Apis-UK The Electronic Beekeeping Newsletter

Apis-UK Issue No. 50 March 2007

EDITORIAL Back to top

This month we take a look at a good mix of items ranging from hornets to moths, through medical honey, a French invasion and disappearing bees with of course a good range of other items as well. There are so many interesting things to read about bees and bee science in the news these days that it is difficult to know what to put in and what to exclude but one item that we certainly can't ignore is the World report on "Beekeeping situation worldwide 2006 – 2007" by Harald Singer, which is full of excellent information about beekeeper numbers, hive numbers, honey prices, imports and exports and much more. I've abstracted some of the information in the text of Apis UK this month for information pertinent to the UK and Europe but there is a link to the full report which is well worth reading. Despite the fact that beekeepers have to work harder to get the same amount of money from their occupation than before, it doesn't paint a gloomy picture for hobby beekeeping which seems to have healthy numbers in most countries.

The disappearing bee syndrome which I suffered from in Spain in 2004 is featuring prominently in the bee news and appears to be causing trouble in the USA on a large scale. The research establishment has swung its eye in the direction of this problem in the USA and many other countries and increasingly the problem appears to be linked to Nosema ceranae. We take a look at this in the article section below. What I know personally about it is that this little microsporidia was one of the causes of my departure for New Zealand in 2004/5 from Spain. There were many other reasons, mainly bee related but beekeepers I knew put my disappearing bees down to bad beekeeping on my part, and for a while I believed them. The problem really is astonishing. A full hive of well organized bees with good stores and a laying queen can literally disappear within a week to ten days, leaving a hive resembling the bee equivalent of the Marie Celeste; uneaten stores, no dead bees, no live bees, no wax moth or damage and everything neat and tidy. I hadn't treated for Nosema because it really was not a problem in our area and I didn't at the time ascribe the losses to Nosema because of the rapidity of it all. We learn all the time. The whole business seemed to spring up from nowhere and in many ways reminds me of the Isle of Wight affair (not that I was anywhere near to being around then I might add). Let's hope that if it hits the UK, beekeepers are prepared for it because believe me, it takes no prisoners. You all might end up in New Zealand as well!

The whole problem might have been identified by a reader who has sent in a very interesting and very topical letter on the subject. (Again, see below).

Our recipe is Honey beer steamed clams which I received from an American friend. It is truly delicious, healthy and not fattening if you don't use the essential accompaniment of Bercy butter. If you do, then as usual our recipe will probably add a few ounces.

We receive in this issue expert 19th century advice on uniting colonies and our look at moths tells us that scientsist have found an very bee like structure that enables them to fly in a straight line in the dark.

Another problem often in the news and facing farmers at the moment is the lack of natural pollinators. This lack is due to a variety of causes including loss of habitat and other associated causes. So how to attract more pollinators? Scientists looking into this and other pollination related subjects have found that some plants in order to attract more pollinators have devised a strategy to actively repel those foragers! See below for illumination and marvel at the ways of nature.

In our last editorial I showed the photo of a hive bursting with bees with two nonchalant beekeepers looking on. Seconds earlier, that pallet of hives had just been dropped from a height, had just about survived and had scared the beekeepers witless. They soon recovered however and seconds later stood there for the photo as if to say 'a perfect landing. What more do you want'.

See what you think about this photo. What's happening here?

In the meantime, as you gird your loins for another beekeeping season full of new dangers on the horizons, I really hope that you enjoy this edition of Apis UK. Stay in touch.

David Cramp
Editor

David Cramp. Editor

NEWS Back to top

MRSA KILLER
A new method could be used to tackle MRSA: the honey of Australian bees. The honey is being used by the James Cook University Hospital in Middlesbrough, a centre of excellence for heart surgery. It uses honey from a colony of bees only found in Queensland to clean infected wounds, along with dressings containing a gum extracted from seaweed. The honey seals the injury and the seaweed extract draws and absorbs the harmful bacteria.

(I'm just investigating whether this is honey from tropical stingless bees or Apis mellifera jelly bush honey which has similar properties to manuka honey. It will be very interesting if it is and perhaps start a revival of stingless beekeeping in the Americas. Ed.

From the USDA. The Honey Situation In the USA
United States Honey Production Down 11 Percent
Honey production in 2006 from producers with five or more colonies totalled 155 million pounds, down 11 percent from 2005. There were 2.39 million colonies producing honey in 2006, down 1 percent from2005. Yield per colony averaged 64.7 pounds, down 11 percent from the 72.4 pounds in 2005. Colonies which produced honey in more than one State were counted in each State where the honey was reduced; therefore yields per colony may be understated. Colonies were not included if honey was not harvested. Producer honey stocks were 60.5 million pounds on December 15, 2006, down3 percent from a year earlier. Stocks held by producers exclude stocks held under the commodity loan program.

Honey Prices Up 14 Percent
Honey 2006 prices increased to 104.2 cents, up 14 percent from 91.8 cents in 2005. Prices are based on retail sales by producers and sales to private processors and cooperatives. State level honey prices reflect the portions of honey sold through retail, co-op, and private channels. Honey prices for each colour class are derived by weighting quantities sold for each marketing channel. Honey prices for 2006 were up from the previous year for all colour class totals.

Vanishing bees threaten US crops
It seems to be getting really serious now in the USA. Bees are literally disappearing. If you recall, we looked a t piece in Apis UK two years ago which chronicled the spread of what researchers called 'disappearing bee syndrome'. It happened to my bees in Spain and the Spanish authorities initiated research into its causes. My apiaries there suffered from this mystery. It also occurred in the UK and Europe and now evidently is causing great concern in the USA. There, it is officially called Colony Collapse Disorder, but a more pithy way of describing it would be Vanishing Bee Syndrome.

Something Rotten in the State of America and no one knows why.

All over America, beekeepers are opening up their hives in preparation for the spring pollination season, only to find that their bees are dead or have disappeared and nobody, so far, knows why.

The sad mystery surrounding the humble honeybee - which is a vital component in $14bn-worth of US agriculture - is beginning to worry even the highest strata of the political class in Washington, nd even Hillary Clinton's got interested in this in the last week or so. (Obviously an election coming up! Ed). And she's not alone amongst US politicians.

Obviously it's not just affecting the beekeepers, it's affecting the farmers that produce the food, and in the end it's going to affect the consumer.

In one report, a Mr Hackenberg, a Florida beekeeper is suffering along with his bees. In a matter of weeks, he lost just over 2,000 of his 3,000 hives. The yard of his honey farm near Tampa Bay, is littered with empty boxes, which normally would be full of worker bees. It has been reported that some beekeepers across the US are reporting losses of up to 95% and federal scientists, the National Beekeepers Association and state researchers have come together to form an emergency working group to try and halt the disastrous trend.

There are as many theories but some beekeepers strongly suspects that new breeds of nicotine-based pesticides are to blame. Others blame new mite infestations and others new chemicals, but many are adamant that it is too early to pin the blame on insecticides.

