



B E E L I N E S

May 2013

Editor: Clare MacQueen

Northwest District Beekeepers Association

Our mission is to promote interest in honey bees and beekeeping throughout the northwest district of western Washington, and, in particular, Snohomish County.

Regularly scheduled meetings are held on the second Tuesday of each month at 7 PM at:

Christ the King Lutheran Church
1305 Pine Avenue
Snohomish, WA

All are welcome, from “newbees” to experts. Please drop by and join the conversation. Share your experience—and your questions!

Membership application forms are available online at:
www.nwdba.org

New members are welcome to mail the completed form, or simply bring it to the next meeting.

GOT IDEAS?



Please send suggestions and/or newsletter content (news items, announcements, book and movie reviews, articles, etc.) to:

newsletter@nwdba.fatcow.com

Visit our home on the Web at:

www.nwdba.org

Our “big sister” organization, the Washington State Beekeepers Association (WSBA), is all about “Keeping the bee in business.”

<http://wasba.org>

NEXT MEETING: 14 MAY

Beginner’s session
(moderated by Dave Pearson)
starts promptly at 6 PM.

Regular meeting begins at 7 PM.

SCHEDULED TOPIC

What Bees See: How Understanding Their UV Spectrum of Vision Can Make You a Better Beekeeper

(Speaker: TBA)

“A GARDEN OF HIDDEN SIGNS AND SECRET CODES”

Richard Hammond’s marvelous video, *Invisible Worlds: Out of Sight*, allows us a view of the world as seen by our beloved honey bees:

3-minute clip: <http://www.youtube.com/watch?v=XoZRDa7Ag2E>

Full-length program: <http://www.infocobuild.com/books-and-films/science/InvisibleWorlds/episode-2.html>

And from “Probing Question: Why Are Flowers Beautiful?” (*Penn State News*): “The patterns on flowers that both humans and pollinators can see—such as the lines on petals called striations—serve as a sort of air traffic control system for bees, and help guide them into the ‘bull’s-eye’ of nectar and pollen at the flower’s center...”

“Some flowers, such as horse chestnuts and sunflowers, change colors within the ultraviolet spectrum throughout their lifespan. ...To pollinators these changes are visual signals of an abundance or lack of nectar, blaring ‘Visit me now!’ or ‘Don’t bother!’”

MAY 2013 ISSUE OF WSBA NEWSLETTER

<http://wasba.org/beekeeping-news-info/newsletters/>

25 June is the deadline to receive materials for the next issue (to be published in July). Please send submissions to Fran Bach:

editor@wasba.org

DID YOU KNOW?

You can find informative discussions at the [Washington State Beekeepers Forum](#).

It’s easy to register, or to log in via one of several social networks, such as Facebook.



4-H BEESLINGERS NEED MONTHLY SPEAKER, PLUS “KID FRIENDLY” JUDGE FOR FAIR

The 4-H beekeeping group is looking for a volunteer to speak on such subjects as swarm and pest management.

The speaker’s commitment would be 30 minutes on the second Tuesday of each month, from 6:30–7 PM (just before the NWDBA general meeting). Meeting location is the Snohomish Girls and Boys Club.

They also need a “kid friendly,” impartial beekeeper to volunteer as a judge at the Evergreen State Fair. Time of commitment is estimated at two hours, and an entry pass with parking will be provided to this person.

For details, or to volunteer, please contact Lisa Webb as soon as possible:

Ondubueque2@hotmail.com

“Snohomish County 4-H’ers Buzzing with Curiosity”

<http://4h.wsu.edu/news/current/2012bees.html>

Photos of Beeslingers:

<http://4h.wsu.edu/news/current/beephotos.html>

PLEASE RETURN YOUR EMPTIES!

Shannon Boling asks those who have not yet returned their empty bee-package boxes to bring them to her at next Tuesday’s meeting. Thanks!

**WOODINVILLE NEIGHBORHOOD GROUP
NEXT MEETING: 16 MAY AT 7 PM**

By Melody Hooper

The inaugural meeting of the Woodinville Neighborhood Group got off to a good start last month with five participants from Woodinville and one from Redmond. The group toured my mini apiary and bee-gear storage area, did a package installation demo for a brand new beekeeper, analyzed a comb sample that concerned another beekeeper, and discussed all sorts of things having to do with bees.

