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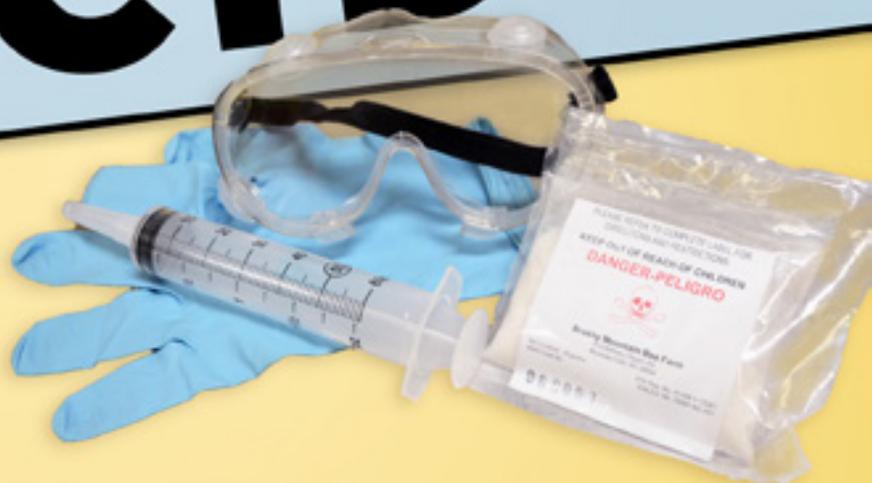
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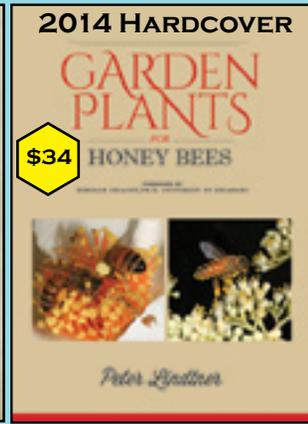
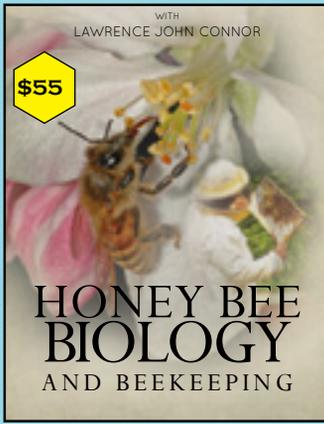
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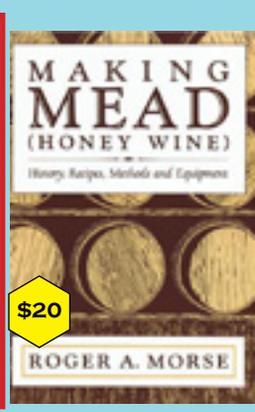
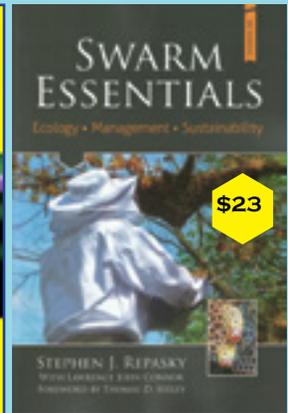
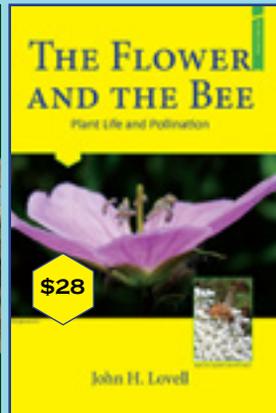
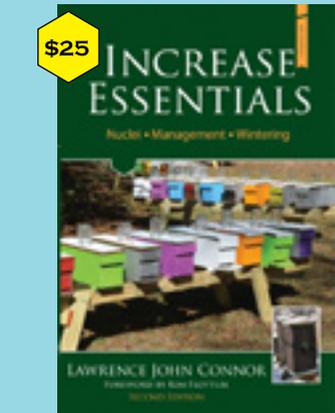
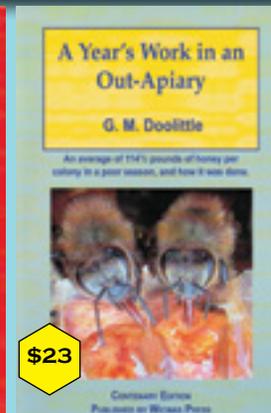
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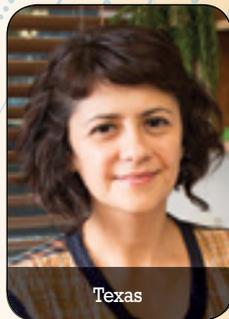
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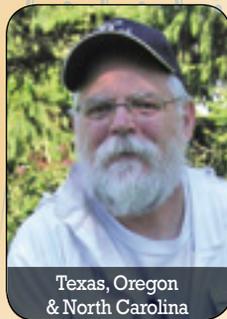
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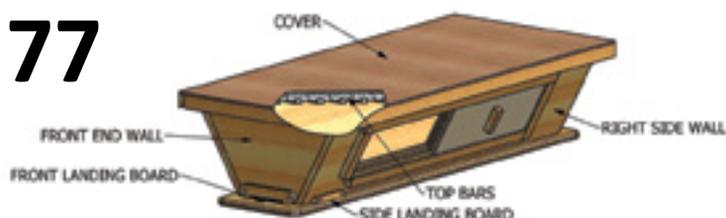
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Executive Publisher – John Root

Associate Publisher, Senior Editor – Kim Flottum, Kim@BeeCulture.com, Ext. 3214

Assistant Editor, Design – Kathy Summers, Kathy@BeeCulture.com, Ext. 3215

Social Media & Event Specialist – Amanda DeSimone, Amanda@BeeCulture.com, Ext. 3255

Advertising – Jean Newcombe, JNewcombe@BeeCulture.com, Ext. 3216

Layout & Design – Joy Nank, Joy@BeeCulture.com, Ext. 3219

Contributors

Clarence Collison • James E. Tew • Ann Harman • Kim Lehman • Phil Craft • Larry Connor

Connie Krochmal • Jessica Louque • Jeff Harris • Toni Burnham • Ross Conrad • Jennifer Berry • Ed Colby

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

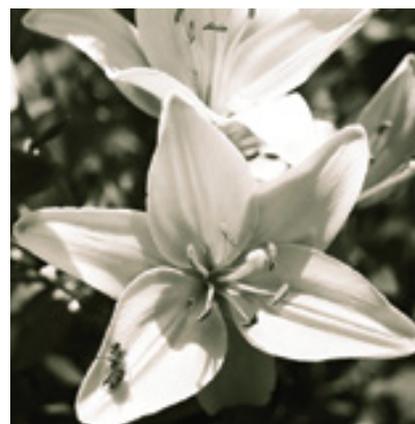
Subscription Information

U.S., one year, \$25; two years, \$48. Newsstand price: \$4.99. All other countries, (U.S. Currency only), \$20.00 per year additional for postage. Digital Edition \$15. Send remittance by money order, bank draft, express money order, or check or credit card. Bee Culture (ISSN 1071-3190), February 2016, Volume 144, Issue 2, is published monthly by The A.I. Root Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices.

Subscriptions, Book Orders – 800.289.7668, Ext. 3220 • www.BeeCulture.com • subscriptions@BeeCulture.com

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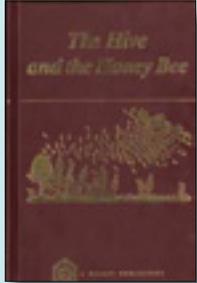
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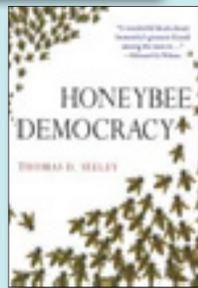
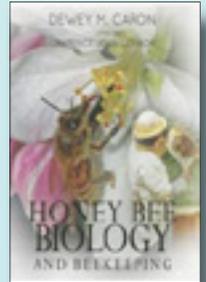
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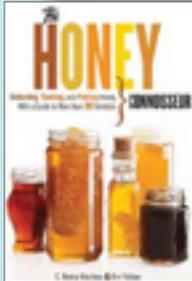
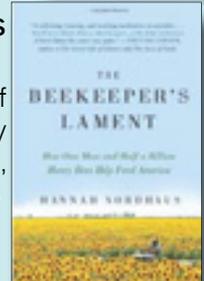


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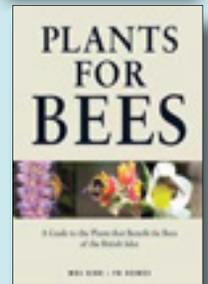


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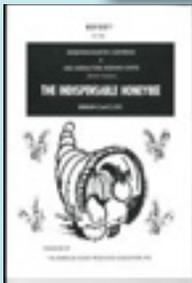
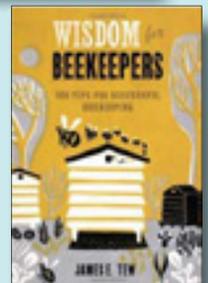


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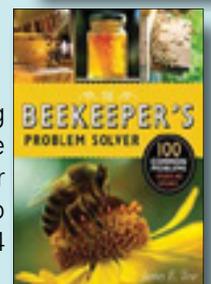


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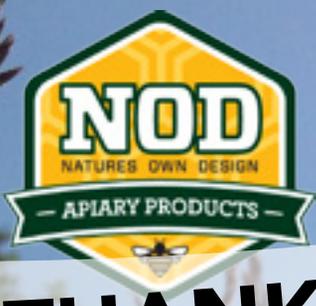


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Apimondia 2019

Thank You for Your Donations to the Apimondia USA Bid for 2019 Effort

In 2014, a nonprofit organization was formed to support a bid to bring the Apimondia Congress to the U.S. Apimondia is our world beekeeping organization. A team of U.S. state and national beekeepers felt this would be a great opportunity for the beekeepers around the globe to see American beekeeping operations, and for U.S. beekeepers to experience a Global Beekeeping Congress.

The USA Apimondia team spent many years on this endeavor, and we were confident about our chances of winning the bid. Creating a nonprofit organization helped us secure tax deductible donations to meet our mission of bidding to host the 2019 Apimondia Congress in the U.S. The Apimondia team developed a very conservative budget estimating we would need \$120k in order to submit a high quality bid to the Apimondia Congress and its delegates. Through the help of generous donors we raised \$96,879.57. As the Apimondia team fell short of donations, we were able to secure a loan for \$20k to ensure we represented the U.S. beekeepers to the best of our ability. Loans, of course, come with the stipulation that we would repay it.

Contributions made to Apimondia U.S. 2019 were donated by Local and State beekeeping organizations, beekeeping companies, beekeeping suppliers, and most importantly by many, many individuals. These donations are sincerely appreciated, as we would not have been able to make this bid without these tax-deductible donations.

Most of you know that we did not win the bid. However, the team was still very positive about the experience, and encouraged about bidding in a future year. The team had wonderful interactions with beekeepers from around the world; however, in the end, many of us believed “geopolitical interactions” outside of our control led to our narrow loss of the bid.

The Apimondia team has been transparent in its fundraising, and all of its work was focused upon the

mission of “seeking the bid to host the Apimondia Congress in the U.S. in 2019.” All of the donations raised supported this effort. Members of the Apimondia team travelled the country, spoke to bee clubs, and sought donations at conferences using their own funds and not those which were donated to the Apimondia U.S. bid effort.

The Apimondia team is making this final report to the beekeeping community, our donors, as part of our due diligence in managing the Apimondia U.S. 2019 bid nonprofit. We are closing out the financial records of this nonprofit, and closing the registration of the nonprofit at the end of this calendar year. The Apimondia team is being responsible concerning the nonprofit we created, and respectful of the donations and our donors, and submitting this report to the beekeeping community. The Apimondia team will make available the IRS 990 tax report we must file for this calendar year on the American Beekeeping Federation website (www.abfnet.org), as well as on the Pollinator Stewardship Council website (www.pollinatorstewardship.org). These two national organizations along with the National Honey Board were directly involved with the Apimondia team, and the team effort was a national effort of beekeepers. Again, the 990 will be filed at the close of this calendar year per IRS regulations, and it will be available for anyone to review.

Generally, the expenses for the Apimondia U.S. 2019 bid consisted of marketing materials, the design and construction of a booth for the Apimondia Congress in Korea this past September, entertainment for the booth, and gifts for delegates. The largest expense was shipping! We received in-kind donations of almonds, Craisins, and honey, but the cost of shipping these items to Korea (and costs at customs) exceeded the value of the in-kind donations. The booth design, and shipping alone cost the Apimondia U.S. 2019 bid team nearly \$52,295. Twenty-three Apimondia team members from the U.S. travelled to Korea to staff the U.S. booth. All of these 23 team members paid their own travel expenses to and from Korea. They all paid for their hotel and meals while in Korea. They

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all paid for their own registration fees to the Apimondia Congress in Korea. The donations were used to support travel for ONLY the two entertainers and the American Honey Queen, who staffed the booth every day, all day, and were fantastic ambassadors for American beekeeping.

The Apimondia team members who spoke to bee clubs, called prospective donors, and mailed letters, donated their time, and travel costs to the nonprofit Apimondia bid USA 2019. When the Apimondia team travelled to Florida, Washington, DC, and Minnesota to determine in which city to hold the USA Apimondia Congress, the team members paid for their own travel. When the Apimondia team met with the International Apimondia Conference committee in Minneapolis, the team members paid for their own travel.

Per the By Laws of the Apimondia USA Bid 2019, the dissolution article advises us how any remaining funds are to be spent. As the Apimondia team did not raise enough in donations to cover our budget, needing to take out a loan; the loan must be repaid. However, the balance of funds after all bills are paid, leaves a balance of \$14,236.37. According to our nonprofit incorporation documents, the balance will be used to repay a portion of our loan from the American Beekeeping Federation. The balance of the loan may be acknowledged through the Apimondia team providing the booth to ABF for their use for education at conferences, and overall marketing of ABF. The booth graphic design “skin,” however will have to be redone by ABF, as the



original “skin” was developed for Apimondia. ABF is not receiving a booth with a \$33,859 value, they will receive a booth *framework*. Please remember, the majority of the cost of the booth was shipping it to Korea and back to the U.S. All nonprofits have a “dissolution article” within their By Laws. This dissolution statement, for Apimondia USA bid 2019 states any such assets remaining *shall be distributed by the Board of Directors for the purpose of beekeeping education and research*. The Apimondia team was able to pay all of the bills from this project, and we will close this nonprofit organization with a zero balance.

The Apimondia USA bid 2019 team is grateful for the support of all of the donors who made their nonprofit contributions in support of this national effort. Even though we are closing down the nonprofit, your donations remain tax deductible contributions for this tax year for your own taxes. As a nonprofit entity, the Apimondia team met their mission: we submitted a bid (and a darned good one) to host the Apimondia Congress in the USA in 2019. We used your donations wisely, appropriately, and responsibly. The Apimondia team worked hard to secure your support, gain your trust, and represent American beekeepers to the best of our ability.

Debbie Seib, Chairman
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The U.S. has two organizations who are members of the Apimondia. To make a bid to host an Apimondia Congress an organization must be a member. The American Beekeeping Federation (ABF) took the lead and appointed a committee that worked independent of ABF.

Several committee members attended the 2013 Apimondia Congress in Kiev to observe and meet with Apimondia’s leadership. A survey was given to voting delegates regarding the interest in the U.S. making a bid. It was from this survey and encouragement from Apimondia, the U.S. moved forward to bid for hosting the 2019 Apimondia Congress. Minneapolis was selected as our host city.

Bidding guidelines are posted on Apimondia’s website. Our entire committee worked many hours ensuring these guidelines were followed as written.

Our initial bid package for Apimondia was approved in May by their Executive Council. We then

began working diligently for the upcoming site inspection and the 2015 Apimondia in S. Korea. The only other country bidding was Canada.

Funding was a major part of making a successful bid and we had a conservative budget approved by our board of directors. Funding came from the beekeeping community, local, state, regional and national organizations, and individual beekeepers.

Apimondia requires a site inspection before final approval for a country to bid. We expected this inspection in June or July, unfortunately it did not happen until August. Our first big obstacle was a week before the site inspection when we learned Apimondia had rewritten the bidding guidelines, which included major changes in the management company (called PCO), host country responsibilities and division of profits. We were totally unaware of these changes, and Apimondia was not willing to make any concession when we met with them in Minneapolis. At this point the U.S. was ready to withdraw our bid. But in Korea they did concede we were not going to accept many changes, so both the U.S. and Canada did agree to some changes.

Our U.S. bid committee was able to secure a prestigious space in the Apimondia trade show and our booth was professionally designed and produced here in the U.S. Included in our booth was Terry and Hilda Brown (a professional country western signer and trick rope entertainers), our American Honey Queen, members of the Meet Minneapolis convention center and committee members. All committee traveled to Korea at our own expense.

From the opening of the Apimondia Congress we were well received, but international delegates began to ask question and made comments we were totally unaware of in the international realm. Beginning with the U.S. policy for issuing VISAs. Although the U.S. has a non-VISA requirement for about 40 countries, most countries, especially in Africa and the Middle East, individuals must apply for a VISA to enter the U.S. and that process can take more than two years.

Another concern was protection of beneficial pollinators (as

well as GMO's issues, but that was not greatly spoken about). Many countries have banned neonicotinoids and have tight restrictions on chemicals used on crops, to protect honey bees and other pollinators.

During Closing Ceremonies and our turn to speak directly to voting delegates – our chairman, Debbie Seib did address the VISA issue, and stated we will work with our State Department in assisting individuals wishing to attend a U.S. hosted Apimondia.

I know many of the Canadian individuals who are on their Apimondia committee and they too did a great job at their presentation. In the end Canada did win the bid. Even though the U.S. will not host the 2019 Apimondia, it will be in North America and I want to attend.

The cooperation we received from U.S. beekeeping organizations was unprecedented, over 110 local, state and national beekeeping organizations and industry representatives join together to make this bid presentation to the Apimondia Congress. Although we did not win, it has certainly elevated the U.S. beekeeping industry throughout the world. It is my hope that in the future we will again make a bid to host this international event.

There is good news from the Apimondia Congress in Korea. Dr. Jeff Pettis, with the USDA-ARS Bee Research Lab in Beltsville, MD was elected to the Apimondia Executive Council for Bee Health and several Americans, including myself, were winners in the World Honey Show.

I want to give credit to the ABF for their continued support in all areas of beekeeping as well as being a major information resource for our industry.

Please let me know if you need any additional information or explanation on anything regarding the USA's bid. Our USA team put so much time and energy into this effort. The entire beekeeping community can be proud of our presentation and efforts. I just cannot put it in the right words how much we all gave toward this effort.

Virginia Webb
Clarkesville, GA

U.S. Apimondia Finance Chair

Big Oil

Kim, I really like you and 99% of what you write in *Bee Culture*, but I feel you are biased on your recent article about Ethanol sent out as a BUZZ, that can be found here – www.beeeculture.com/catch-the-buzz-epa-calls-for-less-ethanol-next-year-lets-hear-it-for-the-epa/

Being that my family raises corn in Iowa, you can say that I am biased too. But there is more to it than what Big Oil wants you to believe. Many of the so called studies that Big Oil and their front groups frequently cite are full of amazing facts. Perhaps you have noticed the millions of dollars they have been spending on TV ads trying to influence just a few key decision makers in Washington to lower the Renewable Fuel Standard. They mention all kinds of terrible things about renewal fuels in those ads.

The most widely cited study critical of ethanol is by David Pimentel at Cornell University. The study claims it takes much more energy to produce a gallon of ethanol than oil. This and other studies frequently cite this misleading conclusion, but they don't tell you that factors used in calculating the amount of energy used to produce ethanol included the energy used to manufacture farm equipment! I am not kidding.

This and other studies critical of corn based ethanol also do not take into account that DDG feed (Distillers Dried Grain) is a byproduct of ethanol production. This feed is used in livestock production and changes the equation significantly when added into the output of corn production used for ethanol. The studies critical of ethanol usually leave that out of the equation and consider DDG as waste or just don't count it at all.

The other common assumption is that somehow without a market for ethanol, farmers are NOT going to plant all these millions of acres of corn. There are more acres of corn being produced, but it is switching back to Soybeans as the corn market continues to fall. Regardless, there will be exactly the same amount of acres planted into row crops. Farmers are not



practicing the old methods of fallow farming. They can't afford to. The price of grain is so low that they are farming at breakeven or even at a loss this year and probably next year.

Herbicides, insecticides and fungicides are and will continue to be used on the same amount of acres regardless of ethanol. There may be less total inputs used if the prices continue the decline as farmers will need to cut their production costs, but in the long term, our farmers will be using fertilizer and pesticides. With GMO seeds, they actually can use significantly fewer toxic pesticides. In the old days, farmers would use millions of pounds of organophosphates to control pests like European corn Borer and Corn Rootworms. Those pesticides killed birds, bees and beneficial insects. Now, the corn plants contain proteins that are toxic to just those insects and the use of broad spectrum insecticides is way down.

Finally, you mention that the production of ethanol is "causing corn-based grocery foods to cost U.S. taxpayers about \$40 billion more than needed a year."

A few years ago, when corn prices increased to \$8.00 per bushel, all of the major food companies took that opportunity to raise their prices of things like corn flakes, pasta, soda etc. to "help recover their extra cost." Well now that corn is selling at local elevators for \$3.50 per bushel, don't you think the major food companies like Kraft would lower your food price? Don't hold your breath waiting for it. The cost of the grain in a box of corn flakes is actually a small percentage of the cost of that food. The package probably costs more than the corn.

Again, I like 99% of everything you write and I enjoyed meeting you when you spoke to the DC Beekeepers a few years back. Keep



up the good work, and thanks for giving me the opportunity to present another side of the story that Big Oil doesn't really want known.

Del Voss
Washington, DC

Escorting The Queen

Larry Connor wrote, "Worker bees may fly with the queen when she leaves for the mating flight. I have not learned of a reason for this mating swarm, but it is common in other social insects – perhaps it is a method of increasing security against predators." (*Bee Culture*, Dec 2015, p 34.)

We know that a new forager

needs to get herself oriented to the location of the hive as it relates to the surrounding environs, and that this takes both time and a number of flights. I had assumed that a virgin queen, who has not before left the hive, probably needs to be escorted to the Drone Congregation Area and definitely needs to be guided back home.

This appears to be an intriguing area for some research. Is the mating escort made up of forager bees? Do they scout out the location of the Drone Congregation Area beforehand? What do they do while the queen is mating with drones? Are the bees who escort the queen back home the same bees who flew with her from the hive? And how do they do it – how do they physically guide her on the journey?

Jeremy Barnes
Seven Valleys, PA

Loves The Bees

Happy sweet Honey bee
I buzz for you, you buzz for me
Happy together, yeah we be
My happy, my sweet Honey bee

The night is dark and mighty cold
But your honey warms me so
I just thought I'd tell you so
My happy, my sweet Honey bee

Warmth of day you take to wing
Honeybee I hear you sing
To my heart joy you bring
My happy, my sweet Honey bee

Happy sweet Honey bee
I buzz for you, you buzz for me
Happy together, yeah we be
My happy, my sweet Honey bee

Tim Hammell

Written for his girlfriend who loves her bees

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New For Spring —

BroodMinder is a wireless temperature and humidity monitor for beehives that uses Bluetooth low energy technology to transmit data to a mobile device or tablet. It is compatible with both iOS and Android. It logs and stores hive data every hour and is designed to run for two years on a replaceable coin battery. The central idea is twofold. One, that as you Winter your hives when you see a dramatic drop in temperature or rise in humidity you can take action to save your hive, and two, through a data sharing forum we will be able to gather a large quantity of diverse real-world data. This data provides us with an opportunity to develop strategies for coping with hive distress



BetaTec Hop Products announces that the US Environmental Protection Agency (EPA) has registered HopGuard® II, a new biochemical miticide that combats *Varroa* mites in beehives. This registration covers all U.S. states. It is the result of rigorous examination of HopGuard® II and demonstrates that it should not cause adverse effects to health or the environment when used according to label instructions. To control mites, the product is applied in beehives via cardboard strips. HopGuard® II is exclusively distributed in the USA by Mann Lake, Ltd: www.mannlakeltd.com.

HopGuard® II also provides beekeepers another option to avoid the development of resistance toward other products. Rotating products to combat *Varroa* mites is an important tactic to prevent resistance development and to maintain the usefulness of individual pesticides.

BetaTec Hop Products is the application arm of the Barth-Haas Group, the oldest and largest hops

over Winter. Right now the prevalent strategy is prepare for Winter, and then hope that the girls will be there when you look in Spring. Hope is not a strategy. We believe that if we measure and understand our overwintering hives better we will improve outcomes.

BroodMinder was started by Rich Morris, a hobby beekeeper from Stoughton, Wisconsin. Rich has been keeping bees for eight years. He is not a bee researcher by any stretch of the imagination. However he has worked in ultrasound research and development for many years (20+ patents) and has been deeply involved in both high and low volume product development. A core belief of BroodMinder is that data of few parameters from many sources is more valuable than data of many parameters from few sources and stands a chance of having a major impact on the apiary community.

The BroodMinder is currently being sold for \$60 on our Indigo-go site igg.me/at/BroodMinder. Please visit <http://broodminder.com/> for more information.

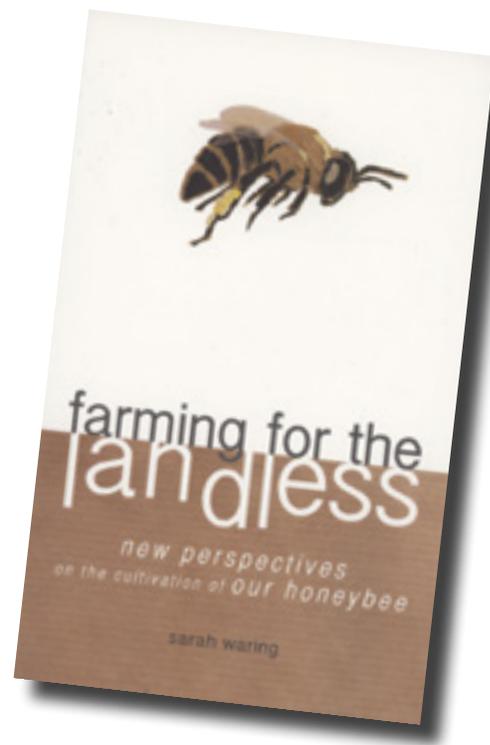
company in the world. As part of the Barth-Haas Group, BetaTec Hop Products draws on over 200 years of hop experience. It's vertically integrated operations include the growing, harvesting, processing, marketing, distribution and sales of hops products.

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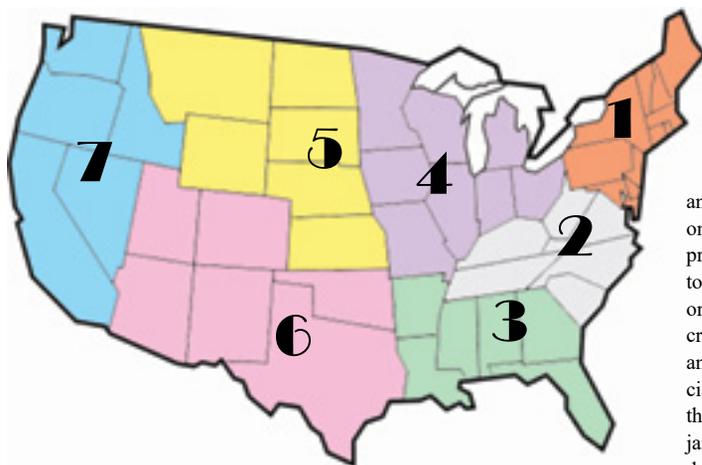


Farming For The Landless. New Perspectives On The Cultivation Of Our Honeybee. By Sarah Waring. Published by Platin Press. ISBN 978-0-9569404-6-9. 5" x 8", 195 pages, B&W, soft cover. Available at book stores and online at www.farming-forthelandless.com.

Sarah has divided her book into sections – First, Cultivation, that is raising bees, and pesticide issues, especially the neonicotinoids in several countries in Europe. The discussion of how several countries in Europe, especially Germany and France studied, and then banned these chemicals was enlightening however, as she related a timeline that should have been instrumental in avoiding the planting dust issues we discovered here. This book is getting attention because of this chapter, but the remaining chapters are just as useful. She moves on to other countries in Europe looking at genetic diversity and purity, Carniolan bees and sustainability, then moving next to northern Sweden, where winter is eight months long and climate change is already an issue. Finally, Conservation. Urban beekeeping. Reconnecting with nature within the city. There is an enormous amount of information in this small book, as John Phipps says. He's right.



FEBRUARY - REGIONAL HONEY PRICE REPORT



Everything but the Buzz, and even that if we could figure out how to harvest, process and sell it... that's the feeling of a lot of beekeepers who keep bees for both fun and profit. But how to make money keeping bees when it seems that all you do is put money into that box, and don't seem to get nearly as much out?

Our reporters seem to be making it work, and they're doing it by making and selling everything and anything they can glean from the bees, and the beehive. Our chart lists most of the harvestable products from bees that beekeepers can make, use and sell. And the numbers show the percent of our reporters who are

doing just that. We now have four years worth of data and you can see already the slight changes our reporters are making. (We missed this in 2013.)

There's no doubt that producing and selling value added products is one way to go, and for a small scale producer it's probably the best way to go. Using beeswax for candles, ornaments, lotions, potions and creams takes a commodity product and doubles or triples its value. Specialty honeys...cremed, comb and the like sell for more than honey in a jar, so consider those, too when producing your product.

