

The Middlesex ee

The Middlesex Bee is the official newsletter of the Middlesex Beekeepers Association, Inc., a 501(c)3 non-profit organization

“When the bee comes to your house, let her have beer; you may want to visit the bee's house some day.”

Congo Proverb

January 27, 2017 MCBA Indoor Meeting and Bee Talk

Introductions

As is our tradition, MCBA President Tom Fiore began the meeting by asking new attendees to introduce themselves with their name, where they're from, and where they are in terms of beekeeping...

- Michele K. from Ashland. She's a new beekeeper, who's been reading and learning for last few years, and is currently in bee school.
- Steve C. of Woburn, he's a first year beekeeper and is an organic gardener.
- Dave M. from Tewksbury, he's been thinking about starting a hive for 3 years,

and has been reading a number of books. Tom quipped that as far as books go, longtime beekeeper Mike Bayko's comment that the bees have never read the books is worth remembering...

- Glen G. is from Maynard, it's his first time attending a meeting and is interested in beekeeping and learning more about bees.
- Mark R. of Stow, had a couple of hives as a young man, and is now getting reacquainted with the craft – he's heard that there's lots of new things to learn...

It's that time of year again... please **RENEW YOUR MEMBERSHIP** (page 17)

February / March 2017

5 | **Testing Bees from deadouts**
USDA Bee Lab in Beltsville, MD

7 | **VOLUNTEER !**
We need your help

9 | **Use Protection**
Keep safe while treating

11 | **Plants**
Dr. Elizabeth Farnsworth, NEWFS

- 1** 01/27 Meeting Minutes
- 2** Meeting & Events Calendar
- 3** BetterBee
- 4** Join us on Facebook
- 4** Bee Magazine Discount
- 8** Smell-O-Vision
- 10** What's Blooming Now?
- 10** Weather Lore
- 12** Extractor
- 14** Poem
- 15** MCBA Spring Workshop
- 16** Winter Feed Recipes
- 17** Club Officers & Volunteers
- 17** Membership Form

Save The Date

MCBA Indoor Meetings and Bee Talks, Special Events

First Religious Society Hall, 27 School Street, Carlisle, MA

03/24, 7-9pm, Glenn Card, Merrimac Apiaries: "Commercial Beekeeping"

04/28, 7-9pm, Annual Meeting, Spaghetti Dinner, Topic/Speaker: TBD

05/06, 9am-2pm, MCBA Spring Workshop, Dunstable MA, see pg 15

Worcester County Conference: (with Dr. Seeley, and Dr. Vanengelsdorp)

03/04, 9am-3:30pm, <http://worcestercountybeekeepers.com/>

Quabbin Regional High School, Barre, MA

Massachusetts Beekeeping Association Meetings: (www.massbee.org)

03/18, 8am-3pm, Spring Meeting

Topsfield Fairgrounds, Topsfield, MA.

06/24, 9am, Field Day

UMass Agronomy Farm, South Deerfield, MA

- George P. from Chelmsford. He started last spring.
- Tom F. with his daughter Malita, of Waltham. A family member in New Hampshire keeps bees and they've been encouraging us try.
- Barbara O. is a second year beekeeper that started with a nucleus colony of Italians, and a package of Russians that's doing fine.

Question & Answer Period

Does anyone have any Questions, Comments, or Observations?

Birgit reported that she had recently lost her third hive (out of 4 hives). The first hive lost was in the fall, the second in early Winter, and finally the third loss was 3 weeks ago. Last week, when Birgit looked into the last hive that died, she discovered that it was full of honey. She has one, good/strong hive left. The first hive in the fall disappeared totally. The second hive was

empty (no one home) – there were dead bees, or any trace of bees at all. Birgit's third hive was full of dead bees and lots of honey. Originally, Birgit thought that 2016 was going to be a good year: she treated her hives and didn't see many mites at all – the hives were healthy.

A member said that she lives in Carlisle, and had lost two hives that simply didn't build up. They started as packages, and despite there being a good number of bees present, given their build up, their stores were low. She put food in there, but the bees in there are all dead. She shared that she has lost 9 hives over last 5 years. She had one strong hive that lasted for 5-years, but she lost that hive two years ago during the bad winter. She said that it's been very disappointing and that her family has questioned her continuing on – but she's decided to give it one more year before giving up.

She said that she'll be starting off again with packages, believing that nucs have their own problems of producers using them to get rid of their dirty old frames – you're never sure how medication is embedded in that old wax. In regards to packages, Alix said that Mike Palmer, *a well regarded queen breeder up in Burlington Vermont, won't use packages because he believes the season is too short here in New England for a colony to develop sufficiently.*

A member said that in their experience, packages can build up strong and just not overwinter. Is it that bees that are coming up from the South can't adjust to the climate. Another asked **"What's happening?" Even with**

honey in the hives, bees seem to just leave. Tom said that bees abscond for a reason. There was a drought and that probably played a large factor; unfortunately we don't know for sure as there are so many things to look at.

