

FINDING THE PERFECT BEEYARD

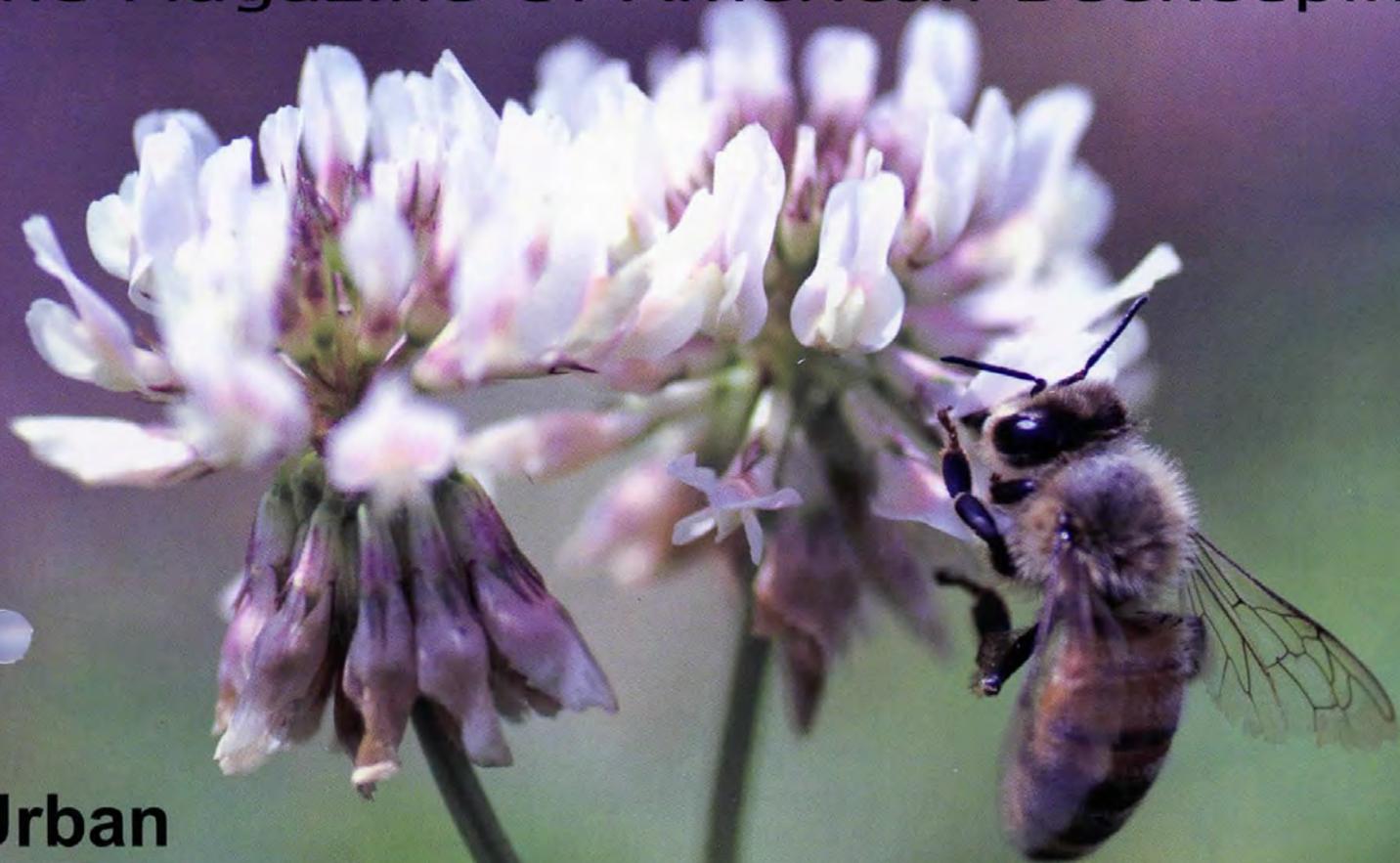
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JUL 2011

Bee Culture

The Magazine Of American Beekeeping



**Urban
Beekeeping**

**Backyard
Bait Hives**

Plus -

- Trapping Yellowjackets - 29
- Selling Honey - 47
- Bee Kid's Corner - 40
- Artisanal Honey - 63

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FEATURES . . .

BACKYARD BAIT HIVE 23

If you build one they will come, eventually.

Donna Lynk

THIS YEAR FIND THE PERFECT BEEYARD 26

We too often take the beeyards we can get, rather than get the beeyards we want.

Kim Flottum

YELLOWJACKET! 29

Trapping these meanies for money adds a little justice to the equation.

Karen Kirsch

URBAN BEEKEEPING 32

What a new-bee can do to ensure a productive season and neighbors that won't mind.

Megan Paska

FUNDAMENTALS FOR SELLING HONEY 47

Enough product, enough people, prices posted and always a smile.

Ross Conrad

MARBLES, MISTAKES & HIVE LIFTERS 51

If you make enough mistakes, you'll lose all your marbles.

Jim Thompson

HONOR THE HONEY POT 53

Not so long ago, these charming pots were found in nearly every kitchen.

Franclyn Heinecke

CHECKERBOARDING 54

Save work, time and expense. Checkerboarding works if you let it.

Walt Wright

CELLS 57

Identifying what's in the different cells on that frame.

Don Studinski

BUILD A HORIZONTAL FRAME SUPPORT 59

Raise queens Hopkins style, or feed a frame to a colony.

Ed Simon



Clover, whether white dutch like this, yellow or white sweet, hubam, red, or any of the many varieties, is the commodity crop of choice for most beekeepers. Without it, we're in trouble, and because of it, we thrive.

photo by Shane Gebauer,
Brushy Mountain Bee Farm

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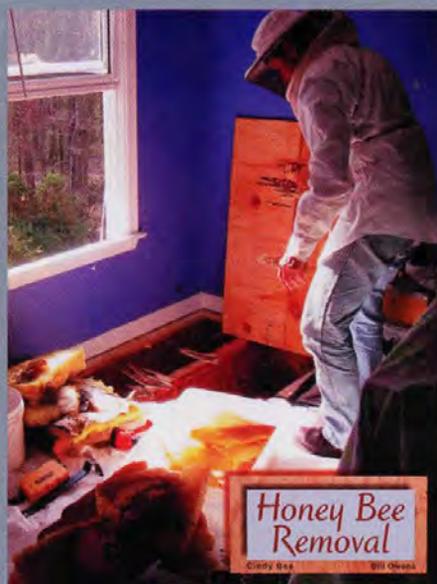
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MAILBOX	7
NEW PRODUCTS	9
<i>Books – Bees: Nature's Little Wonders; The Victorian Beekeeping Revolution; The Enigma that Was Thomas William Cowan; Virology and The Honey Bee. Products – top bar hive legs, hive stand, water dispenser</i>	
THE INNER COVER	12
<i>The Spring of different hives.</i>	
	Kim Flottum
HONEY MARKET REPORT	14
<i>The state of beekeeping, and beekeepers.</i>	
A CLOSER LOOK – COLONY CONFLICT	15
<i>Most violence in a beehive has to do with the battle of "Who Will Be Queen."</i>	
	Clarence Collison Audrey Sheridan
RESEARCH REVIEWED	19
<i>European bee research reports and another look at sub-lethal pesticide effects on colony losses.</i>	
	Steve Sheppard
THREE SHORT UNRELATED DISCUSSIONS	37
<i>Packages, clusters and honey wine.</i>	
	James E. Tew
BEE KID'S CORNER	40
<i>All the buzz . . . for children.</i>	
	Kim Lehman
CATCHING SWARMS	42
<i>Free bees, on a branch or in a bait hive, are worth the work.</i>	
	Larry Connor
HARVEST TIME YET?	63
<i>Harvesting Artisanal Honeys is a challenge, but definitely worth the work.</i>	
	Ann Harman
NATURAL REMEDIES	67
<i>Winter Aconite, Elephant Apple, and Angelica Tree.</i>	
	Abbas Edun
A HARD-EARNED HORNET'S NEST	80
<i>Be careful when collecting a hornets' nest.</i>	
	Eugene Makovec

GLEANINGS-73, CALENDAR-76,
CLASSIFIED ADS-77



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Queens For Alaska

I am an Alaskan beekeeper. I have had extremely poor results trying to winter colonies headed by queens reared in the warm southern states. I had excellent results with queens I got from Canada, from bees routinely wintered outdoors. I can no longer get the queens I wanted from Canada and would love to learn of breeders raising queens from outdoor wintered bees in the cold, long winters of the interior northern states of the U.S. Any such information would be quite appreciated.

Tom Elliott
Chugiak, AK
beeman@gci.net

Greed

In the April 2011 issue the article from Guest Editorial Graham White on The EPA, Pesticides, and Bees is very informative. (I do wish the background was white making for easier reading) Reading this article coincided with a program I watched on the Public Broadcasting System Friday April 15, 2011. This program was about the food produced in the USA and expanded on some of the same issues as your article. There were only two people (farmers) with the integrity to fight back, at least for a while

We, the American people, are being controlled by people making decisions for us about what we eat resulting in negative health issues.

As always, the bottom line is the worship of the almighty dollar....GREED. It will be a very difficult uphill battle but we need

to do our part. Thank you for informing so many.

Linda Pelham
Whitehouse, TX

Hillbilly Hive

Here is a picture we would like to send of a bee tree I was called to retrieve in Jan. 2011 from a university campus. Since it was too cold, and too early to remove them from the log, I decided to make it a hillbilly observation hive and just let the bees work up naturally. A little cedar lumber and a piece of plexiglas worked nicely I think!

We've kept bees now for 12 years and receive several calls a year to retrieve errant bees. My beginners luck is still holding out, we came through a pretty hard winter without loss of any colonies or queens. Hope you enjoy the pictures!

Doyle Mayfield
Halfway, MO



Bee Culture Information



Suggestions

Comments



Termites & Trouble

Our house is all wood, and we live in the woods, so after 18 years, it's time for an in-ground termite treatment. All of the pest control companies that I've contacted, though, use only neonicotinoids for termites. Half use Imacloporid, brand name Premise, and half use Fipronil, brand name Termidor. Needless to say, I'm not about to have my ground saturated with the very chemical agents which might be contributing to CCD. The companies say they can offer nothing else. Would older chemicals,

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such as non-systemic pyrethroids Bifenthrin or Permethrin, be any better? Does anyone know about Chlorfenapyr, classified as a pyrethroid, brand name Phantom? I would appreciate any suggestions for keeping termites out of the house while doing no harm to our bee-hives.

Does anyone have any experience with DuPont's recently-registered termiticide, Altricit, which is in a new class of chemicals?

Anne Brown
Saint Leonard, MD

Packages??

Your article on package installation in a previous issue was excellent, except that it did not address

the situation when things go wrong. Nor did it, or any of the books I have read, answer the following questions:

- How long can bees be kept in a package
- What conditions should they be kept in
- What do you do if there's 4" of snow on the ground
- If this lasts 4 or 5 days, can I release the queen immediately

Since I didn't know, here's what I did:

- Went to my 50 degree unheated garage
- Placed a super on a sheet of plywood
- Laid the opened package in the super
- Added another super above with frames
- Added a pollen patty and syrup feeder

That seemed to answer all the questions, and solve my problem.

Walter Holliday
Cleveland, OH



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New For The Beekeepers – Books And Things

–Tom Seeley –

Bees: Nature's Little Wonders 127 pages, full color 6½" x 8½". ISBN 978-1-55365-531-2.

The sweetest new book that I've read so far this millennium is Candace Savage's *Bees: Nature's Little Wonders*. With only 127 pages, some of them devoted to whimsical drawings of bees, it might seem at first to be a small book written for younger readers, but actually it is a gem of a book on honey bees for readers of all ages. Savage is a gifted writer living in Saskatchewan who has produced a prize-winning work in natural history every few years for the past 30 years.

Her previous books have explored the lives of wolves, crows, grizzly bears, falcons, and other fascinating creatures, while also providing glimpses of the lives of the scientists studying them. We are fortunate indeed that she has written a book devoted to honey bees.

Savage begins with an introduction titled "Little Things" in which she entices the reader by stating "If you are like me, learning about bees will change your life. I'm not suggesting that you'll drop everything and devote yourself to studying insects (though that is possible). What I have in mind is more subtle: a new alertness, a quickening of wonder." If we stop and pay attention to the bees on flowers, she explains, we will "open our eyes to the wonderful strangeness of the life that goes on, every day, all around us." She then guides the reader on

a journey into the "beosphere," describing how the 20,000 or so species of bees living today, nearly all nectar and pollen eating herbivores, evolved from carnivorous wasps starting about 100 million years ago, when flowering plants were just starting to appear in a world filled with coniferous plants. Most of world's bees are loners who build separate nests, but a few hundred species are social bees, including bumblebees and honey bees.

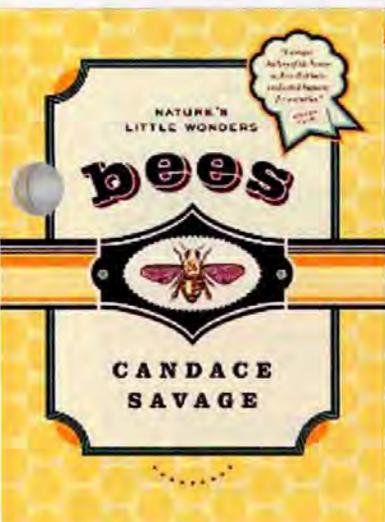
Most of the book is devoted to describing the biology of honey bees, and although the book is small and can be read in an hour or so, it provides an accurate and attractive introduction to the inner workings of a honey bee colony. It is accurate by virtue of the author's diligence in fact-checking with scientists. It is outstandingly attractive by virtue of the beautiful artwork, stunning photographs, and interesting poems and excerpts tucked into text boxes, from such diverse sources as Shakespeare, Pliny the Elder, a religious text from ancient Egypt, Ralph Waldo Emerson, and Emily Dickinson. Moreover, these graphical materials and text boxes are embedded in the gorgeous and delightfully quirky writing of the author herself. For example, in describing how drone cells are 20 percent larger than worker cells, she refers to drone cells as "the deluxe rooms in the Honeycomb Hotel." And in explaining how a worker bee favors the rearing of drones who are her brothers (from queen-laid eggs) rather than her nephews (from worker-laid eggs), she writes that a worker "nips [any worker-laid eggs] in the bud by sniffing out the offending morsels and eating them. There are limits to sisterliness."

A special feature of the book is the way it tells the story of how two German researchers, Karl von Frisch and his student Martin Lindauer, made their pathbreaking discoveries on honey bee communication and social organization. Savage describes the curiously indirect route by which

von Frisch made the startling discovery in the 1940s that foraging bees are able to inform one another, by performing dances inside the hive, of the locations of high-quality food sources. She also explains how an American biologist, Adrian Wenner, in the 1960s challenged von Frisch's conclusion that bees use the information expressed in their waggle dances, and how this so exasperated von Frisch that he once wrote "How could such a differentiated dance have evolved, if it were of no significance? Apparently Wenner and his followers don't trouble themselves with this." Savage concludes this section with a brief review of the ingenious tests in recent years that have discredited Wenner's arguments.

The work of Martin Lindauer actually provides a storyline for the book. We learn how he began studying with von Frisch in 1943, when invalidated home to Munich from the Russian front and eventually discharged from the Germany army for his injuries. We also learn about his discoveries of how a honey bee colony regulates its water collection, how it chooses a new home, and how it maintains a proper distribution of its work force across the range of jobs within a colony, despite its ever-changing needs. In explaining how Lindauer solved the last mystery, Savage describes how Lindauer worked with an observation hive to patiently observe Bee 107 for many hours each day, starting when this bee emerged on July 5, 1949 (whereupon she was caught and marked) and continuing until she disappeared in a thunderstorm 25 days later. His 177 hours of observation revealed that bees do not follow a rigid program of work, but instead respond flexibly to the labor needs that they sense while making lengthy tours of inspection, looking for things to do.

Of the many books that provide a basic look at the biology of honey bees, and that provide a great starting point for further reading, *Bees: Nature's Little Wonders* ranks among



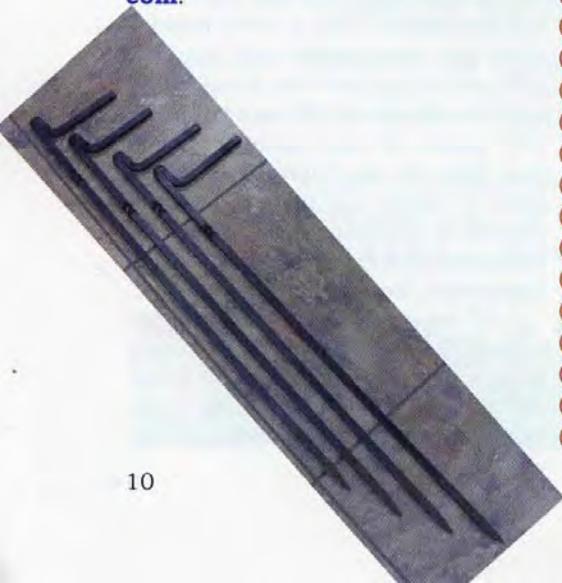
New Continued –

the best. Even for someone who does not want to learn more, it will foster a deeper appreciation for these miraculous insects, our most-important pollinators. Anyone who reads this book will embrace its closing sentences: "What bees ask of us is simple: a world free from poisons and other stressors... In return, they offer to teach us their deepest lesson yet. Much as a honey bee belongs to her colony, so we humans belong to the living community of the Earth. The wild lies all around us, and we draw it in like breath. Our lives are indivisible from the lives of insects."



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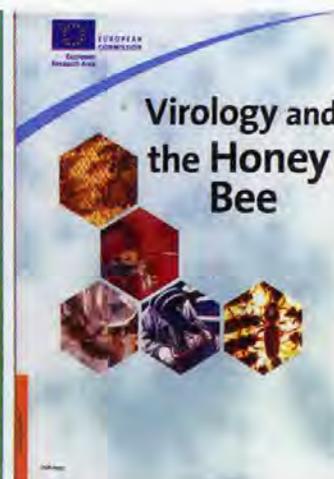
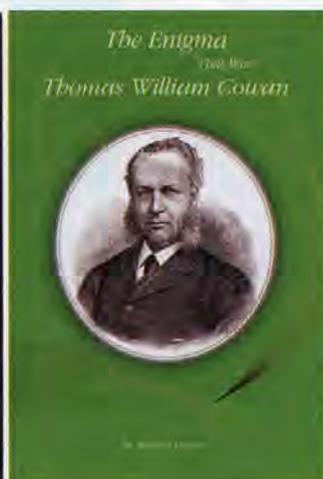
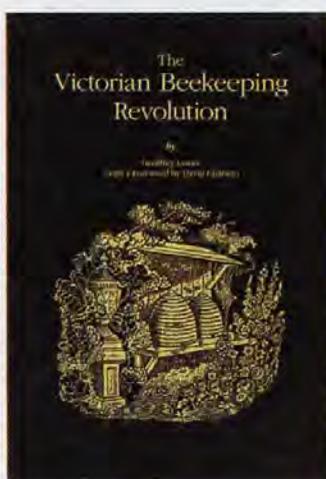
From the fertile press of **North-ern Bee Books** emerge three new titles worth exploring. But importantly, NBB has set upon global publishing, being now able to produce the same book in the UK, the U.S. and Australia, so readers are no longer crushed with the outrageous postage costs of shipping books across the pond. This extra fee has long been a roadblock to purchasing foreign books, but NBB seems to have solved it. If you see a book here that you are interested in, contact a local book store or book store web page and using the ISBN number you can order it there, and have only the minor inconvenience of domestic postage get in the way rather than a second mortgage requirement to have one shipped from Manchester, UK.

Much of the early beekeeping information in the U.S. came to us from England, and by the time we were just getting started, they had a thriving industry, complete with all the engineers, entrepreneurs, inventors, salesmen, organizers, teachers, crooks and cons and professionals one could imagine. The Victorian Era, from 1819 – 1901 was particularly ripe with these characters, and two of NBB's recently published books highlight that period in the UK, along with one from the U.S.

The Victorian Beekeeping Revolution, by Geoffrey Lawes, with a forward by David Charles. 6.5" x 9.5", 294 pages, black and white, soft cover. ISBN 978-1-904846-73-4. \$26.00.

The Enigma That Was Thomas William Cowan, by Robert J. Hawker. 6.5" x 9.5", 336 pages, black and white, soft cover. ISBN 978-1-904846-75-8. \$26.00.

The Victorian era was a domineering force from the mid 1800s to the turn of the century. Advances in beekeeping, on both sides of the pond were accelerated during that time, with Americans moving at light speed in the technology and biology end of the craft, while the British were dealing with extraordinary organizational activities. The establishment of a national bee journal, a national organization, with each county group made to pay homage to the national group, are well documented in these two books. Much of



what constitutes English beekeeping today came to be during this time, and still is a force to contend with relative to joining, or not, one or more of the many groups that make up the beekeeping industry there.

Cowan was involved in much of what was going on, and this book focuses mostly on his contributions to the time, while the other book is a much broader overview of the whole time. Cowan invented a dandy extractor, and in fact for a time exported them to the U.S. A. I. Root, not to miss a good thing, took up with Cowan and sold them for a bit before he improved on them and sold them as a Root – Cowan Extractor. A. I. took his improved machine to the Grand Exposition at the Crystal Palace for an international competition, and came in second to Cowan, even though the judges claimed Root's was best...an early example of Home Field Advantage.

Cowan traveled extensively in the U.S., lecturing wherever and whenever he could. He ran the British Beekeeper's Association and was Editor of its Journal, so had much to say about what happened in his country...even when he was gone. His relations in the U.S. were often strained, as U.S. beekeepers did not offer him the same reverence he had in the UK.

His influence in both countries, and the discoveries, attitudes and personalities of the time are well explored in these two books. If the history of beekeeping is in your blood, these books should be in your library.

Virology and the Honey Bee. Edited by Michel Aubert, Brenda Ball, Ingegar Fries, Robin Moritz, Norberto Milani and Iris Bernardinelli. 6.5" x 9.5", 458 pages, black and white, soft cover. ISBN978-1-904846-77-2. \$48

This reference work is the result of a meeting held in 2005 by BRAVE, a European Commission specifically designed to sturdly the health of honey bees, in this case Viruses.

Chapter one is the introduction. Chapter two discusses the discovery, distribution and other aspects of Acute bee paralysis virus, black queen cell virus, bee virus X, bee virus Y, chronic bee paralysis virus, filamentous virus, Kashmir bee virus, sacbrood virus and slow bee paralysis virus. Chapter three looks at multiple viral infections. Chapter four the role of Varroa and five is the summary.

The book was released in 2007, but only in the academic community. NBB now makes it available to the beekeeping community. This is heavy reading, but necessary if you are to understand the role, and the damage viruses play with our bees.

For any of these, contact a local book store with the ISBN no., or go to www.groovycart.co.uk/bee-books.



INNER COVER

Several forces of nature came together this past Winter to allow us to try something completely different in our backyard this Summer.

While at The National Honey Show in London last October we got to talking to Johannes Paul, one of the founders and a Director of Omlet, the company that produces the Beehaus. There's a wealth of information at www.omlet.com if you want to see everything they

have . . . housing for not only bees, but chickens, rabbits, quail, guinea pigs and ducks. Hans, that's what he goes by, decided we should have one of his hives, so in March this year one showed up.