Strangely, Colony Collapse Disorder is inconsistent even within localised regions. Some beekeepers have managed to retain completely healthy hives which makes it even more difficult to find the cause

RESEARCH NEWS Back to top

Colony Collapse Disorder
It has a name!
I mentioned previously that my bees in Spain were seriously affected by the so called 'disappearing syndrome' in that they disappeared. The Spanish authorities investigated and it seems that this was due to Nosema ceranae, a spore-forming protozoan parasite that invades the digestive tracts of bees.. The NBU in the UK describe the symptoms perfectly as "Signs of CCD appear to be the total collapse of bee colonies, with a complete absence of bees or only a few remaining in the hive. These are not unlike the signs of colony demise associated with heavy varroa infestation sometimes seen in the UK." This was just how it was and at the time no one could explain it and many put it down to neglect and basic bad beekeeping.
In the UK the NBU website informs us that they are **"**monitoring the situation closely and is keeping in contact with scientists in the USA. Although it is very early in the year, with most colonies just becoming active and the inspection season just beginning, some beekeepers have reported colony losses to the NBU. These are not thought to be above the normal winter mortality expected. Any cases of significantly high losses will be investigated in depth by the NBU/CSL scientists and the bee inspectors.

Beekeepers who have concerns about unusually high colony losses in their apiaries should contact their local inspector. Scientists and inspectors at the National Bee Unit are monitoring the situation and are in contact with experts in the USA and in Europe to learn about the latest results of the research into the possible causes of the Disorder and how it might be prevented here. The NBU is a member of various working groups in Europe investigating colony losses."
For more details of the disorder and the results of the investigations as and when they are produced please see the direct link from BeeBase to the Mid-Atlantic Apiculture ResearchandExtensionConsortium(MAAREC)website
http://www.ento.psu.edu/MAAREC/pressReleases/ColonyCollapseDisorderWG.html

NEW FRENCH INVADERS
The French honey industry is under threat from hordes of bee-massacring oriental hornets, the Daily Telegraph reports.
A new foe has successfully invaded France and taken over part of the South West of the country reports suggest. The forests of Aquitaine, in south-west France, now play host to swarms of the Asian hornet, Vespa velutina, which is believed to have arrived there "from the Far East in a consignment of Chinese pottery in late 2004".

A French entomologist who first discovered the invaders, says that their spread across French territory has been like lightning. He said he's now counted 85 "football-shaped" nests across the 40 miles which separate the towns of Marmande and Podensac in the Lot et Garonne department where the hornets were first spotted. The Asian Hornet can cause some serious damage to a human, "inflicting a sting which has been compared to a hot nail entering the body". But that's not the principal threat they pose. They can decimate a nest of 30,000 bees "in a couple of hours" in search of larvae on which to feed their young. This, unsurprisingly, gives local beekeepers serious cause for alarm.

The hornets are just the latest blow to the French beekeeping industry. As we reported in Apis UK recently, pesticides and hot summers have taken their toll on bee populations, and a spokesman for the French National Bee Surveillance Unit said the winter mortality rate among bees had risen to six in ten. Accordingly, honey production has been hit hard - down 60 per cent in south-western France in the last 10 years. The country's 1.3 million hives, managed by 80,000 beekeepers, are unable to supply demand and France now imports 25,000 tonnes of honey annually. Sources say that the arrival of these hornets has made the situation considerably worse and that the future of the entire industry is at stake.

Vespa velutina. Is this a new threat to UK beekeepers? See below.

But don't think that UK beekeepers will be safe. Our Island status which has kept us secure for centuries may not be able to prevent the arrival of these hornets. Stuart Hine, manager of the Insect Information Service at London's Natural History Museum, warned that there is no doubt that these hornets are heading north and will probably find their way to Britain at some point. However, whilst climate change means that the hornets would find UK summers very much to their liking, they would still have difficulty coping with winter frosts.

Hornets can cause chaos.
I remember being attacked by a colony of hornets in Cyprus as a 7 year old. We were on a 'nature ramble' from our primary school when our teacher hit a nest with his stick. We fled in all directions and a section of RAF Regiment guard soldiers who were tracking us, probably thinking that we had been attacked by EOKA terrorists swooped down on us to gather us up and return us to base, but we, thinking the soldiers were the very terrorists we had been warned about then fled in other directions not knowing which threat was worse, the hornets or the soldiers. Eventually we were all rounded up kicking and screaming and taken to the base guard room by a bunch of bad tempered soldiers many of whom had been stung, and our parents sent for. None of us kids had been stung! Ed.

Honeydew Honeys Are Better Antioxidants Than Nectar Honeys
In a study of 36 Spanish honeys from different floral origins researchers have revealed that honey from bees feeding on honeydew have greater antioxidant properties than those produced by bees feeding on nectar. The study is published in this month's edition of the Journal of the Science of Food and Agriculture.

Naturally occurring antioxidants are important ingredients of many foods, and keenly sought in many 'health foods'. They are believed to help protect people from diseases like cancer, cardiovascular disorders, neurodegenerative diseases and aging. They operate by mopping up potentially damaging free radicals that are released in the body. Honey is one source of antioxidants.

The composition of honey depends greatly on where honeybees collect their raw materials. The two principal sources are nectar and the exudation of aphids and other sap sucking insects, the latter resulting in honeydew. Honeydew will contain not only bee derived enzymes and properties but also insect derived enzymes. "Although honey is a natural source of antioxidants, and among honeys, honeydew honey is the best," says researcher Rosa Ana Pérez, who works at the Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario, in Madrid, Spain.

Each of the 36 honeys was exposed to a range of physical and chemical tests. Honeys with high antioxidant properties (measured by the DPPH test) also had high total polyphenol content, net absorbance (as colour parameter), pH and electrical conductivity.

Note: This story has been adapted from a news release issued by John Wiley & Sons Ltd

The raw material of honeydew. Aphid exudates. Honeydew honey is a better natural antioxidant than honey.

Honeydew is a classification of honey that refers to honey produced by honeybees collecting nectar that is exuded from another insect such as an aphid or scale insect. It is quite common in a number of countries and the best known is honeydew from the Black Forest in Germany. World wide it is referred to variously as "forest honey", "Pine honey", "Fir honey" etc. and may be referred to by the specific species of tree producing the honeydew.

New Zealand Beech Forests are a prime source of Honeydew, forming a major export.

A honey bee collecting 'honeydew'.

Honeydews are normally high in Fructose, low in glucose and have higher levels of higher sugars such as maltose . Their tendency to crystallise is also low. Beech honeydew is likewise very slow crystallizing and in fact some beech honeydews never crystallize.

Normally honeydew is below 17% moisture. In the main production area, fermentation is not generally a concern, but the environment is such that large populations of yeast can occur in the honeydew forests. This is due to the presence of large quantities of a food resource (honeydew nectar) and, particularly after rain, wet conditions.

Pictures courtesy of Airborne Honey Ltd, Canterbury New Zealand. If you want to know more about honeydew honey go to their website http://www.airborne.co.nz/hnydew.htm which gives a very comprehensive picture of the subject

The moth has a gyroscope-like sensor

Most insects such as honey bees fly in daylight and have to have sensory information to tell it what it has done and what it needs to do For example if a person unintentionally turns around, the inner ear system or eyes will provide that information and allow for a course correction. But what if you need to fly in the dark? How about if you are a moth? When the light is low, and the visual cues are hard to see, they have to depend more on the mechanosensory system but up until now, the insects' wobble-free flight remained a mystery .

