

Standardized metadata for biological samples could unlock the potential of collections

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Bluethroat (*Luscinia svecica*). Credit: Vojtěch Brlík

Vojtěch Brlík from the Department of Ecology, Faculty of Science,

Charles University and the Institute of Vertebrate Biology, Czech Academy of Sciences calls on scientists to share basic information about biological samples (metadata) to ensure their effective repurposing across biological disciplines.

The call to the scientific community, [published](#) in the journal *Nature*, is based on the experience gained from coordinating the AviSample Network [metadata](#) repository, which currently holds the metadata of more than 35,000 samples of almost 500 bird species.

Scientific community has been systematically optimizing research activities, and there are a number of initiatives actively pursuing this goal. The project led by Brlík pushes these efforts even further, "Our initiative demonstrates that the availability and traceability of basic information about samples (so-called metadata) has the potential to make scientific research more efficient, save financial and human resources and diversify research teams on a global level."

He adds, "This initiative is not concerned with the storage of the physical samples or the data. We are only interested in basic information about [biological samples](#), simply put, when, where and how the samples were collected and how they are preserved. Sharing these metadata is inexpensive, applicable on a global level, and facilitates the use of already collected samples, which benefits both the sample owners and the researchers who will use them."

The principle of sharing sample metadata and repurposing existing samples is beneficial in many ways. Centralized and standardized reporting of sample metadata makes it easy to see what samples are currently available without demanding communication with colleagues or costly collection of new samples.

Sharing metadata could therefore streamline scientific activities,

especially in less explored areas that are difficult to access, while strengthening key collaborations with local scientists. Similarly, reporting sample metadata would help scientists whose research focuses on [endangered species](#) or large spatial scales.

"The initial idea for this initiative was conceived during my Ph.D. studies, when I was looking for feather samples originating from a large area of sub-Saharan Africa. I had samples from our research group, but I needed to expand the dataset considerably.

"We wrote to colleagues in Sweden and Switzerland who we suspected had similar samples from other locations in Africa. And fortunately, it turned out that they did indeed have them. Although they primarily collected the samples for a completely different purpose, we have managed to cover a huge part of the sub-Saharan Africa region through this joint effort, which would not have been possible without a cooperation with colleagues," says Brlík, describing the origins of the current project.



Illustrative photo of ornithological samples. Credit: Petr Procházka

In 2022, Brlík and a team of colleagues (in particular Pavel Pipek from the Department of Ecology, Faculty of Science, Charles University and Petr Procházka from the Institute of Vertebrate Biology of the CAS) created the AviSample Network metadata repository. In this database, ornithologists can now enter metadata of bird samples, i.e. where, when, and how the sample was collected, from which bird species and how these samples are stored.

The database currently includes information on nearly 500 bird species and metadata for more than 35,000 samples are available. The repository has a number of ambassadors who are involved in spreading the initiative in their regions.

"One of the examples of the repurposing of existing samples enabled by sharing metadata is the B10K project. This project aims to survey the genomes of all 10,000 [bird species](#), which the project coordinators are collecting primarily from museums.

"However, for rare species and species occurring in understudied areas (e.g. tropics) it is not easy to obtain samples. Sharing metadata of samples stored in researchers' collections has made it possible to use existing samples collected in Africa and Europe, for this large-scale project," describes Brlík.

In a correspondence published in his article, Brlík shows, using the AviSample Network as an example, that sharing metadata facilitates repurposing existing samples stored in researchers' collections and has thus a huge potential.

"I aim to take this initiative and change in perception to a global level and show that sharing sample metadata has the potential to advance the efficiency of scientific activities across biological disciplines," concludes Brlík.

More information: Vojtěch Brlík, Standardized metadata for biological samples could unlock the potential of collections, *Nature* (2024). [DOI: 10.1038/d41586-024-01421-w](https://doi.org/10.1038/d41586-024-01421-w)

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