



CETAF - LINKED EVENTS

Introduction

In October 2019, **CETAF**, **DiSSCo**, **TDWG**, and **GBIF**, will come together for the open digital science week on biological and geological diversity Biodiversity_Next. The conference will bring together, for the first time at this scale, major international organizations, research scientists, and policy makers to jointly identify social and technical challenges and opportunities around data-intensive biodiversity and geodiversity research.

The conference aims to promote innovation in biodiversity and geodiversity information science, sharing and enhancing community data standards and information management practices, and improving domain reach to new audiences (incl. scientific, policy and industry).

We welcome your participation to the events organised by **CETAF** and its **Member Institutions** at **Biodiversity_Next 2019** to be held in Leiden, Netherlands during **October 21-25, 2019**.

Amongst the many events organised by CETAF members the following list highlights those directly supported or developed through CETAF activities.

Biodiversity_Next is commissioned by



Biodiversity_Next is hosted by



A joint conference by



CETAF at Biodiversity_Next 2019

Pre-conference Workshops

Events organised in the light of the CETAF initiative DEST (Distributed European School of Taxonomy) and the CETAF Biodiversity Monitoring Working Group. **Stay tuned!**

WS21: CETAF DEST e-Training Course: “Biodiversity in a changing climate: e-learn more”

- Organiser Catherina Voreadou | Natural History Museum of Crete, Heraklion, Greece
- Co-organiser Iasmi Stathi, Natural History Museum of Crete, Heraklion, Greece
Gergely Babocsay, Hungarian Natural History Museum, Budapest, Hungary

Abstract

Improving the knowledge, skills and competences of professionals in the field of biodiversity training has become a high priority which involves setting up the right learning schemes and building the necessary skills and capacities.

In this regard, BIODIVERSITY IN A CHANGING CLIMATE: E-LEARN MORE is an e-learning course, developed in the context of the BIOTALENT project (<http://biotalent.myspecies.info>) and maintained, beyond the project's lifetime, by the CETAF Distributed European School of Taxonomy (DEST), which covers the Education and Training initiatives for the collections-related community. The course aims to 1) increase knowledge, skills and competences on biodiversity loss and climate change 2) teach about climate-sensitive model species that reflect profound changes in the global environment 3) engage in conserving biodiversity in Europe and beyond 4) integrate biodiversity issues at a higher proficiency level in everyday work 5) open new career opportunities in science-related business and 6) emphasise the importance of Natural History collections in understanding the origins and future challenges of Earth's biodiversity.

The course has been built under an innovative pedagogical methodology, the Inquiry-Based Learning (IBL), which is a constructivist approach where the overall goal is for learners to gain knowledge by themselves.

During Biodiversity_Next 2019, we propose an interactive workshop addressed to the scientific training community, tool developers, researcher capacity builders), conservation managers and educators in natural history institutions, and those raising awareness of citizen scientists.

The participants will use the **BIOTALENT** platform to get an overview of its modules and IBL implementation. The workshop will present the versatility and effectiveness of the **BIOTALENT e-learning platform** and will foster its use with the development of new content. To this end, the existing course will exemplify both the stimulating IBL methodology used and the content creation process.

WP45: pan-European Biodiversity Monitoring

- Organiser Livia Schäffler | Zoological Research Museum Alexander Koenig - Leibniz Institute for Animal Biodiversity, Bonn, Germany
- Co-organiser Ana Casino, CETAF, Brussels, Belgium
Karsten Gödderz, CETAF, Brussels, Belgium
Urmas Kõljalg, University of Tartu - Institute of Ecology and Earth Sciences, Estonia
Eva-Maria Natzer, Bavarian Natural History Collections, Munich, Germany
Jonas Zimmermann, Botanic Garden and Botanical Museum Berlin, Germany
Martin Husemann, Center of Natural History, University of Hamburg, Germany
Wolfgang Wägele, Zoological Research Museum Alexander Koenig, Bonn, Germany
Iasmi Stathi, Natural History Museum of Crete, Heraklion, Greece
Beáta Papp, Hungarian Natural History Museum, Budapest, Hungary
Ittai Renan, Steinhardt Museum of Natural History, Tel Aviv, Israel
Tamar Dayan, Steinhardt Museum of Natural History, Tel Aviv, Israel

Abstract

Present-day accelerated biodiversity loss remains largely unrecognized as there is still a lack of comprehensive long-term monitoring systems. Available data from different sources and collected on various spatial and temporal scales can hardly be consolidated. In order to prevent human-induced species extinctions, we need to consistently document biodiversity change over time and analyze determinants of population decline to finally be able to provide policymakers with evidence-based recommendations.

