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Global insect collapse: action must accelerate

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Insects—organisms that we once thought so numerous and resistant that they could survive even a global nuclear war—are undergoing a worldwide population collapse, which in turn threatens to wipe out other species through knock-on effects. What can be done? This topic is not being neglected, as the political mobilisation already exists to tackle the underlying causes of the crisis (particularly agricultural intensification and land take): but this action needs to grow, and occupy more time in the debates.

Alarming scientific data: an unrelenting observation

Even the most prestigious scientific publications talk of the "windscreen effect". You don't even need to be particularly old to realize: even thirty-something year olds have probably noticed that far fewer insects are squashed onto their car windscreens today than on their parents' cars when they were children.

George Monbiot called it "Insectageddon" in the *Guardian* in 2017, at the end of 2018 the *New York Times Magazine* talked of the "Insect Apocalypse", while in early 2019 *Le Monde* warned that insects are threatened with extinction by the end of the century: the most prestigious publications of the world press are no longer holding back. Behind the headlines are the data that insect specialists report in the scientific literature. While insect population slumps have been reported in many different countries for some time, and simple observations such as the "windscreen effect" have suggested the magnitude of the problem, a study conducted in Germany from 1989 to 2016 finally made us fully aware of the issue. In an article published in 2017, its authors summarised the data collected by an insect biomass monitoring network in 63 protected areas in the west of the country (thus in principle places with minimal local pollution) and found that in less than thirty years, there has been a decrease of more than 75% of the average biomass of flying insects during the course of a year; and a 82% midsummer decline. Without making definitive conclusions, the authors nevertheless highlighted that most of the protected areas studied were surrounded by agricultural land, where the intensification of farming practices, particularly pesticide use, could have caused an increase in insect mortality over the years, impacting on insects that move away from the nature reserves, thus reducing their populations.

An overview article published in February 2019, which encompasses 73 insect population monitoring studies from around the world, clarifies and extends the bad news. Based on available studies, 41% of insect species studied are in decline, and 31% are threatened with extinction (i.e. declining by more than 30% of the initial population). The annual decline in insect biomass is 2.5% per year worldwide. Since insects are the basis of terrestrial and aquatic food chains, these findings give us a better understanding of the declines already observed in vertebrates (we immediately think of birds, for example), and the risks inherent in allowing the trend to continue.

Above all, this article provides a summary of our knowledge on the causes of this decline: the main ones that appear in the literature are habitat loss and pollution, especially related to agriculture, and pesticides in particular among the pollutants. Moreover, the article shows that the data are mainly available for Europe and North America, and much rarer for the rest of the planet: however, the use of chemical inputs is far from limited to these regions, and today reaches records elsewhere, such as in China or South American countries. The situation is therefore probably even more serious.

As with most biodiversity issues, some long-established problems are involved. The determinants of biodiversity loss continue to be largely the same today as they were several decades ago. This insect crisis thus echoes, in a striking way, Rachel Carson's *Silent Spring*, which exposed as early as 1962 in a book that hasn't aged, the health and environmental risks related to massive pesticide use.

What political responses?

What can we do from this observation? Most scientific articles, and their citation by the press, leave the reader feeling helpless in the face of the catastrophe. While the conclusion is generally that it is necessary to reverse the trend as quickly as possible, by changing agricultural models or the better control of urbanisation, for example **(1)**, we remain with general statements that do not mention that there already exists today some debates, processes, negotiations, and even political initiatives that directly touch on these issues. And that it is possible, and vital, to mobilise around them today, in the absence of convincing results showing any improvement.

Recent examples at the national, international and sectoral levels.

In France, the “France, land of pollinators” plan was launched in 2016, with the aim in particular of promoting the mobilisation of actors on the subject. The Biodiversity Plan, launched in summer 2018, contains measures to limit the use of insecticides (see Action 23 for example). In Germany, in the wake of the 2017 study, which caused a major reaction, an action program for insect protection was initiated, and concerns agriculture in the first instance. Very recently, in Bavaria, a record mobilisation (1.75 million voters) may lead to a referendum for the protection of bees, t hrough significant changes in agricultural practices in particular, including the increase in areas dedicated to organic farming.

In 2016, following the publication of the IPBES Pollination Report, a coalition of volunteer pollinator countries was launched at COP 13 of the Convention on Biological Diversity (CBD), to encourage the development of national action plans to protect pollinators, notably through agricultural sector reforms. An initiative for the conservation and sustainable use of pollinators was launched in 2000 by the CBD, in partnership with FAO, and was recently updated at CBD COP 14 in late 2018. It also advocates the gradual reduction and phase-out of pesticides. In parallel, discussions on the future of the European Common Agricultural Policy, towards more sustainability, are underway. More broadly, while the international community has nearly two years (before COP 15 in China in 2020) to build a more effective framework for biodiversity conservation, the ability to act on the causes of biodiversity loss will be crucial. This will require being able to intervene in the arenas where sectoral changes (on agriculture, infrastructure, trade, etc.) are being negotiated, finding allies, points of convergence and levers for change.

Here are arenas where the silence of insects, birds, bats and all other species must resonate with all its weight.

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(1) Regarding these issues of agricultural models and land take, IDDRI has recently published a scenario for an agroecological Europe in 2050 and an analysis of land take trends in France.

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