INLAND BEEMAIL

Monthly newsletter of the Inland Empire Beekeepers Association

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Presidents Corner:

President's Corner:

Let us start off with the WSU Beefest down in Pullman. After the last one I was positive I wanted to go and once again I was not disappointed.

Friday Night wine and cheese was great. The Ag building has been redone with some upgrades and looks very nice.

Saturday started out with a presentation by Dr. Sheppard and then the Asst Dean which oversees the entomology department. He told us that the state budget had been approved and for WSU there was only one department that had received additional money. The entomology department received $150,000.00 for colony health study. Very nice.

We were then split into four groups and started a round robin. In no particular order I will touch on each. The diagnostic lab was great: I could have spent many more hours in the lab. I had a great time. The best was looking through the microscopes at nosema spores and trachea mites. The bee yard by the highway was run by Dr. Steve Shepard who was in great form. Very informative down to earth comments. Few slips into technical stuff light years beyond us mortals. He was very good at drawing out responses, very little lecturing. Good stuff. We then went to the yard by the lab and looked at AFB and chalk brood. Judy Wu did another great job. She showed us a way to confirm AFB through a quick test using milk and water that she found in an old version of Health and the Honey Bee book. New is not always better. Jerry Tate ran the forth station which inspected and worked some of the WSU hives.

We have a honey flow! The only question is how long will it last. Everybody go out and do your best rain dance. Watch your hives for congestion in the top box. Some of my hives are plugging out the queen and filling up all the frames in the 2nd deep. Pull some of the frames that are capped and open up the middle slots. Move the honey frames to Nucs or start stocking the honey bank. Almost everyone needs frames in a honey bank for emergency feeding when March and April come along.

If you are using drone frames as mite traps do not forget to exchange them every 24 days even if you have four honey supers on top of the deeps. Remember each frame has over 4,000 drone cells. If you forget to exchange the drone frame you will have lots of extra hungry drones to feed and your mite population will probably triple.

Our next meeting will include a discussion on education plans and goals, the first steps. See you there.

IEBA - Meeting Minutes June

Minutes written by Linda Carney, Secretary

June 12, 2009

The June meeting was called to order by Vice-President Daren Mumau. President Ted Swenson is in Pullman attending the WSU field day of bee classes.

The Secretary's minutes were accepted as published in the Inland BeeMail.

The Treasurer reported $1,885.64 in savings and $11,053.77 in the checking account. The motion was passed to accept the reports.

No Joy of Beekeeping report.

Fair Reports- The Sign up lists for the Idaho Fair and the Spokane Interstate Fair were passed around for those present to sign. They will be available at the next meeting and also the picnic. August 26-30, 2009 is the Idaho Fair and "It's a Big Deal" is the theme.
Set up for the Spokane Interstate Fair will be Sept. 9th and the meeting will be Sept 10th. You can contact www.spokanecounty.org for entry forms.

North Yard report- One of the hives had 13 ½ frames of brood!!

The bylaws are still being transferred to computer by President Swenson. When the job is completed the membership will discuss updating the bylaws.

Put on the calendar--The Inland Empire Annual Picnic will be held August 16th at noon. We will stuff packets of honey straws until 1 o'clock and then we will have lunch. Everyone is asked to bring a main dish or dessert and something to sit upon. The Association will provide beverages, hamburgers, hot dogs, and buns with all the condiments. Also, the Association will supply plates and flatware. Rick Sherman will be bringing the famous Honey Ice-Cream for dessert!!!

Joan Nolan mentioned that we should be thinking of brochures for the January class and schedules and costs.

Another great announcement—Dat Da Dahh!! **Brandy Manchester** has just past the *certified apprenticeship* level!!!

Agenda

10 July 2009

Welcome!

Reports:

The Secretary's Report - Linda
The Treasurer's Report - Julie
Joy in Beekeeping Report – none
Fair Reports – part of new business
WSBA Report – see new business
Four Corner Bee Reports – All!!

