

Pollinator experts - Red List of Taxonomists



Experts in insect taxonomy “threatened by extinction”

While insect populations are plummeting, spelling demise for ecosystems and food sources, an increasing body of evidence shows that we currently recognize only a part of this declining biodiversity. Even worse, insect taxonomists able to describe and provide further information about insect diversity are also in trouble. The European Commission launched ‘the Red List of Taxonomists’ project with a view to map and explain trends in taxonomic expertise across Europe. The results show that taxonomic expertise is at serious risk, being particularly poor in the countries with the richest biodiversity, while taxonomists are predominantly male and ageing.

The European Red List of Insect Taxonomists, produced by [CETAF](#), International Union for Conservation of Nature (IUCN) and [Pensoft](#), showed that scientists who specialise in the identification and discovery of insect species - insect taxonomists - are declining across Europe. The report represents different perspectives within biodiversity science, including natural history and research institutions, nature conservation, academia and scholarly publishing.

European Red List of Insect Taxonomists new



European Red Li...Taxonomists.pdf



Red List Poster final.pdf

Despite the global significance of its taxonomic collections, Europe has been losing taxonomic expertise at such a rate that, at the moment nearly half (41.4%) of the insect orders are not covered by a sufficient number of scientists. If only EU countries are counted, the number looks only slightly more positive (34.5%). Even the four largest insect orders: beetles (Coleoptera), moths and butterflies (Lepidoptera), flies (Diptera) and wasps, bees, ants and sawflies (Hymenoptera) are only adequately ‘covered’ in a fraction of the countries.

To obtain details about the number, location and productivity of insect taxonomists, information was extracted from thousands of scientific articles published in the last decade, queried the most important scientific databases and reached out to over fifty natural science institutions and their networks. Furthermore, a dedicated campaign reached out to individual researchers through multiple communication channels. As a result, more than 1,500 taxonomists responded by filling in a self-declaration survey to provide information about their personal and academic profile, qualification and activities.



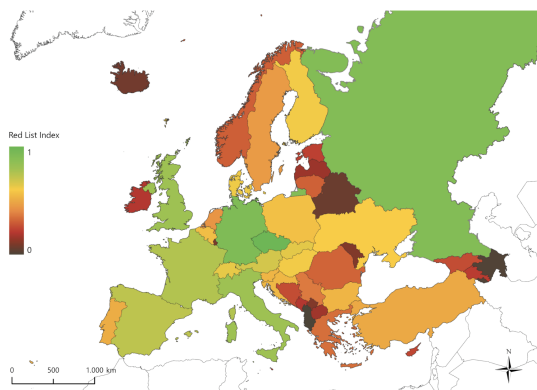
Entomologist examining a small insect under a microscope.

Credit: anton_shoshin/stockadobe.com.

The collected information was assessed against numerical criteria to classify the scientists into categories similar to those used by the [IUCN Red List of Threatened Species](#)TM. In the European List of Insect Taxonomists, these range from Eroded Capacity (equivalent to Extinct) to Adequate Capacity (equivalent to Least Concern). The assessment was applied to the 29 insect orders (i.e. beetles, moths and butterflies, etc.) to figure out which insect groups the society, conservation practitioners and decision-makers need not be concerned at this point.

"Understanding taxonomy is a key to understanding the extinction risk of species. If we strategically target the gaps in expert capacity that this European Red List identifies, we can better protect biodiversity and support the well-being and livelihoods of our societies. With the climate crisis at hand, there is no time left to waste." **David Allen, IUCN.**

On a country level, the results showed that Czechia, Germany and Russia demonstrate the most adequate coverage of insect groups. Meanwhile, Albania, Azerbaijan, Belarus, Luxembourg, Latvia, Ireland and Malta turned out to be the ones with insufficient number of taxonomists. In most cases, the availability of experts seems to correlate to GDP, as wealthiest countries tend to invest more in their scientific institutions. What is particularly worrying is that the lack of taxonomic expertise is more evident in the countries with the greatest species diversity. This trend may cause even more significant problems in the knowledge and conservation of these species, further aggravating the situation. Thus, the report provides further evidence about a global pattern where the countries richest in biodiversity are also the ones most lacking financial and human resources.



