

# The Bee Cause



Volume 11, Issue 8

November 2014

- Next general meeting is 7:30 Tuesday, November 18<sup>th</sup> at the **Corydon Community Centre River Heights, 1370 Grosvenor Ave., Winnipeg.**
- (in room right off main-door)

**Speaker: Gadget Night**  
If you have a special method or technique bring it along to share, as well as an open discussion with question and answers.

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**Pollinators make critical contribution to healthy diets**

Fruits and vegetables that provide the highest levels of vitamins and minerals to the human diet globally depend heavily on bees and other pollinating animals, according to a new study. Fruits and vegetables that provide the highest levels of vitamins and minerals to the human diet globally depend heavily on bees and other pollinating animals, according to a new study published in the international online journal *PLoS ONE*.

The new study was carried out by an interdisciplinary research team, composed of pollination ecologists and a nutrition expert, based at the Leuphana University of Lüneburg, the University of Berlin in Germany, and the University of California at Berkeley and San Francisco. The research team showed that globally "animal-pollinated crops contain the majority of the available dietary lipid, vitamin A, C and E, and a large portion of the minerals calcium, fluoride, and iron worldwide. The yield increase attributable to animal-dependent pollination of these crops is significant and could have a potentially drastic effect on human nutrition if jeopardized."

More specifically, the team showed that in the global crop supply, several key vitamins and other nutrients related to lower risk for cancer and heart disease are present predominantly in crops propagated by pollinators. These include the carotenoids lycopene and β-cryptoxanthin, which are found in brightly coloured red, orange and yellow fruits and vegetables. Other important antioxidants, including several forms of vitamin E and more than 90% of the available vitamin C, are provided by crops that are pollinated by bees and other animals.

Key minerals for the development of bones and teeth, including more than 50% of calcium and fluoride available in the global food supply, are present in crops produced with pollinators. Plant sources of calcium, such as sesame seed, almond or spinach, are particularly im-

portant in regions of the world where dairy production is often not culturally, environmentally or financially feasible. The animal-pollinated crops included in this study vary in the extent of their dependence on animal pollinators, with many able to propagate via alternative mechanisms, such as wind or self pollination. Despite this, the researchers estimate that up to 40% of some essential nutrients provided by fruits and vegetables could be lost without pollinators.

Bees and other animal pollinators are experiencing declines in many parts of the globe. Many farmers around the world depend on the European honey bee, importing them seasonally to pollinate their fields. However, the European honey bee has

suffered massive overwintering losses, proposed causes of which include disease, pesticides and lack of nutritional (floral) resources. Wild pollinators that provide pollination services "for free" are also declining rapidly as habitat is destroyed by intensive farming practices such as agrochemical-based monoculture. The results of this study demonstrate the potential impact of this pollinator decline on human health.

**Reference:**

1. Elisabeth J. Eilers, Claire Kremen, Sarah Smith Greenleaf, Andrea K. Garber, Alexandra-Maria Klein. **Contribution of Pollinator-Mediated Crops to Nutrients in the Human Food Supply.** *PLoS ONE*, 2011; 6 (6): e21363 DOI: 10.1371/journal.pone.0021363 —//—

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**Presidents Comments for October, 2014**

## Presidents Comments for November of 2014

It has been an interesting fall with warm weather in October more often than in July or August.

My own bees kept looking for food until the first heavy frost and then they remained close to their hives for the remainder of October. My bees were quite busy cleaning up any extracting equipment that I moved outside for their last snacks. They do a good job on trays and on the extractor as well as cleaning up any sump leftovers.

The David Suzuki Foundation newsletter has been mentioning a new type of pesticide nerve poison that is being developed by the chemical companies. It is called FLUPYRADIFURONE and it is applied to soil and to seeds. It travels to plant roots and then moves thru the leaves, flowers, pollen and the nectar, making the plant toxic to all insects. The issues were discussed in the Oct 25th and the Oct 31st editions of their newsletter. I would suggest that RRAA members read those particular articles. Yet Canada's Pest Management Regulation Agency wants to approve this new systemic pesticide. PMRA position is that this new pesticide may prove a risk to bees, birds, worms, spiders, small mammals and aquatic bugs. This pesticide doesn't readily break down in water, air or sunlight and when it enters streams, rivers or wetlands it may persist. Yet PMRA is not worried about the possible results/problems to any size of creatures anywhere in the environment. My question is why PMRA takes this position without any scientific study. Haven't we learned from Europe's experience with neonic pesticides????

Putting bees and the ecosystem function at risk endangers all of us. Haven't we learned from the 'Silent Spring' published in the 1960's. This book by Rachel Carson discussed the problems imposed on many creatures by the wide use of DDT.

