GBIF Work Programme 2023
Annual Update to Implementation Plan 2023–2027

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Explanatory note

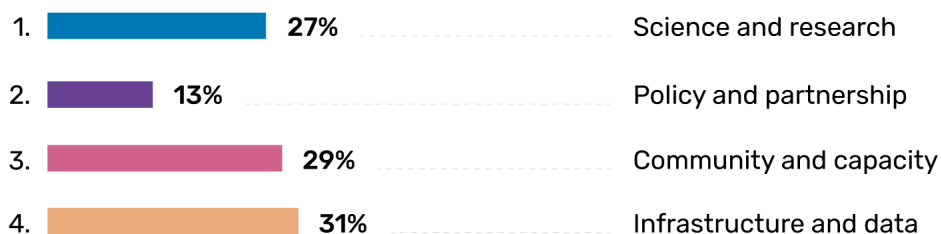This is the first annual GBIF Work Programme presented under the new Strategic Framework for 2023-2027, following its approval by the Governing Board at its 29th meeting in 2022. It represents the first edition of a five-year rolling implementation plan aimed at realizing the vision, fulfilling the mission, achieving the objectives and observing the values set out in the Strategic Framework.

You will notice significant differences from the Implementation Plan and Work Programmes presented to the Governing Board during the previous Strategic Plan period. The overall aim is to focus on the key outcomes that can be expected from GBIF's work linking them to the four priority areas set out in the Strategic Framework. The Work Programme approved at GB29 is less granular than in previous years, with an emphasis on what will be delivered and achieved, enabling the Governing Board to assess at future meetings whether implementation is on track. Specific tasks, events or contracts are presented as indicative only, and the intention is to enable flexibility in the means of achieving the proposed outcomes, both within the Secretariat and through the collective efforts of GBIF's nodes and partners.

Each Priority Area contains up to four designated Activities as well as an Ongoing Activity which presents work that is a continuation across the five-year Implementation Plan. Activity Areas may change over the Implementation Plan as we work to achieve the overall mission of the Strategic Framework. Likewise, many of the indicative tasks will require multi-year efforts to achieve the projected outcomes. Therefore, the Activity Areas and indicative tasks should be viewed through a five-year time frame.

The 2023 budget is a separate document. Under improved financial reporting arrangements recommended by the Budget Committee and approved by the Governing Board, the 2023 budget reflects more transparently the full expenditure dedicated to each priority, including associated salary costs, grants, and contracts, as well as incorporating both Voting Participant contributions and supplementary funds income and expenses allocated towards implementation of the Work Programme. Similar levels of staff time are allocated to Priority Areas 1, 3 and 4, with less time in Priority Area 2.

Staff time among WP priority areas

1.	27%	Science and research
2.	13%	Policy and partnership
3.	29%	Community and capacity
4.	31%	Infrastructure and data

Finally, the Work Programme combines activities required to maintain GBIF's existing services and collaborations as a mature infrastructure as well as measures to implement the enhancements and

developments needed to meet the objectives of the Strategic Framework. The document's structure indicates these components within each priority area.

Priority Area 1: Science and Research

Improving biodiversity evidence for scientific research and understanding

Activity 1.1: Drive mobilization and use of biodiversity data to support priority thematic areas of relevance

Projected outcomes for 2027

- Knowledge gaps are reduced by consolidating data coverage across the thematic areas of relevance
- GBIF's relevance to research is enhanced, through increased recognition and uptake of GBIF-mediated data among researchers across additional scientific disciplines

Indicative tasks for 2023

- Continue and advance collaborative activities with soil, freshwater and disease vector research communities, including mechanisms for analysing current data use, sponsoring data papers, providing small grants to fund data mobilization, and developing targeted guidance on publishing thematically relevant data
- Support data management and flows for the Vector Atlas project funded by the Bill and Melinda Gates Foundation
- Update current guidance on publishing DNA-derived data, provide translation, promotion and training, and enhance and expand reference libraries incorporated into the GBIF taxonomic backbone
- Direct additional eDNA data streams to GBIF, including from national programmes

Activity 1.2: Advance GBIF's contribution to latest biodiversity modelling approaches

Projected outcomes for 2027

- GBIF supports the evolution of fundamental data-driven biodiversity research and its application across methods, scales and disciplines in life and environmental sciences