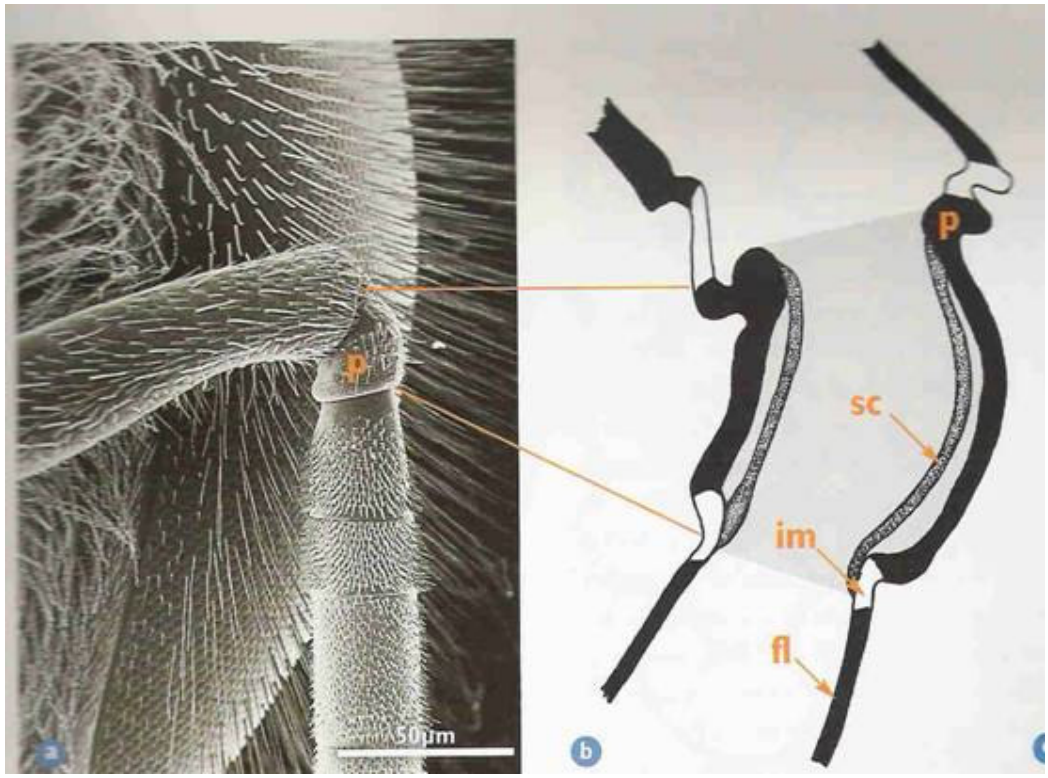
Now, researchers have uncovered the secrets of hawk moth (Manduca sexta) flight control by looking at what happened when the insects' antennae were removed and they have found that just like the bee, the researchers found that a structure called Johnston's organ, which is found at the base of the moths' antennae, was the key. Using vibrations from the antennae, which remain in fixed positions during flight, the organ can detect when and where the moth's body moves in relation to its antennae.

Manduca sexta has been found to have a Johnston's Organ to help it maintain stability when flying in low light conditions.

In essence, it is behaving much like a gyroscope on a ship or plane that gives the vehicle a frame of reference to move within. Further investigation revealed the Johnston's organ then sends this information to the brain so the moth can shift its body back to the correct position.

Monitoring antennae-less moths in a dimly lit flying chamber, the team discovered the moths' flight was extremely unsteady: they collided with the walls, flew backwards or crashed to the floor. However, when the antennae were glued back on, the moths regained their agile grace.

In the honey bee the Johnston's Organ is located within the pedicel of the antenna as shown below:



The Organ is within the pedicel (P) which consists of many sensory cells known as scolopale cells (sc).

The above picture features in the marvellous book by Lesley Goodman called 'Form and Function in the Honey Bee' (IBRA 2003, ISBN: 0 86098 243 2). (Very well worth purchasing if you have not already done so).

Want More Pollinators? Then threaten them with a bit of poison.
The sugar-containing nectar secreted by plants and consumed by pollinators shares a number of similarities to fitness drinks, including ingredients such as amino acids and vitamins. In addition to these components of nectar can also contain secondary metabolites such as the alkaloid nicotine and other toxic compounds.

New evidence shows that plant pollination strategy seems to involve repelling pollinators to a certain extent. Why?

In a fascinating piece of research scientists Danny Kessler and Ian Baldwin from the Max Planck Institute for Chemical Ecology in Jena, Germany, recently looked at this question. Just why would plants risk poisoning the insects and birds that provide them with pollination services? Their findings have been published in The Plant Journal. Kessler and Baldwin examined the nectar of a wild tobacco species, Nicotiana attenuata, and discovered that it is flavoured with 35 secondary compounds. The researchers then tested 16 of these in cafeteria-style bioassays with three groups of native visitors - hawkmoths, hummingbirds (both pollinators) and ants ('nectar thieves'). Some compounds were attractive and others were not. Certain nectar blends seem to increase a flower's chances of being visited by useful pollinators while discouraging nectar thieves.

Nicotine, the most abundant repellent found, affected both pollinators and nectar thieves in the same way. The visitors removed less nectar per visit when nicotine was present. To determine if nicotine was repellent in the real world, the researchers genetically transformed N. attenuata plants to create nicotine-free plants, which were planted into a natural population and nectar removal rates were measured. Native floral visitors removed much more nectar from the plants that had no nicotine than from the normal nicotine-containing plants.

So why would a plant produce nectar that repels pollinators? Data from the bioassays provided the following hypothesis:

When nectar contains nicotine, the amount of nectar consumed per visit decreases but the number of visitations increases. Increasing the number of visitors might increase the genetic diversity of the offspring produced.

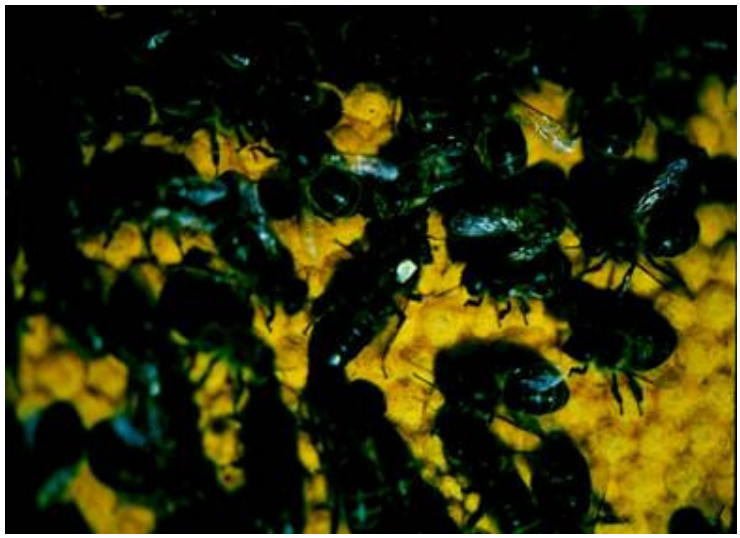
The researchers are planning to test this hypothesis in the upcoming field season. Dissecting the function of this secret formula of nectar, thought to be nature's soft drink, has instead shown it to be quite 'hard'.

Note. This story has been adapted from a news release issued by Blackwell Publishing Ltd..

