

The Bee Line



Newsletter of the Maine State Beekeepers Association | mainebeekeepers.org

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Nuc Transportation & Installation

by Tony Jadcak, State Apiarist

Prior to nuc pickup, the empty hive (i.e. bottom board, hive body, five or six frames of foundation and/or comb, entrance reducer, inner cover, outer cover, empty hive body, sugar syrup, feeder) should be assembled and prepared for installation.

The hive should be located at the apiary site in accordance with the MSBA's "Best Management Practices for Beekeeping" found at www.mainebeekeepers.org. In addition, the apiary should have: shelter from prevailing winds, good air drainage, a southern sunny exposure and no danger of flooding. If the empty hive contains comb and/or frames of honey, it should be screened or made bee-tight prior to installing the nuc so other bees in the area aren't attracted to it and/or don't rob its honey prior to installing the nuc.

PICKUP

Coordinate the nuc pickup with the seller. The ideal times to pickup nuclei are early in the day, during the evening, or during rainy weather since the field bees are within the nuc and temperatures tend to be cooler, for optimal transport.

TRANSPORT

Prior to pickup, the nuc producer usually has the nuc screened and secured for transportation. Adequate ventilation is very important in order to prevent overheating and suffocation of bees and brood.

Ventilation methods vary according to where the nucs were produced and the distance they were shipped. Many nuc designs have both an entrance screen and rimmed top screen for bee cluster space. Another common design has a screened entrance and partially screened sides. The sides have removable wooden slats on the lower part of the nuc that expose screens for transport. The 8-mesh screen is most commonly used for ventilation and is superior to window screen since it allows maximum airflow. Frequently, northern nuc boxes have only a lower entrance or ¾" – 1" auger holes bored through the front and sides of the nuc box. When transporting the latter design, all of the holes should be screened with 8-mesh hardware cloth. Styrofoam nuc boxes are more prone to overheating unless there is adequate upper or side ventilation.

When loading nucs on or into a vehicle, make sure they are stable and will not shift or topple, and ensure that the vents aren't obstructed by another nuc during transport. At times it may be necessary to separate nucs with side vents via pieces of lumber or strapping. When transporting nucs in a car or van, turn on the air conditioner if the bees become noisy or if the vehicle gets too warm. **Do not transport nucs long distances or during warm-hot weather without adequate ventilation.**

ARRIVAL

Upon arrival, put on protective gear, light a smoker and gently puff the nuc entrance with two or three wafts of cool smoke. If the nuc was transported within a vehicle, remove it prior to smoking. Unload the nuc and place it next to or on top of the empty hive it will inhabit and remove the front entrance screen. Depending upon the weather and time of day, the nuc can be installed the same day or delayed for one or more days until time and weather permit. If installation is scheduled for another day, replace the side ventilation slats and remove and/or cover the screened top with the wood or Styrofoam nuc lid.

The most important things to accomplish upon arrival are moving the nuc to the exact location where it is to be hived and removing the front entrance screen so the bees can fly.

INSTALLATION

Gently smoke the nuc entrance with three or four puffs of cool smoke. Place the nuc beside the empty hive if it had been set atop it on arrival day. Remove the outer and inner cover of the hive body, insert the entrance reducer and remove two or more frames of foundation or comb and lean them on the side of the hive opposite the nuc. Spread out the remaining frames of foundation/comb to the edges of the hive body. Gently pry the cover off the nuc and gently waft smoke over the bees and top bars of the nuc. Use minimal smoke so the



Accumulated snowfall in Portland as of February 2, 2011

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NUCS...CONTINUED FROM PG 1

bees aren't agitated and so the queen is less likely to leave the comb and hide on the bottom or wall of the nuc box.

While standing next to the nuc, remove the outermost frame (one near you) by gently pulling the frame *straight up* in order to avoid crushing the bees on this frame and the adjacent frame. This first frame will probably contain honey and pollen and it should be placed toward the center of the hive body. Pry apart and remove the frames of bees from the nuc and **situate them in the hive body in the same order and orientation as they had been in the nuc.**

Center the transferred nuc frames and slide the remaining frames in the hive body toward the nuc frames. Replace the remaining frames of foundation and/or comb on either side toward the hive walls. If there are frames of comb and foundation available at nuc installation time, situate the comb on either side of the nuc frames and place the frames of foundation toward the walls. If only foundation is available, place it on either side of the centered nuc.

Before placing the inner cover on the transferred nuc, check the remaining bees on the bottom board and walls of the nuc box for the queen. If she is still among the bees remaining in the nuc box, gently thump the rear corner of the nuc box on the ground. The bees can then be poured into the hive by inverting the nuc box over it and giving it a shake so the bees fall into the hive body. If the queen isn't visible, still perform the same procedure to remove the remaining bees from the nuc box. After the remaining ("shook") bees have moved off the top bars down onto the combs, place the inner cover on the hive. If the bees are slow to move, gently apply smoke.

FEEDING

Place an inverted feed jar, can or bucket of 1 : 1 sugar syrup (sugar : water) directly above the inner cover hole so the bees below have direct access to holes or screen. Place an empty hive body (or supers) above the inner cover (for protection of syrup) and outer cover on top. Put the empty nuc box in a shed, etc., away from the hive.