This will be my last report as I will not let my name stand for the 2015 RRAA Executive in any position other than Past-President.

It is time for somebody else to lead this group. This is also the last time that Jim Campbell will be our MBA rep or Website co-ordinator as he wishes to have an easier life now that he is recovering from his recent illness. We have both been members of the RRAA Exec. for many years, and look forward to having less responsibilities.

I am off to Honduras in early December. I hope to share some of my beekeeping knowledge with the beekeepers in SW Honduras who are interested in increasing their production. It will be a challenge to work with Africanized Bees again.

I wish that all of you have a good holiday season and that Christmas will be a day that you and your families will enjoy.

Yours Truly----- Charles Polcyn RRAA President for 2014

[This new pesticide, flupyradifurone, is very similar to an existing class of pesticides called "neonics". Neonics are systemic pesticides -- they don't just remain on the surface, but are absorbed into plant tissues, and this new pesticide works the same way. Research shows that neonics severely impair bees' immune systems, making them vulnerable to deadly viruses as well as other behaviour functions. **These pesticides have already been deemed so harmful that they are banned in Europe.**

But pesticide companies like Bayer are merciless. They're already **suing the European Union to overturn the ban!** Elsewhere in the world, pesticide companies are busy lobbying and bullying politicians against a ban, like in the United States. Editor] ---

**Red River Apiarist's Association**

October 21, 2014

Minutes

Chair: Charles Polcyn

Recording Secretary: Armand St. Hilaire, Art Quanbury

## Correspondence:

Thank you letter from Lord Roberts School for the honey from the honey show that was given to the school.

## Comments from the Chair:

Charles commented on the informative articles in the recent Newsletter and positive comments were made by Ken, the Newsletter editor. There was some discussion on the different uses of honey besides as a food product. Charles commented on the high visibility of the yellow volunteer shirts at the Honey show. It was commented that the bees are taking up a lot of sugar syrup this year. Charles had some expenses arising from the honey show that he will pass on to John Speer for payment. Responses from the mayoral candidates indicated that they were not against a change in the bylaw to allow bees to be kept in the city.

## Minutes of September 9 meeting:

Moved by Ron Rudiak and seconded by Christos Agiriou that the minutes of the September 9, 2014 meeting be accepted. CARRIED.

## Presentations:

David Ostermann talked about fall management and wild pollinators. Here are some highlights of his presentation: Re: wintering ways; starts in spring, winter comes quickly, indoor vs. outdoor (Outdoor wintering seems to result in stronger colonies than indoor wintering)

Re: Essentials for wintering: young strong queen, protection from elements, ventilation, adequate food supply, disease free colony.

Re: Food Stores; pollen stores are important. (The high winter losses in 2012, 13 were partly a result of lack of pollen); 4-6 combs of honey or pollen/honey are needed but this can be hard to assess because sometimes pollen is stored over honey (or vv). Also, not all foods are equal; different types of sugar providing honey itself, etc There are some factors that cannot be controlled: eg. Weather is one.

## Wild Pollinator Information

There are 170 species of wild pollinators in Manitoba and 970 species across Canada. Many of these wild pollinators are affected by widespread pesticide use and the reduction of habitat caused by the removal of windbreaks and the widespread use of herbicides. It is important to get this information about wild pollinators out to the public. Information on wild pollinators was obtained from observations on > 1000 acres of raspberries and strawberries maintained by 80 operators. Some of the 15-20 species of bees found in the berry crops included: honey bees, bumble

bees, sweat bees, mining bees and other insects including various wasps, mantid fly, hover fly, leaf cutter bee and bee beetle.

## Waldemar Damert Presentation

Waldemar presented details of his wintering techniques showing his insulation boxes that he uses for outdoor wintering. He also commented on the importance of a young healthy queen and said the older queens have less hair than young ones and that young ones are more vigorously active and will try to hide from the light. An important point for successful wintering is not to have young bees in late fall since this brood will eat more food and not leave enough for winter.

## Details of his insulation box and wintering techniques:

Boxes work best for two hives that are single brood chambers pushed together side by side. Some bottom boards protrude as a flight deck so he suggests you could cut out the insulation to fit but its best to cut the protrusion decks off to maximize insulation.

## Openings:

Hive openings are: brood chamber top and bottom 3/8 x 2 1/2 inches [inner cover (Waldemar makes his inner covers 1/8 inch smaller or 1/16 th less on all sides so less problems with lids or winter covers) and bottom entrance reducers]

For the winter the 2 inch high density Styrofoam box openings are: Bottom 3/4 x 8 inches and Top 1/2 x 3 inches.