Indicative tasks for 2023

- Coordinate development of use cases demonstrating the value of biodiversity data across cutting-edge modelling approaches, through the Biodiversity Digital Twin (BioDT) project supported by Horizon Europe

- Improve data streams between GBIF and key ecological data infrastructures

- Improve data streams between GBIF and other biodiversity data infrastructures, including through the Biodiversity Community Integrated Knowledge Library (BiCIKL) project supported by Horizon 2020

Activity 1.3: Support open science principles

Projected outcomes for 2027

- GBIF is recognized as a leader and an exemplary initiative across the worldwide open science community

Indicative tasks for 2023

- Engage with working groups on UNESCO Recommendation on Open Science to ensure GBIF's experience and innovations regarding open and FAIR data are well reflected in associated guidance and documentation

- Engage with OECD Secretariat to ensure best practices developed by GBIF are reflected in its Recommendation on Access to Research Data from Public Funding

- Work with nodes, data publishers, partners and indigenous peoples' groups to complete and implement GBIF recommendations on applying The CARE Principles on Indigenous Data Governance

- Author peer-reviewed paper describing GBIF's literature tracking system and analysing its impact on data citation

Ongoing activities to support science and research

- Maintain GBIF's literature tracking programme to document and communicate the use of GBIF-mediated data in research

- Promote best practices in data citation using digital object identifiers (DOIs), through outreach to researchers and journal publishers

- Highlight and illustrate uses of GBIF-mediated data across scientific disciplines and thematic areas through GBIF.org and the annual Science Review

- Keep priority thematic relevance areas under regular review, based on outcomes achieved and on advice of the Science Committee and expert groups convened for this purpose

- Ensure presence of GBIF representatives—including through Secretariat and node staff, regional contractors and Open Biodiversity Data Ambassadors—at relevant scientific conferences with appropriate communication materials, presentations and training workshops

- Run annual competitions through the Ebbe Nielsen Challenge and Young Researchers Awards

- Work with partners to maintain and improve support for academic programmes in use of open biodiversity data

- Keep GBIF's compliance with FAIR principles for scientific data management and stewardship under continuous review, with appropriate communication and certification for relevant projects

and processes

Priority Area 2: Policy and Partnerships

Developing partnerships that benefit policy and society

Activity 2.1: Support implementation of the post-2020 Global Biodiversity Framework

Projected outcomes for 2027

- GBIF-mediated data is consistently and transparently applied and cited across multiple indicators used to monitor progress towards the goals and targets agreed through the UN Convention on Biological Diversity (CBD)

- GBIF is recognized as a key implementation partner for biodiversity-related projects supported by the Global Environment Facility (GEF)

- GBIF-mediated data is fully integrated into national Clearing-House Mechanism (CHM) platforms as well as national reporting processes for the CBD

Indicative tasks for 2023

- Implement recommendations from the 2022 consultation through the *alliance for biodiversity knowledge* to enhance use of primary biodiversity data in CBD indicators

- Formalize partnership with the Group on Earth Observations Biodiversity Observation Network (GEO BON) to define GBIF's role in supporting global, national, regional and thematic observation networks and the data needed to measure Essential Biodiversity Variables (EBVs)

- Build on discussions initiated in 2022 to consolidate GBIF's position as a service provider for GEF implementation agencies

- Work with information management team at CBD Secretariat and its Informal Advisory Group on Technical and Scientific Cooperation to provide the option of GBIF hosted portals as a standard component of CHM sites

- Improve GBIF connections and explore partnerships with other biodiversity-related conventions such as the Convention on Migratory Species (CMS), the Convention on International Trade in Endangered Species of Wild Fauna and Fauna (CITES) and Ramsar Convention on Wetlands, including through better coordination between GBIF nodes and national focal points

Activity 2.2: Support the 2030 Agenda for Sustainable Development

Projected outcomes for 2027

- GBIF's value in supporting the Sustainable Development Goals (SDGs) is recognized and reinforced through strategic partnerships with relevant international organizations focused on

climate change, food security, human health and well-being, and both terrestrial and marine biodiversity

- Relevance to multiple SDGs contributes to a broader funding base for GBIF both through project-based support and national contributions

- National contributions and project-based support provide a broader funding base that increases GBIF's relevance to the 2030 Agenda for Sustainable Development and SDGs

