SNSB – Staatliche Naturwissenschaftliche Sammlungen Bayerns – SNSB IT Center, München

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About the Institution

The Staatliche Naturwissenschaftliche Sammlungen Bayerns (SNSB, The Bavarian Natural History Collections) is a research institution on natural history. The Bavarian state organisation encompasses five State Collections (zoology, botany, paleontology and geology, mineralogy, anthropology and paleoanatomy), the Botanical Garden Munich-Nymphenburg and a number of museums with public exhibitions in Munich, Bamberg, Bayreuth, Eichstätt, Nördlingen and Nürnberg. The research focuses mainly on the past and present bio- and geodiversity and the evolution of animals, fungi and plants. To achieve this we have large zoological, anthropological, paleontological and mineralogical collections and a herbarium (almost 35,000,000 specimens) as well as a Botanical Garden and a DNA Bank.

SNSB Staatliche Naturwissenschaftliche Sammlungen Bayerns

About the Data Center

The Bavarian State Collections of Natural History (Staatliche Naturwissenschaftliche Sammlungen Bayerns, SNSB) is a natural history collection facility in Bavaria. The SNSB IT Center as part of the SNSB is its institutional repository primarily for scientific bio- and geodiversity data of the natural history collections belonging to the SNSB.

The mission comprizes research activities in the field of biodiversity informatics and data science. Software is mainly designed and set up following the concepts of the Diversity Workbench (DWB). DWB software tools are registered in bio.tools, a service of ELIXIR Europe.

The SNSB IT Center as GFBio Data Center supports scientists and institutions by offering DWB support and workshops. Additional services are provided on a case-by-case basis. They might include the sustainable DWB management of data from its generation up to persistent storage, archiving and publication of approved, quality-controlled, standardized and well-structured, i.e. FAIR

- occurrence and provenance data (from specimens, biological samples and observations)
- taxonomic and checklist data
- trait data (e.g., morphological, anatomical, chemical and molecular descriptions)

Contact SNSB at NFDI4Biodiversity

Data Center Profile

Name	SNSB – Staatliche Naturwissenschaftliche Sammlungen Bayerns – SNSB IT Center, München
URL	https://snsb.de/snsb-it-zentrum/

Description	The GFBio Data Center SNSB is managed by the SNSB IT Center. People involved are those of this facility. Based on about 20 years IT experience the SNSB IT Center was established in 2006. It is associated to the Botanische Staatssammlung München using its administrative and logistic infrastructure as well as its scientific and curatorial experience. We run a number of services, information systems and portals, some of them have been online for more than 15 years. The in-house technical staff is administrating a server cluster using LINUX and MS Windows platforms with around 60 TByte storage units. The back up systems and archives of the regional computing center Leibniz-Rechenzentrum München are essential part of the storage concepts. Together with co-editors and partners the SNSB IT Center is setting up the Diversity Workbench data management system and platform. The DWB installations and Network expertise is available for GFBio and NFDI. All software is open source and free for download. This concerns more than 20 independent databases for managing collection and observation data, taxonomic data, molecular data, ecological trait data and other data domains. The data center has a close cooperation with BGBM and MfN to support the IT management of the Biowikif arm. The taxonomic expertise and interest is that of the SNSB with its part-institutions. The various fields of biodiversity research (botany, mycology, palaeontology, zoology) are represented by the curators at Botanische Staatssammlung München (BSM), Bayerische Staatssammlung für Paläontologie und Geologie (BSPG), Staatssammlung für Anthropologie (SAM), Staatssammlung für Paläoanatomie (SPM) and Zoologische Staatssammlung München (ZSM) as well as by other scientists e. g. of the regional museums, all employed at the SNSB. Regarding the core IT infrastructure and data management, a wide expertise for data in the field of invertebrates, certain groups of vertebrates as well as in the field of mycology, botany and palaeontology exists. Thus, the SNSB with SNSB IT Center are coordinating the GBIF-D Node Fungi & Lichens and GBIF-D Node Invertebrates II (Mollusca, Chelicerata, Myriapoda), the research infrastructure project IDES (fossil and recent fish collections) and forster the central technical and scientific curation of the occurrence data and the taxonomic backbone for the Flora-of-Bavaria initiative. With LIAS light the SNSB IT Center runs one of the most comprehensive existing trait databases with an online identification tool and fact sheets for more than 10,000 lichen species in 20 languages. The SNSB have a special interest in collection data to specimens curated at the SNSB, in any data from research projects with scientists of the SNSB involved and in collection data about taxa occurring in Bavaria.
Data domains (scope)	Our first preference is to manage data of the collection domain. Apart from this we are specialised to manage, store, archive and publish occurrence/ monitoring data and organise triple-structured data of any descriptive and ecological context (e. g., functional trait data, measurement data, morphological and molecular data). There is great expertise in processing nomenclature and taxonomic data as needed, e. g. for the publication of regional taxon reference lists and checklists.
Target group	
Service Description	Data archiving for research projects is focusing on botanical, mycological, zoological and paleontological data. The data archiving includes management processes with Diversity Workbench (DWB) databases involved. The data publication is done via the DWB network at the SNSB.

