry Connor • Connie Krochmal

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Contact Information

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Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

MARCH 2008 VOLUME 136 NUMBER 3

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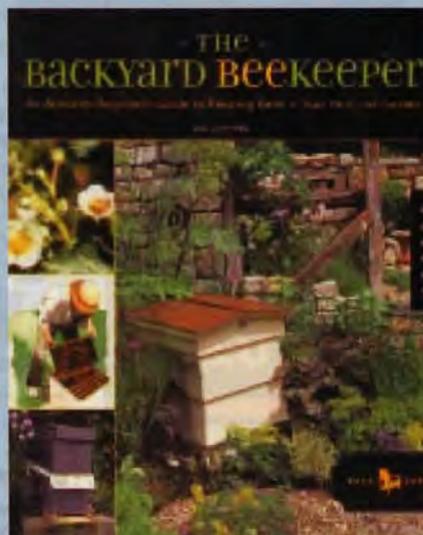
Allendale, NJ may bring back the bees.

John Koster

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Kudos To ABF & AHPA

Yesterday I flew home from probably one of the biggest and best bee conventions in the U.S. I understand there were at least 1500 beekeepers there, 50% more than both ABR and AHP combined. For the past couple of years like some other beekeepers and some vendors, I have elected not to support either organization and have attended neither of the national conventions due to the petty arguing, back biting and conflicting scheduling of conventions.

I think the 2008 convention in Sacramento has shown that the American Beekeeping Federation and the American Honey Producers can meet in the same town and at the same time with tremendous success and to the benefit of all. This allowed the vendors, packers, scientists and beekeepers to interact and mingle much easier. Our industry is only strengthened by uniting with each other. We only hurt ourselves by being divided. It's time we bury the hatchets, heal old wounds, and work together to solve the crises of CCD, *Varroa* mite, bee shortages and other problems that plague our livelihoods. Let's do it again. It was a huge success.

Thanks for a great convention.
Golden Millet
Marsing, ID

Silver Bullet Found

MiteGone kills both mites and repels the small hive beetle. In recent tests in a subtropical environment like central Florida, it was found that the standard MiteGone treatment using three pads will work and provide good results without any bad effects. Further pads were installed on hives with heavy infestation of the small hive beetle, hundreds in the top and bottom, and after a five-day check hives were found with just a few beetles hiding in the comb. This has sustained for five weeks now. Details of the research will be published in *Bee Culture* hopefully in April.

If you do not know what MiteGone is or what it looks like, visit our website at www.mitegone.com and click on "Help Contacts" and explore the home page. If you know about anything else which does all

that, repels the beetle, and costs only \$3-5 total for two treatments per hive, per year, you will also find the silver bullet.

I'm almost 70 and am looking for someone to take over providing beekeepers with the working solution to the mite and beetle problem. The technology for prefilled pads exists (see Ready to Fill kits) which has at least three years tested shelf life while filled with acid. However, this requires registration which I cannot afford. Please contact me if you are interested, or if you know of anyone who may be interested.

It is unfortunate that the U.S. beekeeping industry, professional apiarists, USDA, bee-labs, both associations and regulatory authorities EPA, cannot get together and do what Canadians did in 1994; officially exempt formic acid from pesticide regulations and leave the application up to the beekeeper.

The present position of EPA is that formic acid is not registered as a pesticide, but use of unregulated product, formic acid, by the beekeeper on his own hives does not break any laws on federal books of USA.

Do you think this grey ambiguity can be changed for the better of American beekeepers?

Have a great bee year

Bill Ruzicka
2910 Glenmore Road, North
Kelowna, BC, Canada V1V 2B6

Bad GMOs, Bee Movie

In response to Chris Baldwin's letter Something Sinister in the January 08 issue. I am new to beekeeping, not all the experience like you but I read all I can about the problems that bees are having and I too see that there is something sinister. Although I thankfully have not had the problems that I read about I have only been at it going on my 3rd year. I however have been a gardener most of my life. I feel that what may be wrong with the bees is indeed what is wrong with so much of the world without people being aware. It is in my opinion the GMO crops and seeds. I only use organically grown heirloom seeds and I have had problems the



last couple of years with seeds that I have saved from the plants that I grow because of cross pollination. I live on five acres in the midst of hundreds of acres of farmland some of which grow engineered seeds! My two hives of bees seem to stay here but with all my plants heirloom and organically grown I don't blame them. We have been lied to as Americans as to the damage that GMO does to us and we are among the only countries in the world that put up with what we are being fed. I grow as much of my own as I can and that is partly what led me to beekeeping. I am a subscriber of another publication called *Countryside and Small Stock Journal* that has some great info about what GMO is doing to us. Someone suggested a book called *Your Right To Know -Genetic Engineering and the secret changes in your food* (Andrew Kimbrell of the Center for food safety) and one called *Seeds of Deception* (Jeffrey Smith).

Also I'd like to gripe about the Bee Movie. I hate the stupid thing and I haven't even seen it. The teasers show male bees griping about all the work they have to do!!! I know that Americans are being dumbed down, but come on!!! I was hopeful that the movie would educate people. I was never a fan of Jerry Seinfeld but even less now! I can really say that I hate him. If I am wrong about the movie, someone, by all means correct me. I have cleaned up my ranting here for the sake of respecting other readers, so you might imagine how much this movie ticks me off. I love reading *Bee Culture* and look forward to getting it in the mail, I have to get it before my 15-year-old daughter



who has been learning beekeeping along with me. I particularly like to read letters from other beekeepers, articles by James E. Tew and Inner Cover I would love to read about small scale beekeeping and how things were done without all the expensive equipment.

Jeannie McClymond
Kingsville, MO

Global Bee Breeders

Recently, there has been a good deal of discussion about issues surrounding bee breeding. With a new emphasis on honey bee health in the wake of the CCD dilemma, the importance of the queen to a colony's general condition has come back into focus. Beekeepers continue to see weaknesses in purchased queens, resulting in non-productive colonies and increased rates of supersedure. I wrote about the challenges in developing better bees for beekeepers in the January 2008 issue of *Bee Culture*.

Several bee breeding associations, including traditional ones like The California Bee Breeders Association, The Australian Queen Bee Breeders Association¹ and the newly formed Russian Bee Breeders Association and others just starting out, exist to assist breeders in developing local, adapted stock. I have endeavored to provide a list of bee breeders and programs for those that would like to investigate this topic further²

At the latest Apimondia Congress in Melbourne, I co-presented a discussion of The Global Bee Breeders Initiative³ and also wrote an article on this subject for the March 2007 issue of *Bee Culture*.⁴ Subsequent to that the Global Bee Breeders Association was established by a group of interested collaborators. I took on the job of being a tentative executive director to get the group going. I have put together a web page⁵ and opened

up a moderated discussion list for potential members. At the National Beekeeping Conference in Sacramento, I presented a discussion of the goals of the Association to a packed house, which included the following points:

- The GBBA is for everyone interested in "bee breeding"
- The GBBA is not about spreading genetic material around the globe
- The GBBA is about assisting breeders in increasing genetic diversity with minimum risk
- The GBBA is inclusive; it will assist all producers/breeders even with competing agendas
- The GBBA will provide (perhaps develop?) the latest, best scientific information and give the bee breeding community the best (only?) seat at the "regulatory" table

If you have interest in the Global Bee Breeders Association, please subscribe to the discussion list by accessing.⁶ Should you not be Internet-able and wish to contribute to the discussion about formation of the Association, please contact me at 5002 NW 64th Lane, Gainesville, FL 32653, ph 352-336-9744, e-mail: beeactor@apisenterprises.com.

1 <http://www.honeybee.com.au/aqbba/index.html>

2. <http://www.squidoo.com/queenproduction>



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3. http://www.squidoo.com/bee_breeders_initiative

4. <http://apisenterprises.com/papers.htm/BC2007/Bee%20Breeder%20Initiative.htm>

5. <http://gbba.vze.com>

6. <http://pets.groups.yahoo.com/group/gbba/>

Malcolm Sanford
Gainesville, FL

Keep The Buzz

I love reading your BUZZES!
Keep it up!

Bill Mares
Burlington, VT

To Larry Connor

I just finished reading your article in the February issue. I hope you will take my comments as constructive. I question the idea of diverse drone stocks in an apiary as I understand your writing.

First of all; it seems impractical for the average sideline beekeeper. Secondly and most importantly I have found that any mixing of my Russian stock with other bees (drone source) causes many problems, some of which are (1) loss of mite resistance (2) excessive swarming and (3) sometimes extremely aggressive colonies.

We, who have mite resistant bees, are always making an effort to keep the stock as pure as possible in order to retain the benefits of mite and disease resistance as well as winter survival. My winter survival rate exceeds 95% only because I make this effort to maintain pure stock.

I do not disagree with Tarpie's findings for it is probably correct if all else is equal. For example, if none of the stock had a strong dominance in mite and disease resistance. There is no advantage to crossing a Russian queen with Italian drones. Experiments have shown that much of the survival benefits are lost.

Please accept this as it is intended. I have 45 years of beekeeping experience about 25 as sideliner/commercial and have been using exclusively Russian bees since the first breeder was released in the year 2000.

Carl Webb
Clarksville, GA



INNER COVER

It's early February when I write this so I don't know anything yet about the grants being given out for CCD research. The Farm Bill has dallied for months it seems, even with agriculture from all directions pushing it along. Perhaps it's already settled. The USDA money, that \$4 million discussed awhile ago was to be given out in February, but I don't know where it went, either. Industry money had been generous and kind to those doing CCD work so far, but it is limited and has

many needs. I trust you have been giving just as generously to those groups in the giving business...that's ApisM, The Federation's fund, and many state beekeeping groups are collecting and passing along. California especially, but others out west have been very generous.

More of the story is out by now, but the early, sporadic news is even worse now. It looks like the number of beekeepers with CCD problems is somewhat higher, and the number of affected colonies quite a bit higher this Spring when compared to last, but alas no one knows. Since no one is officially keeping score yet it's hard to tell and the only information is word of mouth and anecdotal. This is frustrating for researchers, and for those of us who report the news, and for anybody who wants to know what's going on. Which leads to a conversation I had with the new Vice President of the American Beekeeping Federation just recently, Dave Mendes. Dave is a lifelong, 7000 colony east coast pollinator who has a lot of first hand information on CCD and the politics going on all around it. He's a close friend of Dave Hackenburg, the CCD Poster Child, and others who have had bees die from what ever this malady is.

His frustration is similar to mine and others in that there is no good central source of information about this. Lots of information is available from newspaper and magazine and internet reports, but they are only reports on reports on reports, with not much new, and essentially nothing on where to go for more information. Dave wants somebody in an office with email, a blackberry phone, and car to go check out things so when he, or she gets asked "What's happening", they will actually know where to go or who to ask for the answer.

Years ago there was a Federal level Apicultural Extension position funded by the USDA to deal as a clearing house for African Honey Bee news. Our own Dr Jim Tew held that position for several years, until the bees got here and the funding went away.

I think Dave's idea has enormous merit and should be vigorously pursued. But of course there's a hundred questions: How is it funded (which sort of answers the next question...)? Who's in charge? What's the job description, really, plus, who says?

My feeling is that this should be an industry funded and industry run position, independent of the politics of any of the groups. Which means that there shouldn't be information withheld, or prejudiced information shared.

It's a tougher call to get this started without the huge engine of government bureaucracy involved, but that very system tends to lend both credibility and evenness to the position. What do you think? Let me know. Or Dave.

While waiting for those initial scientific reports on Colony Collapse Disorder to get published so whatever information they contain can be officially released to the beekeepers who can use it (and those who actually provided the samples to produce the results), and for new research to get started (and those results to be released in the distant future), much peripheral knowledge has been collected that is beneficial for general colony management.

Advances in *Varroa* control, *Nosema* management and nutrition enhance-

ment have been, and will continue to be made as a result of the CCD research going on. Moreover, an unprecedented amount of cooperation (and focused competition) has already resulted between government and university bee researchers, beekeepers and non-honey bee researchers, than has ever been accomplished. Add to this the phenomenal amount of exposure bees, beekeepers, beekeeping, pollination and honey production have received from the general and even not-so-general press to the non-beekeeping world. There's no way we could have ever engineered that, or paid for it or made it happen. And if you don't think it has been important, consider this - CCD has made prime time TV and the Primary Elections haven't moved it off the top 10 topics in the news.

So whether you believe this is a real phenomena of not, believe in what it has done for the industry in terms of understanding and support. And then, find some way to help support the research studying and the beekeepers suffering from this mystery.

Some think, however, that this attention to a critical food production sector of agriculture is so long overdue that who ever is managing honey bee research has not been paying attention.

A friend, one who's leading the pack at full speed on this feels the industry has been fundamentally short changed on what research has been carried out for the past 20 years. His argument isn't so much pointing at what has been done, but what hasn't been done. And, if funding hasn't been available to do the multi-state, long term studies needed to solve problems why the heck not?

The much ballyhooed Five Year Plan just released to improve the health of honey bees should have

Continued on Page 82

More

MARCH - REGIONAL HONEY PRICE REPORT



Feeding - Protein & Carbs

We surveyed our reporters this month about feeding - what do they feed, and how do they feed it? It's interesting to note what bees are getting. Figures below represent the percent of our reporters who are included in the category.

Feeding

- Dry pollen substitute/supplement in open beeyard feeding - 11.4%
- High Fructose corn syrup 45/55 - 13.1%
- Regular sucrose solution - 20.5%
- HFCS/sugar blend solution - 6.3%
- Pollen supplement/substitute in-hive patty - 18.8%
- Pure pollen in patty - 5.1%
- Fondant (candy, soft) - 1.1%
- Candy board (candy, hard) - 1.1%
- Honey from last year in frames - 15.5%
- Honey from last year, diluted in water - 4.5%

Type of feeder used

- Miller Feeder (box - type on top of supers, below cover) - 16.7%
- In hive feeder (frame replacement) - 26.5%
- Feeder pail, plastic, on top of frames, below cover - 8.3%
- Feeder jars, glass, on top of frames, below cover - 9.0%
- Boardman (entrance jar) - 15.2%
- Jar/can (on top of hive, through cover) - 17.4%

REPORTING REGIONS

	REPORTING REGIONS												SUMMARY		History	
	1	2	3	4	5	6	7	8	9	10	11	12	Range	Avg.	Last Month	Last Year
EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS																
55 Gal. Drum, Light	1.31	1.29	1.31	1.31	1.28	1.18	1.20	1.25	1.05	1.04	1.02	1.17	1.02-1.31	1.20	1.13	1.06
55 Gal. Drum, Ambr	1.03	1.23	1.03	1.12	0.98	0.97	1.15	1.25	0.95	1.03	1.08	1.08	0.95-1.25	1.07	0.78	0.97
60# Light (retail)	110.00	115.50	120.00	111.83	110.00	113.75	107.80	110.20	105.00	120.41	105.25	125.00	105.00-125.00	112.90	115.00	119.79
60# Amber (retail)	110.00	105.00	102.00	108.33	110.00	111.25	100.75	110.00	109.25	117.38	103.33	120.00	100.75-120.00	108.94	126.00	103.86
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS																
1/2# 24/case	47.52	54.98	41.40	41.90	61.54	44.50	39.25	61.54	61.54	35.76	28.80	76.53	28.80-76.53	49.61	65.00	43.82
1# 24/case	62.33	68.28	68.25	62.65	82.20	71.70	62.97	64.92	51.72	77.76	76.80	87.00	51.72-87.00	69.71	78.00	63.87
2# 12/case	64.08	61.08	63.00	57.13	60.00	56.93	55.55	67.50	47.87	57.84	49.24	65.00	47.87-67.50	58.77	68.33	58.70
12 oz. Plas. 24/cs	58.56	62.68	49.80	52.76	63.00	62.00	50.42	53.16	42.84	47.64	48.60	62.00	42.84-63.00	54.45	62.00	53.41
5# 6/case	74.25	66.98	71.25	61.54	69.15	65.00	60.40	58.80	57.00	61.86	51.00	76.00	51.00-76.00	64.44	80.67	63.19
Quarts 12/case	81.03	75.18	98.50	85.09	98.00	80.57	73.96	81.45	102.00	79.56	75.00	105.00	73.96-105.00	86.28	96.00	89.02
Pints 12/case	90.80	88.75	66.00	50.00	58.00	46.83	60.55	41.76	66.00	64.68	35.40	58.50	35.40-90.80	60.61	54.00	52.45
RETAIL SHELF PRICES																
1/2#	2.75	2.85	2.51	2.73	1.89	2.56	2.43	2.29	2.29	2.49	2.15	4.66	1.89-4.66	2.63	3.50	2.49
12 oz. Plastic	3.25	3.67	3.43	3.16	3.66	3.58	3.14	3.45	3.37	2.87	3.22	4.16	2.87-4.16	3.41	3.92	3.28
1# Glass/Plastic	3.68	4.29	4.62	4.59	4.62	4.26	3.78	4.19	4.38	3.98	3.95	5.92	3.68-5.92	4.35	5.00	3.97
2# Glass/Plastic	7.50	6.92	8.45	6.33	7.00	6.81	6.44	6.99	6.25	6.39	6.11	10.16	6.11-10.16	7.11	9.92	6.58
Pint	6.67	6.58	6.50	5.56	5.66	5.66	5.60	5.63	6.96	6.60	5.25	7.62	5.25-7.62	6.19	7.92	5.85
Quart	11.14	11.98	11.00	8.78	7.92	9.41	8.97	9.90	11.25	13.55	7.73	13.40	7.73-13.55	10.42	12.31	9.60
5# Glass/Plastic	17.75	14.33	17.13	12.67	18.00	15.25	17.60	17.00	16.35	13.33	13.33	22.00	12.67-22.00	16.23	18.00	14.28
1# Cream	4.25	5.81	6.44	4.78	5.39	4.05	4.81	4.62	5.39	4.72	4.26	5.75	4.05-6.44	5.02	5.00	5.53
1# Cut Comb	27.38	4.96	5.19	4.94	19.95	4.85	5.57	5.00	19.95	8.00	10.00	7.25	4.85-27.38	10.25	8.00	6.02
Ross Round	6.55	4.31	4.97	4.94	6.55	3.50	4.83	6.50	6.55	6.55	4.50	8.50	3.50-8.50	5.69	6.00	5.23
Wholesale Wax (Lt)	2.33	2.48	2.00	2.09	2.15	2.13	2.28	2.25	2.00	2.00	2.59	2.95	2.00-2.95	2.27	2.25	2.17
Wholesale Wax (Dk)	1.67	1.97	1.00	1.93	1.90	1.17	1.50	1.00	1.98	1.93	1.89	1.25	1.00-1.98	1.60	1.99	1.57
Pollination Fee/Col.	60.00	80.33	56.00	40.00	86.13	53.00	52.00	60.00	129.00	140.00	24.00	109.00	24.00-140.00	74.12	146.67	72.46

RESEARCH REVIEWED

The Latest In Honey Bee Research

Steve Sheppard

“Do city environments favor some bees, but not others?”

The majority of papers reviewed in this column could be classified as reporting “experimentally-based” research. However, careful observations of nature outside the laboratory have led to numerous scientific discoveries and a deeper understanding in many fields. In physics, one only has to think of the story (be it true or not) of Newton and the falling apple and in biology, Darwin and the Galapagos islands, to find evidence of how observation of the natural world have led to major insights. In the article being considered in this month’s column, researchers studied the bee fauna present in the seemingly unlikely location of New York City (Matteson et al., 2008). The authors initiated the study to understand the effects of urbanization on the diversity of bee species, especially how it might relate to the ecological characteristics of the bee community. For example, does the fragmented habitat of a city, together with soil disturbance (mowing, paving, etc.) favor some types of bees (social, cavity-nesting) over others (soil nesting)?

The researchers sampled bees from 19 community gardens in the Bronx and East Harlem from 2003 to 2006 using two methods of collection: netting by hand and “yellow bowl traps.” The yellow bowl traps were partially filled with soapy water and salt and were suspended off the ground to avoid disturbance by non-target organisms (humans and other animals). For comparison, the authors examined the bee composition and species diversity of an additional seven locations within a 150 km radius of the urban sites. Four of these were from parks (i.e. Central Park) or landfill sites within New York City limits and three were from more distant locations including a forest in New York State and a biosphere reserve in southern New Jersey. While the sampling methods for the comparison sites were different from

those used in the community gardens, the authors maintained that they allowed an adequate comparative assessment of species composition and distribution.

The researchers found a total of 54 different species of bees in the 19 community gardens they sampled. The three most abundant bee species included two non-native bees belonging to the family Colletidae (short-tongued bees) and a native bumble bee (*Bombus impatiens*). More than 50% of the bee species collected were represented by less than 10 individuals. Honey bees (*Apis mellifera*) were found in a high percentage of the gardens (72%), although not in large numbers individually, as were several other species, including another bumble bee and a carpenter bee species. The summary of ecological characteristics of

the bees that were collected showed that the majority of the species (56%) were either solitary or communal (i.e. not social). Almost 90% of the species collected were “polylectic” (feed on multiple flower species)

S u m m a r y
nesting characteristics indicated that 44% of the species collected (but only 25% of the individual bees) nested in the soil and 33% of the species (but 46% of the individuals) nested in cavities. The other four New York City comparison sites had species totals similar to the 54 found in the East Harlem and Bronx sites. However, the three sites most distant from New York City had

higher numbers of species (ranging from 128-144).

The authors noted that the number of bee species found in the urban New York City sites represented about 13% of the species known for the state of New York. They further point out that the number of bee species found in the urban sites in their study (54) was “remarkably similar” to the number of bee species found in similar surveys in other urban settings such as Vancouver, British Columbia, Canada (56) and Leicester, United Kingdom (51). One “striking result...” was the high proportion of “exotic” or non-native bee species present in the sampled population. More than 25% of the individuals and 19% of the species collected in the East Harlem and Bronx sites were not originally native to North America.

The researchers point out that the proportion of non-native bees found in urban New York City was substantially higher than reported from similar studies conducted in Berkeley, California and Tucson, Arizona and suggest that the reasons could include greater development (urbanization) of the eastern location or historical or ecological factors that favored the establishment of exotic species.

A high proportion of individual bees collected in the urban sites nested in cavities (46%) relative to those that nested in soil (25%), in contrast to the results from at least one of the less urban sites, where cavity-nesting was relatively rare. The authors suggest this may result from either the “opportunistic use of artificial cavities in built structures, the loss of soil-nesting species



or both." Overall, the species richness contained within the small community gardens was similar to that found in the larger urban parks (i.e. Central Park) and landfills. The researchers conclude that such a finding "highlights the ecological value of the > 700 community gardens located throughout New York City ..." They conclude that the distribution of bee species provides further evidence of the ecological value of the community gardens. Given that most individual bee species (of the 54) were found in only a few gardens, the totality of the bee diversity resides in the collective set of gardens, rather than in a few examples. Our friend the honey bee was an exception, as it was found in almost ¾ of the community gardens (although in small numbers individually). Whether the honey bees that are helping pollinate the crops of East Harlem and the Bronx originate from urban beekeepers located within flight range of the gardens or whether there exists a feral population of honey bees situated in nearby light poles, trees and building cavities remains an open and interesting question.

While some readers of *Bee Culture* may be unfamiliar with many of the native bees mentioned in this study, the take home message is that honey bees and their relatives are alive and available for work on behalf of urban gardeners in the Big Apple. In their final word, the researchers in this study caution that if proposed real estate development of many of the community garden sites comes to fruition, it would result in localized reduction in bee species and their pollination services and the loss of local opportunities for environmental education. **BC**

Dr. Steve Sheppard, Thurber, Chair, Department of Entomology, WA State University, Pullman, WA 99164-6382, shepp@mail.wsu.edu, www.apis.wsu.edu.

Matteson, K.C., J. S. Ascher and G. A. Langelotto. 2008. *Bee richness and abundance in New York City Urban Gardens*. 2008. *Annals of the Entomological Society of America*. 140-150.

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Will The Weslaco Lab Close In 2009 - 2/7/08

Word had it that USDA-ARS will close the entire Weslaco Agricultural Research facility as of September 2009. This is one of several money-saving efforts USDA is considering

CHECK OUT PROJECT APIS M. ONE OF THE BEST THINGS GOING FOR HONEY BEE RESEARCH - 2/7/08

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Welcome to the first edition of the Project Apis m. Newsletter. What is Project Apis m? A non-profit organization founded in December 2006, Project Apis m is focused on finding practical solutions to beekeepers' challenges by supporting practical, results

WEST VIRGINIA TAKES CARE OF ITS BEEKEEPERS - 2/06/08

West Virginia bee keepers are stocking up in preparation for this year's honey season. The state Department of Agriculture reports that additional funding is helping bee keepers purchase new bees to make up for last year's losses. Last winter's cold weather and the summer drought

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RESULTS FROM USDA ON CCD PRESENTED IN SAN DIEGO - 1/22/08

The latest report on research results from USDA trials came to light at both the San Diego meeting and the Sacramento meetings. There were some at both and together they make a good story.

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a closer Look

QUEEN MATING

Carence Collison

Queens Need Multiple Mates For A Variety Of Reasons

As we are learning more about the reproductive biology of the honey bee colony, we are discovering that there are biological advantages to queens mating with multiple drones. Virgin honey bee queens initiate mating very early in their lives, when they are approximately 1-2 weeks old. They take multiple flights and mate with numerous drones during each flight. Mating has profound and permanent effects on queen behavior, physiology, and resultant queen-worker interactions (Richard et al. 2007). Mating stimulates vitellogenesis (formation of yolk protein) and oocyte-maturation (egg formation) in the ovaries (Tanaka and Hartfelder 2004), which prompt the initiation of egg-laying. Furthermore, mating alters the pheromone profiles of queens, allowing them to regulate many different aspects of worker behavior and colony organization. While several other effects of mating on the physiology and behavior of queens are known, the effects of multiple-mating and semen quantity have not been extensively studied.

Richard et al. (2007) was able to demonstrate for the first time that insemination quantity significantly affects mandibular gland chemical profiles, queen-worker interactions, and brain gene expression. Because it is not possible to control the natural mating frequency of queens, instrumental insemination was used and queens inseminated with semen from either a single drone (single-drone inseminated, or SDI) or 10 drones (multi-drone inseminated, or MDI) were compared.

The chemical composition of the mandibular gland extracts of virgins, single- and multiple-mated queens were analyzed with gas chromatography, and a total of 27 compounds were found. There were significant differences in the chemical profiles between the three groups of queens. The greatest difference was between virgin queens and the two groups of mated queens, with 15 percent of the variation attributed to insemination quantity. Mated queens had significantly lower levels of 18 compounds relative to virgins, and higher levels of one compound. Multiple-mated queens had significantly lower levels of seven compounds than single-mated queens, and significantly higher levels of two compounds. Of the five original queen mandibular gland pheromone (QMP) components, the quantities of 9-ODA (9 oxo-(E)-2- decenoic acid), 9-HDA (9-hydroxy-(E)-2-decenoic acid) and HVA (4-hydroxy-3- methoxyphenylethanol) were all significantly lower in mated queens compared to virgins. Levels of 9-ODA and 9-HDA were also significantly lower in the multiple- than in the single-mated queens (Richard et al. 2007).

The relative proportions of the 27 individual compounds were compared to total gland quantity between virgin and mated queens and between single-mated and multiple-mated queens. The relative proportion of 13 compounds was significantly different between virgins and mated queens and 10 of these compounds were significantly higher in mated queen mandibular glands. There were fewer compounds with significantly different relative proportions between single- and multiple-mated queens. Two compounds (8-hydroxyoc-tanoic acid and unidentified compound 5) were present in significantly higher proportions in single-mated queens than in multiple-mated queens, while six compounds (4-hydroxybenzoic acid, unidentified compound 2, (E)-dec-2-enedioic acid, palmitic acid, alkane 2 and stearic acid) were significantly higher in MDI than in SDI queens mandibular glands. Of the QMP components, relative levels of 9-ODA were significantly lower in mated queens compared to virgins, while HOB (methyl p-hydroxybenzoate) levels were significantly higher. None of the QMP components differed between SDI and MDI queens (Richard et al. 2007).

These changes in queen mandibular pheromone profiles occur immediately or shortly after insemination, but additional modifications occur over time and may be associated with age, egg laying, or both (Richard et al. 2007). One of the most measurable effects of queen pheromone is the induced retinue response, in which workers are attracted to the queen from a short

“Insemination quantity significantly affects mandibular gland chemical profiles, queen-worker interactions, and brain gene expression.”

“One of the most measurable effects of queen pheromone is the induced retinue response, in which workers are attracted to the queen from a short distance, then lick and antennate her.”

distance, then lick and antennate her. Following insemination, the retinue response to SDI and MDI queens was monitored in observation hives, twice a day for five days. MDI queens attracted significantly more worker bees in their retinue than the SDI queens in natural colony conditions. Also, worker retinue responses to the mandibular gland extracts of virgin, SDI and MDI queens were tested in cages containing four-day-old bees. The retinue size was equivalent whether workers were exposed to virgin, SDI or MDI queen mandibular gland extracts. However, worker bees exposed to two different mandibular gland extracts at the same time preferred gland extracts from SDI and MDI to virgins and preferred MDI extracts to SDI extracts.

