How to ensure biodiversity data are FAIR, linked, open and future-proof

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Now concluded Horizon 2020-funded project BiCIKL shares lessons learned from a three-year European-wide collaboration aligning with the goals of the EU Biodiversity Strategy for 2030. Credit: Pensoft Publishers

Within the Biodiversity Community Integrated Knowledge Library (BiCIKL) project, 14 European institutions from ten countries, spent the last three years elaborating on services and high-tech digital tools, in order to improve the findability, accessibility, interoperability and
reusability (FAIR-ness) of various types of data about the world's biodiversity. These types of data include peer-reviewed scientific literature, occurrence records, natural history collections, DNA data and more.

By ensuring all those data are readily available and efficiently interlinked to each other, the project consortium's intention is to provide better tools to the scientific community, so that it can more rapidly and effectively study, assess, monitor and preserve Earth's biological diversity in line with the objectives of the likes of the EU Biodiversity Strategy for 2030 and the European Green Deal. Their targets require openly available, precise and harmonized data to underpin the design of effective measures for restoration and conservation, reminds the BiCIKL consortium.

Since 2021, the project partners at BiCIKL have been working together to elaborate existing workflows and links, as well as create brand new ones, so that their data resources, platforms and tools can seamlessly communicate with each other, thereby taking the burden off the shoulders of scientists and letting them focus on their actual mission: paving the way to healthy and sustainable ecosystems across Europe and beyond.

Now that the three-year project is officially over, the wider scientific community is yet to reap the fruits of the consortium's efforts. In fact, the end of the BiCIKL project marks the actual beginning of a European- and global-wide revolution in the way biodiversity scientists access, use and produce data.

It is time for the research community, as well as all actors involved in the study of biodiversity and the implementation of regulations necessary to protect and preserve it, to embrace the lessons learned, adopt the good practices identified and build on the knowledge in existence.
This is why among the BiCIKL's major final research outputs, there are two Policy Briefs meant to summarize and highlight important recommendations addressed to key policy makers, research institutions and funders of research. After all, it is the regulatory bodies that are best equipped to share and implement best practices and guidelines.

Most recently, the BiCIKL consortium published two particularly important policy briefs, both addressed to the likes of the European Commission's Directorate-General for Environment; the European Environment Agency; the Joint Research Centre; as well as science and policy interface platforms, such as the EU Biodiversity Platform; and also organizations and programs, e.g. Biodiversa+ and EuropaBON, which are engaged in biodiversity monitoring, protection and restoration. The policy briefs are also to be of particular use to national research funds in the European Union.

One of the newly published policy briefs, titled "Uniting FAIR data through interlinked, machine-actionable infrastructures," highlights the potential benefits derived from enhanced connectivity and interoperability among various types of biodiversity data. The publication includes a list of recommendations addressed to policy-makers, as well as nine key action points.

Understandably, among the main themes are those of wider international cooperation; inclusivity and collaboration at scale; standardization and bringing science and policy closer to industry. Another major outcome of the BiCIKL project: the Biodiversity Knowledge Hub portal is noted as central to many of these objectives and tasks in its role of a knowledge broker that will continue to be maintained and updated with additional FAIR data-compliant services as a living legacy of the collaborative efforts at BiCIKL.

The second policy brief, titled "Liberate the power of biodiversity
literature as FAIR digital objects," shares key actions that can liberate data published in non-machine actionable formats and non-interoperable platforms, so that those data can also be efficiently accessed and used; as well as ways to publish future data according to the best FAIR and linked data practices.

The recommendations highlighted in the policy brief intend to support decision-making in Europe; expedite research by making biodiversity data immediately and globally accessible; provide curated data ready to use by AI applications; and bridge gaps in the life cycle of research data through digital-born data.

Several new and innovative workflows, linkages and integrative mechanisms and services developed within BiCIKL are mentioned as key advancements created to access and disseminate data available from scientific literature.

Both briefs are published in the journal Research Ideas and Outcomes.

More information: Lyubomir Penev et al, Uniting FAIR data through interlinked, machine-actionable infrastructures, Research Ideas and Outcomes (2024). DOI: 10.3897/rio.10.e126588

Donat Agosti et al, Liberate the power of biodiversity literature as FAIR digital objects, Research Ideas and Outcomes (2024). DOI: 10.3897/rio.10.e126586

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