

GBIF Work Programme 2024

***Annual Update and Implementation Plan to the
Strategic Framework 2023-2027***

Version 1.0, 19 October 2023

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Introduction

This is the second annual GBIF Work Programme and annual update to Implementation Plan 2023–2027 (WP24) presented under the [Strategic Framework for 2023–2027](#).

The work programmes of the current implementation plan are less granular than previous ones, with an emphasis on what will be delivered and achieved to enable the [GBIF Governing Board](#) to assess whether implementation is on track. Specific tasks, events or contracts are presented as indicative, with the intention of enabling flexibility in how proposed outcomes are achieved, 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 ongoing activities presenting work that continues across the five-year implementation plan. Activity areas for 2024 include only slight changes, with one activity area having been closed and two having been reworded to better reflect the indicative tasks.

Some indicative tasks persist in 2023 because they require multiyear efforts to achieve the projected outcomes, while many new indicative tasks appear in this work programme. Activity areas and indicative tasks should be viewed through a five-year time frame as we work to achieve the overall mission of the 2023–2027 Strategic Framework.

The 2024 GBIF budget funds WP24 and is detailed in a separate document presented to the Governing Board. Many indicative tasks described in WP24 include activities, such as external contracts and workshops, that are funded through core funding, which are noted in the text. And, as noted at the end of each activity section, supplementary funds have increased the scope of the activities of WP24, enabling GBIF to move further and faster towards its strategic objectives.

Joe Miller

Executive Secretary, GBIF

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 2024

- Commission an update to the systematic review of GBIF use in research ([Heberling et al. 2021](#)) to identify trends in research uses for the 2020–2024 periods, deepen the analysis of methods and analytical approaches, and inform future support for priority thematic areas of relevance
- Advance collaborative activities across priority thematic areas of relevance based on recommendations from the Science Committee, including [establishing a task group on invasive](#)

alien species and engaging experts in agrobiodiversity

- Strengthen and expand support and guidance on mobilizing DNA-derived data from a range of data holder types and scales, supported by data quality improvements, improved coverage of DNA-detected organisms in the GBIF taxonomic backbone, and alignment of guidance with the new GBIF data model
- Expand data flows relating to vectors of human disease, in particular malaria-related data through GBIF partnership in the [Vector Atlas](#) project, with additional data streams on non-malaria vectors as recommended by the [GBIF task group on vectors of human diseases](#)
 - **Expected funding mechanisms and sources:** Salaried staff time apart from: external contract for systematic review update (€20,000 core funds); external contracts for priority thematic areas of relevance (€20,000 core funds, possible supplementary funds); contract for expanding data flows on human disease vectors (supplementary funds: [Bill & Melinda Gates Foundation](#) through the Vector Atlas project)

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 2024

- Consolidate prototype digital twins dependent on and coordinated by GBIF through partnership on [BioDT](#), support user-group testing of prototype twins and links to key biodiversity data infrastructures, and build connections between projects and initiatives through shared data and service dependencies (such as [B-Cubed](#))
- Improve GBIF's capabilities to manage ecological data streams from key infrastructures and monitoring programmes, applying new data model to accommodate richer data (including absences based on complete species inventories) while designing data flows and outputs in planned workshop on the [TDWG Humboldt Extension](#) (see also activities 4.3 and 4.4)
 - **Expected funding mechanisms and sources:** Salaried staff apart from: travel costs for Digital Twin activities (supplementary funds: [Horizon Europe](#) (BioDT); workshop costs for managing ecological data streams (€20,000 core funds, possible supplementary funds from [Cornell Lab for Ornithology](#))

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 (€10,000 from core funding for DataCite fee)
- 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](#)
- Continue engagement with thematic communities prioritized in previous Work Programme (soil and freshwater); 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

- Capture needs and suggestions from research communities regarding the development of the GBIF data model
- 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 [Graduate Researchers Awards](#)(€20,000 from core funding in 2024)
- 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 2024

