the Nevada County Beekeepers Association

Local Buzz

May 2008

President's Message

Swarm season is going strong, I picked up my 3rd one yesterday. This year looks promising—I increased my colonies to 32 and bought and installed 60 packages. Be careful what you wish for! I concluded no one would pay me what I need to work with bees, so I'll pay myself. I hope everyone has bought their bees already, as almost everyone is sold out. Mann Lake is redoing their deep frames, with thicker material on bottom, and new design is good. Your president is still learning, and having a great time doing it! Hope it's the same with you.

Your President, Rob Slay

May 5th Program

Ettamarie Peterson, of Peterson's Farm in Sonoma County, will come over to talk to us about the history of California beekeeping. Much of it started in Sutterville, now part of Sacramento. She is the immediate past president and also the newsletter editor of the Sonoma County Beekeepers Association. Ettamarie was born in Sacramento, not far from Sutter's Fort, so loves the history of that area. She is also the 4H bee project leader in Sonoma County. Come hear how our counterparts in Sonoma County keep bees!

Join us in taking Ettamarie out to dinner at Cirino's, 215 West Main St. Grass Valley at 5:15 on May 5th. Please RSVP to Rob Slay or Steven Reynolds (info on rear of newsletter).

Bee Bits

By Randy Oliver

Beekeeping is never boring to me, and this spring is no exception. First, we started with an exceptionally late almond bloom, then early warm, clear weather. Manzanita then flowered later than I've ever seen. A killing frost snuck up on us a few days ago and blackened walnut, persimmon, and fig trees.

This appears to be an exceptionally strong year for swarming. Yesterday, we followed a huge swarm as it moved from tree to tree, settling a few times. [photo attached] At each stop it dropped little balls of bees balling queens--we picked up seven in all! Luckily, the swarm finally landed low enough that I could reach the branch with a pole saw from a ladder on the bed of my truck. Note at the top of the photo the branch broken from the weight of the swarm.

I've been looking into the causes of colony dwindling, and am writing a series of articles. Here's an excerpt from one on: "Dwindling and Warranty"

Dwindling—What a difference a few days make!
OK, so much for normal colony growth and wintering. Let's talk about dwindling populations. Colony population is a simple function of bee birth rate minus bee death rate. If the queen lays 1500 eggs a day, and most emerge as adults 21 days later, the colony will experience a "recruitment" of 1500 bees per day. This potential growth is offset by the rate of death of bees as they become foragers and die (or, more specifically, ***fail to return***). If more bees emerge each day than fail to return, the colony will grow. If they are lost faster than they emerge, then the colony size will shrink.
In the collapses that are being reported, the problem does not appear to be a low birth rate, since there is (or was) (apparently) ample healthy brood present. So we'd better look instead at death rate.
Since most bees spend about three weeks as house bees during the spring and summer (Seeley 1995), the critical variable is how many days they survive as foragers (or more properly, the average number of days until they fail to return).
I used the VarroaPop model to model colony growth in the Southwest, starting with 8 frames of bees with brood, a moderate queen, no mites. For **forager longevity set at 16 days**, the population reaches 70,000 bees, and runs about 8 frames of brood during summer. This strong colony winters with 20 frames of bees. Using the VarroaPop model with the same parameters, except **forager longevity reduced to 4 days.** ***This colony never reaches 20,000 bees!*** This colony experiences a "spring dwindling" as workers begin foraging (and thus aging). However, if you were to inspect the colony on any day, it would look healthy, but lagging, since it would have about 4 frames of brood, plus a good population of "house bees"—but it would only build up to about 11 frames of bees. This colony then dwindles to about 4½ frames in fall, and then drops to about 3 frames of bees during winter. (If the simulation is continued into the next season, the colony never recovers.)

As you can see, a shortened forager average lifespan has a striking effect upon colony population. If foragers live for 16 days, the colony population builds robustly as long as there is pollen available. However, if foragers only live for 4 days, the colony is in trouble. Although the colony would appear to be healthy upon inspection, in actuality it would be struggling to stay alive! All that the beekeeper would notice would be a "lagging" colony that might suffer from both spring and fall dwindling, not build up well despite having frames of healthy of brood, and collapse during the winter for no apparent reason.
Premature loss of foragers has a profound effect on a colony beyond population size. Fewer foragers means less food in the hive, and poorer nutrition for the brood and nurse bees. Young compensate by initiating foraging earlier in life, which then depletes the number of nurses available to feed the queen and brood.
It thus appears that the key factor that causes dwindling of apparently healthy colonies is ***how many days the average forager lives until it fails to return***. That being so, we should then look at some of the factors that can decrease forager survivability. Many are of no great mystery. However, the beekeeper may not notice them at play!