With our taxonomic expertise and modern technologies for species-based research united at the European level in CETAF, we founded the European biodiversity monitoring group to plan and implement a comprehensive pan-European program to be interlinked with established initiatives and infrastructures.

At the Biodiversity_Next 2019 conference, the **CETAF Biodiversity Monitoring Group (*BiodivMG*)** will bring together taxonomists with important players from ecological research, citizen science initiatives, and biodiversity conservation to establish fruitful inter- and transdisciplinary collaborations.

An integrative pan-European monitoring scheme requires the strategic zonation of Europe and the selection of appropriate monitoring sites. With respect to monitoring methods we need to agree upon taxonomic groups to be covered and on cost and labor efficient field sampling. Standardized methods will be developed in cooperation with statisticians to allow for meaningful data analyses.

Our workshop will consist of two sessions:

1. Development of a harmonized monitoring scheme considering those taxa that allow for answering scientific questions related to major anthropogenic pressures.
2. Discussion of habitats to be monitored regarding climatic zones and priority conservation sites.
Selection criteria may be vulnerability of habitats and occurrence of national responsibility species.

For keynote speakers, we will invite a monitoring expert as well as an ecological statistician for the first session, and a habitat specialist as well as a remote sensing expert for the second part. Additionally, representatives of established infrastructures (such as Long-Term Ecological Research (LTER) and Natura2000 sites) and other initiatives will be invited to establish collaborations.

Symposia and Workshops

CETAF Member Institutions organise symposia and workshops to address specific topics relevant to the CETAF community in support of **CETAF initiatives, products, services** and the **development** of its **working groups**.

Stream 1 - Policies

Open access to biodiversity data available to science and society enhances our power to understand and monitor the earth's biosphere on a scale that was never before possible. Taxonomists and biodiversity data scientists, who were used to working as individuals, now must engage with larger communities focusing on species complexes and ecosystems in a broader, even global, context.

We are witnessing an enormous and challenging socio-cultural change in our field, which needs to be channelled to provide oversight and concentration of the work of thousands of researchers gathering and analysing data into a harmonized, coherent, comprehensive and well-structured approach.

Workshop

WP26: Contributing to a co-designed “Mission on Biodiversity” in the framework of Horizon Europe

- Organiser Carole Paleco | Royal Belgian Institute of Natural Sciences, Brussels,
- Co-organiser Ana Casino, CETAF, Brussels, Belgium
Vanessa Demanoff, National Museum of Natural History, Paris, France
Josefina Enfedaque, European Commission, Brussels, Belgium
Hilde Eggermont, BiodivERsA, Brussels, Belgium
Patricia Mergen, Meise Botanic Garden / Royal Museum for Central Africa, Belgium

Abstract

The European Commission has created a new instrument for the next research Framework Programme Horizon Europe (2021-2027) embedded under pillar 2 Global Challenges and Industrial Competitiveness referred to as a “**Mission**”. Specific Missions are to be co-designed with Member States, the European Parliament, and the stakeholders community, under a clear bottom-up approach where the involved communities have a strong say and express their direct commitment.

A Mission has to be cross-disciplinary, with a clear EU added value. It has to be bold and inspirational, indicate a clear direction, be ambitious but realistic in research and innovation, spark activity across disciplines, sectors and actors, be open to multiple and bottom-up solutions. A Mission has to address the global sustainable development goals, be impact-oriented, and demonstrate their return to society.

Under this framework, where dedicated calls in all work programmes will be developed, the **CETAF community** would like to design and co-create a Mission on Biodiversity & Natural Sciences collections with the contributions from as many organizations and stakeholders in the field as possible (including the European institutions, Commission and Parliament, and related organizations such as **Bio-Bridge, IUBS, GBIF, IUCN**) to be submitted when the call is launched. It constitutes an unprecedented opportunity to unite visions, resources and efforts shared by a wide range of interested parties when tackling jointly the loss of Biodiversity and the enhancement of its preservation in a sustainable manner.

We would like to run a workshop during **Biodiversity_Next 2019** to build a comprehensive, consistent and robust proposal. The intention of this meeting is to bring together collections-based research institutions, related research infrastructures and communities, societal representatives, governmental entities, policy-makers and biodiversity-interested actors to jointly discuss the framework of the Mission and identify the partnership engagement model to develop such a Mission.