Remove outer top telescoping cover and fit insulated boxed snugly over the 2 brood chambers.

Note that the box is 1/4 inch bigger than his hive boxes (1/8 inch space on all 4 sides).

He also places a piece of 2 inch insulation under the bottom as well or inserts insulation into the lower bottom board.

In early March close the bottom opening  
Open it again in April

In spring feed icing sugar and honey mixture or liquid honey and warm honey

## Search Committee for New Officers

Alex Remkes and Victor Dyck agreed to sit on the search committee. The committee also needs two executive members.

## Door Prize winners

Albert Anderson	beeswax
Doug Beckingham	gift certificate
Hans Borst	wallet
Chris Agiriou	hair curlers (for queen rearing)
Alex Remkes	candy

Adjournment The meeting adjourned at 9:30 pm. Next meeting is Tuesday November 18 (one week later than usual) at River Heights Community Club. Time is 7:30 pm. ) at River Heights Community Club. Time is 7:30 pm.

## MBA Report November 2014

Jim Campbell, MBA Representative

Directors of Manitoba Beekeepers' Association (MBA) are preparing for the 109<sup>th</sup> Annual General Meeting of the organization on 12 November, in Neepawa. Designated Representative attendees will review the 2013-14 Year-End Financial Statements, review by-law changes, elect a new board member plus debate several resolutions.

Marcie Smerchanski, Health Canada-Pest Management Regulatory Agency, is slated to present information on the bee health study associated with corn planting, done throughout 2014 season. The study was to collect samples within corn planting areas and from areas where no corn existed, so that data could be compared.

MBA joined the Manitoba Corn Growers Association along with several other groups to meet with Conservation and Water Stewardship staff in early November. The purpose of the meeting was to review things like Insecticide Regulations, Corn Planting changes adopted in 2014, Education provided to industry members, and Best Management Practices utilized.

MBA members are concerned about the blacklegged (deer) tick and the impact on its members. Beekeepers are among the most vulnerable group, as they may place hives in areas where long grass occurs, plus they manage hives periodically from April to November. Members desire to find out where current and future sites most likely to support a tick population. In concert with Dr. Kateryn Rochon, Department of Entomology, U of M, MBA is seeking funding for a two-year tick surveillance project.

They are is to seek funding

Beekeepers —/\—

### Growing Assurance – On Farm program: Apiculture

(<http://www.gov.mb.ca/agriculture/food-safety/at-the-farm/growing-assurance-food-safety-on-farm.html>)

All Manitoba honey bee producers registered with Manitoba Agriculture Food, and Rural Development as active beekeepers are eligible to participate in this program.

Producers must also participate in a one day Biosecurity Training Workshop prior to filing an application and complete the Honey Bee Biosecurity Self-Evaluation Checklist as part of the application to access program funding un-

der the Growing Assurance for Farms – Apiculture program. The Bee Biosecurity training workshops and Honey Bee Monitoring and Diagnostic workshops will be offered at various locations around the provinces (i.e. workshops locations and dates TBA).

After the producer has completed the one day Biosecurity Training Workshop and Biosecurity Checklist he/she will be invited to submit an application for program funding, which can be drop off at local GO Centres or submitted by mail using the mailing directions on the application form. The training workshops will identify, which projects are best suited to address the areas of biosecurity important for individual producer's farm. Information on how to document the impact associated with adopting those biosecurity practices will also be provided during the workshops. The following equipment and Good Agricultural Practices (GAP) have been identified in support of assisting producers to incorporate on farm the National Bee Farm Level Biosecurity Standard. Applicants to the Growing Assurance Program for Farms are eligible for up to 65 percent of the total cost of the eligible equipment and GAPs.

In the case of the brood comb exchange program and the irradiation of equipment and bee feed programs, it is very important that the producer contact the cooperating facilities (i.e. MacGregor Wax Works and Acsion Industries) to make an appointment prior to delivering the equipment. Producers that do not have an appointment prior to delivery may be turned away until they have secured a delivery appointment. It is important to note that in the case of the brood comb exchange program, receipts for the delivered of brood comb will be required to be submitted along with the receipts for the purchased replacement frames and/or foundation equipment in order to qualify for the 65% rebate on total cost. If a producer access funding for comb exchange under a previous Growing Forward agreement (e.g. GF1), they would only be eligible to exchange comb under the new Growing Forward 2 (GF2) up to a combined maximum of the lesser of 1000 comb or \$2000 of replacement comb and/or frames receipts. For example:

- 500 old brood combs exchanged under GF1 and 500 old brood combs exchanged under

GF2 would be permitted .

