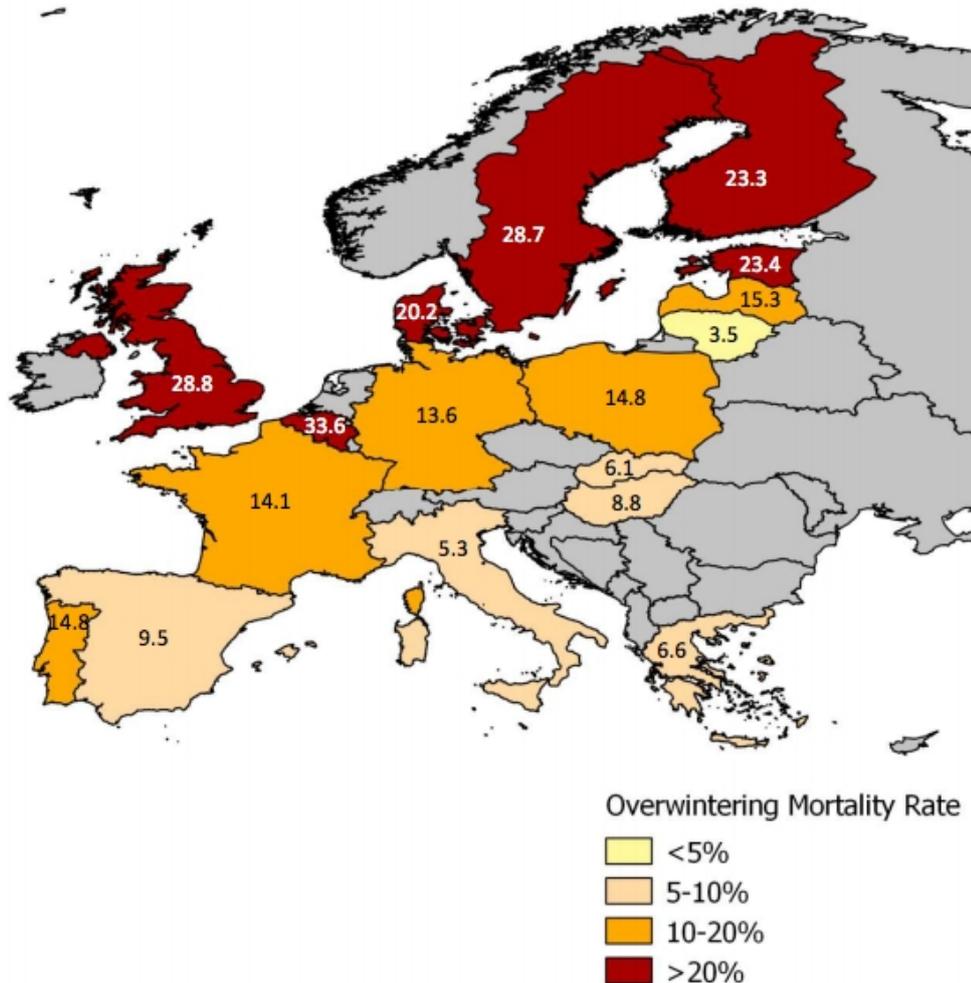


April 22, 2014 

Figure 1: Winter mortality rates in the member states of the European Union recorded by EPILOBEE 2012 – 2013



JOL press Interviews **Gérard Arnold**, research director at the French **CNRS**, specializing in bee biology, on the results of the EPILOBEE ([PDF](#)) study – which was conducted for the first time, in seventeen European countries to monitor hive mortality from autumn 2012 to summer 2013.

Translation by UNAAPI

JOL Press - Which are bee mortality causes?

Gérard Arnold: There are two main categories of factors that may explain hive mortality: biological agents (viruses, bacteria, parasites, mites) and pesticides. There are also other factors that seem generally less important. This is why we refer to a multifactor origin to the bees' decline. What is true at the global level - there are several possible factors - is not necessarily true on the level of a colony or a beehive, where there could be just one factor involved. For example, a parasitic mite like Varroa (*Varroa destructor*) that does a lot of damage in the colonies or a pesticide. It may also be interactions between these two factors. Sometimes there is an abuse of the concept of "multifactor causes"; it can be a way to unjustly minimize the importance of any single factor.