Old Business:

IEBA Yard Report – Bob
Association By-Laws Update. Status: Copied to Word .doc. Submitted to webmaster.
IEBA hats and T-shirts –

New Business:

WSU/WSBA Beekeeper Event in Pullman Report
FAIRs !!!!!
IEBA Picnic – date selection was Sunday, 16 August, location is Plants Ferry
Education Committee planning progress

Meeting Adjourned

A cure for honey bee colony collapse?

Published online in Environmental Microbiology Reports

For the first time, scientists have isolated the parasite *Nosema ceranae (Microsporidia)* from professional apiaries suffering from honey bee colony depopulation syndrome. They then went on to treat the infection with complete success.

In a study published in the new journal from the Society for Applied Microbiology: *Environmental Microbiology Reports*, scientists from Spain analysed two apiaries and found evidence of honey bee colony depopulation syndrome (also known as colony collapse disorder in the USA). They found no evidence of any other cause of the disease (such as the *Varroa destructor*, IAPV or pesticides), other than infection with *Nosema ceranae*. The researchers then treated the infected surviving underpopulated colonies with the antibiotic drug, flumagillin and demonstrated complete recovery of all infected colonies. The loss of honey bees could have an enormous horticultural and economic impact worldwide. Honeybees are important pollinators of crops, fruit and wild flowers and are indispensable for a sustainable and profitable agriculture as well as for the maintenance of the non-agricultural ecosystem. Honeybees are attacked by numerous pathogens including viruses, bacteria, fungi and parasites. For most of these diseases, the molecular pathogenesis is poorly understood, hampering the development of new ways to prevent and combat honeybee diseases. So, any progress made in identifying causes and subsequent treatments of honey bee colony collapse is invaluable. There have been other hypothesis for colony collapse in Europe and the USA, but never has this bug been identified as the primary cause in professional apiaries.

"*Now that we know one strain of parasite that could be responsible, we can look for signs of infection and treat any infected colonies before the infection spreads*" said Dr Higes, principle researcher.

This finding could help prevent the continual decline in honey bee population which has recently been seen in Europe and the USA.

How honey bee colonies control water collection

By: Tom Seeley
Courtesy of Bee Culture

Colonies of honey bees, like all living systems, need water to survive. Water is needed not only to prevent dehydration of the adult bees, but also to prepare liquid food for the brood and to cool the hive on hot days. Often a colony's water need is met by the water that its foragers retrieve incidentally as they collect nectar, since nectar contains much water. Sometimes, however, a portion of a colony's foragers must intentionally collect water from streams, ponds, and other wet places. These are times when either the colony's nectar collection is very low, due to a dearth of nectar-bearing flowers, or its water consumption is very high, due to high ambient temperatures that necessitate intensive evaporative cooling inside the hive. A colony's need for water collection is, therefore, highly variable, and so it is not surprising that a honey bee colony possesses elegant mechanisms for controlling the rate at which its bees collect water.

Water is collected neither by the young nurse bees who prepare the brood food nor by the middle-age bees who distribute water within the hive for evaporative cooling, but by the elderly forager bees, which fly out to whatever puddle or other water supply is near the hive, fill their honey stomachs with water, and return home. Thus there exists a division of labor between the bees that work inside the hive consuming water and the bees that work outside collecting water. This division of labor implies that a colony must solve the problem of keeping a collection process and a consumption process in balance. Indeed, a prolonged imbalance between water collection and consumption can be disastrous. If consumption exceeds collection on a very hot day, a colony can overheat, causing abnormal development of the brood if not a complete meltdown of the combs.

Fig. 1 shows how a colony can adaptively adjust its rate of water collection. Martin Lindauer, a German bee researcher, installed a colony living in an observation hive in a greenhouse, where the colony's rate of water collection from an artificial water source was easily monitored. When Lindauer turned on an infrared lamp beside one of the hive's glass walls, threatening the colony with lethal overheating, the colony boosted its water intake to begin evaporative cooling inside the hive. This stabilized the hive's interior temperature. When the heat stress was removed, the colony promptly lowered its

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water intake.

