The Middlesex Bee

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

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"There is one masterpiece, the hexagonal cell, that touches perfection. No living creature, not even man, has achieved, in the centre of his sphere, what the bee has achieved in her own: and were some one from another world to descend and ask of the earth the most perfect creation of the logic of life, we should needs have to offer the humble comb of honey."

Maurice Maeterlinck, *The Life Of The Bee*, 1924

July 22, 2017 MCBA outdoor meeting and hive opening

Rick Reault opened the meeting by thanking John and Cheryl Mandler for hosting the meeting and sharing their lovely yard and gardens with us. He welcomed new members from Newton, Lincoln, Concord, Malden, and Acton. (*Editor's Note: No club business was discussed at the meeting. Thanks to Jen Reed for taking notes and Ed Cullen for recording the meeting.)*

Could you talk about Warré hives? Rick said that he's probably not the best person to talk about Warré hives [a member interjected to say that they should be called "Worry Hives"], but they're a smaller frame hive where some people will use foundation and others don't. Being a smaller-framed hive, there's less surface area for the bees to expand upon. They can be a little challenging (especially if you don't use foundation) to do inspections, and if you go to extract honey because they don't use the conventional frames of a honey super. Rick asked if anyone else in the group could add to the discussion and someone said that he was running 'modified frames' this year where the frames don't have a bottom slat but they do have sides and a top rail (traditional Warré hives use top rails only). Rick asked if the box/frame dimensions in members' Warré hives are the same as traditional Langstroth dimensons and was told "No." The member said

Save The Date

Massachusetts Bee Apiary Program (hive opening & information day)
UMass Agricultural Learning Center, 911 North Pleasant Street, Amherst
09/16, 10am-12pm, topic: winter preparation

Pollinators in Decline: *Steps to protect them in Massachusetts*
09/16, 10am-12pm, MassWildlife HQ, 1 Rabbit Hill Rd, Westborough, MA
https://www.massbeee.org/2017/08/31/pollinators-in-decline/

Final MCBA Outdoor Meeting and Hive Opening
09/23, 1-3pm, Host: Phyllis Kirouac, 4 Comanche Circle, Chelmsford, MA

Worcester County Beekeepers Association ALL DAY CONFERENCE
visit the WCBA website for more information: http://worcestercountybeekeepers.com/
10/07, 9:00am-3:30pm Quabbin Regional High School, Barre, MA

MCBA Indoor Meetings and Bee Talks
First Religious Society Hall, 27 School Street, Carlisle, MA
10/27, 7-9pm, topic: TBA
11/24, 7-9pm, topic: TBA
12/09 (tentative), 6:30-9pm, Holiday Dinner
01/26, 7-9pm, topic: TBA
02/23, 7-9pm, topic: TBA
03/23, 7-9pm, topic: TBA
04/27, 6:30-9pm, Annual Meeting, Officer Elections, Spaghetti Dinner

MassBee Fall Meeting
visit the MassBee website for more information: https://www.massbee.org/
11/11, time/location/speakers: TBA

that the advantage of the Warré frames/boxes is that they are lighter to lift – especially for those of us over the age of 35. Rick replied that you can achieve similar results in Langstroth hives by using mediums or shallows and 8-frame equipment to help address the weight issue. You could even simply have an extra box (or nuc) and take out 5-frames so you only have to lift half a box can lighten loads immensely. Kathy said that she has 3 Warré hives (one at her house, and two at the school she works at) and she doesn't take the boxes off to inspect, but there are windows. For her inspections, Kathy watches to see if they're doing what they should be doing (bringing in pollen, collecting nectar, et cetera). Kathy said the entrance to the hives are in front, but the back has doors with plexiglass over them – you can see into the hives but you can't see the face of the comb of the 8-frames per box.

A member asked whether the ***low quantities of Warré hives here was because of the dominance of Langstroth hives and commercial beekeepers?*** Rick said that he believes that Langstroth hives are better hives. Even for a hobby beekeeper? Rick said especially for a hobby beekeeper – because of the fact that Langstroth frames offer more real estate for brood and nectar expansion. When you've been keeping bees for a few years and you have the comb, you'll see a build-up of pollen and nectar and you really want the queen to have the space to lay on as many frames as possible during the summer time.

Towards the end of the year you'll see a balance where there's a 50-50 split of brood to food frames – but there's no doubt in his mind that the healthiest colonies have the biggest population.

How do you collect honey from a Warré hive? Kathy said that she keeps bees mostly for the pollination and education, and that you do NOT collect as much honey from them as you would from a Langstroth. You do have to crush and strain (Kathy does this through cheese cloth), and the two hives at the school allows the kids to be hands-on to help bottle and sell it. Rick said that they do have a specialized extractor for Warré frames where they frames lay flat (but it's harder on your elbow). Another member said that he uses a cider press to extract honey. The drawback on that, Rick said, is that you're destroying the comb. If you're doing that, only large populations of bees will build the comb back up quickly, and if you have smaller hives with smaller colonies then it will take them longer to rebuild that comb.

Can you speak about the Mite Treatment sequence? We did a treatment this week and we lost the hive. Can you tell us what happened? We had 4-frames of brood, and 8-frames of bees; we used only one strip (one pad) between the two boxes. Were they this year's strips, or last years? They were fresh Mite-Away Quick Strips (MAQS) from this year. Was the brood only in one box? Yes, they were bringing in honey into the top box. Did you apply this treatment last week? I ask because we had several days over 90°; when you said the bees died, what was the evidence left behind? Well, they disappeared. They absconded? We went into the other hive, because we were going to requeen it based upon your recommendation – so we were going to take a frame of brood from the stronger hive and it didn't look right. I could tell that some of the larvae looked like they had been messed with, and it looked like the emerging bees were just coming out and dying, and the whole hive was just empty. Was there worker brood, or was a lot of it drone brood? Mostly worker brood in the hive. Rick said that he has been very discouraged with the MAQS this year; for those of you who don't know, Formic Acid is the active ingredient in MAQS, and it was first produced about 10-years ago. It was a corrugated pad soaked in Formic