After a few days, check syrup consumption and feed if necessary. Additional syrup will be needed according to container size, weather and flower conditions. After one week, check the hive. Assess queen and brood conditions and add a second hive body when the bees have drawn two-thirds of the foundation into comb. Necessity for additional feed will continue to be influenced by weather and plant conditions. 🍄

- R E C I P E -

Ethiopian Honey Bread [Yemarina Yewotet Dabo]

1¼-oz pkg active dry yeast
¼ c warm water (110° – 115°)

-

1 egg

½ c honey

1 tbsp coriander

½ tsp cinnamon

¼ tsp cloves

1 tsp salt

-

1 c scalded milk*

¼ c melted butter

4 – 5 c all-purpose flour

Dissolve the yeast in the water. In a separate bowl, combine the egg, honey, coriander, cinnamon, cloves, and salt; mix well. Add the yeast, milk, and butter. Beat in ½ cups of flour, then gradually add the remaining flour. Let rise 1 hour or until doubled. Punch down; knead 1 or 2 minutes. Shape and place in a buttered loaf pan. Let rise for 1 hour. Bake in a 300°F oven for 50 – 60 minutes.

Makes 1 large loaf.

** For those of you who have experience making bread, this will come as no surprise, but for those without, let me share a key bit of information here: after you have scalded the milk, **allow it to cool** to at least 120°F before you introduce the yeast (and butter) to it, or **you will KILL the yeast!** I unwittingly made this mistake the first time I tried this recipe. But I didn't end up with just one brick...um, loaf...of bread, I ended up with three—the recipe looked so delicious to me that tripling it seemed like a fantastic idea. I broke the three loaves up as best as I could and put the pieces out in the yard where I saw neither crow nor squirrel come anywhere near them. You laugh! Do me a favor: don't let this sad fate come to your bread! – Lori Harley*

*Recipe from the Follansbee Inn
in North Sutton, NH,
published in The American Country Inn
and Bed & Breakfast Cookbook,
by Kitty and Lucian Maynard, 1987*



Each colony in this yard has several upper entrances so there is no need to clear snow from the lower entrances.

SARE Grant Colony Update, 2/1/11

by Erin MacGregor-Forbes, Master Beekeeper

SARE Project Title: A Comparison of Honeybee Colony Strength and Survivability Between Nucleus- and Package-Started Colonies

The SARE project hives, like the rest of our bees here in Maine, are in their winter cluster working their way through their stores, hopefully to emerge in spring healthy and strong.

My last inspection of the Westbrook colonies was a simple check from the outside, no knocking on the hives or listening to the hum inside, I simply went out on a sunny day when there was fresh snow on the ground and temperatures in the 30s. Every single colony in the Westbrook yard had dead bees in the fresh snow outside the hive, indicating that the bees inside were alive and well.

Beekeepers are often anxious to check their hives in winter. I myself have definitely succumbed to these urges many times over the years, pressing my ear up against the hive and listening for the sound of the bees, perhaps knocking gently on the side of the hive to increase the bee's noise and see if I could hear them better. I also have used the bottom board inserts as a tool for checking bees—you can pull the insert out and clean it and then the next time you check the hive several days later, if you find debris on the bottom board, you know your bees are alive. Or at least were for some time since the last time you checked. On this most recent visit to the bee yard, I did none of that—I simply looked at the colonies, took a few pictures and left them alone.

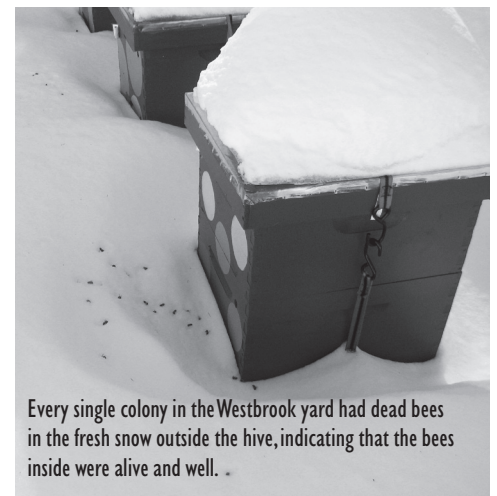
For the most part, the Westbrook colonies went into winter with lots of honey. Five of the colonies are wintering in my preferred configuration, two deeps and a medium, ensuring that they have plenty of food to last until spring. The colonies that did not produce the extra medium of honey for winter are in the standard configuration of two deeps but went into winter heavy, which is good. I am not worried about

starvation yet but will check the colonies for stores closer to the end of the month.

Each colony in this yard has several upper entrances so there is no need to clear snow from the lower entrances. There is an open auger hole in each hive body and an additional escape route through the hole in the inner cover, lined up with grooved homasote insulation board for moisture wicking. It is through these upper entrances that the bees have been clearing out the dead and making their way out of the hive to defecate.

The deep accumulated snow is acting as good insulation on the tops of the colonies and is also helping to keep prying beekeepers from pestering the bees now when it is so important for the bees to be quiet and focused.

