

Symposium 18-6. Innovative technological solutions to accelerate the systematics of mega-diverse insect orders

Interlinked online databases – a key prerogative for evidence-based decision-making and for AI applications

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Though several species/specimen digitisation programmes in many institutions and countries are running at full speed, and quite a lot of image platforms are available on the internet, there is still a big knowledge gap in the identification and delineation of taxa that implement the holistic multi-evidence approach. The reliability of biodiversity data needs to be scrutinised for qualitative and quantitative aspects. Within the collaboration agreements and the IT technical assistance of GBIF, three online biodiversity data systems/platforms are presented: 1) a complete dataset on a taxonomic family of moths worldwide with interlinked information on distribution, bionomics, literature (with URL links and pagination), links to the museum-based collections worldwide, robust visual galleries as well as DNA data; 2) a complete interlinked dataset of all moth species from the entire Afrotropical region, with detailed taxonomic and bionomic information as well as an extensive >45,000 imaging gallery; 3) the change in species composition during three historic periods and in real-time presented with interlinked information on invasive species within one country – Belgium, including the National Collection items, observation records and botanical information blocks.

We promote the relations, modular links, Open Data access and online operations in real-time with interlinked functionalities while dealing with biodiversity data. The use and reuse of circular biodiversity data based on FAIR principles (Findability, Accessibility, Interoperability and Reusability) raises the value of biodiversity data and provides the basis to use these circular data for many applications including AI. The online relational platforms include data at global, regional and country levels. They highlight the importance of structuring biodiversity data in complex yet easy-to-use management systems. This ensures a holistic view of information, thereby allowing transparent decision-making processes and the design of further application strategies. In my presentation, I will demonstrate real success cases presenting the data structuring matrices in Back and Front Offices updatable in real-time. I will emphasize the community efforts to obtain, verify, scrutinize, use and reuse the biodiversity data on moths worldwide. These Open Access, Interlinked and operational in real-time datasets are in line with various policy recommendations to improve the use/reuse as well as the value of biodiversity data of the multi-diverse insect order Lepidoptera.

Key words: relational databases, Lepidoptera, interlinked functionalities, FAIR principles, open biodiversity data.