

The Bee Cause



Volume 9, Issue 8

November 2012

- Next general meeting is 7:30 Tuesday, November 13th at the **River Heights Community Centre, 1370 Grosvenor Ave., Winnipeg.**
- (in room right off main-door)

Speaker: Show & Tell night for Beekeeping Gadgets & Social Gathering

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**Thermoregulation in Bees By Bernd Heinrich and Harald Esch
American Scientist Vol. 82 p. 164 - 170. (continued from October)**

Heart Loops and Honey Drops

Differences in thermoregulation among honeybees, bumblebees and carpenter bees emerge largely because they occupy different habitats. The honeybee is of the tropical origin, but it has been able to invade the northern temperate zone because of its social organization—warmth generated from the many individuals in a hive— and its habit of nesting in tree cavities. Foragers in the field, however, must face the thermal challenges alone, demanding adequate morphological and physiological designs. A

crucial feature of a honeybee's thermoregulation arises from its circulatory system, which helps retain heat in the thorax.

In insects heat is lost directly from the thorax to the air, and usually also through the abdomen. A bee's abdomen, which contains the honey stomach, can weigh four times as much as the thorax, and the abdomen could draw most of the heat out of the thorax. Only the thorax, however, must remain hot for the insect to be flight-ready. If a bee could shut off all unnecessary heat loss to the abdomen, it could forage at lower ambient temperatures.

Honeybees have a short thoracic pile, composed of hairs, that retards convective heat loss from the thorax, but a more important mechanism is a counter-current heat exchanger. It eliminates almost all heat loss to the abdomen, despite the fact that blood must transport fuel from the abdominal honey-stomach to the thoracic flight motor.

A honeybee's heart is located in its abdomen. The heart pumps blood from the abdomen into the head through the aorta. Blood returns to the heart through the open body cavity. A honeybee's is arranged in nine loops in the

narrow petiole area, or waist, that connects the abdomen to the thorax. The blood is heated in thorax and then flows back around these loops before returning to the abdomen. The loops promote counter-current heat exchange in three ways. First, they create a large surface for heat exchange, so that the heat from the warm blood flows into the cooler petiole, where the heat is returned to the thorax. Second, resistance in the loops slows down the blood, allowing more time for heat exchange. Third, the loops obliterate discrete pulses of blood that might otherwise be shuttled quickly through the petiole without heat exchange. In support of the heat-exchanger hypothesis, they and others have found that honeybees never heat up their abdomens, even when the thorax is heated to near lethal temperatures.

In addition to flying at low temperatures, honeybees can fly at higher temperature than any other insect of their size. A flying honeybee generates a temperature excess of about 15 degrees Celsius over a broad range of ambient temperatures, from 17 to 25 degrees. Heinrich found that honeybees can fly at extraordinary high air temperature of 46 degrees Celsius, and that when doing so they maintain an astonishing average thoracic temperature only 45 degrees. Only evaporative cooling can decrease body temperature below ambient (continued on pg 4)

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Presidents Comments -- November 2012

The 2012 Honey Show of late September is long past, but there are still people calling me with questions about sources of pure honey, bees in their garage, and urban beekeeping possibilities. To all of those queries, I provide some information and request that they contact their local beekeeper or the provincial apiarists office.

The warm days of October were very few, so the opportunity for extra feeding of syrup to bees was limited to September. I hope that everyone took advantage of those +20 degree days to feed their bees. I neglected to do enough feeding then, and will hope to do some supplemental feeding indoors when I have moved my single hives inside. I will raise the indoor temperatures for a week and hope that the Boardman Jars are emptied out quickly. Each hive has been weighed and all are over 80 lbs. Flying time in October was limited so the last free flights from the hives was minimal.

The insulated Lupinetti hives I bought last spring are designed for outdoor wintering, as they have 4 inch foam walls and lids. I shall leave at least 10 of them outside on a Southern Slope of my normal bee yard and hope that they winter well. Some of these hives have a top 1 inch opening for ventilation, and others will need an inside cover with a front ventilation slot. February and/or March will tell me which hives are still doing well indoors or outdoors.

The news from the Provincial Apiarists' office regarding the arrival this fall of the Small Hive Beetle into the SW area of Manitoba was not surprising. The location is similar to the 1988 arrival of the Varroa Mite in Manitoba. Mites and Beetles do not recognize borders. Let us hope for a typical cold winter so that the life cycle of the Small Hive Beetle is interrupted by the cold clay ground in that area of Manitoba. This will certainly be a task for the Provincial Apiarists' in the spring time to see if the Small Hive Beetle has successfully made it thru our winter in that area.

The Urban Beekeeping Bylaw Adjustment report will come to a City Council Committee in mid to late November. The wording of the revised/different Bylaw will be in the City of Winnipeg Clerks notice of Agenda Items and will state what the recommendation is. However this can be modified by Council during the meeting or by a motion from the Counselors at any time during the meeting. The City Entomologist has been consulted in regard to any changes in the Exotic Animal Bylaw and has been positive in any discussions with me. I intend to attend the Council meeting and hope that there is a positive result to RRAA's request for a limited urban beekeeping bylaw.