Stream 2 - Infrastructures

From occurrence records aggregators to unified global taxonomic backbones and from species interaction registries to species trait repositories, scientists are facing a growing portfolio of available online access to data services. The ongoing development of those infrastructures, at regional and at global scale, is dependent on the constant dialogue between scientists, policy makers and the public (end-users) and the Research Infrastructure (RI) providers. Furthermore, there are still technological and data related challenges that need to be addressed, to enable existing RIs to operate within an agreed upon syntactic and semantic interoperability framework.

Symposium

SI20: Semantic Annotation of Collection Data

- Organiser Anton Güntsch | Botanic Garden and Botanical Museum Berlin, Germany
- Co-organiser Quentin Groom, Meise Botanic Garden, Belgium
 Roger Hyam, Royal Botanic Garden Edinburgh, UK

Abstract

The data associated with specimens are still too fragmented and poorly connected to fulfill the demands of science. Specific data are difficult to find and aggregate. Recently, Natural Science Collections have started to equip physical specimens with HTTP-URI-based identifiers in order to publish specimen information in the form of Linked Open Data (LOD).

This constitutes an important move towards improved interoperability of collection data and can potentially boost a new generation of interdisciplinary scientific applications.

However, to achieve true interoperability, collection data need to be enriched with links to semantic resources such as, representations of people (e.g. HUH - Harvard Index of Botanists, http://kiki.huh.harvard.edu/databases/botanist_index.html), literature (e.g. BHL - Biodiversity Heritage Library, <https://www.biodiversitylibrary.org/>) and geographic entities (e.g. GeoNames, <http://www.geonames.org/>).

Finding and setting such links can be a time-consuming and costly process. Collections have therefore started to develop and test pragmatic workflows for setting semantic links in an efficient way.

In the symposium, new approaches and best practices for semantic annotations will be presented.

Symposium

SI22: DiSSCo as a model for regional development of collections infrastructure

- Organiser Wouter Addink | Naturalis Biodiversity Center/ DiSSCo, Leiden, Netherlands
- Co-organiser Ana Casino, CETAF, Brussels, Belgium

Abstract

DiSSCo is a new pan-European Research Infrastructure initiative of 21 European countries, which will transform the currently fragmented landscape of natural scientific collections in Europe into a coherent and responsive research infrastructure. It achieves the necessary preparations and construction through a series of DiSSCo-linked projects in combination with a EU-funded Preparatory Phase Project and Construction Phase Project. When operational in 2025, it will have established not only a technical infrastructure but also a legal entity and a governance structure with centralised coordination and national investments for effective operation.

The developed DiSSCo model will enhance digital skills and competencies and provide use-case-driven tooling to support researchers to navigate the data lake of heterogeneous and interlinked data-driven from the 1.5 billion specimens in Europe. It will provide unified digital, physical and remote access to the collections and innovation-led science programmes jointly developed by 100+ European institutions.

The newly formed Research Infrastructure will provide a stable and essential base for scientific research, education, and resource management and will position European natural science collections at the centre of data-driven scientific excellence and innovation in environmental research, climate change, food security, One Health and the bio-economy.

The symposium will highlight the achievements in the DiSSCo-linked and **DiSSCo**-related projects: **ICEDIG**, **Synthesys+**, Catalogue of Life Plus and **MOBILISE** and how these are strategically aligned. It will provide space to discuss DiSSCo as a international model for regional development of collections infrastructure and how this model can contribute to the global alliance for biodiversity knowledge. Such an alliance is needed to achieve a “fully interconnected ecosystem of policies, data standards, processes, governance arrangements, software tools, informatics infrastructure investments and research programmes” as discussed in the **GBIC2** conference in 2018.

Stream 3 - Standards

In the past decade big steps were made to deliver biodiversity and geodiversity data in a more standardised way. However, data interoperability is still lacking and standards are often inconsistently implemented, incomplete and in some areas underdeveloped. With the growth of the data volume, standards become more and more important. Data heterogeneity hampers data exchange and reuse.

Significant investments in standards are needed to provide a more harmonised ecosystem of data providers and this is getting more and more urgent with increasing data volume and growing data needs.

