



# **BEEKEEPING NEWS**

January, February, March 2014

a local chapter of NORTH CAROLINA STATE BEEKEEPERS ASSOCIATION, INC.

## •Meetings & Programs

**Tuesday, January 14, 2014 6:30pm (covered dish meal)**

Our association will be joining a live webinar by Dr. David Tarpy and NCSU involving Resources for Beekeepers, new and experienced.

**Tuesday, February 11, 2014 7:00pm (no meal)**

Larry Tate of Tate's Apiaries in Winston-Salem will speak and answer questions about raising and evaluating quality queens.

**Tuesday, March 11, 2014 6:30pm (covered dish meal)**

John Pledger of Triad Bee Supply in Trinity will speak about making spring splits



## **EPA's system of tracking pesticides harmful to honeybees, critics say**

By Kendall Helblig, Published: December 22

The honeybees that pollinate one-third of Americans' daily diet are dying, and in the eyes of some environmentalists, one culprit may be a decades-old Environmental Protection Agency system.

The system, called "conditional registration," is essentially a way to get pesticides on the market quickly. But to environmentalists and some experts, it has become too loose, letting potentially dangerous pesticides on the market, and letting some stay there too long.

Insecticides conditionally registered in the early 2000s have been blamed for impairing honeybees' immune systems; in the past five years, the honeybee population has declined 20 to 30 percent each year, according to the U.S. Department of Agriculture.

"To continue to risk the collapse of our honeybee population and other insects that support our ecosystems is a tragedy," said Jonathan Evans of the Center for Biological Diversity, a national environmental advocacy group.

The criticism of the EPA's conditional registration system is nothing new. A Government Accountability Office report from August, for example, said the agency has a confusing record-keeping system for tracking pesticides — a problem the GAO first flagged in 1986. The recent report helped revive claims that conditional registration is unsafe.

"I think it's really concerning that they have acknowledged that they have all these problems and missing data, but they are still trying to go full steam ahead," said Mae Wu, an attorney at the Natural Resources Defense Council, another advocacy group.

For its part, the EPA said its 2012 review showed that record-keeping troubles have not affected the safety of products it has approved.

The EPA also said it was taking steps to improve the tracking of pesticides, seeking to "promote consistency and enhance transparency" of its system.

The conditional registration system began in 1978 with an amendment to the law that governs insecticide use. It allows some pesticides to be sold before all necessary studies are completed, as long as the company follows up with required data by a designated date, the pesticide will not cause "any unreasonable risk to the environment" and "the use of the pesticide is in the public interest," according to the EPA's Web site.

About 16,000 pesticides are registered with the EPA, and each manager in the agency's Office of Pesticide Programs is responsible for keeping track of about 800. (Washington Post)

# Innovations

How human ingenuity is changing the way we live.

## *Can bees be trained to sniff out Cancer?*



Some insects, such as bees, have a sense of smell so acutely sensitive that they can locate the faintest of odors in a room, even if it **consists of only a few molecules**. But scientists are particularly intrigued by the fact that these bugs can even be taught to detect various chemicals, from methamphetamines to ingredients in explosives. They've even been shown to effectively diagnose diseases like **tuberculosis** and diabetes.

U.K.-based product designer **Susana Soares** has created a simple, elegant way of harnessing bees to screen for a number of diseases, including cancers, like tumors of the lung **and ovaries**. Her glass apparatus, called "**Bee's**," features a large chamber and a smaller connected chamber housed within

it. After training the bees to associate a specific chemical odor with a food reward, such as sugar, the insects are released into the diagnostic device through an opening. Patients would simply blow into the smaller compartment and wait to see if a swarm gathers toward something alarming in the person's breath.

The project, part of her master's thesis at London's Royal College of Art, began in 2007 when Soares came across research on bees and their phenomenal olfactory abilities. After talking to researchers in the field, she learned that certain diseases, such as lung cancer, noticeably alter the composition of bodily fluids, producing odorous compounds that show up in urine and sometimes blood. Some investigators have even been experimenting with various sensory methods to home in on these "biomarkers." In Philadelphia, for instance, **scientists have trained mice** to identify the scent of lung cancer. Trained dogs have also been used to **sniff out ovarian cancer**. Others have focused on replicating these animal abilities in **electronic nose devices** that are calibrated to pick up these biomarkers undetectable to human noses.