- Work with partners to ensure that GBIF contributes efficiently and transparently to the finalized monitoring framework of the [Kunming-Montreal Global Biodiversity Framework](#) (GBF), particularly headline indicators on invasive alien species (Target 6), business disclosures (Target 15) and availability of data, information and knowledge (Target 21), and including expanded regional mechanisms to support funding and capacity pipelines
- Analyse GBIF's relevance across all goals, targets and mechanisms of the GBF and incorporate the results within communication and nodes guidance materials (see also activities 3.1 and 3.2)
- Explore the potential of 'data cube' delivery formats from GBIF to support further development of biodiversity indicators at national, regional and global levels
- Implement the partnership agreement with [Group on Earth Observations Biodiversity Observation Network](#) (GEO BON), including joint promotion at CBD meetings, development of guidance for alignment of nodes and Biodiversity Observation Networks, and application of the new data model to support standardized observations
- Formalize GBIF's position as a service provider for [implementing agencies](#) of the [Global Environment Facility](#) (GEF)

- 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
 - **Expected funding mechanisms and sources:** salaried staff apart from: travel to relevant meetings including COP16 (core funds); travel to workshops relating to data cube delivery (supplementary funds: [Horizon Europe B-Cubed](#) project).

Activity 2.2: Support the 2030 Agenda for Sustainable Development

Projected outcomes for 2027

- GBIF's value in supporting the [UN 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 2024

- Establish formal partnerships with key agencies to support GBIF's relevance to the SDGs, in particular with regard to human health, food security (building on a Letter of Intent signed with the Plant Treaty in 2023), and climate change
- Organize a joint meeting with the Ocean Biodiversity Information System (OBIS) to advance work on a marine biodiversity data strategy based on 2023 discussions, and recognizing GBIF's position as a partner in the Marine Life 2030 programme within the UN Decade on Ocean Science for Sustainable Development
- Scope and commission an initial Environment and Social Governance (ESG) report relating to GBIF's operational policies, including but not restricted to carbon and environmental footprints and gender, diversity and inclusion guidelines
 - **Expected funding mechanisms and sources:** salaried staff apart from: workshop costs for marine meeting (€10,000 core funds, possible supplementary funds to be identified); external contract for ESG report (€30,000 core funds).

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 2024

- Develop implementation plan for renewed partnership with IPBES, including involvement in task forces, data support for assessments, and mobilization of priority data in response to knowledge gaps
- Engage in the IPBES fast-track methodological assessment on monitoring biodiversity and ecosystem services, approved at the IPBES 10 plenary meeting in 2023
- Refine capture of additional citations of the use of GBIF-mediated data in policy implementation and communicate key illustrative examples
- Formalize partnerships with relevant organizations supporting the science-policy interface
 - **Expected funding mechanisms and sources:** Salaried staff apart from: possible external contracts for filling IPBES knowledge gaps via the BID programme (supplementary funds from [European Commission Directorate-General for International Partnerships](#)); external contract for student support to mine backlog from policy citation database (core funds).

Activity 2.4: Support nature-positive outcomes from decisions in the business, financial and productive sectors



The proposed changes to the wording of this activity, which previously referred only to the private sector, recognize that the same approach applies to publicly owned corporations, financial institutions, and organizations in the productive sectors including agriculture, aquaculture, fisheries and forestry

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 2024

- Support implementation of the [Data4Nature](#) initiative by developing targeted outreach, communication and training resources to engage multilateral development banks (MDBs) and development funding agencies and increase flows of business-sector data from environmental impact assessments, monitoring programmes and funded projects
- Organize forum for MDBs and other potential Data4Nature partners to detail progress and encourage further participation at UN Biodiversity Conference (COP 16) or other relevant venue
- Continue engagement with the Task Force on Nature-related Financial Disclosures (TNFD), in particular with regard to the recommendation of a global nature-related public data facility to support corporate reporting for the Global Biodiversity Framework
 - **Expected funding mechanisms and sources:** Salaried staff apart from: external contract to coordinate Data4Nature initiative (€45,000 core funds), meeting costs for forum (€40,000 core funds, potential supplementary funds from Data4Nature partners)

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, 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)

Priority Area 3: Community and Capacity

Developing the GBIF network to meet future needs and challenges

Activity 3.1: Communicating the value of GBIF



The proposed change to Activity 3.1 (previously "Making the business case for GBIF"), consolidates the communication tasks needed to support activities across all Priority Areas under a single broader activity.