There are also profound neuro-endocrinal changes in the queen's brain after mating. Harano et al. (2005) measured the amount of dopamine and its metabolite (N-acetyldopamine) in the brain of six- and 12-day-old virgins and 12-day-old mated queens. Twelve-day-old mated queens showed significantly lower amounts of dopamine and its metabolite than both six- and 12-day-old virgin queens, whereas significant differences in the amounts of these chemicals were not detected between six- and 12-day-old virgin queens. These results are explained by down-regulation of both synthesis and secretion of brain dopamine after mating. It is speculated that higher amounts of brain dopamine in virgin queens might be involved in activation of ovarian follicles arrested in previtellogenic stages, as well as regulation of their characteristic behaviors.

Brain expression levels were measured in single- and multiple-mated queens for a gene associated with phototaxis in worker honey bees (*Amfor*, the foraging gene) (Richard et al. 2007). Expression levels for this phototaxis gene were significantly altered by insemination quantity. *Amfor* expression levels in the queens' brains were significantly higher in single-mated queens than in multiple-mated queens. These differences are believed to be associated with changes in flight and phototaxis. Fully inseminated queens cease to be phototactic and no longer take mating flights. Previous studies have demonstrated that queens inseminated with lower quantities of semen (less than 8 μ l) are more likely to continue to take mating flights (Woyke et al. 1995).

Clearly, mating number and insemination quantity have profound effects on queen physiology and behavior. Further research will be necessary to understand the mechanistic basis for these changes in queen behavior and physiology. The number and duration of mating flights, the physical act of insemination, the volume of ejaculate, quantity and viability of sperm, seminal proteins in the ejaculate and the genetic diversity of sperm and seminal proteins may all be important factors contributing to the changes in honey bee queen physiology, queen behavior, and social interactions in the colony. Both assays with live queens and cage studies with queen mandibular pheromone extracts demonstrate that workers can detect differences in pheromone profiles and will respond differently to virgins versus newly inseminated queens as well as singly versus multiply inseminated queens (Richard et al. 2007).

Since semen quantity affects the quality of the queen, beekeepers need to have queen mating occur in areas where there is a large population of sexually mature drones available. It takes numerous drones to fully inseminate a queen and there are clear direct benefits of a queen mating with multiple drones (Tarpay 2003). A fully filled spermatheca results in a longer egg-laying life span (Cobey 2003).

There are also many indirect benefits to multiple matings which may have equally important consequences for colony health and productivity. Drones carry different genes for a wide variety of traits. So when a queen produces worker offspring sired by different males, the workers vary from each other

genetically (Tarpay 2003). The result of this increased genetic diversity is a variable and cosmopolitan worker population. Previous studies have demonstrated that there may be colony-level adaptive benefits for genetically diverse workers, i.e. disease resistance. Queens that mate with many drones will ensure that some of her workers (half on average) will inherit favorable alleles (one of a pair of genes for contrasting traits) from their father. A queen that mates with only a single drone runs the risk of carrying alleles that are susceptible to a particular disease; queens that mate with multiple drones ensure that at least some of her workers will be resistant to the disease. Theoretically, any trait – anatomical, physiological, or behavioral – could be impacted by increased genetic diversity within a colony as a result of the queen mating with multiple drones. Beekeepers need to be sure that their queens are properly inseminated with a generous assortment of drone genotypes, so that the worker population is similarly variable. **BC**

References

- Cobey, S. 2003. *The extraordinary honey bee mating strategy and a simple field dissection of the spermatheca - A three-part series- Part 3- The spermatheca*. Am. Bee J. 143(3): 217-220.
- Harano, K., K. Sasaki and T. Nagao 2005. *Depression of brain dopamine and its metabolite after mating in European honey bee (Apis mellifera) queens*. Naturwissenschaften. 92: 310-313.
- Richard, F.J., D.R. Tarpay and C.M. Grozinger 2007. *Effects of insemination quantity on honey bee queen physiology*. PloS ONE 2(10): e980. doi:10.1371/journal.pone.0000980
- Tanaka, E.D. and K. Hartfelder 2004. *The initial stages of oogenesis and their relation to differential fertility in the honey bee (Apis mellifera) castes*. Arth. Struct. Dev. 33: 431-442.
- Tarpay, D. 2003. *Bet hedging by honey bee queens*. Am. Bee J. 143(12): 937-939.
- Woyke, J., Z. Jasinski and A. Fliszkievicz 1995. *Further investigations on natural mating of instrumentally inseminated Apis mellifera queens*. J. Apic. Res. 32: 105-106.

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

By any stretch of the imagination the 2008 National Beekeeping Conference held January 8-12, 2008 in Sacramento, CA was much more than a success. It featured, over 1,300 participants, one of the largest attendances at any U.S. bee meeting in recent memory. It also included some additional sessions, not necessarily present at all meetings of the hosts, the American Beekeeping Federation (ABF) and American Honey Producers Association (AHPA). The week started out with the first-ever International Symposium on Honey and Human Health.¹ This consisted of presentations by a wide range of experts, kicked off with a review of the subject by recognized honey chemist, Dr. Stephan Bogdanov, who recently retired from the Swiss Bee Research Centre² where he was chair of the International Honey Commission.³

In keeping with this theme, Dr. Ron Fessenden, co-chairman of the Committee for the Promotion of Honey and Human Health, reviewed the information shared at Tuesday's symposium on the following Saturday. In addition, a live apitherapy demonstration was held under the auspices of the American Apitherapy Society by Reyah Carlson, former Board Member of the American Apitherapy Society and Frederique Keller, LaC, Vice-President of the American Apitherapy Society on health and healing from the use of all honey bee products, including a demonstration of bee sting application and technique.⁴

Danny Weaver and Mark Brady, respective presidents of the American Beekeeping Federation and American Honey Producers began the formal meeting with an upbeat analysis of how the meeting came into being, and the prospects for both associations cooperating more closely in the future. In spite of these remarks, it was subsequently revealed that the two associations would meet in separate places next January. Nevertheless, the atmosphere at this meeting seemed more favorable for cooperation than at any time since their combined efforts resulted in anti-dumping legislation, as reported in the 1996 Portland, OR meeting of the ABF.⁵

A special upbeat keynote presentation was given by California's Commissioner of Agriculture A.G.

Ma com T Sanford

Notes From The National Conference



"Besides the ABF and AHPA meetings, the Apiary Inspectors of America (AIA) and American Association of Professional Apiculturists (AAPA) met."

Kawamura, a founding partner, along with his brother, Matthew, of Orange County Produce, LLC. As an urban agriculturist, Secretary Kawamura has a lifetime of experience working along and within the expanding urban boundaries of Southern California. It is most encouraging that he began his agricultural career as a beekeeper before entering into his family business as a produce salesman for Western Marketing Company of California. His message was one of change; that agriculture (and by implication beekeepers) must shift from crisis to strategic long-term planning to succeed in the future.

The ABF legislative update was given by lobbyist Fran Boyd followed by that of Richard Adee, representing the AHPA. Both were weighted toward discussing passage of one of the most important legislative initiatives for beekeepers in the next five years, the 2007 Farm Bill. Mr. Adee focused his remarks on the work done by AHPA to reinstate the Byrd Amendment, otherwise known as the "Continued Dumping and Subsidy Offset Act of 2000," named for West Virginia Senator Robert Byrd. It authorizes the U.S. government to impose anti-dumping duties on foreign competitors and gives this revenue to the U.S. companies directly affected. It seems that although damages have been awarded to beekeepers due to honey dumping, there continues to be a huge backlog in unpaid duties to those affected.

Another area of concern is setting loan deficiency payments. The range is likely to be between \$.62 and \$.72 per pound, according to Mr. Adee,

a higher level than in the previous bill (\$.52). There is a considerable amount of funding that has been authorized for honey bee research both on the House and Senate sides. The Senate bill would authorize \$100 million over five years, an increase of \$14 million from the House bill. The Senate research language was revised to make clear that this research funding would be available not only for CCD, but for other long-term challenges to honey bees that require additional research. Although authorized, however, this does not mean funds have been appropriated. Both Mr. Boyd and Adee urged those present to contact legislators at the federal level asking them to support honey bee programs as listed in the Farm Bill by "finding the money" to fund these efforts.

Besides the ABF and AHPA meetings, the Apiary Inspectors of America (AIA) and American Association of Professional Apiculturists (AAPA) met. The latter group sponsors the American Bee Research Conference (ABRC). I wrote about some of the history of this alphabet soup of associations/organizations when I reported on the ABF's convention in Reno, NV in 2005. *Bee Culture* (Mar, Apr, May, June 2005), Vol. 133.⁷

The afternoon of the first day was taken up with "Shared Interest Groups" or SIGs, representing commercial beekeepers, package bee and queen breeders, honey producer-packers, and hobbyist/sideliner beekeepers. Again, I can only report on the second session above. I introduced the goals and aspirations of the Global Bee Breeders Association.¹⁰ Bob Danko

of the Baton Rouge lab discussed the future directions for breeding mite resistance into bees. Dr Marla Spivak described a grant for \$80,000 she will use to help California bee breeders improve their stock. And Sue Cobey discussed her breeding program that will be established at the University of California at Davis, CA. Dr Stephen Pernal, Agriculture and Agri-Food Canada, Beaverlodge, Alberta described the new nosema (*Nosema ceranae*) that I wrote about in the February 2007 *Bee Culture*.¹¹ His research shows a troubling trend. Whereas traditional nosema levels caused by *Nosema apis* fluctuate throughout the year with sharp peaks, that of *Nosema ceranae* maintains a high level most of the active year, meaning that the new nosema appears to potentially be much more virulent.

I attended the luncheon honoring young scientists, sponsored by the Foundation for the Preservation of Honey Bees.¹² The six honorees included Queenie Chan, U. of British Columbia; Katie Lee, U. of Minnesota; Elina Niño, North Carolina State U., Jodi Swanson, U. of Minnesota; and Geoff Williams, Acadia U. (Nova Scotia). Each was awarded a \$2,000 scholarship by the Foundation. The featured speaker was a treat for all in attendance. Feisty, retired Dr Bill Wilson challenged the new scientists to go to work with gusto, employ as much collaboration as possible and study what others have done before them. And he exhorted them not to forget the industry and the beekeepers, who he said were some of smartest bunch of folks in agriculture. His pithy remarks took me back to when he retired at the Fort Worth, TX American Beekeeping Federation, January of 2000.¹³ At that time I wrote, "Bill Wilson has perhaps become the best example of the beekeeper's researcher. He is unabashedly pro beekeeping and has fearlessly stepped into controversial issues squarely on the side of the industry, helping to cut red tape when necessary. Among his considerable accomplishments, Bill is credited with being instrumental in developing the antibiotic extender patty."

Two other events are becoming part and parcel of any national bee meeting are the Kids 'n Bees program (this year called *The Buzz About Bees*)

captained by Kim Lehman of Austin, TX (and writer for this magazine) and the Serious Sideline Series (3rd edition) headed up by Dr Larry Connor of Wicwas Press.

This year the children's event was held off the convention site at the Clunie Community Center. Ms. Lehman was featured at last year's Texas Book Festival http://www.texasbookfestival.org/Calendar.php?selected_day=3 with the following description of her activities, "By combining stories, music, and simple props, Kim Lehman specializes in entertaining educational programs and workshops for children and adults. Past performances include Texas Storytelling Festival, Texas Library Association and frequent appearances on a local children's television show. Selected for the Texas Commission on the Arts Touring Roster, she's educated and entertained children for over 25 years." This event is sponsored by the Foundation for the Preservation of Honey Bees. <http://www.honey-beepreservation.org/>

Dr Connor is well known via his writings and regular appearances at beekeeping meetings across the country <http://www.wicwas.com/>. This year's event included sixteen sessions ranging from a delightful description of John Talbert's educational efforts through his own business, Sabine Creek Honey Farm http://www.heraldbanner.com/features/local_story_219020850.html and the Texas Beekeepers Association <http://texasbeekeepers.org> to descriptions of "How I Did It" (HIDI) for web site development, bee breeding and bee removal (pest control).

Concurrent sessions with the above events were a number of interactive workshops and special seminars on everything from nosema identification and control to small hive beetle biology, to improving bee nutrition. Other activities included visits to the new outlet for Mann Lake Supply and the Heidrick Agricultural History Center,¹⁴ and the renovated Harry H. Laidlaw Jr Bee Research Facility at the U. of California, Davis, CA.¹⁵

The formal session of the convention featured a full half-day session on the latest phenomenon affecting beekeepers, Colony Collapse Disorder (CCD). These sessions were packed with standing room only

in the hallway. Most of the major players reported, including those at the Beltsville Bee Laboratory,¹⁶ The Pennsylvania State University¹⁷ and Bee Alert Technology.¹⁸ The latter organization has obtained a technology known as IVDS. "This new invention utilizes the physical properties of virus, virus-like and other nanometer particles to determine a concentration, distribution and information for discrimination and characterization of nanometer particles (1 nm equals one billionth of a meter). This analysis can identify many known virus families pathogenic to man, as well as a new means for detecting unknown and emerging viruses. Another great advantage is that the IVDS instrument does not require complicated chemistry or reagents."¹⁹

Dr Kevin Hackett, USDA Agricultural Research Service reported on activities with regard to bee health. Also there were individual reports from labs in Baton Rouge, Beltsville, Tucson, and Weslaco.²⁰ A pollination panel revealed how the Almond and beekeeping industries are cooperating via Project Apis m.²¹ The reason for all this is the continued planting of almonds (50,000 new acres are expected to come on line next year), signaling for the first time a shift of beekeeping income from honey production to that of commercial pollination. The year 2007 is the first that beekeeping income from pollination has surpassed honey production. A report from Dr Colin Stewart provided a controversial ending to the general session, revealing that USDA APHIS did not appear to be communicating with beekeepers and the industry about critical issues, including semen and fresh pollen importation.

As noted above, the ABF and AHPA will go their separate ways in 2009. However, the year 2010 offers a unique opportunity for them to consider meeting together again. That year the Canadian Honey Council (CHC) and Canadian Association of Professional Apiculturists (CAPA) will come to Florida. There won't be a better opportunity for the next edition of the National Beekeeping Conference to take place than in the Sunshine state. **BC**

Dr. Sanford is a former Extension

Specialist in apiculture at the University of Florida.

References: All URLs accessed January 22, 2008.

1. <http://www.prohoneyandhealth.com/>
2. <http://www.bee-hexagon.com/>
3. <http://www.alp.admin.ch/the-men/00502/00555/index.html?lang=en>
4. <http://www.apitherapy.org/news.html>
5. <http://apis.ifas.ufl.edu/papers/portland.htm>
7. http://home.earthlink.net/~beeactor/papers_hm/BC2005/ABF_in_Reno_full.htm
10. <http://gbba.vze.com>
11. http://apisenterprises.com/papers_hm/BC2007/A%20New%20Nosema.htm
12. <http://www.honeybeepreservation.org/>
13. http://home.earthlink.net/~beeactor/papers_hm/Meetings/ABF%20Meets%20in%20Fort%20Worth.htm
14. <http://www.aghhistory.org/cgi-bin/default.asp>
15. <http://entomology.ucdavis.edu/dept/beebio.cfm>
16. http://www.ars.usda.gov/main/site_main.htm?modecode=12-75-05-00
17. <http://maarec.cas.psu.edu/>
18. <http://beealert.blackfoot.net/~beealert/index.php>
19. <http://www.bvs-inc.us/>
20. <http://www.ars.usda.gov/SP2UserFiles/program/305/NP305ActionPlan-Final09-04.pdf>
21. <http://www.projectapism.org/>

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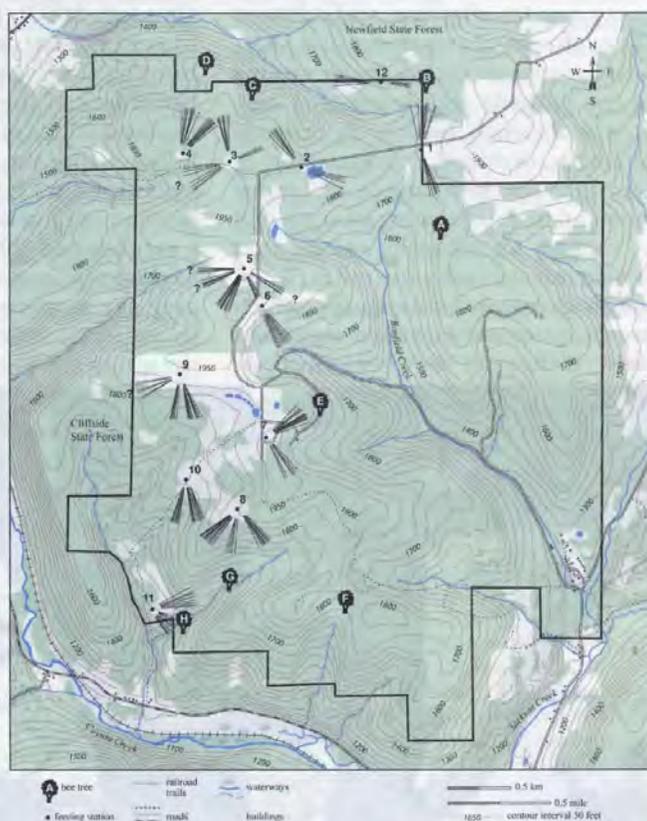
Did a balanced bee-mite relationship develop?



Everyone knows that honey bees are sweetness and light – producers of honey and beeswax – but we beekeepers know that these insects offer another gift: the quiet communion of the beeyard. “And I shall have some peace there,” William Butler Yeats wrote, “for peace comes dropping slow.” This is the peace of bees humming all around, the peace of harmonious union with nature. Lately, though, the beeyard has become less a place of serenity and contentment, more one of anxiety and concern, for our bees live in a world awash in pesticides, overrun by invasive pests, and afflicted by exotic diseases. Perhaps foremost among these threats is the well-named mite, *Varroa destructor*, which will kill almost any honey bee colony it infests unless a beekeeper provides protection.

Five years ago, I began wondering if honey bees and *Varroa* mites in North America might evolve a stable host-parasite relationship, one that would enable them to coexist without human intervention. I suspected that there may be little opportunity for the evolution of a balanced bee-mite relationship in places where most colonies of bees are managed by beekeepers. This is partly because we control mite populations to avoid loss of colonies, thereby weakening the selection for *Varroa*-tolerant bees, and partly because we manage our bees in ways that promote the “horizontal” transmission of the mites between colonies. By horizontal transmission, I mean the infectious transfer of mites among unrelated colonies. This occurs, for example, when *Varroa*-bearing workers drift into an uninfested colony or when *Varroa*-free workers rob a colony with mites and bring them home. Many of our beekeeping practices – such as crowding colonies into apiaries, housing bees in look-alike hives, and transferring frames of brood between hives – promote the horizontal transmission of mites between colonies. This is unfortunate, because biologists studying the evolution of parasite virulence have learned that horizontal transmission of a parasite fosters the evolution of virulence in this parasite, by favoring those strains of the parasite that reproduce vigorously, and thus harmfully, in one host before moving on to infest another

We might expect, however, the evolution of a balanced bee-mite relationship in a place with little or no beekeeping, hence where the population of colonies is mostly feral. Here there will be little or no control of the mites, allowing strong selection for *Varroa*-tolerant bees, and it is likely



Map of the Arnot Forest. Shown are the locations of the bee trees (8) and of the feeding stations (12) used to establish beelines that led to the bee trees. The lines radiating from each feeding station depict vanishing bearings of bees leaving the station. Most of these lines occur in clusters which point toward located bee trees; the clusters that do not are marked with question marks and point to unidentified bee trees. Green areas denote forested land and white areas denote cleared land.



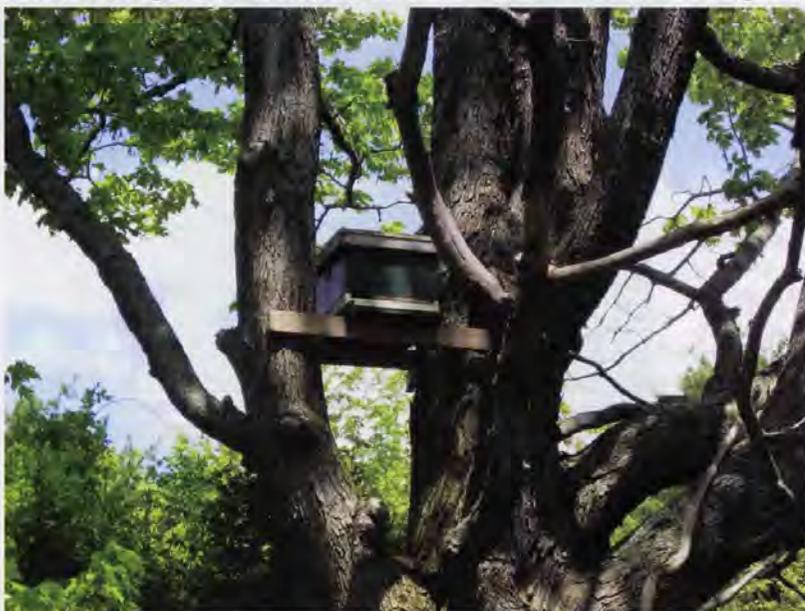
One of the bee trees (tree B, an eastern hemlock, *Tsuga canadensis*) found in the Arnot Forest, along with the author and his bee hunting dog. Red arrow points to the nest entrance.

that there will be mainly “vertical” transmission of the mites between colonies. Vertical transmission occurs when parasites are passed from host parent to offspring, and it fosters the evolution of avirulence in a parasite because it favors those strains of the parasite that leave host parents sufficiently healthy to produce offspring. Vertical transmission of *Varroa* mites, for example, will occur when an infested colony swarms and so creates an offspring colony that is also infested with the mites. In an area with mainly feral colonies, which are likely to nest in widely separated trees, drifting of bees between colo-

nies is unlikely and robbing is also probably rare, hence there may be mainly vertical transmission of *Varroa* mites between colonies. If so, then in this setting we can expect *Varroa* to evolve avirulence.

Recently, I published in a scientific journal a detailed report of a three-year study of the honey bee-*Varroa* mite relationship in a feral population of honey bee colonies living in the Arnot Forest, a 4200-acre forest preserve of Cornell University, near Ithaca, New York (Seeley 2007). Because I believe the findings of this study are of interest to beekeepers as well as biologists, I’d like to share with you here the main results of this study. We will consider four questions: 1) Do feral colonies still exist in the Arnot Forest? 2) Are the colonies there infested with *Varroa*? 3) Are they persisting with *Varroa*? and 4) Are they able to limit the population growth of *Varroa*?

First, I’m delighted to report that feral colonies do still exist in the Arnot Forest. As described in a preliminary report in *Bee Culture* (January 2003), I spent all available time in August and September 2002 hunting the bee trees in the western two-thirds of the Arnot Forest. This involved 27 days (117 hours) of bee lining, using the methods described by G.H. Edgell (1949) in his peerless book on bee hunting, *The Bee Hunter*. I established 29 beelines from 12 feeding stations in clearings spread over the western side of the forest. By patiently following the bees down these lines, I located eight colonies



One of the bait hives placed in the Arnot Forest. This one was occupied by bees in July, 2003. Each hive was mounted as shown, on a simple platform erected between two large stems in a forked tree.

Table Fates of the feral colonies living in trees in the Arnot Forest.		
Date	Colonies alive	Notes
Oct 2002	8	8 colonies found by bee lining
May 2003	6	2 colonies died over Winter
June 2003	6	0 colonies died in late Spring
Oct 2003	6	2 empty bee trees were not reoccupied
May 2004	5	1 colony died over Winter (tree toppled)
June 2004	5	0 colonies died in late Spring
Oct 2004	6	1 empty bee tree reoccupied
May 2005	6	0 colonies died over Winter
June 2005	6	0 colonies died in late Spring
Oct 2005	7	1 empty bee tree reoccupied

of bees living in trees. It is notable that the density of feral colonies that I found in the Arnot Forest in 2002 essentially matches what was found there in 1978, before there were any *Varroa* in North America (Visscher and Seeley 1978). We can conclude that feral honey bees remain plentiful in the Arnot Forest.

To determine whether the Arnot Forest colonies are infested with *Varroa*, in May 2003, I mounted bait hives in five trees located near the sites numbered 1, 2, 5, 7 and 10 in Fig. 1. Each bait hive consisted of one Langstroth hive body filled with 10 frames of comb: eight of worker comb and two of drone comb. Also, each hive was equipped with a Dadant *Varroa* Screen mounted between bottom board and hive body so that later on I could easily insert a sticky board for assaying the mite population inside the hive. Three of the bait hives were occupied by swarms in June and July 2003, and each of these three colonies grew strong and survived the Winter of 2003-2004 and the Summer of 2004. After the bait hives were occupied, I made a monthly assay of the mite population in each hive by counting the mites that accumulated on a sticky board over a 48-hour period. This was done for three months (August-October) in 2003, and for six months (May-October) in 2004. The first set of counts in August 2003 revealed that all three colonies were infested with *Varroa*, with 14, 21, and 30 mites caught on the sticky boards. Curiously, the mite counts for these three colonies never soared to high levels in either 2003 or 2004. The highest count for any of the colonies, recorded in October 2004, was just 42 mites. No more mite counts were taken on the three bait-hive colonies after October 2004

because one was removed from the forest in October 2004 to provide a breeder queen, and because the other two colonies were destroyed by black bears (*Ursus americanus*) during the Winter of 2004-2005.

Presumably, the bee-tree colonies that I found in the Fall of 2002 were just as infested with *Varroa* as the bait-hive colonies that I caught in the Summer of 2003. I wondered, therefore, whether the bee-tree colonies would show long-term survival or would quickly die out, as usually happens when colonies infested with *Varroa* are left alone. I addressed this question by checking all eight bee-tree colonies for vital signs three times each Summer – early May, mid June, and early October – in 2003, 2004, and 2005. The critical indicator of a colony still alive in a bee tree was bees entering the nest entrance bearing loads of pollen. The table summarizes my findings. We see that five of the eight colonies found in the Fall of 2002 were still alive three years later, in the fall of 2005. Of the three colonies that died during the three-year period, two perished in the Winter of 2002-2003 for unknown reasons, and one perished in the Winter of 2003-2004 after a gale in October 2003 toppled the tree housing the colony. The two intact but empty bee trees were eventually reoccupied by swarms, one in 2004 and one in 2005. Thus we see that this population of feral colonies remained essentially stable over three years; there was a net loss of just one colony, due to the loss of one nesting site.

By the end of the Summer of 2004, I was keen to know whether the colonies of Arnot Forest bees were showing such good survival and were not suffering high mite populations because they were resistant to *Varroa*, i.e. were inhibiting mite reproduction. To find out, in the Summer of 2005, I set up at various locations around my laboratory at Cornell six pairs of colonies matched in size. Within each pair, one colony was headed by an Arnot Forest (AF) queen mated with AF drones, and one was headed by a New World Carniolan (NWC) queen mated with NWC drones. The six AF queens were reared in June 2005 using larvae from the AF queen removed from the forest in October 2004; these six virgin queens were returned to the Arnot Forest for natural mating.

One of the six pairs of colonies used to test the hypothesis that Arnot Forest bees are able to inhibit reproduction by *Varroa* mites.



The six NWC queens were purchased in June 2005 from Strachan Apiaries, Yuba City, California; they were naturally mated with NWC drones in California. The two colonies in each pair (one AF and one NWC) were inoculated with the same number of mites from one of my laboratory apiaries. Then, starting in mid July, I assayed the mite population in each hive once a month, using the 48-hour mite drop method. Regrettably, these monthly mite-drop counts yielded no evidence that the colonies of Arnot Forest bees were better than the colonies of New World Carniolan bees at limiting the reproduction of *Varroa* mites. I found that in each pair of colonies, both colonies started with a small population of mites and that in both colonies the population of mites grew strongly over the Summer and Fall. It looks, therefore, doubtful that the Arnot Forest bees have evolved the ability to inhibit the reproduction of *Varroa*.

The most likely explanation for the long-term survival of the *Varroa*-infested colonies living wild in the Arnot Forest is that the mites there have evolved avirulence, that is, reduced reproduction. As mentioned earlier, avirulence is expected to evolve in parasites that undergo vertical (parent to offspring) rather than horizontal (infectious spread) transmission. In the Arnot Forest, the colonies are living in trees spaced hundreds or thousands of yards apart, so the spread of *Varroa* between colonies seems much more likely to occur vertically (by swarming) than horizontally (by drifting, etc.). At present, there is no direct evidence of reduced reproduction by the *Varroa*

mites in the Arnot Forest, but this hypothesis is indirectly supported by the striking absence of explosive growth in the mite populations in the Arnot Forest colonies in late Summer. There is evidence that mite avirulence evolved in an isolated, experimental population of European honey bees in Austria (Milani et al. 1999), and it will be interesting to see if the same has happened in the feral population of European honey bees in the Arnot Forest. My real hope, though, is that after another decade or so of evolution by natural selection, we will find in the Arnot Forest a stable bee-mite relationship based on adaptations for host (bee) resistance, not just parasite (mite) avirulence. **BC**

Tom Seeley is a Professor of Biology and Chairman in the Department of Neurobiology and Behavior at Cornell University, Ithaca, NY. He is also a passionate hobby beekeeper.