Acid within a perforated plastic bag. That was the first generation of the treatment available up until 3-4 years ago, before changing the formula and incorporating the treatment into pads. Just recently they changed the formula again, and the reason they say for the most recent change was to minimize the size of the crystals of the vapors that the pad would emit so that the vapors would penetrate the wax-cappings to get into the brood and kill the mites that are sealed in with the brood. The biggest advantage of MAQS is that you could apply the treatment with honey supers on – but when they came out with the second generation, the directions called for 2-pads to be applied for each treatment. Rick's experience was that he lost a lot of queens when applying the full treatment – he called the company and they replied that beekeepers could reduce the treatments down to a single pad. So, Rick began using single pads for 3-4 years with no problems until this year, where he has once again begun to lose queens using only a single pad. It's discouraging, because if the product is not going to be consistent then how do you know until you have a problem? Rick said that he has had other people tell him that they've lost hives – he hasn't seen that, but he has seen a lot of queen-loss this year and this is forcing him to recheck his hives after applying treatments to see if he needs to requeen and doing so can get expensive!

Rick referenced Randy Oliver (*http://scientificbeekeeping.com/*) who has been speaking about Oxalic Acid treatments (vaporizing or using a mist spray) – Rick cautioned the group that in doing so you only get a phoretic mite kill of only about 3-days, and since you have mites in the brood (which is a 12-day period), any mites that emerge after that window are unaffected, so you need to do multiple treatments over the course of several weeks to keep up with that. We are one of the clubs that donates to Randy Oliver's research, and his latest research is on a liquid Oxalic Acid / Glycerin application applied via soaking blue shop towels, inserting shop towels into the hive and getting a potential 30-day mite kill – the research is still ongoing.

Another treatment is Thymol, but Thymol can NOT be used with honey supers on, so it makes for a good treatment once you've taken your honey supers off at the end of the season. Unfortunately, dealing with Varroa mites is one of the things we have to do as beekeepers... we do know that if you don't do anything, then you're going to have high losses.

What about measuring the mite levels in your hives? Rick said because of the number of hives he has, his operation doesn't have the time to go out and test to see how many mites he has in his hives. Occasionally he'll have student interns that he'll ask to do sugar rolls before applying a mite treatment, and then conduct a follow-up sugar roll to see if the treatment was effective and Rick has seen the treatments be pretty effective against the mites. Birgit said that most of the group probably only has 1-3 hives, and ideally, she herself has 4-hives. She checks for mites before she treats, and uses a sticky-board (a sheet with Vaseline to make it sticky placed beneath her screened bottom board) and looks at the overnight mite-drop and if she sees less than 50 mites from an overnight drop then not to worry. Birgit suggested doing so periodically

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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

to get a feeling of what it looks like when you have a lot of mites. Is that as accurate as a sugar shake? Rick said it's probably as accurate, but the ether roll is the most accurate. Well, last year, she had drops of maybe 20, and she didn't worry... Jen added that with the sticky boards, you need to take into consideration the population of bees, a drop of 20 with a small colony could be horrible and a drop of 50 with a monster colony might not be as bad as with a smaller population of bees. With the ether roll, you're taking 300 bees and you'll know the percentage of mites per 300 bees can give a better answer for inexperienced beekeepers – while Birgit's vast experience allows her to look at sticky boards with a trained eye.

For an estimate of how many bees are in your hive, a Deep, Langstroth frame with honey may not have a lot of bees on it, but as you go into the hive for each frame that is totally covered with bees it's about 2,000-bees. When you dump a package into a deep box, that new package is about 10,000-bees and they'll cover 5-frames. When it's colder, they'll cover fewer frames because the cluster will be tighter – but in 60°, 70°, 80° F. temperatures they should cover that frame, so that's a way that you can estimate how many bees are in your hive. If you open up a deep box and the bees are covering all 10-frames then you have about 20,000 bees in that box. If you have a couple of honey supers on, an average hive at this time of year is 40,000-60,000 bees. It can be less, and it can be more, but on average colonies will usually hit 40-60 thousand bees this time of year.

Rick said that even if the mite count is truly higher than what you're testing out at with a sugar roll when compared to an ether roll, you know that. Rick said that common sense tells you that you should treat when the mite-levels are low, because when the mite level is high they've already inoculated the bees with all sorts of viruses and your treatment is NOT going to be as effective because when you get down to it, it's not just how many mites you have but also the virus levels in the hive and that is very difficult to see. Rick said that he looks at the brood pattern and he wants to see a nice solid, healthy brood pattern with smooth cappings. Like Birgit said, if you keep looking into your hives you begin to get a feel for the way things should look like. Birgit added that when she looks into her hives, she'll use a scraper to uncap some drone brood to look for mites, and if she sees even a single mite then she begins to worry. Go through some of those pupa so you can begin to see what things look like!

Ottavio said that he applies ***Oxalic Acid (OA) via vaporization***, and after three weekly applications he did a sugar roll and on two out of three hives he had zero mites – but on the third he had 2-mites. He cautioned listeners that you can't draw too many conclusions from a single sample and you have to look at your hive(s) overall. Every hive is different, and if you test 100 hives, every single one of those hives is its own superorganism, and that if a sample with zero mites is queen-right then that hive is probably pretty healthy. We've had a challenging year with weather, but that seems to be the new normal and every year is challenging! Ottavio followed up by saying that when applying OA treatments, he always does applications weekly on the same day, for a total of 3-weeks/applications.