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 2024

- Update the [GBIF Communications Strategy](#), revising and revisiting key audiences and messages to account for changes and developments since its publication in 2015
- Refresh messaging and materials across GBIF communication platforms to reflect and update key components of GBIF's value to the network's Participants, publishers, partners and stakeholders, including:
 - GBIF's value to science, research and innovation, particularly in the priority thematic areas identified under Activity 1.1
 - GBIF's role in supporting implementation and monitoring of the GBF and other biodiversity-related conventions
 - GBIF's contribution to supporting the SDGs
 - The financial value of GBIF to science and society
 - The specific value that GBIF membership provides through exclusive services and opportunities for participating governments

- GBIF’s position as a data infrastructure and network that supports open data and open science
- GBIF’s record in managing effective capacity enhancement programmes that produce concrete results in mobilizing data demonstrating onward use through research citations, and documenting policy applications
- Prepare a second series of animated videos on additional areas of GBIF relevance aligned with priority thematic campaigns
- Produce an annual report summarizing progress toward implementing the new strategic framework in 2023
- Capture and communicate the value of work carried out by GBIF volunteers (mentors, trainers, translators, ambassadors and other voluntary roles) and report to national nodes and delegations on the value of uncharged work from volunteers in their countries
- Develop branding, launch and promote use of the ‘derived dataset’ tool to support and encourage more accurate citations and provide data publishers with more precise reporting on uses of their data in research and policy
 - **Expected funding mechanisms and sources:** salaried staff apart from: external contracts and materials for communications strategy (€100,000 core funding); commission new set of animated videos (€25,000 core funding).

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 2024

- Refine the Node Awards programme based on lessons learned from its first year of operation
- Update guidance and support materials for nodes, including:
 - Alignment with the Participation and Engagement strategy
 - Further development of the nodes training curriculum
 - Review of the capacity self-assessment tool for Participant nodes
 - Guidelines on applying the CARE principles on indigenous data governance, following 2023 consultation
 - Guidelines on national approaches to handling sensitive species data, following 2023 analysis
- Following successful piloting in 2023, establish the Technical Support Hour for Nodes as a permanent forum for community exchange and interaction, peer-to-peer training and problem-solving
- Develop materials on the new data model for nodes to reuse and repurpose in engaging data holders
- In consultation with nodes, explore opportunities to enable secondments and work exchange within the GBIF network
- Develop a process for replicating the survey of national nodes to capture information on the value

of national investment in the GBIF network

- **Expected funding mechanisms and sources:** salaried staff, apart from: support for pilot secondment programme (€40,000 core funding).

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 2024

- Consolidate the nodes onboarding programme and scope possible onboarding actions for Heads of Delegation
- Maintain and consolidate the regional support teams to complement and supplement the work of national nodes, and scope development of regional-level node support through associate partners
- Organize an in-person engagement event with the regional support team to strengthen participation in underrepresented parts of the Europe and Central Asia region (e.g. Central Asia, Caucasus, Balkans, Baltics)
 - **Expected funding mechanisms and sources:** salaried staff apart from: external contracts for regional support teams (€80,000 core funds for the Asia support team, supplementary funding from [Norway](#) and [Finland](#) for Priority Area 3 Special Purpose Fund, [European Commission Directorate-General for International Partnerships](#) through the BID programme); ECA regional engagement meeting costs (supplementary funds from Priority Area 3 Special Purpose Fund).