A SINLE GENE CONTROLS TRAITS RELATED TO HONEY BEE SOCIABILITY

The honeybee (Apis mellifera) belongs to the rarified cadre of insects that pool resources, divide tasks, and communicate with each other in highly structured colonies. Understanding how this advanced state of organization evolved from a solitary lifestyle has been an enduring question in biology.

In a new study published in PLoS Biology, scientists have revealed one possible path to community by showing that a single gene controls multiple traits related to honeybee sociability. First characterized for its role in reproduction, the gene, vitellogenin, is widely found in egg-laying insects, which depend on it for egg cell development.



Multiple traits related to the amazing phenomenon of honey bee Sociality is controlled by a single gene!

As every beekeeper knows, a honeybee's role depends on its age, gender, and caste. Reproduction falls to the queen and drones, while essentially infertile females, the workers, perform all the other duties required to support the colony. As young adults, workers tend larvae and perform assorted tasks in the hive. After about three weeks, they switch from domestic chores to foraging, and eventually specialize in pollen or nectar collection. Scientists began to suspect that the protein synthesized from the vitellogenin gene—vitellogenin—might affect these social life history traits in honeybees as it became clear that the protein supported an array of functions not directly linked to egg-laying. For example, sterile workers synthesize vitellogenin to make the royal jelly they feed larvae. It can also prolong the lifespan of both workers and the queen by reducing oxidative stress.

As bees undergo the complex behavioural shift demanded by the change in job description, their physiology changes too: they have higher levels of juvenile hormone and lower levels of vitellogenin. It was speculated that these two physiological factors repress each other to affect the bees' behaviour, with vitellogenin repressing juvenile hormone in younger bees to inhibit the shift from nest to field, and juvenile hormone repressing vitellogenin in bees that have switched to foraging to ensure that they stay true to their task and do not revert to nest jobs. In a previous study, the researchers also proposed that changes in vitellogenin gene expression early in life could foster the selective behaviour that creates the division of labour between pollen and nectar

specialists. To test these proposed roles of vitellogenin in coordinating the social life of the honeybee, Nelson et al. inhibited the expression of the vitellogenin gene with RNA interference (RNAi). This gene-silencing tool introduces a double-stranded RNA (dsRNA) product whose sequence is complementary to a target gene, thereby setting off a series of events that ultimately "knocks down" the target gene. The researchers injected a vitellogenin dsRNA preparation into the abdomen of a subset of bees and compared their behaviour and lifespan to a control group. (The control group also received a dsRNA treatment designed to mimic the stress of experimental handling without affecting gene expression.) The bees' vitellogenin levels were monitored at 10 days, 15 days, and 20 days old to make sure the RNAi effects persisted.

Compared to controls, dsRNA-treated bees had consistently lower levels of vitellogenin protein. These vitellogenin "knockdowns" started foraging at a younger age than controls—confirming that vitellogenin affects workers' occupational fate by repressing the shift from domestic to foraging tasks. The foragers also showed a preference for nectar, in keeping with evidence that workers genetically predisposed toward nectar have lower vitellogenin levels before leaving the nest, while those predisposed toward pollen have higher levels. But more directly, the researchers argue, these results show that vitellogenin controls social foraging specialization. What's more, the vitellogenin-deficient bees died earlier than the controls, demonstrating the protein's influence on honeybee longevity. Altogether, these results demonstrate that vitellogenin regulates the organizational structure of honeybee society by influencing workers' division of labor and foraging preference. Vitellogenin, the researchers conclude, controls not only when bees start foraging and how long they live, but what they forage. Higher levels early in life favour pollen; lower levels favour nectar. Since current methods cannot yet distinguish the effects of vitellogenin from those of juvenile hormone, the researchers argue that the two physiological factors should be considered as partners in mediating task assignment and specialization. Since this partnership is uncommon in insects, it suggests that social behaviour in honeybees emerged from a makeover of relations between vitellogenin and juvenile hormone. It also bolsters the notion that factors normally in control of female reproduction can lay the foundation for the transition from solitary life to complex social behaviour.

Citation: Nelson CM, Ihle KE, Fondrk MK, Page RE Jr, Amdam GV (2007) The gene vitellogenin has multiple coordinating effects on social organization. PLoS Biol 5(3): e62. doi:10.1371/journal.pbio.0050062.

Note: This story has been adapted from a news release issued by The Public Library of Science. (USA).

ARTICLES Back to top

NOSEMA CERANAE

Because the 'Colony collapse Syndrome ' seems to be featuring in the news more prominently, and because a possible cause could be Nosema ceranae, it may be worth reminding readers of the relatively new phenomenon which was identified in Apis melifera in Europe by Spanish scientists in research that was a response to increasing bee losses.

Symptoms of the problem are seen when strong colonies lose their workforce in a matter of weeks even though the hive has food stores, capped brood, and no outward appearance of a serious disease or parasitic condition. No build-up of dead bees occurs in front or inside the hive. Food stores are not immediately robbed by hives in the vicinity and attacks from wax moths and small hive beetles are noticeably delayed. The adult bees remaining in the small cluster are newly emerged and are reluctant to consume feed.

Effects, Treatment and Control
N. ceranae and N. apis have similar life cycles, but they differ in spore morphology with N. ceranae having smaller spores. Without doubt, the most significant between the two types is just how quickly N. ceranae can cause a colony to collapse. Bees die within 8 days after exposure to N. ceranae which is faster than bees exposed to N. apis. The foraging force seems to be affected the most. They leave the colony and are too weak to return, therefore die in the field. This leaves behind a small cluster and a weak colony. There is little advice on treatment but it has been suggested that he most effective control of Nosema ceranae is the antibiotic fumagillin as recommended for Nosema apis

Nosema ceranae The Spanish Research.
A pointer to research workers looking into the 'disappearing bee syndrome' or 'colony collapse disorder', was a huge increase in the detection of microsporidian spores in Spanish honey bees in recent years. To help look in this direction, molecular tools were developed to improve accurate diagnosis of nosemosis in the laboratory. Most samples studied were sent from colonies suffering unexpected decreases in bee population per hive or lower honey production as reported by the beekeepers during the last two/three years.

The research included honey bees samples from apiaries located in the Centre and North of Spain, sent to the Laboratory of Bee Pathology (Centro Apícola Regional) and collected from October 2004 to May 2005. Once the presence of microsporidian spores following OIE recommendations (Office International des Epizooties, 2004) was confirmed, 12 samples were selected from all the positives ones. They all came from different Spanish regions and

Nosema ceranae was first reported as a new parasite of A. cerana. There are reports showing differences in ultrastructural and molecular characteristics when compared to N. apis, the other described honey bee Microsporidia. Spores of N. ceranae seem to be slightly smaller under the light microscope and the number of polar filament coils is between 20 and 23, rather than the more than 30 often seen in N. apis.. Based on molecular data, studies confirm that the Microsporidia isolated from Spanish samples of honey bees are indeed N. ceranae.