So as of this last recording, all fourteen of the Westbrook SARE colonies are alive and well, and my work on the project has been focused on compiling data and writing the interim and final reports. We are looking forward to spring, doing our first real inspections in a few months, and to a new year of beekeeping in Maine. The SARE project will end with our first full inspections in late April and we hope to have some good information from this colony comparison project. Our final results will be available on the Northeast SARE website when the reports are done—more information about that in the April and June *Bee Line* issues. 🍌



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NOTES FROM FARTHER AFIELD

2011 North American Beekeeping Conference and Trade Show

by Erin MacGregor-Forbes, Master Beekeeper

The North American Beekeeping Conference was held in Galveston, Texas, this January 4–8th. The conference is generally held the first week of January and the location is always in the South. This conference incorporates a number of beekeeping organizations and is coordinated by the American Beekeeping Federation. This year several other groups were meeting at the conference including the Apiary Inspectors of America, American Honey Producers Association, and the Canadian Honey Council.

This beekeeping conference is usually held at a resort hotel/conference center, making it a bit of a vacation as well as a learning opportunity. The conference lasts four days and is packed with speakers and presentations in the daytime and social events in the evenings.

One of the best things about attending beekeeping conferences is the opportunity to meet other beekeepers, catch up with old friends and make new ones. There is not a lot of opportunity for beekeepers to get together during the season as we are all busy with our lives and our bees, but spending several days in the sunny south during the winter appeals to many beekeepers. Frank Drummond from the University of Maine at Orono was in attendance, presenting preliminary data from the CAP project he is participating in. Also, quite a few of the recent speakers from MSBA meetings were there, including Medhat Nasr, Cindy Bee, Jennifer Berry, and James Tew. In the evenings we ate out in large groups, talking bees and swapping stories. Everyone has a few funny beekeeping stories and you get to see a different side of people in a relaxed setting.

The conference has several different but concurrent tracks for different types of beekeepers—researchers, commercial honey producers, sideliners—each one has its own group of speakers and topics. While I presented in the sideliner track (on Small Scale Queen Rearing in the North), I focused on attending primarily the main conference sessions and several of the American Bee Research Conference sessions. There were surprisingly few talks with “CCD” in their titles; it seems

that many of the researchers are moving away from that term and were focused on discussing other specific threats to honey bees.

As for the presentations, here are a few tidbits from my notes:

- There was lots of talk about research into new viruses, but little that has any practical beekeeper application at this point.
- I learned that viruses can move back and forth between honey bees and other bees, and also via contact at flowers. But basically the biggest vector of bee viruses is the Varroa mite, and controlling levels of varroa is the best thing that beekeepers can do to keep their colonies healthy.
- There was a very interesting talk by Lizette Dahlgren from the University of Nebraska looking at the varroacide effects on honey bee queens, demonstrating that the queens were less susceptible to varroacides than workers. Her study looked only at queen mortality levels, not ovarian development or performance.
- Dr. Thomas Rinderer presented a talk about the “effects of hive color and feeding on winter clusters of Russian Honey Bees” showing that hive color (dark vs. white) had no effect on population growth. On a side note, however, Rinderer has shown over three years that his 8-frame hives grow better over winter. Of course his work is in Louisiana which is a very different beekeeping climate than Maine, but it was interesting to note, as I have been transitioning to some 8-frame equipment and really like using it.
- Jose D. Villa of the USDA Baton Rouge lab presented his lab’s work on “selection of colonies for resistance to *Nosema Ceranae*”—they had been unable to see a pattern of inheritability of any resistance to *Nosema Ceranae*.

In all, the conference was loads of fun, very informative and certainly worth attending. The full conference information, including the speaker schedule, is still available on the American Beekeeping Federation website, abfnet.org.

The 2012 North American Beekeeping Conference will be held in Las Vegas, January 10-14. 🍷

2010 Apiary Program Summary

by Tony Jadcak, State Apiarist

In 2010, 621 Maine beekeepers registered 6,975 hives. The registration numbers reflect an increase of approximately 150 hobby beekeepers since 2008. There are more than 1,000 beekeepers with 8,000+ hives estimated in Maine. The estimate is based upon the number of beekeepers who attend beekeeping workshops, the number of individuals enrolled in beekeeping short courses and the current membership of the various beekeeping associations throughout Maine.

Approximately 52,000 hives managed by 36 commercial beekeepers entered Maine for blueberry and apple pollination. When Maine's non-migratory and sideline operations are included, about 53,600 hives were

used for crop pollination. The number of hives rented in 2010 for crop pollination was approximately 14,000 less than 2009. Blueberry market conditions and weather influenced demand. Hives were also rented to cranberry, small fruit and vegetable growers and were also situated on canola and buckwheat acreage for honey production vs. pollination income.

In 2010, 14,176 hives were issued Maine health certificates for interstate movement to MA, RI, MI, FL, GA, SD, and NC for crop pollination, honey production and wintering purposes. The majority of migratory hives leave Maine after blueberry bloom for crop pollination (cucumber, cranberry) in other states or for honey production in NY and the Midwest.