This whole mite-thing is somewhat new to me, as I was taught use Fumagillin in the fall and in the spring, Thymol in the fall, and alternate every-other year with the strips. Rick said that he strongly disagrees with that course, as Fumadil is an antibiotic (that's used in commercial operations), but the beekeeping conventions that Rick has been going to for the past 5-years have strongly recommended to NOT methodically feed honey bees antibiotics – so he hasn't used it for the past six years. The same goes for using Teramycin for foul brood – that's not done anymore. Here's the thing, you can use Thymol BEFORE you put honey supers on, AND AFTER, but Rick doesn't think that that's enough. Ottavio said that he applies OA treatments once a week for 3-weeks and he can skip a couple of weeks and then do it again. With Thymol you'll have a period of time with honey supers on that you can't use that product and you could have too many mites in the hive breeding during that period of time. It really depends on what you started with (how many mites were in there already), and then the mite population will double every three weeks. Ottavio mentioned that while OA has only been approved in Massachusetts for the past year, it's been approved and used in Europe for the past fifteen to twenty years. Instead of an OA vaporization method, what about the OA dribble method? You can do that as well – you

wouldn't do both of them at the same time, but it's an alternate method.

Rick said that he doesn't care which treatments you apply – Thymol, Formic Acid, Oxalic Acid, with any treatment ***YOU HAVE TO READ THE LABEL***, research the treatment on the internet because there is a lot of safety guidelines that need to be adhered to – you have to be real careful about all of these and truly know what you are working with.

So how much time do you buy when you apply a treatment to a hive? Hopefully the treatment knocks the mite level down, but does it eliminate the mites? No. Then how much time does it buy you? Well, you would need to know the mite-population, so let's take a guess and say we have a mite-population of 1,000-mites on June 1st, and now our hive is going to swarm... is 30% of the mites going to go with the swarm? Could it be 40%, 50%, 60%? You don't know, but for convenience let's say 50%. So you've cut the mite-population in half but remember that part of that mite population is in with the brood so that will increase until the brood break while the colony raises a new queen. So that swarm may prevent you from getting to the economic threshold (3,000 mites) if the original population was 1,000, or you could reach it in perhaps 9-12 weeks. But, if you didn't have a swarm then you would reach the breaking point in only 6-weeks. ***The point is, that swarming IS a mite-treatment, but will it prevent you from having to treat if your mite-levels is low? No.*** But here's the good thing – Ottavio was talking about the vaporizer, if you get to a brood-less situation and all of the brood hatches out, THEN you can treat with OA because the treatment will be very effective. At the end of the year, going into winter (end of November) there's very little brood in the hive and all of the mites are phoretic (meaning they're on the surface of the bees), then you do an OA vaporization and can knock that mite-level way down and hope that the virus-level isn't high. It's very difficult these days, we have so many challenges as beekeepers – there are a lot of moving targets that you have to consider.

Our beehive had gotten smaller, but we did do a MAQS treatment which ended on July 1st and there were a lot of bees, but on our last inspection there were fewer bees – my question is ***when would you notice if there was an impact on the hive?*** Are there all stages of brood in the hive? Yes, we thought we wouldn't see any brood [if something happened to the queen], but it was a relief because we saw lots of brood. So it's been 3-weeks since you applied the treatment? Yes, but we used to see lots of bearding and yet they haven't been doing that for the last 3-weeks so it seems odd... Let's talk more about the hive, how many boxes are on right now? 2-regular brood boxes and two supers. Is there any honey in the first honey super? Yes, we put the excluder in between the two supers because there was brood in the first medium. If you know the queen is down below you can move the excluder between the top deep box and the medium if you wanted to. First off, if you have honey in the honey super then the hive is healthy because it wouldn't do so (it wouldn't have the capacity to collect nectar for storage if it wasn't healthy). There hasn't been a lot of honey added since July 1st, there were 6-7 frames of honey then. Well, let's ask the group, ***what are some of the things that could happen in a hive that would cause a population of bees in a colony to go down?*** Starvation, no food? Remember that they have honey in the honey supers so it doesn't seem to be a food issue. Pesticides? Swarming? Pesticides could have killed some bees, and with swarming they would have seen some queen cells – did you? No. Foraging? Depending upon the time of day a lot of the population could be out, that's a possibility. Lost a queen? No, they said there were all stages of brood in the hive. Ottavio offered that the queen just slowed down – Rick answered that yes, the bees can slow down – but Rick said there's one answer he's looking for, and we talked about it earlier... When you look through your hive, and you look through your brood boxes, how many frames are completely honey, how many frames are completely pollen because if we reduce the space where the queen can lay then the population of the hive can go down. Is that a honey-bound hive? You know, every time I hear that I think of Gus Skamarycz – a longtime member of our club – because he would always say that, but I don't know why anyone would say that and I've never gotten a straight answer from him – but yeah honey

and pollen bound. If I pull frames from the middle of a box and it's all honey, or all pollen, or pollen on one side and an open space on the other – then I try to move that out so that the open space/cells face the middle and get the pollen more to the outside. Sometimes you do have to extract the honey frames or remove the pollen frames to get the bees more brood space. The other challenge, is when you have a smaller colony of bees, it is a real challenge to get them to draw comb.

Sometimes I'll have a frame that's completely empty and the bees don't use it – what's the reason for that? It could be that the bees are just slowing down, it could be that there's not enough of a nectar flow, or not enough young bees... What about dirty cells? The frame itself is defective? If the population of bees is down, and the bees aren't cleaning the cells and polishing them down then the queen won't lay in them. We could sit here and come up with a dozen other explanations: maybe the queen is older and she's just not laying as much.

We have a similar situation, and the queen/package was from last year. Rick said that he's running a lot of hives, and finds that only 3-5%

Color Guide for Queen Marking

Year Ending	*Color*
0 or 5	Blue
1 or 6	White
2 or 7	Yellow
3 or 8	Red
4 or 9	Green

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***

of his hives have a queen that overwintered from last year in them, and that these days queens only seem to last a year to a year-and-a-half. He knows this because he marks every one of his queens (then produced a yellow queen marking pen from his pocket). Last year was white, and if he has 700 hives then fewer than 50 have white-marked queens in them.

So are they producing new queens every year, or are you replacing them? Both. They swarm, they supercede, we requeen... lots of things happen: we kill them with mite treatments, lots of things happen.

