KEARSARGE BEEKEEPERS

www.kbanh.org October 2017

NEXT MEETING:

SATURDAY, OCTOBER 14, 2017
9-11 A.M.

@KBA APIARY, 223 NORTH RD. SUNAPEE, NH

Topics: Winter preparations in the bee yards, Nov. Harvest Dinner, 2018 Bee School.

PRESIDENT'S MESSAGE:

Hi All,
Summer is behind us and it's time to review our beekeeping for the year. Did we follow our plan or did we become derailed? How about treating for mites, were we timely? Were we tardy? Have you fed you bees in preparation for winter?

I don't know about you, but most of the time my plans become side-tracked or interrupted by a different plan. I'd like to think I am becoming a better beekeeper but sometimes I'm not so sure of that. I guess the main thing is that I am still having a blast with the bees and want to keep learning about them. I hope all of you get as much enjoyment as I do out of this activity. Probably so or you wouldn't be in the club and reading this.

Sometime over the winter or spring I built a honey warming box. It is just a simple base cabinet design so that it will fit in line with my other workshop benches/cabinets. The interior is lined with 1" rigid insulation and ¼" plywood. I use a low wattage light bulb for a heat source controlled by a thermostat that I got from Amazon https://www.amazon.com/gp/product/B01E9IO6N0/ref=oh_aui_search_detailpage?ie=UTF8&psc=1 that only goes up to 108 degrees in 1/10 of a degree increments. It was priced under $20!

My thought was to warm honey supers prior to extraction to make it easier to spin out. I was able to use the heater long before it was time for extraction as I had some of last year's honey that had crystalized in a bucket. It only took a day or so to liquefy the bucket and I only had to warm it to 102.

I did some extracting last weekend and used the heater again for its intended purpose. I have to report that it did help the extracting process. It seemed that the frames spun out much faster than other years. One unexpected result was that the uncapping knife worked better than I remembered from past years. I'm not sure of the mechanics of it but it was welcome. I didn't have to dip the knife in hot water like in years past.

My next project that is in the design stage now is a solar wax melter. I made a simple one for the last club meeting at the apiary but I wanted something that will accommodate full frames. I'll keep you posted on the progress.

The meetings at the club apiary have been a real bonus for many of us. I haven't been able to attend them all, but the meetings that I make are rewarding. The last meeting on 9/27 brought us some new members from Weare and Hopkinton. Last month we had a new member from Vermont.
I think that the club owes Kevin and the Ramspotts a big thank you for making this happen. **THANK YOU!**

We will have the last monthly meeting at the apiary on the 14th and we hope to see you there. We have some things to discuss about the upcoming Harvest Dinner on 11/10 and the Bee School in 2018.
Please join us at the apiary,

Bee well,

John Chadwick

IN THIS ISSUE:

Kearsarge Beekeeper Association Meeting
September 9, 2017
At the club apiary in Sunapee, NH

Presidents Report
John Chadwick began the meeting at the KBA Apiary.

- Liability Forms were passed around and signed by those who had not done so.
- The Club is investigating liability insurance for bee keeping activity.
- A Pollinator Bill is being considered at the state level.
- MOTION FOR ANNUAL BEE SCHOOL - A motion was made and unanimously approved to host a bee school in winter 2018. The club asked for volunteers and will reach out to those who can arrange the venue and speakers.
- MOTION TO PAY EXPENSES - A motion was made and unanimously approved to spend club funds to support expenses incurred at the club apiary.
- Mite Check website was suggested for participation.
- October 14th – KBA October meeting will be at the club apiary.
    - October 21- NH State Beekeeper Annual Meeting will be hosted by the Pemi-Baker Beekeepers Association from 9-3 pm in Bridgewater, NH. (Bring a morning snack). **Location:** *Bridgewater Town Hall, 297 Mayhew Tpke (Rte. 3A),Bridgewater NH 03222.* There will be a honey contest and the two speakers will be: ***Chris Cripps***: of Betterbee will be speaking on the relationship between nosema and dysentery, and small-scale wax production if there is time and ***Howland Blackiston****:* author of ' Beekeeping for Dummies', he has been a backyard beekeeper since 1984.
- November 10th - KBA will host the Harvest Dinner at the Sutton Church. Volunteers needed to bring a roasted turkey and other dishes.