Throughout the year 4,137 colonies were surveyed at random and 1,416 opened, sampled and inspected for disease and parasites. Fewer hives have been inspected, sampled and analyzed annually since 2008

due to the lack of a part-time summer apiary inspector and the additional time spent with novice beekeepers during the year. American foulbrood (*Paenibacillus larvae*) was found in 29 (2.05%) of inspected hives. European foulbrood (*Melissococcus pluton*) was found in 13 hives (0.91%) and Sacbrood virus was detected in 35 colonies (2.47%). The frequency of sacbrood detected in 2010 was the highest since 1986 (2.5%) and 2001 (2.23%). Sacbrood virus is usually found in 1% or less of inspected bee hives. Chalkbrood disease (*Ascosphaera apis*) is widespread and many colonies were found with mild to acute infections. South African small hive beetle (*Aethina tumida*) infestations were common in migratory beekeeping operations, package bees and nucs shipped to Maine from the south. Over-wintered populations of the South African small hive beetle (SHB) have been documented in the 10 southern counties of Maine. The mild winter of 2009 – 2010 may have favored SHB winter survival.

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Like 2009, very few samples were processed for tracheal mite, due to the lack of a summer apiary inspector. In addition, commercial beekeeping operations weren't surveyed for Africanized honey bees. In 2010, 41 hives were sampled from 10 beekeeping operations (commercial, sideline and hobby) and microscopically examined for honey bee tracheal mite (*Acarapis woodi*). Eleven samples were positive with infestations ranging from 3 - 86%. The highest levels of infestation were from hives that wintered in Aroostook County.

In 2010, 291 hives managed by hobby, sideline and commercial beekeepers were sampled from the brood area and examined microscopically for *Nosema*. 234 hives (80.41%) were positive for *Nosema* with infections ranging from 50,000 spores/bee to 16,000,000 spores/bee. *Nosema* was detected in 84.4% of commercial colonies vs. 66.6% of sideline/hobby colonies. In addition, the spore load (spores/bee) of commercial operations was greater than that of the sideline/hobby hives. 55.5% of commercial hives had spore loads greater than 1,000,000 spores/bee vs. 13.6% of non-commercial hives (>1M s/b).

2010 was notable for the mild winter, early spring and dry summer. Blueberry bloom was the earliest in memory and the crop was adversely affected in certain areas due to three consecutive nights with frost in early May. The summer was warm and dry in contrast to 2009 and populous hives produced an above-average late spring/summer honey crop. Unfortunately, the summer drought conditions caused a failure of the late summer/fall honey crop from plants such as goldenrod, bamboo and aster in most of Maine, except Aroostook County.

The mild winter, early spring and ample early honey flow contributed to elevated *Varroa* populations. *Varroa* reinfestation of treated colonies (from feral hives and/or untreated collapsing apiaries) during late winter/early spring and again during the fall was common in 2010. Many wintered



hives reached treatment thresholds about one month earlier than normal. The excessive mite loads, associated viral complex and poor nectar production during late summer/fall resulted in colony losses due to robbery, *Varroa* collapse, and CCD-like symptoms during the fall. In mid/late October (with the onset of cool nighttime temperatures), several beekeepers reported collapse of hives that were populous and had consumed and stored sugar syrup fed for wintering purposes. The bee populations diminished very fast and many hives had few or no bees remaining. The colony collapse occurred at the apiary level. Unlike previous accounts of Colony Collapse Disorder (CCD), the collapsing and dead hives within apiaries were being robbed of stored honey and sugar syrup on warm days when bees were able to fly.

2010 was the first year that CCD-like symptoms were documented in Maine since the fall of 1994 when apiaries collapsed in a similar fashion. Samples of honey bees and brood sent to the USDA in 1994 resulted in the detection of several bee viruses. It is probable that the collapse of hives during the fall of 2010 was due to the excessive *Varroa* infestations and associated viral/pathogen complex. A common question from beekeepers concerns restocking bee equipment after colony collapse. At present, there are no consistent recommendations regarding the stability and virulence of virus particles within dead hives upon restocking with bees.

There was an increase in bee, wasp and hornet inquiries from the public in 2010. The majority of calls concerned the removal of wasps, hornets and bumble bees from buildings and properties. The state apiarist responded to honey bee nuisance requests from the State Police, Maine Turnpike Authority, Town Code Enforcement Officers and homeowners.

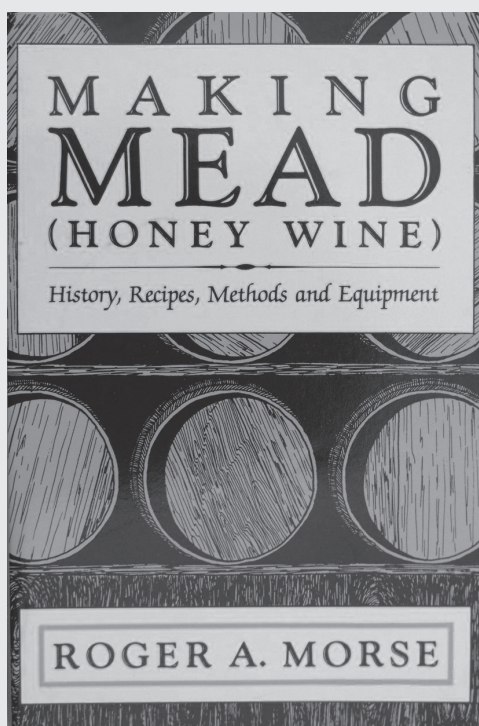
The most common requests for assistance pertained to: bees in swimming pools, swarms, bees in chimneys and wall voids, clusters of bees left at truck stops, clusters of bees on fuel pumps and clusters of bees at rest areas. A few individuals with allergies to bees called the department about regulations pertaining to the location of their neighbor's bees.