I've included a photo of our Beehaus. As you can see, it stands on a set of legs so it is at an easy height to work. It is a long hive, but it is actually two hives, side by side inside that green box, so both are normal...if you consider the English National a normal hive. The large box holds 22 brood frames, 11 fit in a normal National hive. Each frame is 14" x 12", so the 11 frames of each colony hold a lot of brood. There is a divider in the middle of the box to keep the two hives separate, but you could leave it out for one long hive if you wanted to. Above each individual hive are two gray 'honey supers', each holding five Manley honey frames . . . which are the same width as the national frame, but about the same depth as one of our shallow frames. So each individual hive holds two, five frame honey supers so when lifting you only have to move five at a time. Each honey super has its own inner cover...called a cover board in the UK . . . you need four of these to cover the whole Beehaus. Each super has its own queen excluder, and with the unit comes two additional inner covers with built-in escape boards for harvesting honey. There's a screened bottom board, entrance reducers for each door on the ends for each hive, that can be set completely open, set to keep wasps out but let bees in (more of a problem there than here, and don't get me started on what woodpeckers do over there), or to close the door completely.

Everything is made of plastic except the legs, entrance reducers and the frames and foundation. You have to assemble the two-piece supers with a long bolt, and the frames arrive in pieces with accompanying sheets of foundation...foundation comes wired, but you don't cross wire because the wiring is not perpendicular, but in the shape of a "W" on the sheet - I watched the machine do this while at Thorne's last year which is where the foundation comes from. Frames have the same pieces - top bar, side bars and divided bottom bars. Top bars have a removable wedge to hold the foundation in place on the top bar - just like ours. Side bars are grooved though, and the foundation has to fit in the groove . . . so the sidebars have to be exactly perpendicular or the foundation won't go in. To assemble these frames put together all except one side of the divided bottom bar, then slide the foundation in, fasten the wedge and nail the other piece of the split bottom bar in place. Generally, frames aren't glued I'm told by good friends in the U.K., and a good beekeeper can put one together . . . nailed, foundation, wedge fastened and the final bottom bar in, in two minutes but the average is about four. Since I haven't put a frame together in, oh, 10 years, I won't tell you how long the first few took me, and I'll never show the final product. But the second set of 10 were less stressful, assembled much better, and certainly much faster...Thanks to friend Peter's guiding emails.

We put a three pound package in one side in late April, and another three pound package in the other side a few days later. Feeding is a challenge because we don't have feeders that fit in the honey supers, like those gallon pails or quart jars we normally use because the supers are so very shallow. We used baggie feeders with fairly good success for a couple of days,

setting directly on the top bars, with the supers over them for protection but quickly saw the advantage of modifying frames of honey we had on hand to fit the narrower width. Over the super, of course go the individual inner covers, and over the whole thing sits a very large, but not overly heavy plastic cover. A unique way of fastening the cover was included, that uses an adjustable bungee cord. The whole thing has a screened bottom board with a removable plastic board below to act as a debris collector and weather guard. The sides, top and inner covers are insulated for winter and summer temperature moderation.

So there it is. A friend who drove by . . . it sits in a side yard easily visible from the road . . . asked about the new compost box we had, and a good friend who is a beekeeper thought it might be a divine beer cooler. Change is hard.

Since we've just started I don't have a lot of information yet, but I can say that when the wind storm that ravaged much of Alabama in late April blew through our part of Ohio, we found out that placement relative to prevailing winds is recommended. When not full of honey and comb and bees, this long, wide green box makes a great sail. The promotional material for these put out by the company shows this being used on a rooftop without additional weight on top or anchors on the legs. That might be a mistake, or maybe I just missed something in the instructions. We'll see. After the storm, this hive looks just like all the rest - it has a big rock on top.

The Spring of Different Hives



The other force of nature that landed in the backyard this Spring was a top bar hive – tbh. One group of friends swear I’ve swallowed the Kool-Aid and lost all common sense. Another group said it was about time. And a third – probably the most rational said to keep them informed on how it goes – they’ll watch for now. So we talked to as many tbh keepers as we could, read the blogs and the groups and the online stuff, and installed the bees the night just before the wind storm. So at, like 6:00 a.m. the next morning we’re out in the back picking up top bars and setting everything back the way it was. Fortunately I had bungied the whole works together so the pieces weren’t spread out all over, but the bees were none too happy when we got there. But at least they were there. Like the Beehaus, there’s big rocks on the table now.

I got food back on both of the hives after they were reassembled, got them as straightened out as I could before leaving for work and figured they’d stay, or not. They did, and that evening we got back in and finished straightening and organizing. Of course the tbh didn’t need much organizing – there was comb on only one bar – smashed and twisted beyond any useful purpose unfortunately – so they had to start over. I’ll wait a bit before I go looking for queens . . . who knows if they survived.

The beekeeper’s cheapest piece of necessary equipment – a big heavy

rock – is now in place on both of these – lesson learned there.

And certainly, the bigger lesson here is that you can do everything absolutely right and the weather will still win, every time. So, you plan for the worst – or, like me, start planning after the worst hits the first time – and hope for the best. We’ll let you know how the Summer goes with these.

•

Beekeepers are essentially livestock farmers. Instead of cattle or chickens we raise bees, and many of the weather related events that affect cattle and chickens and horses and the rest take the same toll, or offer the same rewards to our bees. When the weather is seasonally pleasant – that is warmish in Summer, coldish in Winter, seldom with records set in any direction, Camelot-like with only Tuesday evening rains, and enough snow to encourage those who do Winter sports, but not so much the rest of us have to endure blizzards on the highway and glaciers in the driveway, with enough spring and summer and autumn sun to allow all the energy all the plants our bees need could want,

and always just a bit of a breeze to keep the air fresh and things moving along, life is good for both bees and beekeepers.

It’s when the weather isn’t all of those things, or even some of those things that the challenge of being a farmer rises and lets us know who is boss, really. So, as farmers, we do, or we should do everything we can to reduce the worst the weather can throw at us. Over the years I’ve watched beehives float downstream, be crushed by huge trees, leave nothing but nails after a fire in the field, blow away – or at least blow over (see above), essentially melt from hot Summer sun, and freeze solid in the depths of a Winter. The weather does more, both good and bad, to us than the short, though lethal list here. The point is, even with two hives in the backyard, you can’t take Mother Nature for granted. Do every thing you can to protect your bees, your beehives and yourself.

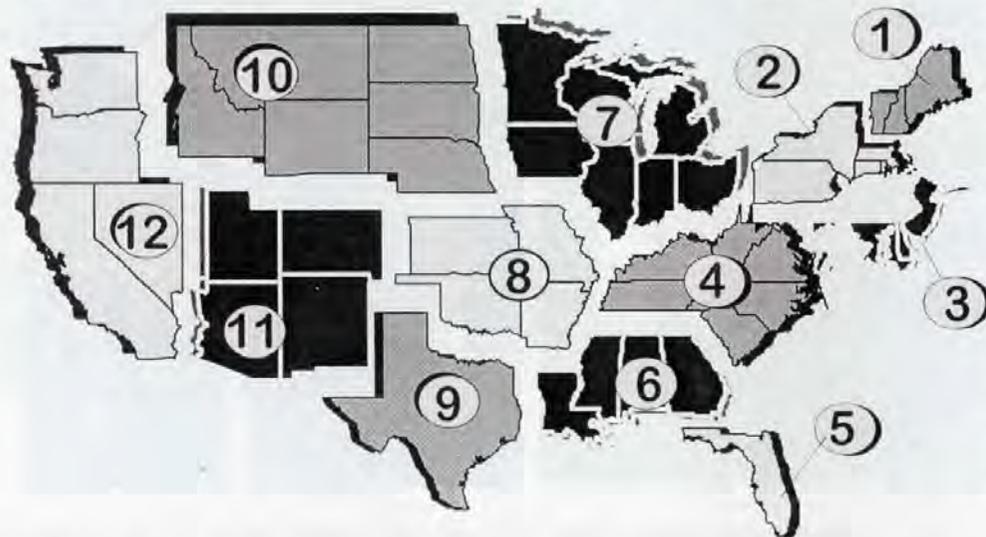
Nature does bat last, you know.

One way to help, of course, is to keep your hive tool handy, your smoker lit, and your veil tight. When it blows, rains, snows, freezes or melts . . . be prepared.

Eric Johnston

CALENDAR PHOTO CONTEST
Don't Forget - "Workin Bees"
is the theme - Swarms,
Inspections, moving,
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JUNE - REGIONAL HONEY PRICE REPORT



The State of Beekeeping, and Beekeepers

Our reporter survey this month explored recent changes in the demand for local honey, any plans to respond to those changes, pricing, availability and prices of non-local honey, and some questions about newer beekeepers they were aware of.

Demand for local honey continues to increase, and beekeepers should take advantage of this by making it prominent on your label, in your displays at farm markets and the like. In the last year 68% of our

reporters indicate increased demand for their products, and 30% report it remains steady. That's positive information for sure.

Because of this increased demand, 41% indicate they will expand their operations to meet increased demand, while 55% will remain about the same size.

Reflecting this increased demand, 51% have increased their prices, but interestingly 47% haven't changed their prices. You might think other honeys would have some influence

on this, but non-local honeys haven't changed much...in either availability or price, remaining pretty steady across the board.

Often prices reflect the number of beekeepers selling honey in an area...sadly, for some price is the only metric rather than quality, but only 36% report that there's more beekeepers selling, while the remaining 64% tell us that these numbers haven't changed. However, 60% of our reporters tell us that there has been a huge influx of new beekeepers...something we've all seen. But, interestingly too, about 20% indicate

that the number of new beekeepers hasn't increased dramatically, and another 20% tell us that the number of new beekeepers has actually declined in the last year.

Exploring this further, we wanted to know the attrition rate of this flush of new beekeepers in the past few years. According to about a quarter of our reporters very few have left the fold in the last few years, 46% tell us quite a few have, but still, that's less than half, which isn't bad. But, about 25% indicate their experience is that far more than half have left already...a somewhat troubling number, while a small percent indicate that most of those newbies have already cashed it in.

The overall picture then seems to be that there has been and still is a rush to get into bees, that they stay for awhile, but then, according to many of our reporters, the hard work, the pails of honey piling up, and the difficulty of keeping bees alive weeds out the bottom 30-40% of these good folks. To keep them, then, associations should focus on managing *Varroa*, and, maybe, a bit more on marketing.

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	1.68	1.85	1.68	1.52	1.70	1.68	1.58	1.65	1.80	1.60	1.61	1.63	1.52-1.85	1.66	1.67	1.56
55 Gal. Drum, Ambr	1.60	1.25	1.60	1.50	1.60	1.54	1.69	1.65	1.40	1.60	1.52	1.55	1.25-1.69	1.54	1.55	1.49
60# Light (retail)	145.00	161.00	140.00	135.00	140.00	148.33	142.00	146.67	148.63	139.80	146.33	161.67	135.00-161.67	146.20	140.57	131.83
60# Amber (retail)	145.00	151.00	140.00	132.80	140.00	142.50	136.90	152.50	117.50	140.61	144.33	163.15	117.50-163.15	142.19	145.23	127.39
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS																
1/2# 24/case	63.36	79.65	49.08	54.65	68.63	58.75	53.30	70.00	68.63	48.00	46.60	77.20	46.60-79.65	61.49	61.37	59.29
1# 24/case	91.20	99.23	84.78	70.95	94.00	84.42	79.60	89.60	72.00	99.84	70.93	103.68	70.93-103.68	86.69	84.53	81.76
2# 12/case	90.30	81.85	77.01	64.67	78.00	75.19	71.12	81.00	69.00	81.00	66.00	85.08	64.67-90.30	76.68	75.80	72.96
12.oz. Plas. 24/cs	91.28	89.00	63.96	64.80	67.20	68.99	62.88	81.87	66.00	61.20	65.00	75.25	61.20-91.28	71.45	72.65	63.68
5# 6/case	91.50	93.98	92.55	73.25	96.00	89.87	78.44	91.50	72.00	85.20	68.50	97.67	68.50-97.67	85.87	84.73	75.97
Quarts 12/case	115.40	118.75	142.80	97.90	96.00	95.14	104.00	105.33	115.40	94.68	98.60	123.00	94.68-142.80	108.92	113.10	110.96
Pints 12/case	69.43	82.98	81.60	63.50	68.00	59.75	72.00	68.80	58.00	92.40	61.00	75.00	58.00-92.40	71.04	74.95	65.52
RETAIL SHELF PRICES																
1/2#	3.00	4.32	2.62	3.12	4.03	3.66	2.77	1.95	4.03	3.15	2.95	3.50	1.95-4.32	3.26	3.52	3.10
12 oz. Plastic	3.75	4.84	3.40	3.76	5.65	4.30	3.45	4.25	3.50	3.52	3.88	4.66	3.40-5.65	4.08	4.09	3.86
1# Glass/Plastic	4.63	5.79	4.51	4.31	6.00	6.14	4.12	5.66	4.99	4.87	5.05	6.91	4.12-6.91	5.25	5.25	4.85
2# Glass/Plastic	8.25	8.49	8.18	6.65	9.50	8.20	7.62	9.16	7.23	9.40	7.34	9.75	6.65-9.75	8.31	8.42	8.17
Pint	7.88	7.65	8.00	6.81	6.40	7.18	7.34	7.80	5.08	7.83	6.76	9.69	5.08-9.69	7.37	7.16	7.55
Quart	11.87	13.07	14.00	11.50	12.00	10.87	10.33	12.91	11.87	12.18	10.25	15.98	10.25-15.98	12.24	12.28	11.60
5# Glass/Plastic	19.75	18.36	19.68	17.85	24.00	20.50	16.68	18.25	21.00	16.56	15.34	23.00	15.34-24.00	19.25	19.92	18.85
1# Cream	6.58	7.11	7.15	5.86	6.58	5.13	5.18	5.37	6.58	6.08	6.04	6.50	5.13-7.15	6.18	6.29	6.19
1# Cut Comb	7.50	7.15	7.15	5.68	7.68	6.13	7.41	6.90	7.68	6.00	7.70	8.00	5.68-8.00	7.08	8.14	6.76
Ross Round	8.04	7.48	7.15	5.00	8.04	6.50	7.67	7.50	8.04	8.04	5.75	8.62	5.00-8.62	7.32	6.95	6.67
Wholesale Wax (Lt)	3.25	4.83	2.75	3.00	3.20	4.85	3.56	4.67	4.50	6.00	3.14	4.05	2.75-6.00	3.98	4.35	3.51
Wholesale Wax (Dk)	2.25	4.32	2.75	2.76	3.00	5.33	2.75	4.25	3.61	3.61	2.30	3.90	2.25-5.33	3.40	3.71	3.16
Pollination Fee/Col.	90.00	106.33	55.00	46.60	77.00	55.00	55.00	75.00	88.37	88.37	57.00	118.33	46.60-118.33	76.00	80.35	76.17



A Closer LOOK



COLONY CONFLICT

Clarence Collison

Audrey Sheridan

Most violence in a beehive has to do with the battle of “Who Will Be Queen.”

Within the highly cooperative honey bee society, conflict among the members is rare, but can exist at low levels (e.g. worker policing) (Ratnieks and Visscher 1989) and may become intense periodically during drone assassination (Morse et al. 1967) and queen elimination (Gilley 2001). Most notably, conflict increases drastically during temporary polygyny (the presence of multiple queens) which occurs during episodes of queen replacement (supercedure and emergency queen rearing) and colony reproduction (swarming). These supernumerary queens are usually quickly eliminated in the re-establishment of monogyny. Both worker and queen behaviors may be involved in the queen reduction process. These newly produced queens’ fight each other until only one queen remains in the brood nest. Young queens patrol queen cells to kill rival queens while they are vulnerable; workers act aggressively toward queens to prevent them from destroying queen cells; queens toot to inhibit worker aggression; workers immobilize queens to make them easy targets for rival queens; and queens eject hind gut contents to cause their rival to be immobilized by the workers. Survival to become the egg-laying mother of a colony is the ultimate goal of this reproductive competition among honey bee queens (Tarpy and Fletcher 1998).

Queens have long been observed to eliminate rival queens during temporary polygyny by fighting (Fletcher 1978, Davis 1908). During a fight, rival queens usually grapple with each other before one queen kills the other using her sting, after which the workers dispose of the paralyzed victim. Direct interaction between two competing queens is infrequent during temporary polygyny; consequently, the process of queen elimination may take several hours to complete (Tarpy and Fletcher 1998). One of the most spectacular events that can occur during a queen duel is the ejection of a queen’s hind-gut contents. A queen curls her abdomen underneath her until her stinger is pointed at her opponent’s thorax and head and expels a translucent liquid that hits the opponent (Gilley 2001). A spray that hits the target queen

has three effects: 1) it interrupts the encounter between queens causing the combatants to separate; 2) it covers the victim with fluid; and 3) it alters the behavior of the workers towards the victim. Tarpy and Fletcher (2003) investigated the functional significance of “spraying” behavior by staging queen duels within colonies housed in observation colonies. Spraying occurred in 39.7% of all interactions between rival queens and was recorded in 12 of 15 duels. Workers were highly attracted to the surfaces of individuals contaminated by spraying, forming tight clusters around them, thus severely restricting their movement. One or both queens in a pair became immobilized by the workers in 37.5 and 29.2% of

“The combat between the queens of an after-swarming colony can be viewed as a tournament consisting of a series of lethal duels. The survivor of each duel goes on to fight in the next duel until only one queen remains alive in the colony.”



all spraying events, respectively, but the queens were never killed by the workers. Conversely, a mobile queen penetrated the worker aggregation and stung an immobilized queen in one-third of the observed bouts. Thus, spraying may serve as a fighting tactic by virgin queens to increase their chances of winning by temporarily immobilizing their rivals.

Gilley (2001) examined the behavior of honey bees following the production of new queens, the period of a colony's life cycle when intracolony conflict is at its peak. A typical honey bee colony rears new queens annually during swarming preparations and the primary swarm is normally accompanied by the colonies current queen. After the departure of the prime swarm, there remains in the nest approximately half of the workers and 15-25 pupating queens (Winston 1987). If there is not a sufficient quantity of workers to produce another swarm, called an after-swarm, then the first queen to emerge from her cell typically kills the other queens before they complete pupation, thus becoming the new queen of the colony. However, if there is a sufficient quantity of workers to produce an after-swarm, then most queens emerge safely to become rivals for the queenship of the colony. A few of these queens depart with one or more after-swarms, but most remain in the nest, engaging in deadly combat until only one queen remains.

The combat between the queens of an after-swarming colony can be viewed as a tournament consisting of a series of lethal duels. The survivor of each duel goes on to fight in the next duel until only one queen remains alive in the colony. A few queens may avoid the tournament by departing with after-swarms. The serial nature of the duels that take place during a tournament is a result of the asynchronous laying of the eggs destined to become queens. Thus, one queen typically kills her rival before the next queen emerges from her cell; rarely are three or more

“Workers can distinguish between adult queens that are related and unrelated to themselves, possibly by using a chemical signal originating from the tergite glands (Moritz and Crewe 1988).”

queens involved in a duel simultaneously (Gilley 2001).

Newly emerged queens spend most of their time moving fast within the hive, approaching and contacting the queen cells that contain rival queens (queen-cell patrolling) (Gilley 2001). While patrolling queen cells, queens show the ability to discriminate occupied from unoccupied queen cells, presumably by detecting the pheromones transmitted through the wall of the queen cell (Free 1987). Queen-cell patrolling might increase a queen's chance of winning the tournament in several ways. First, the approaches a queen makes to queen cells while patrolling may be an attempt to destroy her rivals while they are still defenseless pupae (Gilley 2001). By approaching queen cells frequently, a queen may reduce her risk of dying in a fight with a rival queen by catching her rival just as she emerges from her cell and fatally stinging the young queen before she is ready to defend herself (e.g. before her cuticle is sclerotized) (Gilley 2001).

Tarpy et al. (2000) found that when pairs of young (24h) and older (72h) queens fought, the older queen won in 18 out of 27 pairs. The advantage of age may be even greater when the younger queen is less than 24 hours old, as would be the case during queen-cell patrolling (Gilley 2001). The reduction from polygyny to monogyny is affected by queen age but not queen quality (Tarpy et al. 2000). Older queens (those reared earlier in the queenless period) had an advantage during queen fighting over rivals two days younger than themselves. The factors that may provide this advantage, such as harder cuticle or increased pheromone production, are purely speculative at this point. Polygyny reduction appears to be another mechanism that has been under selection for colonies to requeen as quickly as possible. This advantage would be even more pronounced in a more natural context. Older queens have an opportunity to tear down rival cells before their emergence, which would consequently give older cohorts an even greater advantage during polygyny reduction (DeGrandi-Hoffman et al. 1998). A third possible function of queen-cell patrolling may be to gather information crucial for making decisions such as whether to depart with a swarm or remain in the nest to duel with rival queens (Gilley 2001).

Workers can distinguish between adult queens that are related and unrelated to themselves, possibly by using a chemical signal originating from the tergite glands (Moritz and Crewe 1988). Using this discriminatory ability, workers behave more aggressively towards introduced queens of lower relatedness, but such behaviors have usually proved to be non-fatal (Breed 1981, Breed and Julian 1992, Page and Erickson 1986, Free et al. 1990). The influence of relatedness during queen fighting is largely unknown (Tarpy and Fletcher 1998), except for a study by (Page and Erickson 1986) whose findings suggest that incumbent queens have a 1.7:1 advantage in surviving a queen fight if they are half-sisters of both the workers and their introduced rivals. On the other hand, an introduced queen that is a half-sister of the workers, but is a super-sister to the resident queen, is less disadvantaged during queen fighting.

The influence of relatedness on the pre- and post-emergent survival of queens was investigated (Tarpy and Fletcher 1998). Workers did not preferentially rear sisters over non-siblings under conditions of natural queen replacement. The potential influence of cell position on larval acceptance (related or unrelated) was also non-significant. The number of queen cells accepted by the workers was independent of larval relation. The number of queens that were reared to emergence was also independent of relatedness. However, cell position was significantly related to queen emergence; queens had a higher probability of emerging when positioned closer to the center of

CORRECTION

In the April issue we had the wrong title to Dr. Collison's article beginning on page 19. The article should have been entitled "Cuticular Hydrocarbons." We apologize for any confusion this may have caused.

the brood nest. After queen emergence, however, there was a significant effect of a queen's relatedness to the workers on her survivorship during fights with rival queens; both fighting ability and survivorship. The related queen had a significant advantage in winning. The mechanism of this bias towards related queens is unknown. The difference in post-emergent survivorship suggests that kin selection may operate during competition among adult queens at this crucial state of honey bee reproduction.

Worker bees routinely keep fully developed queens imprisoned in their queen cells for prolonged periods of time (Taber and Blum 1960). Even though some queens may cut open the cells to emerge, the workers imprison them by adding additional wax to the slit at the tip of the queen cell where the queen has cut open the pupal silk and wax. It is through this narrow slit where the worker bees feed the queen inside the cell-prison. Why do bees keep perfectly good queens entombed in the cells? There is some evidence that the worker bees are using their collective consensus building to control the fate of these queens. The imprisoned cells that are shaken by worker bees are more likely to be the first to emerge. The workers control the timing of queen emergence by adding or reducing wax deposits on the incision at the tip of the cell. Finally, there is some evidence that bees will selectively confine half-sister queens over super-sister queens, one of the best examples yet of potential genetic control of the final queen.

Tooting has been well described acoustically and has been shown to delay the emergence of mature queens. By delaying conflict with her rivals, the tooting queen may increase her chance of successfully attacking the cells of rival queens. When a queen toots, she pauses, lowers her thorax to the comb, and rapidly contracts her wing muscles for about five seconds, causing a tooting sound and noticeable vibration of the wingtips (Gilley 2001).

