Task Group final 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 (VBDs), such as malaria, Crimean-Congo hemorrhagic, or yellow fever are human and zoonotic diseases directly influenced by the environment and sometimes natural biodiversity. These systems are complex and involve different pathogens, arthropod vectors, and vertebrate hosts interacting to maintain transmission. Thus, identifying and understanding distributions of arthropod vectors and their relationships with the environment, other organisms, and people can help to prioritize and/or define effective and targeted management. While there are a number of open access databases and repositories available to access georeferenced arthropod vector data, these resources are often tied to more specialized research programmes and may be overlooked by generalist data searches. GBIF is the largest open access facility providing georeferenced information on global biodiversity. As such, GBIF is the first port of call for many researchers looking to study or model biodiversity. To streamline the collaboration between the environmental sector and complementary biodiversity data on human diseases (among other sectors), GBIF convened a Task Group on data mobilization and use of biodiversity data for research and policy on human vector-borne diseases. The task group objectives were fully aligned with the open data policy of the World Health Organization (WHO) and included calling for a multisectoral approach in Pillar 4 of its Global vector control response 2017–2030. 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 opened additional opportunities to promote and enhance the understanding of the links between biodiversity and human health among different sectors.

The Task Group

The Task Group, which originally started in 2020 and closed its first iteration in November 2022, completed its second iteration and included updated membership. Experts were recruited from

diverse geographic regions and fields of expertise. The Task Group (February 2024 to June 2025) included:

Lindsay Campbell, *chair*	Florida Medical Entomology Laboratory, University of Florida	United States
Soledad Cecarelli	Laboratorio de Triatominos, Centro de Estudios Parasitológicos y de Vectores, Consejo Nacional de Investigaciones Científicas y Técnicas, Universidad Nacional de la Plata	Argentina
Theeraphap Chareonviriyaphap	Dept of Entomology, Faculty of Agriculture, Kasetsart University	Thailand
Josiane Etang	Organisation de Coordination pour la lutte contre les Endémies en Afrique centrale (OCEAC) / Faculty of Medicine and Pharmaceutical Sciences (FMPS), University of Douala	Cameroon
Florence Fouque	TDR/World Health Organization	Switzerland
Quentin Groom	Meise Botanic Garden	Belgium
Sylvie Manguin	Institut de Recherche pour le Développement (IRD)	France
Paloma Helena Fernandes Shimabukuro	Fundação Oswaldo Cruz (FIOCRUZ)	Brazil
Marianne Sinka	Oxford Long-Term Ecology Lab, University of Oxford	United Kingdom
Dmitry Schigel	GBIF Secretariat	Denmark
Kate Ingenloff	GBIF Secretariat	Denmark

Past task group members

Name	Organization	Country

Luna Kamau	Kenya Medical Research Institute	Kenya
Thomas Orrell	Smithsonian Institution, National Museum of Natural History	United States
Carlos Zambrana-Torrelio	EcoHealth Alliance and George Mason University	United States

The Task Group was coordinated by Dmitry Schigel, GBIF Secretariat.

The second iteration of the Task Group was established with six Objectives and seven Mandates:

Objectives

1. Identify sources, contacts, and design data mobilization campaigns to improve data coverage to support research on human health

2. Continue prioritization and scoping of activities on vector-borne diseases and taxa

3. Improve visibility of GBIF in the sectors of vector-borne disease research and health

4. Provide advice on existing and prospective GBIF uses and consult with the professional sectors on priority questions that can be addressed with GBIF-mediated data

5. Review and communicate adequate messages to support data mobilization campaigns and to promote data publishing and use through GBIF

6. Suggest improvements for data content, standards, vocabularies, and GBIF services in future development of GBIF for research on vector-borne diseases

Mandate

1. Liaise with other systems of expertise, and define the data mobilization targets and data use priorities essential for achieving the objectives of the health and research Sectors

2. Liaise with on-going initiatives and projects to document best practices using data for research, and, where possible, for interventions on wild hosts, vectors, and reservoirs of human vector-borne diseases

3. 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

4. Consult with and encourage experts in management and use of biodiversity data on human diseases to document and share tools and data management solutions

5. Consult widely and determine key questions that need to be addressed for community-specific needs on data availability, sharing, use, and solutions to promote open data

6. Identify key actors and possible funding sources suitable to support data mobilization and to enhance data use of biodiversity data in research on human vector-borne diseases

7. Communicate with stakeholders on data use and data management, and report

Achievements

All objectives were fully achieved through activities completed within the directives of each of the mandates above

Objective 1: Identify sources, contacts, and design data mobilization campaigns to improve data coverage for human health research

This objective was achieved through calls for data papers and trainings for data sharing to mobilize data campaigns and other activities reported in the deliverables below:

Deliverables

- Launch of the third call for data papers in December 2024, supported by TDR/WHO in *GigaByte*, with targeted outreach resulting in submissions from South America, Africa, Europe, and Asia. This initiative supported mobilization of high-quality vector datasets and increased open-access availability. Some datasets and data papers are still under review in the *GigaByte* collection of papers and will be published by the end of 2025.
- Carrying out of a hands-on training session at the West African Aedes Surveillance Network (WAASuN) meeting in Accra, Ghana (June 2025) with 11 participants, the training focused on mapping arthropod vector datasets to Darwin Core standards, publishing data to GBIF, and drafting data papers for *GigaByte,* with 7 datasets currently under review.