- 300 old brood combs exchanged under GF1 and 800 old brood combs exchanged under GF2 would be permitted .
- 1 old brood combs exchanged under GF1 and 999 old brood combs exchanged under GF2 would be permitted .

Applications will be received and approved on a first come first served basis keeping within allocation levels for different programming. Application will be received until December 5<sup>th</sup>, 2014. All claims will have to be submitted within the fiscal year they were undertaken. For more information about the program and workshops, please contact Rhéal Lafrenière, 204-945-4825 or email rheal.lafreniere@gov.mb.ca .

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trated in an area of 10 km radius. Italian beekeepers have asked that the policy of compulsory destruction be halted, and other measures to avoid spread be implemented.

Dr. Franco Mutinelli of the Istituto Zooprofilattico Sperimentale delle Venezie<sup>2</sup> says: "Our inspections have shown us that the beetle is found in strong bee colonies as well as weak ones, in freshly made combs as well as old ones, and in nucleus colonies as well as full colonies. However, until now the infestation appears limited to this area of Calabria region."

The President of the international honey bee protection network COLOSSI Prof. Peter Neumann says: "The COLOSS association is greatly concerned about this discovery, which represents the permanent arrival of this pest into Europe. It is inevitable that it will spread to other European countries, but we cannot yet predict what its effects on the beekeeping industry will be. COLOSS members will work together to bring scientific results into practice for the benefit of beekeepers to help them fight this serious pest." (*COLOSS Honey Bee Research Association News Release*) —/\—

### The Small Hive Beetle Is in Europe to Stay

The small hive beetle (*Aethina tumida*) is an exotic pest originally from South Africa which can infest honey bee (*Apis mellifera*) colonies, destroying combs and brood often causing total colony loss. It invaded the southern USA in the 1990s causing significant economic loss, and has later been found in Australia, Canada and elsewhere. It is subject to statutory control in most European countries, and contingency plans have been in place for some years in anticipation of its arrival.

On 11<sup>th</sup> September 2014 the small hive beetle was discovered by beekeepers in Gioia Tauro, in south west Italy. The source of the outbreak is currently unknown. Attempts were made to eradicate the beetles, by killing colonies and treating soil with insecticide, setting up a 20 km protection zone and 100 km surveillance zone around the infested colonies.

Subsequent investigation has found that it is present in 48 apiaries of 13 bordering municipalities, all of them concen-

### Using microscopic bugs to save the bees

Date: October 27, 2014

Source: Brigham Young University

Summary: For decades, honeybees have been battling a deadly disease that kills off their babies -- larvae -- and leads to hive collapse. It's called American Foulbrood and its effects are so devastating and infectious, it often requires infected hives to be burned to the ground. Now researchers have produced a natural way to eliminate the scourge, and it's working: Using tiny killer bugs known as phages to protect baby bees from infection.

For decades, honeybees have been battling a deadly disease that kills off their babies (larvae) and leads to hive collapse. It's called American Foulbrood and its effects are so devastating and infectious, it often requires infected hives to be burned to the ground. (continued on pg )



Editor's Note by Ken Rowes  
 Sure glad the weather cooperated to finalize my wintering. Spent September clearing new apiary site and installing an electric fence, October making new bottom boards, screen bottoms and Styrofoam winter boxes. Covered hives 6 a m Friday Nov 7.

November 18, 2014 meeting will be the last for Charles Polcyn as president and Jim Campbell as MBA representative so it will be a night to gender new individuals to take on these positions.

November is the time to assess the summer production and hive performances. Lay out things to do and when to have them done. Some things are the cleaning and repair of equipment. Getting sugar on sale or up grading equipment.

Bee well and may the holidays be a blessing to you and family. PS this has been a rush so I apologize for any errors in advance.

## CLASSIFIEDS

**1 For Sale:** Plastic queen excluders \$3.50 each. SS Tank holds 8 drums of honey, \$1800 OBO. Contact, Lance W. **Phone 204-712-6783, Email; lancewld@gmail.com**

**2 For Sale:** heavy frames of pollen - \$60 per super of ten frames, 15 supers of plastic frames - \$34 ea. Wrecking 2005 F-350 4x4 - asking \$4,000 OBO Booking spring colonies - minimum 4 frames of brood - mid May - \$250 30 honey supers with plastic comb - \$32 each Winter wraps made to your specifications - \$45 to \$65 each Interlake Honey Producers Ltd. Interlake Honey Producers, Fisher Branch, MB 204-372-6920 . Can deliver to Winnipeg. Supers are in good to average shape and all the frames are fully drawn out plastic frames. We have no AFB history. **Paul Gregory paul@interlakeforageseeds.com**