Indicative tasks for 2023

- Explore formal partnership options with the World Health Organization (WHO), Food and Agriculture Organization (FAO), Green Climate Fund, UN Convention to Combat Desertification (UNCCD) and other relevant agencies to build on demonstration and communication of thematic relevance across the SDGs

- Develop new communication materials that describe GBIF's value and in support of the SDGs

- Develop GBIF's strategy for marine biodiversity, including its contributions to SDG 14 (Life Below Water) and the UN Decade on Ocean Science, in partnership with the Ocean Biodiversity Information System (OBIS) and other relevant stakeholders

Activity 2.3: Support the science-policy interface

Projected outcomes for 2027

- GBIF's role in providing data infrastructure essential to the work of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is fully recognized and communicated

- GBIF's use in policy and decision processes is enhanced through partnerships and better communicated

Indicative tasks for 2023

- Negotiate renewal of GBIF-IPBES Memorandum of Understanding

- Work with IPBES Data and Knowledge Task Force to pilot attribution of assessment findings to GBIF-mediated datasets through DOI citations; and to catalyse funding support for data mobilization in response to knowledge gaps

- Develop joint communications with IPBES Secretariat to support the release of global invasive alien species assessment

- Collaborate with Biodiversa+ to establish GBIF's role in supporting the EU Biodiversity Strategy for 2030

- Pilot the use of additional citation-tracking services to capture and communicate further examples of use of GBIF-mediated data in policy, including through the Overton searchable index of policy documents

Activity 2.4: Support nature-positive outcomes from private-sector decisions

Projected outcomes for 2027

- Lending agreements prepared by financial institutions and public development banks include clear and unequivocal requirements for sharing biodiversity data

- Private companies, trade associations and consultancies in all global regions recognize GBIF as the preferred platform to share primary biodiversity data gathered through impact assessments and monitoring

Indicative tasks for 2023

- Advance the Data4Nature initiative in collaboration with Agence Française de Développement and other public development banks, including the World Bank

- Engage the Equator Principles Association to implement and strengthen its recommendations to banks regarding their clients' sharing of biodiversity data

- Work with consultants to develop simplified tools to support standardized data capture and sharing from environmental and social impact assessments (ESIAs), as well as recommendations for use of primary biodiversity data in generation of ESIAs

- Support node managers in engaging with and mobilizing data from the private sector, based on guidance developed through CESP projects, and develop options for a GBIF private-sector help desk

Ongoing activities to support policy and partnerships

- Attend CBD meetings and engagement in consultations and working groups as an observer inter-governmental organization

- Attend IPBES plenary meetings and actively engage in the IPBES Task Force on Data and Knowledge and its respective working groups, as well as the IPBES Task Force on Capacity Building, in GBIF's role as an IPBES strategic partner

- Engage with GEO BON through participation in the Advisory Board and partnerships with regional and thematic BONs

- Continue engagement with IUCN to implement the Memorandum of Cooperation, including regular imports of checklist data from the Red List of Threatened Species and the Global Register of Introduced and Invasive Species (GRIIS)

- Coordinate and facilitate multi-partner activities through the *alliance for biodiversity knowledge*, based on governance and collaboration models developed during 2022

- Continue partnership with Catalogue of Life (COL) to address the governance of species lists and improve their fitness and value for conservation and policy

Priority Area 3: Community and Capacity

Developing the GBIF network to meet future needs and challenges

Activity 3.1: Make the business case for GBIF

Projected outcomes for 2027

- The Secretariat, nodes and Heads of Delegation are equipped with robust materials to demonstrate GBIF's value for money

- Additional countries join or return to GBIF as Voting Participants

- Additional funding agencies or foundations commit supplementary funds to support GBIF activities as part of the resource mobilization strategy

Indicative tasks for 2023

- Disseminate findings of the economic valuation of the GBIF network commissioned from Deloitte Access Economics

- Develop communication materials that outline GBIF's value in virtual and in-person events, including the 2023 Global Nodes Meeting and GB30

- Design a new model for a GBIF Annual Report focused on progress towards the outcomes outlined in this implementation plan, both through the global work programme and the activities of nodes