Type 1a	Collection data, together with the deposit of physical objects, referenced multimedia objects.
Type 1b	Observation and occurrence data, species monitoring projects, referenced multimedia objects.
Type 2	Taxon reference list data and checklist data.
Type 3	Any type of triple-structured data, referenced multimedia objects.
Type 4	RAW data (data sets and/or data packages) if well documented and in formats and structures appropriate for long-term archiving, without further data management requirements.

The services are based on the data management platform Diversity Workbench with the installations and networks at the SNSB IT Center.

Data submission and accession

- SNSB DiversityMobile services
- DWB Data replication services
- DWB Mapping services and import wizards (e. g., for collection and species monitoring data, checklist data)
- Services to import data structured according SDD and DELTA standard

Data integration and management

- Services done with DWB databases and repositories (12 databases)
- Several DWB sql database installations at the SNSB; remote data management by researchers possible; various types of user interfaces and rich clients
- Installation for open data and general access of taxon names and terms (=TNT) through either DWB networks "cloud" or web services
- Repositories for multimedia data and original raw data files (contextual data management in DWB)

Data backup and archiving

- Regular backup and archiving workflows
- Some archiving services for large amounts of data are done in cooperation with the Leibniz-Rechenzentrum. Special agreements are needed to extend these services for GFBio use.
- Some archiving services will be organised as NFDI cooperation with the Staatliche Archive Bayerns

Data publication

- Services for user-guided export of data, provided by DWB export wizards
- Several REST web services
- Services provided by BioCASe Provider Software (BPS) installations at SNSB; e. g., export in various content standards
- Services of the SNSB GBIF Data publisher
- Data flow and pipelines with DWB caching mechanisms to offer export and indexing databases (e. g., for BiNHum, EDIT, Global Plants Initiative, Flora of Bavaria portal, INCT Herbario Virtual Flora Brasil, Virtuelles Herbarium Deutschland)
- Services to export data in SDD and DELTA standard (xml-format)

User services

Since 2007 we offer data management workshops for biologists belonging to various research communities; see Upcoming workshops. We run two mailing lists: Mailing list for DWB software releases and Mailing list for SNSB maintenance work. In the GFBio context, a User Helpdesk will forster the scientific curation of research data in an effective way and a DWB Training Environment will be set up. The envisaged DWB Database Administration Helpdesk will support database administrators of evolving data centers and joint research groups to successfully establish and run DWB databases, virtual research environments and DWB networks.

Service Levels	Data Set x	Data Package x	Data management x	Research Objects x

Data Formats		
Data Submission Formats	**Data**	a) Export files from external installations of DiversityCollection, DiversityTaxonNames and DiversityDescriptions, (b) any spreadsheets (CSV, excel-files), structured according existing DWB import schemes (see SMNS GitHub, SNSB GitHub, ZFMK GitHub or example templates for data submission in the GFBio collection of recommended data submission templates) (c) any spreadsheets and databases in an accessible (not legacy) format appropriate to create new DWB import schemes; Image formats have to be agreed for submission.
	Metadata	EML, ABCD, DarwinCore, DublinCore, SDD
Data Accessibility	**Public access points**	GFBio, BioCASe Data Access Services at the SNSB, Institutional landing pages of citable stable URIs, BioCASe, GBIF, BiNHum, DTN Taxon List Services and others
	Standardised exchange formats	XML-files in ABCD, DarwinCore, EML, SDD standard; Web services of the DWB platform
	Data formats	Text, CSV, XML; Agreed image data formats
	Long-term availability	Unlimited, with tape archiving support through LRZ

Data Publication Services	**Data Citation**	yes, a citation is provided for every data set and data record
	DOI	*yes, via GBIF publication* *via ZB MED/DataCite publication*
Archiving (RAW-data ingest, data, media)		
Licenses / Terms of Use	**Metadata**	
	Data	
Documentation		
Computing center, external service provider **name of the associated computing center (s), (commercial) service provider (s) and services provided**		
Backup		

Your contact persons at SNSB

Data curator

- Tanja Weibulat

Technical contact

NFDI contact persons

- Dagmar Triebel, Tanja Weibulat, Stefan Seifert

Contact SNSB at NFDI4Biodiversity

Do you have questions, feedback or need help?

Contact our Helpdesk for direct support.