Chair's report
Task group on mobilization and use of biodiversity data for research and policy on human diseases

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Purpose and background of the task group

Vector-borne diseases such as malaria, dengue or yellow fever are just one arm of the plethora of human diseases that are directly influenced by natural biodiversity. Animals act as hosts, reservoirs and vectors of disease, so understanding their distributions and interactions with the environment, other organisms and people help prioritize effective and targeted management.

There are a number of open access databases used to inform these models, but they tend to be the result of more specialist research programmes and may be overlooked by more generalist data searches. GBIF is the largest open access facility providing spatial information on global biodiversity worldwide, and as such is the first port of call for many researchers looking to study or model biodiversity. With the World Health Organization (WHO) calling for a multisectoral approach in pillar 4 of its Global vector control response 2017–2030 to streamline the collaboration with the environment sector and complementary biodiversity data on human diseases (among other sectors), GBIF convened a **Task group on mobilization and use of biodiversity data for research and policy on human diseases.** The more recent agreement between the Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (WOAH, formerly OIE), the UN Environment Programme (UNEP) and WHO to strengthen cooperation to promote One Health, has further opened a way to promote and enhance the links between biodiversity and human health among different stakeholders.

The task group

After a preliminary meeting in April 2020, the recruitment of members to the task group followed for the next couple of months and aimed at recruiting experts on a wide geographical basis. In addition to myself, the Task Group currently (November 2022) includes:

- **Florence Fouque**, Observer, Focal Point for Vectors, Research for Implementation Unit, World Health Organization (WHO)
- **Quentin Groom**, Meise Botanic Garden, Belgium
- **Sylvie Manguin,** Institut de Recherche pour le Développement (IRD), France
- **Marianne Sinka**, University of Oxford, UK
- **Thomas Orrell** Smithsonian Institution, National Museum of Natural History, USA
- **Theeraphap Chareonviriyaphap**, Kasetsart University, Thailand
- **Luna Kamau**, Kenya Medical Research Institute, Kenya
- **Carlos Zambrana-Torrelio**, USAID, Global Health Security Division, USA

The task group is coordinated by **Dmitry Schigel**, GBIF Secretariat.

Objectives

The Task Group was established with **six objectives**:

1. Help design and identify sources and contacts for data **mobilization campaigns** to improve data coverage to help research on human health (*Pilot campaign I*: malaria and yellow fever: mosquitos).

    ACHIEVED but with modification to do it through data papers and a broader set of vectors LINK

2. Screen existing GBIF uses and consult with the professional community to define a clear **set of questions** that can be (better) addressed with (more and better) data mediated by GBIF.

    ACHIEVED Analytical review publication on past uses and opportunities is finished, submitted

3. Help review and communicate **messages** to support data mobilization campaigns and to promote GBIF use and data curation.

    ACHIEVED through ongoing Zoom meetings and advice to GBIF S and through attendance of ICTMM2022 conference

4. Evaluate **fitness for use** of data content, standards, vocabularies, and GBIF services to support research on vector borne diseases and suggest improvements for future development of GBIF.

    ONGOING through lessons from thematic help desk and calls for data papers, need for analytical review of standards and term use

5. Continue **prioritization and scoping** of activities on diseases and taxa for the task group

    ONGOING and justifies the need to continue the activities

6. Identify key actors and possible funding sources suitable to support data mobilization and to enhance use of biodiversity data in research on human diseases, as the reports from the task group group is expected to guide **funding** priorities for mobilization of relevant data.