References

- Edgell, G.H. 1949. *The Bee Hunter*. Harvard University Press, Cambridge, Massachusetts.
- Milani, N., H. Pechhacker, and G. Della Vedova. 1999. *Reduced fertility in a European population of Varroa jacobsoni Oudemans*. *Apidologie* 30:435-436.
- Seeley, T.D. 2003. *Bees in the forest, still*. *Bee Culture* 131 (January):24-27.
- Seeley, T.D. 2007. *Honey bees of the Arnot Forest: a population of feral colonies persisting with Varroa destructor in the northeastern United States*. *Apidologie* 38:19-29.
- Visscher P.K. and T.D. Seeley. 1982. *Foraging strategy of honeybee colonies in a temperate deciduous forest*. *Ecology* 63:1790-1801.
- Yeats, W.B. 1920. "The Lake Isle of Innisfree," in *Modern British Poetry*, ed. Louis Untermeyer. Harcourt Press, New York. Available online at <http://www.bartleby.com/103/44.html>

Selection Indices 101: Selecting For Multiple Traits

Andony Melathopoulos

Queen breeders know that their customers are not interested in stocks that have been selected for a single trait, rather they *expect* that stocks have been improved across multiple traits. Selection on multiple traits, however, is not as straight forward as selecting for a single trait: it involves opening a can with three worms.

Worm number 1. Not all traits are equal in worth. How do I weigh the value of each trait?

Worm number 2: Not all traits are equally easy to breed for. How do I weigh my selection on traits that I can readily make progress on?

Worm number 3: How should I best organize my selection system? Should I select on the most important trait until it is pure and then start selecting on the next most important trait? Should I just set a minimum standard for all the traits I am interested in and kick out any breeders that don't make the grade?

Let us begin with worm number three. Above I describe two methods of selecting on multiple traits: 1) *tandem selection* (select on one trait at a time until it is pure) and 2) *selection based on independent culling levels* (all breeders must have a minimum level of all the traits of interest). Both systems are problematic. To outline the weaknesses of these systems consider a breeding program that is looking to improve bees on two traits, honey production and resistance to chalkbrood.

A bee breeder using *tandem selection* focuses entirely on honey production until genetic improvement has been maximized, and only then begins selecting on chalkbrood. Unfortunately, by first focusing on honey production many colonies with excellent chalkbrood resistance have been culled simply because they were not the best honey producers. Consequently, when the program turns its attention to chalkbrood the breedable variation in chalkbrood resistance will have been severely narrowed. The breeding program, in turn, unnecessarily limited itself.

The breeder using *selection based on independent culling levels* takes a different approach. Now, any colony from in the breeder circle that shows any chalkbrood on the bottom board and that does not make a minimum of 120 pounds of honey is culled from breeding. While this strategy is much better than tandem selection at spreading the available genetic variation over multiple traits, it remains problematic. The problem becomes apparent when selection involves more than a few traits. Consider a selection program involving not two, but 10 traits. A colony that had the highest score for nine of the traits would be culled if it fell below the cull for the last trait. Clearly this kind of culling will also fetter the potential of the breeding program in the future.

The *selection index* is a better option. Selection using an index allows you to maximize diversity at each selection event and it ties your selection decisions to the economic priorities of your customers (worm number one) and the heritability of traits in your population (worm number two). Research across numerous livestock species has

shown that both tandem selection and independent culling levels are vastly inferior to selection by index.

The idea of a *selection index* was developed in the 1940s by the livestock breeding wizard Lancy Nelson Hazel, who worked on breeding age at sexual maturity, rate of egg production, egg size, shell strength, internal egg quality, and viability under differing exposures to disease vectors for poultry, which is how his selection index came to be.

The selection incorporates two concrete factors into a mathematical equation: 1) the economic value of the trait and 2) how responsive the trait is to selection (a category that breeders call heritability). A crash course in explaining the process of a selection index follows. If you want more information pick up Dr Ernesto Guzman's book on bee breeding (*Elemental Genetics and Breeding For the Honeybee*, reviewed here November, 2007).

To select on an index you begin by assessing a pool of potential breeder colonies within your operation for a variety of economically important traits. These traits are invariably measured in incomparable units (i.e. honey in pounds, hygienic behavior in percentage of brood removed in 48h, *Varroa* resistance in the number of *Varroa* that drop per day) and come from colonies living in very different apiary environments. Consequently your next step is to translate all measurements into a common unit known as Z-scores.

Z-scores are derived using rudimentary statistics and can be easily calculated with a hand calculator or a computer program such as Microsoft Excel®. The Z-scores account for yard to yard differences and return your values from different traits in a common currency. Z-scores essentially make it possible to compare apples to oranges, or more specifically, traits measured using different units from colonies in different yard environments.

The final step in evaluating the relative breeding value of a colony is to take the Z-score for each measured trait and multiply it by the heritability of the trait (if it is known) and the economic value of that trait. The Z-score products of each trait are then added up to give you a selection index for that colony. The colonies with the highest index values are used as breeders.

If you were able to follow the gory details of this highly abridged description of how to calculate a selection index you will have noticed how critical the *economic value of each trait is in driving selection decisions*. This is the power of this method of selection. Traits that are only moderately valuable to your customers will be weighted far more lightly than traits they deem economically essential. Consequently, the selection process will more efficiently deliver what your customers want.

One way to accomplish this is to assign 100 points across a number of traits. Think of it like this, what if queens cost \$100? How would you spread that \$100 across the various traits? Would you spend \$50 on honey production, \$20 on *Varroa* resistance and spread the remaining \$30 evenly across the remaining traits? Maybe you think queen color is pretty important, in which case you would fill the category titled "other" with "dark colored bees" and put that remaining \$30 there. Whatever you want, just make sure total comes out to \$100. **BC**

Andony Melathopoulos is a Research Specialist for Agriculture and Ag-Food Canada in Alberta, Canada.

The Ohio Queen Project – A Collaborative Initiative

Joseph Latshaw



With the recent challenges of parasitic mites, Africanized Honey Bees (AHB), small hive beetles (SHB) and colony collapse disorder (CCD), beekeepers are readily exploring a variety of ways to dampen the sting of their losses. In the past two decades, the beekeeping industry has seen a multitude of new management styles and chemical applications introduced in an effort to alleviate some of the challenges. While management practices play an important role in the success and survivability of a honey bee colony, recent research has shown the genetic foundation of the colony is important to colony fitness and survivability. The recent studies into the complex genetic underpinnings of the honey bee and recent challenges faced by beekeepers present a unique opportunity for beekeeping. Beekeepers are expressing a greater interest in queen rearing and honey bee breeding throughout the United States in an effort to establish sustainable beekeeping practices in their own regions. The Ohio Queen Project (OQP) is one such stock improvement program that was developed based on the need and interest expressed by Ohio beekeepers. The OQP is a two pronged approach designed to provide queen rearing training and to develop a locally adapted stock for beekeepers.

In 2007 the OQP was initiated by Dana Stahlman and the Ohio State Beekeepers Association (OSBA). There were two primary objectives set forth. **The first objective** was to provide training in the art of queen rearing for Ohio's beekeepers. For a beekeeper, acquiring the skill and ability to raise queens provides a multitude of options for growth and development. To facilitate this training effort the state of Ohio was divided into nine regions and a regional coordinator was selected for each region. The establishment of regions reduced the distance that beekeepers would need to travel in order to attend the queen rearing sessions.

Eleven queen rearing classes were taught by regional coordinators in 2007 with over 120 students participating. The classes were designed to provide participants with the basic skills to successfully rear their own queens using grafting methods. To establish a successful queen rearing system it is important to be able to consistently graft and raise queens. It is then up to each beekeeper to decide how to best use their queen rearing skills, whether that means having a better understanding and appreciation for what is involved in producing high quality queens, raising queens for their own colonies, or undertaking a larger commitment to raise queens for sale. Queen rear-

ing is the foundation for providing beekeepers with the skills to become more self sufficient.

Having the skill and ability to raise queens is only the beginning. For the 2007 queen rearing classes, participants were given the opportunity to graft from instrumentally inseminated breeder queens. In coming years instrumentally inseminated breeder queens will assume a larger role in the OQP as we develop a stock improvement program. To establish a breeding program we require resources and colonies, which unfortunately are in short supply. However, there is no shortage of enthusiastic beekeepers willing to participate in the OQP. Therefore, the structure of the OQP stock selection program is based on the willingness of Ohio's beekeepers to assist with the development of their own regionally adapted stock.

The second primary objective of the OQP was to establish a sustainable breeding program based on exceptional stock selected from around the state of Ohio. In addition to providing queen rearing classes, regional coordinators were responsible for identifying exceptional colonies from across the state that survived the difficult Winter of 2006-2007. To establish a strong foundation of stock in 2007, and what better year than after a tough Winter of ruthless selection, coordinators produced daughter queens from selected colonies. The daughter queens produced by each regional coordinator were then instrumentally inseminated. This method of establishing a breeding population ensures a great deal of genetic diversity in the initial program. Please keep in mind this program is a work in progress which is bound to change and transform based on the needs of beekeepers! After reviewing the needs and conditions present in Ohio, a Carniolan based stock was selected to be the focus of our efforts. However, initial queens selected by regional coordinators were not limited to Carniolan heritage, but rather their merit as being strong, gentle, and productive colonies coming out of the winter of 2006/2007. The long term goal of the OQP will be to transition the breeding program to a more Carniolan based stock.

The queens produced by the regional coordinators and inseminated with semen from Carniolan drones were returned to the regional coordinators to be established in their colonies to be monitored and evaluated as potential breeder queens for the next generation. From the selected breeder queens, the coordinators will raise another generation of daughter queens in 2008 to be instrumentally inseminated and monitored. This program is an ongoing



Dana Stahlman, right, (2007 OQP Coordinator) and Tim Arheit (Maumee Valley Regional Coordinator) discussing the finer points of queen rearing.

stock evaluation project with the objective of evaluating a large number of queens each year and selecting only the very best as potential breeders and drone stock for the next generation. In addition, the breeder queens will be used as a source of grafting material for the 2008 queen rearing classes. In this manner, stock will be distributed throughout Ohio from the selected queens. This system of producing a successive generation of potential breeder queens using stock from each of the nine regions around Ohio ensures diversity within the stock program, but also takes into account the varied environmental conditions throughout the state.

In addition to distributing the OQP stock through the queen rearing course, regional coordinators also have the option of producing naturally mated production queens for sale. The sale of naturally mated queens will greatly encourage the use of the OQP stock throughout Ohio and surrounding states, especially for those beekeepers who do not have the time or the resources to produce their own queens. Producing naturally mated queens in Ohio presents a challenge, which is easily overcome if beekeepers are willing to modify their beekeeping practices. The weather conditions will influence the availability of queens produced in Ohio. Naturally mated queens are easily produced in most regions of Ohio during the end of May through the Summer months. Ohio raised queens will be available if beekeepers are willing to wait an extra month or two.

The initial development of the OQP was intended for Ohio's beekeepers, however it was soon realized this stock improvement program is a valuable resource for the entire beekeeping community. As previously mentioned, regional coordinators will have the option of raising queens from the instrumentally inseminated breeder queens to sell to the beekeeping public. What about other beekeepers or organizations who wish to utilize queens from the stock developed by the OQP? In an effort to make this stock readily available to as many beekeepers as possible, the OQP will also sell instrumentally inseminated breeder queens. Beekeepers or organizations that are not affiliated with the OSBA or the OQP are strongly encouraged to contact us for information on how you can obtain stock from this program. As this program grows, we would like to be able to distribute stock to other regions.

By this point, you may be asking yourself, what is the catch? There has to be a catch as this sounds too good

to be true, and it is! The catch is that we are relying on the efforts of Ohio beekeepers to assist with the selection process. Remember how I stated earlier that the OQP has a very limited number of resources? This project has been possible in part by financial support from OSBA, but has largely relied on the generous resources and time donated by all of the regional coordinators. As a beekeeper, you may be asking what you can do to assist the OQP. It is simple. We are asking beekeepers closely involved in the OQP through queen rearing classes or those who use naturally mated queens produced by the coordinators to closely monitor their colonies' performance. If you use naturally mated OQP queens in your colonies and are willing to keep records of production and performance, we ask for contributions of superior queens back to the OQP. While naturally mated queens will not produce pure daughter queens, they will produce pure drones. Keep in mind a drone is produced from an unfertilized egg, so it does not possess any genetic material from the drones your naturally mated queen mated with. We would like to use drones from some of the exceptional naturally mated queens from across the state each year for the instrumental insemination of the new generation of potential breeder queens.

The idea of a beekeeper donating a good queen back to the OQP has been a difficult aspect of this program. Why would someone be willing to give up one of their best queens? In order for this stock improvement program to be successful, it must rely on the resources of many. With the lack of a huge budget and the inability to set up and maintain some very organized and closely regulated yards, we are using the large number of Ohio beekeepers to assist with our efforts to develop this stock. In place of a large well regulated apiary of potential breeders, the evaluation of a very large number of naturally mated queens will serve to increase the selection pressure on the population. This IS a sloppy selection program, but with enough beekeeper participation and support, it will be successful! In addition to utilizing naturally mated queens to facilitate genetic diversity and selection, the central core of the breeding population will be the 50-100 instrumentally inseminated queens. The instrumentally inseminated queens will be under the close supervision and evaluation of the regional coordinators, but we are also asking for additional beekeeper support in developing an "OHIO QUEEN"

For those of you who have heard of the Ohio Queen Project already or for those of you who participated in a queen rearing class, I hope this information has helped to shed some additional light on the project. For those of you who have not heard of the OQP, now is the time to get involved. I would encourage all beekeepers who are interested in the OQP to get in touch with your regional coordinator or myself. The most up to date information will be posted on the Ohio State Beekeepers Association website at www.ohiostatebeekeepers.org. From there you can follow the link "OSBA Queen Rearing Project" to find out who your regional coordinator is, when and where queen rearing classes will be offered for 2008, and who is selling "OHIO QUEENS." **BC**

Joe Latshaw is the owner of Latshaw Apiaries where he specializes in insemination equipment design and production of II breeder queens. He is the 2008 OH Queen Project coordinator.

1500 PEOPLE CAN'T BE WRONG! REFLECTIONS ON THE NATIONAL - 2008

Kim Flottum

For the past 15 years or so I've been involved with planning meetings for beekeepers. Big meetings (well, pretty big meetings) of around 350-600 or so, and small meetings of say around 40. I've dealt with planning budgets and paying the bills; meals and menus; contracts for hotels and dorms; tours and busses and schedules; speakers, their transportation and audio visual equipment needs (which have changed dramatically in the last five years); auditoriums and breakout rooms; what to have at breaks; vendors and their tables and shipping and returning requirements; entertainment; good and bad weather; moving bees to just-over-there parking lots; promotion; and recovering afterwards. I've also attended big and small meetings....Apimondia with a couple thousand attending, and a county meeting with four dedicated souls attending in spite of a horrendous tropical storm.

But the First National Beekeeper's Conference held in Sacramento in January without question has to be the best meeting I've ever attended. Bar none. What an exceptional way to spend five days. And the title says it all *1500 people can't be wrong*, because that's how many attended I'm told. That's more than the Federation ever gets, more than the Producers ever get, and more than the two combined ever got. That should tell you, and then something spectacular happened. And of course all of those meeting things I just mentioned took place at this meeting (well, not dorms), so I am able to appraise the accomplishments of those in charge.

Because of politics and personalities the two groups have for the 22 years I've been here held separate meetings. Sometimes they even had their meetings on the same days but in distant parts of the country. So if you were so inclined, as the businesses of beekeeping tend to be, to attend both of these meetings you'd spend money for two hotels, two ship-

ping charges, two registration fees, and twice as many meals. I used to campaign for the two to get together at the same place at the same time, while keeping their politics separate. And there were a few conference calls discussing it over the years. And that's kind of what they did this time, with their separate business meetings, and even separate banquets. The rest was excellent.

VENDORS

There were just over 50 vendors who set up shop for the four day event from every corner of the country. Some were brand new to the business, or have been around awhile but were brand new to this particular meeting. Several of the new products we review this month were picked up from these folks. Besides, I'm always interested in what's out there we haven't seen before no matter where it comes from - there were established businesses like Gamber Container, Brushy Mountain, Mann Lake, Pierco, Dadant, BetterBee, B&B, Kelley, GloryBee, Cowen, Cook & Beals, Sherriff suits, and even

Bee Culture magazine among others; or those been-here-awhile but still getting known businesses like NOD Apiary, Shastina Millworks, PermaDent, Mother Lode Plastics, Ellingson's, Used Pallet Co., and Honey Acres. There were the new faces too, like Castle Dome, Alaska Heavenly Honey, Country Rubes, and Mite Zapper. Plus all the others I haven't mentioned but were showing their wares that were there, giving away business reminders - those pencils, key chains, calendars, and samples.

You could spend a whole day in that one room, and I think many did. No doubt this is the best way to look over all the old stuff you haven't had a chance to see up close before, plus all the brand new stuff, because you get to pick it up and see how it feels, or watch it work or try it on and you get to talk to the folks who actually invented it, or manufactured it, or sell it on a day to day basis and you get to quiz them all you want. It's amazing how much beekeeping you can learn talking to these folks. If the vendor room was all there was, it would have been worth the trip for me.

OTHER GROUPS

Unless you've been out in the beeyard for the past six months you know that several beekeeping associated groups met with the two big beekeeper groups during the week. On Tuesday the First International Symposium on Honey and Human



Jack Thomas of Mann Lake Ltd. displaying their newest colony moving equipment.



Norm Gary, far right, formerly from the Davis Bee Lab, and his band played at the evening meal.

Health was held. A couple hundred people came early to sit in on this first-time event.

This whole-day affair covered enough about honey to make your head spin, but it was all interesting and informative. Malcolm Sanford sat through the whole thing and has his report about all the good things learned about honey and health. Quick summary...take a tablespoon of honey before you go to bed every night for better health and sleep habits.

As part of this busy week the American Association of Professional Apiculturists met...they call it the annual American Bee Research Conference, bringing in the best and brightest and busiest of our honey bee scientists. All manner of topics were covered in their separate but equal meeting...that is, it was their meeting, but anyone registered at the Conference could attend. And many did. This group normally publishes the abstracts for their papers in the *American Bee Journal* later this year so for now it's interesting to note the number of papers that covered a variety of topics, just to see where the interests of our scientists lie, and perhaps what changes are being made.

Some papers I classified as covering two topics...like "The Influence of *Varroa* infestation and colony parameters on small hive beetle populations." This paper, in my opinion any way, deals with two subjects...*Varroa*

and small hive beetle. Given that somewhat fuzzy definition then...

There were five papers on nutrition (definitely a record for this topic); four on *Nosema* (I'll bet that's a record for this disease in the last two decades); 13 on *Varroa* biology or control (that's maybe down a bit, finally); five on some form of molecular genetics (gaining every year); five on small hive beetle biology and control (steady); one on Russian bees; one on tracheal mites (good to see this is declining); one on general honey bee health; two on the management of packages and queens; two on propolis (another record I'll bet) and three on basic honey bee chemistry

Each of these 15 minute talks was the result of some months, even years of research by grad students and researchers looking for answers or stumbling on answers while looking for questions. These meetings are a wonder of statistics, graphs, charts, and bullet pointed slides that help solve some of the problems beekeepers are having. Plus, it gives beekeepers at the conference an opportunity to actually ask a scientist questions about something, and better, those same scientists get to spend days and days mingling with the beekeepers who are having the problems they are trying to solve, plus discover new problems on the horizon. Both, I think, benefit.

PESTICIDES, CCD

Speaking of new problems, Colo-

ny Collapse Disorder and associated problems were high on everybody's list of must-see.

It started with pesticides aplenty here, and even if they aren't the CCD curse, they are killing bees faster than beekeepers can make them.

David Mendes, a 7,000 colony, Massachusetts/Florida beekeeper/pollinator talked about pesticides in the environments his bees must visit when pollinating crops and how these chemicals may be contributing to his problems...and his problems have been significant. His first comment was that pesticides aren't tested by the EPA but rather by the Chemical companies that make them, and then the EPA approves them for use, or not. Any guesses on how those results come out?

He talked about not only the financial but emotional stress that losing 60 - 80% of your bees has on beekeepers...anything more than 50% in a year and it gets real, real hard to recover. Two years in a row and you could be looking for a job as a greeter at Wal-Mart, he said.

David Hackenburg, the first to report Colony Collapse Disorder last year (but not the first to have it, certainly), first told about the 2000 or so colonies he had moved to Florida in early January, but within a couple of weeks 80% were gone with the same symptoms of CCD he saw in his bees last year. He quoted Jerry Hayes, the State Apiary Inspector from Florida (where CCD is common) who said that "beekeeping was the ugly step-child of American agriculture" How so? The government has made lots of



Häagen-Dazs donates \$\$\$.

promises so far Hackenberg said...but so far...not much has happened.

He also mentioned pesticides, specifically Imadacloprid, and how it was used everywhere, by everybody. But he went on, and I quote..."Big Ag has control of the USDA from the Secretary right on down to almost the lowest guys on the totem pole." What to do? Get a hold of your congress folks and get them to get some action...get the money out, get control of the chemicals.

Dave Ellingson, another commercial beekeeper and beeswax processor talked about doing everything the way he had been doing things...and nothing was working. It used to be, when a colony dies, air it out and re-use it ... now, that new colony will die too. His pesticide comment was that farmers are now 'stacking' pesticides ... that is, combining insecticides, herbicides and fungicides in a single trip across the field instead of three trips. The problem? When combined these chemical blends become a thousand times more toxic than when used alone. A thousand times more toxic. Imagine.

Gene Brandi, a 2000 colony commercial beekeeper talked about one specific pesticide problem. Spraying fungicides on blooming plants. Generally these compounds aren't harmful to honey bees adult honey bees that is, which is all the EPA makes the chemical companies test (remember who does the tests, and who approves the results). Meanwhile, these non-adult-harming compounds that are brought back to the hive are being fed to baby bees. Would you feed fungicides to your children? No? Neither would I but we are routinely letting honey bees do just that. These chemicals come back to hives on the pollen the bees collect, then store, then feed to their children. This just screams for long term studies on the effect of these chemicals on all the inhabitants in the hive over several generations...the question is, do these chemicals, when fed to brood, affect the adults the brood eventually becomes? Right now absolutely nobody knows. Nobody

Scientists still don't know for sure what causes CCD, and it may be pesticides are the problem, pure and simple (well, pesticides aren't pure or simple, are they?). Certainly the stress that constant exposure to pesticides exerts on the honey



Beekeepers brought bees to be tested by the Montana researchers.

bee population, and the strain this stress puts on a honey bee's immune system is one of the links in the CCD chain.

As part of this session that list of chemicals I talked about last month that was found in wax, brood, adult bees, honey and pollen was shown again, and again it started at the ceiling, ran down the wall, down the center isle (dodging the many people sitting on the floor), and headed out the door. The list is so scary that it makes me want to sit on the floor. We are surely killing bees by the way we are keeping bees.

The latest report on research results from USDA CCD trials came to light at both the San Diego meeting and the Sacramento meetings - together they make a good story.

Last Fall researchers gathered 160 colonies that showed symptoms of having Colony Collapse Disorder. They wanted to study the phenomenon that colonies that die of suspect CCD aren't invaded by those opportunist pests beekeepers routinely see when a colony dies ... bees from other colonies robbing out the honey and other scavengers like wax moths and small hive beetles. Also, when bees were put back in hives that had died from CCD, the new bees came down with the symptoms and the colonies again perished. This was completely alien to the beekeepers who experienced this ... it just wasn't in the rules.

So researchers took 40 colonies of the 160 colonies and had them irradiated - just like medical instruments - to sterilize them, 40 colonies were not treated at all, these then being the control colonies; 40 colonies were treated with acetic acid, known to control other honey bees pests on beeswax comb; and 40 of the colonies had the brood comb removed and the new bees were put on the comb found in honey supers, thinking no brood had been there previous to the addition of new bees.

All 160 colonies then had packages of honey bees put back on them, the bees coming from shipments from Australia. The colonies were fed the standard treatment for the antibiotic common for treating Nosema at the rate of one gallon, two times. They were also fed supplemental pollen substitute to help acclimatize and get ready for the honey flows to follow. The colonies were tested for *Varroa* mites and were tested for Nosema infection. *Varroa* tests showed very, very low infestations, and colonies treated for Nosema showed low levels, or no levels of infection after treatment. This is a key measure since both of these maladies have been implicated in causing or contributing to CCD in colonies.

Then these two groups were divided again, with half of each treatment put on trucks to spend the Summer pollinating, while the other half stayed home and made honey



Lela Dowling, Bee Culture's cartoonist stayed for awhile.

Already in December almost all the beekeepers with these colonies were reporting high losses. Those colonies treated with acetic acid, the control colonies and those put on just honey comb were all reporting at least a 50% loss late in November whether moving for pollination or home for honey. The colonies that had been irradiated showed a 70% survival rate early on, but *more* as time wore on. It seems that the irradiated colonies, by faring better, pointed to some relationship between a living organism and CCD, that all seems moot now.

The conclusion by the investigators after evaluating these colonies this Winter was, at least so far, CCD is "likely an interaction of pesticides, Nosema, virus, nutrition and mites" But what role each of these plays is still undecided, or unfound. No single factor stands out completely, yet.

Other things besides pesticides were found in the samples taken early in the game last Fall. But there's still some information that the beekeepers who gave samples haven't been given I'm told ... and some beekeepers are getting a tad upset ... the feeling goes that I gave you samples so you could examine them and tell me what's wrong. Instead, you take the samples, do your research, get a paper out of it, get a grant because of the paper, and I still don't know what you found. To me, that's a terrible thing to do to a beekeeper who just lost 80% of his business it seems. I wonder if those researchers will be able to get more

samples?

In any event, what has been found in CCD colonies (OK, we'll tell the beekeepers here, a year late), so far has been the Israeli virus, now generally assumed to be world wide in distribution and in the U.S. there seems to have been at least three introductions - the Australian group, a Montana group, and a small hive beetle group (nothing more was said about that, but I find it intriguing). None of the groups were closely related to the original virus found in Israel. Go figure.

Unknown bacteria were found, thought to be symbiotes aiding in digestion. There were several previously undiscovered fungus, one pathogenic, and one in Australian bees not found in the U.S. Both Nosemas were found and some trypanosomes were discovered ... lots in CCD bees, hardly any in healthy bees. Plus, seven other viruses were discovered.

It's plain that we don't have healthy bees, isn't it?

EXCURSIONS

It wasn't all doom and gloom at the meeting however. There were two offsite excursions that you could take that were both entertaining and informative. One was a bus trip to the California branch of Mann Lake Supplies. We got to tour the warehouse, see the shop, then head off to a tractor and truck museum for an hour or so of nostalgic wandering. Then we were fed, back on the bus, and home. It was well organized and went as smooth as glass. Plus, this was all on Mann Lake's nickel, so thanks, folks.

Another night we toured the renovated bee lab at UC Davis. Several organizations have teamed up to put some steam back in this facility, including the California Beekeepers, Project *Apism* and others. After years of being ignored, Eric Mussen's lab has been cleaned spic and span, refurbished, and is ready to go ... especially now that Sue Cobey is on hand. A new position has been funded in the beekeeping science arena there, and the future looks a lot brighter for everybody. Interestingly, Jerry Bromenshenk and his colleagues were going to set up their virus detecting machinery in the Davis lab during almond bloom so beekeepers could bring samples in to see if there's anything amiss with

their bees. A sample takes just minutes to prepare and not much longer to run to see what viruses, and other diseases are present in the sample. But at the last minute Davis bailed on this (for unknown reasons, but helping beekeepers certainly wasn't on their list).

After the tour of the lab we were treated to another dinner, where it was announced that Häagen-Dazs Ice Cream was donating a total of \$250,000 to Penn State and UC Davis for honey bee research (do you suppose they'll turn down this money?), and they were creating a new Ice Cream named Vanilla Honey Bee to draw attention to the plight of the honey bee at the moment. It turns out that honey bees are responsible for the creation of nearly 40% of the flavors Häagen Dazs ice cream produces every year, so they have good reason to be concerned and to invest in our industry. In any event, thanks folks.

Back to work. What do these symptoms sound like to you?

- ..no dead or trembling bees
- ..no crawling bees near the hive
- ..no brood diseases
- ..an elongated season with brood late into the fall
- ..frequent queen replacements
- ..lots of honey and lots of pollen
- ..empty hive
- ..dead bees found 700 yards from the hive

According to one speaker, these are the symptoms of *Nosema ceranae*, that *new* disease that we've had here in the states for as long as a decade some say

Moreover, colonies that are found dying in December through February have lots of spotting and huge Nosema spore counts, and lots of virus... deformed wing virus and more.

But here's the mystery - colonies that are crashing in April through June have lots of spotting, but low, low spore counts, and only IAPV is found. The first batch had *Nosema apis*, the second, *ceranae*.