In the research, twelve samples of adult honey bees from different regions of Spain from colonies with clear signs of population depletion, positive to microsporidian spores using light microscopy (1% of total positive samples analysed), were selected for molecular diagnosis. PCR specfic primers for a region of the 16S rRNA gene of Microsporidia were developed and the PCR products were sequenced and compared to GenBank entries. The sequenced products of 11 out of the 12 samples were identical to the corresponding Nosema ceranae sequence. This was the first report of N. ceranae in colonies of Apis mellifera in Europe. The suggested link of the infections to clinical disease symptoms makes imperative a study of the virulence of N. ceranae in European races of honey bees.

The research wisely concluded that due to the increasing bee losses (Spain as well as some other Mediterranean countries have been suffering increased winter losses of colonies of up to 40% in some regions of Spain) and due to the resulting significant reduction in honey production in recent years further detailed research must be carried out. However, a clear, without doubt, explanation for this problem has not been found and the pathological consequences of N. ceranae in A. mellifera are not known, but it is important to discover if there is a causative relationship between the findings reported in the research and the documented population depletion and colony losses of honey bee colonies in southern Europe.

The full Spanish research can be found (in English) as follows:

Nosema ceranae, a new microsporidian parasite in honeybees in Europe
Mariano Higes (a), Raquel Martín (a), Aránzazu Meana (b)
a.Centro Apícola Regional, Consejería de Agricultura, Junta de Comunidades de Castilla-La Mancha, Marchamalo, 19180 Guadalajara, Spain
b Dpto. Sanidad Animal, Facultad de Veterinaria, Universidad Complutense de Madrid, Avenida Puerta de Hierro s/n, 28040 Madrid, Spain
Available online at www.sciencedirect.com

Since the Spanish research French and Spanish scientists have detected the disease and carried out a genetic sequence of Nosema ceranae in their respective territories and US research can be found in a report entitled "Colony Collapse Disorder (CCD)" from the CCDWorking Group. To read the entire report go to:

http://www.ento.psu.edu/MAAREC/pressreleases/FallDwindleUpdate0107.pdf.

Despite the possible links to Apis cerana, most research institutions do not confine themselves to studying only this microsporidia. They also look at other possible causes such as pesticides, varroa/viral complications, immune system problems and so on and it is worth remembering the Isle of Wight disease saga where Acarapis woodii being the first mite to be discovered in the research into the problem was immediately identified as the cause. In fact it may or may not have been only a part of the problem.

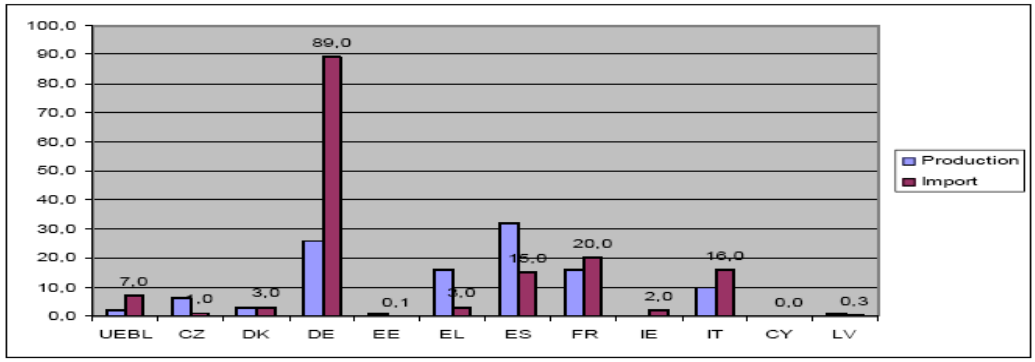
Nosema ceranae ***(for our Spanish readers) from Wikepedia en Español***
Es un ***microsporidia*** parásito unicelular, originario de ***Apis cerana*** pero que a partir del 2004 se detectó en ***España*** que afecta a las ***abejas*** melíferas ***Apis mellifera***. Es causante de la enfermedad denominada ***Nosemosis*** que ataca las abejas adultas. En el año 2004 analizaron más de 3000 muestras en España, arojando resultados positivos en el 90 % de los análisis. En el 2005 sobre 800 muestras, el 97 % arrojo valores positivos. La enfermedad causa pérdida de abejas (despoblación) con la consecuente pérdidas en producción de miel. No se detecta síntomas de diarrea como en ***Nosema apis***, pero hay un evidente Síndrome de despoblamiento en mayor o menor grado o medida. Las esporas de Nosema tienen gran resistencia a las temperatura extremas y a la deshidratación. Durante el año 2006 ***Francia*** y ***Alemania*** han detectado la enfermedad y reconocido la secuencia genética de Nosema ceranae en sus respectivos territorios.

HONEY AND THE EU
The following has been taken from an FAO report which can be seen by clicking on the link. But in this article I have extracted information on:

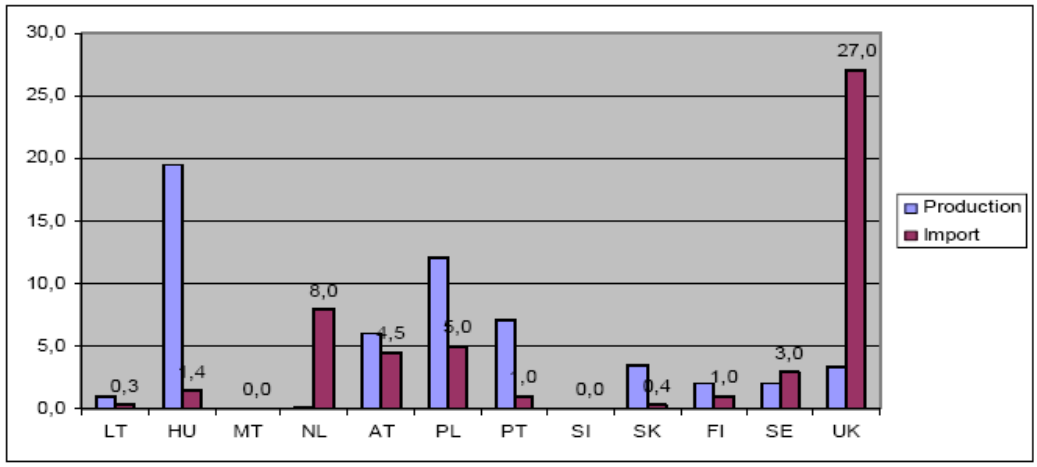
a. The amount of honey each country produces and how much it imports.
b. The amount of bee hives in each country.
c. The number of beekeepers in each country.
d. The number of professional beekeepers in each country.

It is interesting to see the various comparisons between beekeepers and numbers of hives and production which have as much to do with climate as they do with efficiency. At the end of the article I have put the world price variations over the last few years courtesy of Airborne Honey in NZ.

