



GBIF-Sweden: Strategic plan 2012-2016

Revised 2014-02-10

Introduction

The Global Biodiversity Information Facility came into being as an intergovernmental initiative in March 2001. Two years earlier, science ministers from the Organization for Economic Cooperation and Development (OECD) had endorsed a recommendation from a scientific panel to set up a body “to coordinate...the standardization, digitization and global dissemination...of the world’s biodiversity data.” By the end of 2013, after two five-year cycles of capacity-building, and half-way into its third cycle GBIF is now considered to be fully operational. A comprehensive description of historical and recent achievements is given in the GBIF Annual Report 2013 (<http://www.gbif.org/resources/2262>) and an outline of the general perspective of GBIF’s role in the prevailing and future biodiversity informatics landscape is presented in the Global Biodiversity Informatics Outlook (GBIO) published in September 2013 (<http://www.gbif.org/page/2943>).

In January 2001 the Swedish Research Council (SRC) was instructed by the government to organize the national membership in GBIF. While reserving the position as Swedish “Head of Delegation” in the international GBIF consortium for themselves, the SRC suggested that a national node be set up at the Swedish Museum of Natural History. The office of GBIF-Sweden was thus established in January 2003, and work began by an inventory of Swedish natural science collections and observation databases, and by initiating the coordination of digitization efforts at the relevant Swedish institutions.

The overarching aim of GBIF is to create free and easy access to global biodiversity information through a portal to distributed databases. Early in the history of GBIF, interest was mainly concentrated on retrieval and presentation of specimen data from natural history collections, but since then the amount of available observational data has increased dramatically and presently the majority of the contents presented at www.data.gbif.org consist of recently

collected observation records (the contribution of GBIF-Sweden included). However, specimen data from older time periods are critical in analyzing historical biodiversity trends, and specimen data provide better analytical possibilities by providing access to material for confirmation of determinations or for genetic studies. For these reasons, and because traditional methods of capturing specimen data are labor-intensive, increasing efforts are now being directed towards mass digitization of museum specimens.

Already today, GBIF services are important tools for taxonomic, systematic and ecological research but by bringing together and presenting new types of information, including ecological and genetic information, GBIF will become an even better source of information to researchers in biology and other disciplines, to public authorities and to the general audience in the future.

GBIF-Sweden: Vision

GBIF-Sweden should serve researchers, public authorities and others interested in biodiversity as the Swedish hub for information and international exchange of data on the biological diversity of the world.

GBIF-Sweden: General ambition

The ambition of GBIF-Sweden is to continuously harvest and publicly present up-to-date biodiversity data hosted by Swedish institutions and government authorities to stakeholders around the world through the international GBIF portal, in accordance with Swedish commitments under the international GBIF agreement. Where appropriate, GBIF-Sweden also aims to accumulate information about Swedish biodiversity kept elsewhere in the world and provide it to Swedish stakeholders in appropriate form. Finally, GBIF-Sweden aims to play a leading role in stimulating digitization efforts aimed at increasing the quantity and quality of content provided to GBIF from Swedish institutions. The aims will be accomplished by maintaining the necessary infrastructure to harvest the information offered by a decentralized network of Swedish data providers, publish it at www.gbif.se, and expose it to the central GBIF server. GBIF-Sweden will also support and organize digitization efforts, and develop visualization and statistics tools assisting Swedish data owners and other stakeholders in analyzing and using the GBIF data. To this end, starting in 2013, GBIF-Sweden aims to investigate the possibility to collaborate more intensely with the Swedish LifeWatch project.

GBIF-Sweden: Organization

GBIF-Sweden is internationally represented in the GBIF Governing Board by Maria Thuveson (SRC). Upon request from the SRC a joint board/steering group is expected to govern GBIF-Sweden and Swedish LifeWatch as from 2015-01-01.

The independent board of GBIF-Sweden consists of:

- Magnus Appelberg (Swedish University of Agriculture)
- Sif Johansson (MISTRA/EviEM)
- Rolf Källman (DigiSam, National archives).
- Elin Lundström (Decuria AB)
- Bengt Persson (Linköping University/Karolinska institutet)
- Henrik Nilsson (University of Gothenburg)
- Maria Sjö (Swedish Environmental Protection Agency)
- Lars Westerberg (Linköping University)

In addition, an advisory board with the following members has been set up during 2012: The advisory board of GBIF-Sweden will remain active in its original form until 2016-12-31.

- Lennart Edsman (Swedish University of Agriculture)
- Oskar Kindvall (Swedish University of Agriculture)
- Per Lekholm (Göteborg Natural History Museum)
- Mats Lund (Swedish Museum of Natural History)
- Monika Myrdal (Uppsala University)
- Sabine Stöhr (Swedish Museum of Natural History)

GBIF-Sweden: Present activities

Financially supported by the SRC, GBIF-Sweden is located at the Swedish Museum of Natural History, which provides office space, infrastructure and secretarial service. At present (2014) the Swedish GBIF node consists of two shared project coordinators (adding up to 25% service time), one node manager (100%), one systems developer (100%) and one secretary (25%). Accordingly, 564 person days per year are at the disposal of GBIF-Sweden. Temporary assignments may occur pending available resources.