Insects offer key advantages over mammals and electronics, however, because of their antennae. For example, electronic nose devices have trouble detecting an odor amid more complicated conditions, like when there's a greater mixture of gases, as is found in human breath. And studies have revealed that sniffer dogs identify odors correctly only **about 71 percent of the time**, while also requiring at least three months' training. Bees, in contrast, have achieved an accuracy rate of 98 percent and can be trained in about 10 minutes.

In developing "Bee's," the Portuguese native needed something that enabled the user to easily transport bees into the instrument and safely suck them back out using a vacuum. The source material also had to be malleable enough to shape into a system with well-defined pathways that don't impede their movement. She eventually settled on glass as the material because of its flexibility and transparency. "To know the results of a breath test, you'd have to see the behavior of the insects," she says. "Everything is about their behavior."

Read more: <http://blogs.smithsonianmag.com/ideas/2013/12/can-bees-be-trained-to-sniff-out-cancer/#ixzz2p4NcsO00>

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# Bee Culture

## New Winter Thoughts – Honey Bee Management Changes?

on SEPTEMBER 1, 2011 · LEAVE A COMMENT · in CLUSTER, HONEY BEE MANAGEMENT, VENTILATION, WINTERING

The queen's in the middle of this colony that died overwinter...not at all like the new data suggests.

Here's an outside-the-box idea someone thought of, that we'll have a lot more on once it gets reported on at Apimondia, I'm told.

A scientist from Australia wondered about the winter cluster. So he put an airport body scanner in a walk-in freezer and scanned a clustering bunch of bees. He

did this in England, and a friend there told me about it...but not enough to get all the details. But he shared this...



Conventional wisdom...that's what you have when you don't have all the facts...just most of them...says a winter cluster forms in the bottomish part of a hive, shaped loosely like a football. The queen is in the middle, there's an insulation layer of bees on the outside, and as winter progresses and weather permits, the bees move from where they were in the fall upwards to where a good beekeeper put the food. By spring, the bees are toward the top of the hive, getting low on food, and the queen is laying like mad in the middle.

This picture comes, at least in part, from research done more than 30 years ago in Wisconsin, using thermocouples placed in a hive. When activated, the heat sensors gave a static picture of where the bees were, and weren't. That image hasn't changed much...until now.

What the scanner showed, I'm told, is that the cluster is shaped much different, with the greatest number of bees right at the top of the cluster...imagine a "T" I'm told, and, more interestingly, the queen is all over the place, running here and there and keeping things organized. No mention of an insulation layer, moisture ventilation, moving to food...I have a million questions about this.

Now that's a different picture, isn't it? I can't wait to get the rest of the story. You'll see it here, or in the magazine, or on CATCH THE BUZZ for sure, as soon as I can get it.

But one thing troubles me. When you find a colony that has died overwinter, at least usually, you'll find the queen right in the middle of the cluster, surrounded by a block of bees, and there will be lots of bees with their heads in now-empty cells. We've all seen this, right? So what gives? How can these two pictures be the same?

Well, I'll let you know just as soon as I can.

In the mean time, keep you veil tight, your hive tool handy and your smoker lit...it's still summer out there.

By the way, if you're interested in winter preparations, or want to know a bit more about top bar hives take a look at the Mother Earth News Beekeeping blog. We're cooking up some interesting stuff over there.