Someone asked about keeping bees in the city. Alix said that there are beekeepers keeping bees in Belmont, Watertown, and Cambridge, keeping their bees on postal stamp. She said that educating people that don't know about bees can help, in addition to being respectful of neighbors in regards to placement of your hives. Alix suggested that **you should look at the Massachusetts State Beekeepers Association's Best Management Practices**, which were authored by Middlesex County's President, Tom Fiore. It has good guidelines, and if any issues arise then you can reference them and say that you are adhering to the State's Best Management Practices.

Birgit said that educating people is really important! When she started beekeeping, 30-years ago, she had a neighbor complain that they now had a lot of bees in their yard; Birgit asked the neighbor to show her the bees, only to learn that the neighbor in actuality had a wasp nest.

My hive died, and there were a good number of dead bees on the bottom, not a lot, but I counted them and there were 1,500. Is that a good number? No. [Depending upon breed] you would expect at least 20,000. A package arrives with about 10,000, and if you only had 1,500 then that's not nearly enough. Hopefully, you're going into fall with 25,000-30,000 bees in a large cluster. Part of your preparation going into winter is making sure you have healthy bees, have adequate stores, and that you have enough bees so they can cluster together to generate warmth. Starting off with 20,000, 25,000, or 30,000 bees in a cluster is good because there's attrition throughout the winter. They die off naturally, but when they die off brings the cluster below a critical number survival is doubtful. They need enough bees to generate heat to keep warm through the winter, as well as to allow the queen to lay new brood to build up the hive before they start foraging again. If you only had 1,500 bees in the hive, no matter how healthy or how much honey was in there that colony was just not going to make it.

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If you have a small number of bees going into winter you should consider combining the weak hive with another hive because one strong hive has a greater chance of survival than 2 or more with impaired chances.

For those of us that have lost hives, have anyone sent in bees to the USDA Bee Lab for analysis? What sort of analysis do they do? They'll evaluate the sample of dead bees you send in and analyze Varroa infestation, presence of Foul Brood or Nosema. Is this something that is commonly done, and if so would it be worth sharing the findings with the club? A member said that she had sent samples down in the past, and the USDA lab in Beltsville (Maryland) has a pretty quick turnaround: they did a mite count, checked for Nosema spores. *It's free (except for the shipping charges).* *Information can be found on the next page...*

What kind of information did you get in your report? What did your hive die of? It was mites. The mite count was high. What does a high mite count equate equate to? With a high mite count there is a significant increase in your risk

Like Us on Facebook

Our Facebook Page has updates about meetings (delays/cancellations in Winter), and articles about bees - so the next time you're online, come visit!

of mite-borne pathogens (the Varroa Mite is a vector for bee virus and bacterial infections).

Last spring I started with Carnolian bees.. I use medium boxes and bought 3 for the queen [to lay in, the brood area] a queen excluder, and 3 more medium-sized boxes to use as supers. By July, they were growing so fast I added a seventh box on top – but then the drought started and the hive stopped growing. In September I went to take honey off the 3 supers but the bees had moved up into the top boxes leaving some in the top box beneath the queen excluder and only a small population. I left them 80# honey and 25-pounds of sugar, but they died in the last cold snap. The bottom of the hive had a screened bottom board, and there were about 3-4000 bees down there – **what happened?** Unfortunately you didn't have critical mass of bees to keep warm. Did you treat? Yes, organically along with some IPM. Mites probably played a part in it, but a lot of beekeepers had a tough time with the the drought. One of the mistakes you made was keeping the queen excluder on that late, the bees moved up into the food stores leaving the queen stuck back below. Carnolians shut down and are pretty efficient about not raising bees when there isn't a flow on and with the extended drought they didn't produce enough bees to last through the winter. John B. offered that he thinks going to all medium boxes is the wrong thing to do. . What ends up happening is that the mass of bees isn't great enough given the two breaks between frames versus the 1

Bee Magazine Discount

MCBA members receive a 25% discount off subscriptions to *American Bee Journal*.

For a copy of the ABJ Association Member Subscription form, visit the *Club Business & Important Links* section of the MCBA members-only website:

membership.middlesexbeekeepers.org

break between two deep boxes. He said that he was beginning to look into the old Dadant Deep (or 'Jumbo') boxes that are 11" tall versus 9-5/8" for standard deep boxes.

John B. said that he lost two hives like Birgit did; he started counting how many bees were dying – approximately 45-50 a day. **After this initial die-off, the hive deteriorated at a normal pace.** He didn't think that the cold killed them – his two strongest hives going into winter died in November or December and had plenty of honey on them. His hive with the smallest cluster is still alive! The surviving hive was from a swarm he caught in June, and that hive had few (if any) mites in the mite count he did. Queen stopped laying. Died in November or December, plenty of honey. Club president

Submitting samples to the USDA Bee Lab in Beltsville, MD

The United States Department of Agriculture Agricultural Research Service (USDA) offers bee disease diagnosis service for beekeepers across the U.S. The diagnosis of bee diseases has been a focus of the Bee Research Laboratory since its inception in 1891 and we operate a “Bee Disease Diagnosis Service” for beekeepers across the U.S. There is no charge for this service.