During 2010 the state apiarist presented 30 lectures, workshops and field sessions to various bee associations, farm organizations and the general public. There is an increased awareness about bees and farming practices among the general public and an interest in bee culture. 🍄

- B O O K R E V I E W -

Making Mead

by Dr. Roger A. Morse



Review by Frederick B. Wardwell

All you need to know to make prize-winning mead is told in Dr. Roger A. Morse's book *Making Mead*. In 125 pages, he gives formulas, sanitation procedures, equipment requirements, and other helpful information. I know that this is all you need, because I first made wine 60 years ago, studied college chemistry for six years, and read every word of *The Chemistry of Wine Making*, but I never made a satisfactory wine before reading *Making Mead*, or found any helpful suggestions not included in this book. There is thus no need for me to explain here in detail how to make mead. Just read his book.

There is, naturally, other material to study if you wish. The October 1994 issue of the MSBA *Bee Line* interviewed Walter Orlovsky of Dresden in detail on his prize-winning process. The American Mead Association has published volumes on mead, and lists many references. Our Cooperative Extension Service has Entomology Leaflet #82 devoted to mead making, and the February 1998 issue of *The American Bee Journal* carried a fine article by Morse, Kime, and Steinkraus on the latest technology, which listed several references.

Beware! Mead making is not unlike bee keeping in that there are many opinions, many formulas, and if you wish to add them, an almost infinite number of flavorings recommended. Perhaps the most often encountered process variable, however, is whether or not to boil the honey/water mix before fermenting. Dr. Morse et al advise in *The American Bee Journal* article that the flavor is better if boiling is avoided, but in *Mead Making*, Morse states boiling is the best way for the home vintner to make a clear mead. Take your pick.

The cost of making mead is nominal for the home vintner. Equipment consists of a few glass jars a gallon or larger, a few rubber corks, a simple air lock system, some flexible tubing, and empty bottles for the finished product. A cool cellar, optimally 60 – 65°F, is very desirable.

Since mead is wine made from honey, you need honey, and presumably bees. One half pound of honey will produce about a 750ml bottle of dry mead, and a bit less of sweet mead. Your mead's flavor will depend in a large part on the flavor of your honey, just as grape wine depends on grape variety. Dr. Morse favors late-season goldenrod honey for its strong bouquet, while most others prefer lighter honeys like clover or orange blossom.

If you have a reasonably developed sense for wine quality, you have probably found home made wine not better than cheap jug wine. You can do much better than that by carefully following Morse's directions. Still, you may not like mead on first tasting, for, to some extent, all beverages take experience or education to enjoy; however, people who like wine usually like good mead from the start.

Most mead makers feel that mead must age at least two to three years before being ready to drink, while five years is not contested. Some recommend eleven years, but that's a long time to wait. In any event, if you wish to consume one 750ml bottle a week (before a nap), and have a 15-year life expectancy, you will need 250 gallons in the cellar. That will take about 600 pounds of honey and five years of aging, so get started!

Making Mead, by Roger A. Morse, is in the MSBA library. Call Carole Armatis at 368-4419 and she will loan it to you.



FReD Can Help Explain How a Bee Sees!

Reprint from the *ABJExtra*,
December 13, 2010

Bees can see colors, but they perceive the world differently to us, including variations in hue that we cannot ourselves distinguish.

Researchers at Queen Mary, University of London and Imperial College London have developed FReD—the Floral Reflectance Database—which holds data on what colors flowers appear to be, to bees. The development of the catalogue, which has involved a collaborative effort between researchers at two Schools at Queen Mary is reported in the journal *PLoS ONE*.

The work addresses the existing issue that records of flower colors do not take the visual systems of pollinator insects into account. Bees—for example—have evolved completely different color detection mechanisms to humans, and can see colors outside our own capabilities in the ultra-violet range. Professor Lars Chittka from Queen Mary's School of Biological and Chemical Sciences said: "This research highlights that the world we see is not the physical or the 'real' world—different animals have very different senses, depending on the environment the animals operate in."

Professor Chittka and his team have measured the spectral reflectance of a number of flowers in different locations and analyzed what bumblebees perceive, including different shades of ultra-violet. The image at right shows a photograph of a creeping Zinnia (*Sanvitalia procumbens*) using a UV filter, giving just one example of the colors that are 'hidden' to us. Queen Mary PhD student

Sarah Arnold, who is funded by the Biotechnology and Biological Sciences Research Council (BBSRC), was also involved with the project, she said: "We have created a database in which the colors of flowers are indexed from this vitally important pollinator's point of view. For the first time, this database will allow us to analyze global trends in flower color, for example how flower colors might change in areas with high UV radiation. There are many possible applications for scientists from different fields."