Club Activities

All members suited up with bee jackets and veils and spent time in the apiary. Kevin Sargent demonstrated an easy way to use a homemade wooden pivot with a spring scale to weigh hives. A hook clips on under the hive body minus the stand and lifts the supers up. His tests show this is accurate by doubling the weight on the scale. One should assume 4 pounds for each wooden deep in calculating the weight of the hive. A repeat mite check was done on the top bar hive using an alcohol wash. There was lots of informal discussion, laughter and observations of the various hives. Much talk centered around wintering hives: use a Bee Cozy or tar paper, have pollen and honey in frames 3, 5, and 7 in the top box as bees move upward. Again it was another wonderful day in the apiary with lots of members and lots of activities in the many hives.

Deb Dunlop, Recording Secretary

Save these dates:

Sat., Oct. 21 NHBA Fall meeting

As mentioned in the minutes on this page, the NHBA fall meeting is the Saturday after our Oct. meeting. You have missed the deadline to sign up for lunch but can still attend the meeting by showing up and paying the $10 fee and your dues (if not already paid). Please see the driving directions on the NHBeekeepers website. It is possible that they may let you buy a lunch that day, but take a sandwich just in case.

Fri., Nov. 10, KBA Harvest Dinner (and raffle), 6:00 pm at the North Sutton Church, details to follow in a separate notice.

What do bees see? What are their favorite colors?

Many thanks to Richard Brewster for sending me a great idea for an interesting topic to explore. The first article is what Richard sent and comes from The Netherland Bulb Company where he gets his gladiola bulbs, etc. The other two sources are from the internet and I have edited them somewhat due to space constraints. You can find the full articles online, of course. *Barbara Burns, ed.*

"bulbs & bees"

Bees are trio-chromatic, and base their colors on ultraviolet light, blue and green. As a result, bees cannot see the color red. Scientists agree that a bee's favorite colors are purple, blue and white. By planting the right bulbs, home gardeners can not only attract pollinators to their gardens in early spring and throughout summer, but they can also provide food to a hive that is dealing with dwindling resources. Our suggestion for gardeners looking to attract bees would be of course blue and purple flowers. Gardeners will do best to plant larger areas; however, combinations of alliums, hyacinth, muscari, and crocus will be equally as effective in offering bees a large variety of food in early spring. Galanthus and other white flowers are also popular with honeybees and bumblebees and offer a striking contrast to the blues and purples. Once bees begin to visit, they will return, providing pollination to the garden throughout the summer, and subsequent years.

….*Netherland Bulb Company flyer*

From Brookfield Farm Bees and Honey website, "What Colors do Bees See?" 7/21/2012

Honeybees Do Not See The Same Colors We Do

Bees get to see in the ultraviolet world. We can use photographic techniques to mimic that world, but all resulting colors are approximations of what a bee MIGHT see. (More photos by scientist-cameraman Bjorn Roslett can be found at his web site NaturFotograf.com (click on Infrared in the left side menu

We can never see colors the way bees see them.

Bees see "primary colors" as blue, green and ultraviolet They can distinguish yellow, orange, blue-green, violet, purple, as combinations of their three primary colors.
Humans see "primary colors" as red, blue, and green
We can distinguish about 60 other colors as combinations of our three primary colors.
Bear in mind that not all the studies agree on the exact colors or preferences bees see, but they all agree red is black
Some studies propose that honeybees see orange, yellow, and green as one color (green in that group surprised me). Blue, violet and purple are seen as a second color. Ultraviolet being their third color.
Honeybees Do Not See Red
It's not that they don't get angry (as in "to see red"), but honeybees see the color red as black.

Honeybees Versus Humans: A Breakdown

(Courtesy of West Mountain Apiary, where a very good write-up about color can be found)

Humans	Honeybees
Red	Black
Yellow	Yellow-Green
Orange	Yellow – Green (darker perhaps than yellow)
Green	Green
Blue	Blue plus Ultraviolet blue
Violet	Blue plus Ultraviolet
Purple	Blue
White	Blue-Green
Black	Black

Their Favorite Colors?

