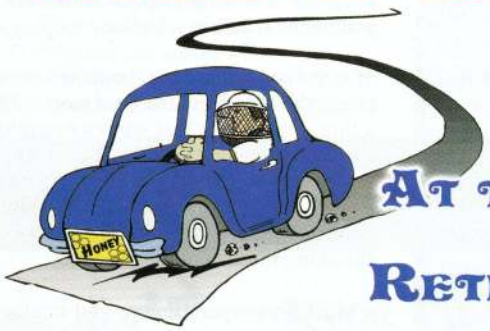
The Traveling Beekeeper



At the Western Apicultural Society Conference: Rethinking Basic Assumptions

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The 2011 Western Apicultural Society convention on the Big Island of Hawaii provided me with a return trip to this fascinating place, a chance to conduct a day-long workshop, and to hear some of the talks from the many speakers. Let me say that I do not intend to snub some excellent speakers, but have picked out a few comments that I felt were responsible for causing me to rethink some basic assumptions. So I will concentrate on a few talks.

Some statistics about dead colonies

A new spiral notebook is 2/3rds filled with notes from speakers. There are research reports and more. The small hive beetle, the varroa mite and nosema occupied many of these pages. I'd like to share statistics presented by Dr. Dewey Caron, U. of DE Emeritus professor and past president of WAS. He reported on the Bee Loss Epidemic, using data collected from beekeepers who offered up data on their losses. This, by default, makes this a biased sample. The reporting period was from October to March, which distorts data from beekeepers who lost bees before October and after March, as I did.

• Beekeepers who keep fewer colonies lose a higher percentage of their hives. In Washington and Oregon, commercial and semi-commercial beekeepers lost 21%, 24.6% and 20.8% of their colonies in 2009, 2010, and 2011, respectively. Small-scale beekeepers lost 25.8%, 44% and 29.4% during those same years. Small-scale beekeepers are those who have one to 28 colonies. They average 2 hives, the median number was 3 hives, and the most common number reported was 1 hive, with 29% of all beekeepers having just one hive. While this statistic does not surprise me, we often forget that the most common number of bee hives beekeepers have is just one colony, and that the federal government does not include them in national beekeeping industry statistics.

• Small-scale beekeepers reported 42% with no winter loss, and 58% had loss. That means that 58% of all single hive owners lost ALL their bees, a tremendous blow to the new and more inexperienced beekeepers.

• The commercial beekeepers were most likely to report non-manageable conditions, such as poor queens and pesticides as causes of their losses. Only 7% of these beekeepers reported CCD as the cause of their losses, but this represented 57% of all colonies lost.

• Using package bees, nucleus colonies and purchased hives, beekeepers replaced more colonies than they lost over the sample period.

• There were no greater losses in colonies left in the home apiary compared with those moved to either almonds pollination or fireweed, suggesting that the effects of moving were not of themselves lethal factors for colonies.

Queen quality

Retired Washington bee inspector Jim Bach discussed factors we should use to measure queen quality. Here are some of his more interesting comments:

•You want a queen retinue (the bees around the queen) of 10 to 12 worker bees, with the best queens having 15 workers in the retinue. He considers this a factor of the queen's pheromone, making her more attractive.

• The noise of a colony increases during queenless conditions, reaching about 85 decibels in a queenless colony compared to 50 db in a midsummer queenright hive.

• For the strongest colonies in the spring, overwinter colonies in three deep hive bodies.

• The lack (reduction) of queen pheromone results in queens being refused food, off colored larvae (a bit grayish like European foulbrood), nurse bees not tending brood as well, and a poor overall brood pattern.

Annual cycles of the brood nest in feral hives (as compared to managed hives)

Perhaps the most fascinating talk for me was the detailed observations made by California beekeeper Serge Labesque. His talk *Lessons from Natural Honey Bee Nests* described a series of detailed observations he has made in bee tree hives that have been carefully split so he could separate the hive, make observations on the position of the

What do you do for a beekeeping meeting in Hawaii? Sit in a way-too-cold meeting room. Here is a group shot by California beekeeper Ray Hicks.

Hawaii Recovery Panel -- L to R: Michael Kliks, Larry Connor, David Barnes, Serge Labesque, and Randy Oliver. *R. Hicks photo.*

brood nest, clustering space, food resources, drone brood and much more. He used several feral hives for this, and followed the cycle over several years.

• His basic observations were similar to those made by Dr. Tom Seeley, now at Cornell University. There was considerable variation in colony size and shape, explaining why we are able to keep bees in so many hive designs. There is a typical arrangement which allows for expansion room at both above and below the comb and cluster.

• There is a debris layer at the bottom of the bee tree nest that consists of moisture absorbing material. Bees do not go to this area, any decay and diseased wood rots quickly. One comment he made suggests that the bees find this debris/decay area repellent.

• Bees suffer in a damp environment, and as a result of his bee tree observations had adapted the practice of using follower boards (frame-shaped boards that may be moved to surround the brood and honey area of managed colony), on either side of the brood area. He uses this as a flexible method of space management extremely useful in the creation of a nucleus hive. The follower board(s) surround the smaller unit and an be move out to allow for colony growth.