The sideline jobs...producing queens, packages, nucs, pollination, selling supplies of all kinds, and even buying product from other beekeepers and reselling, something like honey stix, isn't a bad idea.

There's more than one way to get the buzz out of your bees, and you don't have to squeeze so hard it hurts the bees in the process. Especially heartening this year is the big bump in wax blocks and bulk wax, lotions and soap. Even candles took a leap this year. Value added can't be beat and these beekeepers know it.

There are other products, of course. Our reporters were asked - what else? Royal jelly, honeyed popcorn, honey sweetened apple butter, honey candy, candle supplies, bee removal, flavored creamed honey, honey butter, honey mustard and flavored honey.

	Candles	Ornaments	Wax Blocks	Honey Stix	Pollen	Propolis	Bee Supplies	Packages	Queens	Bulk Wax	Lotions	Soap	Creme Honey	Liquid Honey	Comb Honey	Chunk Honey	Nucs	Pollination	Bee Feed	Other
% Reporters Selling 2010	28	17	54	28	28	13	20	9	15	48	20	10	35	90	66	38	28	-	-	-
2011	39	20	53	39	35	21	21	10	15	42	19	11	35	90	67	40	26	37	10	18
2012	35	21	53	37	32	15	53	10	22	44	18	13	21	94	62	34	23	32	7	48
2014	32	12	51	30	31	21	55	17	27	42	25	10	29	93	54	42	29	34	8	11
2015	30	14	56	28	32	17	40	15	27	40	17	5	30	90	62	38	32	33	11	6
2016	35	14	62	26	30	16	44	15	26	47	22	14	36	94	55	34	31	33	12	6

REPORTING REGIONS								SUMMARY			History	
	1	2	3	4	5	6	7	Range	Avg.	\$/lb	Last Month	Last Year
EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS												
55 Gal. Drum, Light	2.00	2.05	2.22	2.40	1.95	2.11	2.43	1.70-2.95	2.20	2.20	2.14	2.31
55 Gal. Drum, Ambr	1.80	1.98	1.97	2.39	2.13	2.01	2.40	1.50-2.85	2.08	2.08	2.09	2.19
60# Light (retail)	223.33	174.60	181.43	213.72	171.00	182.50	255.00	120.00-300.00	204.84	3.41	189.23	191.11
60# Amber (retail)	231.00	176.57	179.17	203.22	207.18	188.00	255.00	120.00-300.00	204.35	3.41	189.73	190.45
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS												
1/2# 24/case	91.34	74.45	90.00	60.18	51.84	88.30	96.00	48.00-132.00	83.82	6.99	80.43	76.30
1# 24/case	128.32	103.55	121.74	100.44	127.06	116.14	130.30	45.00-192.00	119.04	4.96	117.20	111.99
2# 12/case	114.46	93.00	105.49	94.56	97.44	91.38	122.00	72.00-166.00	106.11	4.42	105.03	98.08
12.oz. Plas. 24/cs	110.07	82.67	91.28	84.27	74.40	102.00	110.13	64.80-156.00	97.15	5.40	92.92	89.61
5# 6/case	133.88	104.60	114.11	109.51	102.30	105.00	136.00	49.50-204.00	119.11	3.97	121.70	113.95
Quarts 12/case	167.38	115.07	127.89	121.30	145.82	147.72	166.00	60.00-240.00	138.22	3.84	138.59	132.95
Pints 12/case	114.44	91.00	76.75	81.22	111.00	75.80	105.50	60.00-163.20	91.32	5.07	89.15	82.06
RETAIL SHELF PRICES												
1/2#	5.08	3.97	4.18	3.31	3.93	4.75	6.00	2.90-7.75	4.49	8.99	4.30	4.06
12 oz. Plastic	6.25	4.50	5.09	4.48	5.08	5.93	6.70	3.39-8.99	5.43	7.23	5.35	5.15
1# Glass/Plastic	7.35	6.62	7.08	5.90	6.06	6.71	9.80	3.00-11.99	6.98	6.98	7.01	6.70
2# Glass/Plastic	13.18	10.80	12.20	10.90	10.54	10.91	15.75	6.00-19.00	12.16	6.08	11.59	11.08
Pint	12.74	8.50	8.74	9.56	8.43	9.75	12.30	4.00-18.00	9.65	6.44	9.67	9.05
Quart	17.59	15.56	14.49	15.75	15.33	15.91	19.07	8.00-28.00	15.92	5.31	16.14	14.92
5# Glass/Plastic	27.91	25.18	31.40	23.83	22.56	27.12	30.00	15.00-43.00	26.45	5.29	25.81	24.54
1# Cream	9.11	8.25	8.00	6.44	11.68	5.90	10.00	4.79-16.00	8.56	8.56	7.80	7.92
1# Cut Comb	12.00	8.65	8.42	9.77	9.50	10.75	15.00	5.00-20.00	10.79	10.79	9.40	9.62
Ross Round	11.72	7.00	10.73	10.00	10.73	9.50	9.20	6.00-17.09	9.92	13.22	8.36	8.25
Wholesale Wax (Lt)	7.68	4.95	4.64	5.74	6.00	6.79	3.13	2.00-15.00	6.04	-	5.75	5.79
Wholesale Wax (Dk)	6.52	4.57	4.01	5.00	5.61	3.17	4.25	2.00-10.00	5.23	-	5.09	5.01
Pollination Fee/Col.	94.00	63.00	60.00	66.29	80.00	114.00	117.50	30.00-185.00	81.57	-	76.29	78.59

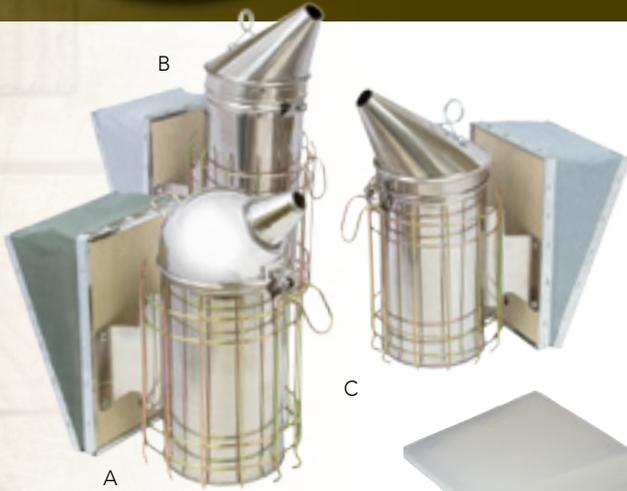


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Go Packers!

INNER COVER

Take a look at that box with the poem by Baxter Black. Baxter's known far and wide as the Cowboy Poet, and his poems, stories and articles are syndicated in hundreds of magazines and newspapers. I read him regularly in a farm newspaper published in Pennsylvania, and he has a web page with all of his contributions over the years. I sat in an audience once and listened as he spun his tales and told his stories and lifted us all with his poems. He is a real cowboy, rides horses, ropes, shoes, all the cowboy stuff he talks about, which makes what he publishes real. He knows his stuff, his people, his animals and has that

special touch when putting it all on paper.

He's never talked about honey bees or beekeepers as far as I can recall, but sometimes the things that the country folks he writes about are about bees and beekeepers whether he calls them that or not. This is one of them.

Now bees don't get scours, and herbicides are a beekeeper's almost worst enemy, but the sentiment of this piece is exactly meant for a lot of us. That iron enriched injection rings a bell doesn't it? And the food supplement that got the pigs doin' better is a fact of life for us anymore. But then, so are the 'natural' treatments – like the parsley he's been addin' makes us believe we're doin' better than the experts who tell us no way is that helpin' out.

And why did it go so well this year? Sure, enough rain at the right time, in the right place made a nectar flow from heaven, and stayin' in the woods away from them chemicals sure went a long way in doin' OK. But did havin' healthy bees from supplements and antibiotics and such have anything to do with it?

In the end, that farmer hates to admit the salesman's got some kind of advice he maybe needs and what he's sellin' is what he should be buyin'. But what else is there he can use? Heck, he's already tried most things and he's busy feeding and keepin' it goin', and, well, at least somebody has an answer. Even if maybe it's not the best answer.

Now, there's another side to this. Dare I say, the dark side? Farmers, and beekeepers, are still the beta versions for a lot of stuff. Research in the lab may show this supplement works just fine on bees, or that on horses when in controlled locations, but the real world of pastures, barns, or beehives in outyards is an entirely different situation. Throw in bad weather and we couldn't get out to feed 'til late, it got colder than you know what for a week and that stressed the heck out of those calves we been nursing with this stuff, and is there really a difference between HFCS and sugar syrup when you feed this to bees, anyway? So what works when the world is perfect is one thing. The real world is far too often a totally different thing. Or, at least, a somewhat different thing.

Now, throw in commissions. That salesman just might be making a chunk of his living by getting a per cent of everything he sells to every farmer he sells to. Maybe all of his living gets made by selling stuff. It might be directly from the manufacturer, or the local Farm Store he works for that sells all make and manner of farm stuff. So he has a vested interest in selling good stuff, marginal stuff, more than you need stuff, not what you need stuff. Or a higher commission on this stuff compared to that stuff, stuff. Whether its feed supplements or the best alfalfa weevil control agents or new soybean seed coatings or variety, or a spray applicator outfit that

charges just a little bit less than what you have now.

A farmer gives, the salesman takes.

And there's another kink in this system. There aren't just a ton of new farmers, or beekeepers, out there anymore. If you lose a customer there are darn few new customers to replace the one you lost. New business only comes from a farmer who was doing business with some other sales guy.

Now most of these folks are looking out for their farmers, or their beekeepers. If that customer fails they lost a customer, or if they buy stuff that flat out doesn't work they lose a customer, so it's in the salesman's best interests to sell the best stuff he can. But at the same time he needs to sell his stuff to that farmer so that farmer doesn't buy some other guy's cheaper, better, easier to use, safer stuff, or, at worst, start using that parsley he mentioned.

Is there a conflict here?

I attended the ABF meeting in Ponte Vedra Beach Florida in January this year, held, unfortunately, the same week as the AHPA meeting in New Mexico. I've tried to be in two places at once before and it hasn't worked out all that well. It didn't this time either, so I had to pick and choose.

I spent time touching base with those businesses that advertise with us (thank you very much), and there were some talks I wanted to hear. One of these was the Producer Packager Special Interest Group because I wanted to hear what was on the minds of people in this part of the business since we're doing that Case Of Honey thing in October. There was the can you be both and do each talk, the panel with several packers from across the spectrum of size, history and style, and a final given by Tim Tucker, the out-going President of ABF, that I was especially interest-

Salesmen.
Selling Honey.
Propolis.

ed in. Tim and I were at a meeting a couple of years ago and he gave an overview of his business that was fascinating, and I wanted to hear more. I wasn't disappointed.

His message was that his business was doing well because his business was versatile, and varied, and he had a unique product mix. Vanilla honey fudge, snack mixes, granola with honey, honey Kombucha, honey jerky, and honey candy were some of the products. Infused honeys by the score, with peppers a hot (sorry, bad pun) product at the moment, and cremed honeys in several colors and many flavors were all doing well. Why, he asked, should you make a store run with a single product when you can carry a dozen or more that go in several areas of the store?

His talk reminded me of many of the things I like discuss with just-starting-to-sell-my honey beekeepers and the fundamentals of honey marketing. You know, been at only a couple three years, don't have tons to sell, but more than I can give away and if I don't start making something on these bees the spouse is gonna make me...well, I'm not sure, but it's getting strained in here because it's all money out and not nearly enough coming in and I did say that this is a hobby that'd pay for itself.

So, here's some things I've learned, from growing up in a grocery store business, and from beekeepers over the years who make money with not a lot of honey, every year.

When your honey is on display somewhere, say a farm market or even a shelf on your back porch, make sure you have at least two colors...one light, one not light. If you blend them all together at the extractor you'll end up with a single, medium bland blend that some folks will like, but more won't. But two colors, you'll sell twice as much honey.

But even if you have only one color, one flavor, put it in at least two sizes. A bear, a one pounder, and a quart will sell you more honey than just one size, or even two sizes. Every time. Really. It's all about having choices – colors, sizes, plastic, glass. And these are all easy and cheap to do. Even if it's two sizes of mason jars – use sizes and colors to

increase your sales.

OK, let's ramp it up just a tiny bit. Local honey. Local honey is going to sell better than just honey. But what's local, anyway? Ten miles from where you live? 100? What about just simply your county? It makes less difference what you call local than you tell what you are calling local. But if it is, say it is. Loud. Big. In colors. On top. I've known beekeepers who get specific enough to put the neighborhood in San Francisco on the label. Now that's local.

One more of the basics. Give it a name. If it's not pure basswood, what is it? Well, it's Spring Brook, or Bright Spring, or Early Tree honey, right? Summer time honey is Nature's Harvest, or Summer's Blossom, or, Solstice Adventure, right? And Fall honey? Autumn Gold, Season's End, Golden Rose or some such. Give it a name, the same name every year (yes, every year will be a bit different, but more alike than not) so your customers can come back and get it again. They'll ask by name, and if you have some, you're both in luck.

The Farmer and the Salesman

By Baxter Black

"Don't be leanin' on my fender," said the farmer to the rep.

"Take a look at this new seed corn,"

"Git your foot offa my step!"

"And I've got a line of cleaners to reduce your Bac-T count,"

"And reduce my line of credit by the very same amount!"

"Not to mention scours vaccine to prevent the dreaded crud, and this iron enriched injection to rejuvenate tired blood."

"I don't need yer blamed concoctions! All my calves are at their peak!"

"Yeah, I noticed yer Deadman's pile is smaller than it was last week, and yer pigs are doin' better since you bought my supplement."

"It's that parsley I been addin', not yer feed that makes 'em grunt!"

"How's that herbicide I sold ya? Killed the weeds in all your fields."

"Huh! It rained just right this summer, that's what doubled up my yields!"

"Do ya need some more inflations, baler twine or rubber boots?"

"Read my lips!"

No milk replacer, no organic substitutes!

Everything you try to sell me just adds to my expenses. It's hard enough to keep'er runnin' smooth between the fences! Can't you see yer takin' up my time. I've got to go and feed. So say good bye and leave me... what you think I'm gonna need."

Reprinted with permission from Baxter Black,
On The Edge Of Common Sense.
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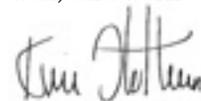
Which reminds me. If you have a single blend from your single harvest, and that's it, put a name on it. And NOT WILDFLOWER, please. Wild flower in Ohio is different than wildflower in Maine is different than wildflower in Florida. Yet we call it the same thing. Why? So. What to call it? What about something like - Medina's Finest. Vintage 2016. And under that put Locally Produced, Locally Harvested, and your name and all the other legal stuff. Then, when a customer wants what they had last time, they'll have a date to refer to. Like good wine. "Yes", you'll say, "2016 was an exceptional year, and I just happen to have a few bottles left, but you know, the price has had to go up a bit because it's so scarce now...".

To summarize. More than one size. More than one color. Sell Local if it is. Never, ever use wildflower as a name but always give it a memorable name, and use vintage year if nothing else works.

Another talk I wanted to hear was the one by Marla Spivak on the role of propolis in a beehive. Propolis. What is this stuff, really? I thought I knew. I didn't. Well, it's less complicated that you might think. Simply, plant resins. And primarily resins collected from cottonwood trees. A few poplars contribute, but mostly it's single sourced. These resins, then, when mixed with a bit of beeswax, in the real world of honey bee hollow tree nests, are placed to form a shell enclosing the nest. It's not modified in the least. Just resin and wax. That's it.

What happens when this shell is in place? Lots. Briefly. Less disease in the colony. The immune systems are less stressed so they spend less energy fighting disease and have more energy to do what bees do. Propolis is sort of a self-medication for bees. Don't fight it. Let the bees use it.

On a mixed note. EPA tells us, "There are NO new mite control products pending in the pesticide pipeline." But on a glad note, most of those we have at the moment, used correctly, are safe for bees, don't contaminate wax, and work.





Bee Culture

The Magazine Of American Beekeeping

Get Ready For Bee Culture's Next Event **A CASE FOR HONEY**

Four medium sized Producer Packers and a medium and large Packer will be in Medina in October to share what they know, and to give you insights into what you need to know, and need to do to be successful in this business. Selling strictly retail, strictly wholesale, strictly bulk – they all need attention, as does buying wholesale and buying bulk. What equipment will you need, what volume will you need and where will you get that much honey? How many employees will you have to have? What about permits, zoning, insurance, labeling...it all comes under the microscope when you open the doors for business. Find out here.

And who can help? What businesses are in business to offer your business help with all of this? Are there any, some, none. If there are, what's the cost? What's the value? Find out here.

And what about The National Honey Board. If you're small you don't have to make that contribution, but even so, can they help? What can they do? Why would they help? Find out here.

We mentioned insurance? How much, for what? What are the risks? What can go wrong and how can you prevent it? Find out here.

And what does the government think about all this? What is honey? What food safety regulations affect you now that the new rules are in place? Can the FDA give you help, or just get in the way? Find out here.

A Case For Honey. October 22 and 23, 2016 at Bee Culture's Conference Center, 640 West Liberty Street, Medina, Ohio.

Watch these pages for travel and hotel information.

Registration is \$150 per person. We will begin taking reservations March 1, 2016. There is a limit on how many we can take so consider registering early.

Watch these pages and www.BeeCulture.com for updated program and registration information.

Mark Your Calendars Now!

October 22 and 23, 2016 at
Bee Culture's Conference Center
640 West Liberty Street
Medina, Ohio

Watch BeeCulture.com and these pages for program and registration information

It's Summers Time –

Florida in January – sounds wonderful, doesn't it. Kim and I traveled to Jacksonville to the American Beekeeping Federation Annual Conference the first week in January. There was not much sunshine and a good bit of rain, which is not what we expected, but at least it wasn't snowing and below freezing.

It was an easy trip – no hiccups along the way. All of the flights were on time and we made it to the hotel easily. Completely uneventful which is what we always hope for. I've noticed over the last year of quite a bit of travel, that most flights are full. You don't seem to ever get the luxury of having a seat between you and fellow travelers. Some airlines have a little more leg and elbow room than some, but mostly you're confined to a small space for some chunk of time. That's the way it was this time. Fortunately all of our flights were fairly short in duration so the discomfort of being next to someone who is taking up a little more than their share, was bearable.

The accommodations were exceptional. The conference was held at the Sawgrass Hotel and Golf Resort. It was a beautiful location, even though it rained the first few days. The staff were all extremely friendly and helpful – maybe the best we've ever seen. One young man named Demetri was over the top. The grounds of this place were spread out and there was a good bit of construction going on. We took a shuttle to a different building for a reception hosted by Veta Pharma – thank you Phil for inviting us. When it was time to go back to the main building of the resort we had no idea how to get there. I thought Demetri was just going to point us in the right direction, but he walked us all the way back to the main hotel. As we walked along we chatted with him and found out he has been in this country for about 11 years. He had recently returned from a visit to Ohio to visit his girlfriend. They're trying to figure out where to settle – Northeast OH or Jacksonville, FL. Seems like an easy choice to me! It was a pleasure to meet and chat with this delightful young man.

Going to one of these big conferences is always a pleasure. There was a great lineup of speakers and vendors and a chance to visit with friends you don't see very often. We hear there were about 900 in attendance.

It was an easy conference to attend. Everybody was in one building. The exhibitors were just down the hall from the main meeting room. And food – and even a Starbucks – all within close proximity.

I like going to this meeting because I'm not responsible for any part of it. Kim and I don't get the pleasure very often of just being attendees. Usually we're some part of the organizing that is going on. So it's a treat to go in

and sit and listen to a whole talk with no one calling my name or asking me any questions.

This meeting is always in early January. The American Honey Producers Association also hold their meeting the same week. However, next year the two groups are doing a joint meeting in Galveston, Texas, a beautiful city. If you can, arrange it take advantage of this chance to be with both groups. You've got almost a whole year to plan. Hope to see you in Galveston.

Just a day or two before we left for Florida we lost one of our chickens. One of the older Buff Orpingtons died. We went out to check on them for the evening and she was tucked tightly into one of the corners and I noticed she was not moving at all. She had not been dead very long. I have no idea what happened to her. She had not shown any signs of distress or injury up to this time. There were no marks on her. She just sat down in the corner and was gone. She was one of our original girls. We're down to seven of the first group that will be four years old in March.

So we're at 17 chickens and the two ducks. They've had it pretty easy this Winter, up until the last few days. It

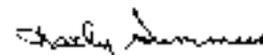
was 9° when we got up this morning. We've had very little snow though, so we can't complain too much. It was -18° this morning in Turtle Lake, WI where Kim grew up. So it could always be worse.

We finally had to clip the wings of the female duck. Almost every day she would be outside the pen when we got home. She's easy to catch and isn't really trying to leave home. It was extremely stressful for him though when she is not in the pen with him.

She seems to be showing some nesting behaviors and she has actually laid a few random eggs. I'm hoping this Spring to have some baby ducks. I've got to do some more reading though. I still don't know as much about the ducks as I do the chickens.

I hope wherever you are you're having a mild Winter and getting ready for Spring. We got our first couple of seed catalogs, so it's coming.

Just want to mention a great Spring time event here in northeast Ohio. The Tri-County Annual Meeting is held in Wooster the first Saturday in March, every year. There will be 1,000 people plus every nationally known vendor you can think of and loads of local vendors. A great kid's program is provided and plenty of workshops for beginners and experienced – and a great Amish lunch is part of your registration. Hope to see you there.



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A Closer LOOK

NURSING BEHAVIOR

Clarence Collison

Nurse bees begin to visit cells as soon as eggs are laid.

The ability of worker bees to recognize brood, its stage of development, sex and caste, is a prerequisite for appropriate brood care and larval feeding (Free 1987). Workers can distinguish the larvae of all three castes, since drone, worker and queen larvae receive food with different compositions (Shuel and Dixon 1959). In addition, nurse bees can also recognize the age of larvae, as the feeding behavior and composition of larval food vary with larval age (Shuel and Dixon 1959; Thrasyloulou et al. 1983; Brouwers 1984; Beetsma 1985; Brouwers et al. 1987). Workers also seem to determine the food requirement of larvae during their inspections.

Young bees begin feeding brood when they are about three to 13 days old. Although workers beyond this age are still capable of feeding larvae to a limited extent, most of them begin other activities at about this age. Nurse bees begin to visit cells as soon as eggs are laid and continue at frequent intervals throughout the duration of egg and larval stages (Gary 1992). Some of these visits are very short (at most about two to three seconds), but in others the larvae and the brood are examined longer with the antennae, the bee leaving the cell only after 10 or even 20 seconds. Each actual feeding is preceded by such an "examination." The time taken for one feeding (including inspection) is variable. Usually it is from one-half to two minutes; in exceptional cases even three minutes. During the first two days after hatching, nurse bees continuously supply the tiny larvae with far more food than can be consumed, so that the larvae appear to float in the milky-white food. During the third day a larva in a worker cell continues to receive food, but consumes it as fast as it is deposited by the nurse bees. During the eight-day period from the laying of an egg until the full-grown larva is enclosed in the capped cell, (Nelson et al. 1924) found that nurse bees visit individual larvae approximately 1,300 times daily, or more than 10,000 times throughout larval development. On the last day before the cell is capped, they visit it nearly 3,000 times, spending a total of approximately four-and-three-quarter hours within the cell. Lindauer (1953) found that the time that 2,785 nurse bees spent in rearing one larva from the time the egg was laid to capping of the cell was 10 hours, 16 minutes and eight seconds.

The visitation pattern by worker honey bees to cells in the brood nest was monitored on an artificially created brood pattern consisting of about one-fourth brood cells evenly distributed among empty cells. The majority (63%) of the observed workers selectively entered larval cells. In contrast, some workers avoided egg cells when presented a choice of egg versus empty cells. The results suggest that larvae produce a general signal indicating their

presence to worker bees. Eggs also seem to produce a signal, which is perceived to be different from the one from larvae (Huang and Otis 1991a).

Honey bee larvae are frequently inspected and sometimes, provided with food by adult workers, but the stimuli that elicit the important task of food provisioning have not been fully investigated. Larvae with their food experimentally deprived received more frequent inspection and feeding visits from nurse bees than normally fed larvae, suggesting that there could be a "hunger signal" (Huang and Otis 1991b). Food-deprived larvae with artificially supplied larval food received the same rate of feeding visits from nurse bees as did normally fed larvae but still received more inspection visits. These results suggest that stimuli eliciting feeding are different from those for inspection. They also support the hypothesis that worker bees deposit food in a larval cell only when the quantity of food is below a certain minimum threshold that is perceived during larval inspections. Since these studies, brood pheromones have been discovered and chemically characterized.

Shpigler and Robinson (2014) conducted numerous experiments to better understand nursing behavior. In their first experiment they examined the worker response to a queen cell with a larva versus an empty queen cell to determine if the bees showed a specific response to the larva. Bees made significantly more visits and spent significantly more time in the queen cells that contained larvae compared with empty queen

"Nurse bees can also recognize the age of larvae, as the feeding behavior and composition of larval food vary with larval age."

cells. Secondly, they compared the response of workers to a queen cell with a larva versus royal jelly. Bees made significantly more visits and spent more time in queen cells with a larva compared with those with royal jelly. Bees capped nine out of 17 queen larva cells but none of the 17 cells with only royal jelly. None of the capped larvae developed into mature queens, presumably because the removal of royal jelly to set the experiment up left them with an insufficient reserve that could not be replaced by the bees in the group. In a third experiment they quantified the success of brood care in the laboratory assay by determining the effect of group size on brood care and the minimum number of bees needed for successful growth of the larva. Queen cells with four-day-old larvae were introduced to experimental groups of three different sizes: eight bees, one bee or 0 bees. The honey bee queen larva goes into the prepupal stage after it spins a cocoon at age of five days, while the workers seal the cell with wax (Laidlaw and Page 1997). Each larva was monitored to see if it spun a cocoon and had its cell capped with beeswax by the workers, died inside the cell, or died after falling out of the queen cell onto the dish bottom during the first 24 hour period (larvae given to zero bees could not be capped, but still could spin a cocoon). The emergence of adult queens from the cells was monitored for seven to nine days. Queen larvae fared significantly better in all three measures (spinning of cocoon, capping of cell, emergence of queen) when placed in eight-bee groups compared with dishes with

“Larvae fed exclusively royal jelly, a glandular secretion of nurse bees, become queens, whereas those fed royal jelly for three days and subsequently worker jelly containing honey and beebread become sterile workers.”

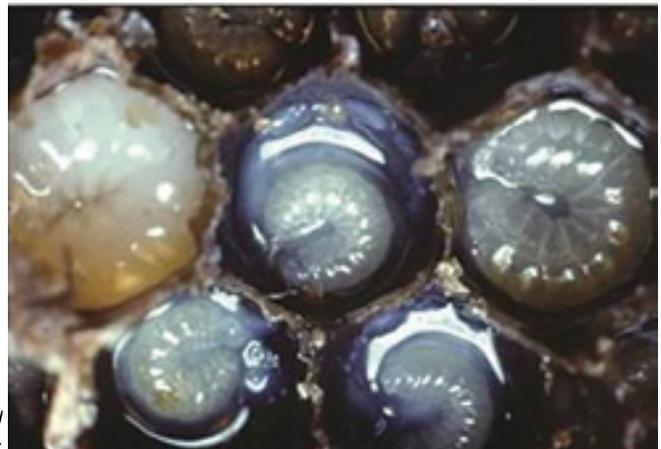
“During the first two days after hatching, nurse bees supply the larvae with far more food than can be consumed, so that the larvae appear to float in the milky-white food.”

zero adult bees. Eight-bee groups also had higher proportions of pupae with cocoons, pupae in cells that were capped and queens emerging compared with one-bee groups. Surprisingly, the proportions of queens emerging from cells containing pupae with cocoons or of queens emerging from cells containing pupae in cells that were capped were similar for the eight-and one-bee groups. Although the presence of one adult worker is very important in ensuring that a queen larva spins its cocoon safely without falling out of its vertically oriented cell; some queen larvae are able to seal themselves in cells without the assistance of adult workers. They also found that single workers can nurse, cap and successfully rear a queen larva, but groups of bees are more effective.

Worker honey bees rear a new queen by providing her with a larger cell in which to develop and a large amount of richer food (royal jelly). Royal jelly and worker jelly (fed to developing worker larvae) differ in terms of sugar, vitamin, protein and nucleotide composition. He et al. (2014) examined whether workers attending queen and worker larvae are separate specialized sub-castes of the nurse bees. They collected nurse bees attending queen larvae (AQL) and worker larvae (AWL) and compared gene expression profiles of hypopharyngeal gland tissues. Significant differences in gene expression were found that included a disproportionate number of genes involved in glandular secretion and royal jelly synthesis. However, behavioral observations showed that there were not two entirely distinct populations. Nurse workers were observed attending both worker larvae and queen larvae, and there was no evidence of a specialized group of workers that preferentially or exclusively attended developing queens. Nevertheless, AQL attended larvae more frequently compared to AWL, suggesting that nurses sampled attending queen larvae may have been the most active nurses.

The number of visits made by worker bees to a queen larva was similar regardless of larval age. However, visit duration was significantly longer for four-day-old queen larvae compared to three-day-old larvae. This is consistent with the fact that four-day-old larvae are larger and require more feeding. In addition, the number of bees performing visits was higher for four-day-old compared to three-day-old larvae (Le Conte et al. 1994).

The honey bee colony has a reproductive division of labor: the queen is the primary egg-layer in a colony and has more than 200 ovarian filaments (ovarioles), whereas a worker normally does not reproduce and has fewer than 20 ovarioles. Cooperation between nurse bee feeding behavior and larval developmental programming results in the differentiation of queens and workers along with variation in ovariole number, body mass and foraging



Young larvae actually float in their food.