Clearly, a colony can turn up and turn down its water intake as needed. To understand how it does this, we must address two puzzles: 1) How do a colony's foragers know when to begin collecting water? and 2) How do a colony's foragers that have begun collecting water know whether to continue or stop collecting water?

Let us first consider what stimulates bees to begin collecting water. Some foragers, perhaps most, are stimulated to start fetching water by the waggle dances of hive mates that have already begun to collect water. But what stimulates the very first water collectors and hence starts the entire water-collection process? In the case of water collection for cooling purposes, one might suppose that it is the sensation of high temperatures inside the hive that initially tells foragers that their colony needs water. But this is not so. You can trigger water collection in a colony occupying an observation hive even if you heat only a small area of the broodnest, where none of the foragers are located. Also, we know that a colony's foragers become strongly motivated to gather water when confined inside their hive by cold or rainy weather. The most vivacious waggle dances that I have ever seen were performed on a winter day when a bright sun raised the outdoor air temperature enough for the bees inhabiting the observation hive in my office to go outside and collect water from puddles of melted snow in the parking lot. Obviously, these foragers must have responded to some cue other than high temperatures inside the hive. What might it have been?

Evidently, what stimulates the first water collectors to action is the presence of highly concentrated sugar solution in their honey stomachs. A bee might sense this either directly, as the fluid passes over her taste organs during food exchanges, or (more likely) indirectly, as a feeling of thirstiness. Many years ago, a student of Martin Lindauer, Hans Kiechle, found a correlation between a high sugar concentration in the honey stomachs of bees near the hive entrance (presumably foragers) and their motivation to collect water. He assayed their motivation by placing a water-soaked cloth at the hive entrance and recording what fraction of the bees that contacted the cloth also drank from it. On rainy days when the bees could not forage, most had an elevated sugar concentration in their honey stomachs and most drank from the wet cloth. He also found that if he fed these bees a dilute (15%) sugar solution, he would lower both their sugar concentration and their desire to collect water.

Once a bee has begun collecting water, she must stay informed about her colony's need for more water and respond accordingly. If the need persists, she should continue collecting and perhaps even perform waggle dances to recruit others to the task. But if the need subsides, she should cease collecting. What tells a water collector to continue or stop her activity?

We now know that a water collector acquires information about her colony's need for additional water each time she returns to the hive and that she does so by noting how easily she can unload her water to bees inside the hive. If there is an acute shortage of water, a water collector's load will be taken quickly and eagerly, and she will continue fetching water. But if the colony's water needs have been met, a water collector's load will be taken slowly and reluctantly, and she will cease collecting. How exactly does a water collector sense the ease of unloading? Several years ago, I studied this question with Susanne Kühnholz, a student from the University of Würzburg in Germany. We took a colony of bees living in an observation hive to the Cranberry Lake Biological Station in northern New York State. There we labeled bees that we found collecting water on the shore of the lake, varied the colony's need for water by heating its hive with a lamp, and painstakingly monitored individual water collectors one at a time, each one for an entire day. We wanted to see in detail how a water collector's unloading experience inside the hive changed when her colony's water need went from high (heating lamp on) to low (heating lamp off). Fig. 2 shows the results for one typical bee. As long as the hive was heated (lamp on at 11:20) and the colony's broodnest was threatened with overheating, each time the bee returned to the hive she needed just a few seconds to find a bee who accepted her load. Also, she contacted only a few bees who refused to take the water, and she needed at most 1 minute from the time when she entered the hive to when she finished her delivery. But once the danger of overheating passed (light off at 2:38), the bee's search times, unloading rejections, and delivery times all increased. In the end, she needed nearly four minutes until she found a bee who accepted her water, she was rejected by hive bees more than 40 times, and hadn't gotten rid of her load after more than 10 minutes. After that, she stopped collecting water.One might wonder if water collectors pay attention to the whole constellation of variables of the unloading experience, some subset of these variables, or perhaps just one special variable. To begin to see which variable(s) might contribute most strongly to the perception of unloading ease, we calculated how much each variable increased when we turned the heating lamp off. Averaging our results for eight bees, we found that the mean

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search time increased by a factor of six, the mean delivery time by a factor of four, and the number of unloading rejections by a factor of 10. This suggests that the number of unloading rejections may be the most salient variable of unloading ease, and thus may be the primary indicator of whether to continue or stop collecting water.