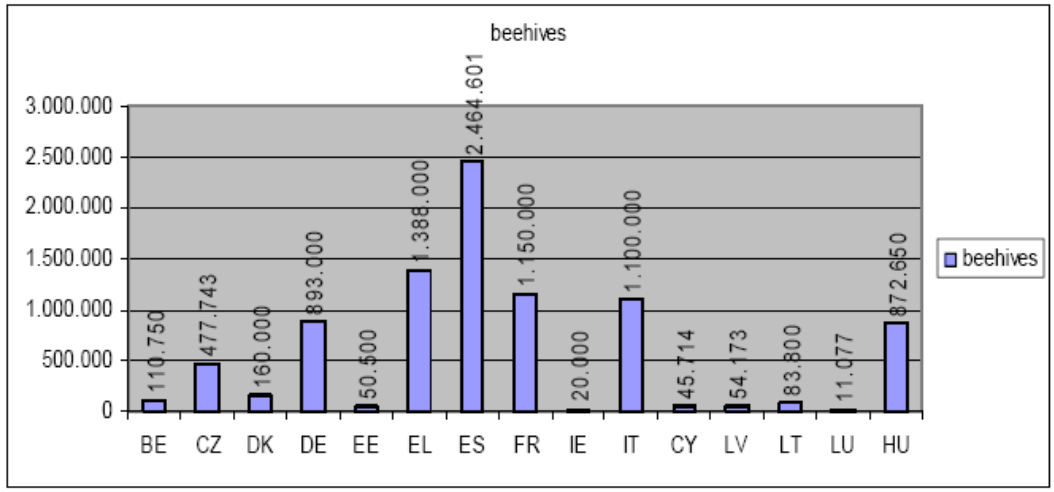
Honeyprod. and import 2004/05 (1.000t) Nr. I



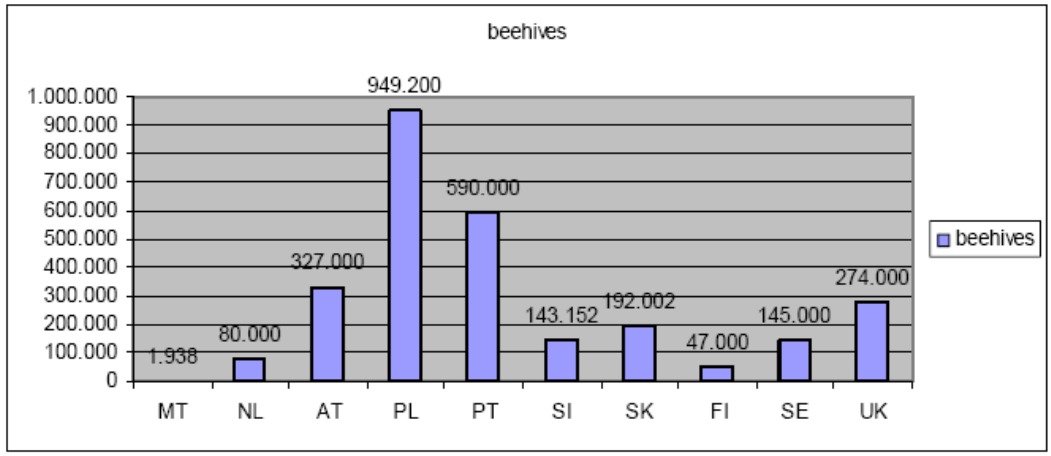
Honeyprod. and import 2004/05 (1.000t) Nr. II



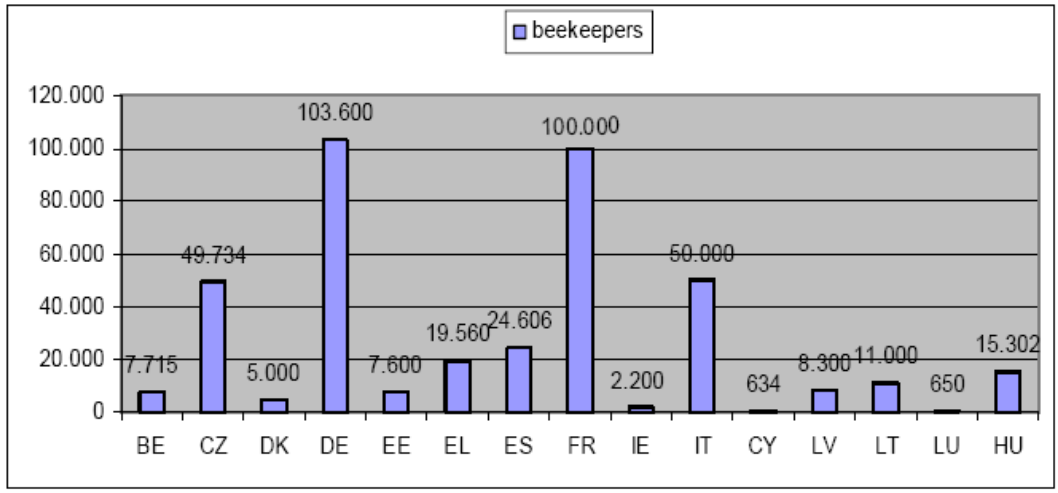
Number of beehives in EUMS ; I
EU 25: 11.631.300 hives



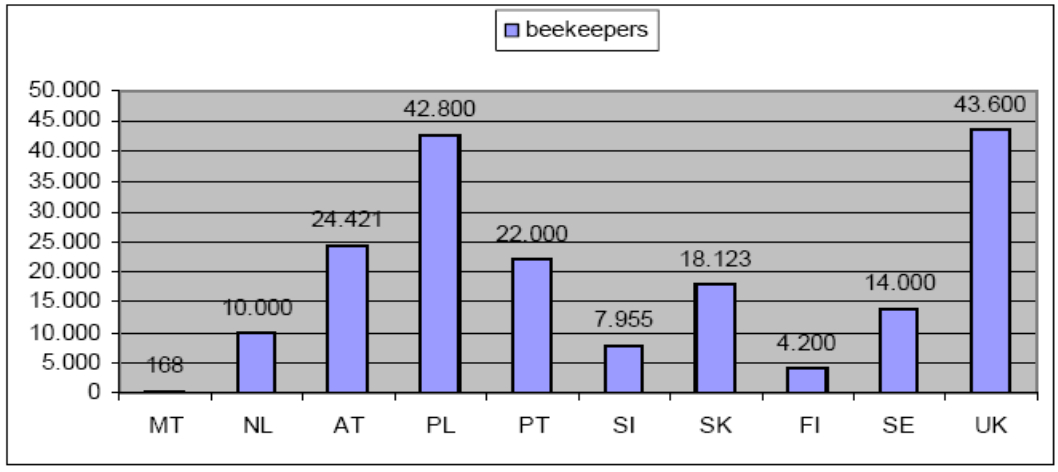
Number of beehives in EUMS ; II



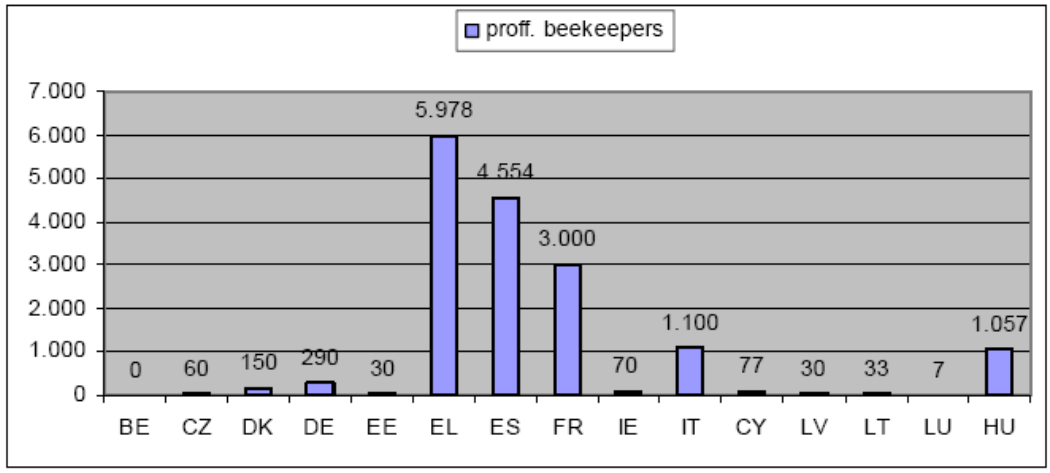
Number of beekeepers in EUMS I:
EU 25: 593.168 beekeepers