Samples received of adult bees and beeswax comb (with and without bee brood) are examined for bacterial, fungal and microsporidian diseases as well as for two species of parasitic mites and other pests associated with honey bees (i.e., small hive beetle, *Aethina tumida*).

WHEN REQUESTED, American foulbrood samples are cultured and isolates are screened for their sensitivity to Terramycin (oxytetracycline) and Tylan (tylosin).

We do not analyze samples (bees, wax comb, pollen, etc.) for the presence of viruses or pesticide residue. We do not make determinations about which species of *Nosema* (*N. apis* or *N. ceranae*) are present, when nosema disease is detected. Diagnostic reports are transmitted to both the beekeeper, submitter of the samples and to the appropriate apiary inspectors.

How to Send Adult Honey Bees

Send at least 100 bees and if possible, select bees that are dying or that died recently. Decayed bees are not satisfactory for examination. Bees should be placed in and soaked with 70% ethyl, methyl, or isopropyl alcohol as soon as possible after collection and packed in leak-proof containers.

USPS, UPS, and FedEx do not accept shipments containing alcohol. Just prior to mailing samples, pour off all excess alcohol to meet shipping requirements. Do NOT send bees dry (without alcohol).

How to send brood samples

A comb sample should be at least 2 x 2 inches and contain as much of the dead or discolored brood as possible. *NO HONEY SHOULD BE PRESENT IN THE SAMPLE.*

The comb can be sent in a paper bag or loosely wrapped in a paper towel, newspaper, etc. and sent in a heavy cardboard box. AVOID wrappings such as plastic, aluminum foil, waxed paper, tin, glass, etc. because they promote decomposition and the growth of mold.

If a comb cannot be sent, the probe used to examine a diseased larva in the cell may contain enough material for tests. The probe can be wrapped in paper and sent to the laboratory in an envelope.

Send samples to:

Bee Disease Diagnosis
Bee Research Laboratory
Bldg. 306 Room 316
Beltsville Agricultural Research Center - East
Beltsville, MD 20705

Tom Fiore said that this is the second year in a row that members are reporting early losses.

You used to hear about hives dying in February or March, but the last couple of years people have been reporting November and December losses.

Someone said that perhaps we should adopt the Canadian approach, which is to build up a package as much as possible take all the honey and let the bees die off. What about Hopguard? There's a new formulation of it out, but no one present had tried it. Rick Reault had tried the first iteration of Hopguard and didn't see any worthwhile results and there were mixed reviews on it. **What about small cell [foundation]?** Tony P. said that he has small cell foundation, and hasn't seen any advantages to it, but since he bought a bunch of it so that's why he's using it.

Rick Ressijaic (*the Membership Coordinator*) said that new beekeepers shouldn't be discouraged by hearing any horror stories during the winter meetings. We all have losses and successes, and you're more likely to hear questions and comments about things that have gone wrong during the Q&A than "My hives are really thriving" because people come seeking help and will talk about those issues.

Tom said looking to the future (the First Saturday in May) the club will be having it's annual workshop over in Groton / Dunstable.

It's a members-only workshop, and we'll be posting information and registration information on our internal website and in the newsletter in the coming months. ■

CLUB BUSINESS

Legislative Update (Alix Bartsch)

On the State Level, Carolyn Dykima, has reintroduced her bill looking to ban Neonicotinoids (now H2382) and is seeking co-sponsors in the legislature. Please contact your representatives in the State House and ask them to support the bill.

On the local level, we have Cambridge that's working on horrible regulations, and now Belmont seems to want in as well – the Belmont Board of Health is holding a forum on beekeeping on February 15th in the Selectmen's Meeting Room at 7pm. Our belief is that each city or town's local public nuisance laws should be sufficient and that additional rules or regulations are unnecessary.

Ottavio F. (a resident of Belmont) spoke briefly about the Belmont regulations, stating that in the past he worked with the Belmont Health Inspector and the Belmont Board of Health – while the town may not know how many beekeepers are in Belmont, they sure him. Unfortunately, Belmont's new BOH Director is looking at the proposed Cambridge regulations as possible launching point – and Ottavio has suggested letting experts help write any new rules. The town now wants to do "Something," but the BOH is not sure what to do. Ottavio said that these are political people that don't know anything about beekeeping, and he hopes that Belmont beekeepers and the club will be present on the 15th.

Alix asked if anyone present lived in Watertown, which has the worst regulations – things like you needing to meet with all of your neighbors for permission before you can keep bees. Alix cautioned everyone that you need to be vigilant about your town meetings, [so these draconian measures don't spread further in the county to your city/town].

George K. (of Boxboro) asked to speak briefly about national regulations – in the January issue of *Chemical Engineering News* (put out by the American Chemical Society) there was a mention about what the EPA is doing in regards to Neonicotinoids – See page 14.