One piece of advice for checking in the Summer for this malady is to check foragers ... they are the oldest. You'll find most of the epithelial cells infected in the foregut, extensive lyses, plus the ventriculus just plain doesn't work and the bees starve to death ... prematurely



The Vanishing Of The Bees documentary film crew was on site.

VARROA

There's still lots of talk about mites because beekeepers still can't control mites. That's a fact. So we still talk about them.

Economic injury levels were discussed ... what's in a number ... here are some for a colony in May ...

A 1% infection is equal to five mites on a 24 hour sticky test, or

Three mites/300 bees in a sugar roll, or

Five mites in a sugar dust test.

More info....60-80% of the mites in a colony are in drone brood at any one time. Remove drone comb. Use screened bottom boards, sprinkle

sugar on bees, and do July splits. Use a queen cell put in on day 21 after the split to make a long broodless period. Dust with sugar

Lots of talk about oxalic acid, which is still waiting to be registered I'm told. Still, some are using it, or at least experimenting with it.

Here's what you need to consider with this stuff. MEASURE what you apply but it's cheap, fast, effective, dangerous, and you need to get in on when the colony is broodless. Three treatments? August 15 (see splits, above), midwinter...unless you live where I do... and early Spring, before brood takes off. I don't make



Vendors galore had everything you can imagine on display.

any promises on this since I've never tried it, but a lot of research has been done, especially in Canada, where, I'm told, a brand new efficient vaporizer has been invented. You'll see it soon.

Again, measure correctly for each box. They use 35g of 2.8% OA/liter sugar solution in Canada, and put only 50 ml in a two story colony between frames with bees on them, half in top box, half in bottom box. It moves throughout the colony by the sugar solution on bee to bee contact. 32 50°F outside is best temperature.

Apigard. The dose seems to be a question. Label says 50g, two times two weeks apart. Too much say some, Rather, 25g, three times, two weeks apart. Read the label or kill your bees.

The outside temp should be in the 80s, put it between boxes toward the back. Some put between combs. 90° or more too hot. It needs to be available in the hive for at least a week at a time. Unofficially, it's great on tracheal mites, but it's not labeled for that...it's just a gift. Don't have screened bottom boards on when you use it, but leave the entrance wide open.

SUMMARY

There were four full days of this. I haven't even scratched the surface of what went on. There were Special Interest Groups, a Sideliner Workshop, socials, queen programs (honey queens, not honey bee queens), a kid's day, and I got to do a local TV talk show.

For more of this read Malcolm's report, since he's covered things I didn't.

One last thing. Starting this Summer (a hard date isn't fixed yet), this magazine, working with Dr Tom Rinderer and his colleagues at the Baton Rouge Honey Bee Lab plus many, many others, will begin publishing a refereed scientific journal aimed square at the people who can use it ... beekeepers. Scientific jargon will be kept to a minimum, statistics will be straight forward, and the material covered will be practical, useful and meaningful for the people who need the information the most. Watch for this coming this Summer. It will be a part of this magazine four times a year. And best of all - it's yours for free. **BC**

Keep Good Records

— Grant Gillard

If your memory is as good as mine, keeping beeyard records is a good idea — a long list is far better than a short memory.

I find in my advancing years a shortage of several things. Time seems to be in short supply and it gets shorter every year. My hairline is receding. My youthful supply of unbounded energy and physical strength is deteriorating. My well of optimism is running dry.

But the most disconcerting thing in short supply is my memory. I can't seem to remember anything anymore. I have officially joined the ranks of the "memory-challenged."

"So what!" you say, "we're all getting forgetful."

But I'm not sure if it's necessarily forgetfulness as much as it is we have too many things cluttering our minds. We are bombarded daily by a plethora of distractions, all vying for our immediate attention. Forgetfulness is not necessarily a sign of old age in our hectic, harried, hurried society. We just have too many things to remember. Multitasking has been elevated to a normal activity of juggling the competing demands of everyday life.

That's why I'm fond of escaping to my beeyard, a sanctuary of industry, a port in the storm, a comfort from all of life's tyrannical urgencies, a return to simplicity. Unfortunately, my forgetfulness brings a new measure of frustration to my beekeeping. I drive out to my beeyard and I seem to forget certain essential tools like my smoker. Or I intend to medicate my hives and I left the medication back in the garage. Or I open a hive and discover two neat, meaty slabs of burr comb loaded with honey. Then I remember pulling out two frames of droney, old black comb on my previous visit. I was going to replace them the next day with fresh foundation. And it may be I didn't really forget, but once I got back home, some other pressing urgency knocked my plan to add two frames of foundation from the forefront of my consciousness into oblivion.

My growing forgetfulness was only increasing my frustration and inefficiency. I added patience to my list of things in short supply. I had to confess I needed some form of record keeping. Gone are the days when I could walk down a row of hives and tell you the source of those bees, whether they originated from a caught swarm or a package. Gone are the days when I could tell you how each hive was faring or what color I marked the queen.

I needed a record keeping system. But I'm not a deeply statistical kind of guy to start with, and I don't want to get bogged down in the "paralysis of analysis." I needed some kind of record keeping system that follows the principles of K.I.S.S. (**Keep It Simple Son!**). I needed a system that would keep my mind on track and my efforts on target.



What's My Real Need?

So I had to decide: what kind of records are most important and what do I really need to know with respect to the bee yard? First, I discovered I needed some form of identifying hives. I couldn't remember which hive was the swarm from the mall and which one was last year's Russian nuc.

I dabbled with stencils and spray paint, adhesive numbers for mailboxes, ear tags for cattle, and finally came to rest on hand-written numbers utilizing a permanent, broad-tipped, felt-tipped marker. Black was my

color of choice and they sell these by the billions at any office supply store, even in day-glow, neon colors.

Second, I had to decide what information I really needed to know. You can create monstrously complex methods of measuring brood patterns, hive weights, mite counts — but none of these were important to me. So I found I needed to know four basic things when I make a visit to a beeyard. I call them my four key ideas.

- a. What's happening? I need to observe if anything is worthy of further management. Is the queen lacking in vigor? Do I notice the "K-wing" syndrome? Do I see mites on the drone larvae in the broken burr comb between boxes? Do they need another super? Or I could note, "Hive is okay."
- b. Action Taken. I need to make a note of what I did on this particular trip, if anything. Did I add a super? Did I install a queen excluder? Maybe I just need to write down, "Hive is fine. No action taken." Or maybe I need to make a note of an impending problem for a future visit, something to watch out for.
- c. Need. With every inspection, there will be something the bees need that I need to remember for my next visit. Maybe they need more room and I need to remember to bring a super. Maybe they need new frames to replace those old junky, black combs. Maybe they need to be requeened. Perhaps they should be fed syrup. Needs change according to the season, and good records help a beekeeper stay attentive to those needs.
- d. Equipment. What equipment or tools are required to remedy the need, and equally important, when should it be done? My greatest frustration is driving to one of my beeyards only to remember I left certain tools back in the garage at home. Or I enter a beeyard to see a swarm hanging on a branch and suddenly I recall how I meant to get out the next day after my previous visit with more supers to alleviate the congestion. Or a

"I think a good place to start any record keeping system is to look at where you are struggling, where you are not getting things done, where the bees are always getting ahead of you."

hive continues to weaken and I remember how I was going to order a new queen. Ah, the best laid plans of mice, men and beekeepers.

Those are my four key ideas. And you'll notice the first letter of each of those four key ideas spell W-A-N-E. That's what I want to happen to my forgetfulness. And if I keep good records, my frustration should wane as well.

Developing a System

Record keeping does not have to be difficult, but I definitely need a system of remembering those four key ideas. My purpose for keeping records is to make better use of my time, make my efforts more efficient, and to account for my growing forgetfulness. So after giving every hive a number and deciding what I need to know, the third part is to create a system of writing the information down to be retrieved at a later date. The key word is "written," as committing anything to memory these days is like carrying a chalkboard in a thunder storm. It rapidly becomes blank.

I've met wonderful beekeepers who use bricks in various configurations. I've seen how some beekeepers keep a 3"x 5" index card tucked between the inner cover and the outer cover so they never forget where they place their notes. Some beekeepers simply scrawl with a pencil on the side of the hive. I guess this would work, but my biggest problem was remembering what I needed to bring with me the next time. I need portable records. I need to write things down in the bee yard and then be able to take that information home so I make the appropriate preparations for my next visit.

And another benefit to taking notes on a hive's progress is my ability to take care of the most urgent need. I have some yards that have nine hives buzzing along harmoniously and two that need a little more TLC. I don't need to open all of the hives on every visit. Record keeping helps me to keep focused on the most urgent need and not waste time on those hives that are doing what they do best all by themselves.

After several attempts, even trying fancy computerized versions of databases, I came up with my own system. I start with a simple, spiral notebook. I've used pocket-sized notebooks, stenographer's notebooks, and the classic student notebook. I take this notebook out to the beeyard and after each hive is opened, I make notes on those four key ideas I expressed earlier.

Initially, this notebook was my sole record system,

but soon, sometimes even after one visit to the beeyard, this notebook was tacky with propolis and sticky with honey. What a mess.

So I got in the habit of taking this notebook home and re-entering my observations in another notebook. The notebook I take out to the bee yards is my "field book" and the other notebook at home is my "log book." My log book is a three-ring binder with a page of loose-leaf, lined paper for each hive. At the top of the page is the hive number along with any pertinent information such as the source of the colony (swarm, package), the race (Italian, Russian) and the color of the queen (I mark all my queens).

With more time on my hands and more time to reflect on and decipher my cryptic jottings in the beeyard, I transfer my field notes into my log book. I make note of what still needs to be done and what I need to do and when it needs to be done. Once transferred, I pull out those tacky, sticky sheets out of my field notebook and throw them away. Their job is done.

For my last part of record keeping, I'll pull out my calendar. Records don't do any good if you just make notes and file them away. I've made notes on certain things that need to be done. Now I need to make sure I get back to my beeyard and get them done in a timely manner. If I need more resources or tools, I can make sure I have everything I need before my next visit. If I have an urgent matter from today's visit, I need to find time, even make time, as soon as possible to alleviate that need. On my calendar, on each space for each date, is a place for a "to be done today" note.

When I know what task I need to do and what I need to accomplish this task, I need to make an appointment with myself to insure it gets done. The ultimate purpose of my record keeping system is to move me to action, to make sure things get done. Without an appointment or a "to-do" list to jog my memory, I quickly become forgetful, or worse, if I'm able to remember, my natural proclivity to procrastinate innocuously slithers in and I'll put it off until tomorrow, or the next day, or the...well, you know how this goes.

Conclusion

Record keeping does not need to be difficult or complex. Anyone can tailor the records of their choice to fit their individual needs. I think a good place to start any record keeping system is to look at where you are struggling, where you are not getting things done, where the bees are always getting ahead of you. Good records will also note mistakes that were made or seasonal cues that were missed, and hopefully, prevent their repetition from year to year.

My system doesn't have to cover all the bases, just what is necessary for me to be efficient with the time that seems to grow shorter every day. And while an efficient beekeeper is a happy beekeeper, I'm also reminded that a long list is better than a short memory. **BC**

Grant Gillard is a sideline beekeeper and author of the book Beekeeping With 25 Hives. He lives in Jackson, Missouri.



The North As A Refuge!

Raising queens in areas of AHB & SHB is problematic, but moving north to escape them can be difficult. Here's an easy way.

David VanderDussen

When tracheal mites first showed up and beekeepers started to have high Winter losses many Northern U.S. beekeepers started trucking their hives south for wintering and then back north for the honey flow. If possible they would pick up some pollination work along the way. Now the pressure may be heading in the opposite direction.

Africanized honey bees (AHB) are spreading across the southern U.S. and Small hive beetles (SHB) are well established in the same areas across the south. Neither one is able to reproduce as well in the Northern States. Hives with known SHB loads have been trucked from Florida right up to the Ontario, Canada land border for the last eight years. Despite intensive surveying of the colonies along the border, SHB have not been found in Ontario hives.

Keeping hives AHB free means having queen matings take place away from Africanized bees. This can be done by instrumental insemination (I.I.), buying in queens from areas that do not have AHB, or isolated mating areas in the AHB belt.

Queen cells and Out-Breeding Vigor Livestock Improvement Program

One thing that honey bees and humans have in common is that in-breeding can rapidly lead to problems. If we are going to have healthy bees over the long term we are going to have to incorporate out-breeding into our livestock management programs. The mating with the fittest drones that occurs in flight matings can be an overlooked tool available to the beekeeper. Colony diseases have a major impact on drones, so the ones that catch the queen are, on average, from colonies that can produce the healthiest drones. Combine it with queen stock that has known disease and pest tolerance qualities and the result is an economical continuous improvement livestock breeding program.

There are two genetic streams that make up the workers in the colony: The queen source (eggs) and the multiple drone source (sperm). Colony vigor can be enhanced by paying attention to both streams. Although it has been shown that I.I. queens can match the longevity of flight mated queens, few beekeepers have the equipment, skills

and time that it takes to do it. If you are looking for specific queen qualities talk to a professional inseminator. They can track back through their banks of maintained lines and recommend a mix. Once you have a laying queen you can graft from her larvae to raise cells. Or, you can buy cells from a cell producer and install them in mating nucs to pick up the drone side from the local population.

Integrated Pest Management (IPM) – Prevention!

The most presented IPM program has five “legs” that it runs on. 1) Identify the pest, 2) monitor levels, 3) determine treatment threshold, 4) treat when required and 5) Prevention. Prevention can take many forms, from simply avoiding exposure to the pest or disease (include AHB in this one), to using products prophylactically (TM for AFB prevention), to breeding in resistance. Breeding efforts have proven to be beneficial towards dealing with a variety of problems: American Foul Brood, tracheal mites, *Varroa*

The Bee Brief, a grab, drop and go mating system.



mites, chalk brood, sac brood, and European Foul Brood. Other livestock characteristics have also been bred for such as gentleness, honey production, extending foraging time, color and propolis production.

The most widely known *Varroa* tolerant stocks at this time are the Russian stock and Minnesota hygienic stock. According to Dr. Marla Spivak, a developer of the Minnesota stock, five generations of open mating of virgin queens from hygienic stock will be required in an area before hygienic behaviors will be exhibited by the bees. This is because hygienic behaviors are recessive, not dominant, characteristics. So, if you had started five generations ago you are well on your way to reaping the benefits of hygienic behaviors combined with survival of the fittest local bee characteristics!

Now, if you are in an AHB or a SHB area and want to raise your own queens, the local bee situation may not be so desirable. Prevention is the way to go for your IPM program. If you want to have mating take place where you are the State of Florida has good recommendations available at http://www.doacs.state.fl.us/pi/plantinsp/apiary/bmp_hbq.doc. However, it may be far easier to go to a different mating site, isolated or North of the AHB line. This is where an easy to transport, grab drop and go mating nuc comes in like the Bee Brief™ discussed last month.

Why Mating Nucs

Beekeepers often use small mating mini nucs as an economical way to have queens mated. They do not require the equipment, feed and bee population investment of full size hives, they are easy to move around and the queens can be found quickly in the small environment.

However, mini-nucs are highly susceptible to SHB invasion. To be able to keep the SHB "corralled," a defensive behavior of the workers, the worker population in the hive must be high enough to cover the comb and to attend to the necessary household tasks. The Bee Brief™ is designed to offer enough size for a bee population, food space and brood rearing to be able to cope with SHB.

Getting above the AHB belt - timing of queen production

Beekeepers need to consider methods of having their queens mated north of the AHB belt or in isolated mating areas. If you live and have your bees in such an area you

just need to time your queen production with the seasons. If you are a migratory beekeeper, going in and out of the AHB zone, you can take advantage of the times that you are out of the AHB zone to have matings take place.

That means trucking, the easier the better. You are moving living insects that you want to be in good shape at the end of the journey so good ventilation is a must. If you are using Bee Briefs™ they can be set individually into the back of a truck or palletized - if it is a closed box the door needs to be held up. Once you arrive at the mating site the Bee Briefs™ can be quickly set out on the ground.

Fat Bees

Once you get above the AHB belt on the map, then you need to find locations with good nutrition potential for the bees. A mixed vegetation landscape giving good pollen and nectar sources is ideal. Avoid areas where toxic sprays might be applied during the time the mating nucs are present. If you have hives that are going to be in a pollination stand for longer than three weeks, setting Bee Briefs™ out at the stand might work well, depending on the surrounding area and time of year.

Four weeks after setting queen cells into the Bee Briefs™ the nucs are now full of "fat" bees, both adults and the developing brood. If you have hives that are pollinating crops that are known to produce poor quality pollen for bee nutrition (cucumbers, for example), the Bee Briefs™ can be used to immediately boost the colonies as they come off the pollination stands. The bees in the hives can replenish themselves from the reserves in the Bee Briefs™ plus they will be getting frames of good quality brood for the next generation.

New Times New Methods

Raising your own queens can be one of the most fulfilling aspects of being a beekeeper. With the open mated, no worries, queen mating days becoming a thing of the past, considering your options are necessary. Many people are trying different methods, and they all come down to looking for ways to handle bees as efficiently as possible. Consider your options, make your plans, and enjoy the company of her majesty the Queen. **BC**

David VanderDussen produces queens, and Bee Briefs in Ontario, Canada.



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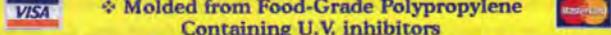
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Match Making - You & Your Queens

Is A Good Queen Always The Right Queen?

James E Tew



"You" and your queens

Is the best queen for your bees always the best queen for you – the beekeeper? Sometimes yes but sometimes – no. Availability, annual season, neighbors, and money are common reasons that you might be induced to use a queen that you would not normally have chosen. The fact is: *All queens in your colonies will rarely be good queens.* As competent beekeepers, we usually strive to have good queens in all our hives, but we nearly always fail.

Why?

Presently, it's early Spring for most of us. For discussion, let's say you successfully wintered 20 colonies and people like Jim Tew tell you to requeen them every year. Having gotten a decent honey crop, you had a good year last year. The queens are established and the colonies are all in good shape. You have the extra money in your pocket. If the colonies ain't broke, why would you try to fix them? Well, very possibly, some of you should not try to fix a colony's queen that's not broken, but those of you competent enough to requeen your colonies have a tough decision to make. Previous experience will have taught you that no matter how great a queen is, she will have a remarkably short lifespan – about a year. Experience will have taught you that to get the queen stock you want, you will need to have ordered early. Experience will have taught you that there is very little value (none) for aged queens, and experience will have taught you that you don't want to be requeening colonies during the nectar flow.

On a personal level, I deal with a high blood pressure problem. It runs in my family. In consultation with my physician, he told me that high blood pressure is deadly for some people while others live long lives – never knowing they even had a blood pressure problem. He continued by saying that medical science can't tell which people will be harmfully affected and who will be fine with high blood pressure numbers. So, everyone gets treated. True, some one-year old queens heading colonies will still be great queens for a second year. Replacing them would seem nonsensical. In other cases, maybe the queen was not even particularly good during her first year – easy decision – replace her. But we can't tell which of the remaining good ones will not make it through the next year. So, all queens get replaced.

Back at the hypothetical 20 colonies that we are discussing, you have ordered twenty-one queens in order to have an extra in case there's a problem. They have arrived and you have been blessed with a great day for the procedure. Articles and articles have been written

telling you how to hold these caged queens and how to find reigning queens in the colony, but that's not my theme here. You remove the old queens and install the new queens. Two weeks later, you find that three of the 20 were not accepted, but you bought a single extra queen. Remember? But, she's been in storage (for reasons only you know, you didn't start a nuc and get her established during that time) for more than two weeks now. Is she still a "good" queen or has her imprisonment been detrimental? Either way, you are going to install her. Now two remaining colonies don't have queens but do have queen cells underway. What to do? One scenario is to allow the natural queen replacement to proceed but realize that these two colonies will experience retarded population development. Another scenario is for you to scramble around and get two more queens from wherever you can. Even so, these two colonies will still be set back. At the end of the day, you have 17 colonies with queen stock you like, one colony *may* have queen stock you like, and two have queens over which you had little control. Could it get more confusing? Yes, because of the seventeen original queens that you installed early, not all will be great queens. You will have variation within that group, too. True, some of you would have been lucky enough to have all 20 be accepted and are off to a great season. That is the exception. For others, the rejection numbers could have been even greater. Bad weather, bad queens, and lack of experience on your part are all common reasons for queen replacement not to be successful. I put you through all of this hypothetical discussion to say again, as competent beekeepers, we strive to have good queens in all our hives, but we nearly always fail.

Your queens and you

Throughout all our queen selection history, passionate people have dedicated their entire lives to developing a queen stock that is truly exceptional. Today, one hundred percent of our bees reflect some of that effort. While all honey bees are wild, there are not any truly wild honey bees to be had. Unless you go to the next level and purchase instrumentally inseminated queens, any queen you buy will have been open mated. Various isolated locations have been tried in years past to be sure that the drones with which queens mate are of strains that we want to cross. But the fact is that most of the queens we buy were naturally inseminated by free-flying drones; therefore, the pedigree of our queens will always be in question. Though they will be similar, the 21 queens you bought will not be 21 identical queens. Try as you might, you will still experience variations in performance within the beeyard.

That's where you, the beekeeper, come in.

In the wild, the best queen for most colonies would be a queen whose prodigy stings everything in sight, swarms several times per year, successfully Winters and only produces enough honey to provide for its own use. That was the strain of bee our beekeeping ancestors started from. I don't want that kind of bee back. I want a large bee that produces far more honey than it can use, doesn't sting me, resists diseases and pests, never swarms, and Winters well – and I don't want to pay a lot for it. The bee strain that you like will be your decision. Some of you prefer yellow bees while others only want dark bees. Some want honey producers while others want gentle bees. Still others of us want bee strains that will tolerate riding on a semi-truck, sitting in the diesel exhaust flume for days on end, and still thrive when they finally get to the end of the long trip. I've come to realize that a good queen is one whose stock does what I want it to do at a price I like.

What is a bad queen?

A frequent comment I hear is, "*He makes good money.*" I've never known how much money "good money" is – but it must be good. I frequently hear the comment that beekeepers should only use good queens. Are there some of you out there who are actually shopping for bad queens? Do you need someone like me to tell you that you should be looking for good queens? May I assume that a good queen is one whose stock is successful (based on human standards) while a bad queen is one whose stock is not as successful or even fails outright? Just as there are degrees of goodness, so are there degrees of badness. In your colonies, a bad queen is one that you feel is bad while good queens are ones that you like. Your reasons are your reasons. Many years ago, my university apiculture professor would get culled queens (bad queens) from a commercial producer and then use them in the university bee colonies. These bad queens made the transition from bad queens to good queens because they didn't cost anything. In some instances one beekeeper's bad queen is another's good queen.

To be sure that you and I are communicating, I should say that generally, bad (or poor) queens don't produce enough offspring or the offspring they do produce are not successful. They don't survive the Winter. They don't show pest resistance. They sting too much or they don't produce enough honey. These marginal colonies that don't die outright are the ones that force us to review the degree of badness – to requeen or not to requeen.

Matchmaking – you and your queens

I have put you through this tiresome discussion to this point to hammer the concept that the quality of a queen's performance and the urgency of replacement is a relative phenomenon; yet recommendations must be made. You will have to personally decide what kind of queen stock you would like as though you and your bees lived in a perfect world. You will surely know that the world is imperfect so while you have goals for your colonies, many times they simply will not make those goals. Your best colony this year will possibly be one of your marginal producers next year. If you have kept bees for a while, you already know there will always be some variation among the colonies within your yard.

Queen management is important to the overall success of the colony, but it is not the only criterion. Weather conditions are important but outside your control. Pest population sizes are important but there is only so much you and your bees can do. Are you splitting/dividing these colonies? Are you able to inhibit swarming? Do you move your colonies frequently? Queens and their efforts are only part of a successful management program. The queen stock you choose must be an integral part of a comprehensive management program.

What to do?

With all the complexities and variations I have just discussed, what should you and I do to manage our queens wisely? For maximum honey production and overall productivity, I would try to requeen in the Spring with queens I purchased from an experienced producer. I selected this producer based on queen availability, price, service, and queen performance; and though I want all these queens to be great, I suspect that there will be a range of performance.

But in my imperfect world, what if I don't get the colonies requeened in the Spring? My bee world will not collapse due to this shortage, but I will have more production variation within my colonies and my overall bee population will decline to an extent. I will anticipate more swarms. I will have to perform triage to identify the truly "bad" queens and give high priority to replacing them. The colonies that I classify as average and the occasional "good" colony, I will probably leave to themselves. I will harbor the hope that the average colonies will grow to become good colonies and I will hope that the good colonies stay that way.

Queen replacement is a serious undertaking. Too often beekeepers take an average colony and unintentionally convert it to a bad colony. It happens. Learn from it. When is it better to leave an average colony alone and when is it better to fix it? If the colony is clearly not thriving (The degree of thriving is usually based on what the other colonies in the yard are doing.), requeen it. Of course, there may be no honey production from that unit and due to reduced population, pollination activity will be lowered.

Making management decisions in the spring and summer is somewhat easier than autumn decisions. Late season requeening for colony survival may not be worth



Is a large queen always a good queen?

the effort. The new queen will not have time to produce new bees so in essence the colony will have a new queen surrounded by old bees – but should the colony survive the Winter, it will have a young queen next Spring.

What I really wanted to say

All I really wanted to say in this piece is don't be intolerant of "average" colonies. Trying to have all your colonies categorized as good colonies is a proper but elusive goal. Think about it. The common range designations are: poor, average, and good. Where should you realistically expect most of your colony rankings to Fall? Yet we are all consistently taught to keep "good" queens in "good" colonies in order to get "good" crops. That makes you a "good" beekeeper. There is nothing uncommon about most of our colonies being average. Do something about the bad ones. I anticipate most of my colonies' queens

will be categorized as average ones but I will always try to acquire more good ones. In summary, I will try to make bad colonies average, then try to make average colonies good. That's a reasonable – but elusive goal.

A personal note

Late last Winter, my email system inexplicably deleted several months of email messages. They just vanished. Believe me, I have heard from some of you who were not answered. To those of you who wrote me, but received no response, I apologize. Please know that I have not intentionally ignored anyone. I am sorry for my confusion. **BC**

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



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'Bout a 100 – Sideline Beekeeping

MANAGEMENT & MARKETING

You have to manage your marketing as well as your bees

Larry Connor

To Manage, To Market

Let me get this out on the table. I have really strong feelings (biases) about the way most beekeepers think. First, when you mention the word 'management' almost all of them think about colony management, while just the few (those with MBAs) think about business management. Second, for most beekeepers the word 'marketing' is a foreign concept. What does beekeeping have to do with marketing?

Maybe I have it wrong, but there are many times I feel I am swimming upstream against a current of strong beekeeper reluctance to discuss their business and marketing plans and that they shut down when you mention it. For some, the only time they ever think about having a business plan is when they want to spend somebody else's money to expand their bee business. To do this they need to clearly explain to their spouse how taking the money from family savings will really generate enough income to pay back on the investment (I'll avoid the big issue of second mortgages to finance bee expansion). It does not seem to make much difference if they are expanding from five to ten colonies or from 100 to 10,000 colonies.

It is refreshing to find that rare couple who share the beekeeping experience and one of them is competent in developing a business plan and keeping the other person on target and focused on making money. Too often these couples have already discussed their discovery that there is "no money in honey," and have put a fair amount of thought and research on how they are going to move forward with the business side of the bee operation, and have a plan to develop, produce and market a product (or group of products) with the intention of making a big profit.

So, if you plan to expand into comb honey production, creamed honey, creamed honey with fruit flavorings, chunk honey, beeswax candles (dipped and molded), beeswax creams, honey soaps and beeswax boot water proofing, you need a production and sales plan.

Or if you plan to produce queens, queen cells, nucleus colonies, specialized beekeeping equipment or some other bee-related product, you should have some specifics on the time of year, the production schedule, the sales plan, and the product replacement policy when somebody complains (sorry no refunds on queens you let fly away).

Let's talk about local pollination rentals. It is pretty easy to say "yes" to a local grower with a pick-your-own setup and agree to bring in 15 colonies to pollinate a three to four acre blueberry field. But when do you decide which colonies will be taken to the plantation? What special colony needs will this pollination require – like feeding and medication (colonies in blueberries often come down with European foulbrood)? If the pollination weakens the

colonies, where will they be moved to so you can rebuild the colonies' strength and get them back into production? How will you move the colonies, from strapping, to hiring help to lift the colonies onto the pickup, from renting (borrowing) a large enough truck to move 15 colonies, to having a plan to get the truck unstuck when the rear wheels sink up to the axle in the muck at the farm? And when it is all done, will you have enough income to actually make a profit? Or are you just interested in donating this service to your local community or act like an outreach against a future favor from the grower?

In many cases the only good business plan for the rental of 15 colonies in any crop is a polite *No – I don't have the bees or the equipment to provide this service*. This is certainly the case if someone is looking for a bargain, a deal, or charity.

And if you do want to provide the bees for pollination because the grower is offering a huge amount of money, paid at delivery, then negotiate a deal where you drop the colonies at a nice central location with a firm roadbed, and



How are you going to move bees for pollination?

let the grower distribute the colonies around the property. Just put it into the pollination agreement/contract what happens if they destroy the hive.

