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(Views expressed in this newsletter are those of the editor and do not necessarily represent those of the CBKA)

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Temperament of colonies

By Walter McPhee

"You need to keep feisty bees", is a phrase I have heard in relation to "Natural Beekeeping", the idea that bad temper is the natural state of bees to enhance their ability to defend themselves against predators especially wasps and maybe humans. This view is also gaining acceptance with some beekeepers in general. Feisty as in self reliant, exuberant, active, determined I can take but aggressive, ill tempered, troublesome, excitable are qualities I do not like in my bees. If your colonies are bothered by wasps get your entrance blocks on early and make sure your hives are sound and wasp resistant.

In years of beekeeping good temperament has been one of a few qualities I breed for, lack of aggression, along with disease resistance, honey production and self reliance. This mostly takes the form of culling queens from bad colonies and uniting in the spring then later in the year breeding from the best colonies. We cannot fully control the breeding of queens so this is an ongoing process.

Beekeeping is a much more pleasing hobby if you are not getting stung a lot, not just you but relations with family, neighbours and passers by are healthier if they are not getting stung from your bees, then there is the remote but serious possibility of bee stings causing anaphylactic shock. Once there was a colony at an out apiary 200 yards from my parents house and the bees were flying over or round buildings and stinging people at the house, they got sealed up and a

cup of petrol in the crown board hole. Sometimes taking out the drone brood and re-queening isn't an option.

It has been said aggressive colonies tend to collect more honey than quiet colonies which often seems to be the case, beekeepers open them up less which is a good thing but also aggressive colonies may have better robbing bees, once opened a bad tempered colony have members which follow you around the apiary disturbing the bees in every hive you open. In an out apiary at Warwick I have never been able to breed calm bees in numbers that preclude intervention, for years I have taken off the brood after artificial swarming, formed nucs and taken them back to Brampton near the home apiary to get the Queens mated then take the mated nucs back as needed. I hoped that eventually the temperament of the local bees would improve which they have a bit but not enough, and I am now too old to carry on this time consuming pantomime. If only beekeepers were ruthless enough to cull out bad tempered colonies to improve the gene pool it would benefit us all.

Thank you to Walter McPhee, of the Carlisle Branch, for the above article.

A new study by University of Maryland entomologists shows that the lifespan for individual honey bees kept in a controlled, laboratory environment is 50% shorter than it was in the 1970s. When scientists modelled the effect of today's shorter lifespans, the results

corresponded with the increased colony loss and reduced honey production trends seen by U.S. beekeepers in recent decades.

Colony turnover is an accepted factor in the beekeeping business, as bee colonies naturally age and die off. But over the past decade, U.S. beekeepers have reported high loss rates, which has meant having to replace more colonies to keep operations viable. In an effort to understand why, researchers have focused on environmental stressors, diseases, parasites, pesticide exposure and nutrition.

This is the first study to show an overall decline in honey bee lifespan potentially independent of environmental stressors, hinting that genetics may be influencing the broader trends seen in the beekeeping industry. The study was published November 14, 2022, in the journal *Scientific Reports*.

“We’re isolating bees from the colony life just before they emerge as adults, so whatever is reducing their lifespan is happening before that point,” said Anthony Nearman, a Ph.D. student in the Department of Entomology and lead author of the study. “This introduces the idea of a genetic component. If this hypothesis is right, it also points to a possible solution. If we can isolate some genetic factors, then maybe we can breed for longer-lived honey bees.”

Nearman first noticed the decline in lifespan while conducting a study with entomology associate professor Dennis van Engelsdorp on standardised protocols for rearing adult bees in the laboratory. Replicating earlier studies, the researchers collected bee pupae from honey bee hives when the pupae were within 24 hours of emerging from the wax cells they are reared in. The collected bees finished growing in an incubator and were then kept as adults in special cages.

Nearman was evaluating the effect of supplementing the caged bees’ sugar water diet with plain water to better mimic natural conditions when he noticed that, regardless of diet, the median lifespan of his caged bees was half that of caged bees in similar experiments in the 1970s. (17.7 days today versus 34.3 days in the 1970s.) This prompted a deeper review of published laboratory studies over the past 50 years.

“When I plotted the lifespans over time, I realised, wow, there’s actually this huge time effect going

on,” Nearman said. “Standardised protocols for rearing honey bees in the lab weren’t really formalised until the 2000s, so you would think that lifespans would be longer or unchanged, because we’re getting better at this, right? Instead, we saw a doubling of mortality rate.”