    PARTIALLY ACHIEVED, with a success story of the signed partnership between University of Oxford, icipe, and GBIF, and the process is ongoing

Mandate

1. Develop a schedule and activities for the Task Group
2. Liaise with other experts and define the data mobilization targets and data use priorities essential for the research community.
3. Liaise with on-going initiatives and projects to document best practices using data for research on wild hosts, vectors, and reservoirs of human diseases.
4. Analyze roles of biodiversity data and suggest improvements for GBIF's current and potential contribution to reaching societal goals, including Sustainable Development Goal 3, *Ensure healthy lives and promote well-being for all at all ages*.
5. Consult with and encourage experts in management and use of biodiversity data on human diseases to document and share repeatable tools and data management

6. Consult widely and determine key questions that need to be addressed for community- specific needs on data availability and data use, including improvements in discovery and access, data mobilization, data and metadata publishing, data complementarity, and data processing at institutional, national, regional, and global levels, community specific benefits for data sharing and solutions to promote open data.

7. Identify key actors and possible funding sources suitable to support data mobilization and to enhance data use of biodiversity data in research on human diseases, as the reports from the Vectors group is expected to guide funding priorities for mobilization of relevant data.

8. Accommodate feedback from the community into summarized recommendations.

The mandate of the task group was useful to achieve the objectives in the timeline manner, and therefore will be transferred and adapted for the next group period.

Outputs: task group activities

The Task group has made significant progress addressing the objectives highlighted in the **Terms of Reference** and followed up through regular online meetings.

One of the first decisions of the group was the identification of the set of diseases that were going to be the focus of the work for the task group. Malaria, dengue, yellow fever were considered by the experts as the main diseases and their vectors, mosquitoes, the target for the data campaigns. The group also considered Leishmaniases, Chagas disease and Lyme disease.

The task group worked on the design, promotion and evaluation of data mobilization campaigns (i.e. call for data papers, presentations in scientific events), communicating with target audiences and promoting use of GBIF-mediated data and GBIF's data mobilization campaigns to improve data coverage to help research on humans. The task group also helped set up a call for a special issue of data papers published in the journal *Gigabyte*. The call, co-sponsored by the TDR/WHO Programme, resulted in the publication of 11 peer-reviewed data papers and more than 500,000 vector records published in GBIF (press release). As it has been considered a successful endeavor by both the GBIF Secretariat and the TDR/WHO Programme, a second call for vector data papers will be issued by the end of 2022. Alongside the call for papers, GBIF launched a thematic help desk which had a contractor, Carole Sinou (Canadensys), and had the voluntary help of Dimitri Brosens (Belgium Biodiversity Platform). The help desk, has already processed vector data from Mosquito Alert, which reports data on *Aedes albopictus* from Spain, and is currently processing data from an additional six sources, including well-know projects among the medical research community (i.e. VectorMap, Culbase).

The group also worked with a contractor, Francisca Astorga (Universidad Mayor, Chile), to contribute to a landscaping study analyzing publications that used GBIF-mediated data and studies that have not. The manuscript is currently in the final stages of preparation and shall be submitted to the *One Health* journal. This study found that most of the studies (particularly those using GBIF-mediated data) tended to analyze two or more species, mainly related to pathogens, highlighting an important need for increasing and improving available

data on species of medical importance on GBIF. It further found that very little data on pathogens were found in public data portals or repositories, again, opening a way to establish connections with the medical research community in order to collaborate with GBIF.

GBIF is working with The Vector Atlas project under a signed agreement approved by GBIF director and Executive Committee. This three-year project funded by Bill & Melinda Gates Foundation is coordinated by Marianne Sinka, to publish vector data pulled from disparate sources to produce data and maps. The collaboration will populate GBIF with data from vector species having different etiological agents of human diseases.

The task group intended to hold at least two in-person meetings that did not happen due to the COVID pandemic. However, 21 virtual meetings were held and, as sanitary barriers and transmission have decreased all over the world, the group met in person in a satellite meeting to the 20th International Congress for Tropical Medicine and Malaria (ICTMM) in Bangkok, Thailand at the end of October 2022, where the current group was closed. The ICTMM is one of the largest tropical medicine conferences in the world and will be an appropriate venue for promoting the role of GBIF on data publication and availability related to human diseases, and the work done by the task group.

It has been a privilege to be the Task Group Chair from October 2021 to the present date and I look forward to continue to collaborate with GBIF.