• Bees in eight frames are more efficient than ten frames, so the use of a follower board on the outside of the ten frame hive body does several things. It fills the space that many hives do not naturally occupy, and it creates an outer ventilation area. Bees generate heat and moisture as they feed on honey, and this moisture and heat rises to the top of the hive. The follower board allows a space for the moist air to move up, over the tops of the frames and down the side of the hive, between the outer wall of the hive and the outside of the follower board. The mosture condenses there, and provides a region for excellent ventilation. As the cooling air sinks, the follower board provides gentle air convection.

• The use of follower boards have helped Labesque to reduce winter loss, reduce problems with stored pollen becoming covered with mold, and increased colony development. The colonies are healthier; demonstrate less chalk brood and EFB in the spring.

• In hot weather the follower boards add an extra layer of insulation, reducing the energy demand on the colony to lower the temperature of the hive. There is less fanning in the summer and the outer frames are better utilized by the colony.

• He uses screened bottom boards and allows the debris to fall though the screen.

• He uses a movable entrance reducer, held in place by clips that holds hardware cloth and movable reducer material in place. He does not use a landing board on his bottom boards.

• He maintains that the separation of the debris from the hive is like the natural hive, and the bees are healthier.

Natural comb observations

•Labesque found that there was no small cell comb in the comb he observed in California, and than most of the cells were in the range of 5.1 to 5.5 mm. In his managed hives he does not use foundation, but lets bees build natural comb. Like Seeley's observations, about 20% of all the cells are drone-sized cells, built by the bees to fill their needs for both drone production and honey storage. He places wires in the frames so bees are able to build combs that may be manipulated better by humans.

Hive organization

In location north of San Francisco (in the wine country) natural colonies have a brood area in January that expands up the tree into pre-existing combs filled with stored honey. The brood area also expands downwards, and reaches a maximum brood area in May. By July the brood area shrinks and moves UP. In August the bees accumulate bee bread (bee-processed pollen) both above and below the broodnest.

In October the brood nest is moved down and honey is added to the area where pollen is stored. The December cluster has pollen available to it that was collected in August!

The brood area of the colony and the colony size are not static, there is a constant expansion and contraction as the seasons progress. The empty space above the nest and below it acts as a buffer.

• On the comb there is a 'boundary area' between the brood and the food stores. This is a thin line of cells that are not occupied by eggs and brood or by honey and pollen. During growth of the hive the boundary area expands, but during the nectar flow the boundary area moves toward the brood area, shrinking the size of the broodnest.

• Most beekeepers ignore and neglect the need for expansion space below the brood nest. Productive hives have an area for constant relocation, storage for nectar, and are not stimulated to premature swarming by a stifling of colony development.

• Storage of accumulated pollen and bee bread in the summer prepositions the protein where the colony will need it during the late fall, winter and early spring.

• When adding extra hive boxes onto hives, he recommends that beekeepers bait the boxes with started frames of honey.

• Based on his observations on the movement of brood, he does not recommend the reversal of the brood nest in the spring. This splits the brood area, and may eliminate clustering space he feels is important to the returning foragers and for surplus bees. Rather than reversing, he advises that beekeepers add another box/super and bait that box with comb that bees are working.

• Colony feeding by beekeepers may shut down the colony broodnest by filling the brood combs.

• Queen excluders are not natural and restrict the movement of bees throughout the year.

In managed hives

January – Bees are using the center of the hive like a chimney, and move up into the bee bread and honey in the second box.
February – The broodnest expands. The early flow may start (remember this is California).
March – The flow is underway and all strong colonies have three boxes. The bottom box may be empty, but this provides the foragers with a place to cluster inside the hive (rather than at the entrance).
April – The flow continues.
May – Maximum brood area, with the expansion to the lowest body.
June – Nest shrinks
July – Bees are producing less brood. The bees produced now are likely to live longer.
August – Pollen is collected and stored in the lower brood chamber.
September –The broodnest is in the lower two boxes.
October – Brood is now in the lower box only.
November – Continued shrinkage of the

brood nest. He removes extra boxes.

December –The colony is in two boxes.

January – Brood starts in the upper box, as the cycle repeats. A period of broodlessness in December allows for increased grooming behavior against the varroa mites.

Lebesque discussed his attitudes toward various management cycles. He is against the introduction of stocks from areas outside the area, and is afraid that foreign genotypes destabilize local bee populations. He is against any areas dominated by monoculture. He seeks a strong nest cavity, a respect for bee biology and sees the need to tolerate a low level of bee pathogens in the hive to develop healthy pest-host relationships.

I look forward to seeing my New England friends at the annual Southern New England Beekeepers Assembly (information/registration at www.wicwas.com). In January, join us for the annual two-day Serious Sideliner Symposium at the ABF meeting in Las Vegas. Please check my website for a new book *Bee Equipment Essentials*.