Although a laboratory environment is very different from a colony, historical records of lab-kept bees suggest a similar lifespan to colony bees, and scientists generally assume that isolated factors that reduce lifespan in one environment will also reduce it in another. Previous studies had also shown that in the real world, shorter honey bee lifespans corresponded to less foraging time and lower honey production. This is the first study to connect those factors to colony turnover rates.

When the team modelled the effect of a 50% reduction in lifespan on a beekeeping operation, where lost colonies are replaced annually, the resulting loss rates were around 33%. This is very similar to the average overwinter and annual loss rates of 30% and 40% reported by beekeepers over the past 14 years.

Nearman and van Engelsdorp noted that their lab-kept bees could be experiencing some sort of low-level viral contamination or pesticide exposure during their larval stage, when they’re brooding in the hive and worker bees are feeding them. But the bees have not shown overt symptoms of those exposures and a genetic component to longevity has been shown in other insects such as fruit flies.

The next steps for the researchers will be to compare trends in honey bee lifespans across the U.S. and in other countries. If they find differences in longevity, they can isolate and compare potential contributing factors such as genetics, pesticide use and presence of viruses in the local bee stocks.

JOURNAL
Scientific Reports

Thank you to Margaret Riches, of the Penrith Branch for the above article.

What do I feed my bees and when?

This is always of concern to beginners in beekeeping, especially during the winter months. The bees require approximately 40lbs of stores to see them through the winter and this can be calculated, at the start of September, by checking

the number of frames that contain sealed honey. A National brood frame will hold about 5lbs of stores and a National super frame about 3lbs of stores. This year the weather continued to be very mild and the bees were foraging until the first week in November. At that time of year it is mainly ivy that the bees are working and they appeared to be bringing in lots of pollen from the ivy. However, it has been said that honey from the ivy is not suitable for over wintering bees as it solidifies in the comb so that the bees need to collect water to soften and dilute the ivy honey to feed to their young. This year the weather was so mild that the bees may have been using it to raise young and probably using stores collected during the summer and/or that provided by the beekeeper at the beginning of September. December has been very cold, preventing the bees from exiting the hives, not that there is much forage available at this time of year. If the Queen has been laying during November there will be many more bees to feed and they will be quickly using up their stores. It is important that the beekeeper assesses the stores in the hive by checking the weight of the hive during the winter months. This can be done by lifting one corner of the hive, at the floor. Another check is to lift the roof and if you can see lots of bees near the feed hole in the crown board they will have consumed the stores lower down as they gradually work their way to the top of the hive during the winter months. During the winter, bees are not able to evaporate the water from a liquid feed and so a solid feed may have to be given. Sugar candy can be made by dissolving 2lbs of sugar per pint of water. It is a messy job requiring a lot of heat to boil the sugar and water and a sugar thermometer is recommended to achieve the desired results. An easier method is to buy bakers fondant which can be easily cut into blocks and placed into an inverted plastic container over the feed hole in the crown board. Some sort of insulation around the container will help conserve heat for the bees. In the spring, to stimulate the queen into laying, a weak syrup of 1:2 sugar to water may be fed to the bees.

Autumn Conference and Honey Show.

On 12th November 2022 the Cumbria Autumn Conference and Honey Show was held at the Bassenthwaite Village Hall. This was the first one since 2018, because of the covid pandemic. Excellent talks were given by the Cumbria seasonal Bee Inspector, Julia Hoggard, on Asian Hornet Track and Trace and Prof. Stephen Martin

about "Varroa: Is a treatment free future possible?" Margaret Riches gave a report on Penrith Beekeepers trip to Slovenia."

Winners of the Honey Show:-

The Association Cup	Ken Hodgson
The Hendran Cup and Medal	Ken Hodgson
John Dixon Cup	Julia Hoggard
Scott-Just Trophy	Keswick BKA
The Alan Tett Cup	No entries
F Hydes Cup	Jayne Whitfield
S J Wornham Trophy	Peter Weatherill
William Douglas Trophy	Julia Hoggard
The Rose Bowl	Keswick BKA
W Barton Trophy	Ian Robinson

The Alan Tett Cup is for the Beginners Class in which this year there were no entries. So come on all you new starters in beekeeping have a go next year and add a new dimension to your beekeeping skills.

Dates for your diary.

4th March 2023 Cumbria Beekeepers AGM