Why does a water collector's ease of unloading change when her colony's need for water changes? The reason that water collectors get unloaded more easily when their colony's water need rises is that there is an increase in the proportion of bees in the unloading area (just inside the hive entrance) that accept water. The rise in this proportion lowers the number of bees that a water collector must contact before finding one that accepts water. We have learned some things about the process whereby the proportion of water receivers within a colony changes when its water need changes. First, we looked at the age distribution of the water receivers at times of low or high need for water (heating lamp off or on), and we found that it does not differ between the two conditions. The water receivers are consistently the middle-aged bees, that is, the bees that are no longer nurse bees but not yet forager bees. Thus, when a colony starts to overheat, it is the middle-age bees that increasingly seek loads of water from water collectors and then walk about the hive, distributing it to other bees or smearing it over the ceilings and sides of cells.

We also checked whether the additional water receivers that appeared when we increased a colony's water need were bees that were functioning as nectar receivers earlier in the day. We found that most were not. This means that a colony can increase the number of water receivers without strongly decreasing the number of nectar receivers. This also explains why, when we stimulated a colony's collection of water (by heating its hive), we never found that this depressed a colony's collection of nectar. This seems highly adaptive, since a colony will be more successful in foraging if its nectar collection is not lowered every time its water collection must be boosted.

The story of the control of water collection in honey bee colonies illustrates how, through patiently performed studies, we can understand our beloved honey bees both at the level of a whole colony functioning as a unit and at the level of individual bees cooperating closely to build a smoothly running society.

Tom Seeley is a professor at Cornell University and a featured speaker at the 2009 EAS Conference in Ellicottville, NY in August. For information www.easternapiculture.org.

For Further Reading:

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Kühnholz, S. and T.D. Seeley. 1998. The control of water collection in honey bee colonies. Behavioral Ecology and Sociobiology 41:407-422.

Seeley, T.D. 1995. The Wisdom of the Hive. Harvard University Press, Cambridge, Massachusetts.

Preliminary Results: A Survey of Honey Bee Colonies Losses in the U.S. Between September 2008 and April 2009.

Prepared by: Dennis vanEngelsdorp[1], Jerry Hayes[2], and Jeff Pettis[3]. ***Courtesy Bee Culture***

The Apiary Inspectors of America (AIA) and USDA-ARS Beltsville Honey Bee Lab conducted a survey between September 2008 and early April 2009 to estimate colony loses across the country. Over 20% of the country's estimated 2.3 million colonies were surveyed. A total loss of 28.6% of managed honey bee colonies was recorded. This compares to losses of 35.8% and 31.8% recorded respectively in the winters of 2007/2008 and 2006/2007. While a decrease in total losses is encouraging, the rate of loss remains unsustainable as the average operational loss increased from 31% in 2007/2008 to 34.2% in the 2008/2009 winter.

Colony Collapse Disorder (CCD) is characterized by the complete absence of bees in dead colonies or in apiaries. This survey was not able to differentiate between verifiable cases of CCD and colonies lost as the result of other causes that share the "absence of dead bees" as a symptom. The 26% of operations that reported some of their colonies died without dead bees lost 32% of their colonies, while beekeepers that did not lose any bees with symptoms of CCD lost a total of 26% of their colonies.

Only 15% of all the colonies lost during the 2008/2009 winter died with symptoms of CCD, this compares to a 60% colony loss with CCD-like symptoms in the winter of 2007/2008. While losses from CCD may have decreased in the winter of 2008/2009, losses from other causes remain a significant concern. 58% of all beekeepers reported above normal losses last year, losing a total of 32.8% of their colonies compared to the minority of beekeepers who claimed a normal or below normal loss of 17%.
These findings emphasize the urgent need for research, not only of CCD, but of general honey bee health.