I had a chance to visit a few beekeepers in Wisconsin during early October. They are experiencing challenges in regard to varroa mite resistance to Apistan or Checkmite and are trying different chemical concoctions to control varroa. They have not seen any sign of Small Hive Beetles yet, but are aware of their potential arrival. What was of some interest to me was the availability of reasonable priced mated queens from them in late to mid April, as well as in May. Could this area in Wisconsin be another source for queens for the Manitoba Market? This is a critical importation question for the Provincial Apiarists.

Our last meeting of the 2012 year is on November 13 at River Heights Community Club at 7:30 PM. This is usually a Gadget Night, where members bring in their inventions, or describe any beekeeping methods that have worked for them. It is also the meeting where the Executive Search Committee (2 Current Exec. Members and 2 from the Floor) is formed to find members willing to serve on the 2013 RRAA Executive. Several members of the current RRAA Executive are ready to retire from their positions and hope that there are others willing to serve on the Executive in their place. It is an opportunity for new ideas and directions that will lead the organization into its 50th year of operation.

Also this meeting has a social component that enables all of us to enjoy some light snacks and beverages as well as share some beekeeping related stories.

All my Best Wishes to ALL of you for the Holiday Season

Charles Polcyn -- RRAA 2012 President

Minutes of the RRAA General Meeting River Heights Community Club – Sept. 11, 2012

7:30 PM: Charles Polcyn opened the September meeting with a few observations about the busy summer months. First, as everyone probably noticed this was a year with an unusual number of honey bee swarms. Charles even had a call about a swarm that had taken up residence in a church belfry and was a concern to parishioners.

Another note of interest is that Reena Nerbas, a Winnipeg Free Press writer, had made the statement about honey sometimes being sweeter depending on what sugars were added by the beekeepers. Melvin Dueck from Klee-feld hastily wrote a note to the Free Press correcting the mistaken article about honey.

Minutes: Moved by Chris Argiriou and seconded by Mary Louise Chown to approve minutes of the May meeting as circulated in the Bee Cause. No changes were required.

Financial Report: John Speer reported that the RRAA has over \$5,100 in the bank. A reminder letter have gone out to members that need to renew their membership.

Funding For Research: A discussion took place regarding our status as a non profit organization that has more money in our account than we need for meeting regular expenses. We decided that a sum of 2000 dollars could be made available to support a specific honey bee related research project at the UofM.

Moved by Chris Argiriou and seconded by Margaret Smith to earmark the sum of \$2000 for a beekeeping related project at the UofM. Carried

Coffee Break: Coffee and cookies.

Program: Charles Polcyn detailed the preparation of honey for competition at the Manitoba Beekeepers Honey Show.

David Ostermann gave a power point presentation on controlling mites using formic acid, Thymol and Apivar strips in preparation for winter.

Loonie Draw: A jar of honey from Vermont and a bottle of mead went to Keith Bamford, Sandra Smith won a jar of heather honey and Marty McIlwain won a jar of buckwheat honey from Scotts Hill Apiary. Duane Versluis won an assortment of tomatoes, and Alex Remkes' name was drawn for a sample jar of honey from Kentucky.

Thanks to everyone for participating and those donating the draw items.

Ron Rudiak, recorder – RRAA

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Minutes of the RRAA General Meeting River Heights Community Club – Oct. 9, 2012

7:30 PM: Brian Smith opened the October meeting with a discussion about the honey show.

It was put forward that a considerable number of our members have difficulty with the narrow window of time to submit entries to the Bee Maid office. Many members noted that if the time for submissions was extended to the entire week of the Honey Show it would be easier to get their entries in.

Financial Report: John Speer reported that the RRAA has over \$5,428 in the bank.

Granulated Honey in the Combs: A discussion took place regarding problems with getting hard granulated honey out of the combs. This happens in the late summer when a significant quantity of crystallized honey will remain in the combs even after extracting the frames. One beekeeper mentioned that the combs could be soaked in cold water to loosen the honey and then a few of these frames can be given to strong colonies very soon after removing from the water. The bees usually will remove any granulation when the honey is loosened this way.

Wax Moth Trap: Ken Rowes mentioned that it was likely Bruce Fallis who wrote about his method of dealing with this troublesome pest. He would mix a little vinegar and honey into a cup or two of water then pour it into a two liter plastic drink bottle with a one inch hole near the top. To this liquid he would add a piece of banana skin. Hanging a few of these around the storage area for supers gets rid of the adult moths that like to lay eggs into the idle equipment.

Coffee Break: Coffee and cookies.

Program: Margaret Smith discussed their four colony wrap preparation for outdoor wintering. The Smiths also winter a lot of their bees indoors. Their outdoor colonies are set up on pallets (four to a pallet).

Ron Rudiak discussed his indoor wintering experiences and why he now winters his colonies outdoors. Indoor wintering was fine but it also means that the beekeeper needs to incorporate a backup fan system and a standby generator should be ready to connect if needed in case of a power outage of more than a few hours. It also means that someone should be on hand to keep an eye on the wintering building daily to ensure that the ventilation and heating systems are operating properly. The reason that Ron now keeps his bees outdoors for wintering is that now he is free to travel for a few weeks at a time during the winter. His wintering success is the same whether indoors or outdoors.

