

KU Leuven Open Science Day • proceedings 2024

Unlocking KU Leuven's natural science collections

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Abstract

Throughout its long history, KU Leuven has amassed a vast patrimony of valuable objects and collections, including a large set of natural science collections. Not only do these latter collections reflect the history of the university, they also form an important source of information on the earth's current and past bio- and geodiversity. As part of DiSSCo Flanders (Distributed System of Scientific Collections, Flanders), an FWO International Research Infrastructure (2021-2024), KU Leuven is currently digitizing several of its natural science collections. In total, these collections (paleontology, mineralogy, soil monoliths, and the Museum of Zoology) are estimated to contain over 180.000 specimens.

Information on specimens and their associated metadata is recorded in CollectiveAccess, an open-source collection management software. Configured in collaboration with LIBIS, it contains multiple data models (biology, earth sciences, and heritage) with fields defined according to the appropriate standards (DwC, ABCD, EFG, Spectrum, Dublin Core) to ensure interoperability. Where possible, links to persistent identifiers in Catalogue of Life, Geonames, Mindat, ORCID, VIAF, and/or Wikidata are provided. High resolution images of each specimen and associated labels are made by KU Leuven Imaging Lab in IIIF format, stored in Teneo, and are made accessible under a CC BY-NC-SA 4.0 license.

As digitization continues, specimens and metadata will be published online through the KU Leuven data portal [Blendeff](#), alongside international data infrastructures such as the Global Biodiversity Information Facility (GBIF), Geoscience Collections Access Service (GeoCAsE), and the future DiSSCo data infrastructure. By making these collections accessible following the FAIR data principles to researchers world-wide and to the wider public, they will contribute to the advancement of science, innovation, and policy.¹

Poster



KU LEUVEN

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Natural science collections @ KU Leuven

Throughout its long history KU Leuven has amassed a vast patrimony of valuable objects and collections, including a large set of natural science collections. Not only do these latter collections reflect the history of the university, they also form an important source of information on the earth's current and past **bio- and geodiversity**.

Curated by staff members of the Faculty of Sciences, these collections are estimated to contain **over 180.000 specimens**. The Scientific Collections & Heritage unit is responsible for collection care, management and digitization.



© Zoology Museum, KU Leuven



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DISSCO – Towards a new model of scientific research

The Distributed System of Scientific Collections (DISSCO) is a **new research infrastructure** for managing natural science collections. It seeks to **digitally unify all European natural science assets**, sharing common access, curation, policies and practices across countries, while ensuring compliance with the FAIR principles.

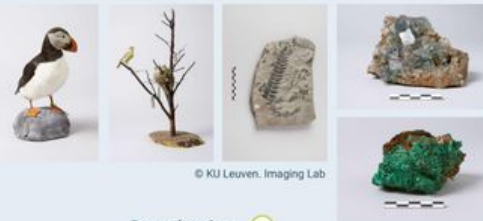
By bringing together over 170 institutions in 23 countries, DISSCO will **transform a fragmented landscape of resources into a comprehensive and integrated knowledge base** that links different data classes across collections. As such, DISSCO will accelerate research, create new research opportunities and contribute to evidence-based policymaking across various fields.

Under this European umbrella, **DISSCO Flanders** (an international research infrastructure funded by the Research Foundation – Flanders, 2021-2024) brings together the **major collection-holding institutions in Flanders, and Belgium**. As part of this program, KU Leuven is currently digitizing its paleontological and mineralogical collections, the collection of the Zoology Museum, as well as the soil monolith collection.



Pre-digitization curation
 Each specimen receives a **unique identifier** and is labelled correspondingly.

Image capture
 Specimens and specimen labels are photographed by **KU Leuven, Imaging Lab** and saved as TIFF files.



© KU Leuven, Imaging Lab

Data cleaning



Registration in CollectiveAccess
 Specimen data is recorded in **CollectiveAccess**, an open source and web-based collection management system, configured in collaboration with **LIBIS**.
Three data models (biology, earth sciences and heritage) are available, with fields defined according to **domain-specific data standards** (such as DwC, ABCD, EFG, Spectrum, Dublin Core) to ensure interoperability.
 Where possible, **links to persistent identifiers** in Catalogue of Life, Mindat, Geonames, ORCID, VIAF and/or Wikidata are provided.



Ingest in Teneo
Teneo is used as a digital repository and preservation system for specimen images. High resolution TIFF files are ingested and preserved, alongside a number of derived representations. Each image is given a unique identifier in Teneo, which is then used to create a **persistent resolver (URI)** ensuring long-term web access via the **Universal Viewer**.
 This URI is subsequently added to the corresponding record in CollectiveAccess.



Online publication
 Specimen data and images are published on the **KU Leuven portal Blendeff.be** with **Omeka S** as the underlying web publishing platform. The **OAI-PMH protocol** ensures data synchronization between CollectiveAccess and Omeka S.
 Images are licensed under a **CC BY-NC-SA 4.0 deed**, are available as **IIF manifests** or can be **downloaded as JPG file** (high & low resolution).
 Future plans include the publication of specimen data on **international data aggregators**, such as GBIF, GeoCAsE and the upcoming European DISSCO portal.



Download poster



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1 MB

Footnotes

1. This work was supported by the Research Foundation Flanders (FWO), Grant No: I001721N. [↵](#)