Once a queen emerges from a cell, the worker bees continue to control her fate. They can favor one queen so she emerges first, allowing her to systematically sting her sisters still confined in their queen cells (Taber and Blum 1960). Or the workers may indirectly kill the queen by arranging two queens to "duel" on the comb until one queen is dead. The workers often have control over the success of the fight, keeping one queen in a "ball" of bees so she is less able to defend herself; indeed, a queen is more likely to win if related to the worker bees. **BC**

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RESEARCH REVIEWED

The Latest In Honey Bee Research

Steve Sheppard

“... yet another lesson of why we need to be mindful of the tendency of beeswax to accumulate lipid-soluble materials, including pesticides from both agricultural sources and mite control products.”

By the time you read this column, a royal wedding will have taken place in England and, predictably, news coverage will have waned and refocused on other equally important topics. For beekeepers, concern for the health and longevity of their queen is a thing quite apart from any murmurs of concern that circulated at the recent Westminster Abbey event. However, in homage to recent events in Europe, this Research Reviewed column covers several recent research reports and findings from European honey bee researchers.

Honey bees are subject to infection by a number of viruses and Deformed Wing Virus (DWV) is one of the most common. Known means of transmission of this virus include “vertical transmission” (transmission between generations) through eggs and sperm, and “horizontal” transmission to honey bee young through larval feeding by nurse bees. *Varroa destructor* has been shown to horizontally transmit DWV by vectoring the

virus to honey bee pupae from a previously infected host. A German research team recently reported results of experiments demonstrating that DWV could also be transmitted to adult honey bees through oral and vector routes (Mockel et al, 2010). These researchers fed a suspension of DWV to virus-free adult honey bees

and also used a hypodermic needle to inject spores into others. In both cases, subsequent molecular analysis of the treated bees demonstrated that a number of these treated adult bees became infected with DWV. This report broadens the number of potential avenues for viral transmission in and between colonies, thereby contributing to a better understanding of viral epidemiology.

Colony losses are a subject of widespread interest in the beekeeping community and two Austrian researchers took advantage of a large gathering of beekeepers, the 2009 world beekeeping Congress (Apimondia), to assess the global situation (Crailsheim and Brodschneider, 2010). These researchers conducted a written survey of attending beekeepers at Apimondia and received return data from 171 beekeeping operations across the world. Overall, honey bee colony losses reported by the participants for the Winter of 2008/2009 was 18.7%, with another 4.3% lost between Winter and September 2009 (total losses of 22%). Respondents indicated that 5.7% of the lost colonies had died while exhibiting two symptoms of colony collapse disorder (CCD): hives with very few adult honey bees remaining, despite the continuing presence of food and brood. The authors noted that those countries with three respondents or more and losses of over 20% included Belgium, Brazil, Chile, Germany, Norway, France, Italy, Netherlands, Norway, Switzerland, Spain, United Kingdom, Uruguay and the United States.

Orchid bees are distributed in Central and South America and are related to honey bees, although most species do not exhibit social behavior. In many species, the males carry

out the pollination of orchids, often in their quest for “scent” collection. Many male orchid bees are able to collect and store flower scents (oils) with special hairs on their feet. Effectively they are able to “scratch open” odor glands on the plant and store the liquid oil-based scents in the tips of other specialized hairs. These scents are later deposited on plant surfaces in areas where the bees mate and are presumably involved in the attraction of females. One research team in Germany reported that they are studying the specialized structures of these bees’ feet with the goal toward designing new “absorbent textiles” and other “technical structures” for oil absorption (Grabarek, et al. 2010). This is one of a number of studies under their project on “Biomimetics,” whereby naturally occurring structures in the natural world are used to provide design ideas for products of interest/use to humans.

In this column, I have previously covered research articles reporting on the occurrence of pesticide residues in hive products and, in some cases, evidence for negative consequences for bees living in those hives. Recently a team of Spanish researchers published a new study on pesticide residues in beeswax and bee bread and the possible relationship between contamination and colony losses (Orantes-Bermejo, 2010). In one experiment, they examined pooled samples (10 hives per apiary) of stored pollen (bee bread) and beeswax from 36 apiaries located throughout Spain. Beekeepers were interviewed to determine the level of “depopulation” (colony losses) from Summer 2006 to Spring 2007. The authors considered an apiary to have experienced “bee losses” when the number of colonies that died during



the study period were over 30%. Of the 36 apiaries examined, nine were classified as suffering from "bee losses," with death rates ranging between 30-80%.

The samples of 32 of these apiaries (24 with 0-20% mortality and eight with 30-80% mortality) were chemically analyzed for pesticides and the contamination levels were compared to colony mortality information. While a number of pesticides were detected, the predominate contaminants found in beeswax samples were an organophosphate (chlorfenvinphos – 100% of samples) and a pyrethroid (fluvalinate – 96.8% of samples). Both of these chemicals were used in Spain to treat *Varroa* mite infestations. Although the chlorfenvinphos levels in beeswax were higher in apiaries that experienced colony losses compared to apiaries that did not, the differences were not significant. However, chlorfenvinphos levels were significantly higher in beebread taken from apiaries that experienced high colony losses (30-80%) compared to beebread taken from apiaries without colony losses. In a second experiment, the research conducted a similar survey for pesticide residues in 101 colonies from five apiaries in Salamanca, an area that had previously exhibited high bee losses. They found similar levels of the main pesticides, and a "tendency" for greater contamination in hives with bee losses, although the differences were not statistically significant.

Orantes-Bermejo et al concluded that the high level of pesticide contamination in beeswax was the source of contamination in bee bread. They further suggested that differences in pesticide levels found among bee bread samples may have reflected differences in the lipid content of the pollen, which is involved in the transfer of pesticides from beeswax to beebread. Further, they noted that the LD₅₀ level of chlorfenvinphos in beeswax (the dose at which 50% of a sample population of bees will die) was exceeded in more than 10% of the Spanish beeswax they tested. They also concluded that this issue is becoming more important as the "closed circuit," represented by the commercial pool of beeswax in Spain, becomes more contaminated. The authors note that beekeepers in Spain have been "fighting the parasitic mite" for 22 years and suggest that the supply of beeswax in their "closed circuit" is now reaching high levels of pesticide contamination.

The findings reported here provide yet another lesson of why we need to be mindful of the tendency of beeswax to accumulate lipid-soluble materials, including pesticides from both agricultural sources and mite control products. Removal of older combs from beekeeping operations on a regular basis would seem to be a "no brainer" under such circumstances. **BC**

Dr. Steve Sheppard, Thurber Chair, Dept. of Entomology, WA State Univ., Pullman, WA 99164-6382, shepp@mailwsu.edu; www.apis.wsu.edu.

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BACKYARD BAIT HIVE

Donna Lynk

Through the garden arbor, the swarm trap hive hangs in a cedar tree, ready for occupancy.



At least, I hope they will. This past Spring I decided to get a jump on swarm capture. Our bees love it high. They cluster 20 to 30 feet up in huge cedar trees behind their colonies. There was one exception. It was on April 1, 2008, when one of our colonies clustered in a wax myrtle bush. I was able to capture it alone, without ladders, poles, or risk to life and limb. But that was April Fools day.

The usual procedure involves the man I love, perched at the top of a 12 foot ladder, wielding a large new trash can suspended on a rather flimsy 15 foot spinnaker pole. Both man and pole are more at home sailing on a Hobie Cat.

Over the years we have captured over six of our own swarms, and found great homes for them. At least that many got away. We consider this our contribution to the restoration of a severely depleted feral honey bee population. I also consider swarming a key component of my Integrated Pest Management Program. A brood cycle interruption, translates to a *Varroa* brood cycle interruption, giv-

ing the bees an edge. Swarming provides us with new young queens, and we have always had plenty of honey. I may also mention, in some form of perverse dynamic, in the years I have reversed brood boxes, I have had more swarming than the years when I didn't.

So this year, we decided to 'just say no' to ladders and poles. This year we built a Swarm Trap Hive.

FOR RENT: Lovely Two Story. Fresh white paint. Peaked Copper Roof. Sleeps 25,000 with plans to expand. Screened Bottom Board. First and second floor Hive Boxes imbued with the homey aroma of well used brood boxes. Frames of fragrant Small Cell Foundation. Some open frames, ready for wax construction. Swarm Pheromone Lure, creates an ambiance of Scout Bee Discovery and Approval. Prime location. Elevation at 10 feet, in an aromatic Cedar Tree. South facing. Plenty of Shade. Catches the coastal breeze. Secure Robber Screen in place, the equivalent of a gated community. Will trade for Honey and Pollination. Only Gentle,

Productive Bees need apply.

We started this experiment in early Spring. Having researched various swarm traps, I hit upon the idea to assemble a scaled down complete hive to lure a prospective swarm. We would strap it tight and suspend it in a cedar tree. The theory: once inhabited, we would simply close the robber screen at night. Next day we could easily lower the hive, and place it upon a waiting hive stand with little or no fuss. The swarm hive would be perfectly compatible with our existing eight frame equipment in the apiary.

Starting from the screened bottom board, I chose two used-for-brood hive bodies in good condition, hopeful that the aroma would inspire confidence in the new tenants. The first brood area was filled with frames, some with foundation, a few empty. Bees love the challenge of empty space. Or so I have heard. Frames with Small Cell Foundation were employed instead of drawn brood comb.



The inner cover with a screen over the opening, allows air to flow but no unwanted visitors.



Frames with foundation and without are added to the first brood box.



The pheromone lure has been nailed to the back wall of the second brood box. Robbing screen is in place, ready to be lashed to the hive body.



In position and ready for hoisting, the swarm trap is ready to take to the trees.



That's she hangs, ready for occupancy, one day, someday.

Wax Moths would have been tempted to squat, and chew and otherwise render our cozy nest a mess.

Next step, installing a pheromone lure purchased from Brushy Mountain Bee Farm. Purporting to mimic the pheromone of jubilant scout bees having located the perfect cavity, the lure was nailed, with high hopes and great expectations, to the inside wall of the upper brood box. A new inner cover was placed upon the body with the upper entrance slot screened. I do this on all my colonies to prevent entrance from unwanted visitors, such as yellow jackets.

Crowning the top, a peaked cop-

per roof to match our other colonies. The shape of the peaked roof also made the strapping and hoisting process more efficient. These copper tops are a little more expensive, but now I have a spare, should I need one. Finally a robbing screen was tied over the entrance, to allow for defense and safe moving. The hive was then well strapped and tied tight. Hooks were tied to the top for suspending the hive from the hoisting ropes.

And so the day came. The tree was perfect. My husband climbed the ladder once more, to install the block and tackle system. We moved the Swarm Hive into position with a

wheelbarrow. Now it was heave-ho time. Up she went, quite easily. The hoisting rope was tied off. We stood back and basked in the hope of smooth swarm retrieval. The swarm hive was lovely, gently swaying in the breeze, out of bee line vision from the apiary, yet close enough for swift discovery. It was, to my mind, most inviting.

There was nothing left to do but wait. And so, we waited. We waited for the inevitable swarm. And what do you know? For the first year since I began the keeping of bees in 2005, not one single swarm. Nothing. Nada. Instead, our bees were bearding up and up. At one point the beard on our oldest colony reached above the queen excluder. We were not unique. Other beekeepers were reporting similar behavior: no swarms, lots of bearding. Was it the result of a sustained cold Winter, ending abruptly into full blown Spring? Who knows?

For myself, I have always felt that the keeping of bees is an ongoing experiment. Sometimes you get lucky with experiments and the answer is 'yes.' Sometimes the answer is 'no.' And sometimes the answer is 'not yet.'

So be it. That is fine. We can be patient. Our Swarm Trap was intentionally built to last. We can use this system over and over again, for years to come. We will have to replace the lure. Easily done. No more ladders. No more poles. Just bees, gentle and productive. **BC**

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Kim Flottum

This is the time of year to start looking for the beeyards you'll need next year and even the year after that. And if you start now you won't get caught in the age old beekeeper rut . . . *we take the beeyards we can get, rather than get the beeyards we want.* So how do you get the beeyards you want, rather than settle for those that just aren't good enough? Let's take a look.

First off, you have to decide what you want from a new beeyard. For instance, will you use it all year long, or just move bees in for certain honey flows, or keep them there just for the Summer, or just for wintering, or simply a place to put bees when you don't have any other place to put them for short, or maybe long term management activity (making splits, gathering to move).

Are you looking for a permanent location or is this a one or two year move and good relations have more to do with negotiated price (honey or actual dollars) than getting to know the dog and the family.

Will you keep anything else in the beeyard? Extra bee equipment or trucks perhaps, or maybe a temporary building for storing or repairing equipment. And what about security? Do you need a fence and a gate and a dog to keep things from walking off, or is there security in that neighbors can watch or do you live in that perfect place where security isn't an issue?

Once you have a plan of action for the beeyard, and can with confidence tell a landowner what will be going on there at anytime of the year, there are some minimal qualifications a potential beeyard should meet no matter the purpose, so let's start with those.

How much off road driving is required?



- It must be available at a reasonable price. Free is good, but that's not first on the list, and you often get what you pay for.
- Within a mile and a half there must be enough available forage from before last frost to after first frost and all season long to support the greatest number of colonies you will have there at any one time. Otherwise, you feed. Not a good plan (this is the primary reason you are starting now when looking for next year). However, it may be the best place in the world for, say, a locust flow, and that's it. In and out in two weeks.
- You must have 24/7/365 access. *No exceptions.*
- That access must accommodate and survive that 100 year flood, the earliest snowstorm in history, the muddiest spring ever, forest fires, wind storms, and anything else that can go wrong environment or weather wise.
- There should be a good road off the main road or permission to build one, good trails once on the land and no surprises...sink holes, wet spots, sandy bottomless pits. You should be able to drive a semi right up to wherever it is your bees will be (see floods, snow etc above).
- It must be large enough, level enough and safe enough to accommodate the largest trucks that will ever be there to enter, load or unload, turn around and drive out.
- It should be level enough to work with a forklift.
- The soil type should be appropriate to put in a bear fence (not rocky or swampy).
- It should be nowhere near a farm field that will get plowed, planted, harvested or managed such that it comes between you and your bees.
- There should be wind breaks on the north and west sides, but far enough away so they do not provide shade (colonies should be in full sun all the time to deter *Varroa* and small hive beetles).
- It should have good south and east exposure for early sun and warm winds.
- You should be able to 'landscape' at will. That is, remove trees and shrubs that hinder easy truck or forklift movement, move some soil if needed, trim trees or vines, widen roads to accommodate vehicles, level land to accommodate storage buildings, fill low spots or level high spots for roads and turnarounds and stacks of equipment.
- One aspect of safety is from hunters. Invariably, if the land isn't posted, or that posting enforced, you'll find

If you use this much equipment, you better be able to drive right up to the hives.



- bullet holes in hives. Maybe a lot of them.
- Every beeyard you have, even if only a simple yard with a couple of colonies, should be close enough to home or within your normal beeyard travels that it is not inconvenient to go to on a routine basis. A great yard you don't go to or can't get to isn't a great yard.
 - There shouldn't be anybody living so close that when you dump two or three truckloads of bees there because you simply don't have any other place to put them...these neighbors, or landowners, won't be in danger, won't be inconvenienced, won't complain, won't even notice. If they are, be prepared to move those bees yesterday.

But let's face it, there's probably no where on the planet that has every one of these attributes. And, there aren't thousands of beekeepers that need every one of these attributes in a beeyard. Until, that is, you do.

But now's the time to start looking for that perfect beeyard, or at least that next beeyard even if you don't need one right now. Let's be optimistic and assume that things are going to go as planned and pretty soon your backyard or other beeyards just aren't going to hold one more colony. Not one more.

The first, and most difficult obstacle in finding a beeyard is simply finding land that is empty and available. If you have a handle on this already, great. But most of us don't until we have to think about it, and we realize . . . well, there's that field I drive by on the way to work; or, doesn't what's his name live next to a farm owned by somebody who doesn't live there; or, I used to hunt over by the river and that land was always empty; or, I already have one beeyard on this guy's land, maybe he has some more somewhere; or, I'll bet Buzz knows where some is because he's always looking for another place.

But if those don't pan out start by asking everybody you know who might know. Certainly farmers know where land is and is available, and they know other farmers who have land, and rent land. Game Wardens know where land is, and isn't, Soil and Water Conservation people do too, as do Woodlot owners and those who harvest woodlots, miners, gas and oil seekers know too, and realty people know empty land, Police and Sheriff patrollers know where people go when they want to be alone, other beekeepers

can often help, and hunters certainly know where there's unused land. As do those that fish, hunt mushrooms, watch birds, and simply hike in the woods.

While you are checking those out, don't forget the many computer assisted programs available. Google Earth™ is a wonderful resource to begin looking because it shows empty land in relation to roads, houses, farms, factories, other beekeepers (often you can see beehives), water and potential forage, and distance from your home or business. Once you locate several potential sites you can begin the leg work of finding out who owns the land.

That is usually pretty easy. Start at your local...usually county . . . Tax Map Department. They'll have a map of the county, you show them the place on the map, they'll give you parcel numbers, then head over to the Recorder's office and they can tell you who owns the deed on the land, and, conveniently, how to get in touch with them . . . address certainly, and usually phone number. If the owner doesn't live locally, or is simply listed as a large corporation in a distant city or state, you may have to head over to the Tax office for the address of the owner that the tax bill is sent to. But all this is public record and in most cases won't take you very long. This is one aspect of local government I really appreciate . . . except,

Can you get fence posts in the ground, and how much shade is there — at any time of the year.





Maybe you're just warehousing hives for short stints – the requirements change, then.

of course, when they send *me* that tax bill.

Once you've found out how to contact the owners the next step is to touch base and see if 1) they would even consider having bees on their property, 2) if so, would they mind if you did an onsite inspection...invite them to accompany you certainly if they are interested, 3) do the inspection.

There's more to the inspection than first meets the eye however, and you may have to go back several times over the course of the whole next year before you commit. Make sure the landowner is aware of the process. But your first walk through, especially if the owner is with you, is a general overview of the landscape, the terrain, visibility from the road if any, wetlands, nearby agriculture and housing, any existing roads or trails, security, what plans the owner has for the rest of the nearby land if he or she owns it (and do they know the owner of the next parcel over? And if so, their plans?). If you have the owner with you there are lots of questions you can get answered right away, but if not, bring a notebook (use the one you take beeyard notes in...you *do* have one, right?), and especially, bring a camera. In fact, bring that camera every time you visit, and take pictures of the same things . . . roads, fields, trees, the spot you think the bees will go, so you have a season-long history.

From the parcel map at the Recorder's office you know the size and shape of the piece, and if you paid the \$5.00 or whatever the fee, you even have a to-scale map. On that you can mark trouble spots, unknown areas, road access, woodlots, rivers, creeks, ponds, marshes and wetlands, onsite roads and obviously used fields and not so obvious fields, fences, hills and anything that might need 'fixing'. You can determine the sun's angle all year long using the map, and see what might be a problem long before it is a problem. Depending on the time of year you should also note existing potential honey crops . . . trees and shrubs, fields of wildflowers, agricultural crops and the like. If possible, hike or drive about the perimeter of the land and see what's next door, and even further if you can get there. Your Google Earth™ printout will be invaluable here, showing fields, roads, woods, rivers, ponds, houses and ag buildings, and anything else that might be beneficial or detrimental . . . needing further examination.

Using your Google map, find nearby agriculture and see what you can find out about that. Corn and soybeans aren't nearly the benign crops they used to be, and some crops, like row crop vegetables, fruit and nut crops, berries, and some others can be downright dangerous because of the season-long spraying they need to meet sales requirements. Some are early season dangerous, some late, some all Summer long. Find out. And while you're at it, is there another entrance to the field, hidden over there behind those trees that isn't on the map? Does that make a difference? Does it help you if the weather is bad, or does it make things a little less secure? And just so it gets mentioned, stay away from other beekeepers. Some states have a two or three mile rule. And even so, find out who's close by...you don't want other beekeepers' problems.

Once you know what a particular piece of land "is", you need to watch it for a season. You can do this a couple of ways. If the owner is willing, I like to put a few colonies there right away and leave them there . . . just to see how they do. But that doesn't mean I stop watching. Waiting with a full set of hives for two, three or more years just to 'see' how the bees do is a monumental waste of time and resources. Don't wait. find out. I also look for honey plant bloom...both abundance and variety, I watch and see what happens after a lot of rain, I wander around the area looking at other land uses, farmer's practices, and traffic.

Traffic? Really? Is this a short cut between two very busy highways that lots of commuters use? Is there some business a few miles down the road you didn't even know about that gets lots of truck traffic? Is there a church over a ways you weren't aware of that gets Sunday traffic, but not much more? Is there a county or state park up the road that gets lots of attention in the Summer? Visit on a few weekday mornings and evenings during drive time, and a few weekend days, early and late and in between to see what's going on . . . both Summer and Winter. This is where having just a couple of colonies on location is a real benefit . . . you have to be there anyway, so time your visits to coincide with the activity you want to measure.

Can you find out the frequency of police activity in the area? Do they routinely travel this road to get somewhere important? Or worse, to get to some place that is always having trouble? Do they ever travel this road? Would they if you told them what was going to be there?

If you start now, this month, and do the work necessary with two, three or more spots all Summer, Fall and even Winter long, and especially next Spring, by next Summer you will have a pretty good handle on the value of the beeyards you are considering. You may find that only one is worth having bees on. If it's two you find that meet all, or usually most of the criteria you set up, perhaps having two isn't a bad idea, providing, of course they aren't on opposite sides of the county.

There are no guarantees of course. Developers move in. Crops change. Land gets logged. Oil and gas get discovered. New highways come through. Stuff happens. But if you've done your homework and feel confident about this new home, it's time to move, and this time you won't have to take just any beeyard you can get, but rather, this time you'll get exactly the beeyard you want. So, what are you going to set all those colonies on, by the way? Pallets? Hive stands? **BC**

YELLOWJACKET!

Karen Kirsch

Just a few steps into the tall grass drastically altered my plans for the evening. In less than a heartbeat a volcano-like eruption of stinging, ground-dwelling yellowjackets were upon me and within half an hour I was at the emergency clinic in excruciating pain. Until the attack I was totally unaware of the hidden menace, but after an expensive and painful recovery I called Jeff Goff.

Goff is a Malone College professor who rather than take vacations spends his Summers collecting yellowjackets, hornets and wasps for pharmaceutical firms. He seemed destined for this line of work. As the son of a PhD. Entomologist he grew up literally surrounded by insects. His own doctorate is in organic chemistry. While his avocation may not appeal to most people, Goff says, "It's a definite adrenaline rush when you hold a nest in your hand and you can feel it humming."

His meticulously-collected wasps (collective term for yellowjackets, hornets, etc.) are purchased by two laboratories; ALK-Abello' Source Materials and Hollister Stier which isolate and purify extracted venoms for Venom Immunotherapy (VIT) – a lifesaver for anyone allergic to stings. Susceptible individuals receive a series of injections to build tolerance. Goff speaks of VIT effectiveness from personal experience. Having been around wasps his entire life he had been stung by the full spectrum, but never had any serious reaction. There was no reason to think he was allergic until August, 2006. While collecting a nest he suffered a serious reaction after being stung by an Eastern yellowjacket (*V. maculifrons*). Recognizing the signs of trouble, Goff ended up at the emergency room.

Ultimately he was released with a prescription for an EpiPen and a warning that the next sting could cause a much faster, potentially life threatening reaction. He was referred to and treated at the Allergy and Asthma Center of Northeast Ohio, one of several worldwide facilities conducting VIT.