# North Carolina Honey Plants

Mountains | Piedmont | Coastal Plain

Plant Name	Scientific Name	Starts	Days	Ends
Today is 19-Dec- 2013		Average Bloom Period in NC Piedmont		
Red Maple	Acer rubrum	1-Feb	40	12-Mar
Sugar Maple	Acer saccharum	5-Mar	25	30-Mar
Dandelion	Taraxacum officinale	15-Mar	60	14-May
Sumac	Rhus spp.	3-Apr	151	1-Sep
Alsike Clover	Trifolium hybridum	4-Apr	102	15-Jul
Blackberry	Rubus spp.	10-Apr	20	30-Apr
Crimson Clover	Trifolium incarnatum	10-Apr	25	5-May
Ladino, White Clovers	Trifolium repens	14-Apr	102	25-Jul
Tulip Poplar		25-Apr	29	24-May
Black Gum	Nyssa sylvatica	26-Apr	14	10-May
Black Locust	Robinia	27-Apr	10	7-May
Vetch	Vicia spp.	28-Apr	46	13-Jun
Holly	Ilex spp.	30-Apr	15	15-May
Raspberry	Rubus spp.	30-Apr	20	20-May
Privet	Ligustrum spp.	8-May	23	31-May
Persimmon	Diospyros virginiana	20-May	13	2-Jun
Sweet Clover	Melilotus spp.	28-May	37	4-Jul
Sourwood		10-Jun	20	30-Jun
Heartsease, Smartweed	Polygonum spp.	4-Jul	126	7-Nov
Goldenrod	Solidago spp.	8-Aug	67	14-Oct
Aster	Aster spp.	25-Sep	35	30-Oct

# When buying honey, be aware of impostors

Food » Tips for buying honey.

By Kathy Stephenson  
| The Salt Lake Tribune

First Published Dec 18 2013 01:01 am • Last Updated Dec 18 2013 06:36 pm

Christmas is one of the most popular times to buy honey – either as a gift or for baking. And that means consumers need to watch for honey fraud, said Bevan Weed, president of the [Wasatch Beekeeping Association](#).



With the bee population declining about 30 percent per year, the honey supply is limited and unscrupulous companies will manipulate the honey to boost profits.

“Honey packers bring in illegal honey or mix in corn syrup or other sweeteners to make the honey go farther,” Weed said.

Earlier this year, five people and two U.S. honey processors were charged with federal crimes after an investigation showed they were illegally importing honey from China. The companies were heating the honey to such a high point that it eliminated all the pollen and officials can’t track where it was coming from.

Here are some things to look for:

**Question price** » The first red flag for consumers should be the price. “If you find cheap honey, it’s not sustainable and you’ve got to question where it’s coming from,” Weed said. In Utah, honey should cost about \$6.50 per pound.

**Avoid organic** » Honey labeled “organic” is a misnomer. “The transient nature of honeybees makes it almost impossible to farm organic honey in a sustainable way since bees travel up to 5 miles every day and collect pollen from any plants available,” he said. Most honey carrying the “organic” label is mass-produced overseas.

**Buy raw** » Consumers should look for the words “raw honey” on the label. This ensures that it is a natural product that has been minimally processed and has the most health benefits. “You don’t want someone taking everything good about honey and stripping it down until nothing is left,” said Pete Somers, owner of The Honey Stop, a honey-themed store at 159 E. 800 South in Salt Lake City.

**Buy local** » Weed and Somers say purchasing from a local beekeeper ensures that you’re buying a quality raw product. Your money helps local beekeepers improve their hives, they say, which in turn helps the state’s overall bee population.

“These are products you’re not going to find on the grocery store shelves,” said Somers, who carries dozens of other bee products from candles and lip balm to containers and artwork.

Once you get your raw honey home, don’t worry if it eventually turns solid.

“Crystallizing tells you that it’s raw honey,” Weed said. “All you need to do is warm it back up.”

Skip the microwave and simply place the jar of honey in warm water and stir until the crystals dissolve.

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November 13, 2013

## Queen Bee's Honesty is the Best Policy for Reproduction Signals

Queen bees convey honest signals to worker bees about their reproductive status and quality, according to an international team of researchers, who say their findings may help to explain why honey bee populations are declining.

“We usually think of animals’ chemical signals (called pheromones) as communication systems that convey only very

simple sorts of information,” said Christina Grozinger, professor of entomology and director of the Center for Pollinator Research, Penn State. “However, this study demonstrates that queen honey bees are conveying a lot of nuanced information through their pheromones.

“In addition, until now, no one knew if queen bees were manipulating workers into serving them or if they were providing valuable, honest information to workers. We have found that the information queens are conveying constitutes an honest message about their reproductive status and quality. The queens are ‘telling’ the workers that they are queens, whether or not they are mated and how well mated they are. In other words, whether or not they have mated with a lot of males.”