Now let's take the opposite extreme. If you already own a one-ton truck with a lift gate for honey handling, it increases the likelihood that you can move colonies into an orchard without breaking apart the beehive or busting your back. So you decide you have 80 colonies out of your 100 that you can rent for pollination for apples, blueberries, cucumbers and pumpkins. It might be theoretically possible that individual colonies will earn four separate rental fees if the blooming dates cooperate. Now put your hands on your head and keep it from spinning around as it thinks of all the money you will make.

Don't spend the income yet kiddo. You will need to have some plan to market these colonies (a potential 80 x 4 or 360 colony placements and 720 potential colony moves (each one in and each one out) – plus keeping a holding yard between rentals for so many pickups and deliveries. Set some limits, either in geography, number of colonies moved per crop, or use some criteria to keep from wearing out the colonies *and* passing yourself at night in a blur of colony movement! Factor in your regular job, and what you can say to the boss when you fall asleep at the controls of that nuclear reactor

Focus on the area (counties) where you want to provide bees. Talk to the county ag and hort agent(s) and tell them you have colonies available for pollination. Also tell the people who answer the phone at the extension office and the local grower's coop. Also talk to master gardeners, farm markets. Put posters up in local restaurants where growers get coffee and breakfast. Mention you have a "few" colonies for local rental. You are not a commercial beekeeper with semi loads of bees. You are local and able to serve just a few growers. Set a fee at the high end of the range for your area because you do not have the advantage of volume sales. Tell folks you pride yourself on providing strong, healthy, CCD-free colonies and giving the bees expansion room so they don't swarm (a key point in apples) or you have strong yet young colonies with lots of brood and young bees so the colonies do a good job with cucumber and pumpkin pollination.

You might print up something to help with promotion: a special pollination business card, or a flier to pass out at a grower's meeting (most are held in the winter months).



Making soap is pretty straight forward. It's selling it that gets tricky.

You will need to talk to other beekeepers in the region who may have provided some of these growers with bees and make sure you are not getting into trouble with the beekeeper (although most will get over it in a generation or two) or avoid a really uncooperative grower. List your terms of rental – payment in 10 days or 30 days or at delivery – that part is up to you to decide. And hold to those terms.

Mark a calendar to schedule phone calls to the grower about a month before you expect the bees will be needed to make sure everything is going according to schedule. A week before call and keep calling every few days and be ready for the call back at 11 pm that says the bees must be in tomorrow. Then be ready to deliver them on time. If you cannot, be up front with the growers and tell them when the bees will be delivered.

Finally, do some numbers on paper. I like to play with an Excel spreadsheet and do some what ifs. What if I can only rent 40 colonies instead of 80? What if the grower's neighbor sprays and weakens the hives so I don't get a Summer honey crop? What if gas or diesel reaches \$6 per gallon? *Is it still worth it??*

Then use this rule: Multiply expected expenses and costs by four. Divide the expected income by 10. That is a realistic assessment of the potential income from bee related activities.

Soap story

With my travel around the country I see what people are making and selling and I can report that many beekeepers are making soaps that contain beeswax and honey. Some report that soap made with beeswax has a nicer feel and sets up better. Let's look at the potential production and marketing plan for soap you make at home.

Soap products have several nice aspects for beekeepers. You can use dry capping wax with just a touch of honey in it and nobody will complain. In most places you do not need an "approved" kitchen since customers do not eat soap. Soap recipes are varied and you can "invent" your own. Find a market that wants a plain product or one that values the uniqueness of your peppermint-tangerine-oatmeal blend. Soap products appeal to a wide audience, male and female (men respond to different odors than women, so learn which ones). And soap is a product many people both use and give away as gifts, so it is possible you will have regular, repeat customers for a favorite soap recipe. Finally, lots of folks like using home-made soaps because they do not use industrial fats or petroleum products.

During the early stages of your product production and marketing development you will need to find and try a few recipes. Attend a workshop or offer to help someone who is doing this already. During the research phase, find out what it will cost to produce a dozen bars of soap and find out what the local market will pay for such a product. Some markets might have soap bars selling for \$3, while upscale markets might double or triple that. Fancy papers, ribbons, labels and a little product "finish" will go a long way. Not all of us want to be Martha Stewart but we can use her ideas on how to dress up a bar of soap with some low-cost additions. Then think of a three or four bar gift box, especially before Christmas, Valentines and Mother's Day



Adding dipped or molded candles to your product line is extra work and extra income.

Once you have a handle on the production aspects of the soap, you need to research the way you will sell this product. You might decide the best thing is to participate in an annual art and crafts show in town and sell a lot of product in a short time period. Have cards printed for follow-up sales at the house or office.

I mention beeswax-honey soaps because I use the product myself, and I have thought about producing some and selling it locally. Now the reality is this – I basically have two months a year I can sell the product because of my travels – September and December. Well, those are good months for sales, and I could search around for fairs, holiday festivals, craft shows and the like and find one or two to experiment with for a season and see what happens.

Maybe you are in this situation, with other responsibilities with job and family keeping you from doing projects like this at different times of the year. So why haven't you run out and done soaps? Why haven't I?

My excuse is that I don't think I will sell enough soap in one day to make it worthwhile. Perhaps if I had a line of other products and an established sales venue I would jump into this, but I don't. And I have no interest in selling books and soaps at this time. Maybe when I get old and retire in 20-30 years I might do this, but not now.

There is an intermediate step in this process. Since I have never made beeswax soap I need to try a few batches and give some away to friends with really tough skin. Then fish for comments after a few weeks, and try to find out



Few of us have this many bees, or the means to haul this many bees.

if they used the soap, and if they did, what they thought of it. Many will have regifted the soap to someone else. That's ok, it just slows me down a little.

Over a period of time determined by you it is possible you or I could develop enough experience making and selling soap that we have enough experience to project the sales of 10 varieties of soap at a local venue. Then you have to ask tough questions to yourself. Can you justify spending a week preparing soap and a Saturday in September selling soap if you sell 25 bars at a \$3 markup per bar? How about 100 bars? These are questions you need to examine, adding in all the costs, the babysitter to keep the kids out of the lye solution, the rental for the booth, and more.

Finally, this may be a wonderful item to sell on the internet, with your own website. Now you have to deal with a) getting a website, b) advertising on the site, c) collecting money from people you do not meet, and d) packaging and mailing the product to the customer.

Good luck. After you go through some of these things you may decide this is the future. Follow the Bert's Bees business model. Or decide there actually is money in honey and go back to basics. But use a business production and marketing plan to help you make these important decisions. **BC**

For a copy of Dr. Connor's new 152 page, full color book *Bee Sex Essentials*, contact abeebooks@aol.com or go online to www.wicwas.com.



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LET US HELP YOU HAUL YOUR BEES AND HONEY

Honey & Human Health

A Report From The 2008 Symposium On Honey & Human Health

Ma colm Sanford

Last month I discussed honey in terms of its carbon footprint and thus, its environmentally friendly reputation, which might be exploited in marketing the sweet. The first-ever International Symposium on Honey and Human Health took place at the 2008 National Beekeeping Conference in Sacramento, CA. This also provides a wealth of information that any would-be honey marketer can look to in shaping a campaign. It was sponsored by The Committee for the Promotion of Honey and Health, Inc., which has the following goals:

- **Create and promote a positive Honey and Health agenda** that will result in greater consumer appreciation and demand for honey nationwide and enhance the already favorable image of honey by advancing sound scientific information that underscores its healthful benefits

- **Support and promote the development of quality standards from within the industry**, and promote an educational campaign that reinforces the need for good science to be applied in the promulgation and establishment of standards, including realistic tolerance and testing limits

The Committee has established a non-profit association with a fully-functional World Wide Web site,¹ featuring press releases and relevant links. The Committee is soliciting memberships and there is scheduled to be a "members only" area in the near future. This seminar is its first entry into delivering information about the relationship of honey and human health. It was supported by a long list of organizations, including

The National Honey Board, California State Beekeepers Association, Saskatchewan Beekeepers Association, and the Western States and National Honey Packers and Dealers Associations as well as CPNA International.

The first of 12 sessions was a comprehensive review of honey use in nutrition and health by Dr. Stephan Bogdanov,² who recently retired

from the Swiss Bee Research Centre, where he was chair of the International Honey Commission.³ Similar to the paper he and Peter Martin have written on honey composition, Dr. Bogdanov will soon publish a comprehensive analysis of honey and human health in the *Journal of the American College of Nutrition*.⁴

His summary revealed what all beekeepers know, that honey differs greatly in appearance, sensory perception and composition based on botanical origin. The major nutritional elements are carbohydrates, mainly the simple sugars, glucose and fructose, but also honey can contain 25 complex sugars, known as oligosaccharides. These are compounds made up of three to ten simple sugars and their consumption can have wide-ranging health implications.⁵

Although a high energy carbohydrate, honey can have a widely variable glycemic index (ranging from 32 to 85) according to Dr. Bogdanov. The glycemic index or GI is a ranking system for carbohydrates based on their effect on blood glucose levels. It was invented by Dr. David J. Jenkins and colleagues in 1981 at the University of Toronto.⁶ The higher the GI the faster food is processed. The relationship between the GI of different foods has been implicated in many human health concerns from diabetes to athletic performance.

Honey also contains small amounts of proteins, enzymes, amino acids, minerals, trace elements, vitamins, aroma compounds and poly-phenols. Dr. Bogdanov's presentation elaborated on some of the positive nutritional and health benefits thought to be derived from the complex makeup of honey. Thus the sweet has shown to have antimicrobial, antiviral, anti-parasitary, anti-inflammatory, antioxidant, anti-mutagenic, and anti-tumor effects. Certainly, it is a high energy food often used by athletes to increase performance. He concludes that most health promoting properties are only achieved by consuming relatively high amounts of honey, from 50 to 80 grams, equal to about two to four tablespoons.⁷

Mike McInnis, MRPS, a Scottish pharmacist provided his vision of the uniqueness of honey. Two major



National Honey Board Photo

from the Swiss Bee Research Centre, where he was chair of the International Honey Commission.³ Similar to the paper he and Peter Martin have written on honey composition, Dr. Bogdanov will soon publish a comprehensive analysis of honey and human health in the *Journal of the American College of Nutrition*.⁴

His summary revealed what all beekeepers know, that honey differs greatly in appearance, sensory perception and composition based on bo-

“Honey should be the first treatment of choice, not the last.”

themes he discussed included the roles of honey consumption in human metabolism and what he calls “restorative sleep.”

In the first situation, Mr Mcinnis sees glucose metabolism as central. He described the reverse glucose-fatty acid cycle in humans, which is complicated by “chronic cortisol driven stress.” Specifically, this stress often blocks fat metabolism, something many nutritionists overlook. The concepts are that honey taken at night recharges the liver’s glycogen level relieving day-time stress, while at the same time the fructose in honey encourages fat metabolism. He states in no uncertain terms that the current mind set that eating before bedtime promotes weight gain is incorrect, especially when it comes to consuming honey

Honey also helps restorative sleep, Mr Mcinnis says, when consumed before bed by ensuring adequate liver glycogen stores, limiting early morning stress hormones (cortisol and adrenalin), stabilizing blood sugar, and contributing to the release of the hormone melatonin, required for rebuilding body tissues during rest.⁸ The public health concerns over short or poor quality sleep are enormous, according to Mr. Mcinnis, and are associated with many conditions such as obesity, diabetes, high blood pressure, depression, Alzheimer’s and other neuro-degenerative diseases. Mr Mcinnis explains his concepts via a video found on the popular Web site youtube.com.⁹

During the conference, the new U.S. Edition of Mr Mcinnis’ book, *The Hibernation Diet* was on display.¹⁰ First published in the United Kingdom, the U.S. edition was just recently published by WorldClassEmpire in 2007 and includes an added section on nutritional supplements. In his foreword to this volume, Dr Ron Fessenden (MPH) (a Co-Chairman of the sponsoring Committee) writes that truly revolutionary discovery in medicine is measured in years, if not decades. Even more rarely do revolutionary nutritional discoveries gain acceptance among the medical community. Most physicians have little training in nutrition and are focused on disease treatments rather than wellness. The discovery that the human body consumes stored fuel (fat) differently during an approximate eight-hour sleep cycle than it does

during the balance of our awake-time is, according to Dr Fessenden, truly revolutionary. Expect plenty of skepticism, he concludes, concerning the principle that the human body burns more fat during sleep than it does during vigorous aerobic exercise, even though there is plenty of documentation in the literature outside the U.S.¹¹

Jessica Beiler described results of cough suppression, when comparing standard over-the-counter remedies containing dextromethorphan (DM).¹² Honey was superior in almost every case to no treatment or use of DM. Parents also rated honey as superior for cough or sleep difficulty due to upper respiratory infection. The honey used in this study was buckwheat, a dark, strong-tasting sweet, often cited for its antioxidant activity. This study was supported by the National Honey Board as part of its ambitious research agenda.¹³

Kirsten Traynor provided the seminar with an in-depth tour of honey and its role in human health via architecture and art over the centuries. She has traveled widely to collect this information on a Humboldt Scholarship, spending time in the historic town of Celle at the largest bee research institute in Europe, as well as the National Library of Wales, which houses the recently donated International Bee Research Collection. Ms. Traynor has also put her knowledge to work, cooperating with the Pediatric Oncology Department at the University of Bonn in treating wounds using Medihoney, a commercial preparation.¹⁴

This brings into focus one of the major sticking points about honey as discussed by Dr Bogdanov in the opening session. The variable source of the sweet used in therapy and other human health situations can result in confusion and lack of credibility by many main stream physicians and nutritionists. The numerous ways honey is processed through heat, filtration and other ways increases this problem. Whether to use buckwheat as in the cough suppressant study or manuka (jellybush) in either its “active” form in burn treatments might be seen as the reason for suc-

cess or failure of specific treatments. Standardizing honey remedies would encourage more use, but a lot more research is needed to properly propel honey use into the mainstream. Fortunately, this is the stated goal of the Committee as noted above.

A series of studies and presentations discussed the following issues related to honey and human health, including effects on cognitive (mental) function and weight gain in rats, insulin resistance (diabetes) and medical therapeutics.

The following results were presented by one investigator of a study published in the *Journal of Food Science*, Volume 73, 2008: “Overall percentage weight gain was significantly lower in honey-fed rats than those fed sucrose or mixed sugars, despite a similar food intake. Weight gains were comparable for rats fed honey and a sugar free diet although food intake was significantly higher in honey-fed rats.”¹⁵ According to the authors, the public health implications for humans with reference to obesity and diabetes are strong and follow up studies on people would be valuable.

Rats are not people and so more study is definitely appropriate according to Dr David Baer Research Physiologist at the USDA. He has a long resumé of research on human nutrition at the USDA’s Food Components and Health Laboratory.¹⁶

He provided an update on the diabetes situation in the U.S., which is now also being found around the world. Diabetes can be found in various forms and has a number of health consequences.¹⁷ He concluded that more than 130 million Americans are affected at a cost of \$117 billion in direct and indirect medical costs and lost productivity. The increasing consumption of refined sugar and high fructose corn syrup since the mid 1970s is a direct contributor to this situation.

On the heels of Dr Baer’s presentation, a study authored by G.B.K.S. Prasad et.al. in the *Journal of Medicinal Food*, Vol 10, 2007 looked carefully at honey use in mild diabetics, most of whom were found to be tolerant to honey, which does not produce

elevations in blood sugar as seen in glucose or other sweeteners. Honey is also metabolized more quickly and cleared from the blood stream more rapidly than other sweeteners, something athletes have exploited for centuries. The authors conclude that honey should be a sweetener of choice for patients with impaired glucose metabolism and diabetes.¹⁸

Perhaps the best researched area using honey for human medical purposes is in burn and wound therapy. In contrast to the Medihoney example provided above, Dr Shona Blair and colleagues at the University of Sydney focus on generic honey, not just one varietal. The research represents a broader approach and confirms many of the beneficial and antimicrobial uses of honey that Ms. Traynor and Mr. Bodanov referred to in their presentations.

Dr Blair's team concludes that honey has largely been forgotten in western medicine mainly due to the rise of antibiotics. However, the resistance that many organisms are showing to these wonder drugs is one of the "most urgent issues facing modern medicine." Fortunately, honey still works as an alternative therapy. In study after study, the sweet has been found to be effective for severe, problematic infections, including methicillin-resistant *Staphylococcus aureus* ("Golden Staph" or simply MRSA),¹⁹ Enterobacteriaceae in wound infections, *Propionibacterium acnes* found in acne and wounds, and pathogenic yeast *Candida*.

Of special interest is honey's effectiveness against what are called biofilms.²⁰ These are often extremely resistant to standard medications and human immune response. Dr Blair concludes that honey should more and more become the first treatment of choice in a wide range of medical situations, not the last as is so often the case.

The Symposium concluded with a final presentation by Co-Chairman Dr Ron Fessenden. He summed up areas that need investigation to further the Committee's goals, reflecting on investigations suggested by the Alberta Beekeepers Association²¹ and other organizations. Those in attendance clearly responded favorably to the symposium and charter members like myself now look forward to seeing the fruits of the Committee's continued efforts in the future. **BC**

References

(All Urls below accessed January 22, 2007):

1. <http://www.prohoneyandhealth.com>
2. <http://www.bee-hexagon.com/>
3. <http://www.alp.admin.ch/the-men/00502/00555/index.html?lang=en>
4. <http://www.jacn.org/>
5. <http://en.wikipedia.org/wiki/Oligo-saccharide>
6. http://en.wikipedia.org/wiki/Glycemic_index
7. <http://healthyhorns.utexas.edu/bevobites/measures.html>
8. <http://en.wikipedia.org/wiki/Melatonin>
9. <http://www.youtube.com/watch?v=3c1lbhPLeM>
10. <http://www.hibernationdiet.com/>
11. <http://bio.waikato.ac.nz/honey/contents.shtml>
12. <http://archpedi.ama-assn.org/cgi/content/short/161/12/1140>
13. <http://honey.com/>
14. http://apitherapy.blogspot.com/2007_06_01_archive.html
15. <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1750-3841.2007.00286.x>
16. <http://www.ars.usda.gov/pandp/people/people.htm?personid=236>
17. <http://en.wikipedia.org/wiki/Diabetes>
18. <http://www.liebertonline.com/doi/abs/10.1089/jmf.2006.070?prevSearch=allfield%3A%28G.B.K.S.+Prasad%29>
19. <http://en.wikipedia.org/wiki/MRSA>
20. <http://en.wikipedia.org/wiki/Bio-film>
21. <http://www.albertabeekeepers.org/>

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Deformed wing virus.

When the calendar page is turned and the 1st week of March appears, we southerners realize that crunch time is upon us. There are only a few short weeks to get our colonies set and ready to go. Otherwise nectar will be left untouched and therefore unprocessed into honey. Hopefully we didn't spend the winter months goofing off but instead got plenty of work accomplished. Old equipment was repaired, ratty, black comb replaced, honey supers primed and ready for action and new, pristine apiary sites selected. If expanding operations then plenty of hammering, wiring, gluing, and painting were part of your Winter activities. If starting those first colonies then queens, packages or nucs have been ordered already. Whatever your plan of attack is I hope you are ready because the bees surely are.

Now that the equipment is in order let's see how the bees survived the winter. The first thing you will want to undertake this month is to inspect your colonies. Don't procrastinate! It is easy to put this off with other Spring-time chores breathing down your neck, but your bees may need you sooner than later. During the month of March there should be numerous opportunities to inspect your colonies. The earlier you finish this task the better. Assuming your colonies are ok by just observing bees flying in and out of the hive means nothing. On your first hive inspection of the year you really must open the hive and check each individual frame when the temperatures allow. Later in the year hive inspections don't need to be so thorough but you need a good idea how each colony is faring before the season begins.

So what are you looking for? Here are the basics. Is there a queen? How does the brood pattern look? Are there any signs of disease? How much honey and pollen is available and where is it located? How do the bees look? Are there signs of mites? And don't forget your notebook and pencil! Records on each individual hive are important information you will want to have, especially if something

Evaluating Your Colony & Your Queen

Jennifer Berry

Check Now For Problems So They Don't Come Up And Bite You Later

goes wrong down the road.

Let's begin the inspection with the most important issue; is there a queen and if so is she performing? If the colony is queenless then you may want to combine it with another colony, especially a weaker one. If you didn't order queens last year, getting one this Spring maybe almost impossible, especially this early. Now inspect the brood area. Brood patterns should be tight, with little to no skipped cells. The larvae should be pearly white. Discolored larvae could be a sign of disease or chilled brood. If you suspect a brood disease like AFB or EFB and are unsure how to diagnosis it, contact an experienced beekeeper or your county agent. The sooner a positive diagnosis can be reached the better. Chilled brood occurs when the brood nest expands too quickly for the bees to keep warm. The brood is exposed to cold temperatures and dies.

There should be an equal arrangement of eggs, larvae and capped brood. If the brood pattern is spotty, and the population low, at this point the best recommendation is to combine these colonies with others. There is no need allowing a colony to limp along if they aren't going to survive. These colonies are susceptible to disease, wax months, and robbing. By combining colonies you not only save the bees but the equipment as well. Just don't forget to kill the poor performing queen first before you combine. However, there are exceptions (doesn't there always seem to be exceptions when it comes to the world of beekeeping?). Some strains of bees will build up slower or faster depending on their genetics. Russians for instance are slower coming out the gate but will rapidly build up, catching or even surpassing your best colonies. You need to know the nature of your colony. In the past I've contemplated whether or not to combine certain weaker colonies. I didn't because the brood pattern was solid even though it was small. In a few cases the decision was a good one. They built up nicely and ended up making a substantial amount of honey. That is why good notes are



Solid frame of brood.

an important asset. It helps you remember exactly what is happening in each colony

Ok, the queen and brood appear to be in good shape, so how about the honey stores? Spring weather in the south can be very unpredictable. Last year we had one of the warmest Springs on record however that late two day Easter freeze in April wiped out not only the newly formed tender vegetation but colonies as well. Dramatic shifts in temperatures can separate the cluster from the food. Warm days the bees become active, then with sharp temperature drops the cluster can find itself separated from the honey stores. The bees may be only an inch away from the food but unable to retrieve it when temperatures plummet. The colony then starves before warmer temperatures arrive.

Even though the nectar flow is just around the corner don't count on it solely if honey stores are depleted. Colonies at this time are rapidly consuming food. Feeding each of those individual larvae takes a considerable amount of honey and pollen. They are nothing but little eating machines, made up primarily of a midgut and hindgut. And to think there are thousands of them per frame! So how much food is enough? This can be difficult to determine. However, the rule of thumb at our lab is too much is better than none. If our full size colonies are down to less than a half a super with no honey frames

Strong cluster of bees.



in the brood chamber, we feed. If we have surplus honey frames we add those, if not we use gallon baggies with syrup. Even though nectar flows may be only weeks away, inclement weather may keep the bees from flying and hence gathering nectar. Another thing to examine is the placement of the honey. As the cluster moves up into the honey supers during the Winter, honey is depleted in those areas. Move full frames of honey around the cluster. Frames of honey at the end of a super are worthless if the bees can't access them during cold spells.

And don't forget to check pollen stores. Here in the south the continued drought wreaked havoc on plant and animal life (as well as Atlanta's water supply). Little to no pollen was produced or collected. Mid Winter inspections of our colonies revealed absolutely no pollen. Not a single cell's worth. Therefore, add pollen patties now if your inspection reveals the same situation. There are numerous pollen substitute products available. Some are even pre-packaged into ready made patties which eliminate the hassle of having to mix it yourself. Pollen is the protein source needed for larval development. If there is little to no pollen, then brood production is reduced.

Even though the mite populations have decreased over the Winter months due to the decline in brood rearing, mites are still present. Examine the newly emerged bees to see if there are signs of deformed wings. If you see a considerable amount of deformed wings then treating should be on the horizon. However, we are nearing a nectar flow so chemicals are out of the question. A non chemical approach to knock back mites is to dust adult bees with powdered sugar. The powdered sugar dislodges the mite from the adult bee. Used in conjunction with bottom screens or a sticky sheet, the mite is then removed from the hive. You will have to repeat this method several times in order to eliminate the mites emerging with workers and drones. The powdered sugar will not penetrate the wax cappings and therefore will not affect the reproductive or immature stage of the mite.

After your inspection make sure you put the frames back in the order you removed them. You don't want to leave brood frames at the end of the hive because they'll be susceptible to colder temperatures.

Since we are only a few weeks away from the start of our nectar flow there is another issue we must consider. Overcrowded colonies are just itching to hit the trees once pollen and nectar start coming through the front door. If you want to make a substantial honey crop you need to discourage this natural, swarming tendency. One larger colony of 60,000 individuals has been shown to produce more honey than the honey combination of two smaller colonies with 30,000 individuals. Swarm prevention and control is important. There are many ways to accomplish this task but none are foolproof. Plus, once a colony has it in their mind to swarm, they will. The methods we choose is splitting, equalizing and cutting queen cells.

Colonies that are "boiling over" with bees, (eight to 10 frames bees and brood) we split. We take four frames bees and brood (with eggs) and place them into a four to five frame nuc. If we have no queens available we allow the nuc to rear their own (which will take several weeks before the virgin queen will emerge). First of March in our area is a little early for queens to mate but by the end of March there should be ample drones and warm weather for mating. If there are weaker colonies in need of a frame

or two of brood we take them from our stronger colonies and give it to them. Basically we rob Peter to feed Paul. Since we can't allow our breeder colonies to swarm we regularly cut queen cells. It's a painstakingly long process but until we have made our final selections we can't afford to lose a single queen.

Retiring old, tired queens also helps to discourage swarming. Since my preference is to re-queen in the Fall the queen is only six months old when the swarm season hits. Another positive for Fall re-queening, there is no disruption to the colony just before the one and only nectar flow we experience. Our flow is short and sweet so we don't have time to mess around. There are Summer nectar flows to our north and south but this involves transporting hives. And finally, I already have a pretty good idea which queens are superior and which aren't so hot (because records are kept for each colony).

One more recommendation for swarm prevention, make sure the colony has plenty of room to expand. If you have empty, drawn deep frames drop those into the brood box. It gives the queen more cells to deposit eggs. Place these empty frames on the edge of the brood area. It's not a good idea to divide the cluster too early unless the colony is extremely strong. Removing old brood comb and replacing it with new wax foundation keeps the bees busy. Adding supers upstairs will also help ease congestion.

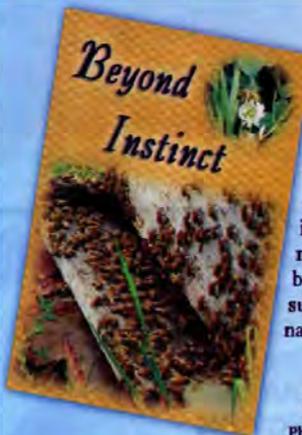
The last thing to discuss is site selection. This can be a difficult and time consuming chore but well worth the reward. If you have a few colonies and want those in your backyard, great. Just make sure they are facing south-east and aren't sitting in a low spot. Hive entrances facing the morning sun will warm up quicker thereby stimulating the colony to forage earlier (the early bird really does get the worm). Numerous nectar bearing plants only have nectar in the morning hours so you want your bees in the sky at first light. Other issues to be aware of when finding a site for your bees; Is there heavy agricultural activity in the area and if so what pesticides are being applied and when? Is there a clean source of water? Is it easily accessible, especially after it rains? How far is it? Are there wind breaks? Is it in a flood plain or water

way? I have had to move my bees several times out of what seemed to be the perfect apiary site, but unfortunately no honey filled the supers. Then other sites which didn't look promising at all produced like mad. But don't get discouraged if you don't make honey the first year. You need to take into account weather conditions that year or the previous year. Give it a few seasons before abandoning a site.

Next month I'll discuss package installation since most packages are being produced and shipped at the end of March here in Georgia. But there is one final touch you can add to your empty hive bodies if packages are on your calendar for delivery soon. Here in the south we are constantly battling small hive beetles. One thing we try to do with our newly constructed equipment is to caulk cracks, crevices and seams in the interior of the hive. They make perfect breeding grounds and hiding places for beetles. By sealing these areas the beetles are forced out in the open more often which in turn keeps the bees on their tails. Get those girls ready cause the flow is a coming.

See ya! **BC**

Jennifer Berry is the Research Coordinator at the University of Georgia Bee Lab.



The honeybee is an amazing creature. Even man has not yet duplicated its main product, honey. How does the honeybee know, for example, when the honey has reached the right moisture content? We understand that bees are instinct driven, but how did the honeybee get its instincts? In this book from communist times, a Russian beekeeper debates an atheist propagandist on the subject "Where did faith in God originate?" 48 pages. Paper.

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Raising Bumblebees

For Fun, And Maybe Profit!

Mary Lewis



When people think of beekeeping, they usually think of white wooden boxes – reminiscent of filing cabinets – filled with frames of golden honey. Neat, clean and sweet, honey bees have been raised in the United States since Colonial times when they were brought over from Europe by our earliest settlers. However, because of *Varroa* mites beekeepers are looking for alternatives to supplement their income.