GBIF-Sweden maintains and continuously extends a network of decentralized data publishers, from which information is collected and published at the national web site www.gbif.se. The data are exposed both to the international GBIF portal through a machine interface, as well as for human consumption through a traditional web search interface. The web site also contains news and information on topics related to Swedish and international biodiversity, web resources for maintaining databases, mapping tools etc.

By the turn of 2013-2014 GBIF-Sweden provides more than 43 million records, making us the second largest provider of biodiversity data in the world (#1 United States offering ca. 180 million records, and #3 Great Britain ca. 42 million

records). Altogether 433 million records are presented by www.gbif.org (February 2014).

Focus areas in 2012-2016

1. Data publication

We expect GBIF-Sweden to remain a large provider of information to GBIF. By the end of the five-year-period, the goal is to have all digitally available Swedish natural history collection and observational data published at www.gbif.se and www.gbif.org. We also aim to decrease the time lag between digital data capture at the host institution and publication of the data at GBIF.

To make this possible, GBIF-Sweden will continue to assist providers, support data delivery, and refine data transport protocols. Where feasible, we will shift to frequent machine harvesting of source databases. We will support the development and adoption of web-based information systems allowing efficient and frequent data transfer to GBIF. In particular, GBIF-Sweden will promote the implementation of DINA (Digital information system for natural history collections) at Swedish GBIF data providers, and will implement special technical solutions supporting efficient automatic data flow from DINA to GBIF using existing synergies within the Bioinformatics and Genetics unit at SMNH , and others interested.

In addition to serving the natural history community we aim to develop the existing links to cultural heritage institutions and seek collaboration with the National Archives and the Swedish National Heritage Board on co-publishing data.

GBIF-Sweden will also support standardization efforts that facilitate information exchange. In particular, we will improve the implementation of international biodiversity information standards to Swedish data by organizing the ENSE standardization effort among GBIF data providers. GBIF-Sweden will also act as a national partner in international biodiversity information standardization efforts (such as Biodiversity Information Standards – www.tdwg.org), based on Swedish concerns and priorities.

Finally, GBIF-Sweden will promote the adoption of Globally Unique Identifiers (GUIDs) for specimens and taxon concepts among Swedish data providers, improving the value of the data.

2. Digitization effort

Specimen data from Swedish natural history collections are particularly valuable to scientists and to biodiversity management officials because they: (1) cover a historically very long time span; (2) offer more extensive coverage of species and collection sites than most other sources of biodiversity information; and (3) consist of actual preserved plants and animals, which provide material for further study. In total, it is estimated that the major Swedish natural history collection institutions hold some 27 million specimens, only 6 million of which have been digitized to some extent. Traditional digitization of museum specimens is labor-intensive and unsatisfactorily slow. At the current pace, it will take hundreds of years or more before the entire backlog is digitized.

To address this situation, GBIF-Sweden has initiated and will seek funding for a national Swedish project aimed at finding ways to rationalize and speed up the digitization of museum specimens. The project may include technical innovation as well as the implementation of existing techniques for industry-scale mass digitization and crowd-sourcing, with the aim of digitizing the bulk of the backlog within a limited time period (15 years). We will also seek out and participate in suitable national and international partnerships with similar objectives in mind; e. g. Digitalium (Finland), Naturalis (the Netherlands) and others for natural history data, and Digisam (the National Archives) concerning cultural history objects.

Where appropriate, we will also support data providers with minor but crucial digitization efforts. For instance, many old specimens (even those already presented by GBIF-Sweden) are not accurately georeferenced and we will encourage and support the development of methods to add spatial accuracy to biodiversity data. GBIF-Sweden may also support data migration and similar efforts to make critical datasets available directly or indirectly (via Artportalen - The Species Gateway) to the GBIF community.

3. Web portal

The Swedish web portal www.gbif.se is the prime national site for users of services provided by GBIF-Sweden. Developed by GBIF-Sweden, the current version of the portal was launched in 2008. It offers important resources for data providers, such as technical hints, tools for data handling and transfer, and statistics on GBIF-Sweden content. The site also provides facilities for searching the information on biological diversity provided by GBIF-Sweden. A news flash section covers conference announcements, information on vacant positions, biodiversity “success stories” etc.

During the current funding period, the portal software will be completely rewritten. The intention is to provide an open-source software solution, which can be used across national GBIF nodes and anyone interested in taking part in the development is invited to contribute via an open code repository. The new system will be customizable with respect to language and geographic region, and

it will also be possible to use it for “thematic” or topic-specific biodiversity information portals. In addition to services similar to the ones offered currently by GBIF-Sweden and aimed primarily at data providers, the new portal will include more search and analysis facilities geared towards the biodiversity research community at large, decision makers and the general public. It will also interface better with other biodiversity informatics resources, such as those provided by the international GBIF portal, DINA, Encyclopedia of Life, and LifeWatch.