Overview of the taxonomic capacity in European countries based upon the Red List Index.

Colour gradient goes from red (Eroded Capacity) to green (Adequate Capacity).

The research team also reminds that it is European natural history museums that host the largest scientific collections - including insects - brought from all over the globe. Thus, these also play an important role in maintaining taxonomic knowledge and building adequate expert capacity at global level.

Concerning trends include also an ageing and a male-dominated (82%) taxonomic community.

"One reason to have fewer young taxonomists could be due to limited opportunities for professional training (...), and the fact that not all professional taxonomists provide it, as a significant number of taxonomists are employed by museums and their opportunities for interaction with university students is probably not optimal." **Ana Casino, Executive Director, CETAF.**

The report points that gender bias has been very likely caused by multiple factors, including fewer opportunities for women to be exposed to taxonomic research and gain an interest, unequal offer of career opportunities and hiring decisions. A fair-playing field for all genders will be crucial to address these shortcomings and close the gap.

"It is pivotal to widely raise awareness of the value and impact of taxonomy and the work of taxonomists. We must motivate young generations to join the scientific community." **Prof. Lyubomir Penev, Pensoft, Managing Director.**

The European Red List of Taxonomists concludes with practical recommendations concerning strategic, science and societal priorities, addressed to specific decision-makers. It gives practical examples and potential solutions in support of their call to action. For instance, in order to develop targeted and sustainable funding mechanisms to support taxonomy, it is proposed to launch regular targeted Horizon Europe calls to study important insect groups for which taxonomic capacity has been identified to be at a particularly high risk of erosion. To address specific gaps in expertise - such as the ones reported in the publication from Romania - a country known for its rich insect diversity, yet poor in taxonomic expertise - it is proposed to establish a natural history museum or entomological research institute that is well-fitted to serve as a taxonomic facility. Amongst the scientific recommendations, the report proposes measures to ensure better recognition of taxonomic work at a multidisciplinary level. The scientific community, including disciplines that use taxonomic research, such as molecular biology, medicine and agriculture - need to embrace universal standards and rigorous conduct for the correct citation of scientific publications by insect taxonomists.

*"As a dedicated supporter of the IUCN Red List, I am inspired by this call to strengthen the capacity, guided by evidence and proven scientific methods. However, Europe has much more scientific capacity than most biodiversity-rich regions of the world. So, what this report particularly highlights is the need for massively increasing investment in scientific discovery, and building taxonomic expertise, around the world." **Jon Paul Rodríguez, Chair of the IUCN Species Survival Commission.***

The European Red List of insect taxonomists is also [publicly available](#) at the Publications Office of the European Union.

Follow and join the conversation on Twitter using the [#RedListTaxonomists](#) hashtag.

Additional information

CETAF is the European organisation of Natural History Museums, Botanic Gardens and Research Centers with their associated natural science collections comprising 74 of the largest taxonomic institutions from 24 European countries (19 EU, 2 EEA and 3 non-EU), gathering expertise of more than 5,000 researchers. Their collections contain a wide range of specimens including animals, plants, fungi and rocks, and genetic resources which are used for scientific research and exhibitions. CETAF aims to promote training, research collaborations and understanding in taxonomy and systematic biology as well as to facilitate access to our natural heritage by sharing the information derived from the collections. Follow CETAF on [Twitter](#), [Facebook](#) and [LinkedIn](#).

IUCN (the International Union for Conservation of Nature) is a membership Union composed of both government and civil society organisations. It harnesses the experience, resources and reach of its more than [1,400 Member organisations](#) and the input of more than [15,000 experts](#). IUCN is the global authority on the status of the natural world and the measures needed to safeguard it.

Through its **Species Survival Commission** (SSC), IUCN assists societies to conserve biodiversity by building knowledge on the status and threats to species, providing advice, developing policies and guidelines, facilitating conservation planning, and catalysing conservation action. Follow IUCN on [Twitter](#), [Facebook](#) and [LinkedIn](#).

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