

Local Buzz



June 2008

President's Message

Hello all and welcome to blackberry flow! I hope everyone is ready and supered up, I'll finish tomorrow. My packages are doing fine, they were installed on April 22nd on foundation and for the most part are 4-6 frames drawn out now. my nucs vary greatly, singles, doubles, doubles with supers and triples. the only consistency is inconsistency, but it's remarkable. Check your calendars to see what shift you want to work at the bee booth during the Nevada County Fair August 6 through August 10—sign up sheet at June meeting. See you all there.

Your President, Rob Slay

June 2nd Program

The program will be a fascinating half-hour video (projected onto a screen) about Brazilian green propolis. This propolis is collected by Africanized bees from the "Field Rosemary" (*Baccharis dracunculifolia*—a relative of our "Coyote Bush") plant, which grows on acidic waste soils. The film was made for Brazilian TV, and shows the methods of collection and processing, as well as interviews with Japanese medical researchers on its properties.

Bee Bits

By Randy Oliver

Whew! I was afraid that we were into 100 degree weather for the summer. Nice to be back to springtime temperatures. The blast of heat sure sucked the moisture out of the soil, though. The forage in the Valley is looking pretty dry. Blackberry bloom is on at this writing up to about 2000 ft elevation, but there are decent nectar flows prior from other sources. Nosema is still a mystery—some bee operations are plagued with it, others aren't seeing it. I recently

returned from presenting in Seattle, and confirmed that it was common there. Last week we began a new trial of nosema treatments, applied weekly by the "drench" method—sprinkling them in sugar syrup over the bees. The trial includes Fumagilin-B, Nosevit, thymol, HoneyBHealthy, VitaFeed Gold, bleach, and syrup controls. I hope to have results within weeks. Here's another preview of an upcoming article:

Hot-Blooded Ladies

The honey bee is a tropical insect that has adapted to temperate climates, much as humans have done—by living in heated shelters. Harvard zoologist Bernd Heinrich describes bee thermal strategies in two fascinating books: **The Thermal Warriors** and **Bumblebee Economics**. Unlike most insects, honey bees normally maintain body temperatures above ambient temperature, both individually, and as a colony. They do so in a clever way—they can "uncouple" their wings from the massive flight muscles in the thorax, and shiver—much as we shiver to warm up. However, bees have refined their shivering to such an extent, that they do it without visible shaking.

And shiver they do. They shiver to keep the brood nest at 94°F. Individual bees shiver to maintain a flight muscle temperature of at least 85°F, below which they are unable to fly. A bee readying itself to take off shivers to warm its flight motor up to about 100°F, and typically maintains it at about 95°F. Bees at the outside of a cluster hold their temperature to a minimum of 41°F, since below that temperature they are too cold to initiate shivering, and will die.

Although the bee's thorax is covered with an insulating pile, it will still chill quickly in cool air if it is not constantly generating heat. Due to thermodynamics, for every 20°F that the ambient temperature drops, the bee needs to work about twice as hard to stay warm. As I mentioned before, foraging in cool weather is very wearing on the bees!

When bees are returning from foraging during a cool day, one can see them occasionally stop to "rest." They are hardly resting! Rather, they have lost too much heat from their flight motor (thoracic muscles) due to the 15 mph "wind" passing over their bodies as they fly. **They need to stop to warm back up.** Indeed, an apparently

resting bee may be working its flight muscles harder than it would while flying!

A bee stores about 15 minutes worth of fuel in its flight muscles, and about another 15 minutes worth in its blood (Southwick 1992). Once these sources are depleted, it is dependent upon whatever nectar it has in the honey sac—and can fly much faster if the sac contains high-sugar nectar. Should a forager run out of sugar fuel while it is flying or shivering, it will die in the field. So how can you tell if a bee is really resting, or whether it is working hard to warm itself up? Simple: look at its abdomen. Much of the bee’s abdomen is taken up with air sacs. These sacs function as pumps to move fresh air efficiently through the bee (more efficiently than our own lungs). Insects obtain oxygen, and dump carbon dioxide by using branched tubes called trachea that open to the outside air at holes called spiracles on the sides of their bodies—three pairs on the thorax, and six on the abdomen.

In order to ventilate, the bee “pumps” its abdomen like an accordion, and opens and closes its spiracles so that it sucks air into the tracheal sacs in the thorax, and expels it from the abdominal spiracles (Stoffolano nd). The largest intake spiracle is the first thoracic, and it is screened by “hairs” to prevent the entry of dust and parasites (although the tracheal mite can enter this spiracle in newly-emerged bees of susceptible stocks). So if an apparently “resting” bee is pumping its abdomen, you know that it is in actuality working as hard as it can to warm up—pumping oxygen to its flight muscles, and carbon dioxide out. This one-way flow-through system of ventilation is extremely efficient. Indeed, when not flying or shivering, the bee stops the pumping action in order to minimize its tissue exposure to harmful oxygen.