"Venom therapy has given me a lot of peace of mind," Goff says. No wonder he's enthusiastic about his role with the country's two leading laboratories. To his knowledge he is one of only four Ohio collectors and not surprisingly his business is buzzing.

Ironically his involvement came about when one of the labs called another Ohio collector seeking a reference for someone in Stark County. The collector just happened to have gotten his own start 30 years earlier with Goff's father. He recommended Jeff and the relationship with ALK was thereby established.

Based in rural Pennsylvania ALK Source Materials, Inc. is a small company engaged in manufacturing Hymenoptera venoms. Their work is based upon clinical trials done by Johns Hopkins University in the mid-1970s which demonstrated the 97% effectiveness of immunotherapy. The company's reputation for high-quality biological products is unsurpassed. ALK Source Materials Laboratories, Inc. is the world leader in allergy vaccination.

Washington state-based Hollister Stier is also focused on manufacturing superior allergy products for the global market. Founded in 1921, the company boasts one of the largest American immunotherapy sales and support teams. The success and reputation of each company

Trap placed over ground-dwelling yellowjacket nest.



Jeff preparing to remove trap. Pounding the ground creates exodus from nest.



Full trap.





Loaded trap goes into large paper sack which allows the wasps to breathe.



From one nest of yellowjackets.

depends upon purity, beginning with the field collection of living wasps, hornets and yellowjackets.

Typically the collection "season" begins the first week of July and ends about mid-October. In the past five years Jeff Goff has collected about 1,000 nests. Most individuals who call for his services don't know whether the stingers on their property are German yellowjackets or European paper wasps. They just want them gone and Goff is happy to oblige provided no poisons have been used.

"Any nests that have been sprayed by the homeowner will not be collected," he states unequivocally. This is crucial as the venom will be injected into patients.

So, how does Goff go about collecting the wasps whose habitats range from tree-hanging hornet nests to ground-dwelling yellowjackets, not to mention those that take up residence inside walls and hedges? Very carefully! Under a professional Beemaster suit he wears two layers of clothing topped off with long-cuff leather gloves. "I feel like I'm in a suit of armor . . . but I prefer pain-free

collection," he laughs.

The majority of his field work is done after dark (9:30 p.m. to 2:00 a.m.) when most wasps have returned to their nests. An inexpensive red LED headlight makes it easy for him to spot nests in trees or attached to building exteriors, but the wasps can't see in the dark nor can they detect the red light. He sometimes employs a vacuum system for interior infestations and even for some ground-dwellers. Exposed hedge nests are a bit more challenging. Suited up, Goff arrives mid-day to clip out intruding foliage. Then he waits until night (" . . . so they can settle down") to bag the nest.

It's critical that the insects be kept alive. Venom deteriorates if they die prematurely, but remains potent when the insects are frozen. Plastic bags would deprive them of oxygen and hasten death, so his collected nests are dropped into large paper bags which allow them to breathe until they are deposited in huge chest freezers reserved for this purpose.

Literally opening a hornets' nest.



A small single layer nest with eggs, larvae and adults.



After a day in the cooler the insects are sorted, sifted to remove any debris and then placed in zip-lock bags labeled with date and species identity. This process is performed over a small cooler with a slab of dry ice in the bottom. "They are never allowed to thaw," he emphasizes. Each sorted and cleaned nest goes into a separate bag. Once packaged they are quickly returned to the freezer until he has a sufficient quantity to ship to the labs. To prepare for transport the bags are placed in a rigid wire box to prevent crushing, then packed in dry ice inside a Styrofoam shipping container. If this part of the procedure sounds simple, think again.

Hornet nests must be disassembled to remove the wasps; a task that can take several hours. A hornet nest like the one pictured may net only about one fifth of a pound, so they remain in the freezer until he has collected enough of each particular species to ship. The entire process is scrupulously conducted according to each company's standards. The actual venom sac, which is about the size of a sesame seed is extracted at the laboratory.

"I'm not an exterminator, I'm a collector," he explains, but at the homeowner's request he reluctantly uses insecticides to kill any residual wasps. "My preference is not to use poisons." Some escapees are killed with his gloved hand, some are vacuumed. Ground-dwelling survivors are more difficult, but can be eradicated after collection by puffing Sevin™ dust into the entrance. Injecting directly into the hole minimizes the impact on non-target insects. In some cases he is able to remove enough "workers"



Queen (left) and worker.

that the colony will die out naturally. Colonies allowed to remain active can be collected repeatedly.

"I'm always on the lookout for other environmentally-friendly extermination techniques. If you have any suggestions, please let me know!" **BC**

Jeff Goff does not charge for collection from the Stark County area. He can be reached at: 330.492.3340.

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**Donald Gunness shown with the model 200
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Megan Paska

URBAN BEEKEEPING



Up until recently, most folks keeping bees in densely populated, urban environments had to do so covertly or illegally, and were often considered wacky, insane or sometimes downright irresponsible by those unfamiliar with the ways of the European honey bee. "Are they going to swarm and attack my children?" or "What if they get into my house and kill me in my sleep?" Thankfully, popular and legal opinion is changing. With all of the news and media coverage of the mysterious malady known as Colony Collapse Disorder (CCD), many city-dwellers are falling over themselves to get a rooftop or backyard apiary of their own, doing their part to help save the tiny critters that are essential to efficient crop pollination worldwide.

Beekeepers in New York City, where I reside, are opening their minds to the potential for hobby beekeeping in the most unexpected places. Hives top century old buildings in the Financial District of Manhattan, live in a community garden in the center of bustling Chinatown, and are kept in the rooftop garden above a sound stage in an industrial part of Brooklyn. Bees live in places like these and, surprisingly enough, thrive with the right maintenance and planning.

From personal experience, I can say that being connected to a network of experienced, local beekeepers is easily the most valuable asset for a new beekeeper. Cities all over the nation have beekeeping associations and meet-up groups in place to help facilitate learning, pool resources and share equipment that might otherwise be too expensive for a beginner. *Bee Culture's* website has a great nationwide listing of local clubs and associations that can help to connect you to a community in your neck of the woods (<http://www.beeeculture.com/content/whoswho/>). New-bees should attend meetings and demos, stick around and talk shop, exchange information with other members and offer to help more seasoned beekeepers with grunt labor for free wisdom and hands-on experience. When you have bees of your own, these are the people who will help answer the questions that pop up as you get accustomed to the behavior and needs of your colonies.

Accessibility is one critical aspect of beekeeping in the city that requires careful consideration in an urban environment. Ideally your hives should be fairly accessible to you, but not to unwanted busy-bodies and curiosity seekers. You should be able to carry woodenware, full honey supers, etc to and from the hive location with relative ease, and without risk of injury to yourself or others. This becomes a more significant issue with rooftop beekeeping, where you may find the only access point is a hatch at the end of a steep ladder or a window. While maintaining rooftop apiaries can have its challenges, there are benefits to it as well. Rooftop bees get abundant sun and air-flow and thus do not have the same issues with moisture build up that can lead to the fungal disease and pests that hives on the ground are subject to. Most importantly, they are kept out of the line of vision. My policy with urban beekeeping, legal or not, is "out of sight, out of mind." You will find that most people are indifferent to beekeeping as long as they don't have to see it. Find a location where your bees will be able to get everything they need without sticking out like a sore thumb and you'll likely dodge criticism

from neighbors. Those new to urban beekeeping should always ask themselves, "What can I do to ensure harmony between my bees and my neighbors?"

Rooftops are great places to keep bees in terms of privacy, but are also wonderful because colonies seem to do better when they can catch the first morning light. The sooner the hive warms up in the morning, the earlier the bees will get to work, and rooftops offer the clearest exposures in the city. Foragers will zoom out of the entrance to find water, pollen, nectar and tree sap to make propolis. House bees will continue feeding brood, cleaning out cells, building wax and removing their dead comrades from the hive. The earlier your bees can get to work, the more time they have to be productive during the day. Productive hives can bring in more food for rearing brood and for successful over-wintering. It's typically stated that you should be sure to face your hive in a south-east direction. I've found that you can be a little more flexible with this, though ideally, the first morning sunlight should touch the face of the hives.

It's important to both your neighbors and your bees that you provide an abundant source of fresh water for your hives. Bees need water to regulate the temperature in the hive and having plentiful, fresh water available becomes vital during the warmest months of the year. Nothing will ruin a Fourth of July BBQ like dozens of bees drinking out of the neighbors kiddie pool while their little ones splash around, oblivious. The bees mean no harm, but folks can get a touch irrational if they feel the bees are too close for comfort. Five gallon galvanized chicken waterers are widely available and make great bee waterers too! Just make sure it's kept full and fresh or else the bees will find a more reliable, and likely inconvenient drinking spot someplace else. Breaking bees of undesirable behavior can be difficult, so the best way to avoid having them forage for water where they are unwanted is to make sure you've got your source set up from day one. This also shortens the foraging trips of some of your bees, increasing productivity.

With water, sunlight and airflow available, the bees will mostly look after themselves. They'll forage up to a couple miles away from the hive if necessary, but will typically stay closer to home if there is adequate food nearby. Urban beekeepers only need to intervene with the goings-on in their hives if they are queenless, diseased, or need more space to grow their work force and store food. The need for additional space is one that merits particular attention with colonies in the city, because when bees begin to run out of space to build comb for the queen to lay in, swarming may occur.

Swarming is a natural occurrence; a reproductive division of a robust colony that has outgrown its current home. This usually happens after your bees survive their first Winter. When a colony swarms, 50-60% of the colony departs with the old queen, leaving a handful of pupal queens developing in cells in the old colony. The remaining, usually young, work force keeps business running as usual. The swarm will often land someplace close to the old hive while scout bees begin searching for an adequate home. In the old hive, a virgin queen will emerge from a cell and either take over duties, or



if the hive is still congested, may fly with a secondary or tertiary swarm. This behavior usually occurs in the Spring after the nectar flow starts and pollen, essential for brood production, becomes abundant.

As you can imagine, to the average city-dweller, the vision of a cloud of noisy, buzzing insects on the move can be jarring. Fortunately, the bees are generally quite docile at this point. They've consumed a full load of honey to tide them over for the journey, making it more difficult for some of them to sting – not that they would even be inclined to! Swarming is serious business to a bee. These rogue congregations are intent solely on finding a safe place to live, work and rear brood. They are extremely vulnerable to predators and the elements when outside of the hive, so their collective focus is on staying together and finding a home as quickly as possible, not on attacking humans. In short, there is no need to fear the swarm, but your neighbors may. With that in mind, sometimes maintaining the peace with your fellow humans will need to take precedence over the hive's natural instincts.

If your bees do swarm, it's important to take control of the situation and snag them as soon as they touch down by gently shaking the cluster (don't forget the Queen!) into a nuc box with some frames or even a medium-sized cardboard box with a lid until you can put them into a permanent home.

In cities, however, prevention is always preferable. Swarms have a tendency to get neighbors who were

otherwise disinterested in your hobby up in arms over it. Inspect your hive regularly, at least every two weeks during the main nectar flow, and make sure to add new supers once all but a couple of frames have been drawn out with comb. During inspections, always check to make sure there is space in the brood chamber for the queen to continue laying at a steady rate. If the hive appears to be congested, you may have to "open up" the brood nest by staggering a few empty frames in between frames of brood to give the house bees some space to build in. This will create space for the queen to deposit eggs and will usually keep the bees settled for a while. Keeping your hive in tact means a larger, stronger colony, more foragers in the field and more honey in the hive.

As an added measure against spooked neighbors, you can set up swarm traps in the trees nearest to your hives. This makes retrieval easier if they end up swarming before you get a chance to take preventative actions.

Even with these steps taken, you may have neighbors who are still hesitant about beekeeping. Invite any resistant parties to a hive inspection, offer gifts of honey and remind them of the benefits their gardens will reap in the form of increased yields. If that doesn't do much to sweeten them to your insect friends, well . . . you may decide that you want to do it anyway. Just make sure you are working within the parameters of the law and taking measures to help your bees maintain a low profile by keeping them "out of sight and out of mind." **BC**

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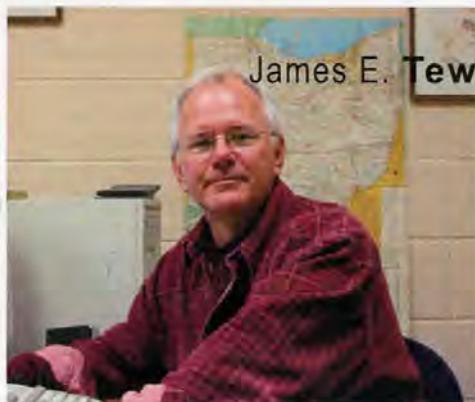
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James E. Tew

Three Short Unrelated Discussions

- Installing Honey Bee Packages In The Rain -
- Really, Really Small Clusters -
- Enjoying A Good Honey Wine -

Installing Honey Bee Packages In The Rain

Why would anyone install expensive honey bee packages in the rain? Short answer? Because it rained every day for days. In fact, the package shipping date was pushed back nearly a week due to rainy weather in the Southeastern U.S. The bees arrived in Ohio on a rainy Friday afternoon. The distribution site was a photographic scene. Hundreds of bee packages were being divvied up. Some purchasers were getting hundreds of packages while others were getting two. Vehicles were losing traction and throwing mud over everything. But spirits were high. The bees were here and they looked good.

While it rained every day, at least the temperature was nice – or was it? Yes, it was nice in that if a proper weather slot would ever come along, the packages could get dumped straightaway, but since the weather was warm, it was tricky finding a cool place to store the packages while we waited. That constant, buzzing and roaring of confined bees in package cages grinds on my nerves. I paid a lot of money for these bees. Replacement bees are not an option. They want to get out and I want to release them, but it continues to rain. When does being confined too long outweigh being released in bad weather?



An empty 6-5/8" super atop deep honey frames.

Mid afternoon on Saturday, I could stand it no longer. I had to release at least some of these packages. I took two of them in a light rain, set the equipment up and ripped into the packages. Other than the rainy, wet weather all went well. There was some bee flight and, yes, the next day, I had to see wet, forlorn bees hanging around – but at least they were out. As has become normal for me in recent years, I will release queens manually rather than having them chew their way through the candy plug. Once again, I will use the netting procedure that I described in the June, 2010, edition of *Bee Culture*¹ to try to keep all my queens in the correct place.

The warm, rainy weather continued the next day (Easter Sunday). After all the normal holiday events were past, I worked out a scheme that is *somewhat* my idea. I would *partially* release the packages. This is an established technique that involves placing the open package in the equipment thereby allowing the bees to more leisurely exit the package rather than the more dramatic shaking the bees from the cage. Each procedure has its merits (and demerits). I have had less than good luck with the partial method during cool weather. On too many cool occasions, rather than leaving the package cage, bees would hunker down and stay in the package. Since foraging could not occur on such days anyway, in itself, this probably was not too bad of a situation. But on a few occasions, the queen cage was left exposed to the weather with varying results. I commonly just shake the bees and am done with things, but this season, the rain was persistent.

My Improvised Procedure

I had honey that I had saved from last season stored in deep frames. I readily admit that having that food reserve is a luxury that many of you don't have but a

¹Minus photos, the archived article (*Honey Bee Packages*) can be found at: <http://go.osu.edu/C2b>





Feeder can in the colony. Note the queen cage.

reasonable alternative is to provide sugar patties² or syrup to make up artificial feed. I placed an empty 6-5/8" empty shell on top of the hive body and prepared the package.

After opening the package and removing both the feeder can and the queen cage and placing them on the frame tops, I bounced the package and laid it on its side near the queen cage. I used the package top to direct the exiting bees by the queen's cage.

Due to the continuing bad weather, I was more sedate than usual about this procedure. I was confident that it could be no worse than having the bees confined in shipping cages for nearly a week. After 24 hours, I returned to several of the colonies and had a look. Thankfully, all seemed quiet and normal. In the colonies I opened, nearly all the bees had properly left the package. Leaving an appropriate number of bees covering the queen cage, most bees were down below on the honey combs.

Releasing The Queens And Cleaning Up

Tomorrow, the package bees will have been with the new queens for about six days. My plan is to quietly open the queen cages and release them directly and leave all in place for a few more days. Rather than releasing the queens and then removing the apparatus, causing bumping and confusion, I will give the queen a day or so for things to settle down. Then I will remove the empty package, feeder can, queen cage and empty super shell. The forecast is for warm rain. Go figure.

I have posted a three-minute video of this procedure on YouTube at: <http://go.osu.edu/C2n>.

The Smallest Colony I Have Ever Had Overwinter

In recent years, I have become accustomed to small colonies overwintering only to spend most of the Summer trying to get back to a proper-sized colony. In fact, as do some of you, I have stories about colonies so small that I assumed that the unit was dead only to have it slowly come back to life a few weeks later in equipment that I thought was empty. But I have never had one as small as I am about to describe still be alive.

In my lab, I have a nine-frame (three deep frames wide x three deep frames high) observation hive that I built many years ago. Late last Summer, a professional photographer asked to photograph the unit. Try as he might, he could not get the glass-glare issue under control. He

asked several times if we could open the unit. Those of you familiar with glass-walled hives know the situation. Burr combs are attached to the glass. Propolis has been used to seal the crevices around the glass walls. And last Summer, the unit was nicely built up and looked like it had good potential for the upcoming Winter season in a month or so. Knowing it was not a great idea, but confronted with a professional photographer who seriously wanted to get the best shot possible, I allowed the unit to be opened up. Yes, it was the ordeal I anticipated. Cracking and popping – jerking – the unit finally opened up to expose bees at face height. He needed both sides open. The colony was already in disarray so what great harm could be done in opening the opposite side? Finally, the glare was gone, the bees were readily available and all appeared well. He finished and my people closed the unit up. It was late in the afternoon and all were tired of the observation hive project.

The next morning, we came into the lab to find bees everywhere. Up and down the hall, lethargic bees crawling on the floor, on the walls – everywhere. In fact, the unit had not been *quite* closed – mostly closed but just not quite all the way. A narrow opening along the glass wall that was near the wall went unnoticed. I suppose that, at first light, the bees began to readily use the easier access than travel the safer tube to the outside. Trying to put all those bees back in that observation hive was like trying to put toothpaste back in a tube. I estimate that the unit lost about 50% of its population. The season was late, the goldenrod was waning and not much else was available. Throughout the Winter, I watched the population drop below any rational hope of survival. The sides of the hive are normally covered so I assumed that at some point, the colony just gave it up. As we were installing the packages, I remembered the saga and had a look – just to confirm that the unit had died. There it was! The record-setting smallest colony I have ever had survive the Winter – 24 bees and a queen; a population of bees so small that theoretically it could have been held in a human mouth. I would have asked your opinion as to what its fate should be, but having it survive until now is against all statistical odds. If the weather ever gives me a break, I will make up a small nuc with some brood to bolster this miniature colony and see what they can do with that assistance.

Mead – Revisiting My Bias

For the most part, all of the mead (honey wine) I have ever sampled has been sweet – usually really sweet. As a personal preference, I don't normally care for a sweet wine of any ilk. And before multitudes of mead-makers descend upon me, I make absolutely NO claim to be anything of an authority on mead and its attributes – *other than what I personally find to be pleasant tasting and emitting a pleasant aroma*. As beekeepers pass along life's beekeeping road, they may try producing comb honey; some will raise some queens; others collect some pollen; some even gather propolis, but a few will try to ferment honey into an old product primarily called mead. Though it is not a large world, there is an entire world of people who specialize in this area. These people may or may not be beekeepers. There are several common types of mead – and all beyond my ability to authoritatively discuss. Apparently, Cyser, Pyment, Molemél, Metheglyn, and

²See Feeding Sugar Fondant to Wintering Colonies, <http://www.honeybeelab.com/>

Hippocras are common varieties of mead that a purist may brew.

My Bias

My bias is that I really have not developed a taste for any type of mead. When I would sample varieties at honey shows or at beekeeping banquets, the meads were generally sweet with a bouquet that I did not readily associate with wine. So there – tried it and didn't like it enough to develop my palate. But recently, on several occasions, I have been introduced to meads that are more refined. In fact, they were delectable. I had my mind made up so these experiences were unnerving.

I sense that there are two major sorts of mead makers – (1) those who buy the brewing products and give it their best shot and (2) those who specialize and even commercialize their efforts. For the most part, I have always been exposed to the home mead maker. Nothing wrong with that. Anything that keeps people enjoying beekeeping is a good thing but that doesn't mean that their brew is always a good thing.

I recently had a very enjoyable trip to Colorado where I was feted and introduced to several beekeepers – some who were new to me and some whom I have known for many years. Mark Beran³ entertained my wife and me for an afternoon in Niwot, Colorado, and provided us with an elementary education in mead-making. He is an accomplished mead master. It so happens that I have recently had some excellent Ohio⁴ meads so I was aware that good products were somewhere out there. But if you are so inclined, you must ferret your own. I am unquali-



Empty package in place with bees covering the queen cage.

fied to make recommendations. But I have discovered two points: (1) good honey wines with pleasant bouquets are available and (2) it takes a lot of honey to make mead. If one's goal is to increase honey consumption, converting it to a (good) honey wine seems to have potential.

While I am not going on a nationwide mead hunt, I do plan to occasionally give mead another chance. I will try to be more open-minded, but I will not longer toss the entire category because of my early bias. **BC**

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³Mark Beran, www.medovina.com
⁴<http://brothersdrake.com/wordpress/>



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Apis What?

There are over 20 races (subspecies) of the Western honey bee (*Apis mellifera*). Since we now have the honey bee genome we can tell much about bees from their genetic make-up. The information we have suggests that the bees in North America can be traced the whole way back to Africa.

Let's take a look at some of the subspecies and hybrid honey bees. A hybrid is a combination of two or more different subspecies.

Italian

These bees are very popular and are great for beginning beekeepers. The light colored queens are easier to spot than darker queens.

Carniolan

These bees are from Slovenia. They are gentle, hard workers that start earlier in the morning and work on colder and wetter days than most other bees.

Buckfast - Hybrid

Brother Adam of the Buckfast Abbey in England spent his entire life perfecting this bee.

New World Carniolan - Hybrid

Dr. Sue Cobey at the University of California at Davis, has been developing these bees for many years by breeding for characteristics of a pure Carniolan which include high productivity and resistant to disease.



Minnesota Hygienic- Hybrid

Dr. Marla Spivak of the University of Minnesota and her research team developed these bees to resist diseases.

She was just honored with a prestigious grant from the MacArthur Foundation.

The genus *Apis* is Latin for "bee". The species, *mellifera* is also Latin (melli-"honey" and ferre "to bear").

Caucasian

The Caucasian honey bee originates from the high valleys of the Central Caucasus which is in central Asia. They have a longer tongue which provides more nectar opportunities for them.

German or Black Bees

These bees are probably the first bees brought to North America from Europe over 380 years ago. Very few people keep these bees today.

Russian - Hybrid

Scientists from Louisiana brought bees to their lab from an area in Russia where the bees have survived mites for more than 150 years. They want to breed a bee that is disease resistant.



Italian-3, Carniolan-1, African-5, Caucasian - 2, German or black bees-4

... BEE kid'S CORNER

Match the common names of these honey bee subspecies to their scientific name. Some are easy. Others you will need to make a guess. The answers are on this page.