Next Executive Meeting: 1. Decision regarding our logo. 2. Recognizing Anne Donkin.

Loonie Draw: The honey bee doll was won by Keith Bamford.

Thanks to everyone for participating and those donating the draw items.

Ron Rudiak, recorder – RRAA

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MBA Report - November 2012

Jim Campbell, MBA Representative

Manitoba Beekeepers' Association (MBA) is busy preparing for their upcoming Annual General Meeting on November 12, 2012 at Neepawa. There has been a change of date for 2012, as some members will be leaving on Wednesday for the Bee Symposium in Quebec City. As their reports are of interest to Manitobans, the AGM was moved up to Monday. Hopefully, the notice of meeting will catch the date change so people can adjust their calendars accordingly.

There will be a session at the Annual Meeting for discussing several issues affecting our industry. Among these are the increased paperwork for obtaining Temporary Foreign Workers, changes to the application form and prices for Bee Winter Mortality Insurance, and the discovery of small hive beetle in Manitoba.

Manitoba Beekeepers have been diligent in checking for evidence of Small Hive Beetle. One element of this has been the inspection of Honey Bee Queens arriving from Hawaii again during 2012. Recent process changes in Queen shipments has proven effective, and inspections this year verified pest free queens. Thanks to special inspection efforts by Rheal and David, Queens were released to customers very quickly.

However, Small Hive Beetle evidence was discovered in the Morden area of Manitoba. MAFRI staff responded quickly to the beekeeper suspicions. In addition to submitting evidence to CFIA, MAFRI assisted in an inspection of the extracting facility and apiaries in the immediate area, where one more beetle was discovered. This led to inspection of two apiary sites nearby, with one site about 1 mile from the Can-USA border, where another beetle surfaced. As per current regulations, a temporary quarantine zone was established until such time as an appropriate control strategy can be put in place. MAFRI will consult with industry, other provinces, and CFIA to determine what is required to maintain Canadian SHB status. More details on this will be presented at the annual meeting.

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(thermoregulation from pg 1) temperature, and a honeybee dissipates enough heat to depress its thoracic temperature some 17 degrees below what it would be if only convection was available.

Each observed long ago that the honeybee flying at high temperatures in a wind tunnel often extrudes a droplet of liquid on its tongue, and Heinrich later discovered that the droplet is a key to a honeybee's thermoregulation. If a tethered honeybee's head is heated, the bee regurgitates nectar from its honeycrop when its thoracic temperature reaches 46 degrees Celsius. Evaporative cooling from the liquid cools the head immediately, and the cooled head withdraws heat from

the thorax, which is coupled to the head by blood circulation and close physical contact. Even placing a drop of fluid in a dead bee's mouth almost immediately reduces its thoracic temperature. In live bees, the heat loss exceeds that of passive cooling because high-amplitude aortic pulses probably increase the blood flow to the head.

Paul D. Cooper and William A. Shaffer of the Arizona University observed regurgitated droplets of nectar in honeybee nectar foragers when they returned to their hive from a hot desert. Pollen foragers, however, did not display that behaviour, probably because they do not forage at the high temperatures the nectar foragers do.

Nectar regurgitation is not unique to honeybees. Undoubtedly, the thermoregulatory function is derived from the honey-making function. As they have shown, a honeybee's droplet of nectar serves two purposes: it removes excess water from the nectar as part of the honey making process, and it allows honeybees to gather more nectar by foraging at temperatures that ground most other competitors with heat prostration.



Figure 1. Honeybee's heart keeps heat in the thorax, which must stay warm for flight. Blood is pumped from the heart, located in the abdomen, through the aorta into the head, where blood empties into the body cavity. The blood in the body cavity moves through the thorax, where it is heated by the activity of the flight muscles and then back to the abdomen. Body-cavity blood moving from the thorax to the abdomen passes through the petiole, where the heart forms 9 loops. The cool blood in the loops absorbs heat from the warm cavity blood before it returns to the abdomen.

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Editor's Note by Ken Rows

Well November is here and not much harsh weather nor snow in our region of the province. Bees have taken treatments, feed and are wrapped by some. Although anxious to wrap I am waiting from a more constant low temperature which I feel will be the middle of November.

Been out visiting Brian Smith in Emerson Mb. who as a wood worker has a mighty fine workshop. Impressed by the frame showcases he designed I wanted to build one myself from walnut stock my father had for some 40 years. So the pleasure of instruction and assembly, including at length discussion on finishes has been by me a pleasure to the core of my heart. Seems to continue to be the blessings in the art of beekeeping with the special relationships, especially for me of RRAA members. At our last woodworking session I planned a "Honeyb's" honey instance of honey glazed chicken garden veggies and some mellow guitar music.

Thank you Sandra for taking over the cooking and indulging me with my recipes while Brian and I worked on wood and stains, oil and other wood finishing's. Much appreciating your knowledge and time together Brian.