In Memoriam

Al Horton passed away last week. He was a long time member of the club, serving as Treasurer for 14 years. At the wake, we presented two tributes to Al's family – flowers as well as some pictures of Al teaching at the club's spring workshop and working bees at a summer outdoor meeting and hive opening. We'll have to think of a way to honor Al's memory in the club – if you have any thoughts or suggestions, please contact club president Tom Fiore at president@middlesexbeekeepers.org ■

Volunteer Opportunities

Minutes / Note Takers

 **Beekeeping Knowledge**

 **Typing / Keyboarding**

The club needs volunteers to take minutes at club meetings and events. If you are available, please contact Tony Pulstone at editor@middlesexbeekeepers.org

Club Director

 **Beekeeping Knowledge**

Last September, Tony Pulstone resigned his directorship, and the club needs a new officer to sit on the Board of Directors, and to serve as an alternate for MassBee meetings. If you are available, please contact Tom Fiore at president@middlesexbeekeepers.org

Members-Only Forum Moderator

 **BK Info**

 **Internet Skills**

If you've been beekeeping for some time, and up on current practices and research then we can use a hand with the members-only forum. The forum structure is already taken care of - it's the meat and potatoes of helping answer questions... Please contact John Cheetham at website@middlesexbeekeepers.org

Designer

 **Beekeeping Knowledge**

 **Graphic Design**

We could use help with the newsletter and other club projects. If you are available, please contact Tony Pulstone at editor@middlesexbeekeepers.org

Finding Speakers for Meetings

 **Beekeeping Knowledge**

 **Google Searches**

If you have spare time, please go through the MA, RI, and NH. County Organizations websites (i.e. archived newsletters) and compile a list of speakers they've had visit their clubs... Send the lists to president@middlesexbeekeepers.org

Social Media / Communications

 **Beekeeping Knowledge**

 **Facebook Skills**

We could use help with our social media. If you know your way around Facebook, or like to blog please contact Tony Pulstone at editor@middlesexbeekeepers.org

Membership Coordinator

Beekeeping Knowledge

Organizational Skills

At the end of this year Rick Ressijiac will be stepping down; Rick also holds the title of the Clerk of the corporation for the non-profit entity that is club. So his replacement, in addition to being the membership coordinator, will be taking over as an officer of MCBA, inc. If you are available, please contact Tom Fiore at president@middlesexbeekeepers.org

Mentors

Beekeeping Knowledge

If you know your way around a hive, then you have knowledge that can be helpful to newbees in your city/town! Can you tell if a hive is queenright? Know how to spot problems? Or club's motto is "Beekeepers helping Beekeepers... Contact Tom Fiore at: president@middlesexbeekeepers.org

Did you know?

3-Dimensional Smell-O-Vision

From Karl von Frisch's *BEES, Their Vision, Chemical Senses, and Language*

There is one respect in which the sense of smell in bees is certainly superior to ours. The human organ of smell is located inside the nasal chamber, and the particles of odorous substances are brought to it by the stream of air utilized for breathing. Since this air stream is well mixed on its way into the nose, there can be no correlation between the shape of a scented object and the sensation of odor that it arouses. But in bees the olfactory organs are located on the antennae, and these can be moved about,. Furthermore, the antennae are also covered by organs of the sense of touch, so that the sense of smell stands in a close relation to that of touch. A round scented object may give quite a different sensation to a bee than will an angular one. August Forel many years ago stated that bees might "smell" the form of objects as a result of this close relationship between the receptor organs of touch and smell on the antennae. The bee's association of touch and smell would be analogous to our won constant integration ever since infancy if what we see with our eyes and what we feel with our hands.

This association of touch and smell is very useful to bees as they visit flowers. Often they bring their antennae close to the flower, almost

in contact with it, so that they can probably perceive even quite feeble odors. Moreover, if various parts of a flower have different scents, the bee can distinguish and locate these separate portions in a very precise manner.

With this in mind I wondered whether there might be sap spots or nectar guides not only for the eye but also for the sense of smell. It was a pleasure to find that in many blossoms this was really true. In a narcissus, for instance, the yellow nectar guide is not only of a different color from the white corolla but of a different scent as well. If we separate the yellow parts of the flower from the white parts and train some bees to one of these scents they can distinguish between the two with certainty. And we too can perceive the difference in scent very easily once the parts have been separated, but we cannot do so by smelling the whole flower, because the two odors are mixed before reaching our olfactory organs.

Bees, with their sense of smell localized on the surfaces of the antennae, can easily locate such differences and can be guided to the nectar by these scented sap spots. Such scented sap spots were also found in other flowers. Often there was no difference in quality but an increasing intensity of odor around the entrance to the bottom of the flower where the nectar is located. ■

Use Protective Gear when applying Treatments

John Sallay provided the following information, because it was really frustrating when he was trying to learn how to use the MAQS and the OA vaporizer, that all of the instructions and websites emphasized that 'Protective equipment was necessary' – but none would specify what protective equipment. Neither John, *nor the club*, is recommending any particular products, just providing information on what he used...

In addition to the typical beekeeping jacket/veil and gloves, long pants, and shoes/boots...

