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Fears for crops as shock figures from America show scale of bee catastrophe

The world may be on the brink of biological disaster after news that a third of US bee colonies did not survive the winter

Alison Benjamin

The Observer, Sunday 2 May 2010

Disturbing evidence that honeybees are in terminal decline has emerged from the United States where, for the fourth year in a row, more than a third of colonies have failed to survive the winter.

The decline of the country's estimated 2.4 million beehives began in 2006, when a phenomenon dubbed colony collapse disorder (CCD) led to the disappearance of hundreds of thousands of colonies. Since then more than three million colonies in the US and billions of honeybees worldwide have died and scientists are no nearer to knowing what is causing the catastrophic fall in numbers.

The number of managed honeybee colonies in the US fell by 33.8% last winter, according to the annual survey by the Apiary Inspectors of America and the US government's Agricultural Research Service (ARS).

The collapse in the global honeybee population is a major threat to crops. It is estimated that a third of everything we eat depends upon honeybee pollination, which means that bees contribute some £26bn to the global economy.

Potential causes range from parasites, such as the bloodsucking varroa mite, to viral and bacterial infections, pesticides and poor nutrition stemming from intensive farming methods. The disappearance of so many colonies has also been dubbed "Mary Celeste syndrome" due to the absence of dead bees in many of the empty hives.

US scientists have found 121 different pesticides in samples of bees, wax and pollen, lending credence to the notion that pesticides are a key problem. "We believe that some subtle interactions between nutrition, pesticide exposure and other stressors are converging to kill colonies," said Jeffery Pettis, of the ARS's bee research laboratory.

A global review of honeybee deaths by the World Organisation for Animal Health (OIE) reported last week that there was no one single cause, but pointed the finger at the "irresponsible use" of pesticides that may damage bee health and make them more susceptible to diseases. Bernard Vallat, the OIE's director-general, warned: "Bees contribute to global food security, and their extinction would represent a terrible biological disaster."

Dave Hackenberg of Hackenberg Apiaries, the Pennsylvania-based commercial beekeeper who first raised the alarm about CCD, said that last year had been the worst yet for bee losses, with 62% of his 2,600 hives dying between May 2009 and April 2010. "It's getting worse," he said. "The AIA survey doesn't give you the full picture because it is only measuring losses through the winter. In the summer the bees are exposed to lots of pesticides. Farmers mix them together and no one has any idea what the effects might

be."

Pettis agreed that losses in some commercial operations are running at 50% or greater. "Continued losses of this magnitude are not economically sustainable for commercial beekeepers," he said, adding that a solution may be years away. "Look at Aids, they have billions in research dollars and a causative agent and still no cure. Research takes time and beehives are complex organisms."

In the UK it is still too early to judge how Britain's estimated 250,000 honeybee colonies have fared during the long winter. Tim Lovett, president of the British Beekeepers' Association, said: "Anecdotally, it is hugely variable. There are reports of some beekeepers losing almost a third of their hives and others losing none." Results from a survey of the association's 15,000 members are expected this month.

John Chapple, chairman of the London Beekeepers' Association, put losses among his 150 members at between a fifth and a quarter. Eight of his 36 hives across the capital did not survive. "There are still a lot of mysterious disappearances," he said. "We are no nearer to knowing what is causing them."

Bee farmers in Scotland have reported losses on the American scale for the past three years. Andrew Scarlett, a Perthshire-based bee farmer and honey packer, lost 80% of his 1,200 hives this winter. But he attributed the massive decline to a virulent bacterial infection that quickly spread because of a lack of bee inspectors, coupled with sustained poor weather that prevented honeybees from building up sufficient pollen and nectar stores.

The government's National Bee Unit has always denied the existence of CCD in Britain, despite honeybee losses of 20% during the winter of 2008-09 and close to a third the previous year. It attributes the demise to the varroa mite – which is found in almost every UK hive – and rainy summers that stop bees foraging for food.

In a hard-hitting report last year, the National Audit Office suggested that amateur beekeepers who failed to spot diseases in bees were a threat to honeybees' survival and called for the National Bee Unit to carry out more inspections and train more beekeepers. Last summer MPs on the influential cross-party public accounts committee called on the government to fund more research into what it called the "alarming" decline of honeybees.