We expect to release a first version of the new web portal in the spring of 2014. Further improvements to the portal will be introduced at regular intervals throughout the rest of the project period. The development of the portal software will be guided by the needs of the contributing partners, usage statistics, opinion of user groups organized by us and other partners, and the development in the biodiversity community at large.

4. Education and outreach

During the second phase of development of the GBIF initiative (2007-2011), the usage of GBIF services increased dramatically, and at the beginning of phase three, the number of scientific publications based on data provided by GBIF surpassed 200 per year. However, the potential is much larger and Swedish scientists are still poorly represented among GBIF users, especially given the large amount of data contributed by GBIF-Sweden. The continued success of GBIF rests heavily upon presentation of data and services to potential users and GBIF-Sweden must engage wherever possible in education at all levels.

To further promote the use of GBIF data, we will keep approaching university institutions to inform about the initiative and the services it provides, to take part in and organize education events, and to participate in staff training opportunities. The new collaborative Nordic Academy for Biodiversity and Systematics Studies offers a possibility to reach Masters students from nine Nordic universities with relatively minor effort. GBIF-Sweden will lead one module under this program, starting in late 2012. GBIF-Sweden will also participate actively in, or organize biodiversity informatics courses or symposia for graduate students, researchers, and other potential users of GBIF resources.

Other activities will include participation in the Ecology Education Forum of the European Ecological Federation and similar national or international discussion fora. During the project period, we plan to participate actively in or initiate research projects focused on GBIF data, such as taxonomic, temporal and ecological gap analyses of the available information. We will also present the GBIF initiative in popular science outlets and develop and demonstrate “GBIF demo packages” intended for use by teachers and school children.

5. Support to biodiversity informatics in developing countries

A large fraction of the data handled by GBIF-Sweden consists of information on organisms observed or collected in foreign countries, particularly in the tropics. In many countries, access to data and information on indigenous biodiversity is restricted and repatriation of such information is among the most important tasks of GBIF internationally. Simply by making data on foreign biodiversity hosted by Swedish institutions available through the GBIF portal, GBIF-Sweden is contributing to this goal.

GBIF internationally and GBIF-Sweden also have the ambition to transfer knowledge technology in biodiversity informatics to developing countries, where requested. The limited resources available to GBIF-Sweden do not permit operational support of biodiversity informatics in developing countries. However, GBIF-Sweden will be open to participation in training and exchange programs, and will be actively seeking such opportunities during the coming project period. In addition, GBIF-Sweden will offer help in installing and running the new node portal software (see Section 3) in developing countries whenever requested to do so.

6. Financial plan

VR-proj. No: 2011-6325					
Applicant: Ericson, Per					
Type: Driftsbidrag/Operation grant					
Title: Fånga framtiden: GBIF-Sweden under fas tre inom världens största initiativ för biodiversitetsinformatik/ Seizing the future: GBIF-Sweden in the third phase of the worlds largest biodiversity informatics initiative					
	2012	2013	2014	2015	2016
Opening balance	93 969	765 775	647 775	81 734	39 685
Previous grant	680 000	0	0	0	0
Sum grant/yr 2012-2016	1 291 000	1 815 000	1 599 000	1 607 000	1 631 000
OH 2012-01-01 - 2012-06-30	136 000	0	0	0	0
OH 2012-01-01 - 2016-12-31	258 200	363 000	319 800	321 400	326 300
To distribute	2 459 169	2 943 775	2 566 575	2 010 134	1 996 985
Salaries expected (recounted by 1.015 from 2013-01-01)	1 385 750	1 406 536	1 427 634	1 449 049	1 470 785
Salaries realized Jan.-Dec.	1 262 767	1 355 000	1 427 634	1 449 049	1 470 785
<i>Difference salaries expected - realized</i>	<i>122 983</i>	<i>51 536</i>	<i>0</i>	<i>0</i>	<i>0</i>
Travelling expenses, operation grant expected	245 000	200 000	200 000	200 000	200 000
Travelling expenses, operation grant realized	36 427	111 000	200 000	200 000	200 000
Difference travelling expenses, operation grant exp.-realized	<i>208 573</i>	<i>89 000</i>	<i>0</i>	<i>0</i>	<i>0</i>
Strategic investment expected	0	487 890	537 407	0	0
Strategic investment realized	0	467 000	537 407	0	0
<i>Difference Strategic investment expected - realized</i>	<i>0</i>	<i>20 890</i>	<i>0</i>	<i>0</i>	<i>0</i>
OH 2012-01-01 - 2012-12-31	136 000	0	0	0	0
OH2012-01-01 - 2016-12-31	258 200	363 000	319 800	321 400	326 200
Used	1 693 394	2 296 000	2 484 841	1 970 449	1 996 985
Closing Balance	765 775	647 775	81 734	39 685	0