Symposium

ST13: Enhancing taxonomic publications for dynamic data exchange and navigation

- Organiser Laurence Benichou | National Museum of Natural History / EJT / CETAF
- Co-organiser E-Publishing working group, Paris, France
Donat Agosti, Plazi, Switzerland
Isabelle Gérard, Royal Museum of Central Africa, Tervuren, Belgium
Luybomir Penev, Pensoft, Bulgaria
Chloë Chester, National Museum of Natural History / EJT, Paris, France

Abstract

Taxonomic publications are focused on expanding knowledge about the world's species. Taxonomic treatments are sub-article elements about a specific taxon and are required by the governing Codes to make new taxonomic names available. Treatments are highly structured with specific language, illustrations, and references to related matter such as previous treatments, collections, publications and material examined. The latter is in its best case a citation of the digital object of a physical specimen in a collection. Taxonomic publications are thus prime candidates for text and data mining to discover these elements and make them findable, accessible, interoperable and reusable (FAIR). The data contained within a publication can then be linked to the respective cited specimen and can be reused, as already done by the Global Biodiversity Information Facility (GBIF).

Anchored in FAIR and Open Access principles, this symposium aims to present the benefits of utilizing existing standards and identifiers as strategies for liberating the data contained within taxonomic publications. Using practical case studies (European Journal of Taxonomy, Pensoft ARPHA publishing platform), we will demonstrate how structured publishing and the Plazi workflow allow the extraction and dissemination of interoperable linked data, including from PDF-based publications, to build pertinent repositories (e.g. Biodiversity Literature Repository) and feed GBIF or the OpenBiodiv platform. Applications and analyses based on this increasingly available data will be presented.

As a conclusion to the symposium, a panel discussion will be conducted to explore the potential alternate metrics obtainable from such practices and ways in which these could be exploited to establish measurements for quality, scope and performance that are more relevant to our field.

Stream 4 - Sciences

Decades of worldwide effort have delivered enormous volumes of biodiversity data and started to address our great need for improved understanding of natural systems. As we face planet-wide issues such as impacts of climate change on biodiversity patterns, human health, and food security, we need transformational approaches that maximize and expand the flow of relevant observations from all regions. Only data-intensive frontier scientific research can secure the insights we need to support science, sustainability and conservation. How can traditional scientific disciplines, such as taxonomy and biogeography, most benefit from novel sources of data and technological breakthroughs?

Workshop

WS41: Fostering the taxonomic imperative: the opportunities and challenges of the 2050 biodiversity goals

- **Organiser** Michelle Price | CETAF, Conservatory and Botanical Garden of the City of Geneva, Switzerland
- **Co-organiser** Thierry Bourgoïn, National Museum of Natural History, Paris, France
Erik Smets, Naturalis Biodiversity Center, Leiden, Netherlands
Jesús Muñoz, Royal Botanic Garden, Madrid, Spain
Jiří Kvaček, National Museum, Prague, Czech Republic
Nikolaj Scharff, Natural History Museum of Denmark, Copenhagen, Denmark
Vince Smith, Natural History Museum, London, UK
Ana Casino, CETAF, Brussels, Belgium

Abstract

Biodiversity is the living fabric of our planet and achieving its responsible, sustainable use is vital if we are to reach global development goals and conservation targets. Taxonomy is the science that deals with the discovery, naming and classifying of all living things, past and present. Defined in a broad sense, taxonomy encompasses the fundamental recognition and description of species (alpha taxonomy) through to establishing the relationships among living organisms in an evolutionary framework.

Taxonomy thus underpins the understanding of biodiversity and yet funding for taxonomic research and support for institutions that hold natural history collections is continually brought into question.

Drivers behind the establishment of research priorities, including their link with economic concerns and societal challenges, may be local, regional, national or even global in nature.

To ensure relevance in a changing society, taxonomy and taxonomists need to respond both to intrinsic and extrinsic challenges.

Data mobilisation of specimens from natural history collections and the move towards the development of a global biodiversity knowledge network are facilitating increased and more equitable access to digital data on specimens and species.

Technological developments and innovations, especially in genetics and genomics, are also opening up new opportunities for integrative approaches to taxonomy, allowing scientists to interpret the living planet in new and exciting ways.

The aim of the workshop is to outline how the community of taxonomists and natural history museums can work together to address the taxonomic imperative and ensure taxonomy remains central to the next generation of biodiversity scientists and to society.