With more questions sure to come, we decided to meet up monthly during bee season for additional Q&A discussions on the third Thursday of each month. This is a great opportunity for beekeepers to ask questions, share ideas, and relax with a cup of coffee and a bite to eat before heading back out to the craziness of spring. If you live in or near Woodinville and are free on May 16 at 7:00 PM, we hope you can join us. We’d love to add your voice to our conversation.

For more information about Thursday’s gathering, or for ideas to start your own group, please contact me at:

beekeeper@gardenapiary.com

PROPERTY OWNERS NEED POLLINATORS

David Mangels (last name rhymes with tangles) needs a beekeeper to set up one or two colonies of honey bees in his yard in order to pollinate his fruit trees.

1. Property is near Cottage Lake, in the Lake Leota area.
2. Fruit trees include apple, pear, cherry, and plum.
3. The back yard is large and easily accessible.
4. There’s plenty of sun during summer months, and early morning sun in winter.
5. Neighbors do not use pesticides.

(425) 483-6897

chowlake@frontier.com

Richard and Barbara Ek would like a beekeeper to set up hives on their property in south Everett.

1. Located near Bonneville power line right-of-way.
2. Plenty of sun and open space.
3. Richard and Barbara have no beekeeping knowledge.

Address: 13831 51 Dr SE

Everett, WA 98208

Office: 425-338-1000

Mobile: 425-478-2000 (text okay)

Email: ekandek@comcast.net

PLEASE RETURN BORROWED ITEMS TO LENDING LIBRARY EACH MONTH

As many of you know, Chris Castro has generously loaned items to us club members from her growing collection of beekeeping books and videos. The plan is that materials borrowed at a club meeting will be returned at the next meeting, so they're available for other folks to borrow.

Please check your bookshelves, the trunk of your car, the storage shed in your bee-yard, etc. for any books and videos that need to be returned. Your fellow club members who are waiting to check them out will be grateful, and so will Chris, I'm sure.

Also, if you would like to donate items to the collection, please bring them to one of the meetings. Or if you need to make other arrangements, please contact Chris:

ccastro2@netscape.com

FROM THE UC APIARIES

If you've not had an opportunity to subscribe to this worthwhile newsletter, I recommend you sign up soon. The Mar/Apr 2013 issue just arrived in my email inbox, and it has several interesting items you may find helpful.

In "Attention on *Varroa*," Univ. of California-Davis entomologist, Eric Mussen, summarizes the latest research from four different laboratories worldwide, and includes links to articles where you can learn more.

Other topics in this latest issue:

- ◆ EU Restricts Neonics
- ◆ Emergency Response Kits (ERK)
- ◆ Lincomix® on the Market
- ◆ Super Boost, Before and Now
- ◆ Human Physiology and Bee Pollination
- ◆ Heat Exhaustion

For details on how to subscribe, plus an index of topics:

[http://entomology.ucdavis.edu/Faculty/
Eric C Mussen/Apiiculture Newsletter/](http://entomology.ucdavis.edu/Faculty/Eric_C_Mussen/Apiiculture_Newsletter/)

NWDBA EXECUTIVE BOARD NEXT MEETING: 22 JUNE AT 1 PM

Day: Saturday

Place: The Beez Neez Apiary Supply Store
403 Maple Avenue
Snohomish WA 98290
(360) 568-2191

Members: Gary Gibbons, Jeff Thompson,
Elisabeth Douglas, Savannah Clendenen,
Larry Brainard, Christina Robertson, and
Shannon Boling

BOARD APPOINTS EDITOR

On 6 April, the NWDBA Executive Board voted to appoint Clare MacQueen as Editor of *Beelines*. She was delighted to accept the position.

LOCAL SPEAKERS NEEDED FOR BEEKEEPERS CONVENTION

WSBA is looking for local speakers for the Washington State Beekeepers Convention, to be held 3-6 October in Federal Way. Speakers need not be Master Beekeepers, though they should be someone our members would like to hear.

Please send your suggestions to Gary Gibbons at:

president@nwdba.fatcow.com

Q. What did the bee say to her waggle-dancing sister?
A. Quit pollen my leg!

Q: Why doesn't bee bread rise?
A. There's no knead.

Q. Why did the bee fly with her legs crossed?
A. Because she couldn't find the BP station.

DR. TIMOTHY LAWRENCE: ON SWARMS

By Clare MacQueen

As our regular meeting began last month, 71 people were in attendance. About ten more had drifted in by the time our featured speaker began his presentation around 7:25 p.m. For a few folks then, it was standing room only!

