

Most ecology research is 'wasted': Researchers call for urgent action

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Climate change, pollution, and the lack of pollinators are just a few of the many challenges we face, both locally and globally. Ecology plays a key role in addressing these challenges. While ecological research

produces a wealth of valuable scientific knowledge, emerging evidence suggests that much of the research effort is wasted, and a large fraction of information is not available to users—other researchers, policymakers, or the general public. But how much of the information value is being lost to us? How urgently do we need to act?

A research team from the Ruđer Bošković Institute (RBI) in Croatia has quantified the research waste in ecology. Their findings, published in *Nature Ecology and Evolution*, are shocking. Between 82% and 89% of research is wasted due to issues with [study design](#) and implementation, study publication, and result reporting. This means we urgently need to act to facilitate a more serious and coordinated drive toward changing research and publishing practices. In this way, we can drastically reduce the unused potential of [ecological research](#), for the benefit of nature and society.

Much research in ecology is avoidably wasted

The research team led by Dr. Antica Čulina, and including doctoral student Marija Purgar and Dr. Tin Klanjšček, collected and quantitatively combined published estimates of losses at different stages of the research lifecycle. These meta-studies were themselves based on a large corpus of published or unpublished papers in [ecology](#).

The RBI team found that the biggest waste, 67%, occurs at the very beginning of the research lifecycle, due to suboptimal planning and research implementation such as lack of control in experimental design, or the use of inappropriate statistical analysis. Further loss of information occurs because 45% of the studies are never officially published in the form of a scientific paper, while as many as 41% of the published studies do not fully present their results.

Ignorance is expensive

Dr. Čulina pointed out that the team wanted to quantify research waste in ecological research, as this estimate can serve as a strong incentive for change.

"If we want to avoid such waste and optimize the [scientific process](#), we need to take [urgent action](#) to change the standards for research evaluation, science funding, and the publishing system. The responsibility lies with funders, publishers, [research institutions](#), and researchers themselves. We hope that our call will shake up everyone involved because ignorance is expensive," the authors explain.

"I believe that most researchers began their scientific work out of curiosity and a sincere desire to contribute to the global pool of knowledge. This knowledge can then be used for various positive actions and for the benefit of our society.

"Unfortunately, the current scientific system impedes reaching the goal because it evaluates researchers almost exclusively by the number of their scientific publications rather than by the rigor and openness of their scientific work. Therefore, we need to get together, find solutions, and implement them urgently.

"Ecological research has already immensely helped modern society, despite the enormous waste of information that we detected in our study. Just imagine how much more it could help us if there were no such losses," concludes Dr. Antica Čulina.

More information: Antica Culina, Quantifying research waste in ecology, *Nature Ecology & Evolution* (2022). [DOI: 10.1038/s41559-022-01820-0](https://doi.org/10.1038/s41559-022-01820-0).
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