Nitrile Gloves – Although the oxalic acid instructions approved by the EPA call for 14 mil thickness nitrile gloves, 8 mil powder-free gloves seem to be adequate

- The nitrile gloves sold by Brushy Mountain are 8 mil, though 8 mil Liberty Duraskin powder-free, blue nitrile gloves are available much more economically in bulk packages from Amazon
- These nitrile gloves are available in a complete range of sizes
- The XXL size gloves fit over beekeeping gloves, if you want protection against both the acid treatment and the bees

See: <http://libertyglove.com/products/hand-protection/disposable-gloves/duraskin/disposable-nitrile/industrial-grade-nitrile-disposable-gloves-powder-free-79>

Goggles – Brushy Mountain's oxalic acid treatment kit comes with Rugged Blue economy safety goggles (SFTEYGG1000021192)

- These have a flat polycarbonate lens that is scratch resistant and is encased in a vinyl goggle that hugs the face, so vapors do not come in around the sides
- These goggles use an elastic strap that goes around the head
- They meet ANSI Z87.1 and CE EN166 standards

See: https://www.amazon.com/s/ref=nb_sb_noss_1?url=search-alias%3Daps&field-keywords=safety+goggles

Respirator Mask and Cartridges – The 3M protective mask that I bought is a 3M “half facepiece” protective mask in medium size (#6200/07025).

- The 6000 series masks are a little less expensive than the 7000 series masks, which I think have somewhat better construction.
- These two series come in both half facepiece and full facepiece
 - I got a half facepiece model since I have separate eye protection goggles which work fine
 - Also, I was somewhat concerned about my respiration fogging the clear visor of a full facepiece model.
- The specific models 6100, 6200 and 6300 refer to sizes small, medium and large. The specific model I bought was relatively inexpensive (\$8.90 including postage), from BHP Safety Products via Amazon.

See: https://www.amazon.com/3M-6200-Half-Cartridges-Piece/dp/B001QF9C5C/ref=sr_1_1?ie=UTF8&qid=1488053206&sr=8-1&keywords=3m+6200+mask

- With these reusable masks you also need to purchase the cartridges specific to whatever you are protecting against.
- The formaldehyde/organic vapor cartridge/P100 filter, which is primarily designed for the formaldehyde (formic acid) should also work with the oxalic acid.
- It is model number 60925 and is somewhat expensive at just under \$30 for a pack of two (you need two for that mask) from Amazon.
- There is all sorts of information on the 3M website, including an online tool for choosing the right filters.

See: https://www.amazon.com/3M-Formaldehyde-60925-Respiratory-Protection/dp/B009POHJA6/ref=sr_1_1?s=industrial&ie=UTF8&qid=1488053321&sr=1-1&keywords=3M+Formaldehyde+Organic+Vapor+Cartridge%2FFilter+60925%2C+P100+Respiratory+Protection+%28Pack+of+2%29

What's Blooming Now?

Common Name	Scientific Name	Value	Plant Type
MARCH			
Crocus	Crocus	Pollen	Bulb
Japanese Witch Hazel	Hammamelis Japonica	Pollen & Nectar	Shrub
Skunk Cabbage	Symplocarpus Foetidus	Pollen	Herbaceous Perennial
APRIL			
Andromeda-Fetter Bush	Xolisma Lucida	Nectar & Pollen	Evergreen Shrub
American Aspen (Poplars)	Populus Tremuloides	Pollen	Tree
Americam Elm	Ulmus Americana	Pollen	Tree
Ash	Fraxinus spp.	Pollen	Hardy Tree
Beech	Fagus Grandifolia	Pollen	Tree
Birch	Betula spp.	Pollen	Tree
Blackhaw	Viburnum spp.	Nectar & Pollen	Hardy shrub
Bloodroot	Sanguinaria Canadensis	Pollen	Herbaceous Perennial
Box Elder	Acer Negundo	Pollen & Nectar	Tree
Cassandra	Chamaedaphne Calyculata	Nectar & Pollen	Shrub
Dandelion	Taraxacum Officinale	Nectar & Pollen	Herbaceous Perennial
Deutzia	Deutzia Lemoinei	Nectar & Pollen	Shrub
Gill-Over-The -Ground	Nepeta Hederacea	Nectar & Pollen	Herbaceous
Hazelnut	Corylus Americana	Pollen	Shrub
Marsh Marigold, Cowslip	Calthe Palustris	Pollen	Annual
Narcissus	Narcissus	Nectar & Pollen	Bulb
Red Maple	Acer Rubrum	Pollen & Nectar	Tree
Shadbush	Amelanchier spp.	Nectar & Pollen	Shrub or Tree
Silver Maple	Acer Dasycarpum	Nectar & Pollen	Tree
Spicebush	Benzoin Aestivale	Nectar & Pollen	Shrub
Tag Alder / Speckled Alder	Alnus Incana	Pollen	Bulb
Tulip	Tulipa	Pollen	Bulb
Willows (Many Species)	Salix spp.	Pollen & Nectar	Small Shrub to Trees

Weather Wisdom of the Bees

Beekeepers and observers have used a variety of sayings about bees and rain, such as:

"If bees stay at home, Rain will soon come;
If they fly away, Fine will be the day"

Information for **What's Blooming Now?** was taken from **Nectar and pollen plants of Massachusetts as observed in the central Connecticut Valley region** Special circular #27, Revised F.R. Shaw, Department of Entomology, University of Massachusetts, 2-2-56

BEE TALK



Plants, Pollinators, and Physiology

Elizabeth Farnsworth, PhD. *Senior Research Ecologist, New England Wildflower Society*

The New England Wildflower Society (NEWFS) is the oldest organization in North America dedicated to Native Plants, and they care deeply about plant reproduction. *A copy of Dr. Farnsworth's slideshow, as well as an audio recording of her lecture will be available soon in the members-only website.*

Who are our pollinators?