Their favorites are said by some to be: purple, then violet, then blue (which all look different to them). I could not find the study that came to this conclusion, but I like it, as my favorite colors are purple, violet, and then blue.

How Do We Know All This?

We don't know it all; studies vary. However:
Bee's color sense was partially demonstrated by Karl von Frisch. In 1915, he showed that bees could discern green, yellow, orange, blue, violet, and purple. He did this by using colored cards and bee feed. He imprinted the bees with the idea that feed could be found on a blue card, but not the other colors. When he removed

the feed, the bees still went to the blue card. He then tried this with green, yellow, orange, violet, purple and red. The only color it did NOT work with was red.
In 1927, Professor A. Kuhn took the study of honeybees' color sense further. He tested bees using the visible spectrum for humans, but also used longer and shorter wavelengths: the ultraviolet and infrared. The infrared was black to the bees, but ultraviolet was a color.

FROM BEE CULTURE MAGAZINE, May 20, 2016

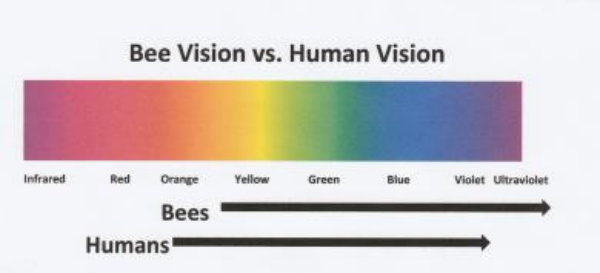
by Sharla Riddle

Sharla Riddle is a retired educator and freelance author. She has been named a Huddleston Scholar, Tandy Scholar and RadioShack Science Chair.

Here's an "eye-popping" fact: The USDA estimates that 80% of insect crop pollination is accomplished by bees.

Scientists consider bees to be a keystone species. They are so important to an ecosystem that it will collapse without them. At least 90 commercially grown crops depend upon bee pollination for survival. How important is the pollination by bees? Ask an almond grower. Without bees, there would be no almonds. Apples, blueberries, cherries, avocados, cucumbers, onions, grapefruit, oranges and pumpkins would also disappear. Bees are the undisputed champions of the pollination world. And their secret weapon? Sight.

The remarkable eyesight of bees has long been a source of fascination in the scientific community. A hundred years ago, Nobel Prize-winning scientist Karl von Frisch proved that bees can see color. The color we see is based upon how a pigment absorbs and reflects light. When light hits an object, some is absorbed and some is reflected. Our eyes perceive the reflected portion as color. The brilliant color in flowers is a way of attracting pollinators, such as bees. The colors of flowers help target the areas of nectar. That's the reason why petals are usually a different color than leaves. Even though humans can see more colors, bees have a much broader range of color vision. Their ability to see ultraviolet light gives them an advantage when seeking nectar. Many patterns on flowers are invisible to humans. These nectar "bulls-eyes" are visible only to animals, such as bees, that have the ability to see ultra-violet light. This "bee vision" makes finding nectar much easier. In fact, some flowers such as sunflowers, primroses and pansies have nectar guides that can only be seen in ultra-violet light.



Like us, bees are trichromatic. That means they have three photoreceptors within the eye and base their color combinations on those three colors. Humans base their color combinations on red, blue and green, while bees base their colors on ultraviolet light, blue and green. This is the reason why bees can't see the color red. They don't have a photoreceptor for it. They can, however, see reddish wavelengths, such as yellow and orange. They can also see blue-green, blue, violet, and "bee's purple." Bee's purple is a combination of yellow and ultraviolet light. That's why humans can't see it. The most likely colors to attract bees, according to scientists, are purple, violet and blue.