Dr. Tim Lawrence has been involved with bees for 50 years — since he was 12 years old and found a swarm on a limb as he was walking home from school.

Just a few highlights from Tim's presentation:

- ◆ Beekeepers must know developmental stages of honey bees so well that the knowledge becomes intuitive, and the clues become obvious.
- ◆ Look for visual cues; pick up on smell, sight, and sound.
- ◆ No need to locate the queen in the hive, just evidence of what she's doing. But if you must find her, for whatever reason, then look at each frame out of focus, not at any one bee. Also, the queen's abdomen pokes out farther.
- ◆ The key to understanding is honey-bee pheromone, since 95% of their communication is chemically induced (not including the waggle dance).
- ◆ Types of Pheromones:

Alarm	Forager
Brood recognition	Nasonov
Drone	Queen mandibular
Dufour's Gland	Queen retinue
Egg-making	Wax gland and comb
Footprint	
- ◆ Swarming is *natural* behavior, and the inclination to swarm varies with different genetic lines. Understand what stimulates bees. For instance, rainy weather for 4 or 5 days can make bees feel pretty crowded.
- ◆ When you see swarm cells, you're in trouble. Adding a box on top of a crowded hive will not break swarming instinct—you must do something about the brood. Tim does something radical—he splits the hive.
- ◆ He never splits brood, but moves 1 or 2 frames of brood into another box, keeping the frames together. It's very important always to keep frames in the same order you find them.

- ◆ Difference between queen and worker is nutritional, and can happen within 24 hours. A queenless hive will buzz louder than a queen-right colony. It's very difficult to re-queen a laying-worker hive.
- ◆ So much easier to keep 3-5 colonies instead of only one. You can equalize them; for instance, you can steal brood from one to put in another, and put honey from one into another as needed.
- ◆ Tim highly recommends reading *Honeybee Democracy*, by Thomas Seeley, to understand swarming behavior. Check out the graph about decision making that Dr. Seeley came up with.
- ◆ 2-3% of swarm bees are scouts and know the location of their new home. They "herd" the swarm in a walk-through [aka zoom-through] by flying in circle-8s.
- ◆ Piping occurs as the bees enter their new home.
- ◆ Actually documented: a queen that lived 8 years! Queens mate with up to 40 drones, but typically 10-12.
- ◆ Drones from 3-5 miles away are drawn to the drone congregation area (DCA). Chip Taylor from University of Kansas can accurately predict where a DCA will form.
- ◆ Fairly equal distribution of sperm that's deposited in queen during mating, with no clumping.
- ◆ Smoke, smoke, smoke—cool white smoke. Tim always uses a smoker during inspections because you never know when the bees will blow up. He prefers Ponderosa pine pitch on top of shavings.
- ◆ Last year, Tim wrote a paper about testing oxalic and formic acids, and Amitraz. None are effective against mites when brood is in the colony, so treatment must happen when brood is not present. Winter treatments are far more effective, though he says he sometimes treats in the fall with thymol, Hopguard, and oxalic acid.
- ◆ Tim is on tap to wear a bee beard again this summer, in Pullman.

*** REMINDER: RINGERS ARE DISRUPTIVE ***

Please, let's respect our club speakers by turning off cell phones before the meetings begin. If anyone must leave their phone on, then please set the ringer to vibrate only.

A VISIT WITH THE BEE-HEADED MONSTER OF THE BLACK LAGOON

By Clare MacQueen

If you've picked up bee packages from the Beez Neez store, you may have seen Terry Johnson already. He's the grandfather in light blue coveralls and baseball cap, a tall man with an amiable face who offers you marshmallows for later, to replace the cork in the queen cage. He's quick to hand a moist paper towel to fastidious folks whose fingers get sticky from holding their new bee boxes. And he gallantly carries boxes and equipment purchases out to customers' cars.

He's also an "incognito celebrity," as the store's owner, Jim Tunnell, told me recently. "Terry's the one under all those bees." Jim nodded his head toward the poster that hangs on the wall behind the cash register. "This was on the cover of *American Bee Journal* in 1981."