**3 For Sale:** Bee Equipment, Nucs, Plastic Feeder Frames, Box & Frame Parts. Contact **Charles Polcyn at (204) 284-7064** or by Email- **charles\_polcyn@ymail.com**

**4 For Sale:** 6 hive top feeders, 20 frames with foundation call 204-612-2754 **Doug Beck** or e-mail **doug-janetb@hotmail.com**

**5 For sale:** (1) New inner covers 7/8" x 7/8" pine rimmed with 3/8" solid plywood. \$8.50 each (2) New rosin-paraffin dipped hive boxes assembled with stainless steel frame rests. Good for lifetime. \$20.00

*The Bee Cause* is the official publication of the Red River Apiarists' Association for distribution to its members and their colleagues in the beekeeping industry. It is published eight times a year on a monthly basis except December and the summer months of June, July, and August when membership meetings do not occur.

Articles can be best submitted in word documents as email attachments. Though they may be edited for spelling and basic grammar, no changes will be made to their contents, message and opinions. They are those of their originator and not of the Red River Apiarist Association.

Deadline for any submission to this newsletter is the second Saturday preceding the membership meeting to allow for publishing and mailing delays. Regular membership meetings are normally scheduled 7:30 PM on the second Tuesday of every month at the **Corydon Community Centre River Heights** located at 1370 Grosvenor Avenue in Winnipeg except the months as noted above.

The Red River Apiarists' Association, formed in 1963, represents the beekeepers of the Red River Valley and environs in southern Manitoba. The association provides a forum for the promotion of sound beekeeping practices through education, networking opportunities, meetings, field days, workshops, presentations by local apicultural experts, as well as the dissemination of this monthly newsletter.

*We are on the web!*  
[www.beekeepingmanitoba.com](http://www.beekeepingmanitoba.com)

each (3) New assembled standard wood frames with self-made chemical and disease-free beeswax wired foundation. \$3.50 / frame. (5) Approximately 50 empty wine bottles. Free of charge. **Contact: Ted Scheuneman 204-338-6066**

**6 Wanted:** Honey contact: **John at 204-943-0166 Email: honeyb@mymts.net**

**7 Rental:** for the small beekeeper **Yes my SS 4 frame extractor is still for rent and will be next year : Ken at 204-755-3427 or roweskd@mymts.net**

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Treating Foulbrood is complicated because the disease can evolve to resist antibiotics and other chemical treatments. Losing entire hives not only disrupts the honey industry, but reduces the number of bees for pollinating plants.

Now an undergraduate student at BYU, funded by ORCA grants, has produced a natural way to eliminate the scourge, and it's working: Using tiny killer bugs known as phages to protect baby bees from infection.

"Phages are the most abundant life form on the planet and each phage has a unique bacteria that it will attack," said Sandra Burnett, BYU professor of microbiology and molecular biology. "This makes phage an ideal treatment for bacterial disease because it can target specific bacteria while leaving all other cells alone."

Although phages are plentiful in nature, finding the perfect phage for the job takes a lot of hunting. That's where student Bryan Merrill comes in.

Merrill has been researching ways to treat American Foulbrood since joining a "Phage Hunters" class his freshman year at BYU. Merrill loved the class, which introduced him to the process of phage identification, and so he approached Burnett with hopes of researching treatment for the disease under her tutelage.

"This bacteria has been a problem in honeybees for a long time," Merrill said. "It infects the larva when they're teeny tiny. Even a few spores will infect and they'll start eating the larva from the inside out. It doesn't hurt the adult bees, but all of the sudden the bees can't replenish the population and the hive just collapses."

When hives are infected, beekeepers generally treat their hives with antibiotics. However, this is usually only a temporary solution. If the bacteria returns, it will most likely develop to be resistant to the antibiotics. From there, bee owners have the option to burn the hive or try phage treatment.

"Phage is a great alternative to antibiotics, and it's a natural alternative because phages exist in nature on their own," Burnett said. "And just the nature of a phage itself is that it's self-replicating at the expense of the bacteria. It multiplies itself so there are more of them to hunt down the bacteria. Then as soon as the host is gone, the phage just disappears."

Once they identify the perfect phage, Burnett, Merrill

and other students replicate it in the lab so it can be applied to the hive with a sugar-water solution. Like a virus, the phage get to work infecting the harmful bacteria until it is gone.

After a lot of gene sequencing and analysing, Merrill has identified five phage candidates for honeybee treatment, cleverly named after former BYU basketball stars (Abouo, Davies, Emery, Jimmer1 & Jimmer2). His findings appear in a recent issue of high ranking biotechnology journal BMC Genomics.