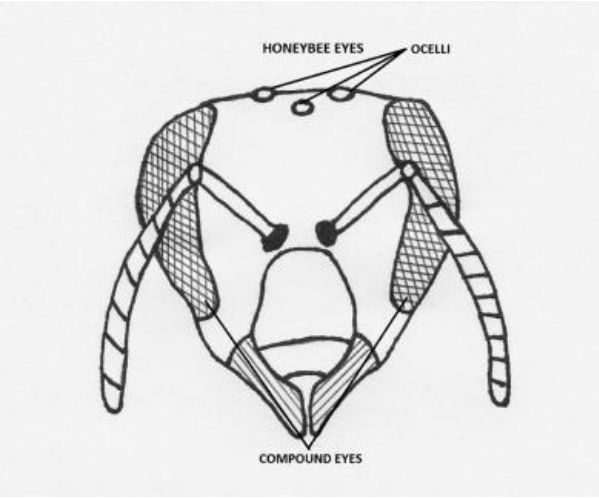
Bees also have the ability to see color much faster than humans. Their color vision is the fastest in the animal world-five times faster than humans. So while we may have trouble distinguishing one flower in a group from another, bees don't. They see each individual flower. Some flower petals appear to change color, depending upon the angle. This is known as iridescence. It's often in the UV spectrum, so we can't see it. But, bees can. They see these shiny petals and associate them with sugar. Thus, the flower becomes more attractive to the bee and gets pollinated.

When we drive on a highway and look out the window at the flowers by the roadside, we usually can't distinguish one flower from another. The car

is moving so fast that the flowers blend in to one another and we see a blur of color. Bees have a far higher "flicker" threshold. They can see individual flowers while traveling at a high rate of speed. Because of this, they actually respond better to moving objects than stationary ones. That's why honey bees have no trouble pollinating moving flowers. That's also why it's rather useless to try swatting a bee-it has no trouble avoiding moving objects.

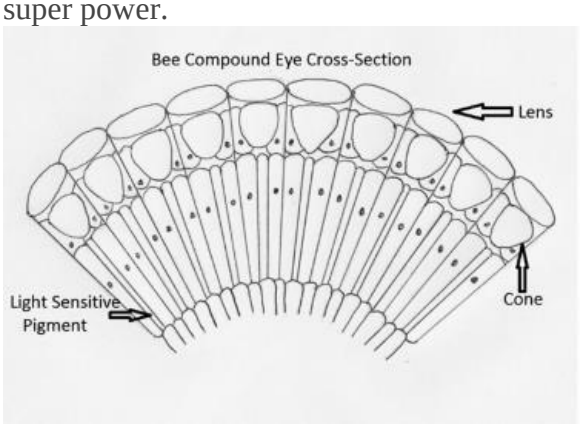
Flying helps bees see better. They can see depth and they can see three dimensionally. They can also judge distance. They communicate these distances and directions of good foraging sites to the hive through their waggle dance. However, scientists have found that it is possible to trick bees into misjudging distances. In one study, a tunnel was painted in a semi-checkered pattern. When the bees passed through it, they became confused regarding the distance of the tunnel. The checkered pattern caused them to think the tunnel was longer, because they thought they were passing by a lot of objects. When the scientists painted horizontal stripes in the tunnel, the bees flew too short. Because of the lines, they couldn't judge that they were passing by any objects.

Thus, scientists realized that bees use the objects they fly by to judge distances, which they later communicate to the hive.



Bees have two different types of eyes-each with separate functions. The three smaller eyes in the center-top of a bee's head are called ocelli. Ocelli comes from the Latin word "ocellus" which means little eye. These little bee eyes have single lenses and help the bee maintain stability and navigate. They enable the bee to judge light intensity and stay oriented. Using these ocelli, bees can gather light and see ultra-violet light, helping them to detect UV flower colors.

If a bee were a superhero, its sight would be its super power.



Every bee has two large compound eyes. These eyes are amazing examples of nature's engineering. A compound eye is made up of thousands of tiny lenses called facets. Each of these facets takes in one small part of the insect's vision. The bee's brain then converts these signals into a mosaic-like picture made of each image. Worker bees have 6,900 facets in each eye, and drones have 8,600 facets. Every facet is connected to a tiny tube. Each of these units, called an ommatidium, contains a lens (facet), a cone of visual cells and pigment cells that help separate it from its neighbor cells.