I managed to dropped by Armand St. Hilare's residence in Roseau River Manitoba. Beautiful and quite along the river, he has built a log stunning Log home and was building a small honey house with bear-proof doors and high windows. Says he keeps the electric fencer on all year to control even raccoons. He was willing to share his honey jam recipes and bring samples to our meeting. Your sharing is appreciated Armand.

I have included the missed Septembers minutes as we need to review and vote on them at the meetings. A legal requirement.

The new year approaches and it will be RRAA's 50th!! Have you a thought to promote for the celebration- send to editor?

Keep in mind the Classifieds- contact the editor. It's \$10 per ad for non-members.

May all your wintering hives pull through and with dryer conditions mite controls provide stronger hive the 2013 summer honey season.

Merry Christmas the editor

next newsletter January 2013

CLASSIFIED

1 For sale: Complete honey extracting line 48 Frame extractor, uncapping table, sump, tank, pump, pipes.

Contact Lance at 204-712-6783, lancewld@gmail.com

2 For sale: 20 Supers (used) for sale; \$25 each; two (2) for \$40 p/u; or delivery extra. Frames (used) \$6.00 each. Bee pollen for sale. Call 204 878-4353

Glenn & Margaret or margandg@mymts.net

3 For sale: Just a quick note saying that we have

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 River Heights Community Centre 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

approx. 200 supers of drawn plastic comb for sale @ \$32 each. 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

4 For sale: 50 frame Maxant extractor for sale with a brand new spare fibre drive wheel. I was hoping to get \$2000 for it OBO contact : wrobertson86@outlook.com -Wade Robertson

5 Wanted: Looking for good used Cowen type horizontal 28 to 60 frame extractor, plus sump and pump. Call Don Friesen, Rosenfeld, at 204-746-8863 or e-mail stonefield71@hotmail.com

6 For sale: 20 Medium supers. 20 Pail feeders with screened lids, in good condition. Contact: Lance 204-712-6783, lancewld@gmail.com

7 Wanted: 2 or 4 frame stainless steel extractor, crank or motorized contact Dennis Ross at 204 878-2924 or rosskr@my mts.net

8 For sale: 12 hive top feeders, 19 queen excluders, 4 super extractor. Contact Doug at Tel 757-4694 or doug.henry1@gmail.com

EUROPEAN UNION

EC Proposes Clearer Rules on Status of Pollen in Honey

A proposal to amend rules on honey¹ to clarify the true nature of pollen following a European Court of Justice preliminary ruling² was adopted 21 September by the European Commission (EC). In line with international WTO standards, the proposal defines pollen as a natural constituent of honey and not as an ingredient. The Court of Justice based its interpretation on the honey directive dating back to 2001 and qualified pollen as an ingredient in honey arguing that the pollen is found in honey mainly due to intervention by the beekeeper. However, the Commission proposal recognises that pollen is a natural constituent and not an ingredient of honey; it enters into the hive as a result of the activity of the bees and is found in honey regardless of whether the beekeeper intervenes. Consequently, since pollen is considered as a natural constituent of honey,

EU labelling rules requiring a list of ingredients would not apply.

The Commission's proposal will not affect the conclusion of the Court as regards the application of the GMO legislation to GM pollen in food. In particular it does not alter the Court conclusion that honey containing GM pollen can be placed on the market only if it is covered by an authorization under the legislation. Furthermore, the labelling rules on GMO in food will also be applicable³. The proposal also aims to align the existing Commission implementing powers in the Honey Directive 2001/110/EC with those introduced by the Lisbon Treaty.

The EU accounts for around 13% of global honey production (200,000 tonnes): Spain is the largest producer (33,000 tonnes), followed by Italy, Hungary and Romania (which each produce around 22,000 tonnes) and Portugal (21,000 tonnes). EU honey imports amount to around 140,000 tonnes and account for 40% of total EU consumption.

Background

This issue arose in the context of a challenge by a German beekeeper on the legal status of honey when his honey was found to contain pollen of MON 810 genetically modified maize. The German Court referred the case to the European Court of Justice for a preliminary ruling. On 6 September 2011, the European Court of Justice issued its judgement where it indicated that: a) the previous understanding of the scope of GMO legislation was wrong (this legislation was fully applicable to GM pollen in honey) and b) that pollen in honey was to be considered as an ingredient. See <http://curia.europa.eu/jcms/upload/docs/application/pdf/011-09/cp110079en.pdf>

1. Proposal for a Directive of the European Parliament and

of the Council amending Directive 2001/110/EC relating to Honey.

2. Case C-442/09, Judgment of the Court (Grand Chamber) of 6 September 2011 (reference for a preliminary ruling from the Bayerischer Verwaltungsgerichtshof (Germany))—Karl Heinz Bablok and Others v. Freistaat Bayern, OJ C 311, 22.10.2011, p. 7. The national courts in each EU country are responsible for ensuring that EU law is properly applied in that country. To prevent different EU countries interpreting EU laws in different ways, a 'preliminary ruling procedure' exists which allows a national court, if in doubt about the interpretation or validity of an EU law, to ask the European Court of Justice for advice. This advice is called a 'preliminary ruling'.

3. Following Regulation (EC) No 1829/2003, the presence of material containing, consisting of produced from authorized GMOs in food shall be labelled except where that presence does not exceed 0,9% of each ingredient.