Merrill has received two ORCA grants to fund his research over the years and has raised several successful beehives for himself.

Story Source:

The above story is based on materials provided by Brigham Young University. Note: Materials may be edited for content and length.

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### Researchers identify queens, mysterious disease syndrome as key factors in bee colony deaths

March 4, 2013 North Carolina State University

#### Summary:

A new long-term study of honey bee health has found that a little-understood disease study authors are calling "idiopathic brood disease syndrome," which kills off bee larvae, is the largest risk factor for predicting the death of a bee colony.

"Historically, we've seen symptoms similar to IBDS associated with viruses spread by large-scale infestations of parasitic mites," says Dr. David Tarpy, an associate professor of entomology at North Carolina State University and co-author of a paper describing the study. "But now we're seeing these symptoms -- a high percentage of larvae deaths -- in colonies that have relatively few of these mites. That suggests that IBDS is present even in colonies with low mite loads, which is not what we expected." The study was conducted by researchers from NC State, the University of Maryland, Pennsylvania State University and the U.S. Department of Agriculture (USDA).

The study evaluated the health of 80 commercial colonies of honey bees (*Apis mellifera*) in the eastern United States on an almost monthly basis over the course of 10 months -- which is a full working "season" for commercial bee colonies. The goal of the study was to track changes in bee colony health and, for those colonies that died off, to determine what factors earlier in the year may have contributed to colony death. Fifty-six percent of the colonies died during the study.

"We found that colonies affected by IBDS had a risk factor of 3.2," says Dr. Dennis van Engelsdorp of the University of Maryland, who was lead author on the paper. That means

(from Pg 7) that colonies with IBDS were 3.2 times more likely to die than the other colonies over the course of the study.

While the study found that IBDS was the greatest risk factor, a close runner-up was the occurrence of a so-called "queen event."

Honey bee colonies have only one queen. When a colony perceives something wrong with its queen, the workers eliminate that queen and try to replace her. This process is not always smooth or successful. The occurrence of a queen event had a risk factor of 3.1.

"This is the first time anyone has done an epidemiological study to repeatedly evaluate the health of the same commercial honey bee colonies over the course of a season," Tarpy says. "It shows that IBDS is a significant problem that we don't understand very well. It also highlights that we need to learn more about what causes colonies to reject their queens. These are areas we are actively researching. Hopefully, this will give us insights into other health problems, including colony collapse disorder."

The paper, "Idiopathic brood disease syndrome and queen events as precursors of colony mortality in migratory beekeeping operations in the eastern United States," is published in the February issue of *Preventive Veterinary Medicine*. Co-authors of the study include Dr. Eugene Lengerich of Penn State and Dr. Jeffery Pettis of USDA. The work was supported by USDA and the National Honey Board.

#### Story Source:

The above story is based on materials provided by **North Carolina State University**. *Note: Materials may be edited for content and length.*

#### Journal Reference:

Dennis vanEngelsdorp, David R. Tarpy, Eugene J. Lengerich, Jeffery S. Pettis. **Idiopathic brood disease syndrome and queen events as precursors of colony mortality in migratory beekeeping operations in the eastern United States.** *Preventive Veterinary Medicine*, 2013; 108 (2-3): 225 DOI: 10.1016/j.prevetmed.2012.08.004

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*ment is not scientific research. Assumptions that have been made and may have influenced the results are listed and detailed in the document.*

The Animal Health Risk Assessment (AHRA) unit of the Canadian Food Inspection Agency (CFIA) conducted a risk assessment to provide scientific information and advice in support of the Canadian National Animal Health Program for the development of import policy. The CFIA's Animal Import/Export Division asked the AHRA to update and assess the likelihood of biological hazards spreading and/or becoming established in Canada, and their likely consequences as a result of the importation of honey bee (*Apis mellifera*) packages from the United States of America (U.S.). There are about 8,000 beekeepers in Canada, fewer than half of whom manage commercial beekeeping operations. The nature of commercial beekeeping operations differs across the country: some beekeepers specialize in honey production, others specialize in delivering pollination services, and many beekeepers combine both activities. Canadian beekeepers may import bee packages (each consisting of a queen bee and two or three pounds of worker bees packaged together) from Australia, New Zealand and Chile. In 1987, in response to the outbreak in the U.S. of two parasitic mites (honey bee tracheal mite, *Acarapis woodi*; and varroa mite, *Varroa destructor*), the Canadian federal Department of Agriculture closed the border to the importation of honey bees from the continental U.S. Importations of honey bee queens were allowed from Hawaii in 1993. Following the CFIA's 2003 risk assessment, the Agency allowed the importation of honey bee queens from the U.S. to help strengthen the genetics of Canada's domestic bee population and meet demands for queen bees. The importation of package bees from the U.S. continues to be prohibited.