A bee is able to see color, because each of these tiny tubes contains eight cells that respond to light. Four of these cells respond to yellow-green light, two respond to blue light, and one responds to ultraviolet light. But a bee's super sight powers go much farther than seeing mere colors. A bee can also detect polarized light. Polarized light moves in one direction. It's caused when air molecules from the atmosphere scatter the photons to create a "super highway" of light. A bee's amazing eye can scan and match the polarization patterns in the sky. It's a bee version of GPS. They are able to use this polarized light as a navigating system. What makes this such a super power is that bees can use polarized light to locate direction even when the sun isn't shining. They then communicate these directions to the colony. Basically, it's a bee road-map. Bees can find their way back home by checking the pattern of polarized light in the sky.

Every super hero has at least one side-kick and a bee's pal is light. Light is defined as the

electromagnetic energy we can see. Humans generally see in the 700 to 400 nanometer range of the spectrum, while bees can see from the 600 to 300 nm range. The 400 to 300 nm section of the spectrum includes ultraviolet light Studies have shown that if deprived of ultraviolet light, bees lose interest in foraging and will remain in the hive until they are forced out by starvation and severe food shortages. UV light, which can penetrate cloud cover, is critical in a bee's ability to find nectar. Bees don't see the same flower color that we do. The UV patterns on the petals of a flower can be compared to the landing deck of an aircraft carrier. Those patterns guide the bee to land at the nectar source. It also explains how bees are able to select a particular species of flower from a field of white flowers. Bees aren't just seeing white flowers. They're seeing flowers with distinct UV markers. In fact, bees will head to the UV-absorbing area of a flower first. It is their bullseye. And, just because a flower is ugly to us, doesn't mean that it's ugly to a bee. Recent studies have shown that weeds are more successful than other plants because they're more attractive to the pollinators. Beauty is in the eye of the "bee-holder."

In very rare instances, people can see into the ultra-violet range. Usually, it's after a lens injury or cataract surgery. This condition is called aphakia. People with aphakia see a "near" UV light. It is perceived as a whitish-blue or whitish-violet color. The French impressionist painter Claude Monet had this condition after cataract surgery. Before the surgery, his cataracts were so bad that his color range was limited to red and orange. After the surgery his paintings included deep purple and blue hues.

Because of the bee's extraordinary ability to see and navigate its world, researchers have made many attempts to create models that mimic a bee's sight. The first "bee eye" cameras weren't successful. They contained more than one camera, which caused them to be too heavy to use. Then, in 2010, German scientists were finally able to create a camera with a "bee's eye view." The key to this camera's success was in using a combination of lenses and mirrors to create a bee's 280 degree field of vision. The camera is tiny, with a diameter of only 23 millimeters. This "bee camera" will allow drone aircraft to "see" more of the world around them. It's a small step in trying to mimic the bee's very complex vision system.

The contribution by bees to world economies is staggering. Researchers at the University of Reading calculated that bees contribute more to the UK economy each year than does the Royal family from tourism. In the U.S., these super-pollinators are worth 14.6 billion dollars in crop production. With its incredible vision, a bee can pollinate plants with pinpoint accuracy. Windy weather and overcast skies are no match for its incredible sight. It can see what we can't and because of that ability, it's the ultimate pollinator. A bee's sight is its super power. Why does it matter? Because bees matter.

A Peach of a Story

October 2017

Back in 2011 at our club's summer picnic at Dick Shores, I won a peach tree in a pot as a raffle prize. I never had any fruit trees on our property but I thought it would be fun to see if it would grow here. I planted the foot-tall seedling on the south side of the house where the lawn slopes to the south and has a nice exposure.

I fashioned a protective cage out of hardware cloth for the little tree and didn't really pay it much attention for a couple of years. It eventually out grew the little cage and I replaced it with some grade stakes. This was to keep us from mowing too close and ending its short life.

This little tree was getting taller and becoming large enough that we weren't going to mow it by accident. It was however, developing a slant toward the northwest and was quite askew. This spring there were blossoms on the tree for the first time and I became excited that we might actually have some peaches.