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3. Jeff Pettis USDA-ARS Bee Research Laboratory, Beltsville, MD, jeff.pettis@ars.usda.gov, 301 504-8205

Commercial Bees Might Spread Disease to Wild Bees

A recent study by the University of Toronto shows that commercial bumble bees may be spreading disease to wild bees. The study postulates that commercially reared bumble bees may be responsible for the introduction of the contagious pathogen Crithidia bombi into wild bumble bee populations. The spread of this disease may be contributing to an alarming reduction in the natural pollinating bee population. Although there has been much speculation, the new study provides compelling evidence by analyzing the patterns of disease among wild bees located near greenhouses. The bees lose their ability to distinguish between flowers that contain nectar and those that don't and make many mistakes by visiting nectar-scarce flowers and, in so doing, slowly starve to death. The bees escape from the commercial greenhouses through vents and a simple mesh could help prevent their escape.

Classified Ads

Tate's Honey Farm has all of your extracting and packaging needs as well as spring packages and queens. Woodenware for all your winter projects and spring needs. Shop hours are 8:30—2:00 every Saturday at E. 8900 Maringo, Millwood. Contact us at 509-924-6669 or online at **www.tateshoneyfarm.com**

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Packages 2-3-4 lbs / or Nucs with five frames
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(509)936-0130

FOR SALE— 5 Frame NUCs
Available May 14th
Italians and Carniolans
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(509) 993-0562

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IEBA Website
www.inlandbeemail.com

WSBA Website
www.wasba.org

Hive Care

July:

The Bees.
Nectar flows are at their maximum, with plenty of bees and activity around the hive.

The Beekeeper.
Watch your colonies as they fill up the hives with nectar. Add supers as necessary and watch that the brood nest does not become honey bound. In some areas, beekeepers begin extracting in July. Supers can be pulled and extracted as early as when about two-thirds of the comb is capped.

In areas of high production, and where flows extend to mid-August, extracted combs can be returned to the hives.

Test for varroa in some randomly selected colonies. Be on the lookout for colonies with unusual population expansion, as they may be receiving large numbers of varroa infested bees from hives that are collapsing nearby.

As you survey your crop, ready some of your efforts for fair entries.

-adapted from www.backyardbeekeepers.com

Inland Empire Beekeepers Association

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Next Meeting:
Friday July 10th
Social Time 6:00 Meeting 6:30

The Inland Empire Beekeepers Association (IEBA) meets the 2nd Friday of every month at the Spokane County Ag Extension office by the County Fairgrounds, at 222 N. Havana. The association is affiliated with the Washington State Beekeepers Association (WSBA). IEBA membership dues are $5.00 for an individual or $10.00 for the entire family. This includes your receiving the *Inland Beemail*, which is published by the association every month.

IEBA

JULY BIRTHDAYS
8TH -- Steve Abbott
11th -- Julie Watts
19th -- Peggy Abbott
22nd -- Jack Knox
24th -- Charles Gross
26th -- Harry Smits

JULY ANNIVERSARIES
7th -- Joe Jovanovich & Terese Palaia
13th -- Sharon & Daren Mumau
30th -- Dale & Cherry Edwards
31st -- Bob & Sharon Arnold

Let's update the Birthday and Anniversary lists. If you are a registered IEBA member please send your name /spouse's name/b-day/anniversary dates to joan1422@msn.com so that we can celebrate you and your special day!

Beekeeping Calendar - Bob Arnold

July

Watch colony honey production and curtail additional supers once the flow is tapering off. Pull supers that are filled as soon as they are filled. Add additional supers only if the honey flow is going very well and the bees have filled the others. Honey flows from knapp weed will provide strong flows in some areas well into September but only in years with good moisture and rains in August. Alfalfa will provide slow flows in August to fill supers and provide winter brood chamber stores. For years that honey flow stops early in July, remove all of the honey supers and begin your fall work. Mark honey production on colonies by estimating the number of boxes on honey each produced. Mark colonies that need to have new queens.