



## EXTINCTION STEPS OF INSECTS: PRETENDING AS IF THEY EXIST

Hakan Bozdoğan<sup>1</sup> and José Alejandro Cuéllar Cardozo<sup>2</sup>

<sup>1</sup> *Kırşehir Ahi Evran University, Vocational School of Technical Sciences, Department of Plant and Animal Production, 40100, Kırşehir, Turkey; Corresponding Author [hakan.bozdogan@ahievran.edu.tr](mailto:hakan.bozdogan@ahievran.edu.tr)*

<sup>2</sup> *Bioprospección y Biodiversidad Colombiana. Basic Science department. La Salle University. Cra 2 # 10-70; Bogotá. Colombia. [jcuellar39@unisalle.edu.co](mailto:jcuellar39@unisalle.edu.co)*

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### ABSTRACT

In this study, the reasons for the extinction and decrease of insect species were tried to be explained. In addition, the possible reasons for this extinction and the decrease in the number of species that did not create social awareness were emphasized.

**Keywords:** Insects, Extinction

### INTRODUCTION

Why do you think insects, a living group whose extinction is increasing day by day, are shown as if they exist in huge amounts in our aging world filled with the wastes of industry and modernism? Can the answer to this question be hidden in the art of concealing the truth? That's absolutely right! Perhaps this is the ultimate fate of living species about which we have little or no knowledge.

How come? It seems to hear you say that there are thousands of different articles on insects written in taxonomic, physiological, and biochemical fields. Yes, it definitely is! However, factors such as the existence of unknown species as well as known insect species, the decrease in the number of entomologists working at the species level, and the fact that many articles were written merely on existing species reduce the knowledge of lost or extinct species. Moreover, there is hardly any work to detect extinct or endangered insect species. Although statistical programs have been developed to calculate various species' relative density, index, and correlation, the number of studies describing the extinction stories of once-existing species is very few.

Have you ever thought why a species disappear into the blue and how this extinction occurs very quietly? These are some questions for which we are seeking answers. Perhaps primarily, global climate change, developing

industry-oriented activities, greenhouse gases, and disproportionate carbon emissions are blamed for this extinction. But weren't there all these negative factors in our world 20 years ago, although not as much as they are now? Was the absence of most insect species in the phenological periods stated in the literature a sign of seasonal climate shift or an actual extinction?

Even if we assume that there is a loss of species caused by entomological studies based on species collection from nature, ceasing this situation will still not bring an end to the extinction of the species.

Forister et al. (2019) emphasizing in their work that they had sufficient evidence to take action, pointed out that it was time to implement policies that will allow for a rapid social response. They also emphasized the need for a primary policy ranging from nations to farms and homes to achieve these goals. There were concrete examples of the extinction of insect species in the studies. For instance, Casey et al. (2015) reported that in the UK, 13 of 23 wasp species declined by more than half between 1960 and 2012, and two species became extinct. Wagner et al. (2021) take a slightly more dramatic approach to the extinction of species. They claim that most biologists agree on Earth's sixth mass extinction event, when more than 80% of all species, including the dinosaurs, went extinct for the first time since the end of the Cretaceous Period which was 66 million years ago.

However, apart from all these known general acceptances, don't you think there are other factors that reduce insect species diversity? There certainly are. Although an increase is observed in the number of interdisciplinary studies today, it is almost impossible to reach information such as the host, intermediate host, parasite, parasitoid, and major plant species of many insect species. Because doing a species-specific analytical study in insects requires a long-term effort and observation. On the other hand, follow-up, continuity, and competence in interdisciplinary studies are extremely important. For example, a researcher who studies plant-insect interaction is predominantly an entomologist and has very basic instruments on plant species. In such a study on plant-insect interaction, the possible extinction of the plant in question will perhaps be explained by the ecological requirements of the host plant species. In support of this view, Tallamy et al. (2020) argued that there are numerous herbivorous insect species based on specific plant lineages and, in turn, supporting a vast global wealth of insect predators and parasitoids, and that non-native vegetation is insufficient to sustain large and diverse insect herbivorous populations.

Many systematic entomologists present numerical values of relict insect species in their monographs. However, there are hardly any researchers investigating the disappearance story of relict species. Kawahara et al. (2021) examined the issue a little more sociologically and argued that people rarely protect what they do not know and appreciate and the ecological functions of insects in nature are not known. In addition, he stated that some erroneous perceptions (films depicting scary insects or dramatized and misleading headlines) rooted in the established culture have an important place in developing this negative attitude.

Recently, we have started to encounter a new paradox. Do insects harm the environment or does the environment harm the insects? Although there is sufficient evidence that insects are disease vectors in some African countries since ancient times and cause tree decay in forest ecosystems, this is a relatively low percentage when compared to their benefits.

In today's modern world, wild carnivorous cats, which are the subject of documentary films, the traditional indispensables of zoos (elephant, giraffe, hippopotamus, tropical region birds), and colorful reptile species have outranked the place and importance of insects in the world of living things. For this reason, entomological insensitivity has increased so much that perhaps the world will not even be aware of this extinction even if almost all generations of insects disappear. The assumption that insects are at the lower levels of the hierarchy of needs in urban life is perhaps the best statement that summarizes the current situation. It seems that the perception of pretending to exist in the insect world, or the unawareness of its absence, will continue in this way for a long time.

Realizing the fact that human beings cannot endure in a world without insects seems to be perhaps the first remedial step to be taken. Just a few basic brochures, technical trips or scientific activities are not enough to raise awareness about insects. The long-term negative consequences of a living species whose deficiency is not observed concretely and rapidly in urban life should be shared with the public using uncomplicated means (long food pyramid rings, complex prey-host relationships) and expressions.

## REFERENCES

- Wagner DL, Grames EM, Forister ML, Berenbaum MR, Stopak D. (2021). Insect decline in the Anthropocene: Death by a thousand cuts. *Proc Nat Acad Sci* 118(2). e2023989118. <https://doi.org/10.1073/pnas.2023989118>
- Forister ML, Pelton EM, Black SH (2019). Declines in insect abundance and diversity: We know enough to act now. *Conservation Science and Practice* 1(8), e80. <https://doi.org/10.1111/csp2.80>
- Tallamy DW, Narango DL, Mitchell AB (2021). Do non-native plants contribute to insect declines? *Ecol Entomol* 46(4):729-742. <https://doi.org/10.1111/een.12973>
- Kawahara AY, Reeves LE, Barber JR, Black SH (2021). Opinion: Eight simple actions that individuals can take to save insects from global declines. *Proc Nat Acad Sci* 118(2). e2002547117. <https://doi.org/10.1073/pnas.2002547117>