Why do worker bees care if their queen is well mated? According to Elina Niño, postdoctoral fellow, Penn State, previous research has shown that colonies headed by more promiscuous queens -- those who mate with many males -- are more genetically diverse and, therefore, healthier, more productive and less likely to collapse.

“Beekeepers have been very worried about their queens, since they seem to not be lasting as long -- a few weeks or months instead of one or two years,” said Niño. “We know that workers will replace their queens when they are not performing well. So if worker bees are able to detect poorly mated queens and take steps to remove them, that could be an explanation for the rapid rates of queen loss and turnover that beekeepers have been reporting.”

The researchers, who represent Penn State, [North Carolina State University](#) and Tel Aviv University, describe how they assigned queen bees to a variety of treatment groups. They report their findings in today’s (Nov. 13) issue of PLOS ONE.

In one group, they inseminated queens with a small volume of semen to mimic a poorly mated queen scenario. In a second group, the researchers inseminated queens with a large volume of semen to mimic a well-mated queen scenario. In a third and fourth group, they inseminated queens with low and high volumes of saline. A fifth group was an untreated control.

The researchers then dissected the queens, removing two glands that are known to produce pheromones -- the mandibular gland and the Dufour’s gland. Next, the team extracted the glands’ secretions and analyzed their chemical compositions using gas chromatography-mass spectrometry. Finally, the researchers presented the gland extracts to worker bees and observed the extent to which they were attracted to different extracts. The team found that worker bees preferred pheromone extracts of queens that were inseminated with semen rather than saline. They also found that queens inseminated with



*Worker honey bees perform a “retinue response,” in which they are attracted to the queen (marked with a number tag), surround her, lick her, and “smell” her with their antennae. This behavior allows the workers to pick up the queen pheromone and spread it throughout the colony. The queen pheromone provides “honest” information to the workers about her presence, mating status, and mating quality. Credit Bernardo Nino, Penn State*

higher volumes of semen or saline as opposed to those that were inseminated with low volumes of semen or saline were preferred by worker bees.

“These results suggest that queens are signaling detailed and honest information about their mating state and reproductive quality to workers, and workers are capable of adjusting their behavior accordingly,” Niño said. “When workers replace failing queens, it is particularly damaging to beekeepers since it can take up to three weeks for the new queen to begin laying eggs and another three weeks for the new workers to emerge as adults. This reduces the workforce and therefore reduces honey production and even pollination efficiency.”

The team also found that the mandibular gland and the Dufour’s gland differ in their functions. “The Dufour’s gland seems to inform workers that queens have mated, while the mandibular gland seems to indicate the queen’s mating quality,” Niño said. “This also means that these glands are likely being regulated via different neurophysiological pathways.”

According to Grozinger, in addition to signaling queen bee reproductive status and quality, queen bee pheromones regulate how fast workers mature and transition from taking care of developing larvae to foraging outside the hive.

“It is possible that changing the quality of the pheromone could disrupt this and other processes, which could have large-scale effects on colony organization and survival,” she said.

Through funding from the Department of Agriculture, the researchers are beginning to examine the effects of viruses, pesticides and poor nutrition on queen pheromone quality to see if the queen also is providing workers with information about her health.

“The more we know about what affects the queen’s health the better chance we will have of creating high-quality queens and disease-resistant stocks of honey bees,” Niño said.

### **Fake honey: UK Manuka sales alone outstrip **Entire** global production.**

British authorities have called a nationwide alert to warn of the increasing quantity of fake manuka honey finding its way onto the country’s retail shelves...Maths don’t add up. There is a higher and ever-increasing volume of honey labelled as

Manuka that are not Manuka. According to industry data, New Zealand produces 1,700 tons each year, while consumption data reveals that an estimated 10,000 tons is sold worldwide annually - of which 1,800 tons is sold in Britain. Sound like the corn syrup & SourWood gang to you???



[Project Apis](#) is a web site worth visiting. Lots of information here.

**Our web site, [www.guilfordbeekeepers.org](http://www.guilfordbeekeepers.org) is your source for local beekeeping information, questions, and answers. Sign up for our forum board and join the conversation!**

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**Guilford County Beekeepers Association**

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