I went to the MassBee Field Day, and a presenter there said that it's not good to replace queens every year because it's not as healthy – could you comment on that? Rick said that he disagrees with that statement, and that you have to take and treat every hive individually and that you need to replace a queen when you need to – and if queens are not living more than a year then there is no other way. If that presenter has a queen source where his queens are living two or three years we'd love to know that so that we could use those queens! Rick doesn't see that, and he uses ten different queen suppliers. Commercial beekeepers is a whole different thing (Rick said that he considers himself very, very small on the scale of commercial beekeepers) and they're requeening their hives 2-3 times a year, and they're selling as many nucs as they possibly can because they want to put new queens into their hives, and new frames into their hives.

That's one thing we haven't really talked about, is ***how healthy are our frames, what's in our frames?*** We don't know and it's not something you can see (it's also very expensive to get them tested). Birgit said that if she sees her frames brown and dark she'll chuck them, and if she sees them lighter and beige she'll keep them – but generally they'll get too dark after 3-years. Rick said that if there's an exposure to any pesticides, herbicides, fungicides then the first place that it will be is in the pollen and then secondly it will get absorbed into the wax and increase over time until it reaches a toxic level in the bees. I thought that the dark brown color meant that it just wasn't fresh wax? Birgit said that after a few years it gets very dark with the incorporation of propolis and foot traffic – you can see it gets darker and the cells get smaller. Rick added that each round of brood will darken the comb. Rick has an observation hive right now that's 3-deeps and a single shallow that overwintered with a small cluster but very little food. He added a deep frame of honey to the bottom of the observation hive (replacing the empty comb there) and a couple of thousand bees at the entrance after picking up the first found of packages from Georgia. The bees came in, joined the queen which immediately started laying – the bees immediately started eating that new deep of honey consuming the whole frame leaving them without stores again so he once again added a deep frame of honey (which was a perfectly white newly drawn frame of honey from last year that had never had brood in it). When you look at that observation hive today the top two frames that have brood in it have a darker brown than the bottom frame which is lighter. Same hive, different frames, different color cappings on the brood because of the difference in the age of the comb. When you first get a package and start off with brand new frames you will have very light cappings and when the season goes on then your cappings will get darker and darker.

If you requeen a hive, as we did this week, into a hive that has absolutely no brood – will she start laying if there are no young bees? When you're requeening and you don't have brood in there then Rick recommends adding a frame of capped brood from another hive (or two). The queen is not Wonder Woman, she can't save that hive by herself. If you're requeening and there's no brood then there's no new bees being laid in the last three weeks and if the new queen starts to immediately lay there will be no new bees for another three weeks – that's six weeks without new nurse bees and it's the younger bees that feed the brood. What if you only have one hive and you can't do that? Then that's not an option and you can requeen that hive and hope for the best, or use this club as a resource and have a few beekeeping friends in your town and help each other out. If your hives are doing well then you can help pitch in.

Has anyone requeened with a Russian queen? What were the effects of that? Rick said that you can be successful or fail when you requeen with any breed of honey bee. I was thinking more I respect to mite control... Rick said that he went to a conference last year and there's a certified Russian Breeders program and Dan Conlon is part of that, and Rick was

disappointed because Dan Conlon is much more knowledgeable than the presenter, but Rick asked the presenter what the difference was between a Carnolian and a Russian bee in terms of hygienic behavior and keeping the mite population down and he didn't know. All they tell you is that with Russians you will have a lower Mite Count but they're not comparing it and Rick has never understood the difference between the two breeds in terms of behavior. He can see the physiological differences and they have different characteristics to a point, but he doesn't know and hasn't seen that great a difference. They're both from the same region of the world, they're both dark, they both overwinter in smaller clusters and neither draws comb out as well as Italians but what the concrete differences between the two breeds has never been fully answered for him.

Ottavio said he recently read some research blaming the Drones for poor genetic contributions to the queens during mating. Rick said that Sue Colby is probably the one of the very few breeders in our country bringing in Drones, and drone semen along with breeder queens (she has permission, our borders have been closed to the importation of new bees since the 1930's) to improve the genetics of our bees – and she has been doing this for over ten years.

I had a lot of ant problems this year and was wondering what others do? I've used talcum powder and cinnamon, but the rain washes that off.... My ants seemed to love cinnamon, so what I've done is take milk cartons and put one on each leg and pour in canola or vegetable oil – the "moat trick." I used to have trouble with ants, and my wife is an herbalist – ants are repelled by the herb "Tansy" so I planted them around my hives an that's kept the ants away. Allendale farms sells Tansy, that's where I got it.

Rick said that his brother and sister-in-law took his beekeeping class this year, and they're keeping bees at their home in Tyngsboro, so he's been checking in on them. They started off with two packages and each of those started off really well. They added second boxes to each colony and when Rick looked in during an inspection, the first hive had built up 5-6 frames in the second box and was doing very well. In the second hive there was no activity in the second box and when he went into the frames, we talk about queen cells and ***you have to be able to distinguish between swarm cells, supercedure cells, and emergency cells***. When you kill a queen by accident (which is what happened with them) is that you will have stubby queen cells on the face of the frame and those are emergency cells and they generally don't produce good queens. We removed all of those queen cells and inserted a caged queen. Two weeks later the queen had been released and was laying. Checked it two weeks later and there were supercedure cells. I checked the supercedure cells and one of them was a good size but you could see that it was just being chewed out (the discoloration at the tip of the queen cell). I said there's no open brood in here, something has happened, so we're just going to let this queen hatch out. But I was debating whether I should open that cell, or not – so I finally decided to open it and laid it flat and looked all around the queen cell because there could be a hole in it on the back of it where she can get released (she doesn't have to come out the tip), but it was entirely intact so he opened up the tip and he saw the antennae and out emerged a worker bee! So that egg didn't have enough time and wasn't fed like a queen but they made the outside structure as a queen cell and it just goes to show you that with emergency or supercedure cells that a queen doesn't necessarily have to emerge from there. Rick said that he had never seen that before, and learns something new every year – he doesn't care how many years you've been keeping bees – you'll never know everything! So when they looked at the other hive, (it's his little brother and he likes to pick on him a bit) and asked "What's going on in here?" You're loaded up with queen cells! His brother asked "Is that the big thing of bees I saw flying around a couple of days ago?" Rick said that's something you should have called me about! So we took a frame from the hive that had swarmed and installed it into the hive without a queen (the worker had emerged from the queen cell). Looked in two weeks later, saw a queen so we marked her (she's laying). The second hive (they're going to be sister queens) had a honey super on – and as I suggest take the outer cover off and put it onto the ground, take the honey super off and put it onto the outer