Co-author Professor Vincent Savolainen, from the Department of Life Sciences at Imperial College London, who holds a joint post at the Royal Botanic Gardens, Kew, adds: "We hope this work can help biologists understand how plants have evolved in different habitats—from biodiversity hotspots in South Africa to the cold habitats of northern Europe. FReD's global records may show how flower color could have changed over time, and how this relates to the different insects that pollinate them, and other factors in their local environment."

Samia Faruq from the School of Electronic Engineering and Computer Science is assisting Professor Chittka on an EPSRC funded PhD studentship, and is an expert

in the computer modelling side of the project: "FReD provides over 2000 records with the colors that the bee sees presented in a very simple way. A successful flower has to be 'noticed' by the bee, and FReD provides a better understanding of the strategy flowers attain."

"Color patterns emerging from the location or altitude in which flowers are found may in turn increase our understanding of the plant-pollinator relationship. We will also be able to determine if flower colors in a given location are converging or diverging in order to give themselves the best chance of reproducing."

Professor Peter McOwan, a computer scientist who helped in developing the technical side of the project, commented: "This combination of biology and computer science, allowing scientist to collaboratively access important data in new ways, shows the power of combining these two scientific disciplines. This interdisciplinary approach can produce significant new applications that will help make a real impact in better understanding the natural world."

The database is freely searchable and open for international contribution, and will inform future ecological studies. "The

records can be used to link flowers together by color, although they appear different to us. On a global scale we will be able to identify the colors preferred by pollinators and see how this varies. This is very significant in terms of the global food supply, which relies on these insects and bees in particular" added Professor Chittka. 🐝

Editor's note: you can access FReD online at reflectance.co.uk



Creeping Zinnia (*Sanvitalia procumbens*) as we see it (left) and with UV shades made visible (right). The petals clearly appear two-toned to bees, which have the ability to see these colors.

When Disaster Strikes

by Tony Jadcak, State Apiarist

In late winter, beekeepers often find themselves thinking about their bees. Apprehension is most common when the previous fall had dismal honey production and when houses creak and snap on bone-chilling nights during January and February. Unfortunately, there isn't much northern beekeepers can do during the dead of winter. At best, newspaper can be added on top of fiberboards of live hives that are completely saturated and candy boards given to populous hives that are low on stores. Both of these conditions are actually a good thing. This year, many New England beekeepers will find some of their hives cold and silent. After recovery from the dreaded feelings of failure and despair, the only thing to do is determine the cause of death via a postmortem.

There are a number of reasons that hives fail to survive the winter. Following are some common causes and conditions that beekeepers will encounter:

Starvation: Symptoms of starvation are easily distinguished by finding the cluster within a hive devoid of honey, or separated from honey stores that remain within the

hive. Classic signs of starvation include a large cluster of dead frozen bees with the core bees headfirst in the comb. Frequently there is a patch of brood under the cluster.

Since the introduction of parasitic bee mites and *Nosema ceranae*, hives often starve with sufficient honey reserves since they have very small clusters. Essentially, these hives suffered a premature loss of adult bees in late fall and during the early part of winter and the cluster didn't have a critical mass to generate heat and allow for movement. These colonies often have a small patch of brood within the cluster since bees will not abandon their brood in order to move onto honey. These small clusters are usually situated on the sunny side or warm side of the hive.

Tracheal mite: Colonies that succumb to tracheal mite (HTM) frequently exhibit abnormal behavior prior to death. Hives that have heavy infestations often break cluster on cold sunny days in February and March and cluster on the exterior sunny side of the colony. Symptoms of acute dysentery and/or *Nosema* are evident and a large number of bees are found on the bottom board or more frequently directly in front of the hive. The clusters of hives that perish from HTM are usually the size of a baseball or grapefruit and located on the outermost frames near the hive wall on the sunny side or hive's front. A common trait of hives lost to HTM is an abundance of honey. Fortunately, unlike hives infected with American foulbrood, the honey and equipment are safe for feeding and

restocking purposes with minimal cleanup. Therefore, block all entrances in these hives so other bees in the area don't rob the honey when warm weather arrives.

Nosema: Hives lost to *Nosema* have symptoms of acute dysentery. Often there is excessive bee excrement on the inner cover, top bars and front of the hive near the entrance(s). There are usually a handful of bees remaining that appear bloated and wet.

Hives lost to *Nosema ceranae* often have a small cluster and a small patch of brood located directly under the top bar of the upper hive body. In northern climates there is associated dysentery and an absence of significant numbers of dead bees on the bottom board.

Varroa collapse: The symptoms of Varroa collapse vary somewhat according to treatment efficacy during the previous fall and pathogens associated with the mite infestation. Small clusters are commonly found on the warm side of the hive with ample honey stores remaining. If the fall treatment was late or ineffectual, Varroa can be readily seen lodged between the ventral abdominal sclerites. Likewise, a number of bees with stunted abdomens and deformed wings are apparent. Upon examination of the lower hive body, combs with partially emerged bees (heads exposed with tongues extended) are visible. Upon removal, these bees often have stunted abdomens, deformed wings and mites within the cells. Hives that succumb to Varroa have very few bees remain-



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ing. If the fall treatment was effective, few mites are present and there are fewer bees with stunted abdomens and deformed wings. Again, the premature death of adult bees reduced the critical mass needed for thermoregulation in winter.