- Hymenoptera: bees, wasps (*but not ants: there's an old urban legend about Ants and Peonies, but they're not great pollinators and tend to kill pollen*)
 - Bee pollination improves Fruit quality and shelf-life: Klatt et al. 2016 *Proceedings*

of the Royal Society B. Which looked at the efficiency of bees on strawberries; Bee pollinated strawberries have higher quality in regards to taste, longer shelf-life pollinated by bees much more efficiently. Fruits plumper, oxin hormones. They also retain their flavor longer.

- Nearby ponds benefit bees and hoverflies - Stewart et al. 2016. *Basic and Applied Ecology*
- Nectar Robbers are cheaters: they make hole at the base of the nectar tube, and are not doing the plant any favors (pollination).
- Flies are among the earliest alpine visitors, and favor red flowers.
 - One of the creatures early part of life stage are flies, hover flies, serpent flies, iridescent, work plants just as hard of bees. Flies are very important pollinators alongside hymenoptera. Particular important in alpine zone. (Baked apple plant, relative of raspberry eneds flies to pollinate.
- Mothes and butterflies
 - Sphinx moth and the Madagascar Orchid (*Xanthopan morgani*) The orchid has a foot long nectar tube (it was one of Darwin's favorite plants) – for every orchid there is something specialized out there to pollinate it.
- Beetles working on a Magnolia blossom
 - Some of our oldest extant flowering plants (which began to emerge in the Cretaceous period), and as these flowering plants first showed up on the landscape, beetles also began to show up. Looking back at fossil record, Beetles began to diversify and become different species at the same time as Trees and Flowers.
- Wind. Pollen carried by wind tends to give us Hay Fever (Rag Weed). Plants that have explosive pollen dispersal: Bunchberry pollen is dispersed by the wind for example, its pollen explodes out of the stamens at 6,700 miles/hour. There are videos on YouTube on exuberant pollen dispersal, look them up! Red Mulberry has amazing pollen dispersal at 740 miles/hour.
- Water Pollination. Eelgrass is a common denizen of New England's lakes and rivers. Eelgrass us the surface tension of water, the male flower floats free to the surface, and female flowers make contact with the male flowers
 - Marine invertebrates: Water was thought to distribute the pollen of Sea Grasses until researches found that small marine invertebrates (including shrimp, copolopods, and isopods) – those tiny

sea creatures that come out at night are actually responsible for pollinating the Sea Grasses!

- Birds are some of our most charismatic pollinators
- Bats. We in New England don't have bat species that hunt for nectar. Probably because survival is especially energy intensive here in the northeast (insects give more of an energy reward). However, towards the southeast you will begin to see fruit bats.

What attracts pollinators to plants?

- Visual Cues
 - Bee orchid (for a very near sighted bee) looks pollen masses stick themselves to the bee.
 - Nectar Guides (ultraviolet lines direct bees to the pollen and ovary)
 - Mountain Laurel, bees get blows of pollen as land on flower – the stamens are spring tripped like on a mousetrap.
- Scent
 - Skunk cabbage (one of the earliest flowers that we see in the spring) can melt its way through snow using a process known as Thermogenic respiration
 - Other Scent mimics – Wild ginger, Virginia serpentaria – Slug pollination – Apocryphal story that slugs are potential pollinators of wild ginger (*Asarum canadense*).
 - Fetid plants: among the largest flowers in world (*Rafflesia arnoldii*).

Extractor



MCBA maintains a hand-operated Maxant 3100-series 9-Frame Honey Extractor for rent by current members. Rental includes everything you need to extract your honey, including:

- Electric hot knife for uncapping honey frames
- Uncapping Fork
- Uncapping Tank

Terms:

- This extractor is available on a first-come, first-served basis to members only.
- The extractor is easy to transport in an SUV or Pickup, and is capable of being moved by one person with ease (however 2 people are helpful)
- \$15/day. Extensions may be available depending upon scheduling. Contact the Extractor Coordinator at extractor@middlesexbeekeepers.org for information.
- The Extractor must be cleaned WITH COLD WATER before returning to the club.
- Any and all damage and/or maintenance issues MUST be reported to the Extractor coordinator immediately.