Workshop

WS57: Promoting natural history collections for understanding biodiversity and biodiversity change

- Organiser Jean-Denis Vigne | National Museum of Natural History, Paris, France
- Co-organiser Michelle Price, CETAF, Conservatory and Botanical Garden of the City of Geneva, Switzerland
Michel Guiraud, National Museum of Natural History, Paris, France Jian-Sheng Sun, National Museum of Natural History, Paris, France
Christoph Häuser, Berlin Natural History Museum, Germany

Abstract

There are more than one billion natural science specimens in collections in natural history museums throughout the world. They are an invaluable source of information about biological diversity, since the origins of life on Earth.

The geological and paleontological collections as well as the bio-archaeological collections, describe past biodiversity and its evolution over different time scales.

The biological specimens collected over the last three centuries from across the globe allow us to understand biodiversity and biodiversity trends over time, but especially the rate of acceleration of the biodiversity loss in recent times.

This workshop is a contribution from the Consortium of European Taxonomic Facilities (CETAF) that proposes to examine how to better promote the potential of collections for contributing to discover and inventory of biodiversity in new ways, to develop a better understanding of biodiversity dynamics from the molecules to communities, and contribute to decelerating biodiversity erosion.

In this context, the development of large-scale collaborative projects for the scientific study of collections using integrative taxonomy and modern approaches to data analysis can be explored alongside the contribution of large-scale natural history collection data mobilisation and aggregation efforts.

The workshop aims to produce a final manifesto on the role of collections in understanding biodiversity and biodiversity change, for consumption by stakeholders, in particular the international and national agencies and organizations concerned by global change.

Symposium

SS14: The role of Earth Science collections within biodiversity research

- Organiser Jiri Frank | National Museum, Prague, Czech Republic
- Co-organiser Falko Glöckler, Berlin Natural History Museum, Germany

Abstract

Earth Science collections, like Life Science collections, have an important role in biodiversity research as they provide evidence for the evolutionary history of organisms, as well as helping to understand the impacts of natural hazards, disasters, and environmental and climate change.

The general aim of this symposium is to discuss and present the importance of Earth Science collections in biodiversity research and other cross-disciplinary subjects. The symposium is related to the implementation of metadata standards, publication of collection data via data portals, tools for mapping the data and conducting quality checks discussed at the TDWG Paleo Interest Group meeting.

The symposium will be open for talks related to Earth Science collections and research with special focus on the following topics:

- The role and implementation of fossil taxa in the taxonomic backbone (e.g. Catalogue of Life) and the role of geochemical data in related platforms.
- Defining minimal, optimal and full requirements for data records in digitised Earth Science collections.
- Implementation and usage of existing metadata standards and controlled vocabularies for Earth Science collections.
- Data portals, search and presentation platforms for Earth Science collections access, research and outreach.

Symposium

SS78: Facilitating Capacity Building of Young Researchers

- Organiser Boyko Georgiev | Bulgarian Academy of Sciences, Institute of Biodiversity and Ecosystem Research
- Co-organiser Catherina Voreadou, Natural History Museum of Crete, Heraklion, Greece
Ana Casino, CETAF, Brussels, Belgium
Iasmi Stathi, Natural History Museum of Crete, Heraklion, Greece

Abstract

Young researchers, including Early Career Investigators (ECIs), PhD and MSc holders, are called to play an important role in the vision of **MOBILISE** and **DiSSCo**. They are called to build a new generation of IT-literate scientists that will efficiently use new e-infrastructures enabling them to embed bio- and geoinformatics and services in their research, develop their research careers on cutting-edge topics and translate strategies on bio- and geodiversity into clear guidelines for providers and decision makers.

How ready are they for such a crucial role? Are there important gaps between young researchers from countries with not well-developed policies and facilities and those from countries having improved all needed infrastructures? In which way available COST networking tools such as, meetings, training schools, workshops, symposia, conferences, short-term scientific missions and conference grants in collaboration with other training initiatives such as **DEST**, could be transformed into focused capacity building mechanisms providing adequate interaction of technology and bio- and geo-diversity knowledge? Can collaborative actions, well organised synergies and strong interaction between young researchers, such as forum, networks or work in groups, act complementary to the above networking tools, giving thus the possibility to the IT-literate young researchers to contribute in strengthening capacity building in their own institutions, driving their business forward?

Under Biodiversity_Next 2019, we propose a symposium addressed to young researchers during which a first nucleus of them will be built, which will interact with MOBILISE and DiSSCo experts in order to discuss, exchange opinions, thoughts and innovative ideas on all the above issues. It will also prepare actions in order to enlarge this group, and efficiently face needs that will emerge, take the chance of challenges and earn the greatest benefit from such a synergy. The forum of young researchers will have its own space in the MOBILISE website.