Older larvae eat as fast as they are fed so food does not accumulate in the cell.

behavior. Wang et al. (2014) tested how nurse bees affect ovariole number and body mass in workers, and how larvae respond to food delivery during different larval life stages. Their findings demonstrated that nurses control larval growth and ovariole number by temporally manipulating food delivery and that the response of larvae to food differs with larval life stage and genotype. Body mass of larvae was more sensitive to nutrition during the first to the fourth instar (L1-L4), whereas ovariole number was more sensitive during the fifth instar (L5). Overall, they were able to decouple the nurse feeding program and the larval development program in honey bees. They concluded that nurse feeding behavior during L5 is critical for modulating ovariole number in workers.

Larvae fed exclusively royal jelly, a glandular secretion of nurse bees, become queens, whereas those fed royal jelly for three days and subsequently worker jelly containing honey and beebread become sterile workers. The ensuing differences in phenotype are thought to result from either worker castration via nutritional deprivation or queen enrichment by nutritional supplementation (Mao et al. 2015). Suboptimal nutrition demonstrably contributes to “trophic castration” and corresponding worker sterility; withholding sugars during the first three days of larval life promotes development of sterile workers (Asencot and Lensky 1976, 1984, 1985, 1988). By contrast, queen-destined larvae consuming only royal jelly develop more rapidly and attain a larger adult body size than do worker destined larvae (Page and Peng 2001). Corby-Harris et al. (2014) found that poor nutrition has major consequences for the expression of genes underlying the physiology and age-related development of nurse bees.

The flow of jelly from 100 nurse bees to the members of two normal-sized colonies was measured one night. To follow the flow, nurses were injected with ¹⁴C-phenylalanine. They incorporated this label into the protein of their hypopharyngeal (brood food) glands and their own body protein. When they were allowed trophallactic contacts during the investigation period a loss of label and a shift away from the abdomen was observed, indicating protein synthesis in the hypopharyngeal glands from previously stored protein. Very young larvae were fed less frequently than older ones. Younger workers received larger amounts of jelly than older ones, but considerable amounts were given to foragers. Drones behaved similarly. Between one-third and one-half of the distributed jelly was given to imagines (fully developed adult stage); 10% and 16% of all workers received radioactive jelly from 100 nurses in the two colonies during one night. Thus, jelly is a very important food for adult bees. There was a remarkable exchange of label within the class of nurses themselves that is interpreted as communication within the social system (Crailsheim 1992).

“Nurse bees visit individual larvae approximately 1,300 times daily.”

Wegener et al. (2009) investigated the physiological consequences of prolonged nursing for both the nurses and the brood they rear. Brood was reared in groups of colonies with either a normal age structure or with moderately over-aged workers. The hemolymph concentrations of total protein and vitellogenin, the development of mandibular and hypopharyngeal glands, and the activity of α-glucosidase in the hypopharyngeal glands of nurses from these groups of colonies were compared. Their results indicate that while over-aged nurses remain capable of producing brood food, they are not functionally equivalent to young nurses. The partial degeneration of the mandibular glands normally occurring at the end of the nursing period cannot be prevented by prolonged nursing. **BC**

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Queen larvae need a diet of Royal Jelly for the entire duration of their cell life.

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

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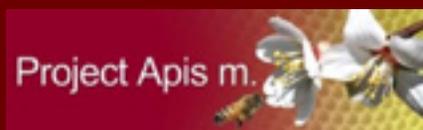


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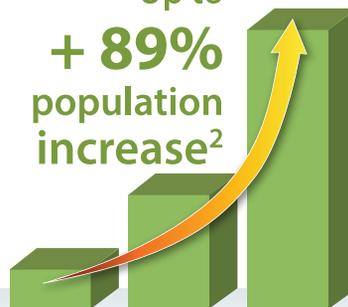
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The Politics Of Killing Bees

Katherine Kiefer



The plight of the honey bee has national attention, now can our political process really “Give Bees a Chance?” There are a few baseline assumptions to help us all understand these threshold issues. The issues I see are:

1. Political action is always human – humans with varying degrees of experience, education and other biases. Political activity always, ALWAYS has an agenda and an outcome of preference.
2. It is important to recognize that there is a well-funded campaign at all levels of government land management, to eradicate certain invasive plants. Many of these plants are key sources of pollen and nectar for honey bees. Implementation of this policy results in the loss of natural, unadulterated habitat for bee forage.
3. Having a clear understanding of the total volume of land and attendant bloom to meet food requirements for a colony of bees north of the frost line in the continental U.S. To support current levels, these lands and bloom sources cannot be reduced.
4. Human beings, whether beekeepers, farmers, Extension Services Staff or politicians, make every day decisions which impact their natural environment.

To thrive, that is produce brood and honey, bees need continuous forage that is safe for them – what you have is knowledge of beekeeping practices in the places where you keep bees. What we intend to unlock are phrases, practices and outlines for actions that you can take to change the policies, which are a result of the politics, surrounding forage plants and colonies of honey bees. In this first article, we – beekeepers and policymakers – need to set as a priority the protection of pollinators from policies which seek to destroy important honey plants.

Currently, there is a movement – politicized – against non-native plants. In my part of the world, where I am a Selectman – part of the three person governing board of my Town in Southern New England – Salisbury, Connecticut – there is pressure on committees in the Town from well meaning residents. Governments, local, county, state and Federal, manage large tracts of land throughout the country. This is where citizens and residents have traction – political traction. Town Planning & Zoning Boards in Connecticut (Connecticut has no counties) have almost exclusive power to control the land use within their borders. This is the political world where individuals have impact. In this world of discussions, decisions and open meeting laws, this is where the world is run by those who show up. There is pressure for us, in my local government, to eradicate non-native plant materials, and if the plant is invasive and aggressive, the pressure increases. Our local beekeepers need to (a) know about these plans, and (b) challenge the plans that are seeking to destroy honey plants.

When I was first elected, I attended a Ten Mile River, Watershed Management meeting (6/7/2014) – the two states in this watershed are New York and Connecticut. I wanted to listen and see how the issues were presented by the various groups – a partial list of presenters: Housatonic Valley Association, Cary Institute of Ecosystem Studies, U.S. Army Corps of Engineers, Dutchess County Soil and Water Conservation District, Cornell Cooperative Extension of Dutchess County, NY State Department of the State Office for Planning and Development. The presenters had studies and plans for controlling and managing this watershed. The attendees were from the Towns in the two states in the Watershed – Planning boards, Conservation Commissions, Water Commissions and council members and selectmen. The presented purpose, as it evolved, was to encourage all



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the small towns present to apply for grant money to act within the plan that the presenters involved had for the land area. These towns are largely served by volunteers, all local of course, and the presenters were largely entrenched bureaucrats with degrees, salaries and influence. The locals, eager to explore the possibilities for grant money, tried to understand what the bureaucracies deemed “priority actions.”

Honey/nectar producing plants around here, by season, include: dandelion, tulip poplar, basswood, willow, *loosestrife*, aster, goldenrod, *spotted knapweed*, glossy buckthorn, *sweet clover* and sumac. There were no beekeepers at this meeting, and there were no advocates for honey bees or pollinators in general. The presentations and discussions focused on watercourse construction, public access, and species eradication. I must admit that I have a bias toward and for honey bees, so I was shocked that “a benefit to changing drainage would be discouraging purple loosestrife.” I raised my hand and brought out many of the points I am raising here.

I, in Salisbury, Connecticut, started 10 colonies of bees from nucs. They did great from dandelion through the end of basswood bloom. There was lots of tree pollen and tulip poplar bloom for the colonies, but after basswood, there was not enough naturally occurring bloom, not enough loosestrife, not enough Joe Pye weed, or goldenrod, aster. And not enough spotted knapweed nor Japanese knot weed. No nectar. I had to feed. I got a few frames of honey, and only two colonies had enough to live through the Winter.

Bee facts and Numbers

A colony, from January 1 through December 31 needs 44-88 pounds of pollen (depending on quality, weather, etc.) and 150 pounds of honey (including that needed to make wax) to thrive – make the necessary brood and to collect all that they need to survive the year. Honey harvested for human consumption is above this base number of pounds for colony health, so for this example we are pulling a 55 pound average. Total requirement per colony per year is 205 pounds of honey. The general ratio of nectar to honey is 32mg of nectar yields 17mg of honey (Canadian Honey Council “How to Make a Pound of Honey”). This is dependent on weather and the nectar source. Bee math – one ounce has 28,350 mg in it. To make 205 pounds (76,586,435.763mg) of honey, the bees

need to collect 92,988,000 mg of nectar. Each worker bee, weighing about 80 mg herself, can carry about 70 mg of nectar in the honey sac. So, per colony, about 1.5 million bee honey sac loads of nectar are needed annually. About 100 flowers nectar yields 17mg of honey, so 2.6 million flowers yield one pound of honey. So, to make 205 pounds of honey, workers must make 533 million flower visits. This quantity is not in your neighbor’s “Bringing Nature Home” flower planting. (also *Hive and the Honeybee*, Dadant, 7th printing of 1992 edition, Honey Bee Nutrition, Ch.6)

A bee can fly about 2.5 miles from her hive, which is a circle five miles in diameter = 23.75 square miles X 640 = 15,200 acres. Average commercial beeyard has 60 colonies. For this fly zone there MUST be more wildness than say, corn, or pavement, or flower gardens, or hay fields or forest.

An important component of modern large numbers of bees in beekeeping is having natural environments large enough for the bees to survive. Large environments. Fields of bloom with good nectar and pollen. Since most tillable acreage is in row crops how many acres of volunteer weeds, non-native and native like goldenrod does it take to support the New York State beehive population? So, what can be done to preserve habitat, healthy habitat, for honey bees? And what do bees actually need? These questions need answers.

On March 4th 2015 H.R. 1264, the Pollinator Protection Act, was introduced to the committee on agriculture. Broadly, this Bill called for the suspension of the registration of certain insecticides, along with creation of a plan to monitor native bee populations.

This Bill did not make it out of committee. In June 2015 The National Strategy To Promote The Health of Honey bees and other Pollinators also known as The Pollinator Health Task Force was introduced by President Obama to achieve the following goals:

- Reduce honey bee Winter mortality from 30% to 15% within 10 years,
- Increase the eastern population of monarch butterflies to 225 million,
- Restore or enhance seven million acres of land for pollinators over the next five years.

This Federal Order calls for planting seven million acres across the nation of a pollinator “friendly” mix. The focus for this plan is in the central part of the country because most of the managed bee colonies spend their Summers there – on *sweet clover*.

Members of the Xerces Society wish to focus on pushing toward native plants rather than sweet clover (and star thistle and spotted knapweed). Sweet clover is probably the most productive honey plant in America. In the December 2015 issue of *Bee Culture*, the cost for the “pollinator mix” is given as \$400 per acre versus \$15 per acre for sweet clover. To spend \$2.8 billion dollars on the seed for this project, without including the cost to prepare of the land for planting, or the resources spent doing the planting is unrealistic. If the Xerces Society continues unopposed with this plan, the attention of all interested in the plight of the honey bee will be focused on a non-solution AND there will be an incredible waste of resources. The goal needs to be preserve, protect, support



Kudzu.

The World Is Run By Those Who Show Up

the honey bee, not to support a not-for-profit interested in planting an artificial mix of plants while eradicating the very plants that bees love.

Another political agenda which evolved out of the presidential directive, was the creation in New York State (as in all states) of a pollinator task force. This occurred in April of 2015. The surprising thing to me was that of the 12 member advisors, only two were beekeepers. There were three representatives to represent pesticide interests, three seats given to agriculture – farm bureau, fruits and vegetables, three were NGOs and the co-chairs NYS DAM (New York State Department of Agriculture and Markets) and NYS DEC (New York State Department of Environmental Conservation). Only two beekeepers? And this group seems to be focusing primarily on pesticides as a necessary component of agriculture. The group has not been called to meet again, yet.

But what about bee forage? How do we protect enough bee pasture to support NY State's 80K colonies? An important component of modern large numbers of bees in beekeeping is having natural environments for the bees to forage. Large environments. Fields of bloom with good nectar and pollen. Without pesticides.

To understand the scope of the attack on non-native invasive plant species, you need only to "Google" invasive, non-native plants. When doing so you'll find most states with long lists of plants considered invasive along with elaborate plans to eliminate them. Minnesota has a common approach to what it defines as 'Noxious Weeds' – go to mda.state.mn.us – the bee forage targeted is – brown knapweed, yellow star thistle, meadow knapweed, spotted knapweed, purple loosestrife, knotweeds, Canada thistle & glossy buckthorn. The plans for eradication include mowing, removing them by the root, the introduction of insect predators, and in most cases remedies soon digress to poison with any of several herbicides. Two problems (1) the eradication process means a year or two of no bloom of anything, then (2) at least one more year while the introduced "natives" are growing and maturing.

Honey bees, also, are not native to this continent. The plants that they super pollinate, sweet clover, star thistle, spotted knapweed, purple loostrife – have bumper seed crops every year, and become more and more prolific, forming healthy populations. Beekeepers depend on these large tracts of wildness, with the bloom of these deemed noxious pests, and return year after year to place their bees in these wonderful locations.

Who gets to define invasive non-native? What list of native plants do we use as the source for the consternation? Plant native here in 1603? Before any European Settlements? The world is not the same – the species currently in the continental USA include "all the birds of Shakespeare" released in Central Park in 1890 and 1891. Eugene Schieffelin (member of the American Acclimatization Society) purposely introduced English sparrows (a.k.a. house sparrows), starlings, magpies, and other European birds that failed to become "invasive

non-natives." But starlings and English sparrows are successfully suppressing native species. Parakeets, too, in South Florida, are pests.

Who gets to define noxious and who gets license to destroy? In the Ten Mile Watershed meeting, it was very clear that the carrot of grant money was used to give guidance and to influence local government officials. Decisions regarding strategies to mow or spray plant life in roadside ditches or medians, or public parks and public lands are often left to people at the public works departments of local counties or communities. Their decisions regarding which herbicide to use, or whether or not to use manual labor, are often influenced by the chemical salesman or, even more sadly, by individuals, often well meaning citizens who have decided that any and all invasives are somehow dangerous to the environment and must be destroyed.

In many cases where crops are planted "fencepost to fencepost" the only food sources not tainted by systemic pesticides and fungicides are the invasive weeds along fencerows and hedgerows. Indeed most non-crop pollinator forage is "volunteer" occurring in gullies, steep hillsides or wetland swales. Local Conservation Commissions and Inland Wetlands Commissions need to not believe all that they hear from the U.S. Army Corps of Engineers. The importance of the preservation of these plant stands cannot be overstated.

As beekeepers, either as individuals or at the club level, we need to make our local public aware of the dichotomy between beneficial invasives and non-beneficial invasives.

We need to create a list of the plants that cause us to choose locations for our colonies, remembering that honey bees fly up to 2.5 miles from the hive. We will thus at the same time provide an explanation of why these plants must be protected. As beekeepers we should always oppose the application of herbicides to the environment anywhere.



*Spotted (purple)
Knapweed.*

Finally, we need to educate people of the importance of preserving these plants in large quantities as essential diverse food sources of all pollinators through open meeting discussion, news outlets and social media.

Returning to Saving America's Pollinators Act of 2015; it has not yet passed. But the Bill has words that pretty accurately describe the loss percentages experienced among beekeepers large and small. It clearly states: one third of all crops produced in the U.S. require honey bee pollination services, and it further states, **"according to scientists at the Department of Agriculture, current losses of honey bee colonies are too high to confidently ensure the United States will be able to meet the pollination demands for agricultural crops."**

Hobby beekeepers, as important as we are, cannot provide this necessity for agriculture. But what we can do is advocate for habitat for all bees, and other pollinators. But honey bees must be the focus.

Commercial beekeeping, or any beekeeper with more than 20 colonies knows that the secret to success is, Location, Location, Location. The best honey and the healthiest bees come from places unadulterated by humans – where the plants have gone wild.

From Thoreau's essay, *Walking* "...and what I have been preparing to say is, in wildness is the preservation of the world."

I'll talk politics and chemicals next time. **BC**

Please contact me, Katherine Kiefer beesweet1@gmail.com
- Let's work together.

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HOW TO START A NONPROFIT BEE CLUB – PART 1

Why Do You Want To Become A Nonprofit?

Michele Colopy

If your beekeeping group is considering becoming a nonprofit; first and foremost ask yourselves “*why?*” Far too often, individuals start a nonprofit when they should really collaborate with another group that is already a nonprofit, such as their state beekeeping association, or a local Friends of the Park group, or similar. Grant funders encourage collaborative programs and projects. Public and private foundations began funding legal clinics and State Councils of Nonprofits to guide new nonprofits.

If you think your bee club could do great things in your community if you became a nonprofit; the first question you and your bee club Board of Directors should ask yourselves is *why do you want to become a nonprofit?*

Are you starting your own nonprofit due to “differences of opinion” with another bee club, or other local group with whom you work? This is the wrong reason to start a nonprofit, as typically missions of your club and your “adversary” will be similar. Funders will be confused by two organizations with similar missions, and probably will not fund either group. Funders will expect the two groups to work out their differences, and combine into one organization.

Are you starting a nonprofit because *one* donor said they would like to give a big donation, but they want a tax deduction? You can use a current nonprofit with a similar mission to accept that donation for your club. The actual nonprofit provides the tax deduction for the donor, and acts as fiscal agent for the bee club that is not a nonprofit, but who is the beneficiary of the donation.

Does the club have ideas for community projects that would benefit from grant funding? Could these projects be collaborations with current local nonprofits or the State Beekeeping Association?

If the projects lend themselves to collaborations (and most projects do), find a collaborator who is already a nonprofit, and work with them as a fiscal agent, first.

Utilizing a fiscal agent gives a bee club the chance to learn what the grant application, funding, and management is all about without having to actually be a nonprofit – your collaborative group is the nonprofit. Working with a nonprofit who serves as your fiscal agent is a good way to experience the grant process. However, understand fiscal agents do not work for free. If another nonprofit is managing your funds, and is responsible for grant accounting, they need to be compensated for their work. The typical fiscal agent fee is 10%.

Some organizations may request a higher percentage based on the intricacies of the grant project management. Some nonprofits may refuse to be a fiscal agent for monies less than \$2,000. While, some fiscal agents with very large development departments, i.e. universities, may charge a 40-65% administrative fee (fiscal agent fee) for managing a collaborative partners’ donations. That administrative fee comes directly out of your grant funds.

Can the bee club afford grant funded projects? One grant never provides all of the funds for a project. Foundations and donors expect the nonprofit to contribute typically half of the cost of the project or program? Nonprofits then must seek additional grant funds to truly secure all of the funds for a project. It is standard practice to seek three times the amount of grant funds needed, as grant competition, and limited funding will simply reduce funding opportunities.

Does the club have many motivated members willing to work on and support the activities of the grant funded project(s)? If you are the only one with the idea, and you

cannot elicit support from fellow club members, this will be your biggest issue. Grant funded projects take many hands to accomplish any grant funded program.

Does the club have leadership willing to accept the responsibility of filing the necessary nonprofit documentation and annual reports? If you do not have the volunteers to maintain and file reports, does the club have the money to pay someone to file the reports? How much will it cost to pay someone to file the reports, and manage grant funded projects? The Treasurer and President are responsible for filing the necessary annual reports to maintain nonprofit status.

Policies and procedures need to be developed to manage the grant funds, and grant funded projects. Grant funded projects and their accompanying application, reports, and accounting records can be public record (depending on the funding source), and the grant contract language.

Nonprofit beekeeping organizations offer opportunities to secure grant funds for bee club projects, but being a nonprofit comes with many accounting and reporting requirements. Nonprofit, or tax exempt organizations allow donations to it to be tax deductible for the donor. Funders will contribute program/project support as the program/project is “for the greater good,” not to the benefit of a single individual.

Nonprofits do not pay income tax on total donations received. Unrelated business income is another issue, where a nonprofit *may* have to pay income taxes (www.irs.gov/Charities-&Non-Profits/Unrelated-Business-Income-Tax).

If a nonprofit has employees, the nonprofit must pay payroll taxes at the federal, state, and local level (www.irs.gov/Charities-&Non-Profits/Employment-Taxes-for-Exempt-Organizations). No

matter the business, large, small, or nonprofit, if taxes are not paid unpleasant actions will ensue.

The bee club, whether nonprofit or not, should have a separate checking account from any Board member, and opened under its own EIN. An EIN becomes the “social security number” for the bee club. To protect individual Board members, the membership and the club responsible actions must be taken with accounting, grant reporting, and most importantly management of grant and donor funds.

What kind of nonprofit do you want to be; which classification best describes what the bee club will be accomplishing as a nonprofit? What expertise exists in your club, including

someone “expert” enough to know *when to seek help*, and *where to seek*

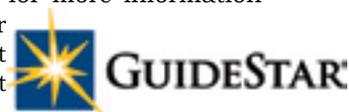
help? Local university legal clinics and State Councils of Nonprofits are available to provide guidance to current nonprofits, and those groups pondering nonprofit application.

Are you considering becoming a nonprofit to protect the bee club’s Board of Directors from liability? Other options may be available to your bee club to protect the Board from liability and lawsuits. Consult an insurance agent for these concerns, who may then refer you to an attorney as well. While a bee club could “incorporate,” or become a “limited liability corporation,” the

club’s mission and risk will determine what business entity it should create to secure a protected Board and club membership. In some states the State Beekeeping Association offers “affiliate programs,” or the State Bee Association is a nonprofit “business league,” wherein its member clubs come under the organizational umbrella of the State Association. Through this “business league” nonprofit the State Association secures the needed insurance, and nonprofit classification to protect its member clubs.

What does it cost to become a nonprofit? Cost to apply for IRS nonprofit status is \$400 to \$850 depending on average gross receipts of the association www.irs.gov/Charities-&-Non-Profits/Application-for-Recognition-of-Exemption and www.irs.gov/Charities-&-Non-Profits/Application-for-Recognition-of-Exemption. Cost to apply and register with your state will vary, but all nonprofits must register with IRS and with their state. Annual reports with applicable fees to your state must be completed. Attorneys will be happy to complete your nonprofit registration application for a cost of \$2000-\$4000. You do NOT need an attorney to complete your nonprofit registration application. This is not legal advice, just simply stating the IRS does not demand you have an attorney file the nonprofit application documents that are readily available to anyone on their website.

Not all nonprofits are the simple 501c3, as there are 33 classifications of nonprofits under “501c.” See this chart for the variety of nonprofit classifications www.guidestar.org/rxg/help/irs-subsection-codes.aspx. Tax exemptions vary per the classification, and the classification is determined by your mission as a nonprofit. Contact your state Council of Nonprofits for more information specific to your state about nonprofit development.



www.councilofnonprofits.org/find-your-state-association.

If you are considering becoming a nonprofit, feel free to contact the Pollinator Stewardship Council as well. We assist our members with nonprofit development, helping you decide if you should or should not become a nonprofit. We also will be a fiscal agent for bee club members and pollinator partner members for your projects.

Next month this column will feature *How to Start a Nonprofit Bee Club-Part II*. **BC**

Michele Colopy is the Program Director for the Pollinator Stewardship Council. She holds a Master’s degree in Arts Administration/Nonprofit Management from The University of Akron, and has created, revitalized and held leadership roles in nonprofit organizations for 20 years.



someone “expert” enough to know when to seek help, and where to seek

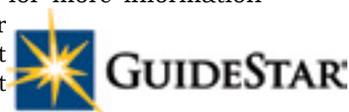
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Beeyard Thoughts

James E. Tew

What to do with a lifetime accumulation of low-resolution bee-related photos?

Poor photos can still recall good memories

New techniques can (somewhat) recompose poor photos

Most will never have any true use – but keep them anyway

For The Brand New Beekeeper – Order Now, But Order What Odds and Ends – Elephants and Bees, Not Good Friends (apparently)



My camera phone

At best, I'm only an average smart phone user. My phone device upgrades so often, I can only hope to maintain my *average* status; and when do we stop calling it a phone? Indeed, using it for an actual phone is just about the least task for which I use it. Did any visionary ever see such a device arising from the black rotary dial phone that all of us old folks used just a few decades ago (well, maybe a bit longer than that). My grandkids absolutely cannot imagine what folderol it took to get film photos developed; and then even though most of them were bad, you still had to pay for them. Importantly, you kept them.

But then, why would anyone think to put a camera on a phone? Wasn't that very nearly illegal at the outset? Historically, I know Henry Ford and historically I know Bill Gates, but I have no idea who was the very first person to conceptualize the phone camera. But here's the deal – that person – singlehandedly – made all of you phone owners bee photographers and videographers. But that does not mean all your pics are good ones.

My collection of faded, out-of-focus, and otherwise useless bee pictures

A few years ago, I was contracted to write a bee book that would contain many photos. I was arrogantly confident. I have about 20,000 photos and photographic slides and around 40,000 digital photos – most of which I can't find when I need them. Mine would not even be considered to be a particularly large photo library. I cannot imagine how many slides and photos that BC Editors Kim and Kathy have in their photo library.

It only took a few email communications for the book company to (somewhat) politely tell me that my slides, photo scans and even 95% of my digital photos were hopelessly unusable. To get those vividly, colorful photos that we all love, one must compose a whoppingly large photo. It is not my intention to teach you photography. I am not qualified. But what do I do with my library of marginal photos and slides. They are the photos of my career – indeed my life¹.

What follows are some examples of marginal photos that have never been used in any presentation or article.

I just continue to keep them as though one day they will miraculously become good photos. They grow older and older – waiting for their day.

Horses and Bees

I know very little about horses. I know that some of you know a lot. In days long past, when horses were used to pull wagons to haul beehives and full supers, how did the horses react to being around bees? Do horses have different personalities so some are okay with stinging insects while others are not? I have personally had cows push hives over as they tried to scratch against them, but nothing with horses.

Finding occurrences on the Internet of horses being killed by bees is somewhat common, but these animals were either tethered or fenced. Africanized honey bees are common aggressors that attack penned livestock and pets. The hives in the photo were mine. Though a fence separated hives from horses, I was still antsy. Nothing ever happened. This is my only horse and bee photo. It has never been used.

A photo you sent me – abandoned bee equipment

Though I can't keep up with my own photos, much less yours, I do enjoy getting pictures when you send them along. The problem is that years later, I am unable to recall where I got the pic. To my knowledge, this bee equipment mystery picture has not yet been solved.

What happened here? Did the beekeeper die, give up beekeeping, lose money? Maybe there was serious disease



Useless Photo 1 – Horses around beehives. Circa 1979.

¹Yes, I extensively use photo restoration software but the best I can do looks like modern-day bad photos.



Use Photo 2 – Out-of focus abandoned bee equipment. An unusable photo.

problem. It is one of my thought-provoking photos that has never served any purpose or use, but I continue to keep it. It is a typical unused photo – interestingly, the fence post is in focus.

Hive equipment rots

I have recently written a piece on painting hive equipment in which I harped about the paint application procedure used to paint hive equipment. A review of that discussion is not my intent here. Just as the photo of the mass of abandoned equipment shows, it is clear that wooden hive equipment has a predictable usable life – about seven years of active use. I don't know how I came to have the photo below that shows the rotten corner.

Though it is one of the “never used” photos, it speaks quietly to me with its obvious signs of bee seasons past. I suspect the equipment had recently been removed from an active hive. The propolis is recent and is an indication that the bees were making a valiant effort to maintain their cavity domicile for a while longer.

In actuality, other than routine painting, not much can be done to protect the wood comprising this rotten hive box. Yet, until a few years ago, this box was usable.



Useless Photo 3 – This photo has a visual character about it. Though it's an unused pic, I like it.

Useless Photo 4 – Note bees on landing board.



Typical beeyard photos will present an eclectic assemblage of hive equipment – some new while other equipment is near the end of its usable life. When you see a photo of beautiful hives all with similar equipment, have a look at those same hive boxes five to 10 years from now. Like everything else in life, nothing stays new for long.

A photo you sent me – A beehive cemetery marker

Through the years, beehives and cemeteries have had an occasional interaction in my life. In a few instances, I mistook a distant cemetery with uniform head stones to be a beeyard. After getting nearer the burial plot, I realized what it was, but since I was there, I would photograph it anyway. Through the years, I accumulated quite a number of apiary-look-alikes, and you sent me some others. I actually used some of these mock-apiaries in presentations, so they don't fit here.

Occasionally, there are bona fide sightings of bee themes in graveyards. I no longer have the contact information, but the photo metadata indicates the cemetery photo was taken in June 23, 2011. If you sent me this photo, I apologize for not giving proper credit.

By showing this photo, I mean absolutely no sarcasm, humor or insult. The grave marker clearly indicates one who was profoundly dedicated to our bee craft. I ask that you look at the detail of the marker – right down to the



Use Photo 5 – The cemetery hive is on metal post of some kind. Unusual apiary site.



Flooding had never happened in this yard. The river is nearly a mile away. (Ted and Becky Jones photo)

nail holes in the box joints and the engraved bees on the landing board.

If the marker is actual granite, it must be incredibly heavy. It might be a plot marker rather than an individual's marker. I have one more cemetery photo for you that follows this photo.

I didn't stop to ask

Whizzing along the highway through southern Ohio, I saw this unusual beehive sighting. I pulled over, but only got a poor shot. At the meeting an hour or so farther south, I mentioned the unusual hive stand and one in the audience immediately knew of it. I asked that I be sent better photos, but I honestly did not think it would ever happen. It did. As is so often the case with unused photos, I know longer have the contact information. If this is your photo, again I apologize.

I went to a great deal of effort to get this photo and harassed others to help me, but I have never had a call for it in a presentation. Nonetheless, I will continue to keep it.