cover – and when you take the queen excluder off you HAVE TO TURN IT UPSIDE DOWN, you need to do this because the queen might be there (you don't want her going into the honey super) – and sure enough there was the new queen! You can raise some nice queens from swarm cells, just pick out the biggest swarm cells there are. If you only want to raise 1-2 queens then cut out all but 3-4 cells and this will cut down on after-swarms (bees can send out secondary, tertiary, et cetera swarms with virgin queens). The largest cells will have been the best fed, and they will produce your best queens.

Birgit shared a story about a queenless hive, and another hive that had beautiful queen cells that she decided to cut out and add to the hive that didn't have a queen. As she's carrying it to the new hive doesn't the darn thing hatch and fly off! But she came back, and Birgit put her into her new home where she was accepted. Rick said that in certain situations, and we don't know why, the new colony will accept a queen right away. In other situations, the bees would immediately ball her and kill her – which is why when you remove the cork from queen cages that you should take it off the candy side. Many suppliers haven't been satisfied with the packages they're getting from the South so they've started to get theirs from California – but when they made the switch there's a different type of queen cage that they weren't used to and they weren't releasing the queens correctly (direct releasing them into brand new hives!). What happens if you do that? If you release a queen into a brand new hive, there are no resources – there's no wax, there's no honey – so a lot of those new packages just absconded. Making sure the queen isn't released too quickly is important: you never poke a hole in the candy. If it takes three, or four, or five days that's better than the bees killing a queen or the package just absconding. Some things don't make a difference in terms of what you do (i.e. how you place an inner cover in the hive), and other things do.

Ottavio asked about a situation where ***the queen died in the cage, never being released…*** Rick said in that case, your supplier should give you another queen. Sometimes when they make these packages there could be more than one queen in the hive (in the midst of superceding, or in the midst of swarming where there are virgin queens in the hive) – when they go to make packages they find the queen and leave her in the box, and then shake out all of the other frames. If there are two queens in the hive you could have just shaken a queen into a package! In that case the package bees won't take care of a caged queen. In other cases they may kill a queen through the screen (there may be something wrong with that queen) there are a lot of situations which would cause a queen to die, and you can't take a chance and you need to get a new queen and put her in there. Time is of the essence, because you need to get that hive established quickly.

Now, if you put a queen in and three days later she's dead, you need to check the frames of bees in the hive and see if there's a laying queen in there! There's a lot in hanging a queen – if it's a cold day and the bees cluster somewhere else then you could lose the queen. We're not there when people install packages, we just get some calls after the fact so we need to try to figure things out. In that case, it's the beekeeper's responsibility to purchase another queen. Here's another situation: let's say the queen gets released and two weeks later you look in and it's all drone brood – you should find the queen, re-cage her and go back to your supplier and they should replace her.

It's not an easy process [getting stared with a package], because there are so many things that can go wrong. It's so important to keep track of packages in the first couple of weeks to ensure that you've been successful, and you can't really tell until you've gotten to the capped-brood stage and you see that it's worker brood. Once you're there, once you see worker brood in the hive, then you know that you're off on the right foot. It can take two, and sometimes even more weeks to get to that point.

For those of you with three or four hives, how many of you have had most or all of the hives make it through the winter? All of us, and none of us! We all keep bees differently, and you're not comparing apples-to-apples, and everybody loses bees. Let me give you a little background, I'm doing a survey of beekeepers in Concord, MA looking at a number of apiaries (and most apiaries have less than four hives). In Concord, only two apiaries had less than 25% losses: one had 12 hives, and the second only had 2 hives in the same general area. So out of 39 hives I've surveyed, only 13 hives overwintered in strong condition (from those two apiaries).

Of the other 25 hives, only 2 survived in strong condition. I've plotted where these apiaries are on a map, and it looks like North- Northwestern Concord (I've plotted 2-mile circles around each apiary to estimate forage area) has less pesticide exposure, possibly.. I've kept bees since 1968 and I stopped buying packages because my bees kept dying every year, and I think it's a result of pesticides, and in particular Imidacloprid. Like you said, a lot changes and I sympathize with the member that lost their one hive and I started with one hive and very luckily went to two and I found their personalities very different. Then I rapidly went to four and I started to have a lot of fun. How can you control what your neighbor is spraying on their land? You can't. Rick said that statistics show that 80% of all herbicides, pesticides, and fungicides are sprayed by homeowners. We've also seen an increasing amount of Mosquito spraying, and Tick spraying.

Rick said that he supplies packages to over a thousand beekeepers in New England, and the percentage of losses for hobbyist beekeepers is very high. He said that bees can overcome a lot if there's healthy forage coming in – and that's why you don't see Nosema problems in May when the bees are bringing in good food.

Rick suggested to people that they track the number of frames of brood, even if it's only once during monthly inspections, and say how many frames of brood are in your hive in each month because that can really tell you a lot about the population of the hive and the health of the colony.

Fall Beginner's Beekeeping Classes *(Belmont, MA)*
7 classes beginning Monday, October 2nd at 6:30pm

MCBA Member Ottavio Forte will offer a beginner's class this fall at Belmont High School. For more information, visit: *https://www1.mcc.net/OneSource/OSPayer/OS_Share/ePayer_Activities_det.aspx?det_id=7Yp9WbHsXtqzMh1qfQy%-2f9A%3d%3d*

Artificial Swarming, part of a larger management strategy

Erin McGregor-Forbes
EAS certified master beekeeper
overlandhoney.com

There is a direct relationship between colony survival and hive management skills. Increasing your skills leads to more options for colony management. Excellent beekeeping dramatically reduces your need for chemical treatment of beekeeping problems.