**To reserve, contact Kathy at: extractor@middlesexbeekeepers.org
or by phone at: 617.549.7460**

Amorphophallus titanum, and Aristolochia gigantea) give off horrible scents

- The Specificity of scent
- Insects learn! Researchers interrupted with eyedropper and rose scent.
- Nectar
 - It is costly to put out nectar if you're a plant. Nectar is 50% sugar, so the plant may not create a lot.
 - Nicotine Plant (puts out a dilute nectar) along with some nicotine in the nectar. Insects will forage a little bit of nectar – there's enough of reward but it leaves a bad aftertaste that keeps each individual floral visit short
 - Nectar can be dangerous! For example, carnivorous plants. Here in New England, native purple pitcher plants, produce nectar that will drown and dissolve insects.
- Not only nectars/plants themselves are dangerous – Crab Spiders are ambush predators, will typically sit on milkweed or goldenrod flowers just waiting...
- Color
 - For honeybees, bright white, yellow, blue, and ultraviolet colors with nectar guides are attractive
- Shape
 - For honeybees, shallow flowers that have a landing platform and are tubular.
- Pollen
 - for honeybees, plants whose pollen is protein rich, sticky and scented are attractive.
 - Pollen contains sperm, and 1 set of chromosomes only.

How do plants reproduce?

- Pollen is not the thing that fertilizes plants: it's what's inside the pollen! Pollen is just the hard case, it only has one set of chromosomes, micro gametophytes in the free living phase. The female part is the egg-producing mega gametophytes tucked down in the ovary of the

flower. Pollen grains are useful in the fossil record, going back 14,000 years in New England and are indicative of when the glaciers receded. Soil cores taken through peat or bog at the base of a pond, in the deepest levels of the soil (the deepest layers are the oldest layers) you can wash pollen grains out of them! Pollen is not viable past a couple thousand years though...

- Where is pollen produced?
 - In the anthers, and male cones (in Pines, female cones open later than male cones to prevent self-pollination.
 - Pollinia is sticky masses of pollen grains. Other plants in addition to orchids produce sticky bodies (such as Milkweed). The honeybee's leg (Tarsa) evolved to collect this sticky as heck pollenia. As the bee flies pollenia is exposed to air and the pollenia change orientation.
 - Hand pollination is done for conservation. Purple Milkweed has notorious low levels of pollination and the NEWFS has tried hand pollination to help produce milkweed pods!
- Double fertilization
 - Pollen grain has 2 sperm nuclei that will germinate and send tube down to ovary. One sperm nucleus will fertilize the egg and this is what becomes the plant embryo (a haploid young plant is born). The second sperm nucleus fuses with other nuclei in gametophytes and now we have a third set of chromosomal tissue (that has 3 sets of chromosomes) – this is what we and call the endosperm and the endosperm feeds the growing plant embryo within the plant or seed. This is triploid tissue, and the entire process is called diploid fertilization.
- Once a plant is actually pollinated...
 - Hormones are released: Ethylene (a gaseous hormone) ripens bananas and causes flower petals to senesce.

Climate change and pollinators

Looking into the future, ecologists are thinking about whether plant and pollinator interactions will change with Climate Change. Plants and bees are mostly tracking any shifts in spring temperatures equally (Bartomeus

et al. 2011. Proceedings of the National Academy of Sciences). This study looked at the record of when the first bees emerge – Anomalous warmth of winters is changing behavior in a certain way. So far when the plants bloom and bees are active – the two are tracking each other.

Native Bees

One of the tough things about Bumblebees, is that their taxonomy and physiology is quite messy. You need DNA technology to determine the difference in species because morphologically, they look very very similar – and that's the reason there is no field guide out there for Bumblebees.

Dr. Farnsworth's favorite pollinator plants (These bloom different times of year)

1. Bellflower (*Campanula rotundifolia*) It's hearty and does well in rock gardens
2. Mountain Mint (*Pycnanthemum muticum*) It's in the mint family and has mint-like flowers, it's leaves have a whitish bloom, which causes its flowers look larger than they are. The leaves smell like Wild Bergamont
3. Black Bugbane (*Actaea racemosa*) Bugs, and bees love them! Once they start blooming, it will bloom for weeks
4. Hollow Joe-Pye weed (*Eutrochium fistulosum*) One way to tell the difference in various species, is that the stem of this plant is hollow
5. Zig-Zag Goldenrod (*Solidago flexicaulis*) suitable for shady, semi-shade

6. Stinking Benjamin (*Trillium erectum*) Early blooming plants that are deep maroon in color. It's a fly pollinated plant that is pretty tall that does well in a bower or pergola
7. Tumpet Honeysuckle (*Lonicera sempervirens*) a plant that grows quite rapidly
8. Winterberry Holly (*Ilex verticillata*)
9. High-Bush Blueberry (*Vaccinium*)

Garden in the Woods

Dr. Farnsworth encouraged members to visit Garden in the Woods, a NEWFS site in Framingham that's extraordinary – NEWFS received a major grant to pollinate New England. The best time to visit is in the spring, because it truly is Spectacular! However she encouraged members to go back in July, and then late August/September to see how the environment changes over the course of a growing season. ■

Humming Bee!

Thy sting was needless then, perchance unknown,
The seeds of malice were not sown;
All creatures met in peace, from fierceness free,
And no pride blended with their dignity.

William Wordsworth

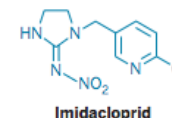
NEONICOTINOID CAN HARM BEES

Chemical & Engineering News, 01/11/16, p22

The neonicotinoid insecticide imidacloprid has negative effects on bees and other pollinators at residue levels above 25 ppb, according to preliminary assessments released last week by EPA and Canada's Pest Management Regulatory Agency. These effects include reducing both honey production and the numbers of pollinators.