Introducing the Humble Bumble Bee

Bumble bees (of the genus *Bombus*) may not be glamorous, but they are miraculous. Native to North America, bumble bees are industrious and efficient pollinators. Flitting from flower to flower, the queens gather nectar and pollen, and in the process pollinate the plants. Their large, fuzzy bodies are the perfect design for picking up large amounts of pollen and their “buzz” shakes it off onto the flowers (also known as sonication).

After spending the Winter underground, queens emerge in the early weeks of Spring and look for a nest site. Nesting sites are typically abandoned rodent nests (mice, rabbits, gophers), but they will nest almost anywhere close to the ground and protected from the elements. When a queen finds a suitable nest site, she will line the cavity with moss or dry grass, and then collect nectar and pollen to produce a food called “bee bread.” She uses this blend of pollen and nectar to build the nest and feed the young. The first brood of offspring will all be female workers (five – 20) who then take responsibility for nest growth, food gathering and storage, and caring for the next developing brood.

The queen is then free to lay eggs for the duration

of the Summer. New reproductive females and males (queens and kings) are produced in late Summer. The queens and kings mate on the wing, and the fertilized queens find places to hibernate for the Winter (loose bark, hollow trees or burrows in the ground). A chemical in the queen’s body, almost like antifreeze, keeps her from freezing in the frigid Winter months. The remaining bees in the colony die when the first hard freeze hits.

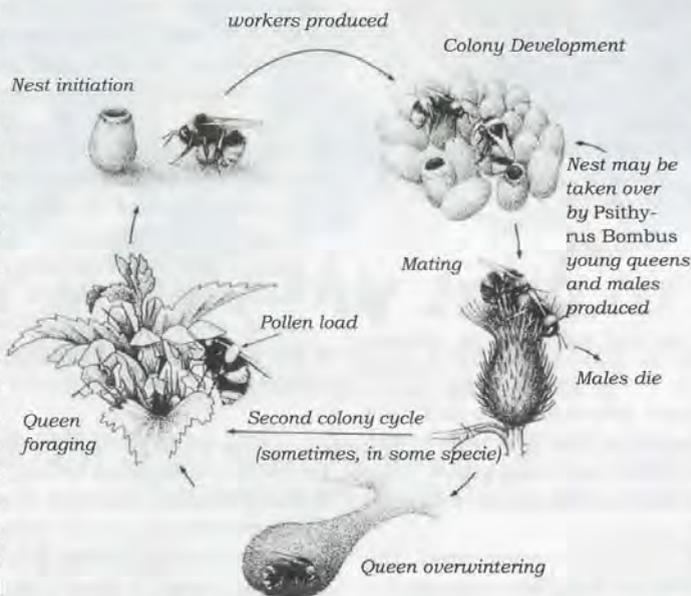
Raising Bumble Bees

Beekeepers should find it fairly simple to start their own bumble bee hives. According to the book, *Befriending*

Bumble Bees: A practical guide to raising local bumble bees, written by Elaine Evans, Ian Burns and Marla Spivak, there are five steps to raising a hive.

- 1.) Catch a local mated queen.
- 2.) Place the queen in a small box with a pollen ball and nectar.
- 3.) Once there are eggs, continue to provide fresh pollen every few days so the queen can feed the larvae.
- 4.) When workers emerge, transfer (or transform) the colony to a larger box. Continue to supply pollen and nectar.
- 5.) Once colony population exceeds 20, the colony can be opened to the outside.

Elaine, Ian and Marla have had consistent success with *Bombus impatiens*. They used a starter box with the dimensions 2.5 x 5 x 3.5 inches. One-eighth inch hardware cloth (a stiff metal mesh screen available at most hardware stores) is used for the top and bottom of the box. The sides are made of wood. The door is made of metal and slides to allow access to the inside of the box.





Queen and workers.



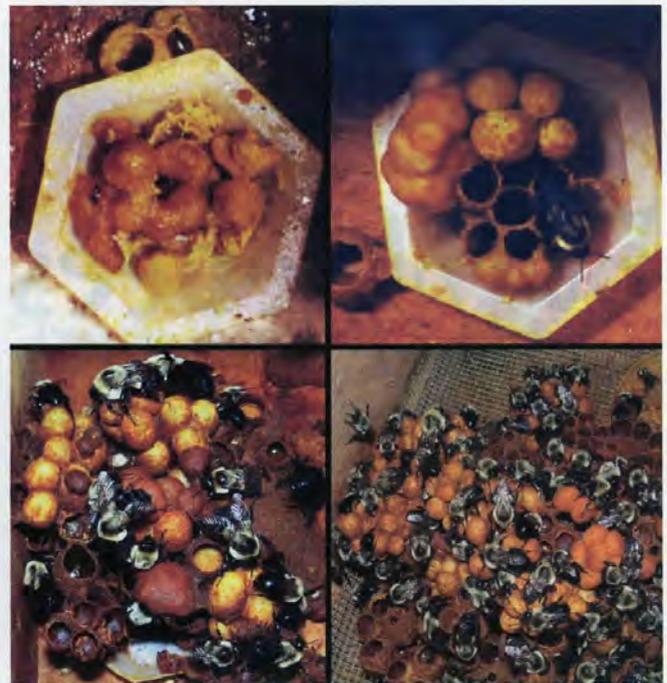
Nest box showing plexiglass top and tweezers for holding adults.

There is also a clear inner door (plexiglass) to facilitate observing the hive. The inside of the box is split into two sections; a food area and a nesting area, separated by a piece of wood with a hole for the queen to move between the two sections.

When the first clutch of workers has emerged, the brood is moved to a larger wooden box, dimensions 9 x 12 x 7 inches. The bees can be picked up by their hind legs with tweezers, but be gentle with the queen – without her – there is no hive. The bees enter and exit the box through a piece of plastic tubing large enough for two bees to pass, kind of like a two-lane highway

Bumble bees seem to do well in a dark environment with 50% humidity and an average temperature of 70°F. Some light during the day doesn't seem to bother them, but try to mimic the natural conditions of the nest.

Feeding the bees will most likely require a visit to the friendly neighborhood beekeeper (unless, of course, you are the beekeeper). One half pound of pollen per colony should keep the bees happy until they are foraging on



Colony development over time.

their own. Mix fresh pollen with a sugar solution (nine cups water to six cups high fructose corn syrup or 1 1 sugar solution) to form a stiff dough. Then roll the dough into a cylinder shape about half an inch thick. The pollen balls should be about the size of a pea. A growing colony should need an amount of pollen equal to roughly one third of the size of the brood each day

There are a few national commercial producers/sellers of bumble bees for pollination, but keeping and selling your own bumble bees locally decreases the chance of transporting diseases or parasites. It also ensures that the bees are adapted to the climate and vegetation.

The advantages to raising bumblebees are:

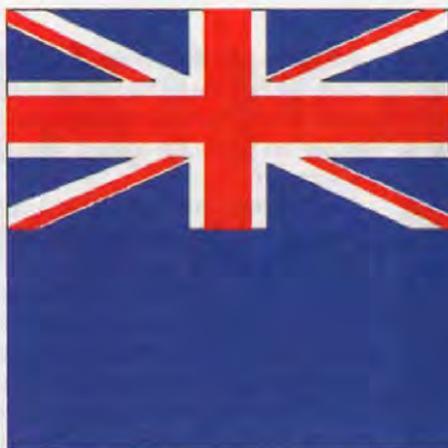
- Bumble bees are not aggressive. They only sting if threatened. And the males don't have stingers.
- Bumble bees are active in windy and cloudy conditions and at low temperatures (41°F).
- Bumble bees do well in greenhouses, so rent or sell them to your local nursery (added revenue).
- Bumble bee hives have a finite life ending at the first hard frost (no over wintering care or cost).

Until such time that the honey bee population rebounds, raising and selling bumble bees is a cost effective alternative. Bumble bees don't seem to be affected by *Varroa* mites, and as long as there are crops and wild flowers to sustain them, raising them should be an enjoyable and revenue producing endeavor **BC**

For more information:

- *Befriending Bumble Bees: A practical guide to raising local bumble bees* is available through the University of MN Extension Store <http://shop.extension.umn.edu/PublicationDetail.aspx?ID=1902>
Phone: 1-800-876-8636
- *Befriending Bumble Bees website* www.befriendingbumblebees.com
- *Beekeeping forum* is available at <http://forums.gardenweb.com/forums/bees>
- *How to build a bumble bee box* at <http://tomclothier.hort.net/page38.html>

Keeping Bees On Pitcairn Island



There are no bee diseases on this island, which is close to the middle of nowhere.

Alan Harman

Pitcairn islanders intent on keeping their bee population healthy have banned the import of beekeeping equipment and honey

The British overseas territory's police and customs officer at one of the most isolated places in the world issued the order in an attempt to maintain one of the last healthy honey bee populations on the planet.

"Friends of Pitcairn and visitors to the island are asked not to send or bring honey, other bee products, or used hive equipment or clothing to Pitcairn," the announcement says.

"As many of you know, the Pitcairners have begun to expand their beekeeping efforts and the island hives have recently been declared 100% free of disease. In order to keep the hives pristine, it is very important that the island not be accidentally exposed to products of bees from other areas that could contaminate the Pitcairn bee population."

Pitcairn, famed as the destination for the Bounty mutineers, now wants to make a name for itself for the quality of its honey

The rich and intense fruitiness of Pitcairn honey is attributed to the nectar from the mango, native lata, passion fruit, guava and rose apple flowers found in abundance on the island located half way between Peru and New Zealand.

The Pitcairn Islands consist of four islands, Pitcairn, Henderson, Ducie and Oeno but the only inhabited island is Pitcairn. It has an area of 6.6 square kilometers and is only accessible by boat through Bounty Bay

The island lies almost exactly on the line connecting New Zealand

with Panama so ships heading from New Zealand to the U.S. east coast and Europe pass every two months or so.

It is located 1,350 nautical miles east-southeast of Tahiti; 1,400 nautical miles west-northwest of Easter Island; 3,300 nautical miles east-northeast of Auckland, New Zealand; 4,000 nautical miles west of Chile; 4,100 nautical miles east-northeast of Norfolk Island; and 4,150 nautical miles south-southwest of California.

Lost in the vastness of the Pacific Ocean, Pitcairn was uninhabited and barely known in 1789.

On the morning of April 28th that year, Acting Lieut. Fletcher Christian led the mutiny on the Bounty. The British warship's captain Lieut. William Bligh and 18 others were set adrift in an open boat but defied the odds by sailing to Timor in an epic 48-day voyage.

Christian took Bounty back to Tahiti and then on to the then uninhabited Pitcairn Island where the ship was destroyed and nine of her original crew settled along with six Tahitian men and 12 Tahitian women plus an infant.

The mutineers lived there undiscovered until 1814 when two English frigates hunting for pirates accidentally found the island.

In 1831 the descendants of the mutineers were moved off of Pitcairn but by 1857 many of them had moved back.

Today Pitcairn has a population of about 50 people.

European honey bees *Apis mellifera mellifera* were likely introduced to Pitcairn during the 1800s. This was a common pattern in the Pacific during the period and while there are no records, accounts of honey bees can be traced back many years in the memories of Pitcairn Islanders.

The then postmaster Oscar Clark was reported to have kept bees prior to 1970 for his personal use and islanders recall him collecting swarms. He is remembered to have had one or two hives. Royal Warren, who has lived



Jay Warren and Simon Young check hives.



Pitcairn Island Honey.

all her life on Pitcairn, said she was stung by bees in a "box" as a small girl. Mike Warren, Royal's son, recalls bees being kept when he was very young.

In the early 1970s, for reasons unknown, honey bees disappeared from the island. Insecticides have been blamed but the actual reason for their disappearance remains a mystery.

With no bee population, difficulties with pollination became very noticeable. The yield from mango trees dropped significantly and hand pollination – removing a flower from one plant and brushing the flower of another – became a common practice. Other insects were recognized as playing a part in pollination but they were not sufficient for Pitcairn needs.

People became tired of hand pollinating plants and in 1977 the possible reintroduction of honey bees was discussed. The islanders agreed on importation and in 1978 two colonies of the predominantly Italian yellow strain of honey bee *Apis mellifera ligustica* were brought from New Zealand.

Another two hives were brought in from the same source in 1992. One of the hives swarmed heavily and while the colony was lost, Pitcairn gained a number of feral colonies.

The imported hives were the property of the Pitcairn Island and were the responsibility of the forester Jacob Warren. But the focus was on pollination and no honey was taken.

Locals tell of bucket loads of honey left sitting around to be either tipped out or given to passing yachts or anybody else who wanted it.

After the 1978 introduction, Glen Clark – the son of Oscar – started to keep bees. Glen Clark was noted for his self-constructed beehive that was said to be "like a bought one." He is thought to have had only one hive, while an islander named Brian Young also kept bees and had two hives at his house.

Interest in beekeeping began to build in the early 1980s after Meralda Warren visited New Zealand. While there she received an in-depth view of the industry and on her return to the island she was named Pitcairn Beekeeping Officer. She no longer holds that role but has remained actively interested in honey bees and the industry ever since.

A minister named Mark Elmoos, who had beekeeping experience, arrived on Pitcairn in 1994 and introduced more people to beekeeping.

This inspired the involvement of an islander called Dave Brown and as a result of a swarm entering a box at the Pitcairn Radio Station, the number of hives with Brown and others involvement – quickly rose from a few to more than 20.

Interest in beekeeping continued to grow and in 1998 the United Kingdom government aid agency Department for International Development (DFID) funded a beekeeping project that involved James Driscoll, an apicultural advisory officer from New Zealand, travelling to Pitcairn to provide training.

Driscoll's enthusiasm quickly had most families on Pitcairn involved in keeping bees and the hive numbers grew.

He said Pitcairn bees are a particularly gentle strain and he was able to work with them wearing minimal protective clothing.

He conducted a bee disease survey and found the honey bees on Pitcairn to be free of all economically important pests and diseases. This was a significant development for Pitcairn as it permitted the New Zealand-based Pitcairn Island Commissioner to work with authorities to open up export markets.

Driscoll returned to Pitcairn in 2001 supported by funding from the Secretariat for the Pacific Community. He provided more training and conducted another disease survey reconfirming the disease free status of the Pitcairn honey bees.

By then hive numbers had passed the 40-colony mark and the industry was developing well.

Today, colony numbers are about to move through the 100 threshold. The export markets are strong and Pitcairn honey can be shipped to almost every country due to its freedom of disease status and effective export certification protocols.

The European Union includes Pitcairn on its list of countries authorized to ship honey into the EU.

The average honey yield on the island is close to 35 kilograms (77 pounds) a hive and the honey sold in beautifully packaged 250 gram (8.8 ounce) jars, can be purchased through the island's website www.Pitcairn.pn.

The industry has set a minimum order of two jars for export and the price for each jar is NZ\$10.00 (US\$7.64) plus post and packing.

DFID continues to support the industries growth and Driscoll is again back in Pitcairn to assist.

However, while new entrants are being taught beekeeping, the focus has moved – as the industry looks to meet the international demand for its honey – to that of increasing hive numbers, intensive hive management, and queen bee breeding. There is the possibility of a propolis tincture product offering being available in the near future.

Driscoll said Pitcairn Commissioner Leslie Jacques and his staff play an important role in supporting the industry.

"People like Shirley Dillon are known to work miracles in shipping needed materials to Pitcairn, which has no airports," he said.

"The beekeeping industry is an economically important part of Pitcairn and it is vital not to bring bees and/or beekeeping equipment to the group," Driscoll said. "Most of the honey is exported and to keep honey production at useful levels and markets open it is important that no impacting pest or diseases are introduced." **BC**

Alan Harman is a frequent contributor to these pages. He is originally from Australia but has recently relocated to Michigan.

Extra Income For The Sideline Beekeeper

I'll never do that again! No, never, Never, NEVER, NEVER!

I don't know how many times my beekeeping friends have heard me utter that statement, but it has been many, as we returned bees to their original stands after having moved them to the orchards for pollination. And each time I said it I was serious deadly serious!

But time has a way of healing all wounds, or so they say, and by the following Spring all but forgotten were the stings, the smashed knuckles, the aching muscles, the bee filled suits, the lost sleep, the long rainy nights and all that other interesting stuff that we thought went along with pollinating. By Spring we were also keenly aware of the fact that we had to generate some extra income in order to get the season off to a good start, so, our occasional good judgement was compromised when the orchardists started calling to reserve bees for pollination.

"OK", we would reply, "But, just one more year!"

So, what has changed that would turn such a dreaded chore into one which we enjoy and look forward to doing each year? It is probably due to a plan which has evolved over the years, out of necessity, in which we manage our bees for honey production, yet with pollination in mind.

Our first experience with pollinating began many years ago when a friend offered to rent our bees to supplement his, in his rather extensive pollination operation. For a few bucks a hive we would help load them on his truck and after the pollination season concluded, we would find them back in the yards from which they were taken. Easy!

Eventually Tom, the pollinator, was offered a job in California working with almonds. He handed us his list of New York accounts and we found ourselves in the pollinating business.

I don't know if it was because we never really intended to become pollinators or if it was simply because I

am a very slow learner, but, for some reason it took us a long time to realize that there must be an easier way to do it.

For several years we simply moved our strongest, and heaviest, two story hives to the orchards. Sometimes these would be about all two men could lift onto our truck. Then, after spending a couple weeks in an orchard, they were considerably heavier to bring back home. It finally occurred to us that we were renting bees, not honey and pollen, so we began lightening the hives by replacing honey and pollen with empty combs prior to moving them. Later we began shaking the bees down into one deep hive body and putting a second deep, with mostly empty combs, above an excluder. This lightened the hives even more and allowed us to remove honey for extracting.

This method worked fine until I had to move the hives by myself. The weight was manageable but I soon realized that these short arms were not made for grasping two story bee hives. This led us to substitute the top deep with a 6 3/4" honey super. I still prefer to have a helper but in an emergency, I can go it alone.

Fall Management

Our system ideally begins in early Autumn when we remove all supers (6 3/4") except for one, a 10 frame food chamber, now very heavy with honey, having been on the hive all Summer. We use the 3/4 depth boxes for honey supers as well, but with only eight frames to facilitate uncapping.

At that time, preferably early to mid-September, we pull out the queen excluder, slip in the mouse guard/entrance reducer, add a teramycin/sugar/grease patty to help prevent American Foulbrood and check the colony for stress. We prefer to use the patties instead of dusting as we believe that the grease also helps to control tracheal mites.

Be sure there are ample stores of both honey and pollen and that the colony has a good healthy queen. If not, re-queen immediately, with mite resistant stock, as it is important to have lots of young healthy bees for successful wintering. If stores are lacking but all else is satisfactory, we usually transfer what is needed from an extra heavy colony or simply merge the light colony with a strong one, using the newspaper method.



The last Fall honey is off. The queen excluder is removed, the food chamber is brought down to the brood chamber, medication is on and the mouse guard is in place.



All wrapped up and ready for whatever old man Winter has to offer.



Beehives, like this one, just coming out of the orchards, chuck full of bees and with a full super of honey, present an urgent need to provide storage space and room for the queen to lay.



(Simply spread a single sheet of newsprint on the stronger hive, cut a few slits in it with your hive tool and set the weak colony on top of this.)

If you treat for Nosema, feed heavy sugar syrup with Fumidyl B. If *Varroa* mites appear to be building up, now would be the time to add formic acid or other approved mite treatment. Toss in a pollen patty if there is any question about pollen stores.

Winter Management

When time comes to remove the medication, in accordance with the label, probably 45 days after applying it, winterization can be completed. We check to make certain that the mouse guard is secure, put a fiber board above the inner cover to conserve heat and either cover the hive with a cardboard enclosure or wrap it with the ¼ inch foam insulation, securing it with a piece of lath and staples. Be sure that the hive tips slightly forward and that the upper entrance is open in order to dispel

moisture.

You have now done just about everything that you can do to insure Winter survival so you might just as well settle back and enjoy the fruits of your labor, repair and build more equipment and make plans for that great year ahead.

A mid-Winter check, (late February? early March?) is always helpful. We like to check for stores by simply hefting the back of the hives not very scientific but sufficient. Usually they are heavy but we like to have some candy boards made up just in case. Entrances should be checked to prevent clogging. Dead outs should be cleaned up now to prevent a greater mess later in the season, and stacked in the yard, secured from mice and robber bees. Equipment in need of repair should be removed to the shop.

Spring Management

Just when Spring management begins is highly dependent upon the weather, but usually, sometime in March we can't resist taking a few peeks inside our hives, but usually it is too early in Central New York to do much other than to tend to emergency situations. One of the drawbacks of doing pollination is having to get the bees ready to move earlier than we would if we were operating strictly for honey production. One of

the advantages is that our system forces us to go thru each pollinating colony three times, keeping us aware of what is going on.

On the first workable day, 60°F or more if possible, we head out to the yards with a supply of empty deeps, some empty supers and some extracting supers of drawn comb. Without removing the packing, we put an empty deep hive body on one of our weakest hives, and, on another we put an empty super. These will become the storage hives.

We now go to one of our stronger colonies, removing the wrap but not the entrance reducer. We remove the super which has served as the Winter food chamber and place it on an empty hive body and cover it to conserve heat. We set the deep bottom box aside, on the up-turned cover, clean the bottom board and on that place a good empty hive body. From the original deep, remove and sort the combs, transferring to the new box four to six frames of brood, two empty frames of drawn comb and two of honey continually watching for the queen and examining the combs for problems. If the queen is spotted in the bottom box, great. Simply add a queen excluder and put on an eight frame honey super. If she is not found there, shake bees from the food chamber, which you have removed, into the hive, until you find her, then place her in the bottom box and add the excluder and super.

The food chamber will probably contain some brood. Place any sealed brood you find there in the super now on the hive above the excluder, along with extracted comb, for a total of eight combs. The brood will hatch and the combs will later be filled with honey. Unsealed brood and surplus honey from the food chamber can be put on the storage hive until it is needed to make splits or to strengthen other colonies. Occasionally these storage colonies will become strong enough to use for pollination.

Pre-pollination Management

We require the orchardist to notify us three days prior to when he expects to need the bees. When the call comes, we go thru the colonies again removing all but six frames of brood, two frames of comb and two frames of honey. From the extracting super we remove any brood comb which has hatched and replace it with



Spring arrives and the food chamber is replaced by an empty honey super (over an excluder) and the inner and outer cover is replaced by a migratory cover.



Bee flight is evaluated before a colony is chosen for pollination.



Moving time! A piece of 1/8" hardware cloth is slid in behind the entrance reducer and is anchored by a single screw.



good extracting comb eight total. At that time we replace the inner and outer covers with a migratory cover

Sometime prior to this, on a day with the temperature at 70°F or warmer, we monitor each hive for flight. Only when flight is 60 bees or more per minute, do we feel that it is strong enough to use for pollinating.

The night before the move, we insert a screen behind the entrance reducer and secure it with a single screw. Then we staple or strap the hives together and we are ready to go.



Immediately upon returning from the orchards, additional supers are added with the food chamber going on top to be filled before another Winter.

This simple method of closing hives to move is one of several great ideas that I have stolen from my good friend Rob Sorrensen who works with me in pollination.

At the orchard, the screen is removed and we return home to await the call that the pollinating season is over

Post-Pollination Management

After the hives are moved back to the home yards, the entrance screen is removed along with the entrance reducer and more honey supers are added. The food chamber, which has been on the storage hives, is put on top of the producing colony where it will remain until Winter preparations begin in early Fall. The migratory cover is replaced by the inner and outer cover Supers are added as needed.

Most of the hives used for pollination are now very strong, and prime for swarming, if they haven't already done so. From the most crowded hives we replace one or two combs with frames of foundation. This not

only gives them more room but is a good way to replace combs.

Conclusion

Most small beekeepers prefer not to pollinate and for good reasons. Crowding the bees down as we do with our system, is sure to cause at least some swarming in the orchards. Besides being very hard work, it is rough on equipment, resulting in additional repairs. We are sure some queens are lost in the process. There is also the possibility of picking up disease as well as exposing your bees to insecticides, although most farmers are well aware of the importance of honey bees and will not spray insecticides while the bees are in their orchards.

However, it is our opinion that the extra income from pollination fees make it well worth the effort and our bees go into the Summer flow strong and in great condition. In the Finger Lakes area of New York State, we start out, usually in April, pollinating cherry orchards, then stone fruits and finally apples. Later strawberries and vine crops can be done. Since we retail most of our honey, we are able to extract several additional varieties, for which we get top dollar

All things considered, we really believe that the small beekeeper, such as ourselves, can profit by doing at least some pollinating and we highly recommend it. **BC**

Duane Waid is a sideline beekeeper in the Finger Lakes Region of New York, runs a successful pollination business, and has a honey stand to die for at the Ithaca, NY Farm Market.

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Pollination & Borders

With losses from CCD, winterkill, and other diseases the need for honey bee pollination in relation to supply of bees will continue to grow internationally, including the East Coast of Canada.

Kathy Birt

Einstein once said that if the bees were to die, we would die in three years...or was it five. Or did he say it at all? No matter. Those may have been words of wisdom for the entire human race to adhere to in the 21st century when losses of honey bees across the world are at a crises stage.

Fifty years ago seeing a neighbor or two farming native bees for honey may have been commonplace. Just as it was commonplace to see neighbor sharing with neighbor.

With the onset of world trade markets, essentially brought on by a higher demand for fresh food, conventional farming grew by leaps and bounds and neighbors sharing with neighbor became a thing of the past.

An increase in crops meant an increase in agriculture chemical use, something that still remains controversial and was blamed for honey bee Winter losses as early as 1990, in Canada's smallest province. Stan Sandler, the Island's biggest beekeeper with 3500 hives, says he presented information to Pesticide Advisory Council in 1990, describing symptoms of bee losses. "They were similar (symptoms) to what is happening now with Colony Collapse Disorder CCD," says Sandler and adds that he believed the culprit to be a known chemical with the trade name Admire, produced by Bayer. Extensive research in the late 90s and into 2004 didn't prove or disprove this belief. Sandler called it the Disappearing Bee Syndrome.

Losses of bees continue in high numbers over the past year and Colony Collapse Disorder seemed rampant in the U.S. Some people involved with agriculture agree this could just be stress on the constant movement of hives for pollination. In Prince Edward Island both honey bee and native bees in all forms have been declining over the years.

Chris Jordan, berry crop development officer with the Prince Edward Island Department of Agriculture in Charlottetown, who is also responsible for bees, attended a CCD conference in Winnipeg 2007. He says experts from the U.S. were brought in to speak at this conference. "They describe it (CCD) as the bees leaving the hives. They are not dying, they just leave the Queen and (leave) any unhatched bees, going into Winter conditions. .and that is not normal behavior," says Jordan.

With losses from CCD, winterkill, and other diseases the need for honey bee pollination in relation to supply of bees will continue to grow internationally, including the East Coast of Canada.

This on-going need is bringing government toward making decisions with regards to pollination in PEI. The Department of Agriculture in PEI, under a new minister, with a new government, the Honorable Neil J. LeClair, a former hog farmer, says the shortage of bees for pollination is not a black and white situation. "We definitely

have to look at the situation and try to solve it. But it has to be something viable that is going to be worked at," says LeClair and adds that there has been some interest shown by a few individuals to get into raising honey bees. LeClair says the department can't start throwing money around until there is an incentive. "I'd like to see the interest first," he says.

One pilot project funded by the department this past spring was an assessment on the strength of hives. This was a concern voiced by both Jordan and Richard Veinot, president of the PEI Wild Blueberry Growers Association. "We cooperated with the PEI Horticulture Association and it was a successful partnership. There was some complaints from blueberry growers that they had hives but not enough bee strength so we needed to address that," says Jordan and Veinot echoes this concern.

With a huge growth in the PEI blueberry industry in recent years the problem of pollination has spurred the opening of the borders to Nova Scotia (a neighboring province) to bring in bees. Up until three years ago, the bees that came in from Nova Scotia were not allowed to go back due to the possibility of disease.

Now the importation of Nova Scotia bees has become essential for pollinating some PEI crops.

In PEI Wild blueberries crops have become an important commodity and pollination of the 9000 plus acres may be in for a crises down the road if the numbers of honey bee colonies doesn't soon grow.

At present Sandler and his Milk & Honey Apiary in the community of Iris in Kings County, is the only large beekeeper. He has no problem renting out that number for spring pollination.

"We seem to be okay in the central and eastern parts of the Island, (for pollination needs) but the western area doesn't have a lot of bees," says Sandler and he adds that there is opportunity or someone to fill that area with bees.

There are a few other beekeepers that may have 600-700 hives between them. The agreement between Nova Scotia and PEI beekeepers is described by Jordan as not necessarily solid. "This is a fragile agreement," says Jordan, and adds, that it is based on the fact that the two provinces have similar diseases (in the colonies).

Veinot sees the shortage of bees for pollination in the province at a crisis already. "It can't just be left to its own (devices); there are proactive steps that can be taken by the beekeepers, the blueberry growers and cranberry growers. and the provincial government."

One of those steps was the discussion of contracts between the blueberry growers and beekeepers from the two provinces. But the beekeepers wanted no part of that. "It's always just been a kind of gentleman's agreement

between the two industries in both provinces," says Jordan.