The Department for the Environment, Food and Rural Affairs has contributed £2.5m towards a £10m fund for research on pollinators. The public accounts committee has called for a significant proportion of this funding to be "ring-fenced" for honeybees. Decisions on which research projects to back are expected this month.

WHY BEES MATTER

Flowering plants require insects for pollination. The most effective is the honeybee, which pollinates 90 commercial crops worldwide. As well as most fruits and vegetables – including apples, oranges, strawberries, onions and carrots – they pollinate nuts, sunflowers and oil-seed rape. Coffee, soya beans, clovers – like alfalfa, which is used for cattle feed – and even cotton are all dependent on honeybee pollination to increase yields.

In the UK alone, honeybee pollination is valued at £200m. Mankind has been managing and transporting bees for centuries to pollinate food and produce honey, nature's natural sweetener and antiseptic. Their extinction would mean not only a colourless,

meatless diet of cereals and rice, and cottonless clothes, but a landscape without orchards, allotments and meadows of wildflowers – and the collapse of the food chain that sustains wild birds and animals.

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Uguagliance

2 May 2010, 12:32AM

We're all doomed, doomed I tell you.

Still, the Guardian and Observer has come out for that wee chancer Clegg so no doubt he'll come up with a nine-point plan to change the bee situation. And the we'll all be happy.

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paedant

2 May 2010, 1:05AM

Potential causes range from parasites, such as the bloodsucking varroa mite, to viral and bacterial infections, pesticides and poor nutrition stemming from intensive farming methods.

Since bees have been kept for thousands of years, and presumably the varroa mite, viral, and bacterial infections were also around during that time, this seems to point to pesticides and intensive farming.

Perhaps all the shareholders in the companies producing the pesticides will agree to manually pollinate all the plants when the honeybees are gone? They can only be drones for so long, can't they?

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**haldir**

2 May 2010, 1:06AM

"The world may be on the brink of biological disaster after news that a third of US bee colonies did not survive the winter"

Newsflash! - the US is not the entire world - I'd hazard a guess that the bees of central Asia, south America and, oh, let's see, New Zealand are doing ok.

My dad's hives (in the hills of Co. Wicklow) are doing very well, after the varroa disaster of a decade ago. He did have two colony disappearances this winter, one which was just an empty hive (it happens), but the other colonies had been making comb and just vanished (unusual). Fingers crossed.

American crop honeybees are often enormously stressed and from a small(ish) gene pool. They are also fed sugar, rather than being allowed to consume some their own (slightly antibacterial) honey and other hive products. They often have varroa.

Bees are also very susceptible to disease, and densely packed apiaries are the perfect breeding ground for them. Just look at any book on beekeeping and the list of diseases is quite surprising.

I'm all for more being spent on bee research here in the UK, it is a disgracefully neglected part of our agriculture, but please don't use silly, alarmist nonsense to make a case.

[Recommend?](#) (129)[Report abuse](#)[Clip](#) |[Link](#)**SpangleJ**

2 May 2010, 1:10AM

Please don't angle every comment for the next two weeks or two years about Clegg. It's already *really* boring, one day in.

In my view, this bee scenario is a vignette of what happens when the powers that be try to ignore a clear and present threat - dismissing it as environmental hysteria. We've had years to seriously invest in bee health and address the crisis. The fall out is vast. The investment isn't.

[Recommend?](#) (82)[Report abuse](#)[Clip](#) |[Link](#)**SpangleJ**

2 May 2010, 1:21AM

@haldir - no, there is evidence of it in Brazil, Taiwan and Israel.

<http://cbs11tv.com/consumer/bees.honeybees.dying.2.502236.html>

But your dad's hives are fine - so the world can breathe easy.

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Fomalhaut88

2 May 2010, 1:27AM
Damn global warming!!!!
Those cold winters!!!!

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HongKongCalling

2 May 2010, 1:58AM
@haldir
please don't use silly, alarmist nonsense to make a case.
Quite. i had a heart sink moment reading the "we're all doomed - doomed I tell you!" headline.
Sure - this is a problem. Sure - it needs sorting. I know next to nothing about bees, but I'm 100% sure that the issue won't be made better by setting a few wild, alarmist hares running.
Any chance of more constructive, solution focused reporting, Guardian??

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Atomiclock

2 May 2010, 2:12AM
Anyone else see a 'relationship' between Mexican petrol prices no longer being cheap enough to force Americans over the border to tank up, and the BP oil rig disaster?