- Denial is NOT a management strategy! Treatment Free beekeeping requires intensive management. All colonies are repeatedly exposed to parasites and viruses.
- Integrated Pest Management (IPM) strategies are key to controlling Varroa destructor mites, including breaking the brood cycle, which:
- interrupts the need for the nurse bees and house bees to be feeding new eggs and larvae
- can be extremely beneficial in giving the bees a chance to "clean up"
- mimics the swarm sequence

Think about how we treat ourselves for viruses

When you get one you rest, drink lots of water, and eat. You can do this for your bees! How do you give your colonies rest, and food? Remove their stress (of raising brood and gathering stores) by giving them a brood break and feeding them. Humans don't use antibiotics to treat viruses when we get sick, why would you give antibiotics to your bees?

How does breaking the brood cycle help treat for viruses?

- It allows house bees to 'catch up' and clean up the hive.
- You can make a split, or simply cage your queen for a week. If she's still in your hive, it will help keep the colony calm.
- Breaking the Brood Cycle as part of your spring management
- It is a method of swarm prevention (splitting before a hive swarms

keeps your bees in your bees in your own apiary). Tom Seeley in Honey Bee Democracy says that less than 5% of uncaugh swarms survive to their second winter.
- Will help manage Varroa mites
- Can increase your honey production.

Artificial Swarming

The British call it Artificial Swarming and it works very well in the New England climate – it should be done on the Dandelion Bloom. Erin said that she performs Artificial Swarms on every single one of her overwintered colonies in the spring. Artificial Swarming is a Win-Win, because it allows the parent colony (a super-organism) to achieve its springtime goal of reproduction. It gives the parent colony a break from egg laying and brood rearing which allows for disease and parasite management by the bees. The new colony (nucleus colony) is a new super-organism, which is what the bees wanted to create anyways – a win for them, and the beekeeper has prevented a swarm and can now expand the apiary or use the queen to bolster a failing colony – essentially it can be used any way that a purchased nuc could be used.

How do you create an "Artificial Swarm?".

- In a colony that has begun swarm preparations in prime swarming season:
- Remove the overwintered queen. You have to be able to locate the queen!
- Remove 2 frames of capped and uncapped brood (replacing them with undrawn foundation in the parent colony)
- Remove 1 frame of food (replacing it with undrawn foundation)
- Remove 1-2 frames of nurse bees (done by shaking them into the new colony)
- Begin feeding this new colony (or nuc) 2-3 quarts of 1:1 sugar syrup (this will help replace the field force until the nurse bees mature)
- Add 2 frames of Foundation to the new colony
- Finally, remove all but 1-2 queen cells in the parent colony (this will prevent a swarm, and after-swarms). This will leave the parent colony queen-less for 10-30 days depending upon the age of the queen-cells and the timing of the queen mating.

Once the "Swarm" is removed from the "Parent Colony:"

- The parent colony is now queen-less
- The parent colony now has an unexpectedly large population of brood, young bees (nurse bees) and foragers.
- Add 2-3 supers if you have drawn comb, and a box of foundation just above the brood. Since you have a large population of nurse bees and only a little brood, the bees will draw out the foundation – bees like to draw wax in a warm environment (which can be found directly over the brood!)
- Check the colony in one week and reduce the number of queen cells to one, this prevents after-swarming
- The queen-less period results in increased honey production, since the colony does not have brood to feed during a critical period during the honey flow – overpopulated with bees that can now forage more!
- Approximately 28 days later, return to the parent colony and check for eggs. If the colony has a new queen you have interrupted the brood cycle and introduced a new queen.
- Brood rearing is resumed in plenty of time to keep the colony maintaining increased numbers.
- What about treating the new colony? You've introduced a brood break in the parent colony, but you should monitor/treat the new colony/nuc.

What's Blooming Now?

Common Name	Scientific Name	Value	Plant Type
August			
Bachelor's Button	Centaurea Cyanus	Nectar	Herbaceous Perennial
Boneset	Eupatorium Perfoliatum	Nectar & Pollen	Herbaceous Perennial
Bur-marigold	Bidens Laevis	Nectar	Perennial
Goldenrod	Rudbeckia Laciniata	Pollen & Nectar	Perennial
Heart's Ease	Polygonum Persicaria	Nectar	Perennial
Joe-Pye Weed	Eupatorium Purpureum	Nectar & Pollen	Herbaceous Perennial
Regweed	Ambrosia Aremisiifolia	Pollen	Annual
Virginia Creeper	Parthenocissus Quinquefolia	Pollen & Nectar	Vine
September			
False-chamomile	Boltonia Asteroides	Nectar & Pollen	Perennial
Japanese Bamboo	Polygonum Cuspidatum	Nectar	Perennial
October			
Witch Hazel	Hamamelis Virginiana	Pollen	Shrub

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

Overwintering Nucs (Overwintering Queens)

Erin McGregor-Forbes
EAS certified master beekeeper
overlandhoney.com

Erin's first exposure to beekeeping was at a seminar whose main speakers included Mike Palmer and Kirk Webster *(well-respected Vermont Beekeepers known for raising nucs and queens)*.

Sustainable Beekeeping

Needs to be achieved by you in your current and future time constraints. If you don't have the time now, or can't commit to the requirements in the future then it will not work...

- Utilize your resources to the fullest extent possible (you need to be able to process your wax, sell excess queens, et cetera) and not only focus on honey production
- Should work with the bees' internal habits as much as possible.
- Derived from the philosophy of permaculture – designing systems tat work with rather than against nature (looking at plant and animal cycles).

No unitaskers in beekeeping – all of your equipment should be able to fulfill multiple roles.

SARE – A comparison of strength and survivability of Honey Bee colonies stared with conventional versus re-queened packages. FNE12-576

Consider the possibilities of raising your own queens and overwintering nucs...