Salut!

Rhéal Lafrenière M.Sc. P. Ag.

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The Honey Bee Research and Extension Laboratory at the University of Florida is pleased to announce the **1st Annual 'Caribbean Bee College'**.

Attached you will find the official invitation and a full-colour flyer with detailed schedule and clickable link to online registration, you can find more information at our website: http://entnemdept.ufl.edu/honeybee/extension/Caribbean%20Bee%20College/caribbean_bee_college.html

You can view the full flyer here: http://entnemdept.ufl.edu/honeybee/extension/Caribbean%20Bee%20College/CBC_FINAL.pdf

For easy access, you can find our registration here: <http://caribbeanbeecollege.eventbrite.com/>

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Honey Bees Harbour Antibiotic-resistance Genes

Conference for Can. Assn. of Professional Apiculturists

Bacteria in the guts of honey bees are highly resistant to the antibiotic tetracycline, probably as a result of decades of preventive antibiotic use in domesticated hives. Researchers from Yale University identified eight different tetracycline resistance genes among U.S. honey bees that were exposed to the antibiotic, but the genes were largely absent in bees from countries where such antibiotic use is banned. The study appears on October 30 in *mBio*®, the online open-access journal of the American Society for Microbiology.

"It [resistance] seems to be everywhere in the U.S.," says Nancy Moran of Yale University, a senior author on the study. "There's a pattern here, where the U.S. has these genes and the others don't."

Honey bees the world over are susceptible to the bacterial disease called "foulbrood", which can wipe out a hive faster than beekeepers can react to the infection. In the U.S., beekeepers have kept the disease at bay with regular preventive applications of the antibiotic oxytetracycline, a compound that closely resembles tetracycline, which is commonly used in humans. Oxytetracycline has been in use among beekeepers since the 1950s, and many genes that confer resistance to oxytetracycline also confer resistance to tetracycline.

Using sensitive molecular techniques, Moran and her colleagues screened honey bees from several locations in the United States and from Switzerland, the Czech Republic, and New Zealand, as well as several wild bumblebees from the Czech Republic, for the presence and abundance of tetracycline resistance genes. They found that U.S. honey bees have greater numbers and a more diverse set of tetracycline resistance genes than honey bees from the other countries.

Moran says it is reasonable to expect to see widespread resistance among bees, considering the decades-long use of oxytetracycline in honey bee hives. "It seems likely this reflects a history of using oxytetracycline since the 1950s. It's not terribly surprising. It parallels findings in other domestic animals, like chickens and pigs," says Moran.

Moran notes that beekeepers have long used oxytetracycline to control the bacterium that causes foulbrood, but the pathogen eventually acquired resistance to tetracycline itself. Of the foulbrood pathogens *Melissococcus pluton* and *Paenibacillus larvae*, Moran says, "They carry tetL, which is one of the eight resistance genes we found. It's possible that the gene was transferred either from the gut bacteria to the pathogen or from the pathogen to the gut bacteria."

Switzerland, the Czech Republic, and New Zealand do not allow beekeepers to use oxytetracycline in hives, so it is perhaps predictable that honey bees and wild bumblebees from these

countries harboured only two or three different resistance genes and only in very low copy numbers, suggesting that the bacteria did not require the genes very frequently.

The authors of the study point out that by encouraging resistance and altering the bacteria that live in honey bee guts, decades of antibiotic applications may have actually been detrimental to honey bee well-being. Studies have suggested that the bacterial residents of the honey bee gut play beneficial roles in neutralizing toxins in the bees' diet, nutrition, and in defending the bee against pathogens. By disrupting the honey bee microbiota and reducing its diversity, long-term antibiotic use could weaken honey bee resistance to other diseases. Hence, the treatment that was meant to prevent disease and strengthen the hive may actually weaken its ability to fight off other pathogens.

Moran says while the study is interesting from the perspective of honey bee health and could have implications for how honey bee diseases are managed, the presence of resistance genes in the honey bee gut doesn't pose a direct risk to humans. These gut bacteria, says Moran, "don't actually live in the honey, they live in the bee. We've never actually detected them in the honey. When people are eating honey, they're not eating these bacteria."

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Secrets of the Honey Bee Bite Revealed

A Previously Unknown Honey Bee Defence Weapon Against Varroa and a Potential New Natural Anaesthetic for Humans

Researchers have discovered that honey bees can bite as well as sting and that the bite contains a natural anaesthetic. The anaesthetic may not only help honey bees fend off pests such as wax moth and the parasitic varroa mite, but it also has great potential for use in human medicine.

The surprise findings discovered by a team of researchers from Greek and French organizations in collaboration with Vita (Europe) Ltd, the UK-based honeybee health specialist, will cause a complete rethinking of honey bee defence mechanisms and could lead to the production of a natural, low toxicity local anaesthetic for humans and animals.

The natural anaesthetic that has been discovered in the bite of the honey bee and measured at the University of Athens is 2-heptanone (2-H), a natural compound found in many foods and also secreted by certain insects, but never before understood to have anaesthetic properties. Independent tests have verified Vita's findings and the potential of (continued on

pg 8) (from pg 7) 2-heptanone as a local anaesthetic.