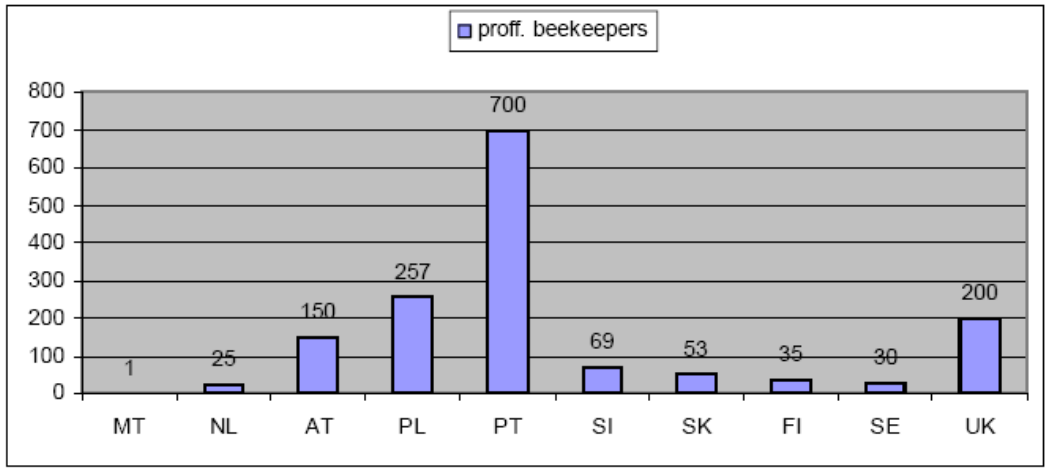
Number of beekeepers in EUMS II:

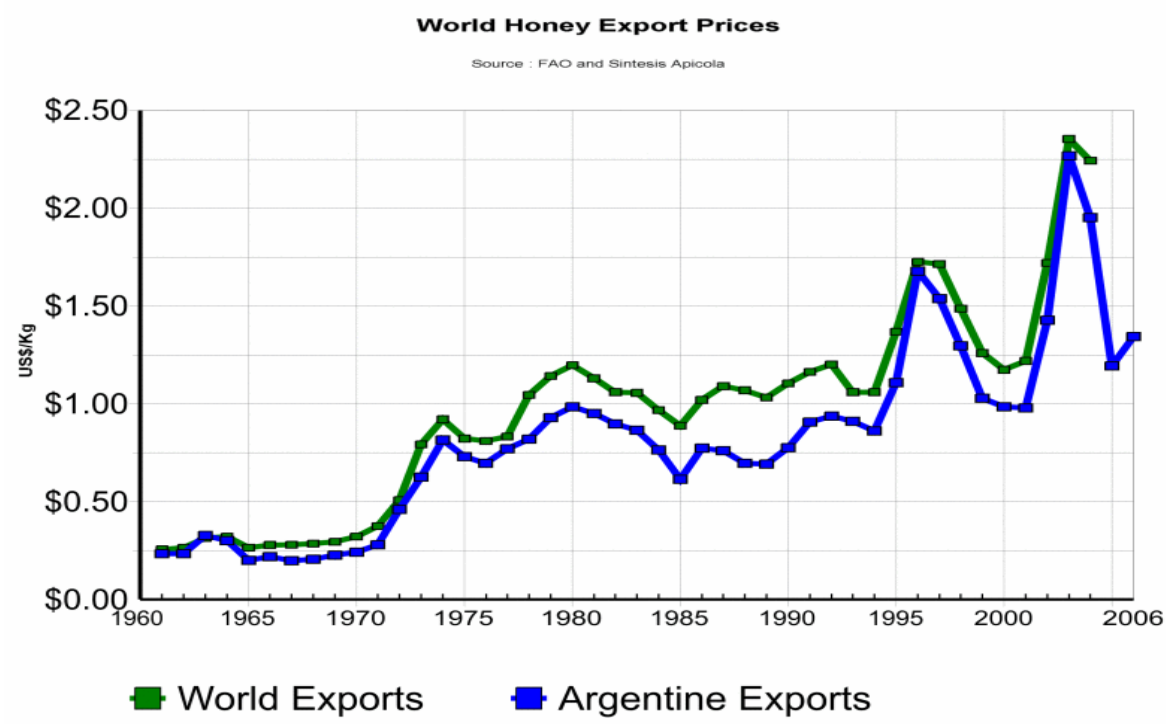


Number of proff. beekeepers in EUMS I:
EU 25: 17.956 proff. beekeepers



Number of proff. beekeepers in EUMS II:
EU 25: 17.956 proff. beekeepers





RECIPIE OF THE MONTH Back to top

To follow on from the information on Honey beers I thought a nice recipe using the stuff seemed appropriate. This one is a bit odd and I had to use a honey beer of dubious origin, but it seemed to work. I learned about it from a friend who got it from America. Hence the US/UK serving measures. Try it. Another healthy recipe!

Honey Beer Steamed Clams

Makes 6 servings -

Ingredients
24oz. flat honey beer
9 lbs. Manilla clams
Bercy Butter

1. Bring 1/2 cup beer to a boil.
2. Add 1-1/2 pounds clams to beer; cover.
3. When clams open, swirl in 1/3 cup Bercy Butter; remove from heat.

Bercy Butter
Ingredients
1/2. unsalted butter, softened
Fresh, coarsely chopped parsley
1. freshly chopped shallot
1 clove freshly chopped garlic
1 pinchfresh, coarsely chopped thyme
1 Tablespoon honey
1 small glass white wine

1 squeeze of lemon juice
1 teaspoonorange zest
1 teaspoon orange juice
Pinch of freshly ground white pepper
1 pinch of crushed red pepper (pimenton or paprika)

Beat together butter and remaining ingredients; reserve. Serve with the Honey Beer Steamed Clams.

HISTORICAL NOTE Back to top

Most beekeepers at some time or other have to unite colonies, usually because one or both are weak or when you need to join two or more casts. As we mentioned in last month's Historical Note, one large stock is better than two weak ones in terms of honey production. Cotton in his 'My Bee Book' explained this to his 19th century readers and went on to tell them how to best combine queen right colonies/casts.

'The best way to join two casts is to smoke them both and then pour the bees from two dishes into a large milk pan, first some of one and then some of the other, sprinkling them gently (not enough to daub them) with a little honey and water. Take away one queen and then put the united parcel into a hive with one comb fastened to the crown of the hive. This will make them take readily to one another, as an united and loving family to their new home.'

Nowadays of course a quick half second spray from a can of non toxic air freshener does the same job. I think I prefer Cotton's method!