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pixielated

2 May 2010, 2:27AM
Hmm...there is already evidence of this happening elsewhere asides from the USA - Chinese farmers in certain areas of the country now need to play the role of human honeybees...

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SydneyMind

2 May 2010, 2:42AM

'The world may be on the brink of biological disaster ...'

Uhuh. Ok. Whatever.

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darhtuna

2 May 2010, 2:56AM

I recently took a class on beekeeping at our local University which is active in bee research. Several things stood out.

Honeybees are not native to the U. S. We have our own pollinators for native crops which are also being lost due to destruction of habitat.

Pesticides build up in the wax to such an extent that it must be removed after 3-4 years due to toxicity to bees. We need a new Rachel Carson to point out that bees are like canaries in the coal mine.

Commercial beekeepers move their hives by truck from place to place to pollinate whatever crop is in bloom, often across the country. Supposedly farmers do not spray during this period. Obviously, travelling, pesticide exposure, and mingling with different local bees can't be good for bee health!

Our University is advocating a return to organic beekeeping focusing on bee health rather than a huge cash crop. The various bee diseases are in fact controllable by good management and some clever organic techniques.

When will we learn to work with nature rather than thinking we can control it??

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Agir

2 May 2010, 3:04AM

Whats the normal percentage loss over a winter period? How quickly can bee numbers regenerate? Whats the minimum number of bees needed? Are there crops which have failed to be pollinated and if so how much?

I would appreciate a bit more journalism before I copy a link to this story thanks...

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Agent3244

2 May 2010, 3:08AM

.. Wake up world, take a good look...

RECIPROCITY or 'What goes around comes around.'

Who can expect the bees to work for our benefit if agriculture makes few concessions to

theirs?

Whole ecologies and single species are heavily dependent upon reciprocity, as is the best of human civilization. Sadly behavioural choices driven by a singular dynamic of monetary exchange are eroding much of the basis of reciprocity. Clearly the seemingly relentless and bottomless quest for value by those in control of the food provision chain limits any aspirations for sustainable and responsible practice in agriculture.

Human induced global warming may threaten the future of our species but I'll wager agricultural collapse is a bigger threat to the future of homo sapiens.

We're far too smart for our own good, but not nearly clever enough for our own benefit. The threat to our survival lies in the weakness of our singular economy and in the rise of corporate dominion.

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cy414

2 May 2010, 3:09AM

do these experts mean to suggest that insecticides are killing insects?

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PeakOilPete

2 May 2010, 3:10AM

Its AVATAR 2 and the bees of souls in 4d ? give me a big blue body, a dragon, a hot blue chick a funny looking horse and let me go and fight Goldman & Sachs!

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RandomEyes

2 May 2010, 3:23AM

It certainly requires research money and its worrying to say the least.

I wouldn't want to jump to any conclusions until the results are in and they need to come in quickly.

Anybody out there who can help direct us, maybe we could all donate some cash to the right organisations.

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**twiglette**

2 May 2010, 3:25AM

It's about time we took environmental degradation seriously. The volcano that stopped the flights was a wake-up-call. Suddenly we realised the sheer scale of the pollution of the vapour trails 24/7 in our skies, and people were saying they could see real blue in the sky for the first time in many years: they just hadn't realised it had vanished (like a dull pain or humming noise you didn't know was bothering you until suddenly it is gone). Very soon there will be precious little to save, and we will be living in a post-holocaust style world where only war is paid for (actually, we're pretty close to that already!). Time to act now, or as the yanks say, like yesterday!

[Recommend?](#) (71)[Report abuse](#)[Clip](#) |[Link](#)**Jiminoz**

2 May 2010, 3:37AM

The sooner we wake up and realise that our lifestyle depends on screwing the planet, the better.

[Recommend?](#) (65)[Report abuse](#)[Clip](#) |[Link](#)**Rickaroo**

2 May 2010, 3:42AM

The EMF bath ..cell phones, wi-fi, blue tooth, GPS etc. is ever increasing. Yep..don't stick your head to close the microwave as we only have so many glial cells. Do bee's have any?

[Recommend?](#) (33)[Report abuse](#)[Clip](#) |[Link](#)**JimHynes**

2 May 2010, 4:02AM

Rickaroo, I think that some of the things you list may be factors causing problems for bees.