As a naturally-occurring substance with a lower toxicity than conventional anaesthetics, 2-heptanone shows great potential. Vita has already patented the compound for use as a local aesthetic and is seeking pharmaceutical partners to develop it further.

Until recently, research seemed to indicate that 2-heptanone was either a honeybee alarm pheromone that triggers defensive responses, or a chemical marker signalling to other foraging bees that a flower had already been visited. Vita's results contradicted these notions.

The new research clearly shows that 2-heptanone paralyzes small insects and mites bitten by bees for up to nine minutes. Somewhat like a snake, the honey bee uses its mandibles to bite its enemy and then secretes 2-heptanone into the wound to anaesthetize it. This enables the honey bee to eject the enemy from the hive and is a particularly effective defence against pests, such as wax moth larvae and varroa mites, which are too small to sting.

Dr. Max Watkins, Technical Director of Vita (Europe) Ltd, said, "We are very excited about our findings on at least two levels. Firstly, the revelation that honey bees can bite enemies that they cannot sting confounds some existing ideas and adds significantly to our biological knowledge. Secondly, the discovery of a highly effective natural aesthetic with huge potential will be of great interest to the pharmaceutical industry eager to develop better local anaesthetics."

In laboratory neurophysiological trials in the School of Biology of Aristotle University of Thessaloniki (Greece), 2-heptanone was found to have a similar mode of action to Lidocaine, the dominant local anaesthetic used in humans and other mammals. 2-heptanone is found naturally in many foods such as beer and white bread and is so safe that it is permitted as a food additive by USA regulatory authorities. 2-heptanone therefore offers considerable potential as an alternative to Lidocaine. Very recent laboratory research using mammalian cells in the USA, has confirmed Vita's expectations that the anaesthetic could be as effective on humans and mammals as it is on insects and mites.

In considering the biological impacts of the findings, Dr. Alexandros Papachristoforou, a Vita researcher working under the supervision of Professor G Theophilidis in the Aristotle University of Thessaloniki in Greece, said: "It is amazing that this second line of honey bee defence has gone undetected for so long. Beekeepers will be very surprised by our discovery

and it is likely to cause a radical rethink of some long-held beliefs. It will probably stimulate honey bee research in many new directions. For instance, many beekeepers have spoken of the 'grooming' behaviour of honey bees in helping to control varroa populations. This grooming behaviour can now be interpreted as biting behaviour."

Dr. Papachristoforou described how the unexpected properties of 2-heptanone were discovered: "We were investigating wax moth control. Wax moths are a serious honey bee pest whose larvae consume wax and pollen, often completely destroying honeycomb. When exposed to 2-heptanone, which is produced naturally by honey bees, the wax moths appeared to die. However, on closer inspection, we realized that the wax moths were merely anaesthetized for a period of one to nine minutes. This was quite unexpected, so our scientific team set up a series of rigorous experiments to find out what was really happening and came up with our remarkable discovery."

The research has just been published in the peer-reviewed journal, PLOS ONE: <http://dx.plos.org/10.1371/journal.pone.0047432>

Several organizations contributed to the research in collaboration with Vita (Europe) Ltd: the Aristotle University of Thessaloniki in Greece, the French Centre National de la Recherche Scientifique (CNRS), Université Paris-Sud, Cyprus University of Technology, and the University of Athens.

Two High-Impact Journals Publish New Papers on the Parasitic Varroa destructor Mite's Role in Collapse of Honey Bee Colonies

EcoHealth Alliance, June 2012

The following is a Statement by Dr. Peter Daszak, President, EcoHealth Alliance:

EcoHealth Alliance, an organization with a long history of ground-breaking work on species declines by our disease discovery experts, welcomes the publication of two new papers on the critical issue of honey bee colony declines, focusing on the role of the parasitic mite *Varroa destructor*. The mite was introduced in South America in the late 1970s, across Europe in the late 1970s and early 1980s, the United States in 1987, and Hawaii in 2007.

The papers are in high-impact journals Science and PLoS Pathogens, both highly-respected among disease ecologists and other scientists. EcoHealth Alliance announced this month the expansion of its programs to include the study of honey bee health. Leveraging the organization's independent scientific expertise, EcoHealth Alliance scientists are building on the methodology used to understand global amphibian declines beginning two decades ago and applying that knowledge to study similar issues facing honey bees. Disease ecologist Dr. Peter Daszak led a collaboration of scientists to uncover the (continued on pg 9)

(from pg 8) underlying cause of frog species decline from habitats spanning North, Central and South America as well as Australia. The discovery of chytridiomycosis – the fungal disease causing wide spread amphibian losses – was a breakthrough amidst the vast speculation of presumed factors including pollution, UV-B light, pesticides, climate change, and habitat loss. EcoHealth Alliance's team of scientists began its understanding of issues affecting honey bee health with an extensive scientific literature review focused on economic drivers, environmental factors, pesticides, and pathogens. The literature review laid the groundwork for EcoHealth Alliance to identify gaps in the current research and colony management practices, and to suggest future research directions. The literature review, backed up by a 2011 survey of beekeepers and scientists around the world, identified research on the Varroa mite as the #1 priority for future research.