POEM OF THE MONTH Back to top

I had to think about this one for a couple of seconds, but it tells a powerful story. I am always amazed at the depth of thought in Emily Dickinson's poems. How did she think of such things?

Partake as doth the Bee,
Abstemiously.
The Rose is an Estate—
In Sicily.

Emily Dickinson

LETTERS Back to top

Webmaster,
I believe colony collapse dis-order to be due to pesticides. When a bee goes to 1 place where there is 1 pesticide, then goes to another place where there is another pesticide-the effects are potentiated-multiplied many fold. We learned this in the 1st gulf war.
Robert Dean. Memphis, Tenn., 38127. USA
rdean333312@aol.com

Well Robert. I think you've got it covered. This should save millions on further research! Seriously though, pesticides are being looked at as part of the research and this communication has a serious and well thought point to it. Rd.

Dear David,

In your latest Apis-UK newsletter you asked for reader feedback. Well, here is my attempt.

The article about bumblebee nest warming reminded me of similar research with European Hornets. Check the following URL:

- http://www.empa.ch/plugin/template/empa/732/30165/---/l=2/

Perhaps I am "carrying owls to Athens". The reasearch is two years old, and perhaps known to you. If not it might be worth letting the readers know about it. The downloadable movie is also interesting.

Best regards and thanks for your time and efforts you put into the production of this newsletter.

Hans

DATES FOR YOUR DIARY Back to top

BEES FOR DEVELOPMENT. EVENTS LISTING
Bees for Development Beekeepers' Safaris. For an amazing beekeeping adventure, chose from one of our four award-winning Safaris - friendly holidays run by BfD in partnership with our colleagues overseas.

BEES AND FLOWERS IN SWEDEN,
12-21 June 2007.
Organised by Bikonsult of Sweden in co-operation with BfD.
A unique opportunity to celebrate 300 years since the birth of Carl von Linnaeus, 'Father of taxonomy'. Options include watching the midnight sun north of the Polar Circle.

AFTER APIMONDIA - AUSTRALIAN LIFE AND BEEKEEPING
14-23 September 2007.
Organised by Bikonsult of Sweden in co-operation with BfD.
See the Australia that you will not find through tour operators, and meet local beekeepers and their families.

TANZANIA
14-28 November 2007
With Njiro Wildlife Research Centre, Arusha.
Experience African bees, visit local beekeepers, apiaries and markets.
See the spectacular Serengeti and the animals that live there.

TRINIDAD & TOBAGO
21-31 January 2008
With Gladstone Solomon, Presidentof Tobago Apicultural Society.
Enjoy sand, sea and Africanised bees. See European bees, stingless bees, pan yards and humming birds.

For details visit our website at: www.beesfordevelopment.org
E-mail safari@beesfordevelopment.org ~
Phone +44 (0)16007 13648

Wisborough Green Division - West Sussex BKA

Beekeeping Course

Suitable for Beginners, Improvers, and Non - Beekeepers

At:- Village Hall, Lower Street, Pulborough, West Sussex. RH20 2BF.

Sat 14th April 2007 assemble from 9.00 for 9.30-5.00 p.m.

The course will be suitable for those who would like to discover what is involved in keeping bees, but will also be suitable for those who have kept bees for some time. It will largely follow the syllabus of the BBKA Basic Exam, but with variations.

Subjects covered will include:-

How to learn about bees	Different kinds of bees
How bees live naturally and how we can manage them	What bees collect - nectar, pollen, propolis, water
How bees store the crop	The 3 castes, queen, drones, and workers.
What happens in a beehive and where	How to start
The Wisborough Green Beginners Package	Choosing the type of hive and why
Siting hives	Essential equipment
Protective clothing	Handling bees
Colony Management	Swarming
Making increase	Dealing with the crop
Feeding	The colony in winter

Course fee £25 (£15 under16's) per head to include lunch, refreshments, and a booklet "Basic Beekeeping". One free place for the organiser of a party of 10 or more as one booking.

Enquiries:- Roger Patterson r.patterson@pattersonpressings.co.uk 01403 790 637

Booking:- Andrew Shelley, Oakfield, Cox Green, Rudgwick, Horsham. RH12 3DD. 01403 822 314

Cheques payable to WSBKA .

Web Site Visit us on www.wsbka.org.uk ["Divisions"] ["Wisborough Green"]

Prepare yourself for the coming season – now

Pulborough Village Hall is off Lower Street. Turn down next to the Oddfellows Arms, right to the bottom and turn right into the car park. If this is full then use the main car park immediately before it.

Sunday 10th June 2007

YORKSHIRE BEEKEEPERS' FIELD DAY.

Sunday 10th June 2007.

Location – 5 mins walk from York station
Themes – Bee Health and Bee Products

Speakers – Dr David Aston, Richard Ball - National Bee Inspector, Norman Carreck, Paul Metcalf, Heather Robson

Subjects – Integrated Bee Health Management, Bee Disease Research, Microscopy, Resistance Testing, Bee products.

Tickets - £12.
Book early to select options.

Contact:
Colin & Debbie Hattee
Email: hatteehouse@talktalk.net
Tel: 01430 860972

Saturday 3rd March 2007 - **West Sussex Beekeepers Association Beekeeping Convention**. Venue: Lodge Hill Conference Centre, Watersfield, Pulborough, West Sussex. Main Speakers, Rev Stephen Palmer, Michael Badger and Richard Ball plus a choice of attending four from a total of ten workshops. Further details from John Hunt on 01903 815655 or email john_bateman_hunt@hotmail.com

Tuesday 24th, Wednesday 25th and Thursday 26th July 2007 - New Forest & Hampshire County Show. The New Forest & Hampshire County Show is the highlight of Hampshire's social calendar featuring all the attractions that have made it so popular for the best part of a century, bringing traditional country pursuits, new exhibitions and demonstrations to this unique event. Put the dates in your diary now.

There is a full range of horse and livestock competitions plus a rabbit section, cage birds, and honey bees. The Countryside area features woodland activities and demonstrations of rural sports, plus terrier and ferret racing. Other favourites include the horticultural marquee featuring many nationally acclaimed flower entries, and the Southern National Vegetable Association Championships.

With over 600 trade stands there is a wide choice of stalls to visit many offering goods never to be found in the shops, including antiques, crafts, and the best of Hampshire food and produce.

We also have the Forest Fun Factory arena, a haven for children with all day entertainment. These are just a few of the many attractions you will find at this year's show – you will be spoilt for choice.

A pay as you go shuttle bus service runs from Brockenhurst mainline station right into the showground, so let the train take the strain.

Discounted tickets available on line at http://www.newforestshow.co.uk/ or on the credit card hotline 01590 622409 from June 1st 2007.

Additional information Show opens 08.15 to 1800 Web site full of information – http://www.newforestshow.co.uk/ Full Title is New Forest & Hampshire County Show.

QUOTE OF THE MONTH Back to top

The person who said the following is one of the greats of European Apiculture. His approach to the subject generally is different and interesting and in this quote he sums up apiculture very neatly indeed. It is just how I see it.

"Observation, experimentation, improvement of one's knowledge as well as physical prowess, acceptance of practical realities – all accomplished with precision, conscientiousness and rectitude – have ensured that apiculture, like other branches in which science and technology are combined, has provided material for multidisciplinary instruction and intellectual and moral training."