This is what I mean - one new thing in the environment which bees have never had to contend with in their history before now is the radio signals used by cellular phones, GPS and so on. Such things are increasing the world over, in industrialised countries especially. One aspect of the problem with bees is that their navigation has been disrupted (I read that elsewhere, not in this article). Often bees leave the hive to forage for food, and just cannot find their way back. So the problem is not so much that something is killing individual bees, but something is disrupting their ability to navigate, and that is what is killing the colonies.

So there is a line of research for whoever has the capacity to do it: how much are bees affected by radio signals, and which wavelengths and intensities, etc?

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Billhook

2 May 2010, 4:31AM

No doubt the anti-science mob would dismiss Albert Einstein as a self-serving data-fudging conspiracist (he was a scientist after all) but he took a serious interest in our utter dependence on bees.

After long study, his conclusion was that if we, humanity, were to lose the honey bee, we should have just four years to live.

If the US record is of 30% losses for four years, they have lost about 83% so far. The poster above is correct: parts of China no longer support bees, and huge numbers of people are trying to pollinate crops by hand. The alternative is famine.

National security priorities? We all know that Iran might build a bomb, oh and a rocket to move it on too. And then there's that guy in a cave in Afghanistan . . .

Regards,

Billhook

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Billhook

2 May 2010, 4:37AM

Sorry, its late and my maths were hasty.

A line in the post above should read:

If the US record is of 30% losses for four years, they have lost about 76% so far.

Better, but not significantly so.

Regards,

Billhook

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UnevenSurface

2 May 2010, 4:37AM

Very funny to read the posts from the city dwellers, who apparently think that their food grows magically in Tescos! Sorry boys and girls, but if your bees die, you are in deep doggy doo doo.

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Hickory

2 May 2010, 4:39AM

At this rate of ccd die offs...and lack of bees being born...we may soon have a vast shortage of the fruits and veges we take for granted.....there is a 60 minute doco about this on you tube.....neo nicatinoids look very suspect....but Bayer corp says theres no evidence....we also dont know what GM crops are doing.....the bees are disappearing....perhaps getting lost and dying...thats why they need to live inside the hive...they die if outside too long.....it could also be the diet they are fed....my hunch is pesticides...too little regulation.....and too much lobbying....but why is there so little govt action on this....like there is so little govt action about peak fuel....I keep thinking about Einstein`s quotes about bees and the human race.....if they die...so will we... :(<http://www.youtube.com/watch?v=VRBJf57aNp4&feature=relate>

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drianw

2 May 2010, 5:20AM

Actually we've had the varoa mite in New Zealand for a few years now, but so far it's limited to the North Island and strict quarantine around hive movements are in place. Apart from that I think our hives are ok, but I'm no expert. Our honey is delicious and the manuka honey is the most anti-bacterial of them all.
kia ora

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SmirkingLiberal

2 May 2010, 5:27AM

bzzzzz bzzzz bzt!
Bzzz buzze biz buzzzz buzzzz!
Buzz bzztbztzbbbbzzz'T!
Bz!

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heavyrail

2 May 2010, 5:56AM

How are the bumblebees doing now

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alchemical

2 May 2010, 5:59AM

The Guardian needs to send out their fly-on-the-wall documentary film crew to get the point of view of the bees.

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hallelujah

2 May 2010, 6:50AM

I'm surprised this article doesn't mention genetically modified crops which are also considered a possible culprit for the vanishing bees phenomenon.

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Andrew30

2 May 2010, 7:11AM

paedant 2 May 2010, 1:05AM

"Since bees have been kept for thousands of years, and presumably the varroa mite, viral, and bacterial infections were also around during that time, this seems to point to pesticides and intensive farming. "

Maybe they could just not get enough stores during the cool short summer and just starved and froze to death in the long cold winter.

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Andrew30

2 May 2010, 7:17AM

Perhaps there should be a law that prevents people from removing flowering plants from their property instead of a law requiring the removal of 'noxious weeds'.

It is the large amounts of pollen (bee food) that is created by things like ragweed that sustains the bees. Just like (you know what) in the atmosphere that sustains the plants.

Your choice, hay fever for a few weeks or starvation.

Inconvenience or death.