EPA's study finds that pollen and nectar of citrus and cotton flowers can harbor residues of imidacloprid above the safety threshold. Corn and leafy vegetables, however, have residue levels below the threshold, the agency notes.

The assessment is the first of four that EPA plans to release this year evaluating the risks of neonicotinoid pesticides for bees attracted to various crops. EPA expects to release assessments on three more—clothianidin, thiamethoxam, and dinotefuran—in December. EPA is working closely with California's Department of Pesticide Regulation to complete the assessments. Once finalized, they could trigger regulatory action to restrict use of the pesticides.





Pictured: Circe giving a honey potion causing Odysseus's men to forget their home and transform into pigs (*The Odyssey*, Homer). Some honeys (e.g. Atropa, Datura, Mandragora) can cause acute anticholinergic syndrome (severe delirium/confusion), which is what Odysseus's men are thought to have suffered.

2017 Spring Workshop



Saturday, May 06, 2016 (9am to 3pm)
 Silveus Plantation (*Carl Flowers' Christmas Tree Farm*) | **Kemp Street, Dunstable, MA 01827**

Sessions will be instructed by experienced beekeepers, and will cover many different beekeeping management practices. After lunch, we will have hive openings. Classes are for both the beginner and experienced beekeeper.

One is never too old to learn! MCBA will supply soft drinks and water

Only members (and their family) may attend. The cost is **\$20.00 per member** (includes all family members attending) **of the MCBA.**

Planning on attending? **RSVP** by 05/01 to **workshop@middlesexbeekeepers.org**

What to Bring:

- Protective Beekeeping Equipment (veil, etc.)
- Folding Chair
- Lunch
- Check for \$20.00 (*payable to the club you belong to*)

I am already a member of the Middlesex County Beekeepers Association (\$20)

I would like to JOIN the Middlesex County Beekeepers Association (\$35)

Name of member registering:

Number Attending _____

Winter Feed Recipes

MCBA Fondant Recipe

- 2 Cups Water
- ½ Tbl. Vinegar
- 8 Cups Table Sugar
- 1 tsp. Honey-B-Healthy
(optional)

1. Pour sugar, water, and vinegar into pot.
2. Bring to boil, stirring constantly.
3. Cover and boil 5 minutes.
4. Insert Candy thermometer, and continue to boil uncovered until temperature hits 234°
5. Remove from heat and cool to 200° F.
6. Add Honey-B-Healthy (opt.)
7. Whip with an electric mixer until mixture begins to turn white with air bubbles dispersed throughout.
8. Quickly pour into molds and allow to cool undisturbed.

Pressed Candy Board

Make a 2" tall candy board frame from scraps of wood, staple ½" wire mesh to the inside for a candy support and drilled a ½" hole in the front for the bees to escape.

Bee Candy Recipe

- 15 Pounds White (Cane) Sugar
- 3 Cups Water

1. Put sugar into very large canning pot.
2. Add vinegar to the water
3. Pour the water into the pot, a little at a time, stopping to make sure it is all mixed into the sugar.
4. Mixing takes some muscle, but it doesn't require cooking the sugar.
5. Line the wire mesh with paper.
6. Pile on the wet sugar.
7. Level off the sugar with a wooden ruler, and set to dry.
8. It will set up and harden in 1-2 days.

Lauri's Sugar Blocks *

This recipe is not cooked in any way - the ingredients are dried or dehydrated to form the hard block.

- 10 Pounds White (Cane) Sugar
- 1 Tbl. Citric Acid
- ⅛ tsp. Electrolytes#
- 3 Capsules Probiotics
- 1 ¼ Cups real Apple Cider Vinegar (*with the Mother*)
- 1 Tbl. Honey-B-Healthy (Optional)

1. Open Capsules into the Apple Cider Vinegar.
2. Stir in Citric Acid and Electrolytes into the Apple Cider Vinegar.
3. Add Apple Cider Vinegar mixture to the Sugar and mix together (your hands work best).
4. Roll out and lightly compress in 1" deep pan (*The disposable aluminum baking trays work really well*).
5. These will set up and harden overnight a food dehydrator set at 130° Fahrenheit, or a few days sitting out in an unheated greenhouse.

* Tony modified Lauri's original recipe by adjusting the ingredient amounts based on 10# of sugar (for hobbyists that don't need as many blocks as commercial operations); he also added some additional strains of probiotics (based upon tresearch).



Available online at ValleyVet.com; Agway has something similar.



Middlesex County Beekeepers Association

Membership Form

\$15 Annual dues per family, **payable to MCBA**. Mail this form and payment to: Rick Ressijac, 7 Coolidge Road, Ayer, MA 01432 *OR* bring it with you to a meeting.

Please print CLEARLY.

Name _____

Family Members' Name(s) _____

Address _____

City / State / Zip _____

Telephone _____

Email _____

How did you hear about us? _____

How many hives do you have? _____ Renewal or New Membership

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