The new papers *Global Honey Bee Viral Landscape Altered by a Parasitic Mite* (<http://sciences.blogs.liberation.fr/files/abeille-varroa-virus.pdf>) in *Science* on June 8, 2012 and *Synergistic Parasite-Pathogen Interactions Mediated by Host Immunity Can Drive the Collapse of Honeybee Colonies* (<http://www.plospathogens.org/article/info%3Adoi%2F10.1371%2Fjournal.ppat.1002735>) in *PLoS Pathogens* in June 2012 answer that call in a timely and powerful way.

Dr. Medhat Nasr
Alberta Provincial Apiculturist

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2012 Manitoba Honey Show

The **2012 Manitoba Honey Show** took place the weekend of September 28th to September 30th at the Forks Market in Centre Court. It had as its theme "Keep Manitoba Bees Buzzing". Colourful signage provided a lot of information about bees, how honey is produced and other aspects of beekeeping.

The Observation Hive continues to be a popular feature with visitors of all ages. Our many volunteers spent hours near the frames answering questions and pointing out aspects of the bee/honey equipment displayed and identified on the tables.

It was a disappointment that larger or commercial beekeepers had not entered into the Honey Show as it is an opportunity to showcase the variety and quality of honey from all areas of Manitoba. Perhaps next year more of them will participate.

Several groups of students of 20 or more were at the Forks on Friday asking many questions as they moved about the tables.

Many of them spent time at the Observation Hive and indicated a good knowledge of the Honey Bee world. Both Saturday and Sunday were

moderately busy days at the Honey Show, but the good outside weather reduced attendance considerably.

Congratulations to Charles Polcyn for capturing the Champion Exhibitor prize this year. Close runners up to Charles were Brian Smith and Ray Hourd. All of the entrants showed off some of their best honey and the competition displays attracted attention from the visitors.

There was a Honey Extraction demonstration on Sunday afternoon by Charles Polcyn with assistance from Brian Smith. A crowd of 30 or more gathered in the Forks kitchen area to hear about how honey is produced and then extracted. A small two frame extractor is used to show how honey is spun out of the combs. Many people in the crowd helped with turning the crank handle on the extractor and received some of the freshly spun out honey for their efforts.

Thanks to the many RRAA volunteers helping out at the display areas, Jim Campbell for advice, all the competition entrants, MAFRI Staff and the Honey Show Judges, Rheel Lafreniere, Gordon Marks, and Martin Nechwediuk. Also thanks to the Manitoba Beekeeping Association (MBA) for funding some of the Show Expenses. Thanks to Bee Maid for their donation and providing a variety of their equipment for display purposes. The small rubber/foam black and yellow stress balls from the Bee Outfitter Shop were very popular with all ages of visitors to the Honey Show. We ran out of them by Saturday noon. Bee Maid pencils were also distributed, but were not as much in demand. Despite the marvellous weather over the 3 day weekend, many people came to the Forks for the Honey Show. They enjoyed the variety of displays and had a chance to observe the bees, talk with beekeepers and perhaps purchase different types of honey from the two vendors, one from Anola and the other from Whitemouth. Three different television stations also came to the Forks for brief interviews. CTV did a live interview video for a mini- honey show starting at 6:40 AM on Friday morning Videos and interviews were made by two other stations on Saturday and Sunday. The 2012 HONEY SHOW enabled visitors to learn more about honey and the honey bee. Beekeeper volunteers realized that people are more interested now in honey bees, including some who want to become urban beekeepers. Questions asked showed we have a lot of educating to do about bees and beekeeping.

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Sweet debating: Fructose is a simple sugar—single molecule while sucrose is double made of fructose and glucose. Although sucrose has the same calories as fructose, fructose is almost 1 1/2 times sweeter in foods and beverages. Note fructose doesn't require insulin for its initial metabolic steps avoiding blood level fluctuations. Fructose is a main sugar (saccharide) in honey.

Contrary to Melvin Dueck in *Winnipeg Free Press* July 7, 2012, adding or blending to honey is legal. Fruits and herbs to honey is legal and is encouraged as a healthier way of adding flavours to your teas and meals. The mute point is adulterating honey with a low cost sugar and calling it honey. That's illegal. Another mute point is adding fruits with simple sugars is blending and the fruit must be labelled and not called Honey solely.

Honey and Agar Fruit Jam

Armand St. Hilaire, of Roseau River

2 cups Black Currants
1 cup Raspberries
1 Tbsp. Lemon juice
2 cups Honey
1 cup water
6 Tsp. Agar Powder

Mix fruit with half cup water and bring to a boil.
Dissolve agar in half cup of water and add fruit mixture and bring to a boil.

Cool down to about 50 degrees Celsius and add 2 cups of honey.

Mix well then fill jars and cool for a few hours. Stir the before it sets to spread fruit evenly.

N.B. Agar is added at a rate of 1 tsp. per cup of jam.

Armand freezes the extra jams to prevent spoilage, noting that the jam has not been sterilized.

Come to the November meeting and meet Armand, even sample some of his home-grown fruit jams.