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glamorganist

2 May 2010, 7:32AM

This comment has been removed by a moderator. Replies may also be deleted.



Andrew30

2 May 2010, 7:40AM

heavyrail 2 May 2010, 5:56AM

?How are the bumblebees doing now?

Fine where I live.

I noticed last summer some bumblebees in the garden (Canada so that means the dirt part not the grass part) and they were crawling in and out on small holes in the ground. I had not realized that they actually burrow in the dirt to nest over the summer. So I put some Popsicle sticks around all the holes I could find and just left that part of the garden (dirt part) untended for the rest of the year.

Then I had to go on a trip and the lawn (the grass part of the yard) was not cut for a couple of weeks. On returning I checked the bees going in and out of the holes and going to some clover that was in the grass, so I stopped cutting that part of the grass; soon it was awash in clover, dandelions and bumblebees.

I have never used fertilizer, pesticides or insecticide on the property and only cut as much grass as is needed for a safe fire break (about 20 ? 30 meters around the house). I? ve has bugs kill large parts of the lawn and beavers take trees (I plant trees just by mowing around them if they sprout in a convenient place).

I think if everyone just gave a thought to what is going on around them and what they themselves are doing; rather than trying to change the whole world or what other people do, the clover, dandelions, bumblebees and beavers would all be better off.

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oldbat

2 May 2010, 7:41AM

No one has mentioned the high reliance of the US on GM crops.....

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Andrew30

2 May 2010, 8:01AM

oldbat 2 May 2010, 7:41AM

"No one has mentioned the high reliance of the US on GM crops....."

Maybe the bees, like most hungry people on the planet don't care about the selective or genetic breeding or the evolution of their food. They just need food.

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Councillor

2 May 2010, 8:02AM

The use of genetically modified crops is the pointer. The US has enthusiastically adopted this technology.

A crop -in the US it's mostly corn- is modified to make it resistant to powerful herbicides.

The farmer can then drench the growing plants with the chemicals, and every 'weed' except the corn dies.

This is beneficial to the farmer, in that crop yields are higher, but the real profit goes to the manufacturer of the herbicide, often the same company that modified the seed.

One need hardly think too long about it to perceive a potential hazard in ingesting anything that has already been 'treated' with a herbicide.

If a chemical can cause a wide variety of plants to wither and die, what would its residue do to the human gut?

And what would it do to a bee?

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Intersubjective1

2 May 2010, 8:02AM

WHY BEES MATTER

Why shove this at the end of the article, it should be at the TOP

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Ladinda

2 May 2010, 8:11AM

paedant wrote:

Since bees have been kept for thousands of years, and presumably the varroa mite, viral, and bacterial infections were also around during that time, this seems to point to pesticides and intensive farming.

Not quite. The varroa mite is native to Asia. Asian bees evolved to live with varroa mites and can "clean" themselves. By and large, they get rid of the mite before the mites' done any serious damage. European honey bees can't get the mites off and succumb.

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2 May 2010, 8:18AM

Apis mellifera - The European honey bee, as has been pointed out already, is an introduction to North America and many other parts of the world.

Not only that, native sub-types in various parts of Europe have been replaced by non-native types. The British black bee (which naturally evolved to suit UK conditions) has disappeared as a result.

Hopefully disease / pesticide resistant bees will be successfully bred - and the effects of pesticides need to further researched and their use reduced or banned as needed.

[Recommend? \(7\)](#)[Report abuse](#)[Clip |](#)[Link](#)**fridayschild**

2 May 2010, 8:20AM

I seem to recall that awhile back some research was published showing that the intestinal flora of bees in parts Britain had been altered by the bees feeding on GM crops. Intestinal flora are vital for the health of all animals, including the human species, as they form the first line of defence against infections of all kinds. Could well be an important cause of declining bee populations, along with profit driven agribusiness and all that that entails in environmental degradation. More recent research showed yet again that ecologically based agriculture is as productive as chemical based agriculture (but requires higher labour input - but hey, what the hell's wrong with people having a useful job to do? Providing food, keeping occupied. Our capitalist civilisation knows the price of everything and the value of nothing!) I live in northwest Spain and the president of the autonomous region gave the go ahead to Monsanto to plant experimental fields of GM crops. To the concern of ecologist groups and farmers not interested in planting GM maiz (acres and acres of it in Galicia already) the multinational replied that they were planting the fields with a plant-free perimeter area of 200 meters. Apparently birds and bees and other such creatures don't fly (or recognise a no-fly zone when they see one!) and seeds don't get blown by the wind. The minister in charge commented that, while they recognised there were some possible ecological problems associated with planting Gm crops, nobody knows for certain what these problems are so let's go ahead and find out! No good shutting the gate when the horse has bolted, as they used to say!