The bee has a clever countercurrent heat exchange system at its waist (the petiole) which prevents thoracic heat from being lost to the abdomen. The abdomen remains unheated. However, the bee instead uses its haemolymph (blood) to pump heat to the head! By placing its head or thorax against a cell wall or capping, the bee can transfer considerable heat to the brood (Figure 6).

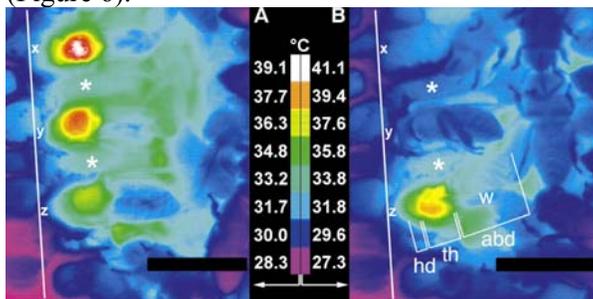


Figure 6. At left is a top-view thermograph of three bees inside empty cells adjacent to brood. The upper bee is generating the most heat. Note how the heat transfers to

the head. At right is a side view of two bees in cells. The upper is resting, the lower generating heat. The asterisks mark the walls of adjacent pupae. The white line is the comb midrib. From Marco Kleinhenz, Brigitte Bujok, Stefan Fuchs and Jürgen Tautz (2003) Hot bees in empty broodnest cells: heating from within © 2003 The Company of Biologists Ltd, by permission.

The ability to transfer heat to the head allows honey bees to perform another neat trick—they can fly at temperatures that would kill most insects (up to 113°F). They do so by using their hot head as a radiator, and if necessary, exuding a droplet of nectar from their mouth to cool by evaporation! I am struck by what an amazing little insect the bee is—it can maintain a constant body temperature similar to ours, cool itself when necessary, transfer heat to its offspring, and regulate the amount of oxygen that its tissues are exposed to!

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May Minutes

48 people in attendance. President Rob Slay opened the meeting with Q and A. A number of people are experiencing swarming...”she who hesitates is swarmed” (quoting Thom Staser), Bears have been observed in the Naturewood/Eden Valley area, putting salami on the electric fence entices the bears, making sure they get shocked before hurting the bees. More discussion regarding the possible causes of Colony Collapse Disorder ensued; regardless of the cause, good nutrition seems to minimize losses—make sure your colonies have pollen available at all times. Earwigs will

drown in a mixture of salad oil and soy sauce in a tuna can.

Ettamarie Peterson of the Sonoma County Beekeepers Association presented slides and a talk on the history of beekeeping in Californian, then presented a lovely series of photos she had taken of bees and flowers that bees like. Thank you Ettamarie!

Leslie Gault for Jack Meeks, sec

Cottage Cosmetics

A how-to guide for making fine olive oil soap and all natural personal care products using beeswax is available from local author and herbalist, Linnie McNaughton. The guide includes detailed instructions.

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December 6 - Kitchen Cosmetics for Holiday Gift

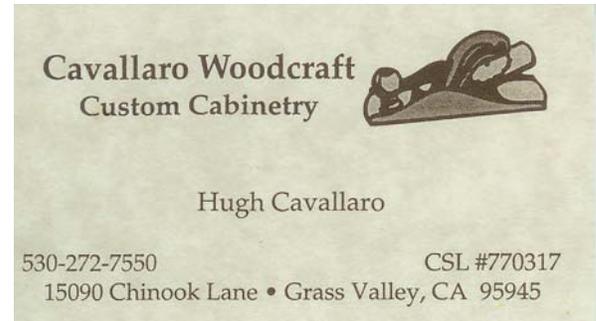
Making

For more information & to register for classes go to secure website: greenblessings.com or call Linnie at: (530) 906-0831

CDFA Solicits Input

The Bee industry should be represented at a series of 'public listening sessions' to be conducted by the

California Secretary of Food and Agriculture AG Kawamura. The sessions will help develop a vision for a more productive, competitive, and innovative agricultural sector by 2030. The sessions will be held between Wed May 28 and Tuesday July 8 all up and down the state. (Details at www.cdfa.ca.gov/agvision).



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The Nevada County Beekeepers Association is dedicated to apiculture education and promotion of the art and science of beekeeping among beekeepers, agriculturists, and the general public. This is a "not for profit" organization. Meetings are held the first Monday of each month at 7 PM at the Grass Valley Veteran's Memorial Building at 255 South Auburn Street in Grass Valley. All visitors are welcome. The newsletter is published monthly as a service to the membership. Articles, recipes, commentary, and news items are welcomed and encouraged. Submission by email is encouraged. Please submit to Leslie Gault at lesliegault@yahoo.com. The deadline for the June 2008 edition is June 25th. A limited amount of advertising space (business card size 3" by 2") is accepted and need not be bee-related. Rates are \$1 per issue or \$7 per year for NCBA members and \$16 per year for non-members. All revenue from advertising goes to the Association treasury and helps offset the cost of producing and distributing this newsletter. To receive the *Local Buzz* via email: please email your request to lesliegault@yahoo.com

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Nevada County Beekeepers Association



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