The warranty is terminated for foragers
Just what causes a bee to become "old"? Adult bees move through four main stages of behavior, starting with jobs within the broodnest, then two phases working toward the periphery of the cluster, and finally working as foragers (Seeley 1995). This progress is determined by genetics, physiological development, nutrition and hormone titers (Nelson 2007), and colony needs. The aging of bees is in interesting topic, since house bees are able to forage by about the age of eight days (Whitfield 2006), but generally wait until they are much older to leave the hive (about 6 weeks in spring, or 3 weeks in summer (Neukirch 1982).
As I mentioned earlier, the aging of bees doesn't begin until they become foragers. This is an interesting concept. A general rule in biology is that animals that "expect" to live a long time (think turtles) invest precious energy and resources into the maintenance and repair of their body tissues, whereas animals that are unlikely to live very long due to predation or loss of habitat (think mice) forego maintenance, and instead invest their energy into reproduction, and thus tend to "wear out" and die at an early age, even under the best of circumstances.

Bees follow a similar pattern: nurse bees or "winter" bees have few external pressures that would result in death, so they invest in maintenance of their bodies by keeping their vitellogenin and glycogen levels high, and their immune systems strong. However, as soon as they switch to foraging, they now have a finite life expectancy due to a single wear item—their wings. An insect is unable to repair its tattered wing tips, just as we can't repair a worn tire on our cars. As an analogy, if a car came with only one nonreplaceable set of tires, there would be no reason for us to maintain the engine beyond the expected life of the tires. And there is no reason for a forager to maintain its flight motor beyond the expected life of its wings. Nature has apparently figured out the math, and programmed the forager for about 150-500 miles of total flight (Neukirch 1982).

Several mechanisms are involved in the actual "wearing out" of the forager (this a well-debated topic (Speakman 2005)). The flight muscles do not maintain their mitochondria (Tribe 1972), lose their ability to recharge glycogen (Corona 2005), and suffer from oxidative stress. Plus, as the wings get shredded, the poor bees have to beat their wings even faster in order to fly (Higginson 2004). Couple this hard work with cumulative exposure to pesticides (more on this later), pollution, and exuberant use of miticides, and forager lifespan can be greatly truncated.

In cold weather, this problem is exacerbated, since foragers must generate additional heat to keep their flight muscles warm (more on this later), and thus they may "wear out" even more quickly (again the increased oxygenation of their tissues during shivering may contribute to aging). Foraging in cool weather would be expected to accelerate the "aging" of bees.

Foragers are thus an expendable element of a colony. There are no "golden years" for old bees--they use all their limited resources to seek out and gather pollen, nectar, water, or propolis, and simply work themselves until they drop. The harder they have to work, the sooner they wear out. When apiaries contain more colonies than the immediate pasture will support, or if the water source is distant, the foragers will wear out in fewer days since more travel is involved in picking up the groceries.

The take-home message on bee aging is that it appears that a bee has a finite number of wingbeats to spend. If she doesn't fly, she can live a long time. But once she begins flying, she's got a maximum 500-mile warranty. There are various figures cited, but that works out to about 8-12 flight days for a healthy, well-nourished forager.

I will post updates to scientificbeekeeping.com.

For Sale

For Sale: Country Rubes Combo Screened Bottom Boards
Special NCBA Club Price!
Call Janet for details. 530-913-2724 or email at rubes@countryrubes.com.

April Minutes

Debra Morawski signed up swarm retrievers for the hotline list, and described materials and methods for collecting. Crowded hives, warm weather and poor hive ventilation favor building of swarm cells along the bottom of the upper box. When they're all capped, the queen leaves with half the hive. Often just splitting the hive and removing full frames of honey stops the pressure. Clorox diluted 1:10 will disinfect American Foulbrood spores in contaminated hives, if immersed for ten minutes. Fumagillin pollen patties recommended for Nosema ceranae. Deformed wing virus is associated with varroa. Sacbrood virus is widespread.
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. To order send a check for $15 to:
Green Blessings
21055 Dog Bar Road
Grass Valley 95949
Call (530) 906-0831
Green Blessings - Class Schedule 2008

- June 22- Herbal First Aid
- July 13- Luxurious Lavender
- October - 4 Felted Pumpkins
- November 1 - Cheesemaking
- November 15 - Kitchen Cosmetics
- November 22 - Soapmaking
- 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

Raffle Items Appreciated

Please help to support the club through the raffle! Bring your unwanted extras of bee equipment, home made items or whatever you think someone else might like! Thanks for your support!!! Karla Hanson, Raffle Chair

SABA Classes

The Sacramento Area Beekeepers Association (SABA) is sponsoring two classes this spring. The Sat., May 3 Intermediate Beekeeping class will be taught by Dr .Eric Mussen, one of the top bee scientists in the country! The location will also be the Sacramento County Ag building located in the County Center at Bradshaw Road and Keifer Blvd. To new beekeepers, do not be intimated by the "Intermediate" title, Dr Mussen does not talk over our heads and there is much all can learn. Call Sacramento Beekeeping Supply at 916-451-2337 for more details or to reserve a spot!

SABA will be presenting a second Natural Beekeeping class instructed by Serge Labesque on Saturday June 12, 2008, Location also at the Sac County Ag building. Minimum attendance will be 13, maximum 25 and the final day to sign up will be Monday June 8th. The fee is the $35. Sign up early to avoid disappointment. Email interest, questions or registration request to Ernie Buda, 2211budae@peoplepc.com .

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 May 21st. 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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c/o Steve Reynolds
PO Box 548
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First Class Mail
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May 5th Program

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