Veinot felt it would be a guarantee to the beekeepers that if a deposit was made under the contract, and something unforeseen came up whereas the blueberry growers didn't need as many bees as originally thought, the beekeeper wouldn't lose out.

This comes on the heels of the Nova Scotia border being closed temporarily during the Winter, due to PEI

bees being resistant to American Foul Brood. "When we found out we were obligated to tell Nova Scotia (beekeepers) and that changed our disease profile," says Jordan.

He explains that this panicked some people, until Nova Scotia beekeepers discovered they had the same resistance in that province's bees. "The border was closed for two weeks. It could have gone on longer, or they could have closed it permanently...so it is a very fragile agreement," Jordan notes.

What can be done about this fragile agreement or to boost the numbers of bees in PEI for pollination? During this closure, Veinot and the blueberry growers brought up the notion of bringing in Ontario bees. This was not received well by the local beekeepers and to date no Ontario beekeepers were contacted.

Veinot notes that the blueberry growers made the offer of contracts to the beekeepers in both provinces to give them some kind of guarantee that they would get some money if a grower cancelled at the last minute. Both Veinot and Jordan thought this was a good idea. "It's a gamble to the beekeepers (to hope to have a hive rented)," says Jordan. He notes the beekeepers may have felt that after signing the contract they would have high Winter losses that prevented them from fulfilling it.

And so it goes.

In a world where border issues have become commonplace due to disease and/or terrorism, everyone has something to protect.

The Spring of 2007 saw enough bees from the two provinces to supply blueberry growers and cranberry growers, as their pollinating seasons follow one another. This number includes Sandler's 3500.

Veinot says there could be at least 6000 acres in need of pollinating annually within a year or two. This based on growth and the fact that a particular acreage is only harvested every other year. He suggests bringing in huge colonies from other provinces, where there could be 20,000 to 30,000 bees in a colony. This was done successfully in two of the Prairie Provinces. But again there is the issue of border crossing and disease.

Both Jordan and LeClair say it is something to be looked at and notes the cost would be a big part of that research. Jordan is quick to point out that the Canadian Food Inspection Agency CFIA overwrites the rules of PEI and would have to have their say and approval for that.



Wild Blueberries are a big crop in the Maritime Provinces, and growers need honey bees from somewhere.

"We do bring in bees from, for instance Hawaii and New Zealand," says Jordan adding that Sandler brings in bees from Hawaii and has to have a certificate from CFIA. "If they won't let them (bees from off shore) into Canada, they certainly won't let them into PEI," Jordan says.

Minister LeClair concludes that his philosophy is to get something viable and make it work. "We don't want to start throwing money around. There

could be an incentive to do it (raise bees) just for the money. We need to make sure the people who get the money, are intent on making it work."

Veinot grows only 50 acres of blueberries and says he relies somewhat on native bumblebees for pollination. "I shoot for about 22 hives of honey bees at the most, but my berries are surrounded by trees and there's a good population of wild bees around the borders."

Steve Javorek, a research scientist at Kentville Research Station in Nova Scotia has been working in PEI around borders of blueberry fields and Jordan says his findings are interesting. "We thought there was nothing (no bees) in blueberry fields. Apparently they are just teeming with native pollinators and he is looking at how we can manage the surrounding areas of blueberry fields to promote native pollinators.

Veinot says there used to be a number of hobby beekeepers in PEI, but notes, "They weren't interested in pollination. They were just in it to make a little honey. If we want to get someone as large as Stan it would take a lot of money and logistics to get set up for raising that many bees."

He says PEI, in fact, Canada may go along for who knows how long where everyone gets bees who needs bees. "But quite frankly, that could turn around so fast it would make your head spin," warns Veinot. **BC**

Kathy Birt is a freelance writer from Prince Edward Island, Canada.

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ANNUALS FOR BEES

*Especially valuable during the
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Conn e Krochmal



Flowering tobacco (*Nicotiana sylvestris*)

Annuals are excellent flowers for the bee garden. Because they bloom for extended periods, they can fill in the gap when other plants aren't available for honey bees. These are especially valuable during the Summer months. Here are some annuals that are particularly suitable for bees. Generally these species need full sun. Most annuals thrive in average garden soils.

Borage (*Borago officinalis*)

Reaching about one to 1½ feet tall, borage can be quite bushy, up to two feet across. Both the stems and leaves are clothed with hairs, which can be quite irritating when touched. The large foliage can reach six inches in length.

Borage blooms throughout the Summer and Fall until a hard freeze. Opening in nodding clusters, the small, star-shaped blossoms are mostly purple or blue. However, they're sometimes white.

Very easy to grow from seeds, borage self sows. This does well in poor soil.

Bees gather both nectar and pollen from borage.

Cosmos (*Cosmos spp.*)

The various cosmos species are excellent annuals for the bee garden. Easy to grow, there are two species.

Common cosmos (*Cosmos bipinnatus*) can easily reach seven or eight feet in a rich soil. However, dwarf varieties are available. The lush, bushy plants have finely cut fernlike foliage. The daisy-like blooms reach three inches in diameter. They have yellow centers. Depending on the variety, the petals can be white, pink, red, or even bicolored.

Yellow cosmos (*Cosmos sulphureus*) tends to be much shorter, about two to three feet. Dwarf varieties are also available. The large leaves, which can be a foot long, are notched. Its flowers come in sunny shades of red, orange, and yellow. These are about three inches in diameter.

All of the cosmos species bloom reliably from Summer until frost. They begin flowering about two months from the time the seeds are planted.

These can easily self sow. Start the plants early indoors or direct sow where they're to grow. Cover the seeds lightly. They germinate in five to seven days.

Some cosmos varieties have double or semi-double flowers. For that reason, get singles for the bee garden. Examples include Sonata and Versailles, which are dwarf varieties of the common cosmos. These only reach two feet in height.

Cosmos blossoms provide bees with nectar and pollen.

Flowering tobacco (*Nicotiana sylvestris*)

Native to Argentina, this is related to smoking tobacco. Though it can sometimes survive as a perennial in warm climates, it is generally treated as an annual. This species reaches four to five feet in height. The very large

basal foliage can be over 1½ feet long. This forms large clumps.

Flowering tobacco is noted for the richly fragrant, white blooms that are 1½ to two inches across. Appearing throughout the Summer and Fall, the tubular shaped, pendant blossoms are quite abundant. They form large clusters.

Unlike those of the winged tobacco, a related annual, these flowers remain open on cloudy days.

For best results, flowering tobacco seeds should be started indoors. Or buy plants from a garden center. Though this can easily self sow, the plants take several months to produce their first blossoms. Don't cover the seeds. The plants do well in a well drained, rich soil.

Regarding its honey status, flowering tobacco compares with regular tobacco. Very popular among bees, the flowers yield pollen and lots of nectar. The honey would resemble that from regular tobacco, which is heavy bodied and very dark brown to blackish with a tobacco-like aroma. In some cases, the flavor can be strong. Typically, tobacco honey is left on the hives for the bees over the Winter. Gardens will produce so little though as to not be a problem.

Marigold (*Tagetes spp.*)

A superb annual for the bee garden, the marigold requires no special attention. Several species are suitable for the bee garden.

The African marigold (*Tagetes erecta*) is the tallest, reaching three feet in height. Blooming non-stop from Spring to frost, this also sports the largest blooms. These are four inches across. African marigold blos-



Spider Flower (Cleome).

soms come in every shade of orange and yellow.

French marigold (*Tagetes patula*) has smaller flowers – up to 1½ inches across. Typically, the yellow blossoms have tinges of red. The plants grow to 1½ feet tall.

Striped or signet marigold (*Tagetes tenuifolia*) has small blossoms, only an inch wide. The petals are yellow. Typically, this species reaches about two feet in height. However, dwarf varieties are available. The foliage is very finely cut and almost fern-like.

Marigolds are easy to start from seed, germinating in three to four days. These can be direct sown where they're to grow or started early indoors. Transplant after all danger of frost is past.

Bees get pollen and nectar from marigolds. Choose varieties with single type flowers, such as Disco or Harlequin French marigolds, or Starfire Signet. Avoid the ones with double blossoms as these aren't recommended for bees.

All of these species are good nectar and pollen sources for honey bees though there aren't enough of the flowers to produce a pure marigold honey.

Mexican sunflower (*Tithonia rotundifolia*)

Also known as tithonia, this member of the daisy family is vigorous, bushy, and robust. It reaches three to six feet in height though dwarf varieties are available. These

plants can be several feet wide. The large, coarse looking leaves are six inches in length. They can be lobed.

Mexican sunflower is best known for its large, reddish-orange blooms, which are three inches across. Appearing in large numbers, these open until frost.

For the earliest flowers, start the plants indoors. The seeds can also be sown directly outdoors after the danger of frost is past. It starts blooming about 10 weeks or so from the time the seeds are planted.

Bees seem especially fond of Mexican sunflowers from which they get both nectar and pollen.

Nasturtium (*Tropaeolum majus*)

Depending on the variety, this can have either a trailing or upright growth habit. The vine types can reach four feet in length. Nasturtiums have distinctive, round, fragrant foliage. In some varieties, such as Alaska, this is variegated.

This plant is grown for the unique, funnel-shaped, spurred blooms, 2½ inches long. A number of doubles and semi-doubles are available. For that reason, be careful to select single types, such as Whirlybird, for the bee garden.

Nasturtium flowers come in a wide range of colors, including cream, red, yellow, and orange. Once this begins flowering, it continues until frost. Nasturtium blossoms, when first open, are edible, with a sweet flavor from the nectar.

Assuming you don't have heavy soil or one that is terribly rich, nasturtiums will thrive with almost no attention. Preferring an infertile, dry spot, they don't like to be fussed over. Under ideal growing conditions, the plants will be covered with blooms.

Nasturtiums are easy to grow from seed, which sprout in two to six days. Direct sowing is best as they resent transplanting. If given a choice, this self sows.

Bees collect nectar and pollen from nasturtium blossoms.

Pot marigold (*Calendula officinalis*)

Pot marigold plants reach one to two feet in height, depending on the variety. Very reliable bloomers, the daisy-like flowers reach nearly three inches in diameter. They come in a wide choice of colors, including yellow, orange, cream, apricot, and pink. These emerge on sturdy, upright stems. To encourage reblooming, deadhead after the old blossoms fade.

Quick and easy from seeds, these germinate in about a week. Pot marigold also self sows.

For bee gardens, avoid varieties with double or semi-double blossoms. Pot marigold flowers offer nectar and pollen for honey bees.

Spider flower (*Cleome spp.*)

These annuals are native to the New World. Several species are in cultivation. Typically, they reach four to five feet tall. However, dwarf varieties are available.

Spider flowers have attractive, compound leaves with seven or more leaflets arranged in a palmate fashion.

The distinctive blossoms appear throughout the Summer until frost. Especially floriferous, a single spider flower plant can have hundreds of blooms at a time. They open in small, leafy clusters. These blossoms are several inches wide. Spider flowers come in various colors, including cream, white, pink, and red. There are also varieties with bicolored blooms. The very colorful stamens can reach three inches in length. Spider flower is named for the long, tapering, clawed petals. The blooms have four petals and four sepals.

Spiny spider flower (*Cleome spinosa*) is noted for two traits – the annoying spines and the very pungent odor reminiscent of wet dog fur.

The spider flowers grow particularly well on sandy and rocky spots, and light, dry soils. They can self sow. These are easy to grow from seeds, which shouldn't be covered.

All of the spider flower species are excellent bee plants that yield both nectar and pollen. These are very popular with bees.



Statice (*Limonium sinuatum*).

Statice (*Limonium sinuatum*)

Also known as sea-lavender, statice grows two to three feet tall. This has distinctive, notched leaves that wrap around the stems. The blossoms come in a broad palette of colors, including white, red, pink, peach, apricot, orange, yellow, blue, and purple. Some are bicolored. These open throughout the Summer and Fall.

Being native to the Mediterranean, statice prefers a dry soil. This needs no special care. For the earliest flowers, either buy transplants or start early indoors. It takes several months for the seedlings to begin blooming. The seeds germinate in two to three weeks.

Considered to be an excellent bee plant, this species provides nectar and pollen. At the end of the season after the bees quit working the blossoms, cut them as an everlasting.

Sweet alyssum (*Lobularia maritima*)

Up to a foot across and not quite as tall, this popular plant is typically grown as an annual though it will survive as a perennial in some locations. It has a mounding growth habit.

If sheared back after the flowers fade, this will continue re-blooming until frost. Though the individual blossoms are small, masses of them cover the top of the plant. These open in large, rounded heads. They're delicately scented.

Usually, the flowers are white, pink, or violet. There are a number of varieties available. Carpet of Snow is by far the most popular white flowered one. Rosie O'Day with rose-pink blooms sporting white centers is also a favorite.

Profusion Cherry Zinnias (*Zinnia*, spp).



For best results, allow at least six inches between sweet alyssum plants. A member of the cabbage family, this does well in poor, dry soils. As a cool season annual, it can be direct sown during the Spring where it is to grow. Don't cover the tiny seeds, which germinate in three to five days. Very quick growing, it comes into bloom within a couple weeks.

Sweet alyssum is a very good nectar and pollen plant. It yields lots of nectar

Zinnia (*Zinnia* spp.)

Among the most popular annuals, these relatives of the daisy come in a range of sizes. There are several species of zinnias that are suitable for bee gardens.

Narrowleaf zinnia (*Zinnia angustifolia*) is very floriferous. This has yellow petals edged with orange. The blossoms are over two inches wide. This is named for the linear foliage. The bushy plants grow to a foot in height.

Common zinnia (*Zinnia elegans*) reaches three feet tall. This stiff, upright plant has hairy foliage. Its gigantic blooms can be 4½ inches across. The shape and color vary according to the variety. It comes in every color except blue.

All zinnias are very easy to grow from seeds. These usually sprout in four or five days. They can be started indoors or direct sown in garden beds where they're to grow. The plants need no special attention.

Some zinnia varieties have semi-double or double blossoms. So look for single flowered ones for the bee garden, such as Red Spider zinnia. Crystal White is a single-flowered, narrow leaf zinnia that was named an All-American Selections winner

Because zinnia foliage can sometimes suffer from mildew, choose disease resistant varieties with single flowers. Profusion is a disease resistant zinnia series. Three different Profusion varieties were named All-American Selections winners, including Profusion Cherry, Profusion Orange, and Profusion White.

Zinnias provide nectar and pollen for bees. Along with other annuals, they're well worth considering for the bee garden. **BC**

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

The Smells Of Beekeeping

Ann Harman

Wood, Smoke, Honey, Pollen, Propolis, Pheromones – All Add To The 'Smell' Of A Colony.

Human's sense of smell is always being compared to that of a dog (search and rescue), or sometimes a cat, horse, pig (truffle hunting, of course), and even a bee. In the animal world we really are not good sniffers. Maybe that is a good thing sometimes. Other times I think we might enjoy many pleasant smells that we cannot detect.

We really cannot enter the world of odors that bees can recognize and differentiate. But we can and do enjoy the smells associated with beekeeping. Let's start at the beginning.

Several boxes have just arrived from the equipment supplier. Choose the large heavy one. Here are the pieces of wood for the hive bodies and honey supers. As we open the cardboard box we detect the pleasant but faint smell of wood. Stop and sniff for an instant because this smell is fleeting and will be masked by other stronger odors.

Which box to choose next. How about the one that is marked "smoker." Not much here to smell at this point. Sort of a faint metal smell. So set it aside for now.

Next is the box that always brings delight to beekeepers. It is marked "wax foundation." Just hand a piece of new foundation to any beekeeper and the first thing he or she will do is stand there smelling it, first on one side and then on the other. Both sides smell the same but the odor of just plain bees wax is so pleasant. Hand a piece to a non-beekeeper and that person will stand there and smell it also. Take a piece of foundation to a school classroom. Guess what – all the kids put it up to their nose and smell. I wonder if the smell of beeswax is the best one in all beekeeping.

The package of plastic foundation opened next does smell of beeswax if you ordered the coated plastic. Since the coating is very thin the smell from beeswax-coated plastic foundation is not as strong as from the pieces of wax foundation. Just the same, go ahead and smell it

anyway

The hive bodies and honey supers are now all nailed. Time for some paint. Here is another smell of beekeeping. The paint smells range from the faint but distinctive odor of latex or alkyd paints to the rich smell of oil-based paint you bought from the hardware store. The paint odors seem to say that the equipment is now ready for the bees.

Let's go out to the beeyard. It is a nice morning for exploring the odors of the hives. But wait – there's a hint of skunk in the air. You hope it is brought on the breeze from the woods or the nearby road. It could be that you had a nocturnal visitor to your hives. Better check around the entrances for skunk signs. If you don't see any, let's proceed with our tour.

I hope you know which of your colonies is nice and quiet because I am going to ask you not to light your smoker just yet. Gently remove the covers and if all is well, take a sniff of the inside of the hive. Your nose really may not discern that particular hive's odor as being different from another hive. Your bees can tell the difference, however. That's a bit discouraging isn't it? The hive smell will be a mingling of beeswax, different honeys, pollen, bees, different propolis, and various pheromones.

We need to separate out the various odors. Put a pollen trap on for a day. Towards evening remove the trap and shake some of the pollen into your hand or onto a piece of paper. Carefully take a sniff. It may smell a little bit sweet from the nectar mixed into it and perhaps from the plant source. You can try using the pollen trap at different times during your beekeeping season. Save some of the pollen from each trapping in the freezer but let it thaw and warm to room temperature before making comparison sniffs. Depending on your own sense of smell you may or may not notice different odors.

If you really get into this, try different times of the same day to see what different crops smell like. Of course, empty the trap at, say noon, then again after supper.

Remember when you are smell-testing it is best to sniff only about three different items before your nose receptors "tire" of the smells. Give your nose a rest before



sniffing again. Each person has his or her own ability to differentiate odors. Industries such as perfume, wine, and foods depend on those few people who have exceptional sense of smell.

On a nice warm day scrape a bit of propolis from a hive. Warm propolis gives odors of resins, a somewhat "chemical" smell. At one time I had some hives in front of a row of pine trees. That propolis definitely had a "turpentine" odor. The propolis in every one of those hives was the same uniform reddish-brown color and incredibly soft and sticky. Your propolis may be from a mixture of trees and may have different colors and odors at different times through the season. Give it a sniff from time to time.

The best time to smell the alarm pheromone, isopentyl acetate, from the sting glands is on a chilly Winter day, warm enough for the bees to move about inside the hive but too chilly to do serious flying. Using no smoke, take off the outer telescoping cover. You should see some bees at the hole in the inner cover. They may run out onto the inner cover, stand and expose their stings. At this time you will smell the sweet banana-like odor from the sting glands. That's an important alarm pheromone, one that brings more bees to the defense. Sometimes you will notice that odor at the site of a sting. Sniff quickly, then smoke the site and curse.

"If you practice, you'll be able to tell where your bees are foraging."

Yes, now you can light your smoker. Here is a smell characteristic of beekeepers. The odor from the smoker will depend on your choice of smoker fuel. Those using the dry pine needles (pine straw) will find the smoke smells pleasant and – well, like pine trees. Some smoker fuel will have little odor, other fuels may have an unpleasant smell. But one thing for sure – after an afternoon in the beeyard you will smell just like the odor from your smoker fuel.

Look for the queen in one of the hives. Pick her up gently and give her a sniff. Unfortunately we may not be able to detect her pheromones. They are produced in small quantities but are sensed very well by bees. Now that you have handled the queen your hands have some of her pheromones on them. However I think the only odor you will get from your hands now is that from your smoker, hive tool, hive parts, frames, along with a bit of dirt.

One pheromone we can detect is that from the Nasonov gland. This gland, near the tip of the abdomen, is exposed when the workers are indicating "the queen is here," "here is our home." If you catch a swarm and dump the bees into a hive body you will see the loose bees at the entrance exposing that gland. Get close and start sniffing. If you detect a smell like geraniums, that's it!

Not all hive odors are good ones. Many beekeepers, unfortunately, have opened up a hive and found that characteristic smell of American foulbrood – that of decay, of dead bees, dead brood. An unpleasant smell, an unpleasant situation. Did you know there are AFB-detecting dogs in the inspection service? Maryland has had an AFB dog on their team or many years. No, the dog does not need to open the hive like we do. The dog's remarkable nose can sniff that odor from outside the hive.

A bad case of European foulbrood will give an unpleasant smell also but it is less in intensity than that of AFB and is more like something spoiled or soured. Odors from small hive beetle damage, however, are in the same category as those of AFB – disgusting. The slime, the fermented honey, the debris all combine to create a thoroughly yucky smell.

Now that many beekeepers are using screen bottom boards there is less need for the Spring housecleaning task of scraping the Winter debris off. But if you have the solid bottoms and are doing your early Spring cleanup, have a sniff of the debris. Dead bee odor, lots of wax crumbles, and let's hope nothing that smells like mouse. Now there's another unpleasant smell – the mouse nest tucked back in a corner. No matter where we live, city or country, in a new house, or have a barn, mouse odor is familiar. Mouse smells like – mouse, Not nice.

All is well. The bees worked hard and the nectar plants cooperated. Now it's time for honey harvest. Our first job is to remove the honey supers with no bees in them. Guess what – smoke does not chase bees from honey supers unless you use huge quantities and confuse the bees. By this time your delicious honey has absorbed that smoke. Yes, you will smell that (and taste it) in your harvested honey. Smoke has its place, but not in your honey.

If you choose a fume board on a nice sunny day the bees will quietly leave the supers. You have a choice of repellents. The traditional one is called Bee-Go®. Now here is one of your awful smells of beekeeping. If you haven't smelled it, don't go looking for some to smell. You won't like it. Neither do the bees. If you do use it, please be prompt in removing the fume board. If left on too long the honey will absorb that smell, just like too much smoke, but the odor released from the honey jar upon opening will cause the customer to throw out the jar.

You can use Mann Lake's Honey Robber®, which is a disguised Bee-Go. You will indeed find it smells better than pure Bee-Go. Go ahead and give it a sniff. Maybe you would prefer Fischer's Bee Quick®. A sniff of that is quite pleasant but the bees still don't like it.

Now we're ready to extract. If you are using a heated uncapping knife you will soon smell honey and also some caramelizing honey that has stuck to the knife. The smell of melting beeswax will mingle with the honey odors. All these smells make extracting pleasant. The wonderful aromas of honey accompany us as we bottle our honey.

I hope you enjoyed your tour of beekeeping smells. Being aware of the great variety of odors – as best we humans can tell – make beekeeping enjoyable and interesting. **BC**

Ann Harman has her head in one of her beehives, smelling the roses, near her home in Flint Hill, Virginia.



WORLD HONEY REPORT

Excerpts From A Speech Given In
January 2008 In Alberta

Ron Phipps

The international honey market is on the cusp of change. That change is a reflection of several factors, including changes in the macroeconomic environment. Honey is not a commodity that exists on an island isolated from what is happening to all other commodities.

- The triple deficits that have plagued the U.S. economy (national debt, trade deficit and consumer debt) have caused a serious erosion in the value of the U.S. dollar. As the U.S. economy teeters towards recession, the Federal Reserve has reduced interest rates, which in turn is likely to further devalue the U.S. dollar
- In the past seven years, the cost of energy has dramatically risen. This affects production and transportation costs.
- The phenomenon of colony collapse disorder (CCD) continues to haunt beekeepers throughout North America.
- Global warming has become an undeniable, and in many ways a self-feeding phenomena. This has caused unpredictable and shifting patterns of production, including honey production.
- To meet national demands for honey, global cooperation on honey, queens and remedial efforts to preserve bee health will be required.
- There is currently a shortage of honey available for the international market.
- The honey and health message has entered the international honey market. This is a nascent but real phenomenon.
- Ignorance of and isolation from international factors of the honey market are being replaced by timely and extensive knowledge by producers, packers and importers alike of emerging market conditions. These factors are coalescing and creating a significant transformation in the honey market.

The fact that Eastern Europe had poor honey crops in 2007 has put packers in both western and Eastern Europe in urgent need to replenish their honey stocks. European demand exceeds current world supply of honey.

U.S.A.

American honey currently represents the best value

for American packers by reason of its high quality and comparatively low prices relative to South American honeys. Although the prices for U.S. honey remain very favorable, the U.S. honey crop in 2007 was significantly below normal, ranging between 130 million and 155 million pounds according to current estimates.

Southern California and the southeast suffered serious crop shortages due to drought and wildfires.

At meetings of beekeeping associations all over the world, including Canada and America, there are extensive discussions on how to protect the world's bees.

In the U.S., the fact that many producers achieved attractive pollination fees and, in some cases, had honey from previous crops as carry over, has kept prices at reasonable levels and provided adequate stocks for packers during the 4th quarter of 2007 and for the beginning months of 2008.

Argentina, Brazil and South America

The 2007/2008 Argentine honey crop has started very poorly after a harsh and dry Winter. As the drought persisted in early Spring, beekeepers were making bees, not honey. In 2005-06, Argentina had a bumper crop of over 100,000 metric tons (220,000,000 pounds) including a large quantity of white honey. The 2006-07 crop was about 70,000 metric tons which was supplemented by the carryover from the preceding bumper crop. The current crop is now projected as only 50,000-60,000 metric tons.

The emergence of the CCD phenomena in Argentina may be associated with increased migratory beekeeping practices. Such practices impose stress of travel upon the bees and also tend to impose upon bees a monofloral diet. Both of these may be contributing to CCD.

Argentina's first extraction was completed with very low yields per hive and an insignificant total quantity.

Argentina's farmers have diverted a lot of acreage to non-honey producing crops as the prices of grains and beans have risen. Soybean production has been curtailed by drought, with a subsequent spike in prices. All this indicates that the effects of drought on Argentina's honey crop may be more than "beekeepers' and exporters' attempts to talk the market up." Agriculture in general in Argentina is under stress.

At the end of January, the reference price for Argentine white honey (clover/alfalfa) is \$1.35/lb. ex-dock. Earlier in the month, Argentina sold honey to Europe in the range of \$1.15-1.25/lb. Due to low yields and low associated productivity per hive, and less honey to sell, Argentine beekeepers are refusing to sell to exporters without a premium price relative to prices for North American white honey.

Uruguay has a similar situation. Commodity prices have caused Uruguayan agriculture to concentrate on non-honey producing crops. The drought that affected Argentina has extended to Uruguay and the strength of the Euro makes Europe the preferred market. Uruguay honey is being sold to Europe at \$1.30/lb. this week.

A major development from South America was an

"The flood of Chinese honey into America has depressed prices by an estimated 25-50%."

nounced in mid-January, 2008. Brazil and the EU have negotiated programs that will allow Brazilian honey back into Europe. With this news, Brazil withdrew offers to the U.S., which had been its exclusive main market in 2007

Brazil's total crop is expected to be 42,000 metric tons.

Brazilian organic honey has risen during the past week from \$1.05-1.10 to \$1.15-1.20/lb. Conventional LA and ELA Brazilian honey have been sold at \$1.05 and \$1.10 during the past week. Once the final details are settled between the EU and the Brazilian government, allowing Brazilian honey to be exported to Europe, Brazilian beekeepers and exporters anticipate even steeper price increases.

Organic Honey

It is worthwhile to know that Brazil, a very large country with significant areas in which conventional, modern farming is not practiced, is an important source of organic honey. In Germany, it has been estimated that 20% of the foods are organic. In America, there is a tremendous increase in the consumption and marketing of organic foods.

Asia

China's honey exports to the U.S.A. are diminishing as higher and prohibitive antidumping rates are imposed upon the handful of remaining Chinese honey exporters. There is growing concern about the misuse of the so-called "packers blend" and discussions are underway with U.S. Customs, the U.S. Dept. of Commerce and various State Governments on issues of fraud and circumvention of

duties. The category of "packers blend," which is labeled as less than 50% pure honey, serves as a loophole to the intent of the antidumping law. This may be discussed by Congressional leaders as well as other illegal ways of entering honey. There are also many clear and compelling indications that circumvention of Chinese honey through Third Countries like Malaysia, Indonesia, Thailand, India, South Korea, Russia, Mongolia is occurring by collusion of unscrupulous exporters and importers. What international trade lawyers and U.S. Customs officials are making clear for the first time is that criminal liability for U.S. Customs fraud pertains to exporters, importers and packers, even Customs house brokers, who knowingly conspire to commit Customs fraud. In the past, most thought the risks resided exclusively with the importer of record. That is not the case, as was made clear by international trade lawyers and U.S. Customs during the National Beekeepers Meeting in Sacramento. New protocols are being developed on various fronts with numerous chemical parameters to detect country of origin. Those tests will be utilized to detect and prevent third country circumvention.