- | | |
|---------------|------------------------------|
| ___ Italian | 1. Apis mellifera carnica |
| ___ Carniolan | 2. Apis mellifera caucasica |
| ___ African | 3. Apis mellifera ligustica |
| ___ Caucasian | 4. Apis mellifera mellifera |
| ___ German | 5. Apis mellifera scutellata |

Produced by Kim Lehman - www.kim.lehman.com
www.beeculture.com

Apis Word Search

June 2011

Q S G J M H E Y X W I G C Y T E K
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|-------------|---------------------|
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| BUCKFAST | ITALIAN |
| CARNIOLAN | MINNESOTA HYGIENIC |
| CAUCASIAN | NEW WORLD CARNIOLAN |
| FERAL | RUSSIAN |

(The solution is somewhere in this magazine.)

Is a killer bee a honey bee? Juan, age 10 from Refugio, TX

The killer bee or Africanized bee is a honey bee. Dr. Kerr began breeding African honey bees with European bees. While working in Brazil his bees were accidentally freed and began working their way north to the United States. They are great honey producers but are very defensive.



Kids Teaching Kids

Meet the Liberty Hill 4-H Club from Petaluma, California led by retired teacher Ettamarie Peterson. Many of the former members continue to keep bees.

Blaine is wearing his new bee hat and veil. He is the most enthusiastic bee student you could ever meet! He has gone to just about every class in his school teaching other students about bees.



The group used old catalogs and bee magazines to illustrate the foods bees pollinate to use as an educational tool at an Agricultural Fair.

To learn more go to www.liberty4Hbees.com.

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Catching Swarms

Larry Connor

Catching swarms is something every beekeeper should do. Bait hives can help, but bees on a branch are a rite of passage.

Since honey bee colonies naturally reproduce their social unit through swarming, beekeepers have developed several methods to capture and install swarms during the swarming process. They also put out swarm traps (bait hives) to attract swarms. This is a highly effective tool in the fight against African honey bees.

During the swarming process bees search for a new home and move to an empty tree cavity, the side of a house or occupy some other cavity. There they establish a colony and quickly grow into a full-scale hive. No longer swarms, they are called wild or feral colonies. Ironically, one of the prime sources of swarms are from beekeeper-owned colonies – after a period of successful buildup, any colony may swarm and be mis-labeled a ‘survivor’ colony.

When a property owner finds a colony in a home or building, they should contact a local beekeeper to remove it. These colonies should not be killed using insecticides, because the honey and dead bees attract opportunistic feeders, from small insects to large mammals. Killing the bees simply makes it easier for the pests to occupy or feed on the nest. Also, without alive bees to control conditions inside the hive, the honey will attract moisture and ferment. A bubbling mixture of fermenting honey may

penetrate plaster and damage the building. Of course, we discourage anyone from killing bees unless they are highly defensive. Humans need all the bee colonies we can get.

Catching swarms

A swarm is a transitory group of bees consisting of a queen bee, five to fifteen thousand worker bees, and a few drones. There is no honeycomb, and the only food the bees have is what they carry with them inside their bodies. Swarm catching is a relatively safe chore for the trained beekeeper. Because the bees are engorged with honey, they are slow to sting. As a swarm leaves a hive, it congregates in a local tree or shrub to make sure the queen has joined the mass of mostly worker bees. Then they decide where they will go to build a permanent nest – scout bees search for suitable nesting cavities and return to the swarm where more bees check out evidence of the potential home. A number of scout bees represent different sites and each shares the location and features of different cavities by doing a dance and sharing samples of the dust and odor of the space. Other bees visit the site and report back, and eventually the colony forms a consensus. They then fly off to their new home, and set up housekeeping.

When Janet's, one of my beekeeping friends, hive swarmed, it landed on a low limb of a spruce tree, almost touching the ground. It was an easy one for Cathy King to photograph as Janet and I hived the bees.

Janet and I positioned one of her empty hive bodies under the swarm. We took out two frames for more room for the bees to fall.



While it is in the open, clustered on a tree branch or outside structure a beekeeper may capture the swarm. There is no comb in these swarms, so they bees may be shaken or brushed into a box or empty hive body and carried home. The queen must be captured during this process, or the bees will fly back to find her. Their new home must be attractive to them, or they may swarm again! They are repelled by strong chemical odors, damp conditions and crowded spaces.

If a swarm is unable to decide on a new home it will build honeycomb in trees or shrubs and this outdoor location becomes a permanent home. In temperate areas these open swarms rarely survive the Winter, but they may persist for years in tropical climates.

How to capture a swarm

Experienced beekeepers keep a swarm box in their car or truck during swarm season. These are often eight or 10 frame hive bodies with a bottom board fastened so it will stay with the box. A piece of window screen or eight-mesh hardware cloth is placed in the hive entrance so bees cannot escape during the move to the new apiary site.

The ideal swarm is one that is a few feet off the ground and on a tree branch. Then it is simply a matter of placing the swarm box under the swarm, and shaking the branch so the swarm falls into the box. Frames of drawn comb and foundation will then be placed into the box so the bees have cluster space. A screened lid will then go on the top of the box – two nails can be partially pounded into the box to hold the lid securely during transit. If the distance to the new apiary is small, a regular lid may be used.

Many beekeepers have been caught unprepared and used a cardboard box to do much the same thing. I wonder how many empty copy paper boxes, with their telescoping lids, have been taken from the work site and used to capture swarms. As long as the bees are not confined too long and have ventilation (punch holes in the cardboard), these work fine.

Swarms high off the ground may require a ladder or scissors lift to reach. If you are afraid of heights or uncomfortable on ladders, let another beekeeper handle this swarm. You have the right to say no!

Some beekeepers use bee vacuum devices with long tubes to suck the swarm into a container. The velocity of the unit must be reduced so the bees are not handled too severely. Avoid stressing the bees if you can.



Shaking the swarm into the box.

Hiving the swarm

Bees in a swarm box with frames may be placed into a regular hive or left in the swarm box as a new hive. Remove the screened entrance and feed the colony with a top feeder (a jar or bag in an empty hive body over the single box).

If you have bees in a cardboard box (or burlap feed bag), set up a permanent hive location in your apiary and put a cloth or cardboard at the front of the hive leading to the entrance of the hive. Gently pour the bees out of the box or bag and let them crawl into the hive. Look for the queen, or queens, as the bees walk into the hive. It is a pretty impressive sight.

Some beekeepers mist the bees with water or thin sugar syrup as they add them to the hive, but I do not see any need to do this.

The new hive has several frames of honey and pollen, empty frames, and frames of foundation. If you are a natural beekeeper and are letting bees build their own comb (especially in top-bar or Warré hives), a drawn frame from a similar colony is a great way to hold the bees in the hive and to 'tell' them how the combs are to be built!

Feed swarm colonies with a one to one sugar syrup. Recheck the hive in a few hours to see if they accepted the home, and then recheck every three to six days to see if they need more sugar syrup. Don't get too nose-y and work the colony too much – this may drive the bees out of the colony. If you see new comb and eggs, stop the hive visit. Once the bees start comb building they will stay in the hive.

New swarms are delightful to watch as they grow and build comb, store food, and produce brood, often in the first few hours of occupancy of the new nest. They build worker comb at first, and during the first three months will produce most of the comb they will ever need in the hive. Feeding is optional for many beekeepers, but I consider it a small investment in this new hive. Your goal is to help it grow so it produces honey and/or provides pollination service both this season and in future seasons.

Small swarms should not be put into hives, but combined with other colonies as discussed below.

Swarm traps (bait hives)

Standard beekeeping equipment or special trap hives allow beekeepers to attract swarms by providing a nest cavity of the right volume, orientation to the sun and entrance size. A chemical bait of bee pheromones is provided as a lure, sold by bee supply manufacturers.

Once the bees were in the box, we gently put the remaining frames into the box, letting the bees clear the way. We used a few puffs of smoke and a bee brush. The colony is now ready for a proper feeder, lid and time to settle.





Above bait hive photo courtesy of Shane Gebauer at Brushy Mountain Bee Farms.

Bait hive in place. (Jamie Ellis photo)

Swarm hives should be positioned 10 to 20 feet off the ground in trees and on buildings. Space them 150 to 300 yards apart for maximum swarm capture, often along the borders of a property to form a trap line.

Standard beekeeping equipment: Use a single hive body with a cover and bottom board, in which you put empty comb and a pheromone lure. Or use a four or five frame nucleus hive. These are easier to place into trees and alongside buildings. Swarms are attracted to these locations, and will occupy the nest. The bees can be taken down at dusk and moved to the apiary. This system is a wonderful way of capturing swarms at low cost.

If you are in an area of high bee populations, such as near a commercial beekeeping area or an area of commercial crop pollination, you are performing a service when you capture swarms that issue from these hives. Swarming is a natural event, so it is hard to prevent swarming from all colonies in all bee operations.

Fiber container hives: Paper and fiber plant containers with a bottom lid have been used to collect swarms for beekeeper use. No foundation or starter strips are in these units, so they force the beekeeper to move the comb into frames or hang from top bars. Since the arrival of African bees in the United States they have provided a way to trap and kill invading swarms.

The fiber containers are positioned so the entrance faces the ground or the side of the nest, depending on trap use. Wire is run through the trap so it can be suspended from a tree, pole or building. The entrance is usually reduced with wire to keep birds and other potential invaders out of the nest.

A pheromone lure may be hung from the top of the trap. These are attractive to bees when positioned in areas of mixed sun and shade (like one finds in a lightly wooded area) 10 to 20 feet off the ground. These traps are used as a proactive method of trapping African bee swarms and killing them by putting them into plastic bags (bees and all) and killing the bees by putting the bag into a freezer

or left in the sun to overheat the bees. By avoiding any pesticide use, the honey and comb in the trapped hive may be used.

These traps are valuable in those states that prohibit personal ownership of African hives. These trap hives are an excellent way to capture a lot of African swarms and prevent them from moving into local nest sites. Enterprising beekeepers offer a trapping service around parks, amusement parks, and other public areas, charging a fee per trap hive.

Traps should be checked at least every 21 days, using binoculars to search for bee flight.

Swarm management hints

When not killing these swarms, keep the following in mind:

- Swarms are fragile, and benefit by feeding sugar syrup and perhaps a small pollen patty. In nature only one out of six swarms reaches its first birthday.

- Swarms carry a frequently of disease the same as the bees in a six mile radius. If you are in an area of American foul brood or Nosema, prophylactic medication is advised.

- New swarms are very good at building new honeycomb, and will build most of the comb they will ever need in the first three months of their existence if properly managed. If you give swarms new combs and foundation, or starter strips, you will benefit from this strong comb building instinct.

- If a swarm is unpleasant to work – the bees run around the comb, or bees hit you in the veil, or the queen lays a poor brood pattern, I strongly recommend you replace the queen during the first nectar flow by introducing a mated queen, a virgin queen, or a queen cell. Remove the old queen first.

- Small swarms, those with less than one pound of bees, can be combined with another colony, one needing extra bees. The easiest way to introduce a swarm is to simply shake the bees at the entrance of the hive to be strengthened. I do this later in the day, and the bees walk into the hive without any sign of fighting. You can often find the queen while they walk in, and cage her if you want to use her somewhere else.

- After-swarms are issued from colonies that have already swarmed once, the mated queen is no longer in the parent hive. After swarms contain one or more virgins that move with the swarm into the new home, and then fight to establish the new queen in the colony.

- Remember that proper colony management encourages you to minimize swarming, but in many seasons it is nearly impossible to prevent every colony from building swarm cells and following Nature's instinct. **BC**

Thanks to Janet DeZwaan and Cathy King for helping with the bees and photographs.

Check for space availability for Dr. Connor's Queen Rearing and Bee Breeding program, June 17-19 at the Connor Farm in Galesburg, Michigan by emailing Dr. Connor at LJConnor@aol.com.

If you live in a state where African honey bees are found, check with your Apiarist to learn if you can legally keep colonies of African bees. Check the state statutes regarding African bees using swarm traps for a fee.

Fundamentals For Selling Honey

Ross Conrad

Retail honey sales start at your door step. Yet, at some point if you stay with beekeeping long enough, you are liable to end up harvesting more honey than your family, friends and neighbors can enjoy. One way to deal with all that extra honey is to set up a vendor booth at your local farmer's market. Not only do farmers markets allow consumers to have access to locally grown, farm fresh food, they enable the producer to have the opportunity to develop a personal relationship with their customers and cultivate consumer loyalty. The growing interest in locally produced food throughout many parts of the United States helps to support the small, hand crafted, artisan business model which is personified by the small-to-medium scale beekeeper.

Having the option to sell your honey at retail prices in a market is more critical and more doable for small and medium sized side-line operations. Sure, it requires more time and money invested in packaging and labeling but when you sell your honey and other bee products at retail prices directly to the end user, you have the potential to receive the highest return on your investment.

Farmer's markets are typically weekly or bi-weekly affairs and usually require a time commitment of three or four hours on market day. For best results, it is important to be consistent in your attendance so your customers will know what to expect and won't be disappointed after traveling to the market only to find that you are not there. While farmer's markets require a regular commitment, everything you can do at a farmer's market, you can also do at a fair or a festival which tend to have many more people in attendance but only take place once a year. Setting up shop at a fair or festival is a great option for folks who don't have a farmer's market nearby.

For the best results whether attending a farmer's market, fair, or festival, pre-event planning is critical. It is important to have a clear vision of the outcome you want to create. You may also need initial start-up cash to reserve your space and purchase components for a display.

You must become familiar with the rules governing

the booth space at the event you are attending and abide by them. Be sure you have enough assistance and leave plenty of time to set up and break down your display on schedule. The organizers of the event will appreciate this and will be much more likely to invite you back in the future.

Your display at a farmer's market, fair, or festival will be competing with other vendors for the attention of the customers. The decor of the booth should reflect your own style and tastes, the image you want your business to have, and the type of customers that you are aiming to attract. For example, I like to display lots of product without having my display space look too cluttered. Generally, folks are more inclined to purchase an item when there are plenty on the shelf than when there are just a

few lonely jars sitting by themselves. You create the perception of abundance when the display shelf or table is filled up with a large number and variety of goods. You want to create a space that is open, friendly, warm, inviting, attractive and clean. A display can be made more interesting by adding shelving or boxes so products are displayed at various height levels. Another way to add height to a display is to stack products in pyramids or other shapes. I find it is best to position small items as close to



Have enough product, enough people, prices posted, and always a smile and a friendly hello.

eye level as possible with larger/easier to see items down lower on the display table. To prevent small items from being hidden from view, be sure to feature large and tall items towards the back of the display and shorter items up front where they will be clearly visible. Additionally, you might want to add a nice table cloth (perhaps with a honey bee motif) to add color and class. A vase of flowers or some potted plants strategically placed within and around the display area can also help create an inviting, festive and attractive atmosphere. A large sign announcing your company name or the primary products you sell (e.g. Local Honey) will help to draw in people who see your booth from a distance.

Once your booth is set up look at the booth from all angles to get an idea of the view that your potential customers will see and make adjustments as needed.

If you have time, walk around and check out the other booths to get additional ideas of how to enhance your presentation.

The location of your booth can play a role in how successful or unsuccessful you are. When possible, it is usually preferable to have a booth on the end of a row rather than to be sandwiched between two other booths in the middle of a row of vendors. When you are between two other vendors, you are limited to displaying to the front of your booth space. However, if you are located at the end of a row, you can often make use of the display space to the front of the booth as well as to the side facing the end isle to enhance your visibility though you should check with the event management to be sure they do not object. This increases your presentation area and display options.

When possible I like to get a booth space next to, or near where people enter and leave the market area. By being the first booth that a person sees upon entering, you will have an edge on the other vendors which can be especially important if you have to deal with competing vendors who are selling items similar to yours. As a honey vendor, being the last booth a person passes as they leave can also be beneficial since honey is heavy and many people will not want to purchase honey on their way into a market or event where they plan to spend a lot of time and have to carry their purchase around with them for the rest of the day.

As a result, you will find that some potential customers, especially those interested in the larger jars of honey, will state their intention to stop by and make a purchase of honey later as they are leaving. However, there is the chance that they may forget to buy your honey on their way out or they may purchase honey from a competing vendor before they leave. It is also possible that they may spend their money before they make it back to your booth. One way to help guard against losing sales due to such circumstances is to offer to make the sale right there and then and hold the product behind the counter for the customer so they can pick it up on their way out. This approach is especially helpful if your supplies are limited and you expect to sell out before the end of the day. By giving the customer the chance to buy now and pick up their purchase later it guarantees that they will have honey to take home at the end of the day even if you completely sell all your stock before they are ready to leave.

To increase interest in your booth and boost sales, it is a good idea to feature an interactive aspect that will help to draw folks in. The easiest and most obvious approach is to offer samples of your honey for people to try. Some beekeepers like to offer a smear of honey on a cracker, or a little plastic spoon that can be used to scoop some honey out of the sample jar. I find that including crackers or other foods in the taste sample can interfere/compete with the actual flavor of the honey offered and plastic spoons create a lot of waste that will not biodegrade. I prefer to offer prospective customers a clean wooden coffee stirrer that can be used to sample the honey and then can be composted after use. I get the seven-inch coffee stirrers and cut them in half. Not only is this option better for the environment, but it is also much less expensive than buying little plastic spoons. You will want to provide a place for folks to dispose of their tasting sticks after try-

ing your honey. Just keep an eye on the kids (and some adults) when they are sampling so that they don't double dip! It is also wise to place a paper towel or something down under the jar in order to catch the inevitable drips that will occur.

Another booth design feature that will encourage interaction between you and the public is to feature an observation hive as part of your display. Be forewarned however, you will get about twice as many people stopping and asking you questions about bees than you will get without an observation hive. The majority of the questions will tend to be one version or another of the following two questions: "Where is the Queen?" and "How are the bees doing, are they still having problems?" While including an observation hive in your booth display is a great way to educate the public about bees, it can be an impediment to sales especially when a single person is staffing the booth. As a result you should have assistance at your booth when an observation hive is present. I find that it works well to have one person who handles the questions and another person who can handle sales and make change. Otherwise you may find yourself engrossed in conversation and either ignoring a potential customer who may end up leaving empty handed in frustration, or constantly excusing yourself from explaining the intricacies of the hive to one person in order to make a sale with another person.

If you have an observation hive set up with bees in it, be sure they have a queen as people will be expecting it. One tool that can help you deal with one of the most common questions you will receive is to mark the queen so that folks can find her for themselves and don't need your experienced eye to help them out, thus freeing you up to help other potential customers.

Don't be afraid to use sales aids such as recipes to promote your products. Professionally produced brochures and other aids promoting honey can often be obtained inexpensively or free from local beekeeping associations or through the National Honey Board.

It is a good idea to also develop a short introductory greeting that is designed to draw people in for more conversation and a sale. Your comment or remark should quickly give folks walking by an idea of what you offer and why your products are unique compared to what they may find elsewhere. An example may be: "Would you like a taste of fresh honey that was harvested just last month?" Or, "Try some unheated, unfiltered honey right out of the hive." Point out the positive attributes of your products, and explain what makes your honey special compared to what they may be used to. Remember, price isn't the only factor that influences a person to buy. Farmer's markets, fairs and festivals can be a great way to expand your market and increase honey sales as long as you plan ahead. **BC**

Ross Conrad is the author of Natural Beekeeping. You can reach him at dancingbeegardens@hotmail.com.

Marbles, Mistakes & Hive Lifters



Jim Thompson

Several years ago a beekeeper friend of mine would tell beginning beekeepers to go out and buy a large bag of marbles.

"Pour the marbles into a pants pocket of your bee suit. When you go to the apiary and make a mistake such as letting the smoker go out, losing your hive tool, forgetting your veil or dropping a frame, simply reach into your pocket and grab a marble and throw it away. Do not try to mark the spot where the marble lands. Eventually there will be a time when you reach into your pocket and find that it is empty. One might say that when you have lost all of your marbles, you have become a beekeeper."

I am probably working on a second or third bag of marbles.

Mistakes are going to happen when you keep bees and that is one reason there are books written on beekeeping. Mistakes with the smoker can be improper fuel, lighting techniques, storing facilities and carelessness. Many sources will suggest burlap or bailing twine as a smoker fuel, but make sure that the burlap and twine do not contain insecticides and pesticides used to control rodents. When lit, you might accidentally injure your bees. Do not light your smoker using kerosene or charcoal lighter and begin smoking the bees before the "starter fluid" has had a chance to burn away. When you light the smoker, remember that fire burns at the bottom and that the fuel should be above the flame. If you load the smoker with fuel and then try to light the fuel at the top of the can, you will usually find a smoker that needs to be relit. Learn to plug the smoker when making the decision to travel with it in the lit stage. Some

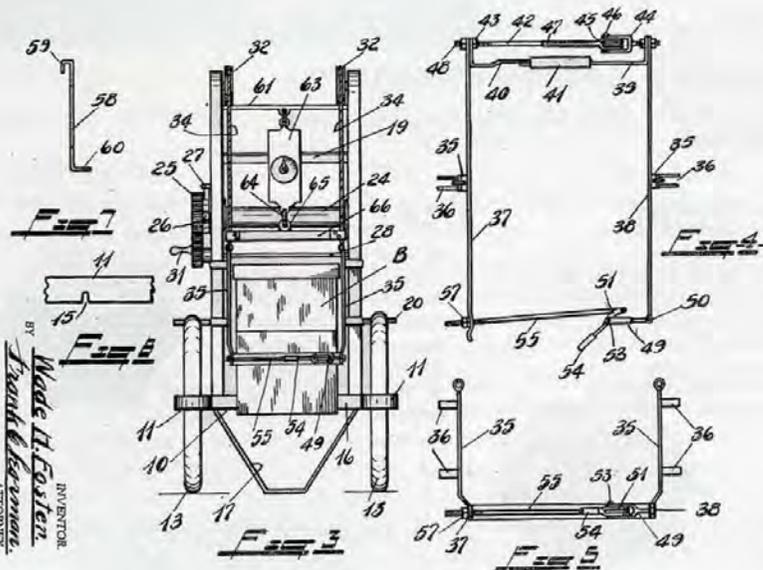
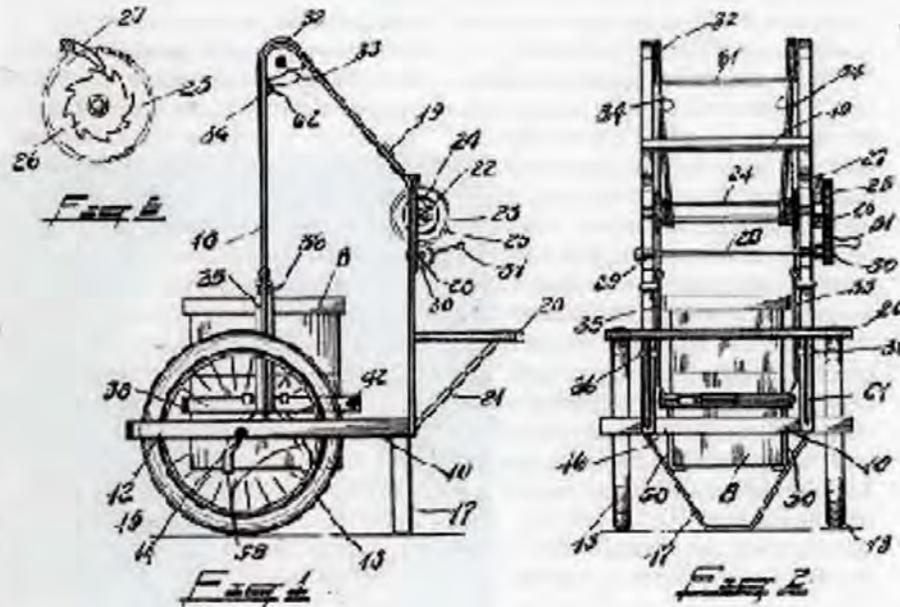
Feb. 15, 1938.