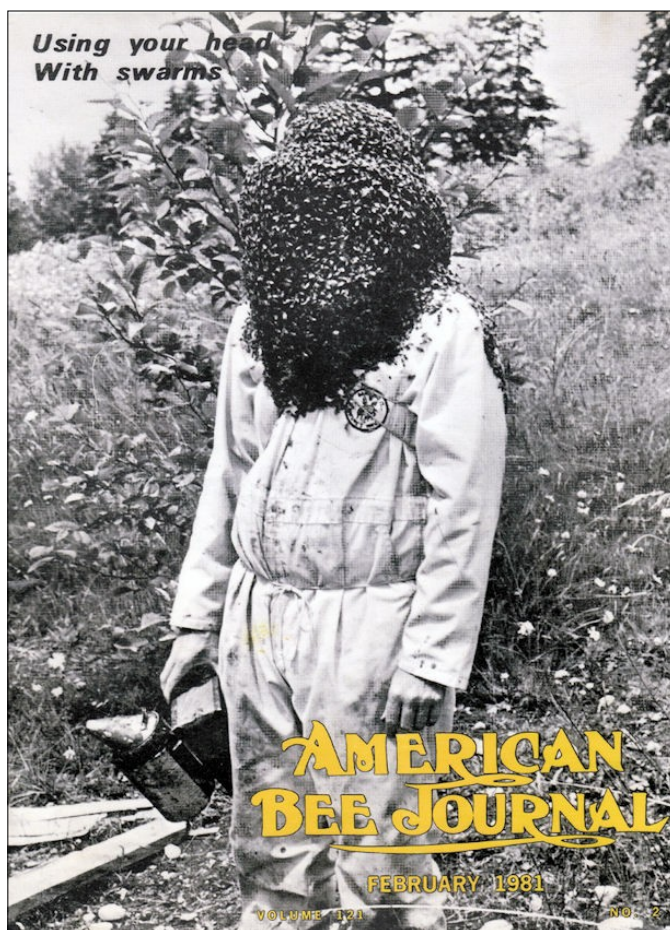
To summarize the story that Terry shared with me later, he had accidentally become a swarm locus while he was trying to destroy a queen bee. His intent had been to force the swarm to return to the parent colony, which, he hoped, would ensure the safety of his summer honey crop from that colony. But to his surprise, he found himself with 40,000 bees on his head.

Which made him feel he ought to show off a bit—and who wouldn't have in his boots?!

"I must admit," he wrote in 1980, "that I possess a certain flair for the spectacular and couldn't resist a bee-laden stroll past the garden where my friend, Mike Larson, and his wife, Patty, were harvesting peas. Giving the swarm a puff of smoke from my smoker every now and then to clear my vision, I marched out of the brush like some strange mutant from a sci-fi thriller."

After a stunned moment, Mike retrieved his camera from the house and shot that awe-inspiring image. Terry now says, "It's an impressive sight, but not in the slightest a dangerous deed."

Yet I think many of us might have a teensy reservation or two if we suddenly found *our* heads encased in a 12-pound helmet of bees! I for one would fret about any overlooked rips in my veil.



Original Photo by Mike Larson, 1980

Read the full adventure, including how Terry removed the bees, in "Sometimes a Beekeeper Must Use His Head," the article he wrote to accompany his friend's photo. (American Bee Journal, Volume 121, Number 2, February 1981, page 85).

When Terry found his first swarm in an apple box at the age of 14, he was living on his family's apple ranch in eastern Washington. Bill Gebhardt, a shop mechanic who worked for Terry's father, was also a beekeeper and maintained a number of colonies. "Mr. Beehart," as he was called by neighborhood kids, soon became the adolescent boy's mentor.

Even after keeping bees for almost five decades, Terry considers himself an amateur. "I'm still learning," he says. "Every year, something is different with the bees."

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The single most important factor driving the “something different” appears to be *Varroa Destructor*. While a subscriber to ABJ in the 1980s and ’90s, Terry read the articles and tracked the progress of this parasite across the United States. *Varroa* mites arrived in Washington state maybe 15 years ago, he says, “and from that point on, beekeeping has never been the same.”

Two eras of beekeeping: AV and PV

Although Terry has maintained up to 60 colonies at a time, he has always considered himself a hobbyist, rather than a commercial beekeeper. In the early days, “Ante-*Varroa*,” all of his hives over-wintered successfully—and without special intervention from the beekeeper. He didn’t even use inner covers. He would begin stimulant feeding in February, and by the end of March, the bees would just boil over the edges of the hive when he opened the cover at 6 PM.

