

Hive Talk

April 2011

Swallows, swarms and showers – this is the story of April this year. Unlike last year when winter dragged its heels and refused to shift until well into what should have been the spring, this year the coldest period, extreme as it was, happened before Christmas and the transition from winter into spring has taken place in a more 'normal' fashion. This second half of April has been warm and pleasant on the whole with some excellent flying weather for the bees. In fact, conditions have been so good a number of beekeepers have been taken unawares with swarms being reported as early as 8th April. For a Honey bee colony to swarm at such an early stage in the year means that it must have overwintered extremely well with few casualties. The queen must have started laying early and her rate of laying will have been consistently high. Although some swallows have arrived, first seen in South Derry on the same day as the first reported swarm, 8th April, they are the vanguard with only a few pairs in the area so far. As for the showers, we have had a few short sharp ones at the beginning of the month, but the dominant high pressure systems have seen them off this second half with relatively little rain over most parts of the country. A good start for the lambs, but maybe not so good for the grass!

Many beekeepers make their first inspections of the year on, or just after St Patrick's day providing the day is reasonably warm. When, and how often further regular inspections take place will depend on how each colony is behaving, but with the good weather we have been enjoying most beekeepers will now have embarked on regular weekly inspections. This frequency is determined by the natural history or biology of the Honey bee. One of the main purposes of the regular inspection is to monitor the behaviour of the bees in order to manage, if possible, their inclination to swarm. For a colony to swarm, it must first of all ensure that there is a queen left behind so that she can eventually lay viable eggs and ensure the continuity of the colony. Once preparations have been made, the old queen will take off with around half the bees to set up a new colony within a couple of kilometres of the original site. It takes sixteen days from the day the egg is laid for a queen Honey bee to emerge from her cell. However, the bees don't wait for the new virgin queens to emerge before they leave, they take off at the stage when the larvae of the potential new queens have received all their food for this stage of their life and the special elongated vertical cell in which they are raised is sealed over. This usually occurs on the eighth day. This means the beekeeper must look into his or her hives every seven days to check for signs the bees are preparing to swarm and in particular for queen cells and to take some kind of action if swarming is to be avoided. And the point of avoiding swarming is to retain as big a potential workforce as possible so that it can gather the maximum amount of nectar for conversion into honey. This is the theory, in practice it is far from straight forward and the bees have a habit of 'doing their own thing' and of surprising us – no matter how careful or how systematic we are in our 'management' of them. The reality of course is that whatever we do, and however we might improve our knowledge and the science of beekeeping, the

bees remain wild and natural creatures that we simply provide with accommodation, and food occasionally, in place of the honey we regularly plunder from them.

Previous articles in this series have looked at the properties of honey, propolis and other hive products, now it is the turn of Royal Jelly. This is the substance upon which the queen is fed all her life, but significantly it is the food that if fed continuously to a larva, ensures that it will develop into a queen. A Honey bee egg will hatch after the third day on which it was laid. The tiny larva is then fed royal jelly by nurse bees that are themselves about a week old – that is, a week after emergence. Royal jelly is produced from the hypopharyngeal glands in the bee's head and is a substance rich in protein, lipids, sugars and vitamins. All bees receive this substance in the first two or three days of life as a larva, but with workers and drones, the food is gradually changed to include more honey and pollen and is not as concentrated as that for a worker larva intended by the bees to become a queen. The implication of this is that there is no difference between an egg that eventually becomes a worker, and an egg that becomes a queen. The difference in development depends entirely on the food given and the qualities it imparts. During the two to three days in which the worker bee larvae are fed on royal jelly, they reach their maximum development; their weight multiplies about 250 times. The queen, fed only on royal jelly for her entire life, reaches maturity five days earlier than the worker bees; and, when she is fully grown, her weight is double that of the worker bee. The span of the worker bee's life is about 35-40 days during the summer (around six months for a 'winter bee') while the queen can live up to about five years and will spend almost her whole life laying eggs. She is fertilized once, and from that moment on can lay as many as two and a half thousand eggs a day during the height of the summer season. The ability of a queen Honey bee to lay at this rate over two or three summers is remarkable and testament to the powers of royal jelly – the substance responsible for her development in the first place and the substance fed to her continuously for the rest of her life to sustain her in her work.