- Increased survival of colonies
- Avoids the need to purchase replacement colonies
- Creates a source of healthy, local queens

- Produces an income from your beekeeping (in addition to honey and candles)
- Helps your friends and neighbors by providing queens
- Increases your beekeeping skills
- Works with the bees to achieve their reproductive goals

Why rear your own queens?

- It's fun, and integrates well in a comprehensive apiary. Considered the pinnacle of beekeeping skills because it requires careful planning, skills, that you be attentive and available throughout the entire process.
- When do you do it? When you have lots of nurse bees and have tons of good pollen coming in (after the dandelion bloom)
- Good Nutrition is Key!
- The only factor that makes a fertilized female egg into a queen is proper nutrition. Queen larvae are fed a highly nutritious diet by nurse bees, which stimulates rapid growth and development. The queen's larval diet affects her future performance!

What are the constraints to rearing your own queens?

- You need to be able to read the colony
- You need to be able to find the queen
- You need to be able to pick up and mark queens (and know the color system*). Note: don't mark queens until AFTER they are mated
- You need to be able to cage the queen.
- You need to be able to make queen candy
- Understand that as many as 30% of your virgin queens will fail to return mated.
- Equipment (a divided hive body or nuc box, or queen mating boxes).

Managing Nucs

- Nucs are easier to manage than full-size colonies because they're not as defensive. It is a great way to learn how to work gloveless and find queens.
- Enable you to learn to read brood frames
- Should not use external feeders
- You should take good notes
- Fundamentals of Overwintered Nucs
- Utilize locally produced queens
- The brood comes from your own operation
- Winter in minimum of 5-frame deep boxes, but more honey is better. 2-3 5-frame mediums is equally effective.
- Your goal is to build a constructive and cohesive colony with a proven overwintered queen.
- Pack the bees together (side by side), or stack above strong colonies.
- Unpacking Nucs in the spring
- Remove nucs from above full-strength colonies just before the weather becomes good
- Un-gang them by spreading them out

Honey

So many blossoms!
So many flowers!
So much flying –
Hours and hours!
So much nectar
Needed to eat
So Honey
All will end up sweet!

– Douglas Florian

Varroa feed on Hemolymph, and other alternative facts

Samuel Ramsey, doctoral candidate in Dennis Van Engelsdorp Bee Lab, University of Maryland. His work before Varroa consisted of looking at parasites (good parasites that feed on aphids and stink bugs)

Varroa feeding behavior is difficult to observe, and their food source was not confirmed by experimental data – until now.

Varroa have a very close relationship with their hosts

- They have the same cuticular hydrocarbons
- They have similar hairs
- They have similar plate formations
- ***People always ask why bees just don't pick off the mites***, they're a different color and it's obvious that they're there... well, it's obvious to us; the problem lies within the hive environment – it's dark in there. The bees will groom themselves by touch, and with similar plate formations and similar hairs, it's easy to miss the mites!

What's in mite excrement?

- >95% Guanine (Cohen, 1994)
- Very little water content
- Insoluble waste product based on the proposed life history.
- Samuel shared that his father has Gout, and one of the major no-no foods is Liver. It contains a lot of Guanine (an amino acid).
- The mite digestion system has no modifications for water filtration – what you would expect if mites fed on hemolymph. Ticks and mosquitoes have this filtration system, but mites don't!
- If mites feed on hemolymph, you would expect to find them feeding on bees all over their bodies to access the hemolymph, but 98% of mites are found on the underside of the abdomen, on the first two sternites. In fact, 99.4% of mites are found under the metasomal sternites, wedged in the intersegmental membrane. Varroa feed only where fat bodies are accessible.

Visible Mites

Mites are found on the underside of the bee's abdomen – but why and when do they become visible? Samuel said that when the mite population grows very high, mites will catch rides on the back of bees in an attempt to spread further to other cells or to outside the hive.

- (***Mite Bombs***) Samuel shared an experiment run in the van Egglesdorp bee lab – they painted bees in a hive purple and orange and allowed the mite population to explode to the point where the colony collapsed. They then asked nearby beekeepers if they observed any of the purple and orange bees in their hives – those bees were found entering hives in apiaries up to 2 miles away!
- Surprisingly, ***sugar rolls are very, very effective in counting mites***. While they may not give 100% as accurate a count as an ether roll, they work. How do they work? It's thought that the fine powdered sugar gets between the foot pads of the mite and the bee itself so that the mite loses 'grip.' *(Editor's note: powdered sugar dusting of hives is no longer a recommended IPM measure – why the disparity between effective mite counts with powdered sugar and the ineffective dusting method? You're not vigorously shaking the colony after dusting with powdered sugar and the sugar isn't getting into the intersegmental membrane...)*
- The intersegmental membrane is very thin, and Fat Body thickness is >120 nanometers at the thinnest point. Varroa mouthparts reach less than 100 nanometers into the bees. Not deep enough to access hemolymph, but it is deep enough to get to the fat bodies.

Artificial Bees

Samuel created artificial bee larva, filled with either 100% Hemolymph (H), 75% H + 25% Fat Bodies (FB), 50%/50% split of H + FB, 25% H + 75% FB, and finally 100% FB. He needed to know the thickness of

the intersegmental membrane for accuracy. In addition, he showed that during late larval and pupal stages the bees are almost entirely fat bodies - which is why the mites are so interested in the brood. He was able to raise new generations of mites In-Vitro (in the lab), something no one has ever accomplished before! His results showed that female mites were able to lay more eggs in cells that contained Fat Bodies, even with only 25% FB content - and only a single egg in artificial larval cells with 100% Hemolymph. He postulated that since they had to remove mites from bees to begin the experiment, that the lone female mite that layed the sinle egg had access to Fat Bodies before being introduced to the Hemolymph-only artificial larva. No other mites were able to lay eggs with access to Hemolymph only.