Photos from the depressing genre

I have quite a collection of depressing photos of bee events. Depressing photos are useful in presenting depressing talks. Not much call there, so these photos are only rarely (never) used. I had a bee equipment storage facility be completely destroyed by a tornado. I took lots of photos but very few were ever used. I have photos of collapsed hive stands and vandalized equipment. Most have never been used. Check out the following.

Most of the hives that were drenched and flooded did not recover. At least one hive was never found. This photo again shows that bad things can happen to good hives.

The photographer never gets photographed

I occasionally upload a video segment for you. I hope that they add to the educational value of the individual written article that it supports. Make no mistake. I am simply a bee guy with a camera. It shows in my productions.

I frequently shoot video with a good beekeeper and retired friend, John Grafton, who has solid camera presence. In this unused photo, John and I were gathering video clips and still shots in a *Varroa*-infested colony.



Two beekeepers and a camera.

That footage has not yet been released. This is a nicely composed photo with essentially no foreseeable use. I offer it to you here. (*Where's the queen?*)

I am interested in the concept of podcast production or at least audio file production. In an effort to: (1) talk to you about this odd article topic, and (2) continue to learn how to distribute beekeeping information digitally, I have posted a video that is primarily audio-based with supportive but rarely used (essentially never used) photos. If you have a look, do it with a pioneer spirit.

The two and one-half minute production is at: <https://youtu.be/R5kSiZuiMf8>



For the Beginner

For me as I write this, it is mid-December. For you that season is long gone. In fact, for many of you spring is not very far away. Got your packages ordered? Ever tried nucs? Got any idea how many of your colonies have been lost, or will be lost, during this Winter season?

Even for those of us who have experience, it is not always an easy call. The evolving management predictor seems to be, "go into Winter with about 40%-50% more colonies that you actually want to maintain next Spring. If you are lucky enough to have a good survival rate, the bees can be combined or even sold to another deserving beekeeper.

Buying and delivering packages has become the



Spring packages. They were ordered in advance.

specialized tasks of a few highly qualified beekeepers. Alternatively, package producers will run large truckloads of bees to package bee distributors. Picking up your packages is irrefutable proof that Spring is here, and all should be ready to crank up the bees. Get in the bee package line as soon as you can.

If you are ordering nucs, everything about ordering packages applies to ordering nucs – except more complicated. Order earlier, plan to get them later, and certainly expect to pay more. But you can expect them to grow and develop faster than packages.

Bottom line; order your Spring bees soon (now). If practical, order a package or two more than you need. If it works out that you don't need them, it should be easy to sell them.

Odds and Ends

While looking for photos of horses and bees for this article, I stumbled upon a series of articles on elephants interacting with bees. The thread seems to be about five years old, so this is not breaking news. I'm sorry. I did not know this was ongoing. In my life, most animals seem to be fine around bees. Raccoons, skunks, opossums, most birds, toads, lizards – even cows seem okay around bees. Dogs don't do well, but what's up with the elephants?

I suppose that since there are precious few elephants in Ohio it should not be surprising that I must be the last to know that elephants seem to be fearful of bees.

Dr. Lucy King, who is usually in the vanguard of the story, is quoted in many of the subsequent articles and offers presentations on the subject. Her work is at



My only elephant shot – and not a bee in sight.

the following URL. http://www.nola.com/pets/index.ssf/2010/05/elephants_are_truly_afraid_of.html

I actually have one – a single one – photo of elephants in my personal library – from a zoo somewhere that I have visited. It qualifies for use in this article. It has never been used. It is of low quality (from a 2009 Blackberry phone camera) and shot through thick, protective glass. Here's the photo and then I'm done until next month. Until then... **BC**

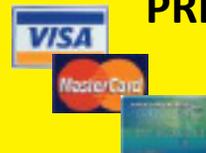
*Dr. James E. Tew, State Specialist, Beekeeping, The Alabama Cooperative Extension System, Auburn University; Emeritus Faculty, The Ohio State University. Tewbee2@gmail.com; <http://www.onetew.com>; **One Tew Bee** RSS Feed (www.onetew.com/feed/); <http://www.facebook.com/tewbee2>; [@onetewbee](https://www.youtube.com/user/onetewbee/videos) Youtube: <https://www.youtube.com/user/onetewbee/videos>*

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All The Buzz In...

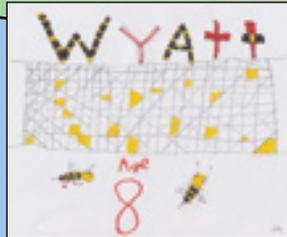


Hello Friends,
Happy Valentine's Day!

Bee B. Queen

Bee B. Queen
Challenge

Make a buzzer
change the shape
and twirling speed.



Wyatt, 8, OR



Blaire, 5, OR



Sydney, 8, OR

The Flight of the Honey Bee



When bees hover around a flower to collect nectar and pollen, their wings beat about 230 times a second. While flying back to the hive the wings still beat that fast but the wing strokes are wider and cover more area. Also bees twist their wings like the blades of a propeller. Bees use a bunch of energy to fly!

The wings aren't the only thing a bee uses to fly. They also use their eyes, antennae, and abdomen. The wind can affect their flight. They use their eyes and antennae to understand the speed and direction of the wind. Then a bee adjusts their abdomen to get the best flight. Raising the abdomen makes the body move through the air easier.

The Fields Are Alive with the Sound of Wing Beats

The size of an insects' wings and the speed of the wing movement affect the sounds they make. A butterfly has big wings and moves them slowly. Can you hear the flight of a butterfly? A mosquito on the other hand has small wings and moves them very quickly. We hear a high pitched sound that drives us crazy!

The Beat Goes On

How does the honey bee compare to other insects in terms of beats per second (bps).

- 600 bps - mosquito
- 230 bps - honey bee
- 190 bps - housefly
- 90 bps - ladybug
- 52 bps - hummingbird
- 12 bps - butterfly



A honey bee enjoying nectar from catmint.
Photo courtesy of Kathy Keatley Garvey

... BEE kid'S CORNER

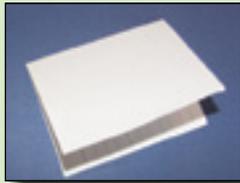
Bee Buzzer

Materials

- 3x5 index card
- Scissors
- Stapler
- Craft stick
- Markers
- 2 Pencil cap erasers
- String
- Rubber band

Directions

1. Fold the index card in half short end to short end.

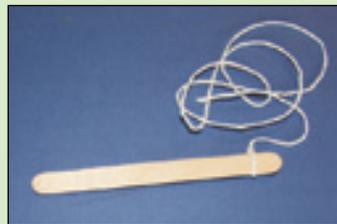


2. Staple the sides together.

3. Draw a bee on each side.



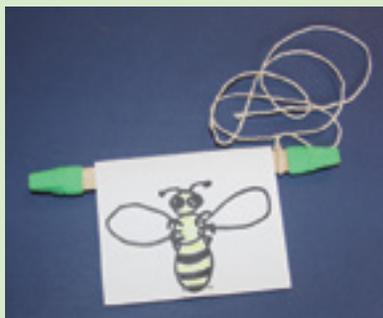
4. Cut about a 2 foot piece of string. Tie to the craft stick.



5. Slip card onto the stick then place pencil cap erasers on each end of the craft stick.

6. Stretch a rubber band around the craft stick and over each pencil cap eraser making sure it is not twisted.

7. Clear a flight path. Hold the end of the string, twirl your bee, and listen to the happy buzzing sound. The moving air causes the rubber band to vibrate. The index card makes the sound louder.



dip their finger in the honey and take a taste. That proved too much for one child who stuck in his whole arm! Kristian loves to kayak, swim, fish, bike, and bake.

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

www.beeculture.com

Bee Buddy

February, 2016

Kristian Flaten is making a difference in his Minnesota community. For the last seven years he has been talking to other kids about the importance of bees and how to protect them. He says, "Don't use pesticides and plant pollen and nectar plants." That's pretty impressive since he is only eleven years old! He also helps with the bees around the farm of his grandparents, David and Ellen Sundburg. A funny thing happened while helping his grandpa give an extracting tour to a preschool group. The kids were instructed to



Kristian's Favorite Chocolate Chip Cookie Recipe

- 1 C. shortening
- 2 tsp. baking powder
- 1 C. honey
- ½ tsp. salt
- 2 eggs
- 1 tsp. vanilla
- 2 ½ C. flour
- 1 package of chocolate chips

Cream shortening, honey, eggs and vanilla.

Mix dry ingredients together and add to the honey mixture.

Drop by the spoonful on a greased cookie sheet and bake for 350° for 12 minutes or until brown.

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MAKE STRIPED ROLLED BEESWAX CANDLES

Julie Finn



My kids and I have made a LOT of rolled beeswax candles.

It's kind of our thing.

My kids have homemade rolled **beeswax candles** on their birthday cakes. They're the tea lights that I put under my essential oil warmer, and the tapers that we have on the table for our "fancy" family dinners.

You mostly make rolled beeswax candles in single colors, or perhaps by wrapping two different-colored beeswax sheets together. This method that I'm going to show you, however, is a little different: it relies on a regular candle as its base, with colored beeswax stripes laid on top. It's an especially nice look when you want something festive, such as the red and green of Christmas, or the pink and more pink of Valentine's Day.

And here's how you make it!

1. Choose and cut your beeswax. For this project, you'll need a light-colored piece of beeswax foundation that's 4" wide by 6" tall, and two pieces of colored beeswax foundation that are 1" wide by 8" tall.

To cut beeswax, first square it on a gridded cutting mat. Take a look at it at your beeswax sheet—see the way that the hexagons line up? In one direction, they line up in a straight line, but in the other direction, the line is staggered. The straight line

always goes ACROSS the candle. If you line up the sheet so that the straight line goes up and down, the candle will be impossible to roll smoothly.

Use a ruler as a straight edge, and an x-acto knife to make the cuts.

2. Make the base candle. I find that the rolled beeswax sheet is much more malleable if I first warm it up for a few seconds with a heat gun or hair dryer. Next, lay the sheet out sideways on your surface, with one edge against the table edge or another area that will help you keep it aligned.

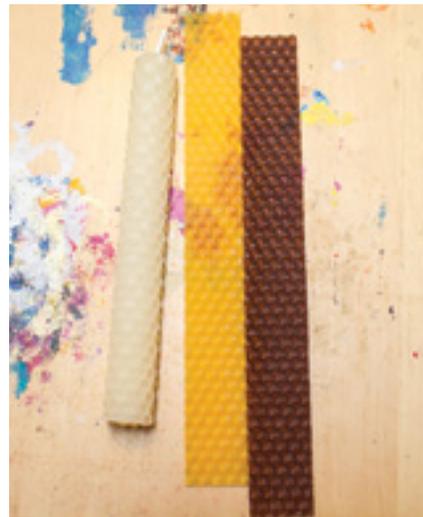
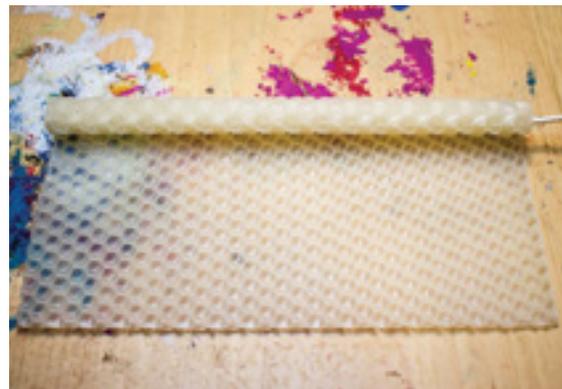
Press a candle wick into the far edge of the sheet, then roll the sheet around that wick.

Once the wick is set, rolling the candle the rest of the way will be easier. Gently smooth the edge of the finished candle and press it down so that it attaches.

3. Prepare the stripes. Butt up the two strips of rolled beeswax to each other, with one a little higher than the other. If possible, warm them with a heat gun or hair dryer, then press the sheets together at their edges so that they'll stick together.

4. Roll the stripes onto the candle. If you know **how to calculate the dimensions of a right triangle**, you'll know that you've already got the measurements for one side of the triangle and the hypotenuse, and that information will help you figure out that you need to roll these strips onto the candle at an angle of between 33 and 45 degrees. You don't want to roll your candle on top of your gridded cutting mat, because it will get wax on it, but the angle guides on your mat can help you see how to place the stripes.

Hold both strips together at that angle, and begin to roll them onto the candle. If you've got the angle correct, you will see that the strips meet themselves as they go around,





so that you can't see any base candle peeking through. If you don't have the angle correct, however, don't worry—just gently unroll the strips and try again.

Continue to roll the stripes up the candle. Wax is pretty forgiving, so don't be afraid to do a little futzing to keep the stripes in the right place.

When you get to the top of the candle, you can either use your x-acto knife to cut off any excess wax, or you can leave it if the points that stick up look symmetrical.

At the bottom, again, you can either cut off the excess wax from the stripes, or smooth them over the base candle.

This method will result in a candle that will fit into your conventional candleholders. You can change the dimensions of the candle, of course, but then you'll have to recalculate your right triangle. **BC**

Julie Finn is a writer, crater, Zombie preparedness Planner and homeschooling mom of two kids. These instructions were taken from www.craftingagreenworld.com.



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BUILD A FEEDER JAR STAND

Ed Simon



Introduction:

Spring is here again and you have decided to double your hive count. Of course that means that there will be a significant investment in woodenware. There is also another investment that is easy to overlook. It is the feeder required to get your new hives off to a roaring start. They can easily cost \$3.65 for a Boardman style feeder or \$6.00 for a frame feeder to \$32.00 for a full hive top feeder. But available at a very inexpensive price is the old canning jar feeder. Used canning jars are readily available in pint and quart sizes at many of the used merchandise stores such as Goodwill or Salvation Army.

You will need a device that allows the bees access to the syrup. You can make a number of feeder jar stands very quickly. It is actually easier to make many at a time as compared to making one or two. The members of your bee club will be happy to relieve you of the extra ones you make.

Material:

- 1) $\frac{3}{8}$ " x 9" x 8' Plywood base (1) – makes 24 stands
- 2) $\frac{3}{4}$ " x $\frac{5}{8}$ " x 8' Stand legs (4)

Special tool:

A hole cutter that will cut a $2\frac{3}{4}$ " diameter hole is needed. One of the most inexpensive ones is an adjustable circle cutter pictured here. Most hardware stores carry this type of cutter.



Construction:

This article will describe making 24 feeder jar stands.

Because:

- 1) It is safer
- 2) It is easier than making one

Step 1: Working from one side of part #1, mark a line $2\frac{1}{8}$ " for the length of the plywood. This is one of the center lines for the drill. Then duplicate this line on the other edge of the wood. You should now have 2 parallel lines for the length of the plywood.

Step 2: Now mark the cross line for the centers by starting 2" in from one end and then marking every 4". Do this on both of the center lines marked in step #1. The picture shows the drill marking as circles and the cutting lines as dashes. You do not need to mark the cutting lines. They are there for illustration purposes only.

These drilling centers will provide for a 4" x 4" platform base for the jar with a $2\frac{3}{4}$ " hole in the center.



Step 3: If you are working with an 8' length of plywood then I recommend that you cut it into two 4' sections. This will make handling the wood much easier.

Step 4: Drill $2\frac{3}{4}$ " holes at the marked locations. To make a smoother cut only drill $\frac{3}{4}$ of the way through the plywood and then turn it over and finish the hole from the other side of the wood.

Note: A drill press is best used for this operation. It makes drilling significantly easier and safer.

Caution: Using a hole cutter like the one pictured can be very dangerous. The bar that holds the cutter heads can fly around at a speed that makes it difficult to see. If your hand or anything else gets in the way, it is guaranteed to hurt.



Step 5: Once the holes are drilled, cut the plywood in half lengthwise.

Step 6: Using $\frac{3}{4}$ " wood cut parts #2. One piece is needed for each edge of the plywood.



Step 7: Glue & nail or staple (parts #2) to the bottom of the base. It is easiest to nail from the top through the plywood into the leg. Use one nail or staple on each corner of the hole to ensure a solidly attached leg.

Make sure that the leg does not cover any part of the hole in the base

Note: I bet you didn't know that circles have corners. They don't but this was the easiest way to explain the positioning of the nails.

Step 8: Once the glue is dry you can cut individual stands from the strip.

Usage: After filling your jars with syrup, invert them and place them in the hole in the stand. Place the stand on the inner cover and place an empty hive body over/around the stand to protect it. A stand with pint canning jars can be covered or protected with a medium hive body. A quart jar will fit inside a deep hive body.

Warning: In the Spring and Fall, the temperature differences between night and day can cause the syrup to be pushed out of the feeder jar. Make sure the jar is away from the hole in the inner cover so the liquid does not drip on to the bees.

Conclusion: During the times of the year when the bees are feeding

heavily you can add as many feeders as there is room for on the inner cover. If you overlap the filling of the feeders, you can make sure the bees always have food. When the feeding slows down and there is a possibility of the syrup fermenting, all you need to do is remove the extra feeders and the spoilage will be kept to a minimum.



Addendum: Creating feeder jar lids

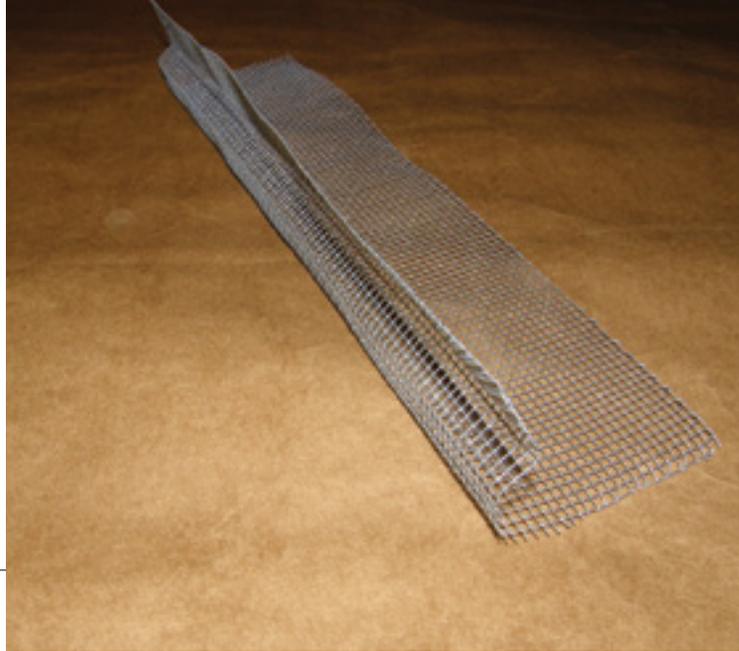
Lids for the canning jar feeder can be made very easily by pounding small nails in the lid. An easier way is to use a brad gun with an 18 gage brad to pierce the lids. Place a stack of lids on a piece of polystyrene and then use the brad gun to make the holes. The insulation is used so the brads do not nail the tops to the workbench. It may take a little work to remove the brads from the lids, but it is easier than using a small nail or a punch and hitting your fingers. **BC**



Get a copy of Ed Simon's book *Bee Equipment Essentials with detailed drawings, construction hints and how-to-use instructions for dozens of beekeeping tools and equipment* from www.wicwas.com. Ed can be contacted through Ed@TheBeeShed.com. Now online are all of Ed's *Bee Culture* magazine articles. They can be accessed through *The Bee Shed* website at www.thebeeshed.com/publications.html.

VENTILATION VENTILATION VENTILATION

Charles Schwend



I sell well-established working beehives, with their honey stores, to buyers far and near, from Spring through Fall. During hot or muggy weather I always stress over my girls welfare during the trip, moving to their new home site. Most beekeepers, or apiarists, close the entrance with a 1" X 2" piece of wood, or a solid entrance reducer. I started selling bee hives with the same method of confinement, and then changed to a better way, using plastic screening stapled to the brood box on top and to the landing board on bottom to prevent the bees exiting through the entrance opening. The impact of stapling would agitate the colony and they would try to leave the hive, clogging the entrance opening by crowding against the plastic screening, to shut off the airflow. A similar piece of screening would cover the opening of the inner cover.

On some occasions where their journey would take some time, the bees coordinated their combined efforts to push through a weak fitting screen and create an opening large enough for many, or all, to escape, leaving the new bee keeper feeling somewhat cheated in their purchase.

Having been a beekeeper for over 35 years, I had an abundance of scrap 1/4" hardware cloth lying around from constructing hive beetle traps and screened bottom boards. Frugality is a must to be profitable in beekeeping, even as a hobby. After experimenting with a couple of designs I found that trimming a piece of scrap hardware

cloth down to approximately 15" X 6" makes a very effective entrance ventilator and bee excluder using a 20-inch plus long, 3/4" dowelling, and a 4" wide duck bill welding vice grip pliers, or use a length of 1" X 2" board to bend the hardware cloth tightly around. The individual wires creating the 1/4" openings in the hardware cloth should be checked to ensure against misalignment or broken wires. If the wiring is misaligned or broken, the resulting opening could be enlarged enough by the bees to allow them to escape. I have found that a pair of small needle-nose pliers will work well in realigning the wires. I have since graduated from the welding vice grip to a three-foot wide metal brake for a more finished insert. A metal brake is a piece of equipment used for bending sheet metals. Smaller brakes can be as narrow as two foot wide, or smaller, and can be purchased relatively cheap.

The finished product resembles an open capital "P", sitting on it's side, (See attached two photos). I made a 180-degree half circle bend in the middle of the width by wrapping the hardware cloth tightly around the length of dowelling.

Using the metal brake or duck bill vice grip, I bent a 90-degree upward angle, 3/4" from the top of the half circle. I continued the hardware cloth, running out from the bottom of the 180-degree half circle.

The half circle is inserted into the entrance. The top bend is adjusted so that there is pressure under

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the entrance top surface and the flat surface is pressed against the landing platform. The top 90° angle is adjusted to put pressure against the outside surface of the brood box just above the entrance opening.

An alternative to using a dowelling is just squaring out the half circle with the metal brake, vice grip pliers or a length of 1" X 2" board. The curved section in the middle of the scrap piece of hardware cloth could also extend into the brood box a little more to allow for a larger number of bees to collect before shutting off the air circulation. The entire operation only takes a 180-degree curve and one bend, or if using the alternative method, only takes three

bends. A very simple operation once visualized.

Since all bee boxes are not made equally, the sides of the hardware cloth can be trimmed back with a tin snips, heavy-duty scissors or shears. If the insert is a little too short, or if the transport trip is really long, two plugs can be made from a soft wood to seal the ends, and/or put extra tension pressure on the hardware cloth insert, to ensure a more secure fit. Just make sure the wood plugs extend over the hardware cloth to the end of the opening.

A beekeeper can adjust the measurements to suit his own requirements, and with a little practice find the perfect fit for his needs. I have also thought of soldering a bent narrow "U" shaped tin strip along the raw edges of the hardware cloth to cover the sharp barbs of wire. Bending the tin would also require the use of a soldering gun and a metal brake. This would also stiffen the unit making for a tighter fit in the entrance, and maybe eliminating a need for wooden plugs at the ends of the unit.

A second method to safely cover the sharp wire end barbs would be to dip the sides of the hardware cloth into a shallow tray of liquid latex several times to build up a coating. Liquid latex is relatively cheap and easy to use, just be sure to adequately dry the applied liquid before handling.

I would welcome any response, positive or negative, from readers on how well this design has worked for them, or how they improved on the basic design to meet their needs. I can be reached at: Charles Schwend, 2930 Woodland Lane, Marine, IL 62061; 618.363.9104; schwendcharles@yahoo.com. **BC**

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Bee Lining With Dan Conlon

Learning The Key Aspects Of Bee Lining In Ohio

Larry Connor

Bee lining is a method of finding bee colonies, a form of honey hunting. Dame Eva Crane¹ reports that European humans once used many methods of finding nests of honey bees. In the late winter, honey hunters of the Hungarian, Slovak, and Russian peoples walked through the woods searching for dead bees and nest debris on the snow along south-facing forest edges. The Carpathians and Latvians looked for fresh tracks of the pine marten (*Martes martes*) that could lead to a bee nest, often indicated by wood debris where the marten had opened the nest with its teeth and claws. Ukrainians followed bear tracks.

In Slovakia, honey hunters visited flowering willow in the early Spring and listened for bees working the catkins. The hunters watched foraging bees gather nectar and watched the direction they flew. Some attached a blade of grass to a bee to help them watch the direction of the bee's flight back to the hive, and also to slow the bee in her effort to return home.

Crane writes that beekeepers would watch bees return to their hive later in the day, when it was easier to see them flying against the sky. Bees were primarily located by listening for the sound of the bees, often from a distance.

In North America, the "English Man's Fly" preceded the European invasion of the continent, providing rich rewards for those who located the nests and harvested the honey. Their honey hunting became more sophisticated with the development of bee lining, using boxes of collected bees and sequentially releasing them to determine the direction of bee flight, and thus the direction of the bee colony. The location of these

nests provided the honey hunter with a source of both honey and bees.

A.I. Root wrote about this process, as did the Director of the Museum of Fine Arts in Boston, G.H. Edgell, who wrote about his boyhood experiences hunting nests in New Hampshire. He claimed that his small book *The Honey Hunter*² brought him much greater fame than any of his publications about the fine arts. This book was of great use to a young scientist at Cornell University who has spent a lifetime using bee lining in his research on colony decision-making and behavior. This is Dr. Thomas Seeley, who will publish an account of his experiences with bee lining in 2016 in the latest of his very informative and readable books.

Last month I interviewed Dan Conlon, a beekeeper working in Western Massachusetts, and the newly appointed Vice President of the Russian Honey Bee Breeders' Association. During our conversation, Dan explained that his first beekeeping teacher was a farmer he worked for in southwestern Ohio. He lived in Centerville, and worked south of there, where "the land consisted of farm lands and woodlots all the way to Cincinnati and the Ohio River."

"Today this region is all developed as houses and malls –those places I remembered, and the Bell Farm no longer exists. This is significant to me as I have been a strong advocate for farmland protection, and the preservation of open space in Massachusetts – because of what I saw happen to my childhood landscape."

Here is a follow-up to our earlier interview, focusing just on Dan's experiences lining bees in Ohio.

Bee lining box from Betterbee.



Larry: Tell me about your experience with lining bees. How did this get started?

Dan: I was introduced to bee lining by Hugh Bell, the same guy who introduced me to bees as a teenager. This was outside Centerville – part of the greater Dayton area. Everything south of Centerville was farmland. As a teen I worked with haying and other chores. Mr. Bell had about two dozen beehives. Because no one in his family was interested in bees and I was fascinated with them, he took the time to teach me about bees and beekeeping. This was in the 1960s.

The second year working for him, I was invited to go along on Sunday afternoons to go bee lining. We were joined by a couple of farmers and others who worked construction jobs. They were all working men; they were probably in their 50s when I was a teen. At the time they seemed really old to me, but they were able to walk miles over uneven ground and chop down and cut up trees. Nothing was mechanized, and we only took down trees that we could get onto a truck, so the trees had to be near a solid roadbed and not too big around.

These were the older guys I looked up to, the source of stories about all kinds of things, clowning around, and probably when I got my first taste of bourbon.

In this part of Ohio it is flat, and there were lots of fields and woodlots. We would get in a car and drive to the countryside. Then we walked down railroad tracks. Sometimes we would find a field of buckwheat, where the farmer was resting the soil as a part of corn and soybean crop rotation. We would look for bees on the buckwheat flowers. We collected fully loaded bees into our lining box.

I made a lining box with a cigar box and some honey comb.

¹Eva Crane, 1999. *The World History of Beekeeping and Honey Hunting*. Routledge, New York.

²Edgell, G.H. 1949 *The Honey Hunter*, reprinted by Kessinger Publishing, LLC (March 1, 2007)

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Box used by Tom Seeley. Photos from his upcoming book on the topic. (photos taken by Megan Denver.)

Sometimes we would set out honey comb in the box and once the foraging bees showed an interest, we would close the bees into the box. By opening a slide on the side of the box, the men could allow one bee out at a time. The bees were usually filled with honey, and slow fliers. We would watch the direction they flew home. As we lost sight of the bee we would release another bee, and follow her. By doing this we were able to find the direction of the woodlot she was flying to. This was an advantage of the Ohio landscape, as the bee trees were almost always in woodlots, as there were few other trees in the open fields. If there were, they would be easy to spot.

The cigar box had a slide, and I could let the bees out one at a time. In Ohio we would eventually zero into one of these woodlots. As we headed to the woodlot we kept releasing foragers and watched them go to their nest. This helped us determine where in the woodlot we might find the bees.

I was able to do this eight or nine times, during which time we discovered about six bee trees. We may have cut two of them – it was a long time ago. Our outings were more social than anything else. I did help Mr. Bell cut down one of the trees that was small enough for us to handle.

These woodlots were usually not on Mr. Bell's or the other men's land, so they had to get permission to cut the trees. Sometimes we were some distance from any road access, and the trees were too big to cut and haul out. They would mark the trees and leave them standing.

They would cut the tree and leave it intact on the ground for a week, allowing the bees to settle. We would return, and he used an old sheet to cover the entrance holes in the tree, and cut it into pieces. We did not screen the entrances, which I have seen others do. The sheet kept most of the bees out of the air. Once cut into pieces, we would carry the section of tree containing the bees out of the woods, and put it in the truck, and move it into the bee yard. The men cut as close to the nest as they could to reduce weight. Later this allowed access for the bees to move up into a Langstroth brood chamber.

With the trees we found in the Fall, later in the season, we let the trees Winter, and would never touch them, but knew where they were.

The second tree that we harvested was not moved – instead they split the hive on the site because it was too big and it was located in the middle of this woodlot. In the Spring they cut it, looking for the brood and bees, as well as any honey – they always thought they would get honey off these trees.