Contrast that with “Post-*Varroa*,” and its annual losses of 75-80%, even with proactive stewardship on Terry’s part.

AV, he used to take 40 colonies on his ¾-ton truck to eastern Washington during the first week in April to pollinate fruit trees. He would bring them back home to the Tualco Valley near Monroe each May in time to make blackberry honey, then transport them to Methow for thistle honey.

He was able to focus on the bees this way each summer because he was a schoolteacher back then. (In fact, he taught English in the public-school system for 31 years before retiring in 2000.)

Terry’s brother helped with operations, and between the two of them, using a motorized 10-frame extractor, they were able to harvest a ton of surplus honey every year. Literally. Imagine: two thousand pounds of honey—or about 165 gallons! Terry says he routinely sold that much honey every year from the back of his truck. (And I thought harvesting five gallons last year, even with help from my husband, was a whole lotta work!)

One year the bees outdid themselves, and he actually sold *two tons*. Not only blackberry and thistle, but also clover; in other words, some of the tastiest varieties. Their

operation reached a point where he and his brother either had to expand, i.e., go mechanized with pumps, tanks, and the whole shebang; or simply forget about it.

About that time, Terry’s then-six-year-old daughter developed an allergy to bee stings, so the decision to give up beekeeping seemed obvious. Thus, he kept no bees at all during the years that she received immunotherapy.

Yet after selling so much honey for so long, and providing customer service to so many people, he continued to get calls for help with swarms and for beekeeping advice in general. Soon, Terry was back at keeping bees himself, though maintaining far fewer colonies.

Last year, for instance, he had five colonies going into winter, but only one has survived. From those five colonies, he was able to harvest only 16 gallons of surplus honey.

“A bee in every blossom”

These days Terry picks up a couple of bee packages every year just for the garden. Honey bees are vital for pollination of cucumbers, squash, zucchini, and watermelon, and he enjoys watching them at work. “A bee in every blossom,” as he so charmingly quipped. Still, there was sadness in his voice.

Beekeeping used to be fun, “but now it’s challenging.” He remembers the horrifying day when he opened one of his hives to find only the queen and one attendant left, a sight that breaks his heart all over again whenever he looks at the photo he took to document that loss.

Ante-*Varroa*, the biggest challenge in the valley was to keep the bees from swarming. These days, “you feel blessed if you get a swarm.”

Post-*Varroa*, Terry has seen drastic changes in the Tualco Valley where he has lived for 35 years: *Varroa* and tracheal mites, nosema, herbicide and pesticide use—and the bees cannot manage the combination of all these stressors at once. Yet there’s always hope.

There’s the beekeeper he met recently who managed to overwinter five hives successfully at the head of Lake

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Chelan, a 52-mile long lake in eastern Washington. His strategy? Cover the hives with tarpaper, and the following spring ask a seasoned beekeeper what else he should do.

Terry's answer: "Keep doing whatever you're doing!" After all, a survival rate of 100% is nearly unheard of nowadays. He theorizes that those bees in Stehekin may be protected by the lake, that they may be so isolated that Varroa has been unable to infiltrate there.

So he continues to speculate and experiment, and encourages others to do so as well. As part of those efforts, this is the fourth spring that Terry has helped his friends distribute bee packages at Beez Neez. "I learn from the people who come in," he says. "They're very interesting." And he enjoys that.

The first couple of years, as he recalls, 700-750 packages were sold, but this year the orders topped a thousand: an encouraging number. More people involved with beekeeping can mean more research and experimentation by amateurs, which can help the beekeeping community at large deal more effectively with the challenges we all face.

"The best thing since sliced bread!"

That's what Terry calls the frame holder, one of his favorite beekeeping gadgets. It can hold as many as four frames, and allows you to keep frames in the right order. The only problem is remembering to take it off the side of the box before putting another box on. And to make sure you pick up the frame holder from the grass and put it away afterward, to avoid mangling the blade of your mower a week later.

Terry also recommends "meadow muffins" as smoker fuel, but, as he cautions, only those from eastern Washington—since it would take a flamethrower to ignite cow patties from western Washington! You need "nice sundried" cow pies, and he keeps a whole bag of 'em on hand, which he picks up by the bushel whenever he visits family on the other side of the Cascades.

Cow chips produce a nice cool smoke when added to burlap sacks, as he does, but he says they'll do the same when you add them to whatever fuel you currently use.