[Recommend? \(54\)](#)[Report abuse](#)[Clip |](#)[Link](#)**Phoenix57**

2 May 2010, 8:26AM

Is there a control area to study - a part of the world that is entirely free of pesticides and where bees are thriving?

Is there any part of the world entirely free of pesticides at all, I wonder?

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undercurrent

2 May 2010, 8:37AM

There are an unprecedented number of 'anti-nature' factors that have been on the increase in our post industrial environment over the past decades. They include: A trebling of pesticide use; hybridisation of both agricultural plants and bees themselves; monocultural farming methods with their attendant destruction of biodiversity; 'climate change' causing disruption to normal seasonal patterns of breeding; genetically modified organisms (GMO) which now cover 99% of US farming industry's soya and maize production and which have been shown to disrupt endochrinal function and immune systems; atmospheric pollution from toxic pollutants. Add them up and think of the bee, then think of us humans...

I think one can now understand why Albert Einstein once said "If the bees die - mankind will soon follow".

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ByGeorge

2 May 2010, 8:44AM

When you go for a walk - presuming you live near some greenery - look how many bees lie dead or dying. Something in the environment is drastically amiss. Nicotinoids are a good guess - just the volume of chemicals that are thrown about to squeeze every last drop of production out of the land. Shameful

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tristamshandy

2 May 2010, 8:45AM

Here is a very recent NY Times article. Although I do not take this as scripture, in this article it is mentioned that bee populations have increased a lot in China, and other countries.

In any case, it discusses the CCD and possible causes.

I think more of us need to take care of our planet for the sake of taking care of it, and not out of some profit-driven reason.

Could someone answer this question from **Poenix57**

Is there a control area to study - a part of the world that is entirely free of

pesticides and where bees are thriving?

<http://freakonomics.blogs.nytimes.com/2010/04/28/whats-behind-the-honeybee-decline-perhaps-not-what-youve-heard/?scp=1&sq=bee%20colonies%20CCD&st=cse>

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[harrakaharraka](#)

2 May 2010, 8:46AM

@SydneyMind

2 May 2010, 2:42AM

`The world may be on the brink of biological disaster ...'

Uhuh. Ok. Whatever.

of course this is not alarmist nonsense, not even close, just very bad reporting. human linked extinctions of species already mean that the world is facing the greatest number of extinctions ever... highlighting bees because they are pollinators is crazy and blinkered. it all links together. humans are exterminating thousands of useful species .. and no-one gives a damn.

90% of the medicines we use were derived from plants, yet that little herb that just got rubbed out doesnt concern anyone, although it may contain the cure for cancer. stupid. blinkered. idiots.

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[mothmoth](#)

2 May 2010, 8:48AM

Anybody wanting to contribute donations to help research might contact the Soil Association.

It would appear that whatever new circumstance humans have put the bees in, their range of adaptations has been challenged. As yet we do not know whether only one is to blame or whether it is a combination: the sprays which accumulate in pollen/beeswax, the sugar for winter diet instead of protective own honey, the transporting of hives across vast acres of (especially) almond orchards which costs them their normal navigational strategies, the introduction of airwave interference from telecommunications.

In a litigation-led economy it's predictable that no-one wants to accept responsibility. So it seems to me that while everyone's bickering the best thing we can all do is return bees to the least changed circumstances possible: give'm back all their own, ancient ways of flourishing. Respect, Bee.

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juliuzbeezer

2 May 2010, 8:54AM

French apiculteurs are also reporting stunning losses. And the French are the number one users of pesticides in Europe.

80% of GM crops are modified to be pesticide resistant: then much higher doses of pesticides can be used, creating a sterile monoculture in the fields: and a death zone for bees.

The government response? To move towards 50% less pesticide use by 2018. Let's hope that's not too late.