They used a two man cross-cut saw, and it was work to open the tree to gain access to the bee nest. They would use axes and wedges to split the log open. They were always concerned about finding the queen. We would string some of the brood combs into frames and put them into a hive body. Of course, we included the queen when they found her. Like a swarm, once the queen was moved the bees would start going to the new hive. They would leave a box with

brood combs in it. Later we returned to catch any bees that were still in the old log hive. These were added to the new colony.

Most of what we did was done in the middle of the day, so there were foragers out of the tree, and there were fewer upset bees.

When we carried the log back to the apiary, it was set upright, on end, and left for the bees to buildup and rebuild comb. Mr. Bell returned to the log hive a month later and would drill a hole from the top. There he put a regular Langstroth hive body with an open bottom on the top of the hive. This allowed the bees and the queen to move up to the regular hive body, complete with standard frames. Once the bees were in the Langstroth, I would check for the queen and look for brood. If both were found, the men placed the hive body on a stand in the location of the log hive. The log was pulled back several feet behind the flight into the entrance. The bees would relocate to the entrance of the Langstroth hive, and the colony had been successfully shifted to the new colony. This transfer from log to Langstroth happened over several months, as the colony expanded.

Inside the log there was still brood and honey. Mr. Bell would split the hive open and carefully remove the frames of brood, tie them into frames and install them into a hive body. There would still be bees there, primarily young nurse bees that had emerged from the brood combs. The older bees would have moved to the new hive location.

Basically, the majority of the bees

would end up at the Langstroth hive.

Larry: What was your relationship with Mr. Bell?

Dan: I was probably included in these adventures because Mr. Bell recognized that I was fascinated by the bees. His early influence was important to forming the person I became. He would include me all the time. [He] gave me my first bee hive and my first copy of ABC-XYZ. My parents would wonder what I was doing when I brought bees back to our backyard in suburbia. Hugh Bell just liked showing me the bees and gave me an excellent introduction to the bees.

While these are old memories, but I don't remember many issues with the bees. They were concerned about getting American foulbrood. They would use a sulfur drug for foulbrood. That is no longer legal to use anymore.

All in all, they were good times. I still have a nice feeling when I think about my experiences with Hugh Bell and his bees.

Larry: What other methods did Bell use to obtain new bee hives?

Dan: I don't remember them losing as many colonies as we do today. I don't remember using any package bees. They would make up new colonies using queen cells in May and June, primarily using cells produced during swarm season. I think the bees were sometimes the old black bees, as they were a bit stingy. They were not as tame as those we had in the managed hives. He may have obtained queens from the other men in the group, as they seemed to be pretty good friends.

Larry, I do remember successfully producing my first queens, from cells, in one frame nucs. Bell took me to a bee meeting – I think Lebanon, Ohio – where I swapped two of these queens with another beekeeper Bell knew. I got two of his queens and he got my two. I believe this was a common practice in those days. Bell did things rather routinely – making splits to re-populate dead-outs, sold a couple nucs (or traded), used cells when they were in a favorite hive, and once the hive was prospering never touched it during a nectar flow. He always had about two dozen hives and that seemed to be all he wanted – extra

swarms were sold or given away. Honey bees probably were important to his crop farming, and he did sell honey at the farm. Mostly I think he enjoyed beekeeping as a hobby or way of relaxing as we did most of this after regular work times and on Sundays.

Larry: Have you done any bee lining in Massachusetts?

Dan: Once or twice I went with Hal White, old dairy farmer, quite a naturalist. We became friends, and he liked to take walks. Hawley State Forest was a nice place to go for walks. We did the bee lining in the State Forest. We did find two bee trees but did not take them down. It was a lot more difficult to find bee trees in the forest than in the relative flat land of Ohio.

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We have seen a lot of bee trees in the past few years, so it is clear that the bees are living in the trees again, after the introduction of tracheal and *Varroa* mites and the rapid die-off of the bees in feral situations. We have a lot of logging in my area and the loggers call and ask if I want the bees they find in the forest. The bees look a lot like Russians because of the striping on the abdomen that is more common in the Russians we raise. But there is a lot of color variation in the Russian bee strains. The queens often have striped abdomens, making them harder to find because they blend in so well with the rest of the bees. Striping on the abdomens of queens makes them much harder to find.

This interview has inspired me to do some bee-lining again after you forced me to recollect this enjoyable activity. I do think there are some bee trees to discover once again in western Massachusetts. Maybe I will take my grandson along and tell him a few Hugh Bell stories.

Larry: I am sure there are lots of beekeepers who would like to tag along on that adventure! **BC**

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A beekeeper in Nevada writes:

I have a hive that has many earwig inside. Usually on the top when I remove the inner cover. Any real concern?

Phil replies:

Earwigs (order *Dermaptera*) play a sinister role in folklore, being reputed to purposefully crawl into the ears of sleeping persons for the purpose of entering the brain to lay eggs – hence their name. Fortunately, this is only an old wives' tale. For beekeepers, they are not normally considered a problem.



Earwig.

The hive is a small ecosystem containing all sorts of macroscopic and microscopic life. Some are the familiar parasites and disease causing organisms which directly attack bees or brood: mites, nosema, foul brood, etc. Others are pests: opportunists such as small hive beetles and wax moths. These are usually nuisances which can cause damage within the hive but are not serious threats unless the colony is too weak to cope with them. A few are merely transients: free loaders just seeking a dry habitat, sometimes subsisting on trash fallen from the frames. Mice are a special type of opportunist. They may enter the hive seeking shelter but, once there, they wreak havoc, destroying frames and comb while consuming pollen, honey, and bees. They are a special threat in winter when they are more likely to seek out a warm, dry nest and the colony is unable to break cluster to defend the hive. I hope everyone has entrance reducers in place by now.

Some transients are unusual. I once knew a beekeeping couple from Western Kentucky who maintained hives both there and in Mississippi. The wife told me that she did not enjoy working their Mississippi hives, because they had encountered more than one snake inside. She had

never seen snakes in their Kentucky hives. I am certain they were there after mice or in search of shelter – not to prey on bees. I don't know what the bees thought about the snakes, but they were an unpleasant surprise for the beekeepers. More typical transients are various types of bugs. These are sometimes found above the inner cover, and more often on the bottom board or in the debris tray in hives with a screen bottom board. Various beetles are common, some of which can easily be mistaken for small hive beetles, but which are harmless. Even though these interlopers are not threats, strong hives will not tolerate very many of them. We tend to see them more in weakened hives and in hives where the bees have died or absconded.

Earwigs and cockroaches (order *Blattodea*) can be found both on bottom boards and inner covers. These insects look somewhat alike, have similar lifestyles, and are commonly mistaken for one another. I have always classified them in my mind as transients, however your question motivated me to consult my copy of *Honey Bee Pests, Predators and Diseases*. One of the sources cited in this excellent reference states that earwigs “. . . may pierce cappings and spoil comb sections with excreta, food fragments, and the skins of nymphs.” The book makes similar observations concerning roaches, with the addition of a warning about odor problems. Another source notes that earwigs may carry honey bee diseases, including European foulbrood. It seems that from now on I may have to consider both species as pests rather than transients. As with other pests, the best way to



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control them is to *maintain strong colonies*. However, last Summer, I had a new colony die out and I stored the hive bodies which contained some nice drawn comb. There must have been a dozen roaches or earwigs in the boxes. After learning more about them, I may be quicker next time to squash these pests with my hive tool. One other note: if you store comb in used brood boxes inside your house, or any place else where you wouldn't like to see these insects take up residence, try to brush them off or squash them before moving the boxes inside. Paradichlorobenzene, which is used to control wax moths, will also eliminate roaches and earwigs which emerge after you place the boxes in storage.

In my *Bee Culture* columns I sometimes recommend helpful beekeeping reference books. *Honey Bee Pests, Predators, and Diseases*, 3rd edition, edited by Roger Morse and Kim Flottum, is a good one. However, be aware that this most recent edition was published in 1997, and suggested procedures regarding the control of some parasites and diseases, including varroa mites and foulbrood, have changed since that date. Small hive beetles are not addressed at all, since they were not discovered in the United States until 1998. Nevertheless, it remains a useful source of information for beekeepers. I frequently consult it for background information on common honey bee health problems, and especially for less common issues, such as earwigs.

A beekeeper in West Virginia writes:

I have an odd question. I know when you put your ear up to the box when it's cold, you can still hear a hum from the bees. When it's below freezing, would you hear any hum? (Yes, I have a stethoscope, lol.)

Phil replies:

Honey bees do not go into suspended animation in the Winter. Even when temperatures outside are below freezing, there is activity in the hive, so my first inclination is to say that it should be audible. The possibility of using a stethoscope to do a quick winter time check has also occurred to me but, unlike you, I do not own one, so I have never tried it. After a Google search I confirmed that, even in freezing weather, yes West Virginia there is a hum.

I found several beekeeper's webpages and one forum discussing how to listen in on the bees when it's too cold to open the hive. There were some helpful comments by people who reported success along with a few "couldn't



Photo credit – <http://mudsongs.org>.

hear a thing" remarks. Some listeners, most of whom worked in health care and had access to them through their jobs, used expensive stethoscopes. Others said cheap ones purchased over the internet worked fine. (A quick check of online prices turned up some for less than \$10.) One person even said that a large screw driver with the shaft on the hive and the end of the handle placed against your ear is a sufficiently good conductor of sound. For that matter, as you mentioned, just putting your ear against the hive also works, but could be uncomfortable in really cold weather. There are a few things to keep in mind. Try your eavesdropping on calm day; wind will interfere with your ability to hear. Also, the cluster moves around in Winter, so you might need to listen at several places on the brood boxes. A ventilation hole seems to be a good place to try. Some beekeepers who heard nothing at first got a response after a firm knock on the hive. I would be cautious about trying that too enthusiastically, however, out of concern that it could disturb the cluster.

There are other ways of checking on hives in Winter. Dr. Jerry Bromenshenk from the University of Montana has explored the use of infrared cameras for colony assessment. This is assuredly a more informative method and, for commercial beekeepers, more efficient. Those with only a few hives would find it difficult to justify the expense, but might still be interested in learning how much information can be gleaned this way. Watch *Bee Culture* for a series of articles by Dr. Bromenshenk about technology and beekeeping, beginning in the January issue.

For beekeepers who Winter their hives where temperatures occasionally rise above 50°F (as it does at my home in Kentucky and yours in West Virginia) the simplest way to check on colony survival is to watch the hive entrances for flight activity during spells of warmer weather. As winter transitions to spring, loads of pollen on returning workers' legs tell us, not only that the bees are alive, but that they are rearing brood. Be aware, though, that activity at the entrance does not guarantee that a colony has come through Winter successfully. In early Spring or on warm Winter days, honey bees are alert to the lure of food stores remaining in dead colonies. It's difficult, especially for the inexperienced, to tell whether bees are flying out and back in as part of normal activity, or in and back out in the act of robbing dead or severely weakened colonies.

I understand and share the urge to see whether our colonies are making it through the Winter. I admit to feeling a little thrill each year when I detect the earliest stirrings in my hives. But once cold weather sets in, there is nothing constructive we can do to improve their chances. It's important that we not let our curiosity and impatience actually put our colonies at risk. Lifting the covers to check on the cluster is OK on sunny days when temperatures begin to climb above the 50° range. I know one beekeeper who uses a flashlight the better to see between the frames. A glance in the top box (normally by late Winter the cluster has moved into the top brood box), without removing frames or lifting off the top box, is sufficient to assess activity and cluster size. More intrusive inspections should wait until daytime temperatures consistently reach 60°. I am always concerned when I hear of beekeepers (usually self-styled experts from the internet) encouraging late Winter or early Spring hive

manipulations. Moving frames can disturb the cluster; rearranging them can spread brood out to the extent that the bees cannot keep it warm when temperatures drop again. That wastes resources and delays the build-up of the colony.

Some areas of the country are lucky enough to avoid true Winter. Unless you live in one of them, be content with looking and listening in the coldest weather, and with quick checks early in the Spring. Wait on thorough inspections and invasive management until you can count on sustained mild temperatures.

A beekeeper in Arkansas writes:

My bees have been storing a lot of honey, several hives have supers mostly full. I have been treating hives with Apivar during most of September so do not want to harvest any of this stored honey.

At a recent bee meeting I told a friend about all the honey on my hives and he noted to not allow them to become honey bound because they may swarm. Bothered me enough that I have removed about two frames in center of supers to allow room. I use one deep and a medium super for overwintering. Am I worried about nothing or is this a good idea? I have put full honey frames in a freezer so that maybe on a warm day in Winter or before it gets too cold to open hives I can put full frames back in hives for Winter.

I used to feed bees in Fall but that was getting a little expensive, encouraged robbing and I would rather they used stored honey instead of sugar water.

Note: This question was received in October of 2015

Phil replies:

I don't think you need to worry about swarming at this time of year as long as the bottom boxes contain a few frames with open cells for brood rearing. I have never had a Fall swarm that I know of. You have the advantage

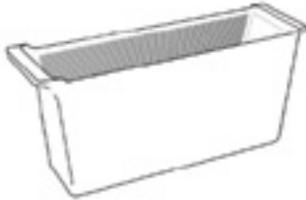


of being far enough south that your colonies will rear some brood through the Winter. Newly emerging bees will make up for normal, seasonal population losses and give the colonies a stronger population to build on in the spring. This is one reason it is easier to maintain hives in areas with mild winters.

Though the risk of a swarm is small, a honey bound hive is a possibility. During a good Fall nectar flow, colonies often fill the top brood box. In fact we want them to in order to ensure sufficient food reserves to last until Spring. Since I am further north than you, I use a two deep brood box configuration, because my hives need more stored honey for our longer Winters. In colder climates, three deeps may be necessary. Like you, I prefer not to depend on feeding to build Winter stores unless it becomes absolutely necessary, and I am fortunate that in most years there is an adequate fall flow. I do not collect Fall honey for consumption or sale. I leave it on the hive as part of my contract with my bees. Problems may arise when the upper box or boxes are full and foragers are still bringing in nectar. As long as it continues to be brought in, bees will store it in any available space. With no room above, they will put it in cells where they might be raising brood. That means fewer replacement bees and a scanted population by Spring, and will negate some of the advantage of a mild Winter.

Almost all cases of honey bound hives which I have observed have actually been sugar syrup bound. The worst involved a beekeeper whom I visited one year in mid-June while I was Kentucky State Apiarist. He had contacted me because he was seeing a sharp decline in the number of bees flying in and out of the hives which he had started from packages in early April. My first observation upon seeing the hives was of feeders at the entrances. He was still feeding, though I was aware that there was a very good nectar flow in the area. Upon looking into the top brood box of the first hive, I found all the frames completely full of what appeared to be mostly sugar syrup. Conditions in the bottom box were almost the same, with only very small patches of brood on the centers three frames, the equivalent of what would normally be found on one side of one frame. The lack of foragers was no longer a mystery: the hive was dying out due to the lack of space for brood. Most of the colony's population had succumbed to old age, and there were too few new bees to replace them. Conditions in his other new hives were the same. He had been advised to feed new packages, but either no one told him when to stop or that instruction had not sunk in.

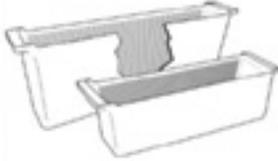
Swapping frames of empty comb for ones full of honey, as you did, is an excellent management strategy for avoiding a similar situation. With empty cells for nectar in the top box, bees will use the bottom brood box for brood rearing. Be aware, though, that substituting frames of new foundation is not an option, since bees do not readily draw comb in the fall, even during a nectar flow. They would ignore the frames of foundation and continue to place nectar in empty comb in the bottom box. Storing the frames of honey in the freezer for return to the hive if needed later is another good idea. You seem to be doing all the right things: treating for mites, attending meetings, asking questions, and most of all, paying attention to what is going on inside your hives. These are the basics of good beekeeping. **BC**



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Installing A Queen



Queen and attendants in mailing cage

Jim Thompson

What seems to be a rather routine procedure may not be. At various times a beekeeper finds that the queen needs to be replaced. Different reasons for this replacement might be: the queen is old or failing, the attitude of the hive is not what you would like it to be, the hive is non-productive, the hive needs a break in the brood cycle to clear up disease, you may want to retard the hive from swarming, or there is no queen in the hive.

When introducing a queen to a hive, there are the different techniques or procedures that can be used: introduce a mated queen, introduce a virgin queen, introduce a queen cell, or encourage the bees to raise their own queen. The percentage of acceptance by the bees in the installation of a laying queen is rather high. The acceptance of a virgin queen by the bees in a hive is the range of 50 to 60%. While putting in queen cells or allowing the bees to raise their own queen may also have a high percentage rate of acceptance, there are further conditions that the hive must have in place. When raising a queen from a cell more time is required for the queen to develop, get mated, and start laying eggs. The amount of time could be critical if the nectar flow is missed or the drones have been eliminated from the other hives, or the weather is not conducive to bee flight.

There are many devices that

beekeepers have invented for queen introduction and some of the situations within a hive make queen introduction difficult. It also seems that every beekeeper has their own way of doing things and their way seems to be the only way to do things. So when you talk to other beekeepers, the more confused you will become. When you add all of these factors, the "simple task of introducing a queen" is not so simple.

If you decide that you are going to requeen a hive by installing a laying queen, the normal procedure is to order a queen. A day before you install her, you either catch the old queen and put her somewhere other than in that apiary or kill her. You need to be assured that the hive is queenless. There is some debate on whether you leave the body of the old queen in the hive or remove it if your choice was to kill her. One thought is

to have the bees carry out the body of the old queen so they are absolutely sure that they are queenless. Another thought is that even a dead queen could emit a residual amount of the queen substance pheromone indicating that they are queen right. Perhaps in your efforts to kill the queen, you only stun her or injure her and thus the situation is worse by having a wounded queen in the hive emitting pheromones when you believed that she was dead. If your choice was to remove the old queen and move her to another yard, you will have the advantage of having a queen in case something goes wrong. However she may still have the problem that caused you to want her replaced.

If you wait too long before introducing the new queen and the hive is queenless for a while, there is the possibility that a worker(s) will assume the duties of laying eggs. This is known as a **laying worker(s)** and all these eggs will develop into drones.

Laying workers are very difficult to find as they look like all of the other workers and the hive has accepted them as queenlike. A tell tale sign of laying workers, is that the eggs in the cells are not well centered and in many cells there are multiple eggs.



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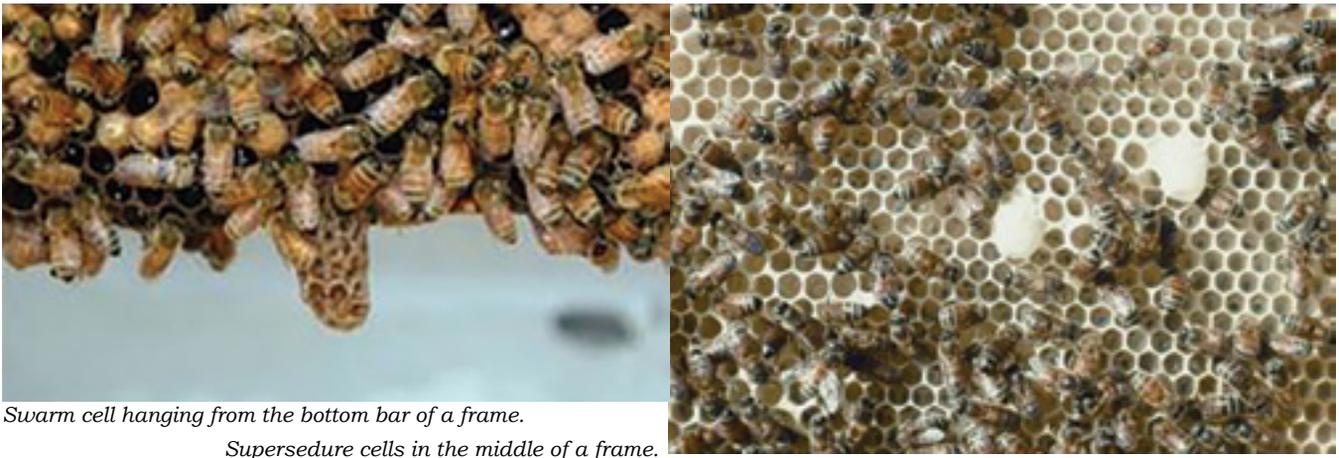
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Swarm cell hanging from the bottom bar of a frame.

Supersedure cells in the middle of a frame.

Some say that solving a laying worker situation can be solved by *multiple* attempts in introducing queens, while others say that the hive is hopeless and the hive should be combined with a strong queen right hive. The reason that the combining method works is that the pheromone of the laying queen is stronger and usually the hive has a larger population.

A queen that is failing sometimes will lay only eggs that will develop into drones, thus she is called a **drone layer**. Because of her appearance, she can be identified easily and caught so the situation can be corrected by requeening.

By requeening every year you generally prevent having a failing queen for whatever reason. A new or young queen tends not to swarm as much as an older queen and usually the disposition of the hive is calmer.

Many beekeepers believe that the bees are a better judge on the condition of the queen, and if she needs to be replaced they will develop supersedure cells. You can tell the difference between supersedure cells and swarm cells usually by the position that the cell occupies on the frame. A supersedure cell can be anywhere on the frame as it was built out of necessity, but usually it is in the middle part of the frame. A swarm cell usually is on the bottom part of a frame and usually there are several

cells. You should also be aware that many times bees will build queen cell cups on the frames and it is worth inspecting to see if the cup is polished and being primed with royal jelly or already have eggs present.

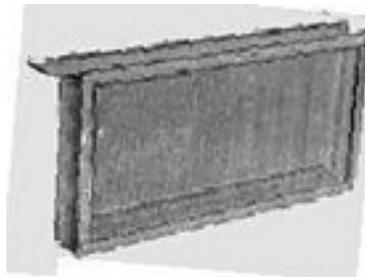
A general rule is that you do not destroy supersedure cells. If you start destroying swarm cells in hopes of preventing swarming, you may end up with a hive that swarms and leaves your hive queenless. If you see the swarm cells, the bees have made the decision to swarm and there is little that you can do to prevent it. You can split the hive, and use the cells to queen the split(s), while keeping, or replacing the queen in the original hive.

It is also handy to know how to read what is happening to the queen cells in a hive. When you see open queen cells, you should look at the bottom of the cell to see if the queen emerged from the cell or was killed. An emerging queen chews the bottom of the cell open so the bottom of the cell will swing open like a trap door. A queen that has been killed in her cell will have evidence where the cell was opened from the side of the cell.

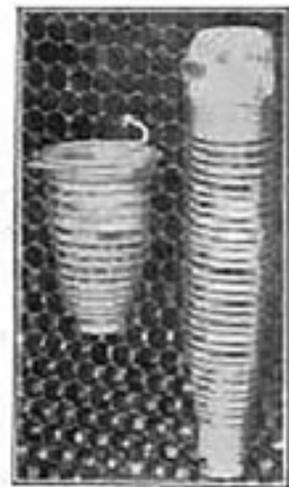
More controversy exists as to how long a queen may live and store

semen. Most of the books indicate that queens living under normal conditions will last approximately two years. As proof, the books point out that when a hive swarms, the swarm begins to make supersedure cells in the newly established hive. However if a beekeeper can keep the hive from swarming, there will be days where the queen cannot be found in the hive and there are no eggs but a few days later everything is back to normal and a queen is present. This indicates that the original queen took another mating flight or was superseded.

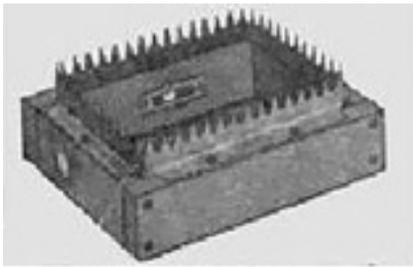
You also should know the usual timing procedure of a swarm. The bees around the queen decide when the hive should swarm and build many queen cells and start reducing the diet of the queen. The queen stops laying eggs and shrinks in size so she can fly. When the swarm issues, we call it the primary swarm and because it may have the old queen and the



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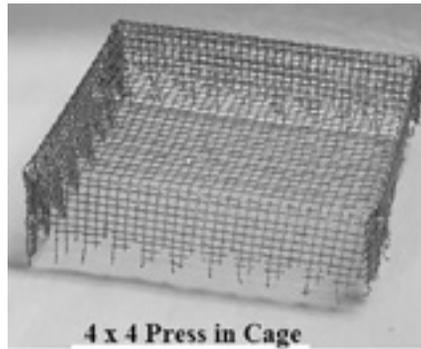


**Jay Smith
Introduction Cage**

bees usually settle at a low location. Scout bees are already looking for a new home and when decided which of possibly several locations is best they go directly there.

If the weather is good, a queen will emerge from a cell in the original hive and take her maiden flight about three days after the primary swarm issued. Sometimes the timing gets off and another swarm issues from the hive and this is called a secondary swarm. Because the old queen has gone in the previous swarm, the queen or queens in this swarm are virgin queens.

I have seen a secondary swarm with seven queens and was busy catching them and putting them in mailing cages. A secondary swarm usually settles on higher objects and once hived takes longer to start up as there is the decision which queen will be dominant and the mating flight or flights will be done after the hive is established. If too many secondary



4 x 4 Press in Cage

swarms issue from the same hive, there is the possibility that the hive can go queenless as there aren't eggs or larvae that are of the right age to make a queen.

A very successful method in getting ready for the introduction of a new queen is to build a Nuc (nucleus hive) by removing the frame that the queen is on along with a frame of honey and a frame of brood with the hanging bees and take them to a new location. I mentioned three frames but you could have more, it just depends upon the size of the Nuc, most beekeepers prefer five frames. You may take frames from other hives and put into the Nuc as long as you do not include the hanging bees.

Essentially what you have done is remove the old queen from the original hive in preparation for the introduction of a new queen and provide the old queen an opportunity to build up a small hive while also giving you a backup queen in case something goes wrong with the original hive.

Sometimes this is considered a method of swarm control. In the old hive you have the essentials for queen rearing such as larva of the correct age, plenty of bees to provide the bees with heat and hive duties, and plenty of food. In case the introduction of the new queen does not work, they could raise their own queen. If in the case you didn't purchase a queen, you could use this technique as the hive may develop supersedure cells. You must take the nuc to a new location as they will return to their original hives if left in the same yard. As the



Queen introduction frame

nuc grows, it may be transferred to a regular hive.

If you purchase a queen, normally that queen has been mated and has been laying eggs. She is sent to you in a mailing cage which over time has had many configurations. The mailing cage can be made of wood with two or three "holes", metal, or plastic. There will be room for the queen and a few attendants, ventilation, and a compartment that holds queen candy. There usually are two outlets in the cage so that the queen may be released directly or released after the candy has been eaten.

Queen candy is usually made of a mixture of finely ground confectioner's sugar and high fructose corn syrup. If you were making a queen candy for your use, several beekeepers have used a mixture of honey and powdered sugar. Some people have claimed that using honey in the mixture may contain pathogens. Getting the candy to the correct consistency is very important as if it is too thin, it will not stay in the correct location of the cage and if it is too hard, the bees will have trouble eating it. The hardness of the candy has led to the idea that you should poke a hole through the candy with a nail.

Some beekeepers have used marshmallows instead of the conventional candy to get away from the consistency problem. The idea of using the candy is to provide the queen with food during her transportation to her new home and to provide a slow or timed release of the queen. The timed release is very important as the bees in the hive need time to accept the queen. However, there are still a bunch of questions. Where and how do you place the cage? Do you remove and replace the workers? Do you direct release the queen? Do you treat the hive for mites and other diseases while introducing the queen? Many of the answers to these questions depend upon your own experiences, training, and schedule.

If you are putting a queen in an apiary that is miles away from your



A five-frame nuc.



**Miller Queen Catcher
and Introduction Cage**

home, you may wish to remove the “cork” from the candy end because it may be some time until you return to the yard. If the hive that is receiving the new queen is in your front yard, you may wish to keep the cage corked until you choose to release the queen at a later date.



the cage is higher than where the queen is located. The reasoning for this is that if an attendant bee dies and covers the candy, she traps the bees in the cage. Thus some suggest removing the attendant bees, while others suggest that the attendant bees should be replaced by bees from the colony where the queen is being introduced. Some queens are sent in bulk packaging

Many years ago, it took nearly a week for a package of bees to be delivered in the mail, allowing the bees’ time to become accustomed to the queen. Thus beekeepers got in the habit of releasing the queen directly into the beehive. Today, some beekeepers are receiving packages that were shaken within the last 24 hours, so there needs to be some time where the queen is kept caged.

When you place the mailing or introduction cage in the hive, care must be given to not put the cage directly underneath where a top feeder is located. This is just a precaution in case the feeder malfunctions and drowns the queen in her cage.

There is a lot of discussion about how to place the cage in between the frames. Generally the candy end of

meaning that several queens are in their own mailing cages without attendants. The balance of the bulk package is filled with loose bees to feed the various queens in the package.

I would suggest that no chemicals be used to treat diseases and mites during the period of time that a queen is being introduced as it could interfere with the pheromones of the queen. Once the queen is released and laying eggs, the chemicals for mite control could be started.

Some beekeepers advocate that the laying queen should be confined to a certain frame or within a special area. It seems that once a queen is laying eggs in a hive, her acceptance



A California queen cage.

is very close to 100%. Other reasons for confining a queen is to be able to determine the age of larva in queen grafting situations or to cause a break in the brood cycle without destroying a queen.

In making nucs and splits you may transfer frames that have queen cells on them. Other times you can cut the cells out of a frame for transfer or have the queen cells that have been developed from a specially designed queen cell base or cup. In hives where there might be many queen cells, a cell protector might be used until you put the cell where you want it to belong. Cell protectors have been made out of wire or plastic.