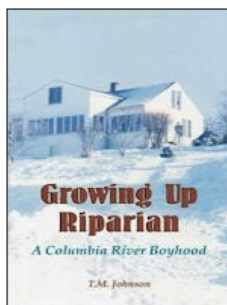
A head for bugs indeed

Terry is working on a definitive collection of butterflies, which suits him in part because he enjoys being in the great outdoors. He's traveled throughout Washington during the process of collecting 101, thus far, of the 160 species of butterflies in the state.

Plus, he continues to maintain a large veggie garden, makes candles from honey cappings, and writes articles for his blog, [The Valley Ripple](#). He is now in his fourth year of reporting general goings-on in the Tualco Valley and had posted 255 entries as of 30 April this year.

On 11 May, Terry published his annual report, "Bringing the Bees Home," in which he talks in more detail about the beekeeper who overwintered five hives in Stehekin.

Plus, he describes a culinary adventure that will make many readers cringe: eating honey bee larvae for the first time. Did it taste like chicken? Visit his blog to find out. And maybe leave a comment saying you read about him here in *Beelines*!



Terry Johnson is the author of a memoir, *Growing Up Riparian: A Columbia River Boyhood*, published via CreateSpace on 24 November 2011 and [available through Amazon](#).

"HOW TO WATER HONEY BEES"

What do you get when you combine cork, cool water, lemongrass oil, and hardware cloth in a bucket? A creative way to distract bees from straying next door to a skittish neighbor's swimming pool or birdbath.

Get the details at RDG's blog. He's a homesteader who's been keeping bees for nine years:

<http://weekendhomestead.net/posts/how-to-water-honey-bees/>

TWO WAYS TO LURE A SWARM

A tip from the helpful folks at Beez Neez: If you're fresh out of synthetic swarm lure, bait your trap with an empty queen cage salvaged from a recent bee-package box.

Or you can dip a cotton ball in pure, food-grade lemon, lime, or lemongrass oil, and rub it along the inner walls of your bait box. Citral is the key ingredient in these oils that mimics the scent of Nasonov pheromone. Experts advise that a little goes a long way, saying that a saturated bait box is like a woman wearing too much perfume.

Gary and I baited our swarm trap both ways, to cover at least a couple pheromone bases (we hope). Wish us luck!

*Pure citrus oils, food grade,
no additives or alcohol,
\$9.95 for a set of three
1-ounce bottles.*

*Product is unavailable in
conventional grocery stores,
as well as Whole Foods.
I was only able to find it
at PCC Market.*



CAFFEINATED NECTAR MAY GIVE BEES SAME BUZZ HUMANS GET FROM JAVA

Honey bees fueled by caffeine occurring naturally in the nectar of *Coffea* and *Citrus* flowers remember their floral “baristas” 24 hours later, and fly back for refills.

[A recent study published in Science](#) (8 March 2013), by researchers with the Institute of Neuroscience at the UK's Newcastle University, concludes: “By using a drug to enhance memories of reward, plants secure pollinator fidelity and improve reproductive success.”

[In other words, plants are far “smarter” than we ever imagined!] Apparently, caffeine motivates more strongly than sugar. Phil Stevenson, a chemist at Kew Royal Botanical Gardens outside London, says:

“We found that when they were taking sugar nectar with caffeine, they were three times better able to remember the flowers a day later than bees that were feeding on sugar alone.” [If it boosts our memory, why not theirs?]

<http://www.kuow.org/post/if-caffeine-can-boost-memory-bees-can-it-help-us-too>

“HONEY LAUNDERING: A PRIMER”

Thanks to Dave Grimes for the heads-up about a report by Jesse Hirsch in the May 2013 issue of *Modern Farmer*:

“In the U.S., our consumption-to-production gap is large: roughly 150 million pounds produced per year, with an annual demand for about 400 million pounds. Obviously, we're importing a lot of honey.”

<http://modernfarmer.com/2013/05/honey-laundering-a-primer/>

While at this site, be sure to check out “Bee Week” as well, a series of informative and eyebrow-raising articles:

<http://modernfarmer.com/2013/05/welcome-to-bee-week/>

“THIS IS THE BEST COMIC BOOK ABOUT BEES YOU’LL EVER READ”

A black-and-white graphic novel about our favorite bugs? Sounds stupendous. Although I almost never read comic books or graphic novels, I can hardly wait to see this one.