The fact that Chinese honey is being removed from the U.S. market will have a very profound influence. The reason for this is that during the past four years, the flood of Chinese honey into America has depressed prices by at an estimated 25-50%. During the first part of that period, Chinese new shippers were manipulating loopholes that allowed them to post bonds and not pay their antidumping duty liabilities. When U.S. Customs came to collect tens of millions of dollars of retroactive duties, the Chinese importers would vanish, only to reappear under a new guise and a new name. In September 2006, the U.S. Congress closed that loophole. New loopholes emerged in late 2006 and in 2007. One scheme was to fraudulently enter pure honey under customs categories for honey blends and sweeteners, including but not limited to the so-called packer's blend. That customs fraud allowed Chinese honey to enter without payment of antidumping duties. Chinese exporters also severely undervalued the honey in order to reduce cash deposits. Chinese honey has been offered through third countries. In competition with one another to gain market share, the Chinese exporters sold honey at very low prices. The past four years saw honey from other origins, including American honey, having to compete with the Chinese honey entered through nefarious schemes. It is anticipated that there will be actions taken by the U.S. Government to both prevent and to punish illegal activities regarding the importation and sale of Chinese honey.

Vietnam's honey crop has begun. Vietnamese prices are firm as demand is robust and expected to dramatically increase as Brazil exports of honey to Europe resume and China's presence in the U.S. honey market is diminished. **BC**

"Brazil and the EU have negotiated programs that will allow Brazilian honey back into Europe."

Ron Phipps is a honey buyer and global market analyzer located in Jericho, NY. He's also involved with The Honey & Health Movement.

Just Passin' Through

Walt Broughton

As a longtime beekeeper, I had been anticipating an incarcerated bee experience even before coming to this resort. Along with the scattered early dandelion bloom, came a fair amount of honey bees, but when the lions became bountiful, the bees became scarce, indicating that they had found a closer nectar source.

Yesterday, as I was finishing my dinner feast, a commotion outside the dining hall diverted the correctional officers' and the dining staffs' attention away from monitoring us inmates. I forwarded my tray and utensils to the dishwashing station and, upon exiting the building, I discovered that a swarm had just moved directly through the pathway of inmates walking back to their dorms. I watched the swarm move toward the ball field and settle on the outermost part of the lowest limb of an oak tree.

Now, you must understand, the cluster was at least 25 feet above the ground. Regardless of that, a semi-panicky situation was in progress. I was loitering in hopes of getting involved, but I was denied permission to go down to the lower tier where the bees were. The maintenance crew was already taping off a large quadrant and detouring all foot traffic. A sergeant whose father kept bees expressed no interest in capturing the swarm, but he assisted me in downplaying the crisis on hand. I earnestly wanted to bust the swarm. I spoke with the lieutenant and then with the captain of this joint and told them of my credentials, desires, and willingness to assist with the dilemma on hand. The captain replied, "If we were out on the streets, it would be different but, under the circumstances, I don't want you to go down there."

I had to go back to my hut, where I could see the swarm hanging by looking out of the dayroom window. I knew that they had two cherry pickers on the premises, and I desperately wanted to be involved, but I still did not know what the fate of these bees would be. When they called, "Yard out," we were detoured around the other

end of Building B to get to The Yard.

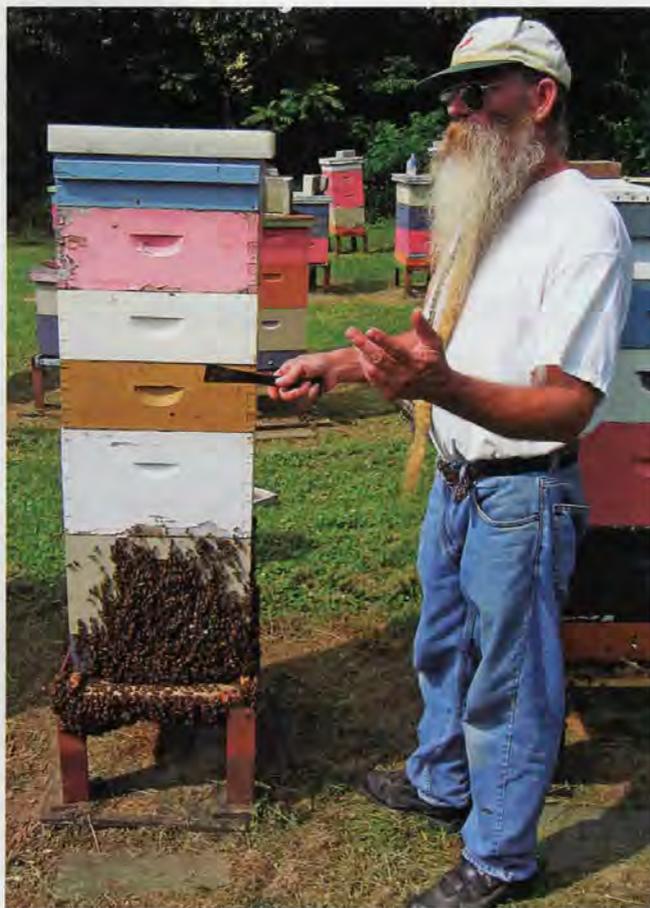
I spoke with a sergeant in The Yard, and he said that they were going to let the bees alone and let them find their own home. I was relieved to hear that they were not going to spray them, and I merely stated that I hoped that they did not seek refuge in one of the buildings on the complex. I went down to the track and started my walkabout, keeping a watchful eye on the swarm off in the distance at the top of the hill.

About 15 minutes before the end of our rec time, I

looked up to see everybody scattering up by the bocce ball court and outdoor pavilion. Sure enough, the swarm was on the move and heading my way. Inmates were scattering. Out from the PA system came, "Clear the track. Return all yard equipment." This was a premature announcement, and I went against the flow, trying to keep up with the swarm. I was thinking; if I can see the queen in flight and catch her from midair, well perhaps, just maybe, I can arrest the swarm and have them suspended from my hand as I had done once before in my home yard.

Okay, so here I was going across the ball field, in hopes that the swarm would drop down just a bit so I could identify and capture the queen. Well, the bees just kept flying slightly out of reach and were heading for Building Eight (the coal burning, boiler/maintenance building). I feared that they had found a crevice in the brick structure and

were fixing to move into a cavity in the building, which inevitably would have been their demise. Just as they approached this fate of doom, they veered off, went around the building, and disappeared into the deep woodlot. Huray!!! Although I initially wanted more direct contact with "The Girls," I was nearly equally elated to observe them transcending into a new beginning in the forest. **BC**



Walt Broughton, The Swarmbuster, keeps bees in Chester County, Pennsylvania, and is currently incarcerated and in an alcohol therapeutic community for DUI charges.

Bring Back The Bees

John Koster

Members of the seated Allendale Borough Council were at a loss to explain how the Draconian ban on bees got on the books

Allendale, New Jersey, is one of the most bird-friendly communities in the nation – but an Allendale resident is now taking the initiative to make Allendale friendly to bees as well.

Dianne DiBlasi, an editor and beekeeper who keeps her own bees over the border with friends in neighboring Upper Saddle River, wants to win asylum for the honey bees in Allendale, where bees are among those animals banned by local ordinance,

“I brought it to their attention a few weeks ago,” DiBlasi said. “I’m working with Councilman Fred Litt and his committee.”

DiBlasi has already submitted a list of guidelines issued by the New Jersey Department of Agriculture for keeping bees in populated areas to the Allendale Borough Council, which she received from Tim Schuler, the New Jersey State Apiarist in Trenton, the state capital.

“As a beekeeper, I plan to follow all nine guidelines even though Mr Schuler told me that each and every guideline does not have to be followed to be considered ‘legal,’” DiBlasi told Mayor Vince Barra and the Allendale Borough Council in a letter. “The number of mandatory guidelines that need to be adhered to is a town-by-town decision.”

DiBlasi, who appeared before the council at a work session in August of 2007, was asked to find out that the regulations were concerning beekeeping in neighboring communities.

“Ramsey, Upper Saddle River, Montvale, Ho-Ho-Kus and Waldwick ALL permit beekeeping,” she reported at the end of October. She also contacted all three of her immediate neighbors and reported that they themselves had no objections to beekeeping on her property. “My project received much enthusiasm from the three families.”

Allendale, however, lists bees among the other animals that are forbidden within the boundaries of the borough, an affluent New Jersey suburb of New York City which often serves as a backdrop for TV situation comedies, TV commercials and occasional dramatic films

because of its unpretentious but prosperous ambiance of tree-lined streets dotted by frequent parks. The borough is immensely proud of The Celery Farm, a 104-acre bird and wildlife sanctuary located along the historic Franklin Turnpike, where more than 240 species of birds have been identified by avid birders, and where borough officials join birders and high school students in an annual volunteer

clean-up. Past and present mayor including Mayor Barra, Borough Administrator Les Shenkler, and Stiles Thomas, a prominent figure in state and national Audubon Society and in the Fyke Nature Association, are all involved in maintaining – and when possible – expanding the Celery Farm.

Official Allendale’s love of birds is a matter of record. When the last surviving wild turkey from a family of eight, otherwise eaten by foxes or coyotes, formed the habit of standing guard outside the Brookside Middle School, the police department assigned a police patrol officer to keep watch on the wild turkey to prevent it from pecking children or being squashed in rush hour traffic: demands on police manpower shortly led to the turkey being snagged and dropped off, unharmed, in an isolated mountain area near the New York – Pennsylvania border

DiBlasi cited the state regulations she intends to keep when – as seems quite probable – the Allendale Borough Council exempts bees from the ban. These are:

1. There must be no more than three hives of honey bees per lot size of one-quarter acre or less.
2. No hive of honey bees will be maintained without 15 feet of a boundary line of the property on which the hive is located.
3. All colonies must be located at least 25 feet from the public sidewalk, alley, street or roads.
4. All apiaries must have on site an adequate source of water within 25 feet of the hive(s) at all times (especially between March 1st and October 1st).
5. A 6-foot high solid fence or hedge must be erected if the colonies are within 10 feet of a neighbor’s property.
6. All bee equipment and hives must be maintained in good condition.
7. All colonies must be kept in movable frame hives in accordance with N.S.S.A. 4:6-10.
8. All colonies must be inspected by the beekeeper or his delegate no less than three times between March 1 and October 1 of each year.
9. A substantial barrier or fence must be erected to prevent animals and children from coming into close contact with the hives.

The ban on bees, however, is also official, at least for the time being. The ordinance states: *It shall be unlawful for any person to keep....any cattle, chickens, bees, goats, guinea hens, hogs, horses, ocelots, pigs (including potbelly pigs) pigeons, sheep, swine or any other animal that is deemed to be dangerous to humans. The determination of whether or not an animal is deemed to be dangerous to humans shall be made by either the borough’s Animal Control Officer or a police officer of the Police Department.*” The ordinance provides a maximum fine of \$1,000 for violation, or a theoretical but highly unlikely 90 days imprisonment, or both.

Members of the seated Allendale Borough Council were at a loss to explain how the Draconian ban on bees

got on the books. However, some 30 years ago, during the last days of the hippie era, the son of a prominent local family maintained a sort of organic farm right beside the Franklin Turnpike, featuring some of the other animals mentioned in the ordinance, including horses, sheep, goats, chickens, and a monkey that once bit a reporter. Another resident in the town at that time maintained a garage full of cobras which he used to produce antivenom. The ménage-au-garage flabbergasted neighbors when

they found out why he was also breeding mice in his carport. The cobras were sent into exile after the mice were, in his words, "liquidated" and the horse and goat farm closed when the owner put on a suit and took over the family business. Allendale's restriction on bees, otherwise unexplained, may have been an overreaction to other, more exotic animals less important to pollination. **BC**

John Koster is a free lance writer, and lives in New Jersey.



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GLEANNINGS

MARCH, 2008 • ALL THE NEWS THAT FITS

WALTER T. KELLEY COMPANY ANNOUNCES NEW OWNERSHIP

The Walter T. Kelley Company, a leading beekeeping equipment manufacturer in Clarkston, Kentucky, today announced a shift in ownership. Two local entrepreneurs, Joe Papalia and Alan Bernard, have purchased the company returning it to a proprietary ownership, effective as of December 14, 2007.

Since the death of Walter T. Kelley in 1986, it was common knowledge that the Company he and his wife created, nurtured and lived to see flourish, was set up in an Operating Trust. The provisions of the Trust were decided by the couple in 1963. The Walter T. Kelley Company was to continue under those provisions for 20 years after the death of the surviving spouse. Ida Kelley died in 1978 and Walter Kelley in 1986. In October 2006, with the expiration of that Trust period, the local Hospital Foundation became the sole beneficiary of all Kelley Company holdings, assets and properties, just as the Kelley's' will had stipulated.

Naturally, there was much speculation about how the governing board of the hospital would assume the duties and responsibilities of a thriving manufacturing company. Whether to keep and oversee the plant, or seek a buyer at a fair price were options that would require much research and discussion. Knowing they would need time to reach a decision, they appointed Thomas Oller as CEO. He worked

in their behalf, continuing the day to day activities of the plant until July of 2006 when Jane Burgess came on board to fulfill those duties.

Jane Burgess is currently on board as manager and CEO of the entire operation. Kelley's employees have at an average been with the company over 15 years with the longest employment being at 40+ years and the newest hire being within the last month. Earl King continues to juggle operations, customer requests, and traveling between shows, etc. The customer service staff has a long relationship with Kelley's customers and with their years of experience are able to answer bee related questions & concerns. Kenny Day being one of the longest term employees assists customers in specialized needs related to honey processing equipment, often designing and helping build equipment that uniquely fits their needs. It is the team's mission that the company strives to be a curious forward thinking operation working for the benefit of the beekeeper. Kelley's also wants to assure that the customer receives information and quality customer care as we stay rooted in the beekeeping community.

Walter T. Kelley was known internationally as "The Bee Man," having spent more than 60 years manufacturing beekeeping equipment and promoting the production of honey. Mr. Kelley and his wife

AAPA AWARD FOR APICULTURAL EXCELLENCE



Dr. Marion Ellis, right, University of Nebraska, was recognized by the American Association of Professional Apiculturists with the AAPA Award for Apicultural Excellence at their January 2008 meeting in Sacramento. Dr. Ellis was recognized for his longstanding commitment to AAPA and his creative and diverse contributions to honey bee research, extension, and student mentorship. Mike Hood presented the award to Dr. Ellis.

RESISTANT CELLS TO SAVE WHOLE BEES

A breakthrough by New Zealand scientists could end the threat to the honey and fruit export industry from the *Varroa* mite.

The tiny mite has been in New Zealand for seven years, infiltrating hives and feeding off bee larvae, wiping out bees in their millions and threatening fruit exports which rely on bees for pollination.

Until recently the only answer to killing the mites has been to douse hives in chemical miticides. But that is costly and its effects are waning.

HortResearch scientists from Hamilton's Ruakura Research Centre have come up with a better plan of breeding bees that are *Varroa*-resistant.

The scientists have been amassing carefully selected bees using artificial insemination. They then extract *Varroa*-resistant cells from some and individually inseminate that genetic material into others.

Once back in the hives the bees

breed, building up strength and resistance.

"By continually doing inter-breeding we increase the frequency of that gene until the stock that we've got here, the best of it, 80% of the *Varroa* in those hives can't reproduce," says HortResearch Scientist Doctor Mark Goodwin.

Now the lab work is over the real test begins.

Fifty high-resistance hives of half a million bees are heading offshore. The destination is Great Mercury Island on the Coromandel Peninsula.

"Once the population's established here we can start producing queens, take cells off the island and providing them back to the industry so that they can start using genes on their own hives and reduce the dependence on insecticides," says Doctor Goodwin.

It will take about two years for mother nature to build up numbers and work her magic.



Continued on Page 83

been in place 20 or more years ago so the industry wouldn't have crashed in the first place, he says. What the heck were they doing while Rome burned and bees died is the question beekeepers, and my friends, keep asking.

Well, the answer may be closer than you want to think. Industry group legislative committees have spent thousands, probably many thousands of dollars visiting Washington to lobby for some kinds of favorable honey import legislation during that same 20 years. And still honey prices are in the crapper (See the Phipps article in this issue), because beekeeping is a global activity that no longer (and for a long time hasn't) stops or starts at a border. The money was spent, it seems, on marginally useful goals when it could have funded long term, far reaching projects that looked down the road and saw....CCD? Pollination as the only business? Stress in a beehive? Foreign pests legally brought into the country? New pests? Missed pests? Technology that existed in other sciences that we could have been using? Better ways to use what we have? Other ways to use Byrd money? All

of the above? But, alas, the money was spent on other things.

As a result there are still low honey prices, a single, solitary breeding program that works (that would be the Russians), a not very useful alternative to AFB control. .and.. and...a !!**NEW**!! Five Year Plan to help the health of honey bees. For 20 years bees have been dying and now there's a NEW program?

Some say this is 20 years late and millions of dollars short because of a myopic industry and lack of leadership in the research arena. Others, however, aren't quite so harsh.

What do you think?

I suspect there'll be a significant demand for queens and packages this season, well, in April and May anyway. A couple of fairly large queen producers have folded their tents already this year, so those 60-70,000 queens, plus the packages those companies produced will have to come from somewhere. If you haven't already ordered either of these, you may be plain out of luck until later this Spring, if at all.

By June there'll probably be splits available in some places, but mailing packages that late in hot weather can be tricky, and many

won't do it.

So this may be an opportunity for someone with lots of bees, and thoughts of swarms dancing in their heads to capitalize on the situation – without getting greedy of course.

You should be feeding your colonies this month anyway at best some protein if they still have honey, and as soon as drones are ready start pulling brood and bees – making sure you have eggs in the brood frames so they can make right-age queen cells.

What to put them in? That may be a challenge – maybe more even than knowing how or where to put them.

What about those cardboard or plastic nucs you see advertised? About \$5 or less, you buy a bunch, put your splits in there, add the price to your nuc cost and everybody is happy – you, another beekeeper, your bees, that guy who gets his crop pollinated and those fine folks who buy honey.

This year, sell some nucs. But for right now, it's Spring time in Alaska, and elsewhere, so keep your smoker lit, your hive tool sharp, and your spirits up – this year will be better

Kim Holten



CARTOON CAPTION CONTEST

This cartoon is by our own Lela Dowling who has done several covers and many cartoons for us over the last few years. We will be publishing a book filled with her amazing work later this Spring, called "Uncle Buzzy's Big Fat Book O' Bee Cartoons".

Send the single Best Caption you can think of for this cartoon by **April 1** email only to Kim@BeeCulture.com

We will choose the one we like best and the winner will receive a **Brand New Excalibur Hive Tool** (featured on Page 14 of this magazine). We'll publish the winner in the May issue of Bee Culture. Remember email only to Kim@BeeCulture.com

WESLACO LAB TO CLOSE?

Word has it that USDA-ARS will close the entire Weslaco Agricultural Research facility as of September 2009. This is one of several money-saving efforts USDA is considering in their budget. Closing the Weslaco facility would save about \$10-13 million. Apparently the powers that be are not displeased with the Honey Bee Research program at the lab, but other research areas located

there have been noted as not performing as expected. The decision is expected to be made by the end of September, 2008.

What this will do to USDA efforts to implement, finally, a long range five-year plan focusing on honey bee health has not been addressed, nor has there been any mention of short term efforts addressing the current crisis on Colony Collapse Disorder.



2008 WI HONEY QUEEN

The WI Honey Producers Association is proud to announce Michelle Heram was selected as the 2008 WI Honey Queen at their convention in November. Michelle is the 20-year-old daughter of Kevin and Tamara Heram of Onalaska, WI.

Prior to being selected as the WI Honey Queen, Michelle served as the 2007 La Crosse Area Honey Queen. In this role, she promoted the honey industry at local fairs and in schools.

Michelle will spend the next year promoting the beekeeping industry in WI. She will speak and appear at fairs, festivals, and farmers markets. She will also give presentations in elementary schools about honey bees and the beekeeping industry. In January 2009, Michelle will represent Wisconsin at the American Honey Queen competition at the American Beekeeping Federation



Convention in Reno, Nevada.

To schedule an appearance with Michelle Heram, please contact the Wisconsin Honey Queen Committee at 414-545-5502 or whoneyqueenprogram@gmail.com. All appearances are free of charge.

BEE BOX

Hardworking blue orchard bees can be coaxed out of their snug winter cocoons just in time to pollinate the year's earliest and best blossoms, thanks to a newly designed box for these slumbering pollinators.

Bee experts with the Agricultural Research Service (ARS) Pollinating Insects Biology, Management and Systematics Research Unit in Logan, UT, created the box to help growers and beekeepers ensure that blue orchard bees (*Osmia lignaria*) or other wild bees are ready to help America's harried honey bees (*Apis mellifera*) pollinate fruit or nut trees – or other crops – as soon as they begin to flower.

Synchronizing bees and blooms is tricky, according to ARS research entomologist Theresa L. Pitts-Singer at Logan. For example, almond trees may burst into bloom when still-wintering bees aren't yet ready to pollinate them.

Pitts-Singer, Logan technician Glen E. Trostle, and former Logan

entomologists William P. Kemp, now with ARS in North Dakota, and Jordi Bosch, now in Spain, designed and tested the housing unit, called a "bee warming and emergence box." ARS is seeking a patent.

Tests in a CA almond orchard and UT apple orchard – with about 450 female blue orchard bees in each – showed that approximately 50 percent of the bees sheltered in the new boxes flew outdoors by the fourth day of the test. That was two days earlier in CA and seven days earlier in UT than bees emerging from traditional, unheated wood blocks.

For the experiment, prototype units – made of polycarbonate and polystyrene foam, and measuring 16 by 10 by 13 inches – were slipped inside wood shelters in the orchards. Each prototype included



KELLEY ... Cont. From Pg. 81

Ida first began manufacturing bee hives in Houma, Louisiana in 1924. Within 10 years their business had grown so they felt they needed to be in a more centrally located area in order to serve the entire United States. In 1934 they moved their bee hive factory to Paducah, Kentucky and remained there until 1952 when they again relocated, this time in Clarkson, Kentucky where the plant continues to operate.

"The Walter T. Kelley Company was founded on making a great product and selling it at a reasonable price," says co-owner Joe Papalia. "We will continue this tradition

with the help of our customers. We ask them to let us know what problems they have or ways to make our product better and we will try to make it happen." The company has long been known for its superior wax foundation made of 100% pure beeswax and wood hive bodies and frames, made of kiln dried superior white pine lumber. Look for new products coming from Kelley in the future.

The Walter T. Kelley Company is located at 807 West Main Street in Clarkson, Kentucky. Call (270) 242-2012 or 1-800-233-2899, or log on to www.kelleybees.com for more information.

AAPA PRESENT STUDENT AWARDS

Each year the American Association of Professional Apiculturists (AAPA) presents an award to recognize and promote outstanding research by students in the field of apiculture. The award was presented at the national meeting of the American Beekeeping Federation and American Honey Producers Association in Sacramento. The 2008 winner is Michael Simone of the University of Minnesota.

The AAPA also presents an award for the best student paper presented at the American Bee Research Conference (ABRC) each year. This year the conference was held in conjunction with the national meeting at the American Beekeeping Federation and American Honey Producers in Sacramento, CA. The winner for 2008 is Elna Niño of North Carolina State University.

OBITUARIES

Henry E. Piechowski, a life long resident of Redgranite, WI, passed away on Thursday, January 10, 2008, in Ocean Springs, Mississippi. He was born to Joseph and Anna (Schultz) Piechowski on July 16, 1912 on the family farm south of Redgranite. On May 28, 1938, he married Esther Jakubowski of Milwaukee. They raised twelve children, ensuring that all received excellent education and training. He had 25 grandchildren and nine great grandchildren.

A 1929 graduate of Redgranite High School, he was a commercial beekeeper and owned Henry's Honey Farm in Redgranite and Ocean Springs, Mississippi. He was a pioneer in his field, establishing pollination services and marketing programs for honey in Wisconsin and throughout the country. He had served as President and as a Director for the Wisconsin Honey Producers Association and as a Director for the American Beekeeping Federation.

a heating unit, thermostat and clear tube for bees to use as an exit. Some daylight comes into the box through the clear tube, so that bees can find their way out.

Flexible bristles lining the tube allow bees out, but not back in. That's a plus, because it encourages the bees to make new, clean nests in wood blocks nearby.

ARS is the U.S.D.A.'s chief scientific research agency.

Lloyd A. Lindenfelser, 92, of Tremont, IL died January 16 at Apostolic Christian Restmor in Morton, IL.

He was born on March 20, 1915, in rural East Peoria to Adolph J. and Edith (Glabelhausen) Lindenfelser. He married M. Imogene Koch on August 30, 1942, in East Peoria. She died June 24, 1998.

He enlisted in the Navy in January 1942. He was a medic for the U.S. Marine Corps in two Pacific invasions, the Peleliu Invasion and the battle of Okinawa in WWII. He was honorably discharged as a chief pharmacist's mate in 1946.

Following the death of his father, he farmed the family farm northwest of Morton until 1974. Lloyd attended Bradley University and graduated from the University of Illinois in 1948 with a degree in chemistry and a master's degree in bacteriology.

He was employed by the U.S. Department of Agriculture as a microbiologist at Northern Regional Research Lab in Peoria, retiring in December 1979. Since 1932, Lloyd was an avid beekeeper and a long-time member of the Illinois Beekeeping Association, serving as president of the association for many years. Following retirement, he worked as an apiary inspector for the Illinois Department of Agriculture.



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There's something about me that eventually drives women crazy, but not in the good way. Anyhow, it's been a little lonely on the farm since my divorce a year and a half ago.

Slim likes bees, and she likes me, but she lives over the hill, and I don't see much of her, doggone it.

My bees do occupy me, the little darlings.

When it comes to *Varroa* mite control, oxalic acid (OA) is the talk of the American bee community. It's effective yet safe – hard on mites and relatively easy on bees. Dirt cheap, it leaves little or no residue in honey or beeswax.

Beekeepers in many other countries legally treat with oxalic acid. We Americans can only talk about it, pending government approval. Articles that describe how to purchase, mix, and apply OA always come with a caution for us American beekeepers to not actually try this, because it's illegal. Get it?

And no self-respecting American beekeeper would use an effective yet benign miticide if it were against the law. I certainly wouldn't.

But if I were to choose to use an illegal miticide, this is the one I'd pick, and this is how I'd do it:

I'd want to treat during a broodless period. Here in Colorado that would reliably be the month of December and maybe part of January.

Then I'd locate that December 2006 *American Bee Journal* piece by Randy Oliver that gives you the step by step.

I'd go down to the hardware store and find some wood bleach, because that's the easiest way to buy oxalic acid. The hardware guy would casually inquire what project I had in mind, because he's a friendly guy. I'd say "It's a new parasitic mite treatment for honey bees," and he'd say, "Well, OK, but I never heard that one before."

One obvious problem with spraying oxalic acid on bees in December is you can't have the mix freezing in the sprayer wand. There's also something counterintuitive about dousing bees when they're clustered up trying to stay warm.

I searched Randy's article but found no minimum temperature guidelines.

I regretted missing his talk at the Colorado Beekeepers' meeting in early December, but I had to punch a time clock that day, and a steady paycheck is what enables me to dabble in this noble craft of beekeeping.

I called a couple of guys who did make the meeting, and they said that Randy was a terrific speaker, and that they learned a lot. When I asked about minimum temps for Winter treatment, one said he thought, "40 degrees." But he wasn't positive. But 40 does sound reasonable. You can't expect it to get much warmer here in December, and any colder seems too cold to be wetting down bees and besides, you're only using a tiny bit. So, if I were to apply OA, I'd use 40 as a minimum temperature.

This year we had a relentless December, with brutal cold and plenty of snow.

About the middle of the month, we did have a clear day – a day that was also my day off – when it reached 36 degrees a little after noon. I might have chosen that afternoon to treat.

I might have discovered that OA dribbling goes pretty smoothly. I'd probably learn that squirting down between the frames goes really fast, but that when I tried shooting up from underneath a super, the liquid didn't penetrate the cluster but instead rained back down onto the super below.

Working alone, I might have gotten a couple of dozen colonies treated in an hour and a half or so, which might not have seemed

too bad, considering that this would have been my first try at this.

By 4:30 when it cooled off, I might have decided that I'd finish the remaining 30 hives another day.

Our weather was tantalizingly uncooperative well into grim January, so that anyone looking for a 40-degree day would have been excruciatingly frustrated.

Then one day Slim called. She wanted to know if she could meet me for a swim at the hot springs. When she said, "How about 4 o'clock on Friday?" I suddenly stopped thinking about bees.

The day of our rendezvous came with a cool, snowy forecast, but by early afternoon it looked merely threatening. What if I'd glanced at the thermometer and it read 38? I might have decided to go for it.

For sure I'd have called Slim and told her I'd be a little late. But there's a difference between a *little* late and *too* late. She'd have known I was waiting for a break in the weather and taken the news in stride. Sometimes the bees have to come first, although not every woman understands that.

If my OA were pre-mixed in the refrigerator, I could have knocked out those remaining 30 hives pretty quickly. It would have pleased me to see the beeyard snow dappled with golden honey bee droppings that afternoon. It's a good sign when bees break their Winter cluster.

Slim looked radiant. She always does. Her little braided ponytail hung down to the side of her lovely long neck. She smiled shyly as she walked toward me. For an instant I couldn't breathe.

So I could have gotten my bees treated on a day I never expected to, on the same day I had a date with Slim. How much more could I ask from life?

But that's how it went, or rather how it would have gone, if I'd done it.

Ed Colby

If I'd Done It

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