In difficult situations where you need more time for the bees to accept the queen or the weather has been inclement, there is an introduction frame available where you can insert a wooden mailing cage and let the queen be released into an area where she can be attended by the bees in the hive. After you feel that she will be accepted, you can open the release hole in the top of the frame. This idea is very similar to the Miller Queen Catcher and Introduction cage of the 1920s, but solves the problem of catching and handling the queen.

You can see that there are many options in introducing queens. **BC**

Many of the illustrations came from the 1920 and 1930 Root Catalogs.

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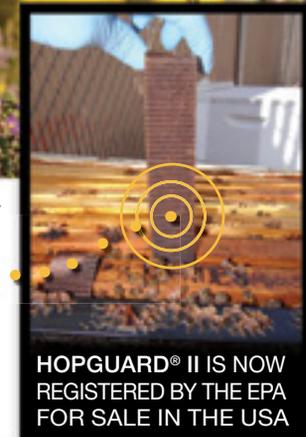
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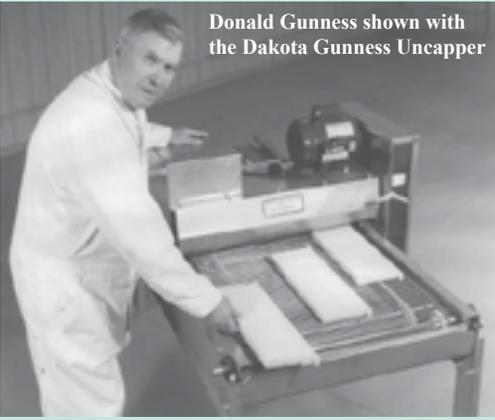
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Climate Change

A bee problem we can potentially solve – Part 2

Ross Conrad

Last month in part one of this three part series on greenhouse gases, climate change, and their impact on beekeeping we looked at some of the changes that are being observed and their potential impact on honey bees and beekeepers. Rather than debating whether climate change has an influence on extreme weather events (floods, droughts, hurricanes, etc.), over the past couple years the scientific debate has transformed to focus on the magnitude and extent of its influence, while politicians debate what our response should be.

We also explored some of the basics of soil science and how a healthy microbiome in soil is essential in order for the plants growing in that soil to thrive. Thriving plants produce abundant forage for pollinators, as well as provide crops and biomass while at the same time, the plants pull carbon dioxide out of the atmosphere and exude it into the soil in the form of simple carbohydrates (sugars) that feed soil microbes. It turns out that there are agricultural practices that have proven themselves successful over time at helping plants to maximize the sequestration of carbon into the soil. These are the same practices that ensure plants robust health thus maximizing the quantity and quality of crops and pollinator forage.

Keep the soil covered with plants and plant matter

Bare soil oxidizes carbon in the soil, while plants protect it and add to it. Not only do plants sequester carbon through photosynthesis, they slow carbon emissions by soil microbes by forming a barrier between the air and the soil, and they reduce soil erosion a major factor in soil carbon depletion. Every time soil is exposed, whether it is because the ground is being tilled, a crop has been harvested and the land left fallow, or we leave space between row crops, soil carbon is reduced. Practices such as mulch farming and under-sowing with legumes and cover crops to keep soils covered throughout the year increase soil carbon, keep soil organisms healthy and prevent erosion (Azeez 2009).

This also means that tilling the soil needs to be minimized if not abandoned. Not only does tilling or turning the soil ruin the soil structure, it exposes the soil to air so

carbon can oxidize and escape. Tilling also disturbs the micro-organism ecosystem in the soil, destroying pore spaces in soil that hold air and water, both vital components for healthy soil organisms. In addition, the act of tilling itself often releases carbon into the atmosphere through the burning of fossil fuels. Research indicates that the highest levels of carbon sequestration are achieved through cropping systems that practice no-till farming and add plenty of organic matter (e.g. compost or cow manure) to the soil (Khorramdel 2013).

Imitate nature's diversity

Nature shows us that the more diverse a system is, the healthier and more resilient that system is, so to promote healthy soil microbes monocultures should be avoided (Lal 2004) just as honey bee monocultures should be avoided by keeping a variety of families and races of bees rather than just one type of bee from a single source. Monocultures invite pest and disease infestations, while diverse plantings help keep infestations from spreading. A

mixture of plants on every square foot of ground provides the opportunity for a larger diversity of soil organisms to fill the greater variety of niches. Mixtures of cover crop varieties are now available to help encourage biodiversity. While crop rotations help support biodiversity, rotations with continuous cover cropping prevent fallow periods of bare soil and increase the activity of soil microbes and enzymes. Research also indicates that when legumes are included in the crop rotation, microbial biomass is increased (Six 2006).

Grazing animals can be an important part of building organic matter in soils, particularly in pastures. Perennial pasturing when properly managed has shown rapid increases in organic matter and soil carbon (Machmuller 2015). Not only do animal hooves break up the soil surface allowing plant seeds, water and air to infiltrate, their manure and urine which are rich in carbon, nutrients and microbes inoculate the soil with biological diversity. I have more to say on the importance of grazing ruminants below.



France's "4 per 1000 - soils for food security and the climate" is based on the fact that an annual increase of soil carbon at a rate of just 4% would be enough to stop the present increase in atmospheric carbon. This national effort by France will focus on ecological agricultural practices to sequester carbon to restore stability to our climate.

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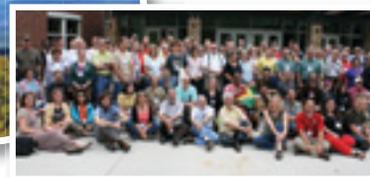
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Discontinue the use of pesticides and synthetic fertilizers

Synthetic agricultural chemicals (herbicides, fungicides, insecticides, etc.) destroy soil carbon. Not only are pesticides lethal to soil organisms, chemical fertilizers have also been shown to destroy organic matter in soil. The Rodale Institute's Compost Utilization Trials showed that composted manure combined with crop rotations resulted in carbon gains of up to 1.0 ton/acre/year, while the use of synthetic fertilizers without rotations achieved carbon losses of 0.15 ton/acre/year (LaSalle 2008). Meanwhile, 50 years of farm trials at the University of Illinois showed a loss of five tons of soil organic matter per acre on fields where 90 to 124 tons of carbon residue was added on each acre, but a synthetic nitrogen fertilizer was also applied (Khan 2007).

Reforestation and reversing desertification

The release of carbon that had been stored in the ground for millions of years has been accompanied by the destruction of about a third of the world's forests and grasslands. There are indications that the proper management of woody plants can lead to sizable soil carbon gains (Quinkenstein 2011). The re-establishment of our lost forests and grass lands can play a significant role in helping to restore the atmospheric carbon balance. The work of Kenyan Nobel Peace Prize winner Wangari Maathai's Green Belt movement, has assisted African women in planting more than 20 million trees and serves as an inspiration.

Another inspiring effort is the work of Allan Savory who demonstrates how holistic planned grazing that mimics nature can stop the process that causes land to turn into desert and help reverse climate change. Approximately half the surface of the Earth is currently desert or in the process of desertification, and a significant part of the reason for this has been the way ranchers and nomadic peoples have grazed their animals. Savory shows that by allowing hundreds of times more animals to graze on a piece of land than the land itself can support, for just a short duration, the land can be regenerated and desertification reversed. Rather than

take up more space talking about it here, I encourage you to view Allan's Ted Talk on mob grazing for a truly inspirational 22 minutes at: <https://search.yahoo.com/yhs/search?p=tet+talk+desert+grazing&ei=UTF-8&hspar=mozilla&hsimp=yhs-002>

Can we act in time?

Researchers who study soil carbon sequestration to mitigate climate change estimate that we have removed 136 Gigatons of carbon from the soil as a result of land clearing and agriculture since the industrial age (Lal, 2007). This is less than the amount of carbon we need to put back into the soil in order to reduce atmospheric carbon dioxide levels to 350 ppm, the level that NASA climate scientist James Hansen says is a relatively "safe" level. Depending on who's numbers you look at, agriculture contributes anywhere from seven to 15 percent of the world's greenhouse gas emissions. Other major contributors to GHG emissions are categorized as industry (manufacturing, packaging, transportation and storage), and changes in land use (such as through deforestation and desertification). Unfortunately these categorizations ignore the fact that agriculture is one of the world's major industries accounting for much of the processing, packaging, shipping and storage activity in the world. Agriculture is also a major cause of deforestation and responsible for much of those emissions as well. As a result, our current industrial agricultural model is both directly and indirectly responsible for about a third of GHG emissions worldwide. Clearly our agricultural system must change from being a major contributor to the problem, to being part of the solution.

Given that we are currently at 400 ppm carbon dioxide and in order to keep climate change to a minimum we need to reverse the CO₂ buildup and get back to at least 350 ppm quickly, we need to remove and store 50 ppm of carbon dioxide in the soil. This works out to about 106 Gigatons of carbon. Since we have removed about 136 Gt since 1750, we know the carbon will fit back in the ground. All it will take is to convert all of the world's agriculture to incorporate practices that sequester carbon: such as the use of cover crops, no-till, no

chemicals, replanting our forests and holistic planned grazing. Since the agricultural practices that are needed are the same practices used by many organic, biodynamic and permaculture farmers, what it will ultimately take to reverse climate change is tens of millions of new eco-agricultural farmers all around the globe, supported by hundreds of millions of conscious consumers. That is how simple, and how difficult, the challenge before us is.

Of course there are the naysayers who will claim that this will never work – that organic agriculture will never produce enough food for our ever growing world population and we need modern industrial agriculture in order to feed the world. This argument ignores the fact that currently there are millions of people starving and going to bed hungry every day even with industrial agriculture. Various studies point to the fact that the future will not be dominated by the corporate model of agriculture we see today. (DeSchutter 2011, Foley 2011, Natural Resource Council 2010, FAO 2012) Instead the world's increasing demand for food can only be sustained by smaller, more localized forms of ecological agriculture that are much more efficient (both in terms of energy and in terms of the amount and quality of food produced from a given area of land).

Not only will our effort to reverse climate change improve the chances for our bees (and much of the rest of life) to survive in the long-term, but the bees will benefit greatly in the short-term from the removal of toxic pesticides from the environment. Of course this also means that the face of the beekeeping industry will also have to change dramatically (along with the rest of the agricultural industry). The huge monoculture farms that are only able to sustain themselves through the use of pesticides and fossil fuel burning machinery will become a thing of the past, as the world realizes the grave mistake it has made by embracing industrial agriculture.

Along with the phase out of these mega-farms will be the phase out of large-scale migratory beekeepers that not only rely on the existence of these inefficient farms for their existence, but contribute to the problem by requiring fossil fuels to power the

trucks that run the bees around the country. In its place we are likely to see many farms returning to the days were bees are kept on the farm in order to meet pollination needs, and migratory beekeeping operations are likely to be much smaller in scale and more localized in their activity.

As I write this article, the 21st United Nations Climate Change Summit is taking place with 195 negotiators from around the world gathering in Paris, France for what organizers called the largest-ever gathering of its kind. Known as COP 21, the climate conference objective is to reach a legally binding and universal agreement on climate from all the nations of the world. Given that world leaders have been meeting like this for 20 years now and have so far failed to reach any meaningful agreement that has actually had the effect of reducing greenhouse gas emissions, this year's summit is unlikely to succeed as well. In large part this failure is a result of our unwillingness to change. Until the vast majority of us are willing to change how we live and do things, heads of government and business leaders are unlikely to change the way they do things to any meaningful degree.

Whatever the result of the COP 21 summit, I can guarantee that it is not going to be enough. We have reached the point where drastic changes are going to be required if we are going to limit climate impacts to severe rather than catastrophic consequences. But even if we miraculously stopped burning all greenhouse gasses tomorrow, reduced our energy use and waste, ramped up our renewable energy production, and transformed industrial agriculture to an ecologically harmonious model, the climate changes that we are seeing today will continue to get worse before they get better. As beekeepers, we will have to learn how to assess our vulnerability to the changing climate, plan and prepare mitigation measures and evaluate our capacity to adapt to keep bees in such an unpredictable world. This will be the focus of next month's installment.

Special thanks to the Massachusetts Chapter of the Northeast Organic Farming Association and Jack Kittredge for the white paper: *Soil Carbon Restoration: Can Biology do the*



Although Monsanto used the occasion of the COP21 meeting to promote how much they are doing to help support agricultural practices that sequester carbon, the data suggests that chemical pesticides and herbicides like Monsanto's Round Up actually cause carbon levels in soils to decrease.

Job?, which formed the basis for this article series. www.nofamass.org/content/soil-carbon-restoration-can-biology-do-job **BC**

Ross Conrad is the author of *Natural Beekeeping*, Revised and Expanded 2nd edition.

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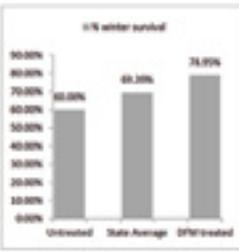
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BIGGER PICTURE

Jessica Louque

Sweet Treats For Valentine's Day

Since you're reading a beekeeping magazine, I'm assuming that you have an affinity for bees or your significant other/family member does. With Valentine's Day just around the corner, the thought of purchasing presents for your Valentine should be a part of your planning (right, honey?) and I have your best-ever bee gift ideas below, with a little bit of everything for every type of Valentine. As a caveat, I am trying to stray away a bit from the normal food-related gifts and more into the tangible item realm to try to give something a little new.

While there's always the ever-present gift group of honey, candles, or other bee produced/beekeeper made gifts, this might be the time to think a little deeper into the thoughts. Maybe you're looking for a present for a bookworm, a collector, a bee nerd, or a fashionista beekeeper, and maybe some of these ideas will lead you in the right direction!

The first step in addressing a problem is admitting you have one. My name is Jessica Louque and I admit that I am a book hoarder. There, now everyone feels better. As a person who owns so many books that I have occasionally purchased the same book twice for fear of not owning a good book, I have a fairly large collection of bee-related books. Of all the bee books out there, the book I reference the most is *Insect Pollination of Cultivated Crop Plants* (1976), by Dr. S.E. McGregor. I have to say it is some of the most well spent money on any of the books that I use. If you are not as interested in pollination specifically, it might not be as nice of a gift. If you're trying to encourage a budding beekeeper, Kim Flottum's book *The Backyard Beekeeper* is really one of the best you can get. The colors and photos are engaging and the writing style keeps you from losing interest. Most anything put out by Lawrence Connor should be on most

book collector's shelf, and maybe you could start a tradition of a new book each year. If you're looking to round out some non-apis (non-honey bee) information, *The Bees in Your Backyard: A Guide to North America's Bees* is a good bet for a good reference. If you have a baby bee as your Valentine, you might want to look into *The Bee Tree* by Patricia Polacco is one of my favorite children's books for the eastern European artwork and slightly different take on storytelling. If you're buying for a more casual reader, might I suggest a nifty magazine called *Bee Culture* with a year subscription for your Valentine? I hear it has some excellent contributors.

One of the more interesting things I've come across lately was recommended by a friend who might be considered a bee enthusiast is a group of posters sold by Eversweet Apiaries in West Virginia. If you have someone who might love reference books, or bee books, but you're hesitant to buy them because their collection is daunting and you don't want to buy them something they already have, then this is a gift to consider. They have a honey poster,



Botanical drawings for the plant-inclined.

and a pollen/nectar availability poster that you can either buy by the season, or a season compilation of all three posters for a reduced price. It's a pretty neat poster set that of course will vary depending on your region, and would be nice in a frame. The only caveat from my perspective is that this is a present that requires a little pre-planning because it took a good few weeks for me to receive mine in the mail after ordering. If you want to have it in time, you'd better order it now!

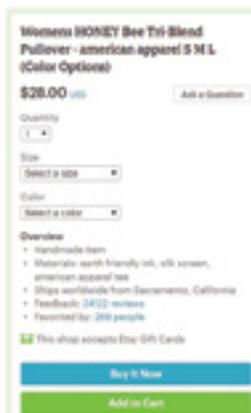
If you're like most bee people, you are just about at that point in the year where you are itching to plant something and most likely hoarding seed magazines and ordering ridiculous seeds that you don't have room to grow in anticipation of the coming Spring. Feed the need with seeds. Nothing says "I love you even when your ignoring me in the garden" more than buying seeds. At least that way, they can think about you while they sit in the garden! This is one of the more dangerous areas for buying a present because



Maggie with *The Bees* book.



Zen Threads shirt.



it turns into the “To: me, From: me” present. My absolute favorite seed company is Johnny’s Seeds. Nearly all our vegetable seeds come from there, and we use them for our major purchases as well. We bought an entire pallet of buckwheat seed from them this year, as well as almost every seed produced in the U.S. for one of their tiny pumpkin varieties. The germination was excellent and the plants were definitely high production. Sometimes, Johnny’s is missing a variety or type that I want, and High Mowing Seeds is my second go-to seed source. Both companies offer a wide range of organic seeds that are high quality. If you’re looking for something a little more bizarre, you can find all sorts of odd things on Etsy that may or may not be a good idea to plant in your zone, and may or may not be good for your wallet. Have you met Etsy yet?

If you’ve never shopped on Etsy, let me please be the first to introduce you to your new shopping addiction (or your wife/girlfriend’s new

addiction). What bee person couldn’t use a super comfortable shirt that’s also stylish or entertaining? There is a store called Zen Threads that sells the absolute softest t-shirts I’ve ever purchased. Most of their designs are pretty quirky, with everything from vampire squirrels in hazmat masks, to giraffes in tennis shoes, to a couple of neat bee prints. My favorite has a large print of a bee and declares the greatness of honey. There’s also a white and yellow striped pair of knee socks that you can buy with a bee print. If you’re looking to spiffy up a Mr. beekeeper in your life, let me send you to the Cyberoptix store on Etsy. If you search “Oh Honey” you should be able to find this handsome black silk tie with a gold screenprint of bees on honeycomb. This is another store of quirks and probably also quarks, with all kinds of nerdy designs that have graced a many of my grandpa’s Christmas and Birthday present boxes, as well as my husband’s boxes. If you don’t feel like it’s too much, or you need to bee-up a non-bee tie, Etsy store CosmicFirefly sells a really nice bee tie bar, although it looks a bit more bumble bee-like. Bobby enjoys his and uses it frequently. If you want a couple’s matching set, multiple Etsy stores sell a golden bee bobby pin set that has the same die-cast mold as the tie bar. I believe there are also rings that match, but those are going to be a bit large for the same bee mold. Speaking of jewelry . . .

Etsy is a great place to find bee jewelry for most any taste and price range. They have all sorts of sets for rings, necklaces, and earrings, or mix and matching. I’ve ordered from a lot of different stores or vendors on Etsy, and rarely do I have a problem (perhaps twice, and one of those was not particularly bad and was rectified

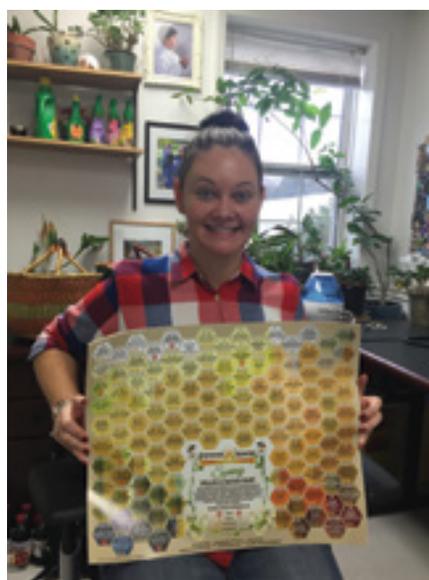
by the shop). I would not hesitate to purchase something on there just because it was a little pricey if I thought it would make the perfect present.

You can also have someone custom design your piece by a shop. Bobby and I had a fork set made with our wedding date on the handle, and just above the tines said either “Mr. Louque” or “Mrs. Louque” with a bee stamp embedded in the metal. Customized presents always mean more, but you might want to spend some time looking around for who looks like they can make the best product.

So now onto my last phase of presents – the pampered bathroom accouterments like lotions, soaps, shampoo, and such. If you are looking for a reasonably priced brand of cosmetics, The Naked Bee does a pretty good job of maintaining good quality without breaking the bank. They sell a wide range of cosmetics, including shampoo, conditioner, soaps, lotions, sunscreen, and a few other things. If you want to have a little more luxury while being in the organic realm, check out the LUSH cosmetics website. They are based in Canada, but have a U.S. version of their site as well. They have products that are all hand-made and range from cruelty-free labeling to full vegan lines (maybe not so much bee-based in that category). One of their best sellers in the soap is Honey I Washed the Kids, a honey based soap that has a little liner of beeswax on the top. It smells fantastic and lathers well. They also have a great honey shampoo, and their lotions are to die for. They are definitely on the pricey side, so be prepared to separate from your money, but it’s a worthy purchase for your bee-utiful lady in your life (or ladies, should you have daughters around on Valentine’s Day).

Whether you are buying a present for your friend, your parents, your lady love, your handsome husband, your kids or yourself, I hope you were able to pick up some great ideas to show some love to the important people in your life. If all else fails . . . there’s always chickens. And baby goats. And maybe alpacas and mini donkeys. **BC**

Jessica Louque and her family are living off the land in North Carolina.



Pollen poster from the bee company.

CERTIFIED NATURALLY GROWN

Much More Than A Marketing Label

Alice Varon



How can you have organic honey? That's not an uncommon question when I talk with beekeepers. They will correctly point out it's impossible to control where honey bees fly. Since honey bees can cover a geographic range of more than 8,000 acres, the odds are decent they will forage on a crop or landscaped area that has been treated with synthetic pesticides. This fact makes it impossible for most beekeepers to qualify for organic certification. Yet many beekeepers are committed to organic principles, and would like a certification that recognizes their practices.

Fortunately, there is such a program, called Certified Naturally Grown (CNG). Participation in the organization's apiary certification program has grown each year since it was launched nearly six years ago. The experience of Leigh Knott is typical. Back in 2010, when she was living in northwest Arkansas Ms. Knott started keeping bees. From the beginning she had a firm commitment to working with nature, not synthetic chemicals, to manage her apiary. It was a steep learning curve, but she was glad to discover some guidance when in 2013, after she relocated to the Blue Ridge Mountains of NC, a local farmer told her about Certified Naturally Grown's apiary program. As she expanded her apiary in her new home, she relied on CNG's apiary standards as guidelines to best practices. In 2015 she initiated and completed the CNG apiary certification process and is able to use the Certified Naturally Grown name and logo to market her honey.

Since 2002, Certified Naturally Grown has offered certification for farmers using natural methods to produce food for their local communities. CNG's peer-review certification programs are tailored for direct-market farmers, and based on a commitment to working in harmony with nature, without relying on synthetic chemicals to manage pests, soil fertility or plant diseases. Today there are more than 700 CNG farmers and beekeepers in 48 states nationwide.

In 2007, CNG started receiving phone calls from beekeepers concerned about colony collapse disorder, asking whether we'd offer certification to their apiaries. They were committed to supporting the health of their bees, and felt that keeping synthetic chemical treatments out of their hives was an important part of that work. Being able to be certified for these practices would provide

a way to encourage other beekeepers down this path, and raise awareness among customers.

After all, they reasoned, while we can't entirely prevent our bees from landing on crops treated with harmful pesticides, we can surely support honey bee health in other ways. Beekeepers can keep chemical treatments out of our hives, follow good management practices, and allow for natural selection to determine the strains that will best withstand pest and disease pressures, and thrive in our local conditions.

We were sold on the idea, but we needed an experienced beekeeper to work with us to develop the certification standards that would form the basis for such a program. What particular practices would be allowed, prohibited, recommended and required to be a CNG beekeeper?

As luck would have it, Dr. Buddy Marterre of Winston-Salem, NC contacted us and said he was willing to take the lead in drafting these standards. We worked with him to ensure the apiary standards were in keeping with CNG's approach, including regulating only what's meaningfully in the beekeeper's control, minimizing paperwork, and working with nature instead of relying on inputs. We shared the draft standards with experienced beekeepers nationwide to get their feedback, made some adjustments, and then developed the application forms and inspection worksheets. All these program elements have been posted to the CNG website. We launched CNG's new Apiary certification program in 2010.

Nearly six years later, as of December 2015, CNG has received more than 320 applications for apiary certification. These applications were reviewed based on CNG's Apiary certification standards. Today there are 80 Certified Naturally Grown apiaries in the United States. They're distributed across 29 states, with the greatest numbers in Georgia (16 CNG apiaries), North Carolina and Virginia (six in both), Pennsylvania and Tennessee (four in both). Like all CNG producers, they each have a profile on the CNG website at CNGfarming.org. Once applicants complete the certification process they're also eligible to purchase marketing materials such as the CNG logo stickers to place on jars, or laminated certificates or signs. We are currently designing a honey jar label just for Certified Naturally Grown beekeepers.



Hysmith Jar photo by Austin Varner.

One may wonder whether there’s really a need for a certification program providing a marketing label for beekeepers committed to ecological practices. After all, these are typically small-scale producers with a devoted local customer base, and they rarely have any difficulty selling all their honey. But as it turns out, marketing isn’t the only reason, or even the main reason, why beekeepers join Certified Naturally Grown and maintain their certification.

We recently conducted a survey of our current members to get a better sense of what motivates them. The survey gave four reasons why a beekeeper might choose to be CNG certified, and asked how important was each. The results are shown in the table below. By far, the most significant reason was “to highlight my practices and values”, with 79% of respondents saying it was super important. This reason was followed closely by “to raise public awareness of honey bees” with 59% of respondents saying it was super important. The survey also asked members for examples of how their certification had been valuable. The results confirm that for CNG beekeepers, certification is about more than marketing – they also see it as a way to raise awareness and educate their customers.

Reason	Weighted Average*
To highlight my practices & values	3.71
To raise public awareness about honey bees	3.26
To help my marketing	2.82
To connect me to other beekeepers	1.81

*on a scale of 0 – 5 where 0=insignificant, 1= it matters a little bit, 2= sure that matters, 3= pretty important and 4=super important

Rhett Renoud of Wild Honey Ranch in Ramah, NM describes his reason for maintaining his certification this way: “With the certification, people are drawn to respect the world of beekeeping and understanding how fragile

our environment is. And more importantly, the CNG certification helps people understand that there is more than one way to keep bees.”

In her application, Leigh Knott of North Carolina indicated her reasons for seeking CNG certification. She wrote “I want to raise awareness of naturally grown honey vs. conventional. I believe becoming CNG certified would be a great way to raise awareness and hopefully encourage other local beekeepers to follow CNG guidelines.”

One of the distinctive features of CNG is the peer-review inspection component. These inspections are a core component of the certification process, and are carried out at least once per year by another beekeeper in the area.

Related to this requirement, Rhett Renoud adds another reason for keeping his certification: “Because Certified Naturally Grown is structured and has an accountability system, it separates myself from the other local beekeepers. In a sense, the certification demands respect.” This sentiment is shared by Ryan Hysmith of Hysmith Honey Co. in Beech Bluff, TN. He writes “It is one thing for me to tell people I cared about creating a clean, natural product; it is another thing to show third-party verification”.

Leah Knott, like many CNG producers, found the inspection experience itself was valuable. She writes, “The inspection process was great. We spent a lot of time on each question (since it was my first one) and it gave me the chance to really review my habits vs. best practice. The inspector clearly had some ah-ha moments too.”

In some areas, CNG certification can grant access to certain markets. Don Studinski of Honeybee Keep in Golden, Colorado, told us that “The market manager was ‘interested’ in my honey before we discussed CNG, but he was ‘excited’ to have my honey when he heard about my certification.” In fact, there are several farmers markets and grocery stores that give preference to producers who are Certified Naturally Grown (they’re listed at cngfarming.org/markets_directory).

Most CNG beekeepers are working on a fairly small scale. A recent survey found that of all 28 respondents, only three had more than 50 hives this year, 10 had 26-50 and 15 had 25 or fewer. Most CNG beekeepers are hobbyists, and in a handful of instances they’re sideliners. Even though there’s a minimum dues of \$110 for CNG farmers, we do not require a minimum amount to cover the certification dues for beekeepers. All CNG beekeepers must contribute *some amount* to keep our grassroots program running, but our goal is to encourage participation and help us raise awareness of the importance of natural beekeeping, both for the sake of the bees and our food supply. By not setting a minimum, we avoid excluding people on financial grounds. Please join us!

You can learn more, get certified, and register for updates at CNGfarming.org/apiary **BC**

Alice Varon is Executive Director of Certified Naturally Grown

STANDARD TOP BARS FOR THE BEEKEEPER



TJ Carr & John Bradford

Introduction

We know that honey bees and beekeepers contribute greatly to American agriculture and to our dining pleasures. We recognize the Langstroth hive as an optimized design for large-scale honey production and crop pollination beekeeping, and we recognize that it is also suited for many small-operation beekeepers. However, there are good-intentioned rebellious beekeepers among us, including the authors of this article, who choose to keep bees in “Top Bar Hives.” We propose there are good reasons to keep bees in top bar hives and for top bar beekeepers to use top bars of standard design and dimensions.

The authors are members of the Albuquerque, New Mexico, Beekeepers Club, one of two larger beekeeper organizations in New Mexico. The other major organization is the New Mexico Beekeepers Association, whose past president is Les Crowder. Les has kept bees for more than 30 years, is largely unequalled in his knowledge of beekeeping, generously shares his wisdom with others, and is an advocate of top bar hives. There is no better discussion of pros and cons of top bar hives than is found at his website. If you have internet access, please read what Les says at www.fortheloveofbees.com/. And, for another discussion of top bar hives and their use, there is an excellent article in the online Wikipedia encyclopedia at http://en.wikipedia.org/wiki/Top-bar_hive.