Clan Apis was created by Jay Hosler, an entomologist and award-winning cartoonist whose work has been called “ingenious” by *The London Times*. I hope to track the book down through interlibrary loan and review it in a future issue of *Beelines* — unless any of our members have read it and would like to write a review instead?

<http://modernfarmer.com/2013/05/this-is-the-best-comic-book-about-bees-youll-ever-read/>

BERNICE AND THE BEE

While a friend of mine was milking his sweet-natured bovine, Bernice, a honey bee meandered into the barn. Harry had a good rhythm going, so he kept only one eye on the bee as it buzzed here and there. Suddenly, it flew into the cow's ear. My friend froze, but Bernice just kept chewing her cud. She didn't even flinch.

After a few seconds, Harry shrugged and resumed milking. To his surprise, the bee squirted out with the milk into his bucket. “Can you believe that!” he said. “It went in one ear and out the udder.”

EDITOR'S CHOICE: NOTEWORTHY LINKS AND QUOTATIONS

**KIM FLOTTUM: WHAT'S KILLING THE BEES?
STRESS AND JUNK FOOD**

From *CNN Opinion*, 2 April 2013: "With humans, if we get too little sleep, have a poor diet, and take on too much pressure, our stress levels rise and we succumb to ailments our otherwise healthy immune system could easily handle. And we get sick.

"So it is with the bees. Their world is overrun with stress....

"To thrive, any organism needs to be 100% strong, and that begins with a healthy diet.... Basically, the food system in this country for honeybees is broken, and it needs fixing."

<http://www.cnn.com/2013/04/02/opinion/flottum-bees-death>

**"BEES BROUGHT TO THEIR KNEES":
THE DISEASED SUPERORGANISM**

Now here's an understatement (plus, a new word to add to my lexicon): "Honey bees face a diverse pathosphere" (*Trends in Microbiology*, December 2011). And Figure 1 of the article nicely diagrams the key *pathosphere* groups.

From Box 1, Colony collapse disorders: "After initial successes at identifying unusual viral profiles in some CCD colonies [5], a consensus is emerging that CCD is complex and probably cannot be ascribed to any one agent, even within the U.S. [71]. Instead, honey bee colonies appear to be resilient to most individual insults, but are vulnerable to the cumulative effects of microbes and other stress factors."

From Box 2, The diseased superorganism: "Serial exploitation of colony members might also allow highly mutable pathogens to 'explore' protein sequence space as a means of evading defenses and improving their chances of moving on to new hosts. Intriguingly, several honey bee viruses appear to be capable of recombination [84], and Moore and colleagues suggest that this recombination is one route for acquiring virulence traits [85]."

<http://www.knowthecause.com/downloads/Evans2011ColonyCollapseDisorderLC.pdf>

SLOW-MO, HIGH-DEF, AND UP-CLOSE!

Astounding video of honey bees drinking water, grooming, and sunning themselves. Take-offs and landings, too.

<http://www.youtube.com/watch?v=sH7aNZ7sFE4>

**"THIRD OF US HONEY BEES KILLED LAST
WINTER, THREATENING FOOD SUPPLY"**

A report by Brandon Keim in *Wired.co.uk* (9 May 2013) notes that neonicotinoid exposure alters immune-system function in Varroa-infected bees and makes them more vulnerable to infection by *Nosema ceranae*, another parasite implicated in honey-bee losses. Even though neonics used on crops may not kill bees outright, such use weakens them enough for other stresses to become lethal.

Agricultural entomologist Christian Krupke of Purdue University likens the effects to "living in an area with extreme levels of smog, causing your body and immune system to become overtaxed so that a common cold progresses to pneumonia."

<http://www.wired.co.uk/news/archive/2013-05/9/winter-honey-bee-collapse>

PROPOLIS: CAPED CRUSADER?

Notice from *The Atlantic*, summer 2012:

<http://www.theatlantic.com/health/archive/2012/07/the-latest-weapon-in-the-war-on-cancer-honey-bees/259560/>

[Details of the study](#) appear in *Cancer Prevention Research* (March 2012): "Caffeic Acid Phenethyl Ester [CAPE] Suppresses the Proliferation of Human Prostate Cancer Cells through Inhibition of p70S6K and Akt Signaling Networks."

From the abstract: "[CAPE] is a bioactive component derived from honeybee hive propolis. CAPE has been shown to have antimutagenic, anticarcinogenic, and other beneficial medicinal properties."