Activity 3.2: Support and strengthen GBIF nodes

Projected outcomes for 2027

- GBIF nodes provide a strong and stable foundation for data mobilization and use through the network

- The role of GBIF nodes as hubs for data mobilization and use is better understood and supported, especially at national level

Indicative tasks for 2023

- Develop a peer-to-peer training curriculum for nodes covering key aspects of node functions

- Organize training sessions at the 2023 Global Nodes Meeting addressing needs raised by the nodes committee, such strengthening data use, improved collaboration between nodes and HoDs, and collaboration with national focal points of other intergovernmental initiatives

- Publish analysis of risks and benefits of publishing sensitive species data, and develop associated guidance and recommendations for nodes

Activity 3.3: Expand and strengthen national participation

Projected outcomes for 2027

- GBIF national participation is expanded across currently under-represented regions, G20 economies and megadiverse nations
- Current Associate Participants have agreed pathways towards achieving or returning to voting participation

Indicative tasks for 2023

- Develop a Participation and Engagement strategy aligned with the GBIF capacity framework and resource mobilization strategy that outline clear roles for the Secretariat, nodes and national delegations
- As a component of the Participation and Engagement strategy, promote and extend specific services exclusive to national members as an incentive to become or remain a GBIF Participant, e.g. national hosted portals, and develop 'onboarding' activities for new Participants as well as periodic 'refresher' events for existing Participants
- Building on the outcomes of the 2022 GBIF Asia Summit, develop a specific strategy for enhancing GBIF activity in the region at both national and institutional levels
- Organize an in-person engagement event to target countries in the Arabic-speaking regions (North Africa and West Asia)
- Continue funding of contracted regional support staff in Asia and Africa, and explore options for expanding contracted support staff in Latin America and the Caribbean, Europe and Central Asia, and the Pacific

Activity 3.4: Develop capacity and skills

Projected outcomes for 2027

- GBIF's ongoing capacity support programmes are successfully concluded, and new support programmes are scoped
- Additional training and guidance resources are available to the community in multiple languages covering both data mobilization and data use

Indicative tasks for 2023

- Conclude the current Biodiversity Information for Development (BID) and Biodiversity Information Fund for Asia (BIFA) programmes with completion of projects in sub-Saharan Africa, the Caribbean, Pacific and Asia, with final reporting to respective funders in the EU, the JRS Biodiversity Foundation and the Ministry of Environment, Government of Japan
- Organize and hold an end event for the current BID programme to communicate impact of the projects and proposals for successor activities

- Following publication of the external BID review, consult with community on proposed scope for follow-up capacity programmes covering multiple regions and with multiple funding sources
- Conclude projects funded under the current Biodiversity Information Fund for Asia programme (BIFA), and explore options for a follow-up capacity support programme in Asia
- Based on needs evaluated through the GBIF capacity enhancement framework, scope additional training modules to enhance and expand existing training curricula
- Following an evaluation of its first year of operation, refine the GBIF Data Use Club
- Support training needs for mobilization of DNA-derived data, including through the BioDATA Advanced programme focussed on South Africa and Norway

Ongoing activities to support community and capacity

- Organize annual calls for projects under the Capacity Enhancement Support Programme (CESP)
- Continue to support proposals for hosted portals, and to support the Living Atlases community including contribution towards the cost of a technical coordinator
- Provide ongoing support for documentation, including formatting and translation capabilities
- Operate effective communication channels that produce and disseminate news items and thematic content on GBIF.org and in social media, regular opt-in and publisher newsletters, and ongoing communications to the nodes
- Continue cycle of biennial Global Nodes Meetings co-located with Governing Board meetings
- Organize events to engage GBIF Heads of Delegation and node managers attending other international meetings including through the CBD and IPBES
- Coordinate work of volunteer mentors, ambassadors and regional support contractors
- Support Biodiversity Information Standards (TDWG) community through financial and organizational contributions towards annual meetings

Priority Area 4: Infrastructure and data products

Maintain and evolve infrastructure to advance biodiversity-related knowledge

Activity 4.1: Enhance robustness of the core GBIF infrastructure

Projected outcomes for 2027

- GBIF-maintained software and informatics infrastructure provides high, ongoing levels of availability and performance that keep pace with growth in data publication and use

Indicative tasks for 2023

- Address "technical debt" in software and infrastructure

- Plan capacity and hardware procurement to accommodate growth in volume and use of data

