



GBIC2

Delivering a Roadmap for Biodiversity Knowledge in the Information Age

Copenhagen, Denmark, 24-27 July 2018

In recent decades, numerous agencies, institutions and foundations around the world have supported the organization and delivery of digital information on biodiversity at global, national and other scales in support of scientific research, policy decisions and public engagement.

However, such initiatives are generally guided by local priorities, focus on short-term deliverables and rely on project funding. This results in duplication of effort and overlapping mandates, which has delayed progress toward a sustainable, coordinated and interconnected global infrastructure for biodiversity information.

The global biodiversity informatics community has explored these issues on multiple occasions—most recently at the workshop, *Exploring Synergies and Sustainability for Biodiversity Information Systems*, hosted by the Senckenberg Gesellschaft für Naturforschung in March 2017. Attendees representing global data infrastructures, national data centres and major research institutions agreed on the need to establish a shared mechanism for planning and delivering a linked and open global biodiversity data infrastructure.

The scope under consideration corresponds broadly to the areas identified in 2012 at the Global Biodiversity Informatics Conference (GBIC) and described in the Global Biodiversity Informatics Outlook (GBIO: <http://www.biodiversityinformatics.org/>). The GBIO addresses the organization and presentation of digital information from all sources relating to species and other taxonomic ranks, and to the presence and activity of these species within natural systems.

Relevant stakeholders must cooperate now to determine how such a mechanism can work and can support the widest possible set of international partners. Based on the 2017 discussion at Senckenberg, the central component is likely to be a small project office working with all relevant parties to set, agree upon and enact shared priorities. Such priorities would include short-term needs to develop tools, standards and best practices; medium-term needs to integrate and streamline infrastructures and investments; and long-term multi-decadal needs to ensure sustainability of services and knowledge products. The overall vision is to enable international parties to work together efficiently, and for a global network of institutions and organizations to share and distribute responsibility for components that fit together to create a fully interconnected whole.

Attendees at the March workshop proposed that GBIF could play a role in steering development of priorities and coordinating efforts to secure sustainable funding and deliver on the priorities. The GBIF Governing Board has responded to this request by supporting plans for the Global Biodiversity Informatics Conference, or GBIC2, in Copenhagen on 24-27 July 2018. Building upon the 2011 workshop that produced the *Global Biodiversity Information Outlook* (<http://biodiversityinformatics.org>) (GBIO), this event will convene a broad group of stakeholders to discuss and refine the model for operating such a coordinating body.

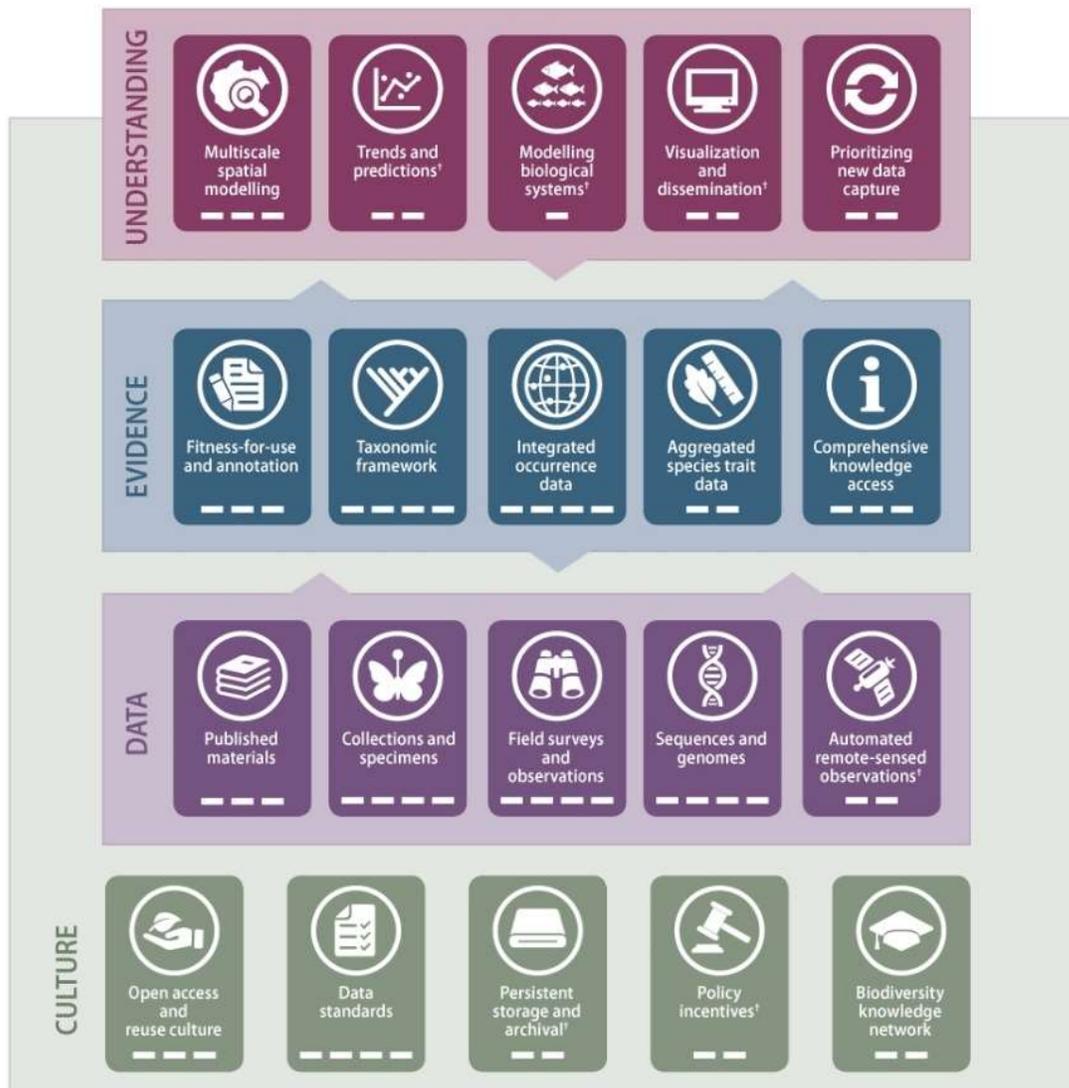
The requirements of an effective mechanism will include:

1. Enabling interested parties anywhere in the world to contribute to a transparent planning and priority-setting process
2. Delivering community-approved roadmaps for establishing interoperable repositories, networks and services that support digital biodiversity science at all scales

3. Developing the system architecture of components within these roadmaps
4. Documenting and promoting best practices and common standards for compliant data systems
5. Guiding and coordinating development of project proposals to deliver missing components
6. Providing appropriate parties with support to secure their own project funding for components that contribute to the shared roadmaps

Revisiting the GBIO

The GBIO document remains a useful starting point for these activities. Its framework (below) identifies 20 high-level components grouped in four focus areas, which together form an interconnected map of management needs for global biodiversity information. Each component can serve to prompt an in-depth review of recent changes across related domains and dimensions while framing the requirements for developing and implementing any corresponding roadmap.



- The **Culture** components provide the open data and open science context for all other aspects.
- The **Data** components ensure the web accessibility of well-formed streams of data from all relevant sources of biodiversity observations and measurements.
- The **Evidence** components address the organization of these streams into accessible, integrated information resources.
- The **Understanding** components build on these resources to provide modeled representations of best available understanding of actual biodiversity patterns and properties.

Goals for GBIC2

- 1) Develop the attendees' consensus vision for how a global-scale coordination mechanism for biodiversity informatics planning should work, including its scope, governance and required resources
- 2) Prepare and publish a white paper communicating this vision to scientific and policy audiences
- 3) Agree on next steps for soliciting input from non-attendees and for preparing to seek funding required to establish the mechanism
- 4) Explore in a workshop situation how to structure and document decadal roadmaps for international collaborative implementation of biodiversity informatics components.
- 5) Offer draft exemplar roadmaps from these workshops to provide a concrete perspective on expected outputs

Workshop process

GBIC2 will be organized around in-depth explorations of one key component from each of the four layers identified in the GBIO framework. Focusing on the following components will ensure consideration of both technical and societal aspects and address well-understood elements and other elements for which solutions are at best preliminary:

- **Biodiversity knowledge network** (Culture): developing models, social networks, reputation and recognition systems to empower and reward professionals and knowledgeable amateurs to contribute to the curation and improvement of digital biodiversity information. This component area involves mostly sociological aspects of integration and change, bringing together skills from a different set of contributors.
- **Published materials** (Data): addressing the challenges of offering digital access to centuries of information gathered and stored in non-digital formats, including transformation of this information into structured data for synthesis with existing digital resources. This component area involves a diverse stakeholders with opportunities to increase alignment and reuse of informatics tools, including optical character recognition, gazetteers and vocabularies, and automated translation services.
- **Integrated occurrence data** (Evidence): aligning activities around the world to aggregate spatial evidence of species occurrence, removing duplication of effort, and ensuring delivery of the most comprehensive integrated data resource possible. This component area offers immediate opportunities for alignment since several key infrastructures are already starting discussions on how to achieve this.
- **Trends and predictions** (Understanding): delivering time-sensitive analyses of available evidence and developing robust models for past and future scenarios. This component area presents different challenges around credibility, governance and integration of multiple sources of biotic and abiotic information.

Attendee profile

GBIC2 will include representatives of key institutions and infrastructures working in each of these component areas. Parallel working sessions will seek to identify challenges that need to be overcome to allow stakeholders to collaborate in global-scale decadal planning activities and to organize their programmes of work around such plans.

Planning milestones

March – May 2018

- Finalize list of attendees and ensure their wide geographic representation, breadth of expertise and domain, and understanding of one or other selected component area
- Issue pre-workshop consultation and survey to solicit inputs from a wider community, with key communications in all UN languages

May – June 2018

- Face-to-face preparatory meeting for co-organizers (including review of any pre-conference inputs).

24-27 July 2018

- **GBIC2:** the event will run from Tuesday lunchtime to Friday lunchtime, structured as a series of facilitated parallel workshops and plenary review sessions

August – November 2018

- Open consultation across the web (surveys, webinars, etc.) on outputs from workshop

25 August – 2 September 2018

- Dissemination of initial recommendations at TDWG/SPNHC conference in Dunedin, New Zealand

16 October 2018

- Presentation of results and initial recommendations at GBIF Governing Board meeting GB25 in Kilkenny, Ireland

December 2018 / January 2019

- Publication of recommendations and follow-on implementation plan, subsequent to consultation period