Queen issues: Failing queens and queenless colonies are a common reason for hive mortality over winter. Hives with queen problems are recognized by a disproportionate number of small drones (reared in worker comb) within the cluster. In addition, inspection of brood frames in the lower hive body and/or within the cluster will reveal drone pupal caps in worker comb.

Shrews: Evidence of shrew depredation is often first recognized upon removal of the outer cover. Broken bees are scattered on the inner cover (i.e. detached heads, abdomens and wings). The bee's thoraces are absent since shrews eat these "meaty" appendages. Likewise, broken bees are found on the bottom board with shrew tunnels burrowed through the dismembered corpses. The combs of colonies killed by shrews are damaged and appear as if the wax and pollen was shaved off. The shrew will only chew the wax to the midrib (foundation) and not chew through the comb and make a nest like mice do. A musky odor is also common in hives lost to shrews, unlike the smell of urine associated with mice.

Other symptoms common among dead hives include: a sour smell caused by fermentation of uncapped honey and/or sugar syrup. Uncapped honey will absorb water

from the air, thus diluting the honey, which initiates fermentation. It is important to initially shake the excess water from these frames, and again just prior to restocking the hive since water will again infiltrate these combs. In addition, hives with excess moisture (dead or alive) will frequently have a fluffy-white or blue-green mold on the outer frames and interior hive walls. These molds aren't cause for concern and are often strains of penicillin.

What to do: In general, most hive equipment can and should be reused when the bees die, except when American foulbrood is the cause. In the case of starvation, the majority of frames need minimal attention except for those with excessive amounts of dead bees stuck in the cells. Before temperatures warm and the dead bees begin to decompose, shake the bees off the combs and clean the bottom board, etc. Sometimes a majority of bees can be shaken out of the cells or removed with a shop vac. Some beekeepers give combs with excessive dead bees to strong hives in spring so the bees can remove the corpses. A better strategy would be to cull the combs filled with dead bees and insert new foundation. Plastic frames can be scraped to the midrib and given back to hives. Frames with only a few bees stuck in the cells need no action and should be reused since bees can easily remove the dried corpses. Frames that have wet, mushy, decomposing corpses should be culled since fly maggots and hive beetles infest them—culling makes life easier for the bees.

since the bees will likely rebuild the damaged comb with drone cells. Frames with minimal shrew damage can be reused.

Regarding Nosema, scrape and clean the woodenware and cull frames with excessive feces running down the comb. For minimally stained frames, scrape the top bars. The cappings on frames of honey can be cleaned by gently wiping the feces off with a cloth dipped in a bleach solution (1 bleach : 9 water). Warm water works well and gloves are recommended. Heat or acetic acid fumigation are the standards for killing Nosema spores when treating large amounts of equipment. Consult beekeeping textbooks for specifics.

Hives lost to Varroa over the winter can be successfully restocked. Unfortunately, recommendation for restocking equipment that has undergone colony collapse isn't clear-cut in light of some CCD reports. A common concern about restocking this equipment pertains to the stability and virulence of virus particles within the equipment.

A number of commercial beekeepers state that the equipment needs to "rest," vacant of bees prior to restocking. The question is, for how long and under what conditions?

In 2008, I successfully restocked equipment that had succumbed to parasitic mite syndrome (PMS) brood, deformed wing virus infection of bees and brood, and Nosema the previous season. I must admit that frames with excessive amounts of dead brood were culled and replaced with foundation. Likewise, frames that had bee excrement running down the comb were culled. Only the newer and best looking frames of comb, honey and pollen were restocked.

Good news! Punxsutawney Phil did not see his shadow on Ground Hog day. Therefore, spring will arrive early and you will soon hear the birds chirping. 🌱



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Hives lost to queen issues need minimal action and should be treated as above. If there are brood combs with excessive drone comb, they should be culled. Likewise, combs with excessive shrew damage need replacement

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BEEKEEPING SCHOOLS

Cumberland County CE

5-Week Beginner Bee School

Instructors: Master Beekeeper
Erin MacGregor-Forbes
& Geoff MacLean

Feb 23 – Mar 30 2011
Wednesdays, 6:30 – 8:30PM

Room 303, Payson Smith Hall,
USM Campus, Portland

FMI: Colleen Hoyt, 780-4205
or choyt@umext.maine.edu

5-Week Intermediate Bee School

Instructor: Larry Peiffer,
VP, MSBA

Mar 24 – Apr 21 2011
Thursdays, 6 – 8:30PM,
with field lab Sat, Apr 23

Nasson Heritage Room,
Anderson Learning Center,
21 Bradeen St, Springvale

FMI: Rebecca Gowdy, 324-2814
or rebecca.gowdy@maine.edu

Fee: \$95/single (\$145/pair);
pre-registration req. by Mar 10

Pre-requisite: one full year
of beekeeping experience

Knox-Lincoln County CE

7-Week Beginner Bee School

Instructors: experienced KLCB
& MSBA beekeepers

Mar 1 – Apr 12, 2011
(TBA: one Saturday
to assemble hive equipment)
Tuesdays, 7 – 9PM