W. H. FOSTER

2,108,480

HIVE HANDLING APPARATUS

Filed March 4, 1937



INVENTOR
W. H. FOSTER
BY Frank E. Garrison
ATTORNEY

Feb. 15, 1938.

W. H. FOSTER
HIVE HANDLING APPARATUS
Filed March 4, 1937

2 Sheet-Sheet 2

2,108,480

commercial beekeepers have holding areas on their trucks to allow them to travel with lit smokers. I can tell you that the plastic truck bed liners do burn so an investment in a metal smoker container is a wise purchase. A metal potato chip can, a lard can, or a Christmas popcorn tin may be used as a smoker container. If you light your smoker with a propane type cigarette lighter, make sure that the lighter does not get inadvertently placed in the lit smoker along with the new charge of fuel. There can be an explosion that sounds like a 12-gauge shotgun and the smoker or parts of it can go 20 feet in the air. You might even develop a unique way to find your "lost" smoker and other bee equipment with a tractor and a brush hog. It can be a real trick using the found items after they have been tossed around by the brush hog.

Work the bees when the temperature is right. If you open the hive and remove frames when the weather is cold you may find that you kill the developing brood. You may start inspecting the bees when the temperature is as low 50°F, but it will be better to wait until it is 65°F. Bees try to keep the cluster and brood within two degrees of 95°F year round when brood is present. Once you open the hive and start removing frames the temperature within the hive may drop and the bees tend to become agitated. You should keep your visits under 10 minutes in length.

Because you must make your decisions about what is best for the

hive in 10 minutes or less, you will find that probably the hive may have been reversed when it didn't need the reversing or the frames were moved around when they should have been left alone. Perhaps you put the supers on too early. Most mistakes can be corrected the following day, with the exception of killing the queen. Sometimes errors in supering and reversing are attempted when it is too late. The result can be swarming, a lack of production or a dwindling hive.

I can't remember how many times Dr. James Tew has spoken to groups and showed hive moving implements from wheelbarrows to trailers. Usually in the background was a green crudely made contraption with bicycle tires and a winch that allowed a person to move a hive. No one ever demonstrated moving a hive with it. It was a conversation piece with flat tires. When the September 17, 2010, tornado destroyed the barn where it was stored, a decision had to be made on its disposition considering its condition and how much space would be taken up in the new storage area. I talked to an individual who had actually used the green hive lifter and he said that it had to be used only on level ground as there was very little ground clearance and the handles to guide the contraption were too short and the cage part would run into your shins or ankles. There was also a balance problem.

Because I help in the beekeeping museum, I was asked to make a few decisions. Items were separated by

the road with the good items on the west side and the discards on the east side. Without a doubt the items on the east side were pure trash. The tornado had damaged things so badly it was hard to distinguish whether some of the items were even formerly pieces of bee equipment. On the west side of the road items were put in groups and then sorted further as to serviceability. Everyone passed on the green machine and I was the last person to give an opinion on it and thus it went to the scrap heap. One week later while looking through patented bee objects, I found a hive handling apparatus that was very similar to it. It was invented by Wade H. Foster of Bad Axe, Michigan in 1937. The patent (2,108,480) was issued February 15, 1938. There were some slight differences, but I feel that we may have had a prototype item without realizing it. Another possibility is that we may have had an example of someone's infringement upon a patent. The only consolation is that it didn't work well. If a hive lifter of this type could be made where it had more ground clearance, longer handles, a collapsible cage, wider tires and lighter weight then perhaps you would have a useable one person hive lifter. Now my question is, do I throw another marble away? **BC**

Jim Thompson is an antique beekeeping equipment collector, honey judge and commentator in Smithville, Ohio. You can contact him at honeyjudge1@yahoo.com



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Honor The Honey Pot

Franclyn Heinecke

In these days of quick convenience and constant urgings to use the latest, greatest new thing, there is something delightfully domestic and unwaveringly welcome about getting honey from a honey pot.

Honey, we know, is good for the body. This simple food is highly flexible and beneficial in many direct and indirect ways. Getting such wholesome nutrition any way we can is important. This is true especially today when we lead ever more hurried, hectic lives bombarded by pollutants and stress.

But, humans do not live by honey alone. Food for the body is one thing; we also need food for the soul. Even more so, such a miraculous food as honey calls to be honored. Its maker, the honey bee, is worthy of our admiration. Using a honey pot may be one simple way to honor the food and its maker while nourishing our souls as well as our bodies.

Not so long ago, these charming pots were found in nearly every kitchen. Parents and grandparents proudly displayed their honey pot, each one designed to whimsically depict some aspect of the hive, honeycomb or industrious honey bee. The variety of shapes and colors sparkled of the designer's imaginative way to honor the humble bee.

Today, honey pots show up only now and then, usually in antique shops or on flea market tables. Rarely are they found in a kitchen, and that is a shame. They have been replaced by seemingly easier, faster ways to get honey. Grab the inverted plastic bottle. Pop open the lid. Plop out a portion of honey. That's it. The tea is sweetened. The toast is done. We still get the antioxidant rich, bone strengthening, good bacteria encouraging boost of energy found only in pure honey. But, there is a cost to such convenience. It seems wrong to dispense honey as one would squeeze ketchup for fast food fries. The work of thousands of bees visiting thousands of flowers and flying thousands of collective miles demands a more reverent, respectful application of their product. Furthermore, there are extra benefits that come from getting honey

from a pot.

First there is the fun factor. Honey pots are cute. Just seeing a honey pot can make us smile. That smile may wake us up enough to enjoy the other benefits of using a honey pot. Lifting the lid, we smell the fragrant honey and remember easy Summer days when gardens blazed in color and buzzed with life. Raising the stick or spoon, we feel a gentle strength as the honey becomes a golden ribbon, draping and folding on itself as only honey can do. Some honey may drip on our hand, and we feel all at once that the honey is soft and sticky and rich and smooth. And it tastes wonderful. Licking it from finger, we notice the unique flavor of its original flower nectar. The color, too, reflects its source and can be white, any shade of gold, or as dark as amber. The honey seems to absorb and reflect light at the same time. We become full of wonder at the contents of this humble honey pot. We pause to think of that tiny insect whose small, individual actions add up to provide for a thriving, successful community. We are reminded that small actions can have big impacts.

Perhaps computer scientists understood this concept when they named a new spam-catching technology a "honeypot." These honeypots do not solve specific computer problems. Rather, these extremely simple yet highly flexible tools collect small bits of information coming into the computer. By doing so, they are able to thwart malicious intrusions and unwelcomed spam. These tiny honey pots guard the computer. In that guarding, they make our use of that tool less frustrating and, hopefully, more secure.

Likewise, our kitchen counter honey pot can be a simple guardian that beckons us to slow down and enjoy all of the nourishing pleasures that bees and their miraculous food provide for us. With honey's nutrition, we can feel secure that we are being good to our bodies. Using a honey pot may soothe some of life's daily frustrations. If nothing else, the pot holds precious honey and often makes us smile. What could be better than that? **BC**



Checkerboarding

SAVES WORK AND TIME

Walt Wright

Reducing population or slowing growth of the colony is the antithesis of maximizing population for improved honey production.

The advantages of reliability (Feb) and increased production (Apr) have already been treated. This submittal is intended to primarily treat a fringe benefit. CB is much easier and cheaper than other swarm prevention alternatives. For the hobbyist or sideliner with a “day job”, the advantage of simplicity could easily outweigh the two primary honey production benefits.

Colony target swarm issue timing is roughly the last-frost date for the area in the wooded east. Backing up from that timing, swarm commit is about two weeks earlier to start swarm cells. Prior to starting swarm cells is the three weeks of swarm preparation. Adding those together totals five weeks back into late winter to “get ahead” of colony swarm intent.

Opportunities for the part-timers to open colonies are limited to week ends during that period and week ends are often weathered out. Too cold or too rainy. Often, locally, we have not had the chance to check for queenright of the overwintered colonies. The beauty of CB is that it can be done in almost any kind of weather short of a pouring rain. There is very little cluster disruption in gently moving frames of honey overhead. The “investment” mentioned in the April article is just arranging your wintering configuration to insure a box of capped honey overhead to CB. In some areas that may require forfeiture of a super of marketable honey in the preceding season. Not to worry. That forfeiture will pay big dividends for the following season(s).

Once CBed, you can forget all the other Mickey Mouse aspects of swarm prevention/control. It’s a one-shot deal. You just need to keep them in empty comb at the top to sustain the effects. In your first trial of the

concepts, it will be difficult for you to believe that concentrated bees four or five feet high are not preparing to swarm. If you can tell the difference between swarm and supersedure cells, by all means, take a look. Be advised that you might fracture supersedure cells in the process. This subject will come up again later.

Most swarm prevention techniques are oriented to weakening the colony or slowing colony development. The theory that congestion causes swarming is the foundation for those techniques. Taking strength ranges from taking a split of a frame of brood through equal division of colony assets. Slowing down development includes variations of brood nest disturbance from which the colony takes time to recover and reorganize. The Demaree is the most severe of those techniques, and does stop swarming, but it is labor intensive and doesn’t increase honey production much. Reducing population or slowing growth of the colony is the antithesis of maximizing population for improved honey production.

We offer you a new approach that accelerates growth rates and yields much greater populations. We call it checkerboarding (CB). A description of internal colony operations and the CB manipulation appeared here in 2003 and are archived at www.beesource.com/resources/point-of-view/walt-wright/. It is important that the reader be exposed to those older articles describing internal bee colony techniques for survival and reproduction. I speak a foreign language from typical beekeeper terms. The closest the old literature gets to describing colony internal operations are words like Spring buildup, swarm impulse, and

Fall brood nest shut-down.

When we started, it seemed prudent to understand how the colony implemented their full season objectives. As we learned, concepts emerged for which no terms existed in the literature. We had to call them something or use a full page to describe the process each time the subject came up. Example: A full article was devoted to the deliberate reduction of brood nest size in the swarm preparation period. We call that backfilling and the literature makes it sound like a problem for the colony – “No room for the queen to lay.” It has several purposes in the swarm preparation format. We are pleased to report that some of our terms are entering the beekeeper language – at least among the beginners who are eager to learn.

Let’s get into the less work thing. We’ll start with splitting/nucing. That approach not only takes more work/time but also requires some extra supporting equipment and expense in feeding. Depending on the amount of the total brood available, a couple frames of brood may not be much impact on the donor colony production, but the nuc generated with the split needs constant care and attention for the remainder of the season. Some of the attendant problems include queen issues, and feeding/robbing. In the southeast, with a two month break in forage between Spring and Fall flows, the nuc must be fed generously in that period to keep them growing.

If you are splitting/nucing to replace Winter losses or increase hive count, it may be worth the extra time/work/cost to you. But it wasn’t to me. Tried it one season and that was enough for me. Later, tried equal colony division after mid Summer harvest. Liked that better

- no feeding.

Tip, southerly areas: With or without division, you can get more honey in the tanks by selecting frames left to feed them through the Summer doldrums. Take fully capped frames to the extracting room and leave partials and uncapped for feed. Let the colony finish those frames on the Fall flow for wintering rations.

Another savings in work/time/cost comes from a fringe benefit of CB -automatic spring season supersedure of their year-old queens. No need to requeen, with its problems of acceptance or even the extra work of looking for swarm cells. With nectar building in the supers, boxes are being added regularly and the hive stack is getting taller through the swarm preparation period. That's no time to be going to the bottom to check for swarm cells on a weekly basis. If you rear your own queens, it's an investment in time and support equipment and if you buy queens for requeening it's a cash outlay. It was learned in the first season test of CB, when several supersedure cells were fractured by inspection, that it's best to stay out of the brood nest during the swarm preparation/issue season.

If you are going to abandon looking for swarm cells, you need some confidence that CB is working for you. We have been remiss in providing that info in past articles. It's quite simple to verify CB is doing what is expected by indications at the top of the hive. Storing nectar at the top is all the confidence you need. If you are adding supers of drawn comb at the top to maintain empty space, that colony has no intent to swarm. For the weaker or slower colony it may be necessary to penetrate to the supers that were checkerboarded. They are okay if they are storing nectar in the interleaved empty frames.

A word of caution: The above is true for the established colony, but there is a three-week period preceding the new wax of main flow that overhead nectar storage is minimal. The landing board can look quite busy, but little nectar is being added at the top. This is normal and does not reflect swarm intent. If you go a week without adding supers on the established colonies, "main flow" is imminent. To add to the confusion, second year colonies will sometimes

"When we started, it seemed prudent to understand how the colony implemented their full season objectives. As we learned, concepts emerged for which no terms existed in the literature."

store nectar overhead during the lull. The take-home message is not to panic when this happens. CB is still doing its job if the established have been storing nectar at the top in the preceding few weeks. Grit your teeth and watch it happen. It's also the period when the second year colonies are superseding, and checking for swarm cells can lead to queen cell damage. We put a moratorium on penetration to the brood nest during the swarm season in the first season test of checkerboarding. The fact that the colony had been storing overhead prior to the lull provides confidence that CB was working then and that doesn't change during lull.

Hive body reversal of the double deep is a separate case. It does not slow colony development in most cases nor does it take away strength. Reversal interferes with the first action of swarm preparations - that of reducing brood volume by backfilling. When brood to the top bar is raised, the colony starts over with brood nest reduction at the top. This delays commitment to swarm by starting swarm cells. Although reversal is one of the least time-consuming of prevention techniques, shuffling deeps is not fun and the results depend on accurate timing of the manipulation. The timing varies with colonies and the beekeeper must stay on top of each colony's status.

We have heard many reasons why beekeepers are reluctant to try

CB. Most will not stand up to scrutiny. One, from a local beekeeper, makes sense. He told me that if he tried all the goofy schemes he had heard about, he was willing to bet that they collectively, would result in a net loss. He is probably right. And I've spent 15 years promoting an off-beat scheme. Should have spent that time enjoying the "golden years."

We hear the word "proactive" more and more applied to beekeeping. CB is proactive (#2 definition) in that the action is taken before the need. It's the number one definition that gives me the most grief. From the study of psychology, it is the word relating to the dominance of first-learned information over subsequently learned information. You long-time beekeepers do not need to make excuses for not trying CB. It's the way your minds work. Since you have little control over your genetic mental programming it's normal for you to continue what you "know". I have reason to believe that some of what you know is inaccurate. What I "know" is based on what I see, and am inclined to favor that over what I hear or read.

In conclusion, the beekeeper that chooses to checkerboard for swarm prevention can take a "laid back" approach to the swarm season. Relax and enjoy. **BC**

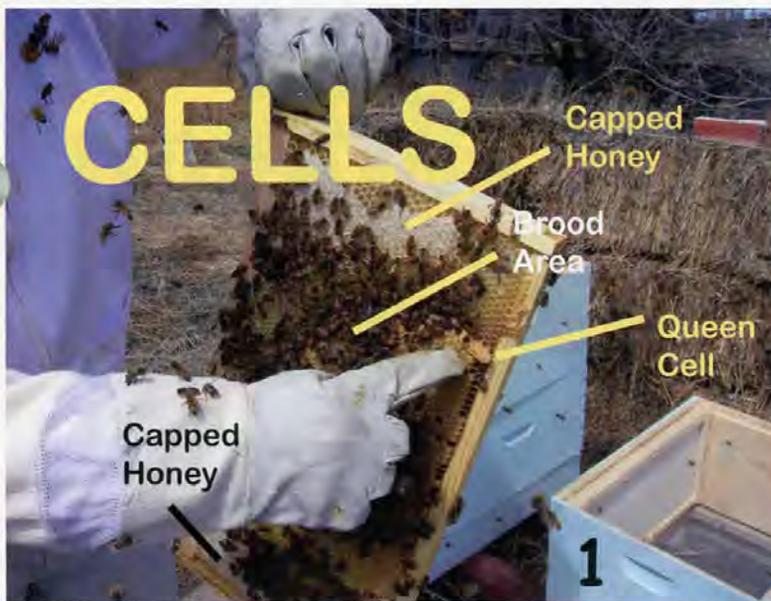
Walt Wright keeps bees in Elkton, Tennessee and is a frequent contributor to these pages.

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In March this year, I got some good photos of frames which clearly show each cell type beekeepers need to learn to identify. Although many readers may already recognize these, it is instructional for the beginners, and even experienced and those that may just be thinking of becoming beekeepers.

Starting with the easiest cell, capped honey, you can see examples of this in the upper right corner of the frame shown in photo 1. Note that the upper right corner of the frame is being held by my left hand in this photo. Note also that this area has some empty cells where the bees have been consuming the honey. Those cells are likely to be refilled with honey as Spring progresses. Now look at the opposite corner, the upper left corner off the frame, toward the bottom of the photo. More capped honey. This is a typical pattern you will see the bees using . . . honey in the corners.

Continuing with photo one, under my right hand, is the brood area of the frame. This is a nice football shaped pattern indicating a good and healthy queen. All those brownish capped cells are female brood which will emerge as workers for the 2011 season. All the bees you see in this photo are female, workers, probably "nurse" bees.

Still on photo one, we now take note of the cell at which my finger points. This is a great example of a queen cell. There are some "usual" aspects to this cell and some "unusual" aspects to this cell. The usual aspects are related to the shape of the cell. This is a typical shape and size for a supersedure queen cell. The term supersedure cell is reserved for when the colony has decided to replace their queen. This cell type is typically found in the upper third of the frame. This one is on the lowest portion of the frame. That's what makes this unusual.

Now you are probably thinking, hold on there, you just said the brood indicated a healthy queen, but then you said the bees have decided to replace her. That's right, I did say that. What I was holding out on you was that I had deliberately removed the healthy queen a week earlier. I essentially forced a strong three-deep colony to be queenless. I took their queen, a couple frames of brood and a couple frames of honey and made a split. I loaded all this into a "nuc" and took them to my apiary several miles south. This was essentially an artificial swarm. Being left queenless, the three-deep colony was forced to make a new queen. We call this an "emergency" queen cell. Sometimes, bees will decide to do this on their own, then you would find queen cells on the upper 1/3 of the frame.

Moving to photo two, notice that this is a full brood



frame. No honey in the corners on this one. In fact, if you look closely, you will notice that those empty corner cells in the upper left of this frame are slightly bigger than cells containing brood on most of the frame. Those are likely candidates for an unfertilized egg. That's how a drone gets made, the queen would lay an unfertilized egg into those slightly larger cells. In photo two, I'm actually pointing to two capped drone cells. They are larger, a lighter color and poking out slightly higher than the rest of the brood cells. There's a bee crawling over the higher one. The rest of this frame is capped brood . . . female bees, workers.

The frame in photo two is covered with a large, healthy number of workers. Now look very closely, near the dead center of the photo is one bee that is noticeably larger than the other bees. He's looking down and to the right with a dark butt sticking up and to the left. That's a drone, the only male bee on this frame. He may be the first male for the season. April 5 is early to be seeing drones. The bees don't make them until they are "ready" for swarm season. That's when drones are useful . . . to fertilize the virgin queens. Drones don't have stingers.

In photo three, we see a totally brood frame that has had a lot of empty cells where the girls have already emerged. There are only workers on this frame. No drone on this one. What I want you to notice about this frame is that it's time to replace it. See that dark colored wax comb. This frame is several years old. It's likely got pesticide residue in it. In July, I'll pull this frame out and melt the wax, then I'll probably burn it. I don't want my frames to hang around too many years. I want my girls to stay healthy and new wax is a comforting warm-fuzzy in that respect. **BC**



Horizontal Frame Support For The **HOPKINS QUEEN REARING**

Ed Simon

When researching the many methods of raising queens I found a reference to the Hopkins System. It uses the placement of worker eggs and young larvae suspended above the brood nest of a queen-less hive to draw out queen cells. Subsequently, I could find no commercially available frame supports for the queen cell drawing frame. Since I make as much equipment as possible, I decided to make a Horizontal Frame Support. The final cost was less than \$1.23 since it was made from a 1"x4"x6' pine board and some scrap 1/4" plywood.

The Hopkins System or Case Method – Developed by a Mr. I. Hopkins in the early 1900s.

This system is the placement of a frame with eggs or young larvae from a breeder colony above a queen-less colony. The frame is laid on its side (horizontal) and is positioned on top of the brood nest in a queen-less cell builder colony. The queen-less colony will feed the cells on the bottom side of the horizontal frame and create queen cells from them. The trick is to provide eggs and larvae of the correct age so quality queens will be reared.

Building the Frame Support

Creation of the Horizontal Frame Support requires a minimal amount of work. The hardest part is ensuring that the support is square so it will fit on a hive with no gaps. If you use a 1"x4"x6' board, you will only have to make minimal cut.

Step #1 – Cut the sides and ends of the Horizontal Frame Support. They should match the hive boxes you are using. See the attached drawing for the standard Langstroth dimensions. If you are butt joining the corners then you should have two side pieces 3/4"x 3 1/2"x 19 7/8" long and two end piece 3/4"x 3 1/2"x 14 5/8" long.

Step #2 – Lay out the 14 5/8" long end pieces with a brood frame that you are going to use with the

Horizontal Frame Support. The brood frame should be situated so the cells will be in the center of the support. See the attached drawing for a general placement. Mark the center of the ears or tabs of the frame. Then place a mark 3/4" on each side of the center mark. This is marks the size of wide groove that will be cut in the end pieces so the frame can lay down in the support. Also mark the location of the bottom bar of the brood frame. This is the minimum length needed to ensure the bottom of the frame does not slip off the brood frame support.

Step #3 – Notch the end pieces to allow the ears or tabs of the frame to fit in. Make the notch 3/8" deep and 1 1/2" wide (cut on the marks you made in the step #2). This is notch "C" in the drawing. The 1 1/2" width of the notch allows you to adjust the position of the brood frame for the best fit when you are placing it on top of the existing frames.

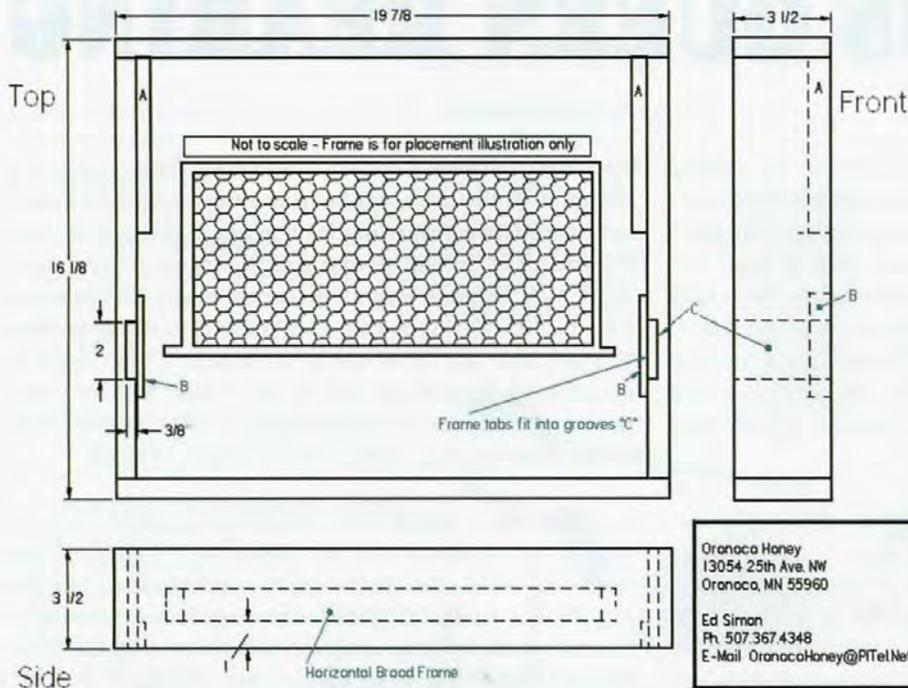
Step #4 – Cut two pieces of wood 3/4"x1"x6" to use as guide/supports for the bottom of the brood frame (Parts "A" in the drawing).