The slant bothered me so this spring after all the rain we had and the ground was soft I put a rope on the trunk and pulled it straight. It was now looking like a proper tree and not like it was about to tip over.

By now the blossoms were long gone and I was disappointed to see that there were no peaches on the tree. A few weeks later I was removing some Japanese Beetles from its leaves and I found one lone peach hidden away among the branches. I don't know much about peaches but this peach had the shape and size of a butternut and was very hard. Although I was very pleased that we had one peach I really didn't have much hope for this one.

While watching it thru the summer it didn't seem to change size or shape. This just reinforced my thought that the peach wasn't going to mature and ripen for us.

More time went by and I found a note on my office desk from my sister saying, "Your peach is amazing." I have to tell you that even though I didn't hold much hope for this peach it didn't stop me from taking pictures of it and tell folks how it might turn out to be the best peach on Baker Hill this year😊. I did take a few pictures of it and I would show it to anybody that I could capture.

So on 9/21 after seeing the note from my sister I went out to see what she was talking about.

Was I surprised! It had changed its shape and gotten much bigger.

As you can see when I say much bigger it is relative to what it was. It was kind of puny by most standards but we were still very pleased. While I was holding it for the picture it dropped off into my hand. I guess that it was ready to pick.

We kept it on our kitchen table for a week while it got a bit softer and felt that it was about ready to eat. The big day came on 9/28 and we sliced it in half and then my wife and I had probably the best peach on Baker Hill that day. It was still a little bit hard but we were both very pleased, our first peach.

That wasn't the whole story. Since I won that seedling I would occasionally wonder if I would ever see the couple that donated peach tree to our raffle. I do remember talking to them about the tree and them telling me that they had started it themselves. The other thing that I remembered about them was that they were from Concord and had a farm that had "Frog" in the name of it.

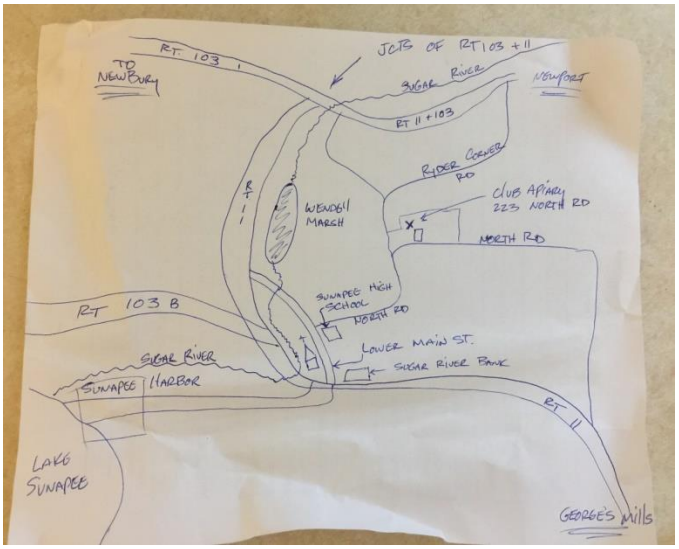
I know that I did a couple of internet searches for Hoppy Frog or something Frog farm and never had any luck. I wondered if the club's records would have any information so I asked Robin if he had any members from Concord that had a farm with "Frog" in its name. About an hour later I heard back from Robin and while there were no Frogs there was a couple from Concord that had an email address with LazyToadFarm in their name. This must be them. In 6 years I had changed toad to frog but it must be them.

I sent them an email explaining why I was writing and that the peach tree had born fruit this year. Later that day I heard back and sure enough it was that same couple. They were happy to hear that the tree had made it and enjoyed the picture I had sent. I had asked them if they had any specifics about that peach and they didn't know about that particular tree.

They had collected peach pits during a trip the previous year from Colorado to NH. So it could have come from anywhere from here to Colorado. This couple has several peach trees from that trip in their yard in Concord. They have a variety of ripening times from mid-August to late September.

We did save the pit from that peach and now it is in the fridge hoping that it will germinate. While it probably won't be a peach tree that will make it to our club raffle maybe one next year will make it.

John Chadwick



Map to KBA Apiary, 223 North Rd., Sunapee, NH