Just 2.5% of food production here is currently "bio" (= "organic" neither term really satisfactory). The system is heavily regulated, but the global picture is of subsidy incentives generating bigger and bigger farms which are managed more and more intensively (*productivisme*), while the little guys can't compete and have to give up. This is what happens when financial incentives become the sole driver for cultural change. Capitalism is *the* revolutionary force comrades. But nature is complex and the loss of traditional methods (which were in balance with nature) is both grave and sad. It's the world's favourite sport to give French farmers a kicking, not least in Paris, but they do know their stuff. There are far more who would like to be *en bio* than can square that belief with the exigencies of the market. The market is made by man and must be changed by man, and quickly.

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wastebuster

2 May 2010, 8:55AM

Although important I think people are forgetting that the humble bumblebee is also suffering.

Advantages of bumblebees over honeybees as pollinators

Bumblebees forage earlier in the mornings and later in the evenings than honeybees.

They can continue pollinating during colder weather and even when it is raining. They are faster workers, visiting twice as many flowers per minute as honeybees. Because of their larger size, they can carry heavier loads enabling them to forage further afield than honeybees. They do not have the communication system used by honeybees, the famous 'waggle dance', which informs other honeybees of the a rich food resource outside of their 'crop' area, allowing bees to leave en masse to collect the food.

Bumblebees instead, have to diligently continue to 'work' their food source in the crop which requires their service, resulting in a more reliable and thorough pollination of crops.

Commercially Important Pollinators

Indeed there is such a shortage of our native bumblebees to pollinate these crops, particularly greenhouse crops and field grown strawberries, that many commercial growers have, since 1989, imported them from commercial breeders in Holland. They arrive in ready made nest boxes with queen bumblebees and a small number of workers, which soon grow larger,, in each box, It is estimated that between 40-50,000 such nests are imported into the UK each year.

Advantages for commercial growers using imported bumblebees

The Mediterranean *Bombus terrestris dalmatinus*, (B.t.d) a relative of our native buff tailed bumblebee, *B.t. audax* (B.t.a), was selected for commercial breeding because of particular traits it possesses, such as producing more queens, which themselves were more productive in egg laying, thus making it more financially viable to do so. Research has found that this species, in comparison to our own native bumblebee, were better nectar foragers, were considerably larger, have the ability to overwinter without diapause, can fly several kilometres (suggesting rapid dispersal) have a higher reproductive output (two generations a year) produce larger males, produce substantially more queens capable of founding new nests and they could set them up most readily. Many admirable qualities for the commercial crop producer, which we can only assume, breeders would make selective breeding to increase as many as these attributes in the bees they sell.

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getjiggy21

2 May 2010, 8:55AM

Is it surprising that many of the bees didn't survive when there are so many aeroplanes spraying barium chemtrails into the atmosphere!!!??

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lierbag

2 May 2010, 8:55AM

GM figures largely in this crisis - although governments will continue skirting around this fact because big business doesn't want to see its profits take a dip. Proteinase inhibitors present in transgenic plants disrupt bee development and longevity. The conclusion of the paper: *Environmental Risk Assessment of Transgenic Plants Using Honey Bee Larvae*, produced by the Danish Institute of Agricultural Sciences, stated: *IV. Conclusion*
Adult worker honey bees mainly eat pollen as nurse bees, with a peak in pollen intake at day nine after emerging. The pollen intake and, thus, amount and type of digested protein, is correlated to the developmental status of the hypopharyngeal glands (30-31).

The secretions of these glands are important components of the larval food. It is therefore likely that nurse bees that ingest PIs will be poorer producers of larval food both in terms of quantity and quality. Hence, not only will the longevity and learning ability of adult bees be reduced (17-20) affecting their performance as forager bees if they are influenced by a SBTI containing pollen or nectar source, they will probably also be suboptimal tenders of larvae as nurse bees. A crop expressing SBTI in a 1.0% concentration in pollen or nectar will, therefore, have both a direct impact on honey bee larvae through digestive inhibition (resulting in increased development time, increased juvenile mortality, and individuals surviving to adulthood being smaller) and an indirect impact

through nourishment depletion through affected nurse bees. The in vitro rearing technique presented here makes it possible to monitor individual larval development and we suggest that this should be included in an environmental risk assessment procedure before releasing transgenic plants for field planting.

http://www.biobees.com/library/pesticides_GM_threats/transgenic_environmental_risk_assessment.pdf

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