Step #5 – Glue and nail the pieces cut in step #5 to the end pieces of the Horizontal Frame Support. Remember the ends are mirror images of each other so place the pieces in the correct place.

Step #6 – Cut two pieces of plywood 1/4"x1"x6" to use as supports for the ears of the brood frame (Parts "B" in the drawing).

Step #7 – Glue and nail the pieces cut in step #6 to the Horizontal Frame Support. The ears of the brood frame will rest on these pieces. Span the grooves ("C") cut in step #3. Remember the ends are mirror images of each other so place the pieces in the correct place. Make sure the top of this piece supports the frame in a level of position.





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Step #8 – Assemble the support the same way you would assemble a standard hive box. Be careful to make sure the Horizontal Frame Support is square. I'd recommend using screws at the corners rather than nails since the support is only 3 1/2" tall and can easily be forced into a non-square position.

Step #9 – Paint the Frame Support with the paint you rescued from the recycling center and you are ready to raise hundreds and hundreds of queens.

Conclusion

Considering the ease of construction, the Hopkins Method and the Horizontal Frame Support in conjunction with a Cloake Board should be a viable alternative for small bee keepers who want to raise queens with minimal disruption of a productive colony.

Additional Thoughts

How many times have you wanted to feed a hive with an existing frame of honey? You certainly didn't want to disrupt them since they were expanding nicely. Consider using the Horizontal Frame Support. It will allow you to lay a frame of pollen or honey on top of an existing colony without breaking the ears off of the frame. It can then be removed very easily when the bees have emptied the frame. **BC**



HARVEST TIME YET?

Ann Harman

Harvesting Artisanal Honey Is A Challenge, But Definitely Worth The Work.

As we left May and its nectar flows, we enter June with possibly more nectar arriving in our hives. In the temperate zones of the U.S. weather, latitude and elevation affect the timing of strong nectar flows. If you are too late this year for some specialty honey crops, mark your calendar for next year. In certain areas, however, you may be able to harvest some of those artisanal honeys in June. In some areas an Autumn flow may be one of your artisanal honeys.

To be able to determine possible harvest you really need to know your nectar sources. Just remember, they may change. Even though our bad economy has slowed down home construction, a little is taking place in some areas. Developments turn idle meadows into asphalt roads and green lawns with not a dandelion in sight. Farmers have found that intelligent harvest of woodlands brings income and actually benefits the forests and woodlots for the future, but right now perhaps some of your nectar sources are not as plentiful. With droughts in some places, brush and forest fires change the landscape. Did any of those happen to affect your nectar supply?

Take some time – in your pickup, on two feet, on bicycle or horse – to keep track of your bees' forage area. As strange as it may seem, urban places are the most stable as far as plant life and disruption goes. Suburbia is fairly stable but some homeowners can change their landscaping drastically or hire a pesticide-herbicide-happy lawn service. Rural bee forage is most susceptible to change. Farmers change crops; pesticide management can change; trees are cut down. Once you have found out what is really going on in your bee forage area you can then decide what honey crops you can expect. However, we always have to cope with what Mother Nature delivers: rain, hail, too warm, too cold, etc.

Beekeepers need to be aware of microclimates. Just because your backyard locust tree is not ready to bloom quite yet, what are the locust trees doing in the bees' foraging area? The blooming times can differ even up to a week. Hills, valleys, rivers, and windbreaks all influence

blooming times, especially in early spring. You may not be moving your hives to take advantage of certain flowers, but your bees do move about quite easily. You need to keep up with them.

Is managing for artisanal honey too difficult? Not really. Is it profitable? Oh yes. Take a walk through a cheese shop or the cheese section of an upscale supermarket. Visit a specialty food shop and browse the sauces. Have you looked at any specialty food catalogs recently? What an assortment of good things to eat, all

carefully named. Well, plain old honey is still desirable but people are willing to pay more for something they perceive as special. Specialty food sales are increasing. In spite of the bad economy, or perhaps because of it, consumers are looking for out-of-the-ordinary.

Timing and paying attention to the weather is important if you are planning on separating your honeys. In areas of black locust trees, this may well be your first major nectar flow. Fortunately the blossoms appear before the tree is really fully leafed out so the blossoms are easy to see. A honey crop from black locust is frequently ruined by high winds and rain. If you are lucky and get supers of it, charge accordingly. Unlucky? Wait for the next nectar flow. Don't have black locust in your area? Discover what you do have.

Well this year Mother Nature was kind. You did put on more than one super per hive didn't you? Give those bees a chance

to respond to empty comb. Give those bees a place to store nectar while it is being evaporated down to become honey.

Your first major nectar flow was tremendous. Don't relax now. Keep checking to make sure the honey-filled cells are getting capped. Since the wax used for capping honey is freshly-made wax, a high population of house bees of the right age, 12 to 18 days, must be available for producing wax.

OK! The first crop, no matter which plant source it is, with no more than about 10% uncapped, is ready to remove from the hives and go immediately into your honey



processing area, large or small.

In these days of Small Hive Beetle (SHB) you now have two reasons for extracting that honey crop quickly. Two reasons? Let's see – SHB is one. The second is that you need to empty those supers and get them back on the hives for the next nectar flow that could be coming right on the heels of the first one.

If the next major source comes in a week or more after the first one, you can let the bees clean up the supers by putting them over the inner cover for a few days. If, however, you are almost immediately entering your second artisanal flow, just put the wet supers back on ready to be filled. The small amount of the first honey will not affect the next crop from a different plant unless the first honey has an unusual or strong flavor.

At the moment the first crop is in the settling tank. The current crop is being ripened in the supers. You may or may not have time to take a rest. However, since pests such as SHB and ants could cause a problem, maybe it is best to bottle the first batch of artisanal honey. True, the queenline-type jar is well-suited for honey but perhaps you want to explore other interesting jars. Yes, you should have thought of this back in February when throwing snowballs was more fun than looking through supply catalogs. Right now beekeeping equipment suppliers are up all night filling orders for those good members of the Procrastinators Society.

That reminds me. What about your labels? Do your labels need to show that your honeys are different? Definitely. Take a walk down the aisles of wine in a supermarket. The same vintner may have a number of different wines, all with distinctive labels. You may need to have two or three variations of your label to show the differentiation. Before you start complaining about price of labels, be certain that your selling price includes the cost of your fancy jar and the special label.

It's time to check on the honey supers with your second type of honey. By this time you are getting quite good at keeping your different flavors separate. Perhaps next year you could think about one or more of your hives producing some comb honey. You could choose either the round sections or the Bee-O-Pac® equipment. Good strong, well-nourished bees will fill these types of equipment very well. You can also make true cut-comb or good chunk honey. However, if one of your artisanal honey crops is inclined to granulate rather quickly, any kind of comb honey is not a good choice.



A honey that crystallizes quickly is a good candidate for making creamed honey. You do need to follow the Dyce process so that you have a spreadable, buttery-smooth product, worthy of being called creamed artisanal honey. Charge accordingly.

If one of your nectar flows comes later in bee season, you will need to keep your colony strength up through the Summer. You will need to consider monitoring and treating for *Varroa* since the mite population reaches a peak in Summer. You will also need to be sure the queens are maintaining a good population of workers. Summer can be a time for increased stress on a colony. Have the bees a good water supply to combat Summer's heat that can be extreme? Think about both drought and dearth. Both of those situations can mean lowered nutrition for the colony.

Robbing can increase in late Summer, especially during a dearth. If you are expecting a late Summer crop keep careful watch on bee activities in your beeyard. Your special harvest can disappear quickly. This is not the time to have equipment with holes in it.

One more thing to consider about a late Summer or early Autumn crop is making sure your bees will have enough food for their Winter stores. The amount you need will depend on the length of your Winter. Yes, you can remove that late Summer honey crop and feed plenty of sugar syrup for Winter stores. You will be selling artisanal honey for a premium price, much more per pound than sugar costs per pound.

I hope you have been keeping some records during this bee season. Although next year may have different weather patterns from this year, your notes on weather and nectar flows will aid in planning for next year's artisanal crops. If your first strong nectar flow is very early, be sure your honey supers are ready beforehand. Store them well for Winter. You don't want mice to discover a Winter home.

So Mother Nature didn't let you get all your artisanal honeys this year. But you do have a big batch of your local wildflower. Bottle some of it for your customers who always request it. Then bottle some and give it a new name and sell it in a new place. Surely you can think of another name for your delicious wildflower. Once you've decided on its new name you now have another artisanal honey. Charge accordingly. **BC**

Ann Harman keeps her bees near her home in Flint Hill, Virginia.

NATURAL REMEDIES

Winter Aconite, Elephant Apple, Angelica Tree

Abbas Edun

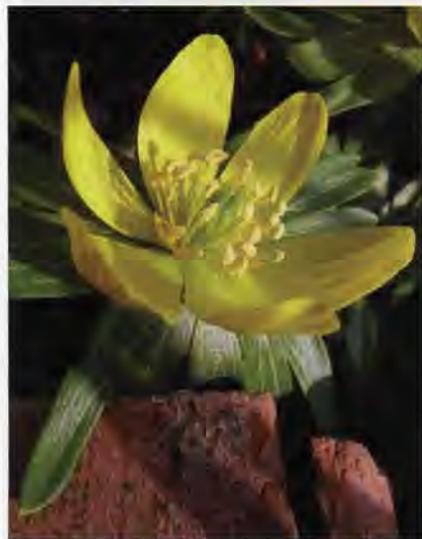
WINTER ACONITE

This perennial belongs to the Ranunculaceae (Buttercup) family in which it fits well, having the characteristic flower and fruit morphology. Its botanical name is *Helleborus hyemalis*, but it has been more familiarly known as *Eranthis hyemalis* for over a hundred years. Other scientific (Latin) names of the plant are *E. cilicica* and *Cammarum hyemale*.

Winter Aconite¹ is native to Greece, central and southeastern Europe, western Asia and Japan. It is now naturalized in North America and Britain, and is widely cultivated as an ornamental all over Europe²; in the southern regions of the continent it flourishes in damp deciduous forests and meadows, up to an altitude of about 4000 feet (1200 meters) above sea level. It also grows at the sides of roads, and in parks and open woodlands on chalky soils.

The plant exhibits aestivation³, growing on forest floors and using the sunshine accessible below the canopy of deciduous trees before their leaves emerge. It dies when the shade from them becomes substantial, or, in dry areas, when Summer drought reduces water availability.

This ground-covering, woodland species grows from a tuberous root



Winter Aconite.

and reaches a height of about four to eight inches (10–20 cm.). The rather large, solitary yellow flowers are among the first to appear in Spring, as early as January in cool climates, though later where Winter snow persists⁴. The leaves only expand fully when the flowers are nearly gone; they are peltate, five to eight cm diameter, with several notches, and only last for two to three months before dying during the late Spring.

The flower closes in the evenings, caused, no doubt by lower air temperatures; it opens again the next morning. Interesting cup-like nectaries are to be found in the plant; the whole petal has been modified into a structure to secrete and hold the extremely rich nectar. This attracts honey bees and other insects which are already flying out on the slightly warmer days and are attracted by the strong resplendent yellow flowers.

A variety of powerful toxins is found in all parts of *E. hyemalis*, but particularly in the rhizome⁵. It also contains cardiac glycosides, and lectins⁶; many of the latter change the physiology of the membrane of blood cells to cause agglutination, mitosis, or other biochemical changes. One lectin which was isolated from the rhizome exhibited a pronounced specificity towards blood-group-O erythrocytes. Other toxic compounds include alkaloids, and protoanemone which is a ranunculoid derivative and an unsaturated lactone.

In ancient times the rhizome of *E. hyemalis* was recognized as a medicine with miraculous curative effects especially for mental disorders. It was used as a cardiotoxic to complement digitalin and strophanthin, to treat some skin ulcers, and as an emmenagogue and irritant. In addition, it was employed as a purgative, abortifacient and local anesthetic.

Modern medicine has almost forgotten the curative properties of the plant. As a treatment for intestinal worms it lasted into the 18th century. The only drawback was that

the patient might end up being killed together with the worms. Winter Aconite is a sedative for neuralgia and rheumatism; in the former, a tincture of the root is often used.

Saponins are glycosides with a distinctive foaming characteristic, and consist of a polycyclic aglycone; they are found in *E. hyemalis*. We generally do not suffer severe poisoning from saponins as our cholesterol inactivates them so that only the mucous membranes are affected. Because of this, they have been used in sneezing powders, emetics, and cough syrups to facilitate expectoration. Most saponins are also diuretic, but this effect disappears within a week following the neutralizing action of our cholesterol.

ELEPHANT APPLE

Dillenia indica is commonly known as Elephant Apple, a name which is also used to identify another plant, *Limonia acidissima*. The aim of this article is to provide the reader with some interesting facts about the former which is also known to botanists as *D. speciosa*. Its common names are Baboul, Chulta, Hondapara Tree, Indian Catmon, Ma-tad, Outenga, Pomme d'Éléphant, Ramphal and Simphol.

It is native to southeastern Asia, from India⁷, Bangladesh and Sri Lanka east to southwestern China (Yunnan) and Vietnam, and south through Thailand to Malaysia and Indonesia. It is also found in the Philippines, New Guinea, and Australia's coastal rainforests in Queensland and the Northern Territory.

Depending on the climate, it may grow as a large shrub or small to medium-sized tree, attaining a height of up to 50 feet (15 m.). It prefers full sun or very light shade, and it can be found at relatively high elevations in humid, tropical and subtropical regions. It should be planted in areas which are free of frost.

The tree is supported by buttress roots; it has a continuous



Elephant Apple.

trunk covered with a smooth, reddish brown bark which is exfoliating, thick and tomentose. There is significant branching only at the very top of the trunk, the spreading branches forming a dense crown.

The oblong or obovate, toothed leaves are up to 12 inches (30 cm.) in length and have a conspicuously corrugated surface with many impressed parallel veins. They are leathery, shiny, dark green above, light green beneath, have sharply toothed margins, and are confined to the ends of the branches.

The beautiful, solitary flowers are about six inches (15 cm.) in diameter; they are almost always pendulous because of their weight. They have five thick, white petals and numerous, yellow stamens, distributed in 12 whorls. The tree starts to bloom when it is about 15 feet (4.5 m.) tall, producing flowers from April to August. Although they last for only a day, honey bees and other insects are attracted by the fragrant scent of the flowers.

The globose fruit measures five to six inches (12-15 cm.) in diameter. It is greenish yellow, has a thick protective covering, and is surmounted by the persistent, slender, spreading rays of the stigma. The pistil is an aggregate of 15 carpels, each one containing five, small brown seeds embedded in an edible pulp; the latter is aromatic but very acidic, with a flavor somewhat like that of a sour, green apple, and requires cooking.

Phytochemical studies showed that the fruits of *D. indica* are rich in phenolics with good antioxidant and free radical scavenging activities. They also provide a rich source of

flavonoids and lupeol triterpenoids; examples of the latter are betulinaldehyde and betulin, while myricetin is a flavonoid. The stem bark contains dillenetin and glucosides. Some of the other chemical constituents of the tree are arabingalactan, (a polysaccharide), beta-sitosterol, cycloartenone, dihydro-isorhamnetin and n-hentriacontanol.

A methanolic extract of the fruit was reported as having potential anti-leukemic activity; betulinic acid, a major compound which was isolated, could explain such activity. The ripe fruits are appetizing and beneficial in colic associated with mucous. The juice of the root mixed with that of the fruit and a bit of honey is used as a cardiogenic beverage, as well as a cooling one in the treatment of fever. Depending on the dose of the mixture you are taking, it may also act as a cure for dysentery, or it may prove to be laxative.

Because it is very rich in tannins, the juice of the fruits has been used in traditional medicine for a very long time, an important application being its antidiarrheal activity.

Their astringent property also explains, in part the anti-inflammatory activity of an alcoholic extract which acts by decreasing capillary permeability. Such an extract also showed central nervous system depressant activity. The young leaves and stem bark are used as a laxative and an astringent; they may be pounded and applied as a paste on swellings of the skin.

Parts of the tree are reputed to be used as an aphrodisiac and to promote virility, and a decoction of the ripe fruit is used for the prevention

of baldness. The root and stem-bark are useful for prophylaxis of cholera, and an extract of the stem, diluted in water, if sprayed on and around a wound caused by bee stings and the bites of spiders helps to alleviate the pain.

ANGELICA TREE

This article introduces the reader to one of about 100 species of *Dendropanax*, a genus of flowering plants in the Araliaceae (Ginseng) family. The genus consists of evergreen trees and shrubs, disjunctly distributed in the Asian tropics/subtropics and the Neotropics.^[8] It was hypothesized that it originated from continental tropical Asia and migrated into the New World via the North Atlantic Land Bridge⁹.

The scientific name of the Angelica Tree is *D. arboreus*¹⁰. It is also known to botanists as *D. stenodontus*, *Aralia arborea* and *Gilibertia concinna*. Some of its popular names are Galipee, Jamaica, Lion's Hand, Matagente, Potatowood, Sac-Chacah, Sweetwood, Vaquero, Vibona and White Gumbolimbo¹¹.

In southeastern Asia *D. arboreus* is found in Cambodia, Laos, Thailand and Vietnam. It also grows throughout most of tropical America, both North and South. Population analysis shows that it is abundant in Cuba, Mexico, Central America and Panama. It is also found in the Greater Antilles including Puerto Rico, the Dominican Republic, the Virgin Islands and the West Indies.

It is a fast growing, shade intolerant, upper-canopy tree which successfully sprouts after fire. It is important because of the shelter which it provides in the coffee plantations of Puerto Rico¹² and those of the Central and Western Cordilleras in Colombia.

The tree does best in cool, moist climates and needs humus-rich soils of mesic forests. In the Mexican tropical zone it is widely distributed in high evergreen, semi-evergreen, semi-deciduous forests, and deciduous forests on igneous or calcareous soils with good drainage.

Because of its wide-ranging geographical spread and altitudinal distribution¹³, *D. arboreus* exhibits considerable variation. It grows as a large shrub or small to medium-sized tree, from about 45 to 80 feet (13.5 to 25 m.) in height. There are



Angelica Tree.

also differences in its foliage and inflorescence.

The trunk is cylindrical and straight or slightly winding, and it may reach up to 30 inches (70 cm.) in diameter at breast height. The bark is medium brown or grayish brown, smooth to slightly scaly or cracked, with abundant and prominent lenticels being visible. Internally it has a clear cream color which changes to greenish brown; it is fibrous and has a fragrant scent and sweet flavor. The crown is generally open and wide-spreading, dense and round.

The leaves are simple, alternate and sclerophyllous; they are very variable in size and shape, dark green and bright on the upper surface, paler beneath¹⁴. Those in the shade and on sterile or juvenile branches are often deeply trilobate, while the leaves in the canopy and those of older or fertile branches are ovate to elliptical, or obovate and entire, or undulate.

The tree blooms during the whole year, especially from December to August, with many small, greenish-white, hermaphrodite¹⁵ flowers. They generally appear in the upper leaf axils and stem ends, one to eight in a cluster forming a short cymose inflorescence. The filament is enlarged and the anther is bilocular, opening by a whitish valve which rolls up from the base to the summit. Out of the spiky, green, five-pointed calyx there arises a white petal tube, the hypanthium, which curves upwards

into a very irregular shape, composed of five petals and five sepals. The distinctively stimulating aroma of the flowers often fills the air and attracts pollinating honey bees¹⁶. The tree is a good source of nectar, and the wood from its trunk is used to make beehives.

Several aliphatic polyacetylenes (polyines) have been isolated from an ethanolic extract of the leaves of *D. arboreus*; falcarinol oxylipins and a few others have shown in vitro cytotoxic activity against human tumor cell lines, but are not toxic against normal hepatocytes¹⁷.

The fruit and young shoots, ground and dissolved in water, have strong antivenin activity against the toxin of snakes, and are also used for inflammation of the feet by the Tacana community in the Bolivian Amazon. An infusion of the leaves is used as a remedy for fever and also administered for hemorrhage of the stomach; a poultice made from young ones is used for healing sores. **BC**

References

- ¹Some of its common names are Éranthe d'Hiver, Winter Hellebore, Winterlinge and Wolf's Bane. It is not the same as *Aconitum napellus* which was presented to the reader in the December 2009 issue of *Bee Culture*.
- ²It is found in Croatia, France, Italy and the Balkan Peninsula including Turkey.
- ³Also known as "Summer sleep," it is a state of dormancy somewhat similar to hibernation.
- ⁴The plant is frost-tolerant and readily survives fresh snow cover unharmed. It is one of the first plants in the year to yield nectar and pollen.
- ⁵The poisoning symptoms which can be triggered include a slow, irregular pulse, weakness, labored breathing, irregular heart beat, respiratory failure and nervous system disturbances such as

delirium, convulsions and even death due to respiratory collapse, breathlessness, vomiting and nausea.

⁶Cardiac glycosides are drugs used in the treatment of congestive heart failure and arrhythmia. The primary one in *E. hyemalis* is bufadienole hellebrin; hellebrigenine, its aglycone is more potent than the glycoside itself.

Lectins (toxalbumins) are protein or glycoprotein substances that bind to sugar moieties in cell walls or membranes. Plant enzymes also bind to carbohydrates, but they are not considered to be lectins.

⁷It is grown in Bihar, Orissa, Madhya Pradesh and the north of Bengal.

⁸In biogeography, the Neotropical zone is one of the world's eight terrestrial ecozones. It includes Central and South America, the Mexican lowlands, the Caribbean islands, and southern Florida, because these regions are delimited by similarities in flora and fauna.

⁹See proceedings of the Fourth Biennial Conference of the International Biogeography Society, held in Mérida, Yucatán, México, January 8-12, 2009.

¹⁰It is not the same as *Angelica archangelica* which was presented to the reader in the December 2008 issue of *Bee Culture*.

¹¹Its Chinese name is Mei zhou shu shen, and in Haiti it is known as Bois Nègresse.

¹²It is widely distributed in the lower montane and moist limestone regions of the Río Abajo State Forest. There are also coffee plantations in the eastern part of Chiapas, Mexico, where *D. arboreus* is reported to be dominant in the natural forest canopy.

¹³It is found at a maximum altitude of about 5,200 feet (1,600 m.) above sea level in Jamaica, and 4,500 feet (1,400 m.) on the slopes of Rincón de la Vieja National Park in Costa Rica, and in the lower montane forests of Páramo on the Colombian Andes.

¹⁴Sclerophyllous: thick and leathery.

¹⁵That is, they have both male and female organs.

¹⁶The flowers are also visited by other insects including cockroaches.

¹⁷An aliphatic compound is one that is not aromatic, i.e., it lacks a particular arrangement of atoms in its molecular structure. Ethanolic: of, relating to, containing, or derived from ethyl alcohol.

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SUSTAINABLE FARMING

A group of leading scientists, economists and farmers is calling for a broad shift in federal policies to speed the development of farm practices that are more economically, socially, and environmentally sustainable.

Writing in the journal *Science*, they say current policies focus on the production of a few crops and a minority of farmers while failing to address farming's contribution to global warming, biodiversity loss, natural resource degradation, and public health problems.