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 2024

- Launch a continuation of the BID programme once contract is secured with the European Commission Directorate-General for International Partnerships, explore additional funding sources, and organize regional meetings in target regions (co-located with regional nodes meetings, where possible)
- Reevaluate the impact of the GBIF [Capacity Enhancement Support Programme](#) (CESP) and develop recommendations for improvements
- Update materials within GBIF training courses aligned with the new data model, adding new

materials and use cases as appropriate

- **Expected funding mechanisms and sources:** salaried staff apart from: external contracts and BID regional meeting costs (supplementary funding from [European Commission Directorate-General for International Partnerships](#)).

Ongoing activities to support community and capacity

- Organize annual calls for projects under the [Capacity Enhancement Support Programme](#) (CESP): €80,000 from core funds for 2024
- 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 regional nodes meetings (€40,000 core funding to support 2024 meeting costs, other costs expected to be met from supplementary funds including BID)
- 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 2024

- Retire the internal GBIF checklist database and replace it with [ChecklistBank](#), and deploy corresponding updates to public GBIF APIs
- Maintain deployments of hosted portals and hosted data repositories (IPTs)
- Maintain GBIF R ([rgbif](#)) and Python ([pygbif](#)) libraries to follow changes in GBIF public interfaces and support outcomes, including eDNA engagement activities
- Mature deployment and operation of software on the Kubernetes technology platform
- Review and test disaster recovery processes

- 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
 - **Expected funding mechanisms and sources:** salaried staff apart from: payment for Kubernetes platform training (€20,000 core funding), costs of hardware procurement (€100,000 core funding).

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 2024

- Establish a ticketing system to manage, prioritize and monitor help desk support
- Replace the GBIF Backbone Taxonomy with the extended release of the Catalogue of Life Checklist, produced using ChecklistBank
- Support content curation on GRSciColl and coordinate editor and user communities as well as data import and synchronisation processes
- Upgrade documentation by
 - Enhancing the understanding of data quality through consistent, accessible documentation of all related processes, tools and information products
 - Revising the documentation on record-quality requirements, including occurrence identifier stability, and use of standardized values, including vocabularies
 - Consolidating and expanding the technical documentation
 - **Expected funding mechanisms and sources:** salaried staff apart from: contractor to support ChecklistBank (core funding) costs of ticketing system (€20,000 core funding).

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 2024

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

- Improve ability for users to filter based on categories of dataset origins, including citizen science, eDNA and the business sector
- Advance capabilities for event-based search, based on prototype co-developed with the Atlas of Living Australia, and explore support for the forthcoming Humboldt extension on species inventories (see also activities 1.2 and 4.4)
- 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, including priority-setting for data mobilization and digitization
- Develop new data download formats that offer configurable summaries of occurrence data
- Improve data quality by:
 - Integrating basic data quality checks into the IPT and implementing emerging publishing models and changes to Darwin Core
 - Continuing to explore approaches to annotation capabilities in GBIF.org focused on taxonomic and geographic combinations to detect suspicious records, piloting rule-based issue documentation with selected volunteer communities
 - Maturing the workflows that ensure stable GBIF occurrence identifiers and improving communication about identified issues and solutions
- Explore alternative platforms and methods for integrating and managing information from literature tracking
 - **Expected funding mechanisms and sources:** salaried staff apart from: external contract for UI contractor (core funding); external contract to support GRSciColl integration (core funding); travel to support development of data cube format for B-cubed project (supplementary funds from [Horizon Europe](#)).

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 2024

- Mature the unified data model aiming to become a candidate standard within [Biodiversity Information Standards](#) (TDWG)
- Refine and test data publishing models for specimen data with community members
- Develop publishing models for monitoring data (abundance and absence) and structured events around targets to improve support of inventory data using the Humboldt extension (see also activities 1.2 and 4.3)
- Advance data models for interaction data
- Encourage growth of the community of vocabulary editors to accelerate the collection of community-curated vocabularies
- Complete the migration of content and associated code to use the vocabulary-server for all controlled terms
 - **Expected funding mechanisms and sources:** salaried staff apart from: external contract to

support further development of the unified data model (core funding)

Ongoing activities to support infrastructure and data products

- Combined cost of contractors across priority area 4: €287,000 from core funds
- 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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