Knox Lincoln County
Extension Office, Waldoboro

FMI: www.klcbee.com
or Jane Dunstan, 586-6800
or MSAD #40 Adult Ed,
832-5205

Fee: \$60 + \$10 (due at 1st class)
for materials: *BeeKeeping Basics*,
pro-rated KLCB membership,
free raffle ticket, certificate
of completion

Rick Cooper

3-Week Beginner Bee Schools

Saturdays, 9AM – 3PM

Class 1: Feb 19,
Mar 5 & 19, 2011*

Class 2: Feb 26,
Mar 12 & 26, 2011*

*Package installation Apr 16

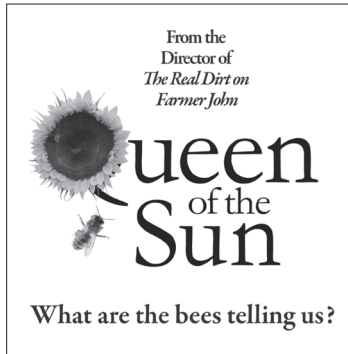
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or rick@bees-n-me.com

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\$25 for any additional members

BUZZINGS

Community Film Screening: Queen of the Sun



Thursday, Mar 3, 2011
[* Fri, Mar 4], 7 – 9PM

Merriconeag Waldorf School,
57 Desert Road, Freeport

Synopsis: This documentary is a profound, alternative look at the bee crisis. Taking us on a journey through the catastrophic disappearance of bees and the mysterious world of the beehive, this alarming

and ultimately uplifting film weaves together an unusual and dramatic story of the heart-felt struggles of beekeepers, scientists and philosophers from around the world.

Ag Day in the Legislature

Tuesday, Mar 22, 2011, 9AM – 1PM

Hall of Flags, second floor of State House, Augusta

Approximately 20 agricultural organizations generally participate. MSBA will have a booth.

Community Film Screening: Vanishing of the Bees



Saturday, Mar 26, 2011, 3PM

Garland Auditorium, Saco

Discussion panel to follow.
\$5 suggested donation (benefits local organic beekeeping and student performing arts groups)

RSVP: Cara St.Louis-Farrelly,
ctottenham@aol.com

Synopsis: Filming across the US, in Europe, Australia and Asia, this documentary examines the alarming disappearance

of honeybees and the greater meaning it holds about the relationship between mankind and mother earth. As scientists puzzle over the cause, organic beekeepers indicate alternative reasons for this tragic loss. Conflicting options abound and after years of research, a definitive answer has not been found to this harrowing mystery.

UPCOMING REGIONAL MEETING

EAS 2011 Conference and Short Course

July 25 – 29, 2011

Crowne Plaza Hotel and Conference Center,
Warwick, Rhode Island

The EAS Conference will be held in Rhode Island in 2011. Make plans now to spend the week of July 25 through 29 in Warwick at the Crowne Plaza Hotel and Conference Center. Warwick is an easy 3½-hour drive from Portland and the beekeepers of Rhode Island have planned a great week. The short course—with both novice and advanced levels—will take place on Monday and Tuesday. The Conference begins on Wednesday and in addition to lots of interesting speakers offers workshops on Thursday and Friday. There are plans for a barbeque and a clambake during the week and of course the traditional banquet on Friday. We toured the facility in October and it is really nice. Rooms are available at a discounted rate (ask for the EAS rate—group code BEE) and there are even camping spots on the grounds if you have a self-contained unit (no hook ups).

www.easternapiculture.org

APPEAL FOR HAITI BEEKEEPERS

Apimondia (The World Federation of Beekeepers Associations) is still working with Bees for Development Trust and ACBO (The Association of Caribbean Beekeepers Organisations), to raise funds to support beekeepers in Haiti to rebuild their lives after the devastating earthquake of January 2010. You can donate online at justgiving.com/Haitibeekeepers if you wish.

EDITOR'S NOTE ON SUBMISSIONS

Submit all articles, announcements and news at least 15 days prior to publication date [Feb 15, Apr 1, Jun 1, Aug 1, Oct 1, Dec 1].

Just as a honeybee colony relies on each of its foragers to venture forth and bring back sustenance for the hive, so too does this publication rely on member participation. Maybe you have expertise or an experience you wish to share, an anecdote from your bee yard that would entertain or inform your fellow beekeepers, or a report from an area event? Or even a compelling photograph, recipe, or relevant product review. Or maybe you would like to see a particular subject matter covered—let me know and I'll see what I can do. The long and the short of it: bring some sustenance back to your Maine hive!



Maine State Beekeepers Association

THE BEE LINE | Newsletter of the MSBA

Lori Harley, *Editor*
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www.mainebeekeepers.org

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| <input type="checkbox"/> Extra Gift Contribution | \$ _____ |

Total Payment \$ _____

*Membership includes a subscription to *The Bee Line*, the MSBA's newsletter. **Current membership is a prerequisite for attending the MSBA Annual Meeting.**

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PRIVACY POLICY: Member information *will be* provided to other MSBA Members unless specified otherwise here: ☐ No, please do *not* share my contact information with other MSBA Members.



HONEYBEES NEED YOU!

This is a ☐ new / ☐ renewing membership (check one). How did you find out about the MSBA? _____