"We have the technology and the science right now to grow food in sustainable ways, but we lack the policies and markets to make it happen," says John Reganold, a Washington State University soil scientist and the *Science* paper's lead author. Starting in the late 1980s, Reganold pioneered several widely cited side-by-side comparisons showing organic farming systems were more earth-friendly than conventional systems while producing more nutritious and sometimes tastier food. His *Science* co-authors include more than a dozen other leading soil, plant, and animal scientists, economists, sociologists, agroecologists and farmers.

The *Science* paper grows out of several national efforts to address concerns about farming's impact on the environment, including the landmark 1989 National Research Council report, *Alternative Agriculture*, which recommended greater research and education efforts into sustainable farming. All the authors of the *Science* paper wrote the council's 2010 update, *Toward Sustainable Agricultural Systems in the 21st Century*.

The paper is particularly critical of the Farm Bill, which is slated for

renewal next year. While only one-third of farmers receive payments under the bill, it has an outsized influence on production. It does little to promote sustainability, write the authors, while "distorting market incentives and making our food system overly dependent on a few grain crops mainly used for animal feed and highly processed food, with deleterious effects on the environment and human health." Environmental impacts, says Reganold, include overdrawn aquifers, eroded soil and polluted water.

Meanwhile, he says, agricultural research and the field of "agroecology," which adapts the principles of nature to farming systems, are finding new ways to grow abundant and affordable food while protecting the environment, helping farm finances, and contributing to the well-being of farmers, farm workers and rural communities. Consumers—whose concerns range from farm working conditions to animal welfare to food safety—are seeking out organic and alternatively grown foods at grocery stores, farmer's markets, food coops, Community Supported Agriculture networks, and large outlets like Trader Joe's, Whole Foods, even Costco.

The mounting environmental impacts of agriculture call for a transformation that can be sped up by shifting federal support to research, policies and markets that support more benign alternative farming systems.

"We need to move more quickly," says Reganold. "Why are we supporting big, mainstream agriculture that's not necessarily protecting or benefiting the environment? Why don't we support innovative farming systems of all sizes that produce food sustainably?"

CORN SUGAR IS STILL HIGH FRUCTOSE CORN SYRUP

A group of sugar farmers and refiners has filed a lawsuit against members of the corn refining industry in an attempt to stop them from claiming that high fructose corn syrup is a natural corn sugar.

The suit, filed in a US district court in Los Angeles by Western Sugar Cooperative, Michigan Sugar Company and C & H Sugar Company, claims the industry's corn sugar branding campaign for high fructose corn syrup constitutes false advertising. Companies named as defendants in the case are ADM, Cargill, Corn Products International, Penford Products, Roquette America, Tate & Lyle Ingredients Americas, and the Corn Refiners Association.

President and CEO of Western Sugar Cooperative Inder Mathur said: "This suit is about false advertising, pure and simple. If consumers are concerned about your product, then you should improve it or explain its benefits, not try to deceive people about its name or distort scientific facts."

The Corn Refiners Association (CRA) petitioned the Food and Drug Administration (FDA) in September last year asking it to allow the term 'corn sugar' as an alternative label declaration for high fructose corn syrup (HFCS). The CRA—a trade association that represents the corn refining industry in the United States—claims that 'corn sugar' would provide greater clarity for consumers, and it has repeatedly stressed that HFCS is not high in fructose, even though that is what the name may suggest. In fact it contains proportions of fructose and glucose that are similar to sucrose. High fructose

corn syrup (HFCS) has suffered from a serious image problem for years, having been variously accused of causing obesity and type-2 diabetes, not to mention being an evil, secret weapon of mass destruction. The evidence behind such claims is, at best, inconclusive (and at worst paranoid fear-mongering) but at this stage it hardly matters. The sweetener has fallen out of favor with consumers and sales have slumped.

Commenting on the lawsuit, Corn Refiners Association president Audra Erickson said that the association stands by its advertising campaign and intends to defend its FDA petition.

She said: "Sugar is sugar. High fructose corn syrup and sugar are nutritionally and metabolically equivalent...It is disappointing that another sweetener would sue the competition for its own gain—and stand in the way of consumer clarity about added sugars in the diet."

The complainants claim that the corn industry should have waited until the FDA responded to the petition to allow manufacturers 'corn sugar' as an alternative labeling claim for HFCS before going ahead with the ad campaign. They are seeking an injunction to end the campaign as well as damages, including "compensation for corrective advertising".

The United States is still the world's biggest user of high fructose corn syrup, but manufacturers have been increasingly switching it out of their products in recent years in preference for beet or cane sugar, on the back of a spate of bad publicity.

KIWIS FEAR CCD HAS LANDED

New Zealand beekeepers fear colony collapse disorder has reached their South Pacific shores.

National Beekeepers Association joint chief executive Daniel Paul says the association has begun receiving reports of significant bee losses of up to 30%.

"It's significant enough to make us sit up and take notice," Paul tells The Dominion Post newspaper.

Paul says the association is conducting a survey of its members to get a handle on the bee losses.

The *Varroa* mite has been blamed for losses in the past 11 years, but the association says the use of chemical treatments has allowed bee numbers to recover.

The beekeepers believe the new

killer could be the new family of insecticides, neonicotinoids, saying they could be interfering with a bee's nervous system.

Association vice-president Barry Foster tells the newspaper neonicotinoids have identified as a potential cause of colony collapse disorder.

He says it's time for the Environmental Risk Management Authority to consider reassessing its use.

"If bees are responsible for \$4 billion of New Zealand's economy, and we allow bee death rates to reach levels found in other parts of the world, we're essentially playing Russian roulette with some of the biggest industries on which this country relies," Foster says.

—Alan Harman

PESTICIDE SAFETY QUESTIONED, THIS TIME IN THE UK

The British environmental group Buglife says government inaction means neonicotinoid pesticides are continuing to damage bees and other wildlife as a newly released government report claims field studies show "no gross effects" on honey bees.

The problem is the key field studies the UK government report relies on were funded by a pesticide company, have not been published and have not been subject to open examination.

On the other hand, there is a growing pile of independent, published scientific evidence of damage to bees and other pollinators from the pesticides.

Buglife chief executive Matt Shardlow says the publication of the report means that for the first time it is clear what evidence the government has been relying on to license the use of these potentially environmentally destructive chemicals.

"However, the release of this government report has not put us at ease," he says. "There is nothing in the report that leads to a conclusion that the chemicals are safe for the environment."

The report was written by government scientists in response to a report on neonicotinoid pesticides published by Buglife in 2009. It was released only after a freedom of information request by Buglife.

The government report evaluates the peer-reviewed, published, independent laboratory studies in great detail, but uses this only to conclude there is cause for concern and that field studies should be done.

However, there are significant question marks about the scientific validity of the unpublished field studies, most of which were funded by the pesticide manufacturer and are very short in duration (often only three days). These studies are not critically reviewed in the government report.

A 2010 review of neonicotinoid pesticide research published by scientists at Exeter University showed that even published field studies were not thorough enough to be able to detect a massive 20% decline in the performance of honey bees.

Organic group The Soil Assn. Policy Director Peter Melchett finds the government report incredible.

"It is beyond belief that in the face of a growing international consensus that neonicotinoids are a serious threat to bumble bees, honeybees and other pollinating insects, UK pesticide regulators seem to be basing their contrarian views on no serious scientific evidence," Melchett says.

"They looked at no independent field studies, and none that take a really long-term view which would tell us the impact of the long-term exposure to repeated small doses of poison that is increasingly the fate of pollinators."

Buglife says it is working with the Chemical Regulation Directorate to better understand which of the listed field studies provide the best evidence that the environmental damage predicted from the laboratory studies does not occur in the field. —Alan Harman

AFRICAN OPPORTUNITY ACT WILL INCREASE HONEY EXPORTS

A beekeeping forum in Zambia is seen as an opportunity to increase honey exports to the United States under the African Growth and Opportunity Act.

The American legislation provides countries in Sub-Saharan Africa with the most liberal access to the U.S. market available to any country or region without a free trade agreement.

The act seeks to reinforce African reform efforts, provides improved access to U.S. credit and technical expertise, and establishes a high-level dialogue on trade and investment through the U.S.-Sub-Saharan Africa Trade and Economic Forum.

The Zambian Honey Council says Zambian honey exports to the U.S. have been minimal, but says the forum will expose producers to American buyers.

"The hosting of AGOA in this month in Lusaka is going to expose the bee keepers because we want to have this deliberate policy whereby we expose them to American buyers," council coordinator Bill Kalaluka tells the allAfrica.com news service. "They will be able to engage on one on one basis not only for the bee keepers but also the honey traders."

The aim is to attract direct investment to help boost Zambian production from 1,500 tonnes to 15,000 tonnes a year. About 500 tonnes is sold on the local market.

"We export 1,000 tonnes to the international markets including the

U.S., but what goes out to the U.S. is very minimal," he says.

Kalaluka says the council wants to work through partnerships to increase exports to the U.S. and other markets as a sure route to economic growth and wealth creation.

"Partnerships are critical to the development of the honey industry in Zambia because it will help stimulate production of honey," he says.

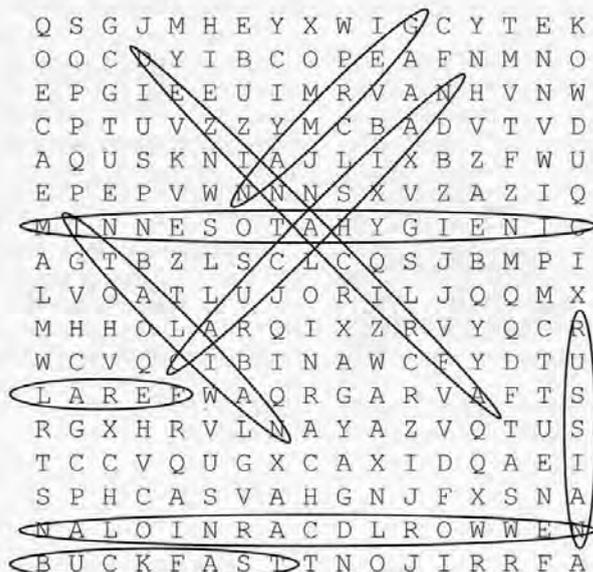
Kalaluka says when dealing with countries such as the U.S., one of the benefits arising from the forum will be technological transfer.

"Once the beekeepers and the traders are engaged in business linkages with the American buyers they will also help the bee keepers package their products based on the market needs which will enable us to penetrate the U.S. markets," he says.

The council has trained more than 12,000 bee keepers in six districts on quality, standards and cost management and honey products are being certified by the Zambia Bureau of Standards and Zambia Honey Council.

"We are encouraging our members to improve on the packaging and marketing strategies," Kalaluka says.

The act is seen as helping create better market opportunities and stronger commercial partners in Africa for U.S. companies. It is intended to help forge stronger commercial ties between Africa and the U.S. and helps to integrate Africa into the global economy. —Alan Harman



Answer for the Kids Page game.

HONEY STOPS SUPER BUGS

Manuka honey could be an efficient way to clear chronically infected wounds and could even help reverse bacterial resistance to antibiotics.

University of Wales researcher Rose Cooper tells a Society for General Microbiology's conference she found that the honey can interfere with the growth of three types of bacteria that commonly infest wounds – *Pseudomonas aeruginosa*, Group A Streptococci and Meticillin-resistant *Staphylococcus aureus* (MRSA).

Her group says the results suggest honey is an attractive option for the treatment of drug-resistant wound infections.

Manuka honey is derived from nectar collected by honey bees foraging on the manuka tree in New Zealand and is included in modern licensed wound-care products around the world. However, the antimicrobial properties of honey have not been fully exploited by modern medicine as its mechanisms of action are not yet known.

Cooper's group is helping to solve this problem by investigating at a molecular level the ways in which manuka honey inhibits wound-infecting bacteria.

"Our findings with streptococci and pseudomonads suggest that manuka honey can hamper the attachment of bacteria to tissues which is an essential step in the initiation of acute infections," Cooper says.

"Inhibiting attachment also blocks the formation of biofilms, which can protect bacteria from antibiotics and allow them to cause persistent infections."

Cooper says her work in the lab has shown that honey can make MRSA more sensitive to antibiotics such as oxacillin – effectively reversing antibiotic resistance.

"This indicates that existing antibiotics may be more effective against drug-resistant infections if used in combination with manuka honey," she says.

The research may result in an increase in the clinical use of manuka honey as doctors are faced with the threat of diminishingly effective antimicrobial options.

"We need innovative and effective ways of controlling wound infections that are unlikely to contribute to increased antimicrobial resistance," Cooper says. "We have already demonstrated that manuka honey is not likely to select for honey-resistant bacteria."

She says most antimicrobial interventions for patients now are with systemic antibiotics.

"The use of a topical agent to eradicate bacteria from wounds is potentially cheaper and may well improve antibiotic therapy in the future," Cooper says. "This will help reduce the transmission of antibiotic-resistant bacteria from colonized wounds to susceptible patients."

– Alan Harman

UN REPORT: HONEY BEE COLLAPSE NOW WORLD WIDE

A new UN Environment Program (UNEP) report shows the collapse of bee colonies has become a worldwide phenomenon with serious implications for biodiversity and food security.

The report, *Global Honey Bee Colony Disorders and Other Threats to Insect Pollinators*, says more than a dozen factors, ranging from declines in flowering plants and habitat to the use of memory-damaging insecticides and the worldwide spread of pests and air pollution, may be behind the emerging decline of bee colonies across parts of the globe.

It says tens of thousands of plant species could be lost in coming years unless conservation efforts are stepped up.

The report says the decline of bee populations has serious consequences for food security. Pollination is critical for flower and seed production and vital to the health of ecosystems. As many crops depend solely on pollinators for survival, the well-being of pollinating insects such as bees is critical for ensuring the availability of food for a growing global population.

Scientists who prepared the report say without profound changes to the way human-beings manage the planet, declines in pollinators needed to feed a growing global population are likely to continue.

Among the threats:

*New kinds of virulent fungal pathogens, which can be deadly to bees and other key pollinating insects, are being detected worldwide, migrating from one region to another as a result of shipments linked to globalization and rapidly growing international trade.

*An estimated 20,000 flowering plant species, upon which many bee species depend for food, could be lost over the coming decades unless conservation efforts are stepped up.

*Increasing use of chemicals in agriculture, including systemic insecticides and those used to coat seeds, is being found to be damaging or toxic to bees. Some can, in combination, be even more potent to pollinators, a phenomenon known as the 'cocktail effect.'

*Climate change, left unaddressed, may aggravate the situation, in various ways including by changing the flowering times of plants and shifting rainfall patterns. This may in turn affect the quality and quantity of nectar supplies.

These are among the findings of the new report, which brings together and analyzes the latest science on collapsing bee colonies.

It underlines that multiple factors are at work linked with the way humans are rapidly changing the conditions and the ground rules that support life on Earth.

The report says bees are early warning indicators of wider impacts on animal and plant life and measures to boost pollinators would improve food security and other economically and environmentally important plants and animals.

The authors of the report call for farmers and landowners to be offered incentives to restore pollinator-friendly habitats, including key flowering plants including next to crop-producing fields.

More care needs to be taken in the choice, timing and application of insecticides and other chemicals. While managed hives can be moved out of harm's way, wild populations (of pollinators) are completely vulnerable, the report says.

"The way humanity manages or mismanages its nature-based assets, including pollinators, will in part define our collective future in the 21st century," UNEP Executive Director Achim Steiner says. "The fact is the 100 crop species that provide 90% of the world's food, over 70 are pollinated by bees."

"Human beings have fabricated the illusion that in the 21st century they have the technological prowess to be independent of nature. Bees underline the reality that we are more, not less dependent on nature's services in a world of close to seven billion people."

The report on bee colony disorders has been led by researchers Peter Neumann of the Swiss Bee Research Center and Marie-Pierre Chauzat of the French Agency for Environmental and Occupational Health Safety.

Neumann says the transformation of the countryside and rural areas triggered decline in wild-living bees and other pollinators.

"Society is increasingly investing in 'industrial-scale' hives and managed colonies to make up the shortfall and going so far as to truck bees around to farms and fields to maintain our food supplies," he says.

"This report underlines that a variety of factors are making these man-made colonies increasingly vulnerable to decline and collapse. We need to get smarter about how we manage these hives, but more importantly, we need to better manage the landscape beyond, in order to cost-effectively recover wild bee populations to far healthier and more sustainable levels." – Alan Harman

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Glenn Apiaries.....	76
Hardeman Apiaries	17
Harris Honey Bees	65
Koehnen, C.F. & Sons.....	34
Miksa Honey Farm.....	39
Nina's Queens	76
Old Sol Queens.....	76
Olivarez Honey Bees Inc.....	24
Olympic Wilderness	62
Pendell Apiaries	68
Rossman Apiaries	79
Shamrock 'S' Queens	2
Spell Bee Company	66
Strachan Apiaries	6
Taber's Queens	62
Weaver, R Apiaries.....	65
Wilbanks Apiaries.....	68
Z's Bees	49

Associations/Education

American Beekeeping Federation.....	6
American Hoony Producers	76
Australia's Honeybee News	21
Back Home Magazine.....	18
Backyard Beekeeper	72
Beekeepers Quarterly.....	18
Children's Books.....	21
Heartland Apicultural Soc.....	25

Honey Handbook	72
Honey Bee Removal Book.....	5
Western Apicultural Society	25

Equipment

A&O Hummer Bee Forklift	22
Bee Villa Hives	20
Bee-Z-Smoker.....	8
Bucko Gloves.....	18
CC Pollen.....	34
Cowen Mfg.....	61
Custom Hats & Veils.....	62
Dakota Gunness	31
Forest Hill Woodworking.....	62
Golden Bee Products.....	76
Humble Abodes Woodenware	39
Inner Covers	76
JZsBZs	65
Pierce-Mieras Uncapper	65
Pierco Frames	65
Queen Rearing NucS	49
Vermont Flexi-Pumps	61

Related Items

Angel Bottles	68
Bee Dun Bee Repellent	25
Beekeeping Is Sexy	77
Beezerkbelts	77
Bottom Mount Pollen Trap	61
Branding Irons	68
Feed Bee.....	62
Fixit Hive Repair	65
Global Patties	62
GloryBee Foods.....	36,58
Golden Heritage Foods.....	8
Hive Contamination Mgt.	35
Hogg Halfcomb Cassettes.....	65

Medivet.....	50
Miteaway Quick Strips	20
Mite Bee Supplement.....	18
MiteZapper	46
Mother Lode Products	58
Nozevit.....	61
Oxalic Vaporizer	76
Premier 1 Fencing.....	21
R. M. Farms.....	25
Sailor Plastics, Containers	55

Suppliers

Ashley Bee Supply	49
B&B Honey Farm.....	34
BBWear	18
Beech Mtn. Bee Supply	1
Beeline Apiaries	10
Blue Sky Bee Supplies	
..... Ins. Back	
Brushy Mountain ... 66,Ins. Front	
Dadant	45
Foutch Manufacturing	68
Kelley, Walter	46
Mann Lake Supply..... 1,4,7,49,	
..... Back Cover	
Maxant Industries	50
Miller Bee Supply.....	76
NOD Apiary Products.....	52
Queen Right Colonies	68
Root Publications.....	56,70
Ross Rounds	2
Rossman Apiaries	79
Ruhl Bee Supply.....	68
Sherriff, B.J.	6
Simpson's Bee Supply.....	71
Thorne.....	6

A Hard-Earned Hornet's Nest

It was my first year keeping bees. I'd gotten a late start (a three-pound package in early June), managed to kill my queen (another story entirely) and had little hope of getting any honey for my efforts. Nevertheless, I was happy and proud to be a beekeeper. I'd only been stung a couple of times, and was feeling cocky.

So when a lady named Teresa approached me about getting rid of a hornet's nest in her yard, I quickly obliged. I'd never met Teresa, but she worked for my father-in-law and he'd told her I was a beekeeper. (It's a little like buying a pickup truck – soon everyone wants you to help them move.) And besides, I'd always wanted one of those nests.

I made a quick visit to Teresa's house to check it out, and went to a bee club meeting the following evening to ask for guidance. My primary concern was preservation of the nest. I received two recommendations:

- Suit up well: Wear the full bee suit, plus jeans and a long-sleeved shirt underneath. Hornets have industrial-strength stingers, and they pack a wallop.
- As for removing the nest, it's pretty simple: Just go out at night, snip the branch on both sides, drop the whole nest into a plastic bag and tie it tight. After a night in the deep freeze, shake the dead critters out on the ground and the nest is yours.

I went by Teresa's house on a Sunday evening. The nest was football-shaped but beach ball-sized. It hung in a bush along the driveway, about five feet off the ground and 15 feet from the house. It was pretty dark in that part of the yard, though there was a small light on the house by the side door.

I suited up as advised, grabbed my trash bag and pruning shears and approached the target. I shined a flashlight on the nest, and one of its denizens immediately crawled out to investigate. Well, they're not sleeping, I thought.

I hated to arouse them further, but I was going to need light to see what I was doing. After a minute or two, I was able to prop the flashlight in the grass in such a way that it illuminated the nest. I picked up the shears and went to work.

My initial surveillance had not been thorough. I soon found that there were about a dozen branches routed through the nest. It took several minutes and quite a bit of jostling to snip them all, and by that time I was pretty well surrounded by curious hornets. I say curious because, amazingly enough, they did not seem aggressive. Not that the sight and sound of them wasn't a little unnerving – I was used to the hum of honey bees, but this tone was of a deeper, more ominous nature.

I finally extricated the huge nest from the bush and, with some further effort, managed to stuff it, branch amputees and all, into the trash bag and seal it. I turned to head for the car and saw scores of disoriented hornets

circling the light on the house. I wondered if there were any left in the nest.

At home, I dropped the bag into my basement chest freezer, and didn't give it another thought until about 2:00 a.m. Tuesday. I was working the night shift at the time, and when I arrived home I pulled the bag out of the freezer and hauled it outside. After shaking a few dozen frozen hornets out onto the grass, I dropped my prize nest back into the bag, set it just inside the front door, and went to bed.

At about 9:00 a.m., I awoke to a shriek from my wife. Even in my groggy state, I immediately knew what it was about. I also knew that it was not so much a cry for help as a cry of – well, let's just say I was the one who was going to need help. My wife had not been thrilled about the whole bee thing to begin with, and the idea that I would bring stinging insects into the house – even if I had every reason to believe they were dead – well, that was just unacceptable.

After a brief, futile attempt to explain myself, I stalked and killed the revived varmint, then hauled the nest back outside. Reaching into the bag, I was greeted by two more live hornets, who buzzed lazily away. I shook the nest for a few seconds and out fell a handful of dead wasps, on top of what looked like the majority of those I'd shaken out the previous night. I still wonder why some survived the zero-degree temps while the rest perished.

As for the original job, Teresa called a couple of days later to say that the hornets were busy building another nest in a neighboring bush. I went back on my first free night, this time stopping off at the hardware store for some wasp spray. (The heck with the nest – I'd had about enough of this.)

The new nest was already about the size of a football, but rounder. I didn't mess around this time. No need to suit up – I just soaked it down with wasp killer, clipped the branches and stuffed it into a bag, this time for trash.

Teresa was very appreciative. She gave me a whole five dollars, which marked the beginning of a lucrative career in pest removal. Minus the cost of the wasp spray, and not counting gas, I cleared almost 75 cents. The trash bags I was able to reuse. And as for my time – well, I've learned in the 13 years since that I'm much better off not keeping track.



Eugene Makovec