This qualitative risk assessment is based on the approach recommended by the World Organisation for Animal Health (OIE) and consists of the characterization of hazards with entry, exposure and consequence assessments. The qualitative assessment includes the likelihood of the introduction of the hazards into Canada with the importation of honey bee packages from the continental U.S. (entry assessment); the likelihood of potential hazards spreading and/or becoming established within the domestic honey bee population in Canada (exposure assessment); and the expected magnitude of the resulting consequences (consequence assessment). Africanized honey bees, antibiotic-resistant American foulbrood, small hive beetle and amitraz-resistant varroa mite are identified as hazards associated with the importation of honey bees from the U.S. The cause of the colony collapse disorder (CCD) is still unclear; it is generally considered to be multifactorial. Due to the fact that there is no specific biological agent identified, CCD was not considered a hazard for this risk assessment.

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#### **Risk Assessment on the Importation of Honey Bee (*Apis mellifera*) Packages from the United States of America (V13) January 2014**

Canadian Food Inspection Agency

#### **EXECUTIVE SUMMARY**

*This assessment is a science-based evaluation to assist risk managers in decision making and risk mitigation. This assess-*

#### **Secrets of the Museum: Historical Insect Collections Reveal Several Bee Species in Decline**

*Summary:* A new study of North American bumble bees has identified 11 species in decline and recommends immediate conservation efforts for the most endangered species.

(October 18, 2012) – Guelph, ON

Countless drawers containing hundreds of thousands of bee specimens lie in insect museums and private (continued on Pg 9)



collections across North America, some dating back to the 1800's. These historical collections are a treasure trove of information for assessing the conservation status of species, according to a new study published in *Biodiversity and Conservation*.

Researchers with the Canadian Pollination Initiative (NSERC-CANPOLIN) mined numerous insect collections in Canada and the United States looking for information on the distribution and abundance of 21 eastern species of bumble bees. Working with their colleagues in the US, the team found that 11 of the *Bombus* species are in decline, while another eight species are stable or show an increase in abundance.

"It is really difficult to know if a species is in trouble unless you have good historical data for comparison. This is the first time data gathered from historical collections has been used to assess the current status of Nearctic bees across their entire native range," says Sheila Colla, a recent PhD graduate from York University who led the study. The study was based on 44,797 bee specimens collected between 1864 and 2009. Researchers used both taxonomic and geographic data found in collection records to measure the persistence and relative abundance of each species across the full range of their distribution. Of the 11 species found to be in decline, four are deemed "vulnerable", six are considered "endangered" and one is "critically endangered".

The bees most at risk tend to share similar characteristics. The most severely endangered species is a cuckoo bee, *Bombus variabilis*, which lays its eggs in the nests of other bumble bees to be raised by the host. Three other bee species in decline were also cuckoo bees. Other bee species most at risk tend to be long-tongued species with queens that emerge late in the season. The researchers also noted that species with smaller historical ranges were less likely to persist.

"There is still a lot of work to be done to fully understand the threats to bee populations, and what makes a particular species vulnerable to decline. But in the meantime, protecting the habitat of high risk populations should be a top priority for conservation efforts," says Colla.

Researchers from the University of Ottawa, Dartmouth College, the University of Connecticut and Yale University were additional co-authors on the study. The project was supported with funds from the Natural Sciences and Engineering Research Council of Canada, a Natural Sciences Foundation DBI grant and a state wildlife grant to the Peabody Museum of Natural History. The study is contribution #58 to the Canadian Pollination Initiative (NSERC-CANPOLIN).

**Colla, S.R., F. Gadallah, L. Richardson, D. Wagner and L. Gall. 2012.** Assessing declines in North American bumble bees (*Bombus* spp.) using museum specimens. *Biodiversity and Conservation Biology* (published online: DOI 10.1007/s10531-012-0383-2)

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### **Toxin-laden nectar poses problems for honeybees** *Date:* December 22, 2010 Newcastle University

Researchers in the UK have shown for the first time that chemical serotonin enables the honeybee to learn to avoid nectar containing toxins. Honeybees can learn to avoid nectar containing natural plant toxins but will eat it when there is no alternative, scientists at Newcastle University have found.

This means that in areas dominated by these so called 'toxic plants' -- such as almond or apple orchards -- bees struggle to find an alternative food source and so are forced to eat toxic nectar.

With honeybee populations already under stress, the Newcastle University team believe these toxin-laden nectars could, in some cases, be a factor affecting colony health.