- Provide environments for development and network-wide testing, particularly related to indexing under revised data standards

- Maintain GBIF R (rgbif) and Python (pygbif) libraries to follow changes in GBIF public interfaces

- Replace Google Analytics with a more personal privacy-focused web analytics package

- Replace the Cloudera Data Warehouse with an open-source alternative

- Monitor carbon footprint of GBIF services

Activity 4.2: Enhance support services for data publishers and users

Projected outcomes for 2027

- The expanding GBIF community of users are fully supported by a responsive help desk team and improved technical documentation

- The taxonomic and collections communities benefit from improvements in GBIF support to the Global Registry of Scientific Collections (GRSciColl) and the Catalogue of Life

Indicative tasks for 2023

- Expand the distributed help desk team, including through use of the regional support contractors

- Assess taxonomic data gaps and provide summary reports on them to the Catalogue of Life

- Improve technical documentation for data publishing guidelines, data processing, common tools and tutorials, and reference APIs

- Support increased content curation on GRSciColl, coordination of the editor and user communities, and data import and synchronization processes

Activity 4.3: Enhance features and capabilities of the GBIF infrastructure

Projected outcomes for 2027

- Improved user interface to GBIF.org

- Improved capabilities for GBIF to handle ecological, collections, and phylogenetic data

- Data reuse increased through more stable GBIF identifiers

Indicative tasks for 2023

- Align interfaces, functionality and software used in GBIF.org, hosted portals, the shared data pipeline project and the Living Atlases

- Improve GBIF network pages, presentations of regions, and accommodate community-provided content

- Improve ability for users to filter based on content types (e.g. citizen science, eDNA)

- Further develop capabilities for event-based search following prototype co-developed with the Atlas of Living Australia

- Implement a material catalogue to capture specimen information exposed in the new data model

- Enrich GRSciColl through integration of collection description information, compatible with the Latimer Core schema, to support use cases such as priorities for data mobilization

- Allow downloads of data published to any Darwin Core extension

- Implement tools and policies to address content changes in the Catalogue of Life

- Develop tools to align a filtered subset of GBIF-mediated data with a phylogeny, an exemplar workflow to showcase phylogenetic organization of a dataset using sequence-based identification, and ability to run phylogenetic diversity metrics from GBIF-mediated datasets

- Explore approaches to annotation capabilities in GBIF.org that enable data corrections, enrichments and user-provided rules that combine taxonomic, geographic and temporal combinations to detect suspicious records

- Define and implement procedures to improve the stability of identifiers associated with records published through GBIF

Activity 4.4: Drive data standards development

Projected outcomes for 2027

- The revised GBIF data model is matured and applicable for use
- All controlled terms used in GBIF processing are managed in the vocabulary server

Indicative tasks for 2023

- Refine the revised unified data model developed during consultations in 2022

- Develop documentation and communication material for the revised data model, prepare a submission to Biodiversity Information Standards (TDWG), and establish an appropriate maintenance group

- Enhance the GBIF Integrated Publishing Toolkit (IPT) to support data publishing using the revised data model, and emerging formats such as the Catalogue of Life Data Package and CamTrapDP for camera-trap data

- Mature the tools and processes around maintenance of the vocabulary server, including growing the community of vocabulary editors and aligning vocabularies with relevant ontologies for the revised data model

Ongoing activities to support infrastructure and data products

- Software maintenance (upgrades, bug fixes, capture and handling of change requests, added functionality) and user support (IPT, hosted portals, GBIF.org, GRSciColl, registry, ChecklistBank and taxonomic backbone builds)

- Hardware maintenance (purchases, installation, supervision/monitoring, optimization, operation planning, screening of future needs)

- Infrastructure upgrades to the latest possible versions of widely used frameworks and cluster technology (web services stack, search engines, distributed data platforms)

- Systems support (monitoring and remediation of risks from technical debt, operational supervision and issue handling)

- In-house support (error diagnostics, installation support, load tracking, training)

- General help desk support through email and GitHub

- Data user support (maintenance of rgbif and pygbif libraries, custom downloads, API use) and publisher support (IPT, data formats, error diagnostics, custom metrics); training support through webinars, individual appointments, documentation, videos and workshops

Colophon

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Document control

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