JOL Press - The "Epilobee " study reveals a high rate of bee mortality in northern countries: therefore, would climate be associated with the bees' decline?

Gérard Arnold: we should be careful with the results of a study that has been conducted over nine months. Exceptional climatic events - in this case a cold spell - may, in fact, cause colony mortality, even if the bees are able to survive harsh winters. Specifically, this study we excluded any samples that show evidence that the colonies died from cold. To obtain confirmation of this hypothesis, it should be determined whether, during a mild winter, if the colony mortality rate remains high. In France, for example, the mortality rate was 14 % in winter, and 14% in spring and summer: so we can not directly attribute the high mortality during the bee season - spring and summer - to the winter cold.

JOL Press - What from the Epilobee study do you criticize?

Gérard Arnold: The study presents shows a methodological bias: the European Commission asked to the authors of the study to analyze only biological agents,; without regard ignoring pesticides. This is a very partial view of things. Another weak point: it does not consider other effects than the "bee mortality" in the study. While one of the main problems in the decline of bees is the weakening of bees colonies, an abnormal population decrease of individuals number in the colonies, where remains the queen and soame workers remain, but that can't collect enough honey.

JOL Press -- May cClimate change may have an impact on the bees disappearance?

Gérard Arnold: Not at the moment. We must carefully distinguish between the honey bee, which is generally raised by beekeepers, and hundreds of other bees species in France (thousands around the world), which are wild, and mostly solitary. The honey bee has spread around the world, almost from the Arctic Circle to the equator, such as in the southern hemisphere. It is a bee that knows how to protect itself from heat and cold. It is, in fact, able to adjust maintain the temperature inside the hive. But when there are major disturbances in climate, for example, a very rainy spring, or a severe drought that affects the flowers, these will have an impact on bees, just because they need flowers to feed. So there could be an indirect effect of climate change. It ' also a fashion This is also a fashionable topic ... Someone Some abuse this topic it to avoid deflect that attention away from other factors that that should focus on other factors that cause bee mortality.

JOL Press - It 's Is it too alarmist declare that honey bees could become endangered?

Gérard Arnold: We can't say this for the honey bee. However but Yet, it is undeniable that is they are in poor condition. If the beekeeping as a job will be no longer profitable, there will be a decrease in the number of beekeepers and therefore the number of bees colonies, and this will have negative effects on crops pollination of crops and wild flora. By contrast, the situation is different for some solitary bees species, which are specialized on specific plants. Several species are endangered and just a few are worried about it, : so there is the risk of extinction for these those species.

JOL Press - Bees have a vital role for crop pollination: what would be the consequences of their demise?

Gérard Arnold: The bees provide a huge service in crop and wild flower pollination. At the economic level, these services are infinitely more important in value than the honey production value. The consequences of a failure of this pollination are essentially a decline in crop yield or quality of their products. In China, for example, where the number of hives are significantly decreased in some areas, farmers are forced to pollinate the crops by hand. The United States faces a problem in almond production, because sometimes there are not enough bee colonies to pollinate almond trees.

JOL Press - At the European level, which are the methods are put in place to protect

bees?

Gérard Arnold: The measures go sometimes in the right direction sometimes no ... The European Commission has recently suspended the use of three neonicotinoid insecticides. Unfortunately, these are generally partial decisions. The pesticides were banned in for some cultures crops but not for all kind of culturescrops, : so we can still find them in the environment. The main effort to be done at the European level is relates to the toxicity pesticide toxicity testing which support use permits.for their permission to use. It was proved that the tests currently used are inadequate and unsuitable compared to regarding the molecules currently on the market. On the other hand, there are no studiesy about the toxicity of pesticides mixtures toxicity, while the bees are exposed to a cocktail of molecules that are not known to be of unknown toxicity. It's urgent and essential to invest soon as possible to immediately identify all the causes of bee mortality and to remedy it.

[Interview by G. Arnold - JOL Press](#)

Listen to the two radio interviews to G. Arnold Iter France

[1\) In French, from 1 minute to 20 minutes](#)

[2\) In French, from minute 31 to minute 41](#)