The authors hold copyrights to specific fabrication drawings for a proposed standard top bar and for a hive design that uses it. We make the designs and drawings freely available for use by other beekeepers or for commercial production. Electronic copies of the drawings are available in Adobe Portable Document Format (.pdf), which can be printed on standard 8-1/2 by 11 inch paper. Adobe Reader software is available for free downloads and use from <http://get.adobe.com/reader/>.

The drawings and a pre-publication draft of this article are available for downloads at the following websites: <http://mistressbeek.com/2009/05/03/diagram-and-plans-for-a-top-bar-hive/>; www.nmbeekeepers.org/page/topbar-hive-plans

You may choose to obtain a copy of the drawings for reference while reading this article.

Some Reasons to Use Top Bar Hives

Although Langstroth hives are typically produced by commercial hive manufacturers, top bar beekeepers often build their own hives. Moderately skilled craftsmen can make top bar hives using relatively simple woodworking tools, and they often make the hives from scrap or surplus materials. Thus, top bar hives may provide a substantially lower cost for entry into beekeeping, and they are the predominant hive in some developing and under-developed countries.

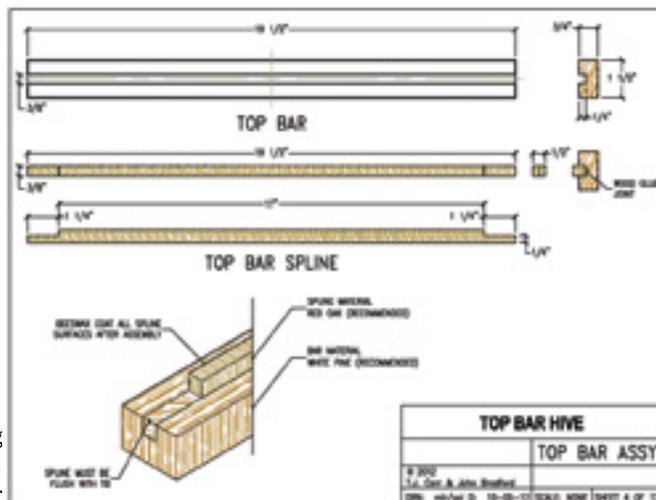
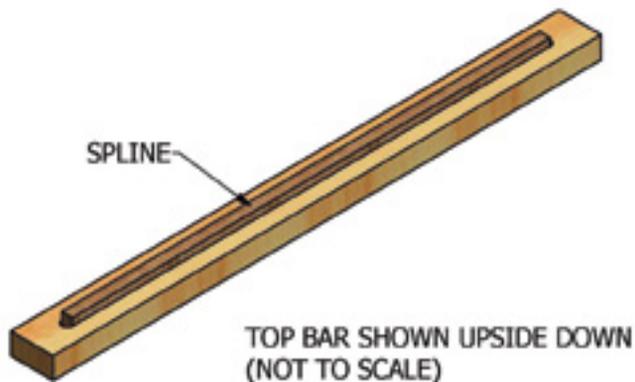
In comparison to the Langstroth hive, top bar hives provide an environment much closer to the conditions found in nature by wild and feral bees. No comb foundation material is used in top bar hives. The bees hang comb down from the top bars, in essentially the same fashion as in a wild hive, and the bees determine the cell size to suit their needs. Bees kept in a top bar hive devote resources to wax and honey production in about the same proportions as in a wild hive.

The beekeeper harvests honey by cutting off the comb at its junction with the top bar, and comb cut from the top bars is not recycled within the hive. There is far less danger of chemical residue build-up in a top bar hive than in a Langstroth hive. Honey extracted from new comb that was never used for brood or pollen storage can be of uniquely high quality. We believe that colony survival rates may be enhanced by the natural conditions found in top bar hives.

Bees kept in top bar hives will tend to produce less honey and more wax than bees kept in Langstroth hives in the same bee-food-source environment. This may not be at all important to a small beekeeper with a well-pollinated orchard and vegetable garden and with honey on the table. The extra beeswax can be a resource for candles and other desirable handcrafted items.

Why Use a Standard Top Bar?

One of the primary advantages of the standard Langstroth hive is the interchangeability of hives and hive components within an apiary and among beekeepers. Top bar beekeepers have largely forgone this advantage in exchange for the freedom to build our own hives to designs of our own choice. The advantages of using interchangeable top bars are so great, however, that some loss of individual freedom is justified.



Experienced beekeepers will have no problem finding many reasons why top bars should be interchangeable. Interchangeable top bars are required when splitting or merging colonies. When introducing package bees or swarm bees to a hive, the presence of a couple of brood combs from another colony will help ensure that the newly-installed bees do not depart the hive.

Standard top bars can be exchanged with other beekeepers, and standard bars have potential sale and re-sale value.

As with the forms and function of common tools of carpentry and other crafts, the shape and design of the proposed standard top bar has evolved through years of use in which variant shapes and configurations have been tried. Faulty, inferior and unnecessary features have been discarded. What remains is a bar that produces optimum results in the top bar apiary.

Dimensions and Features of the Proposed Standard Top Bar

We propose a standard top bar with a main body that is 19-1/2 inches long by 1-1/2 inches wide by 3/4 inches thick. This bar can be temporarily used in a Langstroth hive, and its size falls within the range of bar sizes currently used by most American top bar beekeepers. A top bar with 3/4 inch depth has adequate stiffness and is light and easy to handle. When bees hang comb along the bottom centerline of the 1-1/2 inch wide bars, adjacent combs are separated by a proper “bee distance.”

The proposed standard bar features a wooden spline that is 17 inches long by 3/8 inch wide and extends 1/4 inches below the bottom surface of the bar and into the hive interior. This protrusion into the hive encourages the bees to hang comb along the long axis of the bar and deters cross-combing. The spline also supplies additional surface area at the junction of comb and top bar, so that a stronger connection is formed. Our experience indicates that the bees form a stronger comb to spline connection when the spline has a rectangular shape than when the spline has a triangular shape.

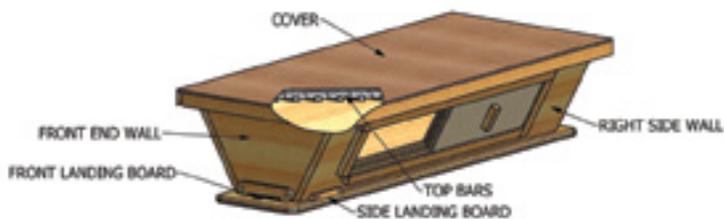
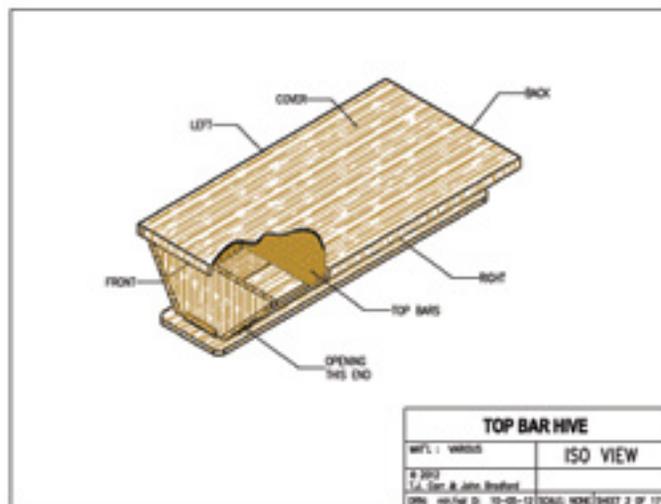
When the standard bar with 17 inch spline is used in a hive where a centered bar leaves a gap of about 3/8 inches between the bottom ends of the splines and the hive side walls, the bees will tend to terminate the comb at the spline end, and, thus, will not attach comb to the side wall at that height and location.

There are experienced top bar beekeepers who advocate use of top bars narrower than 1-1/2 inches, in one case as narrow as 1-1/8 inches. We note that a variation in top bar width is one deviation from our

proposed standard that would not preclude the exchange of top bars between hives or between beekeepers. We also note that a top bar thinner than 3/4 inches would not preclude its temporary use in a hive designed for use with our proposed standard top bar.

Features of Our Top Bar Hive Design

The authors are proposing widespread use of a standard top bar to facilitate flexibility and efficiency in the individual apiary and to facilitate top bar exchange and cooperation among top bar beekeepers. We are *not* proposing or advocating use of a standard hive design. A beekeeper might prefer a hive of shallower depth to ensure lighter weight combs and reduced chance of comb breakage. This might be a sound decision, especially in the case of hives that are to be routinely transported to different locations. A beekeeper located in an area of strong nectar flow might prefer a hive of greater length and volume. Top bar beekeepers will continue to build hives



to their own designs, desires and judgment. However, even the experienced beekeeper might learn something from review of our hive design and methods, as might the novice beekeeper who is just starting to build hives.

As discussed in the Wikipedia article referenced above, top bar hives with vertical side walls are often referred to as “Tanzanian,” and top bar hives with sloped side walls are referred to as “Kenyan.” Widespread experience indicates that bees have fewer tendencies to attach comb to the sloped side walls of the Kenyan top bar hive. Our hive design has side walls sloped at an angle of 60 degrees to the horizontal, which is the same slope as the side walls of the hexagonal wax cells produced by the bees. The reader may also note that 60 degrees is an important axis of symmetry in the arrangement of the cells within the comb. We do not pretend to understand the rational processes of the bees, but we speculate that the bees find it relatively easy to build comb so that a bee distance is maintained between the parallel sloped sides of the comb cells and the hive side wall.

Hives should provide a cavity shape and volume that the bees find receptive, and top bar hives with dimensions approximately the same as ours have been successfully used for years by many top bar beekeepers. Consistent with that, we chose specific dimensions to make efficient use of readily available materials and to minimize wood-working operations in fabrication of hives. Nominal 1x2 white pine, finished four sides, has finished dimensions of 3/4 by 1-1/2 inches, which can be used unchanged in producing top bars. Nominal 1x12 white pine, finished 4 sides, has standard dimensions of 3/4 by 11-1/4 inches. Our bottom board width and inner side wall width are called at 11-1/4 inches.

We call for red oak for top bar spline material. Red oak finished to a precise 3/8 inch thickness is readily available. We call for Hardie Board, a cement-fiber product commonly used for structure siding, for the hive cover. It comes in 4 by 8 or 4 by 10 feet sheets which can be cut to make four or five hive covers with scant waste.

We use only natural wood for surfaces exposed to the hive inner cavity (other than glass at the viewing window), and we avoid plywood for fear of out-gassing by adhesives used in plywood manufacture. We do call for the top bar splines to be glued into a groove, but commonly available wood glues are relatively benign materials that cure without noxious vapor and are quite inert when cured.



Photo by Anne Cole.

Our bees have demonstrated a preference for entrances through the side walls rather than through the end walls. However, an end wall opening can be quite handy for use of Boardman entrance type feeders. We provide both side wall and end wall entrances, which can be either open or closed at the beekeeper’s discretion. The Landing Board Closure (LBC) is used to close the end wall entrances. When mounted in one of two positions the LBC also provides ventilation through “perforated metal.” The authors have used Lincane 0.020 inch thick decorative sheet aluminum, product bar code 040395520622, sold in 24 by 36 inch sheets. A Google search reveals a variety of online and local store vendors. Hive builders may already have, or may identify, other suitable perforated metal or screen products.

We have typically located and oriented hives with the entrance pointing to the south. When using this hive in the northern hemisphere one might typically face the front wall to the east and open the left side wall entrance, so that that the active bee entrance faces to the south.

Our design includes a viewing window, with shutter. The window can provide useful information about bee activity with minimal disturbance of the bees, especially when used at night and with a flashlight. If hives are clustered in pairs it is handy to have windows at the outsides of the pairs. The hive-building beekeeper might choose to build one of two hives with the window located on the left side wall, so that each hive of the pair has a window facing to the outside. The hive builder might decide to omit the window to simplify construction. One acquaintance builds windows on both sides, with one window to view the brood area and one window to view honey storage.

Hives made to our drawings measure 18-1/4 inches across the horizontal line between the tops of the side wall inner surfaces. When the standard top bar with 17 inch spline is centered between the side walls, the distance from the spline bottom end to the closest point on the side wall is about 0.4 inches, slightly more than 3/8 inch. As previously discussed, we think this gap helps the bees maintain a bee distance between comb and side walls. If the standard top bar is accidentally displaced toward either side of the hive, the spline will come to rest against the side wall and will stop the lateral movement before the bar moves far enough to cause it to fall into the hive cavity. We recommend building hives that provide this 18-1/4 inch dimension, even if other dimensions and features are modified.

The reader will observe that the heights and upper widths of the front and back end walls are different. The upper surface of the front end wall lies 3/4” above the tops of the slanted side walls and lies flush with the upper surfaces of the top bars. The top bars are pushed against and parallel to the front end wall. The hive cover is supported on the plane formed by the upper surfaces of the front end wall and the top bars.

The upper surface of the back end wall lies flush with the tops of the side walls and with the bottom surfaces of the top bars. In the event that the combined width of 29 top bars is slightly greater than 43-1/2”, the last top bar can ride slightly over the back end wall. If there is a gap left by installing the maximum number of top bars that will fit, the gap can be closed by a non-splined filler bar of suitable width.

In Summer months in hot climates the hives should be located in a shaded area. If a shady location is not available, we support a separate piece of plywood above the hive cover on four bricks and add bricks or other weights on top to keep the plywood in place when the wind blows. The plywood should be large enough so that sunlight does not fall directly on the hive cover.

The experienced beekeeper may want to have one or two nuclear hives available. These are easily manufactured from the drawings by shortening the longitudinal dimensions. The hive builder should decide how many top bars are to be removed to make the nuc hives and should shorten the longitudinal dimensions of side walls, bottom board and cover by 1-1/2 inches for each bar that is to be deleted. Nuc hives with 15 top bars are common. We omit the window for nuc hives.

Practical Tips for Fabricating the Top Bar Hive

Beekeepers who build hives to these drawings will bring a wide variety of woodworking skills and tools to the task. Those with high skills and the most precise tools and equipment will have little trouble maintaining accurate hive dimensions. However, achieving accurate dimensions of the end walls will be difficult unless the 60 degree side wall angle is accurately maintained. A large 30-60 degree triangle, of the type used by graphic designers and in traditional pen and ink drafting, can greatly assist accurate layout and accurate setup of an inexpensive table saw. If the hive builder does not own or cannot find such a triangle, she or he might be able to get someone with a precise table saw or radial arm saw to cut a good template.

The end walls can be laid out without use of a drafting triangle or template. Starting with a board width equal to the required height of the end wall that is to be drawn and cut, the hive builder draws a line across the board perpendicular to the long dimension of the board. At one side of the board and starting from this perpendicular line the hive builder measures and marks in each direction half the top width of the end wall. At the other side of the board one measures and marks in similar fashion half the bottom width of the end wall. The slanted sides of the end wall are then drawn by connecting corresponding marks at each side of the board.

The beekeeper will want the hive to be structurally stable, even after considerable handling, and might want to disassemble it at some time in the future. We recommend that major components be assembled using only wood screws. If required, nails should be used only temporarily during assembly, and nails should not be used in the finished product. Screws should be stainless steel or screws manufactured and designated for exterior exposure. Such screws are commonly used in exterior wooden deck construction and are readily available.

Dadant entrance feeders come in slightly different designs. It is a good idea to have on hand a sample of the specific entrance feeder that will be used, and the hive builder should ensure that the end wall openings are suitable to accommodate that feeder. The hive builder may need to modify the Landing Board Closure, LBC, shown on sheet 16 of the drawings, to accommodate the specific entrance feeder that is to be used.

All interior hive surfaces should be left unpainted, but the hive exterior surfaces will last longer and be



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more attractive if given a good paint job of prime and finish coats. Do not paint the screw heads if you may want to disassemble the hive in the future. White paint is preferred. In summer months, a well painted white hive may have interior temperatures 20 degrees Fahrenheit lower than hives painted a darker color.

Fabricating Bars and Hives from Alternate Materials

The authors have used other materials in building top bars and hives, including oak scavenged from shipping pallets, side walls laminated from surplus 1 by 8 tongue-and-groove flooring, and long leaf pine previously used circa 1920 to remodel an even older house.

Use of alternate materials will usually entail more work. Care should be taken that no material that is potentially deleterious to the bees is used at the hive interior. The vertical depth of the hive should not be substantially increased, because this could result in heavier comb more likely to break away from the top bar.

If side wall material has a width other than 11-1/4 inches, then end wall dimensions will need to be adjusted to maintain the desired 18-1/4 inch distance across the top of the hive cavity. In the case where we have used 11-1/4 inch wide side wall material, the bottom width of the end wall trapezoids is called at 7 inches. The reader may observe that 18-1/4 inches minus 11-1/4 inches equals 7 inches. This relationship results from the use of a 60 degree angle and the fact that the numerical value for the cosine function of 60 degrees is an even 0.50.

As an example, if one uses nominal 1 x 10 inch side wall material with actual width of 9-1/4 inches, one calculates the required bottom width of the end boards as: 18-1/4 minus 9-1/4 equals 9 inches.

The height of the back end wall can be calculated as the width of the side wall boards multiplied by the sine of 60 degrees, which 6 place value is 0.866025.

In the case shown on our drawing where the side wall material is 11-1/4 inches wide, the height of the back end wall was calculated as: 11.25 times 0.866025 equals 9.743, shown on the drawings as 9-3/4 inches.

The height of the front end wall is 3/4 inches greater than the back end wall height. In the case shown on our drawing where the side wall material is 11-1/4 inches wide, the height of the front end wall was calculated as 9-3/4 plus 3/4 equals 10-1/2 inches.

In the case where side wall material is 9-1/4 inches wide and we calculated a required bottom width of end boards



Photo by Jeff Dickson.

at 9 inches, the height of the back end wall is calculated as: 9.25 times 0.866025 equals 8.011 inches, approximately equal to 8 inches.

The height of the front end wall would then be: 8 plus 3/4 equals 8-3/4 inches.

Conclusion:

Healthy bees pollinating plants in our garden and surrounding area gardens benefit all. Pure, raw honey in the pantry and on the table is a great pleasure. A wide dispersal of bee colonies and varied beekeeping practices help ensure honey bee genetic diversity and species survival. Top bar hives are a logical hive choice for many beekeepers, and we hope those beekeepers consider use of a standard top bar and find our designs and comments helpful. **BC**



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The Indispensable Honey Bee

1973 vs. 2015: USDA/Researchers

G. Splevin



In the Nov. 2015 and January 2016 *Bee Culture* magazine I wrote of the 1973 report, "The Indispensable Honey Bee." The USDA and University researchers contributed much at this national conference. Reviewing the report from 43 years ago, the similarities today are as if the past has changed nothing for beekeeping or our honey bees. "Beyond producing honey and other products, probably the chief value of bees lies in their ability to pollinate over 60 agricultural crops and thus increase the production of fruit and seed. Bees are responsible for 80 to 85 percent of all crop pollination performed by insects in this country."¹ stated Dr. N.P. Ralston, Assoc. Director Science and Education with the U.S. Dept. of Agriculture. Dr. Ralston acknowledged the Honey Bee Research Lab in Arizona as featuring scientists involved in "basic and applied research" of the "pollination requirements of a number of crops, factors affecting pollinating activities, the effects of pesticides, and the nutrition, biochemistry, physiology, and behavior of honey bees."² He spoke to the attendees at this honey bee conference about research at other USDA labs or universities working to control and for the prevention of bee diseases, management of bees for pollination and honey production, "biology and management of non-*Apis* species of bees for pollination,"³ bee breeding and genetics, control of *Nosema*, controlled bee mating and stock maintenance, the development of a genetic strain of bees with a "special affinity for collecting alfalfa pollen,"⁴ new methods for storing honey bee semen and queens, and using "heat and cold rather than chemicals to control the wax moth, one of the beekeepers' worst problems."⁵

Reading this 1973 report and listening to beekeepers today, and reading the beekeeping literature today, what happened to these "research advances?" Dr. Ralston's report reminds me then and now honey bees are still trying to be treated as "feedlot livestock." In the 1973 report USDA spoke of "excellent progress in developing artificial diets and mass feeding, or feedlot beekeeping."⁶ Research today is concluding honey bees are healthier when they eat a natural diet comprised of a variety of

floral sources, untainted by pesticides. The comparisons to 1973 and today in the bee industry and within the management of honey bees continue with Dr. Ralston's statement, "Pesticides comprise the largest single problem in the industry. Pesticides are a concern not only of those involved in beekeeping, but also those of us involved in the broad agricultural picture."

Dr. Ralston comments that "500,000 colonies are killed or seriously damaged by pesticides annually in the U.S."⁷ Beekeeper friends utilized the indemnity program at that time, but like today it did not "ease the burden" of lost colonies. I encourage you to review this report for yourself, the moment in time depicted in this report is as if time was actually frozen, and by reading this I am unthawing the pages, because the facts on the ground, the world of beekeeping has not changed much.

Varroa destructor has certainly kicked the wax moth from its pedestal as "beekeepers' worst problem." However, in 1973 monoculture "decreases crop diversity, . . . The shift toward increasing air applications of pesticides . . . toward materials more hazardous to bees . . . and toward newer materials with shorter residual action requiring more frequent application . . ."⁸ are the same issues today.

Dr. Ralston's report also spoke of carbaryl's use on corn creating contaminated pollen which bees took back to the hive and the nurse bees and brood were killed. This 1973 scenario is a mirror of the issues surrounding neonicotinoids used on corn today (although there are additional concerns with this systemic pesticide in its half-life, and dust-off toxicities). In 1973 the USDA acknowledged bees visited corn and collected pollen; a fact forgotten in the recent past by the USDA. I am saddened to again read that in 1973 the USDA was still unsure of Integrated Pest Management. "One especially interesting development calls for managing the use of pesticides by applying them only when enough pests are present to threaten crops."⁹

As a former apple grower, I am saddened by this revelation by the USDA in 1973; and frustrated today that they refuse to learn from their own history. Dr. Ralston

cites a research project in 1968 on cotton in Arizona. Cotton growers spent \$198,000 on pest control. Pesticide applications were “admittedly heavy and prolonged, and damage to the honey bee industry was extensive.”¹⁰ In 1969 the County Extension Service was asked to help cotton growers “develop a better insect control program.” “Scouts were hired and trained. By the end of the season, as a result of using the scouts, spraying costs had dropped to an amazingly low \$36,000, over half of which went to pay for the scouts. But, of particular importance to area beekeepers, colonies were restored to almost their original numbers.”¹¹

Dr. Ralston believed this method of pest management would “gain in importance.” What has happened to scouts in the field assessing pest levels? What has happened to Integrated Pest Management?

Dr. Ralston’s conclusion shined hope in 1973 on the health concerns for honey bees, but it is a statement which could have come straight from the President’s National Strategy Promoting the Health of the Honey bee and other Pollinators:

“Constant educational pressure to motivate concern for bees provides another means of minimizing the pesticide problem for beekeepers. Growers must be reminded of the need for using less hazardous materials, using them only when essential, reducing air application in favor of ground spraying, and timing applications to avoid bee flight . . . with understanding and good will on all sides, backed by a program of research and education by State and Federal agencies, we can strive for practical solutions to the problems that beset the beekeeping industry.”¹²

Dr. Ralston’s comments were written in 1973, 43 years ago! If I looked at Federal research of 1930 would I find the same platitudes towards honey bees? Probably not, but the effects of the dust bowl were greatly changing agricultural practices. However, many of those hard-learned lessons of the 1930s are being repeated today.

Other researchers of the USDA offer similar

commentary in 1973, as beekeepers and the public hear today:

- economic value of honey bees needs more research
- world-wide pollination needs are unsure, being threatened, but we have to feed a growing population (and yet 133 billion pounds of food goes uneaten in the U.S. annually)¹³
- pollination is valuable to prevent soil erosion, and maintain plant diversity
- loss of bee forage contributes to less honey stores and bees starving through Winter
- reduced seed production in crops is due to less insects to pollinate the crop
- extensive cultivated land destroys habitat for native bees
- do we have enough honey bees to pollinate our crops? In 1973 it was stated “there is a need for five to possibly 20 times the number of colonies that are presently available . . .”¹⁴

The economics of beekeeping and pollination services needed examining in 1973, as it does today. The culture of beekeeping still is wrought with territorial attitudes, undercutting of rates, etc. today as it was in 1973. S.E. McGregor concludes his comments to the 1973 group expressing the need for bee specialists and plant specialists on eleven pollinated crops, as well as support for Extension pollination specialists to “advise both the grower and the beekeeper.”¹⁵

Having lived through 1973 with my own bees, and reading this document of a point in time of the bee industry, has me remembering, thinking, and challenging my fellow beekeepers in my own local and state association. I challenge my daughters who keep bees to stop this repetition of history, and truly work to help “the indispensable honey bee.” With the magazine editor’s indulgence I hope to continue this analysis of 1973, and spark discussion among my fellow beekeepers about our past and our present; and *do we want them to continue to be the same.* Stay tuned for further discussion on beekeeping in 1973 and 2015 from this “curious guy.” **BC**



S.E. McGregor.

¹⁴“The Indispensable Honey Bee,” published by The American Honey Producers Association, Inc, 1973; page 9, (re-print available from *Bee Culture*)

²Ibid., page 10

³Ibid.

⁴Ibid.

⁵Ibid, page 11

⁶Ibid, page 12

⁷Ibid, page 11

⁸Ibid, page 12

⁹Ibid, page 14

¹⁰Ibid

¹¹Ibid

¹²Ibid, page 16

¹³“In ‘Just Eat It,’ Filmmakers Feast For 6 Months On Discarded Food,” National Public Radio, All Things Considered, Updated November 19, 2015 2:45 PM ET, <http://www.npr.org/sections/thesalt/2015/11/18/456489490/in-just-eat-it-filmmakers-feast-for-6-months-on-discarded-food>

¹⁴“The Indispensable Honey Bee,” page 22

¹⁵Ibid, page 27

The Queen In Glass

Scott Ouderkirk

The American Glass Guild

Bees – We hear so much about them lately, but most people still aren't aware how much work bees do around them each day. Honey bees are constantly flying above us, back and forth on their business, unseen and unsung. My friend, Marty Snye, is a blacksmith and beekeeper, and I am a glass artist and beekeeper. We often work together on hives and other projects, but our love of bees caused us to truly collaborate for the first time on this piece called The Queen.

My name is Scott Ouderkirk, and I am lucky enough to live in the Thousand Islands, which is a section of the St. Lawrence River on the border of New York State and Canada. I do most of my work alone in my studio overlooking the river, so I don't often have to answer to anyone about my art...until my wife tells me something needs to be changed. Working together on a project with another artist isn't something that I am used to; but Marty and I had been talking about creating some work together so that we could have a show of collaborative pieces using my glass work framed by his iron work. I had created a small bee piece for an illustration in my book, *The Wind in the Islands*, which Marty had framed with iron. We thought, why not scale this piece up to make a more powerful statement? Thus, I began sketching some ideas.

At about the same time, a call for entries for the American Glass Guild's 2015 exhibit in the National Cathedral in Washington DC arrived. We decided to enter this piece. The next thing you know, our entry was accepted, and we got to work.



My first drawings were fairly simple following the small original. I showed the drawing to Lorraine Austin, who is a glassblower and my go-to person for design help. Her ideas made the design much more organic and complicated. She also created the glass ball which sits at the top of the piece. Marty made a few changes to the full size drawing; then he built the frame. The frame is made of steel which is heated and hammered into shape. Marty works with very traditional methods; only using more contemporary methods when appropriate. In this case, it was easier for me to create glass pieces to match the frame rather than the other way around.

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Once I had Marty's finished frame in my studio, I began creating fused glass pieces which would fit into the frame sections. As many as eight layers of colored and clear glass were stacked up and fused together. I included



in the painting a selection of flowers and plants which honey bees visit during their busy lives. The small bees are painted on the back of the glass to create depth. The technique of glass painting used on *The Queen* consists of adding black and brown outlines and shading to colored fused glass. The image of the glass pieces on the light table shows the glass before the final firing. In the final firing, the glass was silver stained, which involves applying a silver compound to the back of the glass and firing it. This causes a yellow staining of the glass and is where stained glass gets its name. The silver staining was not added to the wing areas, allowing them to remain clear.

The Queen lived in the National Cathedral in Washington, DC until July 31, 2015. We hope that it made the many visitors to the cathedral think about honey bees and how they help all of us. It is a partnership that more people need to be aware of. The plight of the bees should be taken into consideration when environmental decisions are made because it is our plight as well.

It is important for an artist to step out of his or her comfort zone occasionally. Every collaboration leads to new ideas and growth for all parties involved. A person who is unfamiliar with a process may ask for something to be done which needs new techniques to be learned or even developed. Marty and I find this to be true whether we are working as artists or beekeepers; and this project was no exception. Fortunately, as I grow older, I find my thirst for knowledge continues to increase. **BC**

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MENTORS NEEDED

— Ann Harman

I gave a Power Point presentation at the Upper Crackerbox Beekeepers Association. The audience was composed of about one-third newbees and the rest more experienced beekeepers. My topic was *Preparations for Winter*. At the end I innocently asked for questions. I was bombarded! Mostly from the newbees. The questions were on everything ranging from 'how do I know if my queen is dead?' to 'should I still be feeding my package bees?' All the questions were basic beginning beekeeping questions, nothing out of the ordinary. My question to the club was 'Do you have a mentor program?' 'No.' Back in the early Spring, classes were held on three Saturday afternoons. Package bees were ordered for the class members. Now they were on their own except for the regular monthly meetings.

A newbee, without a mentor, who attends club meetings, may find it difficult to get answers to questions. If the meeting program was about making beeswax candles, that topic is far into the future for someone in their first year. If no refreshments are given at the meeting then there is no time to mingle with experienced beekeepers. The first year is just more difficult without a mentor. It is possible that some of these newbees will have problems that could have easily been solved with a mentor. But – no mentor – no more newbee. Too discouraged to continue.