Fat bodies are the liver of the bee! There are ***9 essential functions of Fat Bodies*** in honey bees:

- ***Metamorphosis*** – Fat bodies facilitate the process of metamorphosis. Fat bodies absorb proteins into adipose bodies.
- ***Growth and Development***. Hormones help regulate worker shifts of roles, and hormones are made in the bees fat bodies. When varroa mites feed on bees, they don't have as many fat bodies and the bees roles in the hive (nursing through foraging) shift earlier and the bees don't live as long. Missing fat bodies result in the removal of whole sets of proteins!
- ***Nutrient Storage and Metabolism***
- ***Metabolic Activity*** – flight is very energy dependent, and in varroa-infested colonies the foragers are be able to fly out to nectar sources, but they lack the ability to return to the hive
- ***Water Loss and Osmo-regulation***. The wax atop bees give them their shiny appearance, and when bees lose their fat bodies then they can't produce that wax which helps keep moisture inside the bees.
- ***Temperature Regulation*** – fat bodies in bees act akin to a human's hypothalamus, which tells the us and the bee that it is too hot or too cold
- Fat bodies are the primary site of ***protein synthesis*** in the bees (see Growth and Development above)
- ***Immune Function*** in the bees is regulated by their fat bodies. Anti-microbial peptides are released by the fat bodies. Fat bodies also detoxify pesticides (Editor's Note: see the discussion of P450's by Dan Conlon in the December/January newsletter)
- ***Vitellogenesis***. Fat bodies reduce the oxidative stress in bees (Oxidative stress is thought to be one of the major factors of 'aging'). Vitellogenins are made in the bee's fat bodies. Vitellogenins are thought to help/be the major factor in the longevity of overwinter bees versus summer bees. So, Samuel recommends that late summer or early fall is the time to treat your bees, to knock down the varroa population and give your bees the ability to generate vitellogenins.

Hairs of the Honey Bee

The bodies of honey bees are well covered by branched (plumose) and unbranched hairs (for sensory purposes). The hairs extend from the body exoskeleton, but it is these plumose hairs which give the bees their 'fuzzy' appearance. The plumose hairs also enable honey bees to trap pollen grains effectively, and differentiate honey bees from other Hymenoptera.

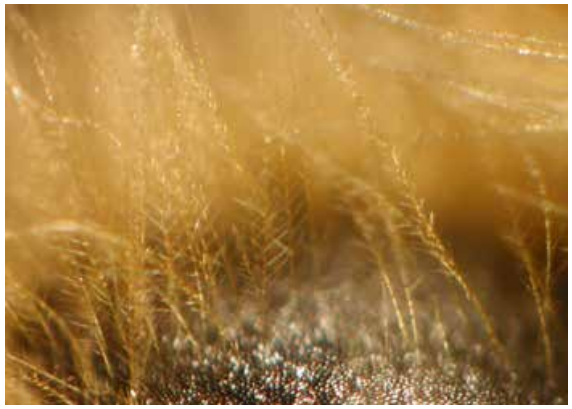

Image Copyright by Zachary Huang

Use Protective Gear when applying Treatments

MCBA member John Sallay provided the following information, because it was really frustrating while he was trying to learn how to use the MAQS and the OA vaporizer, all of the instructions and websites emphasized that "Protective equipment is necessary" – but no specific protective equipment is recommended. Neither John, *nor the club,* endorses any specific products – we're just providing information on what John used. In addition to the typical beekeeping jacket/veil and gloves, long pants, and shoes/boots, you'll need...

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). They're also available on Amazon.

- 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 – 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.

See: *https://www.amazon.com/3M-Respirator-6200-Respiratory-Protection/dp/B007QY8X2K/ref=sr_1_fkmr0_2?ie=UTF8&qid=1500079054&sr=8-2-fkmr0&keywords=3M+Half+Facepiece+Reusable+Respirator+6100%2F07024%28AAD%29%2C+Respiratory+Protection%2C+Small+%28Pack+of+1%29*

Cartridges – With these reusable masks you also need to purchase the cartridges specific to whatever you are protecting against.

- The 3M technical service folks said that the less expensive model ***6001 Organic Vapor Cartridge*** would also work for our oxalic and formic acid mite treatments ($9.62/pair vs. $22.89/pair on Amazon for the formaldehyde/organic vapor P100 cartridge).
- The respirator cartridges can be reused, potentially several times, but 3M does not specify how many times. Since the cartridge acts like a sponge, it depends on the concentrations of exposure, temperature, and other factors. However, you know when you need to replace the cartridges when you either smell/taste the acidic gas while you are using the mask, or the cartridge is clogged with particulates and you can no longer breathe through the mask properly.
- For storage of these cartridges in between uses, remove the cartridges from the mask and store them in a sealed Ziploc type bag.

See: https://www.amazon.com/3M-6001PB1-1-Organic-Replacement-Cartridge/dp/B000XBKLLE/ref=sr_1_1?ie=UTF8&qid=1500078826&sr=8-1&keywords=3m+6001+organic+vapor+cartridge

MCBA

Middlesex County Beekeepers Association

Membership Form

$15 Annual dues per family, **payable to MCBA**. Mail this form and payment to:
Ed Culkin, 9 Johansen Drive, Marlborough, MA 01752. *OR* bring it to a meeting.

Please print CLEARLY, and fill out the ENTIRE form.

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** ☐

Club Officers

President
Tom Fiore
president@middlesexbeekeepers.org

Vice-President
Rick Reault
vpresident@middlesexbeekeepers.org

Treasurer
Allen Bondeson
treasurer@middlesexbeekeepers.org

Clerk / *Membership Coordinator*
Ed Culkin
membership@middlesexbeekeepers.org

Directors
Jen Reed, TBD
director@middlesexbeekeepers.org

Volunteers

Extractor Rental
Kathy Martin
extractor@middlesexbeekeepers.org
617.549.7460

Librarian
Allen Bondeson
librarian@middlesexbeekeepers.org

Swarm Coordinator
Alexandra Bartsch
swarms@middlesexbeekeepers.org

Website
John Cheetham
webmaster@middlesexbeekeepers.org

Newsletter
Tony Pulsone
editor@middlesexbeekeepers.org