It has long been known that while most plants reward pollinators for visiting their flowers, some offer nectar that is poisonous. Honeybees -- vital for crop pollination -- may be susceptible to some of these nectar toxins and beekeepers and scientists have long recognized they can be poisoned by the nectar.

Now researchers in the Honeybee Lab at Newcastle University have shown for the first time that the honeybee can learn to avoid nectar containing toxins. The study showed that when bees accidentally ate nectar that made them sick, they subsequently avoided the smell of the toxic flowers.

Publishing her research in the academic journal *Current Biology*, Dr Jeri Wright, director of the Newcastle University Honeybee Lab, said that understanding how honeybees learn to detect these toxins could ultimately help us to breed plants that don't produce them and protect the honeybees.

"Avoiding toxins in food is as important as obtaining nutrition," explains Dr Wright. "What we have shown here is that -- like humans -- bees are not only able to taste toxins but are also capable of learning to avoid flowers with nectar that made them feel unwell after eating it.

"The problem is that despite this, bees could be feeding on 'toxic' nectar because there is little else around -- for example, in a large orchard where they have been brought in specially to pollinate it. At a time when populations are already vulnerable and under stress, this could be crucial to their survival."

The Newcastle University Honeybee lab is one of only a handful in the UK and is playing a key role in researching the demise of the UK's honeybee populations.

In this latest research, the team found two distinct pathways in which the bees were learning to avoid the toxic nectar; the first through taste and the second by learning after the toxic nectar had been eaten.

This second pathway was triggered by the chemical serotonin -- a neurochemical that could also play a role in this form of learning in humans.

Dr Wright said the next step was to try to understand how the consumption of toxic nectar influences colony health in agricultural settings.

"It makes absolutely no sense for plants to poison the pollinators they rely on for their survival," she explains. "It may be the toxins are there to protect the plants against nectar robbery by ants --

we just don't know. "What we do know is there are a number of plant species in the UK which produce toxin-laden nectar but if there is little else around it seems the honeybees are being forced to continue to feed from these plants.

"This could well be having a major impact on the UK's honeybees and we need to understand this if we are going to protect them."

**Journal Reference:**

- 1. Geraldine A. Wright, Julie A. Mustard, Nicola K. Simcock, Alexandra A.R. Ross-Taylor, Lewis D. McNicholas, Alexandra Popescu, Frédéric Marion-Poll. **Parallel Reinforcement Pathways for Conditioned Food Aversions in the Honeybee.** *Current Biology*, 2010; DOI: 10.1016/j.cub.2010.11.040 —//\—

**An alternative to Our chemical impacting our bees in the attempts to reduce bee losses to parasites, nosema and other pathogens**

I received an e-mail from Barrie Briggs in March of 2012 suggesting an alternative approach to managing our bees to reduce their abnormal losses. He gained the ideology from European beekeepers.

Could there be an alternative treatment to reduce bee losses in strengthening the bees and their environment?

Research has suggested the causes of the problem to be more complex than just varroa mites, nosema and agro chemicals.

He stated that a proactive group of north German-and Danish commercial beekeepers questioned the deployment of chemicals

for parasite and fungi control. They thought the problem might be an imbalance in the life of the beehive.

Perhaps an alternative approach should be considered over manufactured chemicals. Simply put, try strengthening our bees and their environment.

There ha been some positive results in establishing ecological equilibrium both in Europe and in North America. Changes such as increased bee vitality by substituting an **organic Probiotic spray** concentration in place of the traditional smoke.

The concentration was developed through a fermentation process that utilized a community of lactic acid cultures and herbs.

The number of dead bees on the bottom board was reduced significantly as well as an increase in dead parasites. Before closing the hives up for winter the honey harvest was up 7%.

Barrie mentioned he is open for feed back.

That said, Rhéal has for sometime now advocated the reduction in chemical use as well as natural feed such as local pollen collection and Waldemar has been suggesting adding honey to your sugar. It seems to me hive material need to be tight and dry . Draffy wet homes are environments for pathogens although the bees try to glue them up and we come along a pry them apart. Last spring's assessment of the 2" Styrofoam winter boxes revealed very clean homes, fewer bee deaths and absolutely dry conditions at time of removing the boxes. Last meeting Waldemar mentioned that several of us tried to measure temperatures above the colonies through the front entrances. We found with weak colonies the temperatures were averaging 10 to 12 C but with the strong hives the temperatures ranged 18 – 21 C.

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**Red River Apiarists' Association  
Winnipeg, Manitoba  
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I apply for membership in the Red River Apiarists' Association. Membership includes one-year subscription to the newsletter "The Bee Cause" (8 issues)

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