Given what royal jelly can do for queen bees, it is little wonder that it has been perceived as having special qualities in the human diet. Royal jelly contains remarkable amounts of proteins, lipids, glucides, vitamins, hormones, enzymes, mineral substances, and some would claim, specific vital factors that act as biocatalysts in cell regeneration processes within the human body. Royal jelly contains approximately 12% protein, 5-6% lipids and 12-15% carbohydrates. Its B Vitamin content is high, and with 17 amino acids, including all 8 essential amino acids, it is a nutritious hormone-rich substance with a wide spectrum of potential benefits. Royal Jelly also contains around 15% aspartic acid, which is the latest 'big thing' in sports medicine for muscle and cell regeneration. Royal jelly is credited by the alternative medicines industry with a considerable list of properties and is said to confer benefits in relation to the following: energy levels, chronic fatigue, skin, hair, nails, bones, joints, hormonal regulation, asthma, sexual vitality, impotence, weight regulation, rejuvenation, recovery from illness, immune system stimulant, cholesterol levels, cardiovascular health, anti-depressive, anti-anxiety, high

blood pressure, mental condition, memory, depression, arthritis, liver ailments, eczema, impetigo, skin disorders and diabetes. An impressive list! Apiculturists both at an amateur and a commercial level in Ireland and Britain tend not to spend much effort in producing and collecting royal jelly for sale, though many beekeepers in France concentrate on its production. China is the biggest producer and exporter of royal jelly estimated at 2000 tonnes per annum which is 60% of the world's total output. Scientific evidence to support the claims made in relation to the health giving and nutritional benefits of royal jelly is limited. Nevertheless, the nutritional supplements and cosmetic industries continue to set great store by the alleged properties of royal jelly and no doubt profit by our belief in its marvellous powers.

With swarms already reported and the bees showing clear signs of building up their numbers, the recent good weather has meant the active beekeeping season is now in full swing. Regular inspections will be needed until well into August, however the pressing need at this time is to have equipment ready to deal with any honey surplus. This means having supers clean and ready with drawn foundation if possible to place on each hive as soon as the numbers of bees have increased to produce enough foragers and the space in the brood chamber is limited because of the amount of brood occupying combs. It is important to try and stay a little ahead of the bees and to give them more room just a little before they need it. This is one of the management techniques that can be applied to reduce the tendency toward swarming – shortage of space is one of the swarming triggers.

Earlier this month, Afbi (Agri-Food and Biosciences Institute) published its annual Honey bee survey. This is a short questionnaire that can be completed anonymously by beekeepers to help quantify the size and determine the relative health of the Honey bee population in Northern Ireland. If you are a beekeeper and haven't yet completed the survey, then please do so without further delay. It can be completed on-line, or a hard copy version can be obtained direct from Afbi, here are the details: By Phone

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By Email

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A salutary reminder of the consequences for us all in relation to bee health is to be found in the Press Statement released recently by the International Bee Research Association (IBRA) as follows:

International Bee Research Association

The world's longest established apicultural research publishers

PRESS RELEASE

[Immediate 20/04/11]

Award winning paper highlights bee declines

A paper written by a team of researchers from the University of Reading, UK and from around Europe, has been awarded the Eva Crane Award by the International Bee Research Association as the best paper published in its *Journal of Apicultural Research* during 2010.

Honey bees are the most important managed pollinators in Europe and make a significant contribution to the pollination of our food crops and also some wildflower species. Recently there have been many reports that bees have been declining, but it was unclear how big the losses were or how widespread across Europe they were. The researchers took up this challenge and brought together information from 18 European countries to track the changes in the number of honey bee colonies and beekeepers over several decades.

In the Mediterranean they found a small increase in colony numbers, but the main finding was that in central Europe about a quarter of all bee colonies have been lost since 1985. In some countries the losses have been particularly severe, with more than half of colonies lost in England in the same period. The study shows that the trend of losses is expected to continue. It sounds alarm bells for the future reliability of crop pollination and food security.

Lead author Dr Simon Potts says: "This is the first study to quantify the real extent of declines in honey bees across the whole of Europe. Prior to this study, there were a handful of local estimates of honey bee losses and a lot of speculation, but this paper now clearly presents the actual degree of honey bee declines across the whole continent. The health of our pollinators, as documented in our paper, has wide reaching implications for our health and our economy."

A new paper by Dr Potts and his colleagues is published today in the latest issue of the *Journal of Apicultural Research*. The paper describes the major new STEP (Status and Trends of European Pollinators,) Project funded by the European Commission. Dr Potts coordinates STEP which will run for five years and bring together leading researchers in 24 organisations from 21 countries with a budget of £4.3 million. The project addresses the drivers of pollinator loss across Europe and will identify mitigation and adaptation options to reverse declines and improve the management of pollination services across the continent.

IBRA Scientific Director Norman Carreck says: “these two papers are important because they help to both quantify the loss of bee colonies in Europe, and to outline methods of addressing this problem”

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