Every local beekeeping club that holds classes, whether a few or a comprehensive series, needs a Mentor Coordinator. Uh oh – does that mean a struggle to find someone to take care of finding mentors, matching mentors to newbees and making sure everything is going well? Just keep reminding club members that they belong to a small organization run by volunteers so –

the more volunteers, the less work for everyone. Besides, organizing mentor/newbee combinations only occurs once a year.

What a difference mentors would have made for those newbees in their very first year of beekeeping. Having a good beekeeping book is great but we have to remember that even a good book does not take into consideration the local climate and the weather. These two cause us to change our beekeeping plans. What about the Internet? Well, the newbees do not have the background to determine if the information is sensible or silly. A mentor could certainly advise a newbee about what to use and what to ignore. But a mentor standing beside a newbee next to the hive is better than a book or the Internet.

Let's take a trip back in time – to your first year of beekeeping. For some of you that could be just last year. For others it could be 40 years. If you grew up helping your grandfather you actually were very lucky because he was your mentor. If you are in your second year you actually know a little bit about bees and what they do, but still there is much more to discover and learn. If you do remember your first year, think about what sort of help you would have liked. What questions did you have? Did you make any blunders and wonder what to do? In fact, did you recognize you did something foolish?

Every beekeeping club that gives classes for newbees needs to have a Mentor Program. The success of the newbees really does depend on this program. At this point you are thinking that getting any member to

*Be a mentor. Here's how.
Be a newbee. Here's how.*

do anything, except attend meetings, is practically impossible. But you do have someone to teach the beginner classes. Yes, it is possible for the teacher to be a mentor. But you need more.

Now sit down with your membership list. As you read down the names you realize that your total paid membership is 150 beekeepers. However, meeting attendance hovers around 55. Where are the other 100 on meeting nights? A myriad of reasons – taking a night class in accounting, erratic working hours, choir practice, family responsibilities, can't drive at night, and more. All perfectly good reasons but many of these members do attend field days, the annual picnic, and some other events. So there is interest in the club activities. A number of these people are known to be good beekeepers and sell excellent quality honey locally. So these beekeepers can be approached and asked to become a part of the club's Mentor Program. Before you start to contact any of the club members you need to compose your Mentor Program.

So let's begin with what a mentor is and is not. These points are important to put forward to possible mentors who may view it as taking care of someone else's bees. **A mentor is a guide, not a doer.** As a guide, a mentor should be able to acknowledge what the newbee is doing correctly. 'You did a good job of loading and starting your smoker.' And, of course, comment on something that will lead to a problem. 'You just spilled a lot of sugar syrup on the ground – bees will find it quickly and robbing could begin – or – you are going to step on and squish bees who found the syrup. Always keep in mind that to teach is to learn. Nobody will ever know everything about honey bees – that makes it fun!

The only situation where a mentor would actually do something would be to help avoid a bad situation or to salvage an accident. If the newbee drops a hive body, resulting in angry bees in the air and frames displaced then a helping hand in getting things back together will be necessary. At other times a simple demonstration, such as showing a newbee how to use a hive tool effectively is useful.

Since you wish to reach all club members to promote a Mentor Program, write a short description

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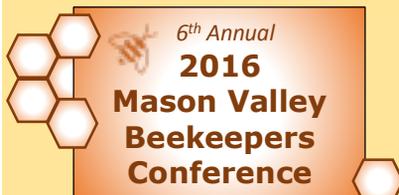
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of what a mentor is and does (and does not). Then send this to all the club members with a letter asking them to become a part of the club's Mentor Program. Such a program has two sides – the mentor and the newbie. That means you should also make a short description of what the newbie can do to make the team of mentor-newbee successful. Explaining both sides may help to recruit mentors who may have been reluctant to become a mentor. Let's take a look at some items for these two descriptions.

For the mentor the first thought, already mentioned, is that a good mentor is a guide, making suggestions, not doing the work. A mentor has to realize that the newbie may be quite amazed and even a bit fearful doing something with what seems like a gazillion bees capable of stinging. Keep in mind that most people who want to be a beekeeper are accustomed to seeing a few bees in the garden. The few thousand in a package or nuc are probably the most bees in one spot that the newbie has seen.

Today a Mentor Coordinator needs to realize that beekeepers are using different hives and have different approaches to beekeeping. It would be best for the Coordinator to explore what the newbie is planning – Langstroth hive or top bar? *Varroa* control chemicals or nothing? The Coordinator needs to inquire before assigning an appropriate mentor.

If a mentor can be assigned early in the classes then a mentor visit to the newbie can determine if the newbie has chosen an appropriate place. Also, in black bear regions,

MENTORS NEEDED

Sign Up At Your Nearest Bee Club

does the necessary bear fence allow enough room for opening the hives and moving around? This first visit gives the mentor and newbie time to get acquainted. Yes, it also gives the mentor an opportunity to change to another newbie if something is not satisfactory.

Mentors should live within a reasonable distance of their newbie. What to do if a newbie took your club classes but actually lives much closer to another club? Perhaps your class days were more suitable for the newbie. Coordinate with neighboring clubs to arrange a mentor that lives closer to the newbie. That newbie will probably be attending the other club's meetings anyway.

Mentor and newbie should exchange contact information – cell phone numbers, home phones if different, and arrange suitable times for phone calls. Determine what action is best if newbie has an emergency – and perhaps what would be an emergency.

One of the important points for the newbie is to consider what is and is not important before phoning the mentor. Go to the beekeeping book first. No, it will not always give you the answer. But think – is it a question that should be answered NOW or can it wait. It is better to make one phone call to the mentor with 10 questions than 10 separate phone calls with one question each.

Everyone is using cell phones as cameras today. A newbie can take a photo and send it to the mentor with a comment or question. This is certainly an easy way to sort out some minor problem or to alert the mentor to a big problem, and it is strongly encouraged.

In class the newbie probably heard about diseases and pests. Descriptions of American foulbrood and the burning of hives become very worrisome to newbees. Two books are available that can be taken to the beeyard for diagnosis. However, what may be more important would be to reassure the newbie that AFB would be extremely rare for their new colonies. However, *Varroa* is everywhere and in some places so is the small hive beetle. Help the newbie to know what to look for during the first year.

Give a thought to having an Apprentice Mentor Program – made of those beekeepers in their second year. Everyone who is a beekeeper learns something every time a hive is opened and bees inspected. To mentor is to learn! Each mentor can invite an Apprentice Mentor to come and help, learn and give encouragement. An Apprentice Mentor is on their way to being a better beekeeper.

Have a little celebration at the last club meeting of the year. Thank the mentors and present them with a Certificate of Thanks. Then thank the newbees for their successes with their first colonies of bees and wish them a good honey harvest in their second year. **BC**

Ann Harman teaches and mentors newbees in and around Flint Hill, VA.

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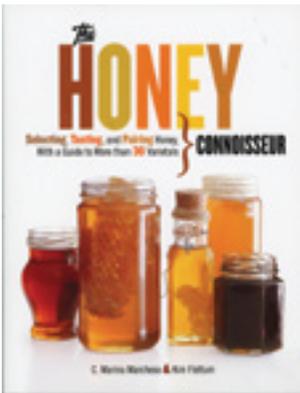


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GLEANNINGS

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BART SMITH RETIRES



Bart Smith retired on December 31, 2015 after working 13 years as a support scientist at the USDA-ARS Bee Research Laboratory (BRL) in Beltsville, MD. His duties included running the bee disease diagnostic lab, and he had overall responsibility for the 400 honey bee colonies maintained by the BRL for research purposes. While the BRL's diagnos-

tic service remains in good shape thanks to Bart's leadership and mentorship, he will be sorely missed for his hard work at the BRL and for his extensive service to bees and beekeepers. Prior to coming to the BRL, Bart worked as State Apiary Inspector at the Maryland Department of Agriculture (MDA) for 27 years, leading their bee health and educational programs. From 1984 to 2002 he served as secretary of the Apiary Inspectors of America (AIA), and he continues as a leader for his local (Anne Arundel County) and state clubs. Bart received an MS degree in entomology from the University of Maryland where he investigated the bee louse, *Braula coeca*, a wingless fly that is found only on honey bees. He is eagerly anticipating more time with Rosemary and his family and more time to travel the U.S.

BOY BUMBLES NOT SO DUMB

Male bumblebees – once thought to be good for just sex – are just as smart as female worker bees despite their dim-witted reputation, British researchers say.

Researchers from Queen Mary University of London's School of Biological and Chemical Sciences trained male and female bumblebees to distinguish between artificial flowers that contained food and another that did not.

They found male bumblebees equal the female or worker bee's excellence in learning which flowers reward with food.

Male bumblebees were believed to have few aptitudes beyond mating and thought to be not just lazy but simple. In comparison, worker bees are well known for their ability to learn the location of their hive, the colors and scents of rewarding flowers.

But lead author Stephan Wolf says the stereotyping is wrong.

"Despite fundamental differences in the daily habits between male and

female bees, this work illustrates that male bees can be clever shoppers in the flower supermarket even when their main interest is in mating," he says.

The study published in the journal *Animal Behaviour* tested the bees' ability to associate the flower color with the reward of food. Flower colors were changed after some time, and bees had to forget the previously learned cue and learn a new color as indicator for nectar or food.

Over four sequential color changes, the researchers showed that male and worker bees are equally good at learning floral colors to guide them to the flower types that provide them with nectar even when the colors of the rewarding flowers change over time. – *Alan Harman*

*Would A Fly
Without Wings Be
Called A Walk!*

OBITUARY



Keith Clausen Rowe, 91 years, of Jackson Lake, WI died peacefully Nov. 1, 2015. He was born July 6, 1924, in Tecumseh, NE, to Richard F. and Hilda (Clausen) Rowe.

Keith married Anita Adeline Hawks on Aug. 21, 1948, in Ashland. She preceded him in death in

1965. Keith received a Bachelors Degree in Engineering from the University of Wisconsin - Madison.

Keith proudly served a 23-year career as a pilot in the USAF during World War II, Korean Conflict and the Vietnam War. He was a beekeeper for 40 years and was named the Wisconsin Honey Producers Beekeeper of the year in 2000.

Keith is survived by five children, Judy Rowe (Frank Cordes), Richard Rowe (Debra), Diana Marty (Keith), Doreen Rowe (Thomas Pearson) and Douglas Rowe (Virginia Kay); 10 grandchildren; and nine great-grandchildren.

Besides his wife, he was preceded in death by a brother, Russell and a sister, Vera Vilmann.

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COME TOGETHER

New Zealand's long-divided apiculture industry has voted for unification.

The Federated Farmers Bees group, the Honey Packers and Exporters Association and the National Beekeepers Association have voted by a substantial majority to proceed with unification.

The vote was taken at the New Zealand apiculture conference.

"The three associations have all endorsed the proposal to unify the industry and work towards strengthening and growing New Zealand's apiculture industry," Federated Farmers Bee section chairman John Hartnell says.

"Many in the industry have been proposing this outcome for a number of years and I'm really excited about where this decision will lead us as we progress towards a strong and progressive single unified industry body."

A unification working group has recommended an interim governing board of 12 with an independent chairman aiming to launch the new national body by next April. It would grow out of the National Beekeepers' Association and the Federated Farmers Bee Industry Group would be wound down.

National Beekeepers' Association president Ricki Leahy says he's excited about what the merger offers the industry moving forward.

Honey Packers Association chairman Allen McCaw calls the decision a hugely positive step for an industry that is changing rapidly.

"We need to have a representative body that reflects all stakeholders across our wider industry," he says.

Beekeeping began in New Zealand when two hives were shipped from Australia in 1839.

The National Beekeepers Association, formed more than 100 years ago, has almost 700 members in 11 branches throughout New Zealand.

Under the plan, the new group will represent commercial and hobby beekeepers, exporters, packers, food manufacturers and health product makers.

It's estimated the new association will need NZ\$1.9 million (US\$1.31 million) to get into full operation with NZ\$484,000 (US\$334,526) for administration, NZ\$515,000 (US\$355,850) for honey research and NZ\$950,000 (US\$656,538) to fund extended market access.

The industry expects the government to chip in with some of the needed money.

The working group said that to be profitable and sustainable, the industry needs a formalized administration and a single national organization funded by a commodity levy. With no compulsory levies at the moment, the proposal is for the interim board to be funded by a voluntary subscription.

Hartnell says the greater majority across all stakeholders are supportive of a merger because it's the wish of the industry and "it's the common sense way forward."

He says it hasn't been easy getting there.

"But I think at the end of the day the industry is maturing as it grows," Hartnell says. "We all realize that the industry is far bigger than it was 10 years ago, so it's vital that we engage with all stakeholders as we drive to the future."

"It's about working together to ensure the integrity of our products and services are maintained at all times and delivering a robust industry model which will meet the challenges we will face over the next decade and beyond."

The bee industry has a lot more to offer New Zealand than its estimated annual contribution of NZ\$5 billion (US\$3.45 billion) a year Hartnell says.

"With a unified body the opportunities and doors will open, which is fantastic for all stakeholders in the apiculture industry in New Zealand," he says.

Alan Harman

ASIAN HONEY BEE 1 AUSTRALIA 0

Australia has abandoned its fight against invading Asian honey bees.

Biosecurity Queensland says the restricted area for Asian honey bees in the state has been removed, and the restraints on the movement of bees or bee products into, within or out of the area.

The changes came into effect on 20 November 2015 for the restricted area, which ranged from Cairns extending 30 km to Palm Cove in the north, 100 km to Millaa Millaa in the south and 100 km to Mutchilba in the west.

The end of the restricted area means that bee keepers are no longer required to obtain written approval from a government inspector to move bees or bee products into, within or out of this area.

Asian honey bees were first detected in Cairns in 2007, and the restricted area was put in place to support an attempt to contain and eradicate the pest.

However, the invading bees have since spread by natural means and it has been nationally agreed that they cannot be eradicated.

Asian honey bees remain an important pest for Biosecurity Queensland to monitor as they are natural hosts for *Varroa* mites.

Varroa is not present in Australia, but they could arrive with a new Asian honey bee incursion and as a result, Biosecurity Queensland says it will continue to monitor Asian honey bees and any significant colonies found will be destroyed.

Alan Harman

WELSH STRIKE GOLD

Next up on the medicinal market – Welsh Manuka honey.

Cardiff University scientists who analyzed the honey created by bees from 250 Welsh hives to find plant-derived antibacterial drugs say they have found plants with high antimicrobial properties.

Prof. Les Baillie of the university's School of Pharmacy and Pharmaceutical Sciences, says a joint study with the National Botanic Garden of Wales uncovered a honey in Gwynedd, an area in northwest Wales, that is as potent as New Zealand's famed Manuka.

Baillie tells the British Broad-

casting Corp. that the find has created more excitement than anything else in his three decades in science.

"It's one of those projects that has amazed us as we have gone through," he says. "Every time we turn around we find something else quite cool."

The team found two hives in the garden of amateur beekeeper Chris Hickman, of Tywyn, Cardigan Bay, that created honey with as much antibacterial power as that from the nectar of the Manuka tree.

"Two hives will never replicate

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New Zealand's thousands of tons of Manuka honey a year," Baillie says. "However, by identifying the plants visited by the Tywyn bees, such as woodruff, we may be able to increase production to a feasible scale.

"We're looking at growing those plants in various areas around Cardiff."

The university project set out to find plant-based sources for drugs capable of fighting antibiotic-resistant infections, asking beekeepers from across Wales to send samples.

The research was led by Jenny Hawkins for her PhD project using honeybees to help source natural antibacterial properties in plants.

"Our plan was to employ bees as private investigators and to send them out to interview every flowering plant in the country," Hawkins says in a statement.

"During each visit, they collect a forensic material in the form of nectar containing phytochemicals –

some of which may be antibacterial – and pollen which holds the DNA fingerprint of the plant."

The researchers took the antibacterial analysis of 250 samples of honey and sequenced samples from 20 with the highest antibacterial qualities and identified the plants which contributed. They aim to extract the antimicrobial components from these plants and to synthesize them in labs.

The aim is to put these plants in as many places as possible for the bees to feed upon., everywhere from the rooftop of a shopping center in Cardiff to a disused bowling green.

Baillie is looking for teams of students to work on this live project taking the product to market. The project will explore the feasibility of establishing an urban honey company based in Cardiff. It will produce and market medicinal honey from bees that have been fed on plants identified by research at the university.

Alan Harman

EL NIÑO

The El Niño weather event is expected to abate through the northern Summer and Autumn, New Zealand's National Institute of Water and Atmospheric Research (Niwa) says.

The climate forecast says it is expecting El Niño to weaken for the rest of the Summer and by the end of the second quarter to return to more neutral conditions.

The forecast is in line with one from Australia's Bureau of Meteorology which says the weather event peaked in recent weeks and conditions will return to neutral in the second quarter.

The Ministry for Primary Industries (MPI) says recent rain has been a welcome respite from ongoing dry weather conditions in much of the country, but farmers in drought-affected parts of New Zealand will continue to feel the impacts of El Niño for months.

"In many of the drought-hit areas, particularly Canterbury and Marlborough, the rain was a great morale booster," MPI director of resource policy David Wansbrough says.

"Crop farmers have had a better start to the year, as any good rainfall like this really helps new crop growth. But where pasture has died from over a year of dry weather, more rain will be needed to break the drought and it will be months before production recovers."

Wansbrough says farmers are doing a good job of working through their drought management plans. Many destocked in November and early December and this means the remaining animals can be kept in good condition.

The rural lobby group Federated Farmers says many farmers weathered difficult conditions in 2015 and the majority see no relief coming in the New Year.

A survey of more than 1,100 members found 52% saying they expect market conditions to stay the same. Only 29% predict improving conditions, with 19% forecasting worse times to come.

Some 41% of the dairy farmers surveyed are forecasting improved market conditions compared with 29% overall, 19% for the meat and fiber industry and 17% among arable farmers.

Federated Farmers president William Rolleston says it's encouraging to see relatively higher levels of optimism among dairy farmers after what they have faced in 2015.

"More generally this result suggests we have another tough year on the way and that's certainly the way it's set to start in much of the South Island where the El Niño Summer is creating a drought that grows worse by the day," Rolleston says.

Alan Harman

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CALENDAR

◆ALABAMA◆

The Alabama Cooperative Extension System's 21st Annual Beekeeping Symposium will be held February 6 at the Clanton Conference and Performing Arts Center, 1850 Lay Dam Road, Clanton.

Featured speakers are Marion Ellis and Jennifer Berry. A beginning workshop will be available. Lunch is provided with pre-registration.

For more details and to register visit mell-base.uce.auburn.edu/wconnect, or contact Paul Mask, 334.844.4450.

◆ARIZONA◆

9th Annual Chemical Free Organic Beekeepers Conference will be held February 26-28 in Oracle.

The cost is \$200 and includes two nights lodging, six meals and the meeting.

For information Dee Lusby, dcealusby1@aol.com.

◆ARKANSAS◆

The Arkansas Beekeepers Association will hold its Spring Conference March 11-12, at the Ramada Inn Convention Center in Mountain Home.

Please see www.arbeekeepers.org for information.

◆CONNECTICUT◆

Back Yard Beekeepers Association 2016 Speaker Schedule – February 23: Jonathan Snow, Barnard, TBD; March 29: Dr. John Boyce M.D., Yale, Honey as Medicine; April 26: Roberta Gantz, NYS TBD; May 24: James Wilkes, Hive Tracks – using technology for record keeping; June 28: Dinner & Silent Auction Meeting; September 27: Brenna Traver, Penn State, Honey Bee Pathogens; October 27: Anne Frey, TBD; November 17: Jennifer Tsuruda, Clemson TBD.

Each month we have timely weekend hands on inspection workshops, bee school, mentor program and more. For dates, locations and information visit www.backyardbeekeepers.com.

◆INDIANA◆

The IN Beekeepers' Association will hold its IN Bee School XIV February 27 at Decatur Central High School, 5251 Kentucky Avenue, Indianapolis. Doors open at 7:00 a.m., program starts at 8:30. Pre-registration is \$30/person or \$50/family by February 8. After that date \$40/person and \$65/family.

The guest speakers are Kim Flottum and Joe Latshaw. For more information and to register visit www.indianabeekeeper.com or contact Mike Seib, 317.432.5342 or mike@seibshoosierhoney.com.

◆MICHIGAN◆

The MI Beekeepers Association will hold their Annual Spring Meeting March 11-12 at the Kellogg Hotel and Conference Center at MI State University in East Lansing.

Keynote speaker is Gary Reuter. Breakouts offered for beginners and a microscope session with Zachary Huang.

The cost is \$30/one day or \$50/both days. Register at 222.michiganbees.org or pay at the door. Room are available at the hotel for \$102/night through February 4 using code 1603MIBEEE when reserving.

Southeastern MI Beekeepers' Association (SEMBA) will hold its 78th Annual Beekeeping Conference March 19 at Wayne County Community College District's Western Campus, 9555 Haggerty Hwy, Belleville, MI 48111.

Admission is free. Please pre-register by March 12 at SEMBAConfReg@gmail.com. There is a potluck lunch. Please bring a dish to pass and table service.

The Holland Area Beekeepers' Association (HABA) will hold its annual beginning beekeeping school February 6.

The cost is \$40.

Visit <http://hollandbees.org> for details.

◆MISSOURI◆

Eastern MO Beekeepers will host their 9th Annual Workshop February 6 at Maritz in Fenton.

Speakers include James Duever, Mark Dykes, David Westervelt and more. The cost is \$85/person or \$95 after January 18. Lunch is included.

For more information info@easternmobeekers.com or 314.669.1828.

BeeSpeakSTL, a St. Louis Regional Beekeeping Speaker Series welcomes Tom Seeley February 27 at the MO Botanical Garden's Shoenberg Theater. The cost is \$22 in advance, \$28 at the door.

To register visit BeespeakSTL.com.

Eastern MO Beekeepers Association will hold its annual Beekeeping Workshop February 6 at Maritz, 1400 South Highway Drive, Fenton. The cost is \$85/\$95 after January 18.

Instructors include Mark Kykes, David Westervelt, James Duever and more.

For information contact info@easternmobeekers.com or 314.669.1828.

North Central MO Beekeepers Association and Crooked Hill Beekeeping LLC are sponsoring a beginner's beekeeping class February 20 at the Macon High School.

Cost is \$40. Instructors are Jim and Valerie Duever.

To register contact georges@chbeekeeping.com or 660.214.0132.

Will County Beekeepers will present an all-day conference – Bee Prepared. Healthy Bees Make Happy Beekeepers – for the beginner and the expert. April 2 at Joliet Junior College, Weitendorf Ag Ed Center, 17840 W. Laraway Road, Joliet.

For information visit <http://willbees.org/beeprepared>.

◆MONTANA◆

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For more information visit www.UMT.EDU/BEE.

◆NEW YORK◆

HoneybeeLives' Organic Beekeeping Classes two-day workshop February 27-28 at the New Paltz location and February 6-7 Brooklyn.

For details www.HoneybeeLives.org or 845.255.6113.

Geneva Bee Conference will be held March 19 at the Scandling Center in the Vandervort Room at Hobart and William Smith Colleges, 300 Pulteney Street, Geneva.

Speakers include Mike Palmer and Tom Seeley. There will be four breakout sessions and an evening social.

For information www.GenevaBeeconference.com.

◆NORTH CAROLINA◆

The NC Beekeepers Association Spring Meeting will be held February 25-27 at the New Bern Riverfront Convention Center.

For information visit www.ncbeekeepers.org or contact sandy@pmbees.com.

◆OHIO◆

Beginning Beekeeping Class February 13 at the Richardson Bretz Memorial Building in Celina.

Registration will be \$40/person and is limited to the first 30 people.

For information contact Mike Doseck 419.394.4215.

Medina County Beekeepers Association meets the third Monday of the month at the Root Candle Company in Medina, OH. The meeting starts at 7:00 p.m.

For information visit www.medinabeekeepers.com.

Medina County Beekeepers will hold their annual Spring Beekeeping Classes starting in February, at Root Candle, 623 West Liberty Street, Medina.

The instructor is Kim Flottum. Classes will be held on Saturdays and Monday evenings. Watch for details.

For information visit www.medinabeekeepers.com.

◆PENNSYLVANIA◆

The Western PA Beekeeping Seminar will be February 19-20, 2016 at Doubletree by Hilton, Mars, PA.

Speakers include Jeff Harris, Diana Sammataro and Christine Grosinger.

For information contact Lyn Szymkiewicz at lynszym@comcast.net or 412.855.0710.

Introduction to Beekeeping Temple University, Ambler, February 20-21 and March 19-20.

For information and to register visit <http://vincemasterbeekeeper.com/courses/>.

◆VIRGINIA◆

5th Annual Mid-Atlantic Honey Bee Convention will be March 5 at American Legion Post 242, 21 J.B. Finley Road, Sandston. \$50/person or \$90/family.

For more info visit www.maohbc.com.

◆WISCONSIN◆

Beekeeping Classes, Madison – Beginners Classes will repeat through the Spring. Second Step Class is in March. The fee is \$50 and covers handouts, coffee, and more. Individual hands-on mentoring available, \$20/two hours in the apiary.

Classes are held at the Dane Co. Extension Building.

For more information and registration contact Jeanne Hansen 608.244.5094 or jeannialabeanie@yahoo.com.

◆WYOMING◆

The Wyoming Bee College will be held in Cheyenne March 19-20.

For more information visit www.wyomingbeecollege.org or Catherine, 307.633.4383.

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This feels like the home stretch. The other day when I told my Aspen Mountain ski patrol boss this would be my last season, Bud looked stunned. “Why?” was all he could say.

But to answer Bud’s question, *why not?* I’m 68. I’ve been doing this for 40 years. I lived the dream. I’ve seen it all. Now I’m weary of getting up at 4 a.m. and sleeping on the bus. My knee aches. And it’s not like we have an armchair in front of the fireplace for the old guys. They boss us around like Marine Corps recruits. So what if this is the best job on Earth? I want to leave before they start whispering about me. I have an exit strategy. I have a lifetime ski pass. The farm’s about paid off. I trade honey and lamb with the chiropractor who doesn’t take Medicare. My bees bring in a little, and I have a renter. Maybe I’ll file for Social Security.

Money seems so important, until you meet someone with stage four cancer, or your neighbor drops dead in the driveway. Rich or poor, we play the hand Fate deals us. Only one certainty: our visit here is short. We’re just passing through.

As the climate talks in Paris drag on, December weather here in western Colorado remains unseasonably warm. I ran into Mary Ann down at Maud’s restaurant. She came home for a family emergency. She has a house way down south in the wild windswept glacier region of southern Chile. Her thermometer read 97 before she flew to Colorado. No one remembers it ever having been so hot in December. She showed me photos of native Chilean bees. She wonders about the orange bumblebees that live in her attic.

Fifty-nine of my 94 colonies got trucked to California in November. They’ll spend the winter in a holding yard. They all had at least ten frames of bees when they shipped. But even in balmy California, Winter takes its toll. About the time you read this, Derrick will give them a last look. Dead-outs get set aside. Weak colonies might get combined to make the grade. Then the little darlings go into the budding, soon-to-blossom almonds, for the greatest honey bee show on Earth. I cross my fingers. Already I’m formulating a *Varroa* mite knockdown strategy for these bees when they get home. If bees spill out of the boxes, if they haven’t swarmed or starved, if I can split some and make increase, if the truck doesn’t roll on the way back, this is all I can ask for.

Here in Colorado, a load of bees tipped over on Loveland Pass this fall. A guy I work with knows a paramedic who arrived on scene. Hives sat on the roadside and on the road, many of them pretty much intact, until a snowplow pushed them into rubble off the road. My friend showed me photos. “Why didn’t they bring in some beekeepers?” he mused.

Last year the almond pollination price was \$180 per hive. That’s \$180 gross. It costs to truck bees, to pay Derrick to check on them, sometimes feed them through the California Winter. Lyle gets a cut to fill the contracts and keep an eye on the crop dusters. If all goes well, I get a check, and my bees return home healthy. Last year three colonies vanished. Not even the woodenware came back. We never solved that mystery.

I don’t even know where they are out there. I couldn’t give you the name of the closest town. *In the almonds.* That’s all I know.

My hives with fewer than 10 frames of bees in November stayed here. So the weakest get to try their luck at surviving our always unpredictable Colorado winter, while the strongest bask in the California sunshine. I took advantage of pleasant December weather to dribble these now brood-less stay-at-homes with oxalic acid, for mite control. Typically, as soon as the queens stop laying in the Fall or early Winter, the temperature drops way below freezing,



and I have to wait for a January thaw to dribble oxalic acid. This year I caught a break.

My recipe is 3.67 ounces of oxalic acid (wood bleach) dissolved into two quarts of distilled water. Then I add a four-pound bag of sugar to the mix. I use a garden sprayer to squirt this sweet acidic solution into brood-less hives, three to five ml. per seam of bees, 50 ml. per colony max. It knocks *Varroa* mites into the next county. When I say “seam of bees” I mean the gap between two deep frames, filled with bees, top to bottom. The little darlings don’t always fill seams top to bottom and from one end to the other, so obviously you sometimes have to estimate. For how-to details, I heartily recommend Randy Oliver’s always informative Scientificbeekeeping.com. And keep this stuff out of your eyes!

This recipe makes three quarts. I treated 35 relatively weak, brood-less, Winter-clustered colonies, using less than a quart of mix. Cost for the whole batch: under five bucks.

Tomorrow the alarm goes off at 4. It’s OK. It’s raining, sure to turn to snow by morning. Tonight my gal Marilyn will pack me a lunch, before she sleeps in my arms. I’m 68 and still living the dream, but this is the home stretch.

Ed Colby

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