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Class 2

Comb Honey

First place: Alex Remkes
Second place: Charles Polcyn

Frame of Honey

First place: Brian Smith
Second place: Ray Hourd
Third place: Charles Polcyn

Beeswax

First place: Brian Smith

Class 3

Best Taste

First place: Ray Hourd
Second place: Donna Ladan

Champion Honey Show Exhibitor

Best of Show 2012: Charles Polcyn

Honey Judges:

Gordon Marks
Martin Nechwediuk
Rhéal Lafrenière

Congratulations to all entrants!!

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MANITOBA HONEY SHOW

2012 Competition Results

Class 1

Liquid Honey, White

First place: Brian Smith
Second place: Charles Polcyn
Third place: Ken Fehler

Liquid Honey, Amber

First place: Ray Hourd
Second place: Brian Smith
Third place: Charles Polcyn

Liquid Honey, Dark

First place: Charles Polcyn
Second place: Donna Ladan
Third place: Ken Fehler

Granulated Honey, White

First place: Ron Rudiak
Second place: Ray Hourd
Third place: Jami Worms

Comb Honey

First place: Alex Remkes
Second place: Charles Polcyn

Honey-bee wizardry is a profound chemical tapestry from plant to man!

Many plants are self pollinating, yet cross-pollination performed mostly by honeybees produces stronger, more prolific plants that in turn produce hardier offspring.

A honeybee is any bee that produces honey and honey bees are the bees that produce honey for money.

The basic ingredient of honey made by our domestic honey bees is nectar, a watery sugar solution produced in excess by the nectary gland of plants during photosynthesis.

After a foraging trip the worker, all workers are females, returns to the hive with an average of 49 mg. Of nectar. That's 1/11325 of one pound. The nectar enters the bee's honey stomach called a crop where it is mixed with an enzyme called invertase. Invertase breaks the nectar down into fructose and glucose. The worker returning to the hive feeds the partially converted nectar to other workers who also add invertase, thereby reducing the moisture content of the nectar. As this occurs the nectar thickens and the mixture becomes honey. Reducing moist is also done by placing a droplet of nectar on the top side of a frame cell and hive air currents evaporate the moisture out.

Readings from the editor

Celebrating 50 Years

Jim Campbell, RRAA Exec

Red River Apiarists' Association will be celebrating a major milestone during the early part of 2013.

Sometime during 2013, the Winnipeg and Area hobby club known as Red River Apiarists' Association could be celebrating their 50th Anniversary. What a party that could be, as Beekeepers look ahead to marking this special event, and reminiscing about what has happened during the past years.

The Club was formed in 1963, partly in response to a need by the Manitoba Beekeepers' Association, to have people serve as promoters of the honey industry. The Provincial Honey Show simply took place within the Winnipeg International Flower Show, traditionally held during the third week of August, at the Winnipeg Auditorium, in downtown Winnipeg. Honey displays seemed compatible with gladiola and other flowers.

Although, at this time, honey shows took place at the Dauphin Fair, and the Provincial Exhibition, in Brandon, RRAA was requested to organize and staff the honey show in Winnipeg. Don Robertson, Provincial Apiarist, along with Dave Smith, Extension Apiarist, approached a

group of hobby beekeepers to determine interest in forming an association having a mandate to look after the Honey Show area.

The plan was to shift emphasis from having Honey Competitions at Beekeeping Conventions, to being more visible to the public. This public promotion started about 1951 with the Provincial Fruit & Vegetable Show, which later amalgamated with the Winnipeg Horticultural Society in 1955, getting renamed as the International Flower Show. With these shows occurring in August, commercial producers were usually busy extracting their crops and unable to do promotions.

At the organizational meeting on March 26, 1963, Mr. Don Robertson outlined the benefits of forming an association for buying packages of bees as a group, plus exchanging ideas about beekeeping and organizing field days. Later, on April 1, 1963 various committees were formulated. One of the last of the original members, Mrs. Anna Donkin, who passed away this past September 12, was appointed to the Refreshment Committee. This passion was reflected for many years, as Ken Rowes alluded to in the last RRAA newsletter.

The first regular meeting took place April 16, 1963 in the Beekeepers Room of the Manitoba Honey Co-operative, 625 Roseberry Street. At this time the first "constitution" was formed. All of this history leads us to reflect at the 50th anniversary during 2013.
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**Red River Apiarists' Association
Winnipeg, Manitoba
2013 MEMBERSHIP APPLICATION**

I apply for membership in the Red River Apiarists' Association. Membership includes one-year subscription to the newsletter "The Bee Cause" (8 issues)- \$25.00.

Name _____ Tel. _____

Address _____

City _____ Prov. _____ Postal Code _____

E-mail address _____

Signature _____

New Member [] Renewal [] Student [] [free 1st year]

Other. Please specify. _____

This completed form may be brought to the meeting or mailed with your cheque to :

**John Speer, RRAA Treasurer
Box 16, Group 555. Winnipeg, Manitoba R2C 2Z2.**

Make cheques payable to Red River Apiarists' Association.

Please do not send cash in the mail., MB R2C 2Z2