- Use of Task Group meetings to identify priority taxa, datasets, and regions for mobilization; documented activities and recommendations in the GBIF Health GitHub repository for transparency and community use.

- Work with VectorBase to increase the number of records shared via GBIF from 1 million to 1.6 million, improving both taxonomic and geographic coverage for vector-borne disease research.

Objective 2: Continue prioritization and scoping of activities on vector-borne diseases and taxa.

This objective was achieved through task group meetings and other activities reported in the deliverables below:

Deliverables

- Held 14 Task Group meetings to refine the scope of work, focusing on high-priority vector taxa and geographic regions for data mobilization

- Identified Southeast Africa, Asia and Latin America as priority regions for capacity-building and mobilization activities, aligning with gaps in GBIF's health-related datasets

Objective 3: Improve visibility of GBIF in vector-borne disease research and health sectors.

This objective was achieved through representation of GBIF at several international events and the creation of a dashboard as reported in the deliverables below:

Deliverables

- Task Group members represented GBIF at International Congress for Tropical Medicine and Malaria (ICTMM) 2024 (Malaysia) through booth displays, presentations, and direct engagement with ~1,200 attendees; presented at Belgian One Health (BeOH) conference in 2025 (Belgium) on biodiversity data for policy; and planned/will chair a session for Datos Vivos 2025 (Colombia) on One Health and open data

- Events used to actively engage with researchers, policymakers, and public health professionals, highlighting GBIF as a tool for accessing, publishing, and applying biodiversity data in health-related research

- Creation of an online dashboard tracking non-native and invasive mosquito species distributions, integrating GBIF, VectorBase, MosquitoAlert, and other sources.

Objective 4: Provide advice on GBIF uses and consult with professional sectors on priority research questions.

This objective was achieved through the link established between GBIF and WHO through TDR, the contracting by TDR of a consultancy on the use of GBIF data for policies and the development of a tutorial as per reported in the deliverables below:

Deliverables

- Input to a TDR/WHO–funded consultancy led by Global Vector Hub, producing a systematic review of GBIF-mediated vector data applications for informing vector control and policy (https://drive.google.com/file/d/1ec8HKpLb53XUG9ycys9TkvGuNvP_2xuF/view?usp=drive_link).

- Development of a downloadable tutorial for formatting and using GBIF mosquito occurrence data in species distribution modelling; delivered a presentation during GBIF's Technical Support Hour (Jan 2024) to promote best practices for publishing health data [https://www.gbif.org/event/5OAhtQqcgvm3GV1KdS7KOu/technical-support-hour-for-gbif-nodes-january-2024]

Objective 5: Review and communicate messages to support data mobilization and promote publishing/use of GBIF data.

This objective was achieved through several publications and written documents, webinars and communication materials including news items published on TDR website, as reported in the deliverables below:

Deliverables

- Co-authoring of an editorial in *GigaByte* as part of the second call for vector data papers, providing clear recommendations for open data publishing of vector data in the health sector

- Creation of a *A Guide to the Publication of Vector Data*, offering step-by-step instructions for mapping data to Darwin Core standards, which was open for community review until

June 2025

- Participation to the *GigaByte* webinar "Author Insight on How to Publish Vectors of Human Disease Data" to encourage submission of well-documented datasets

- Drafting of recommendations for editors of vector-borne disease scientific journals to encourage data publication through GBIF

Objective 6: Suggest improvements for data content, standards, vocabularies, and GBIF services.

This objective was achieved through contributions to reviews and addition of a case study, as reported in the deliverables below:

Deliverables

- Contribution to GBIF Secretariat's review of standards and term use for vector data, identifying opportunities to enhance data consistency and usability

- Addition of a vector use case to GBIF's data mobilization course, demonstrating best practices for data formatting via the help desk, and applied lessons from training sessions to update guidance

It has been a privilege to serve as the Task Group Chair from February 2024 until the close of the TG in June 2025. I have enjoyed working alongside the other members of the Task Group and the TDR/WHO to advance training and data mobilization efforts to elevate the use of biodiversity data to better understand and reduce vector-borne and zoonotic disease hazard across the globe.