

Swiss natural history collections network

2021 Collection Survey



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1. Introduction

The 2018 survey

In 2018, the Swiss Academy of Natural Sciences (SCNAT), the Swiss node of the Global Biodiversity Information Facility (GBIF.ch), and the Swiss Society of Systematics distributed a survey among the collection-holding institutions. Thanks to the numerous answers, the metadata gathered contributed to the publication in 2019 of the SCNAT report "*The National Significance of Swiss Natural History Collections*"¹. This report was decisive in obtaining federal funding for SwissCollNet for the period 2021 to 2024. Additionally, the survey, mostly focused at the institutional level, allowed to clarify and update the GBIF records of the Swiss institutions: confirmed institutional acronyms and designations have been registered in the *Registry of Scientific Collections* (GRSciColl², for more details see below) and underlying data (such as addresses, emails or total number of specimens) were updated.

SwissCollNet 2021 survey

A priority of SwissCollNet is to make visible the diversity, the quality and the importance of the natural history collections curated in Switzerland, and make them available to the public and the researchers. In order to get detailed information at the collection level, SwissCollNet launch with GBIF.ch a new survey that will be published on GRSciColl and will be available to the Swiss institutions on a SCNAT server (see point 2.2).

This collection survey is an important milestone of the SwissCollNet initiative: it will allow to gain an unprecedented vision of the collection general contents, their richness, their strengths but also their challenges. This detailed level of knowledge will be an asset for many stakeholders:

... the **curators** will develop, with their evaluation, an access to a synthetic description of their collections, their condition, their value and their needs (and why not identify collections that could benefit from a project funded by SwissCollNet?);

... the **institutions** will give, by being published on GRSciColl, visibility to their main collections at a national and international level;

... the **network of the Swiss collections** will gain a common dataset to share information, facilitate collaborations (and why not to submit projects during SwissCollNet second call?) and strengthen the network;

... **SwissCollNet** will receive strategic information to illustrate the scientific value of the collections and position the Swiss Virtual Natural History Collection as an invaluable infrastructure for research.

¹ <https://swisscollnet.scnat.ch/en/activities/publications>

² <https://www.gbif.org/grscicoll>

Concretely

All Swiss collection-holding institutions are invited to send information about their collections to generate a detailed overview of the field and reach the full potential of this survey. The minimum level of information required is at the level of the collection unit (see definitions point 3.2), however data at the subunit level is highly interesting for future collaborations between collections.

The survey follows the structure of 2018 with adjustments to reach the level of precision necessary for a publication on GRSciColl (collection unit level), but also to be an interesting dataset for SwissCollNet and the Swiss network of collections (collection subunit level). Every institution that provided collection data in 2018 will receive a pre-filled file for update and completion.

Whereas since decades, *Index Herbariorum* provided unambiguous references for botanical collections, no such comprehensive registry existed for other domains such as Zoology or Geosciences. GRSciColl aims to fill this gap. Originally developed by the Consortium of the Barcode of Life, the registry was transferred to GBIF in 2018. Today, it is fully integrated in the GBIF registry and permits to reference scientific collections from various domains - biological, geological, anthropological or archaeological. GRSciColl is synchronized with other registries such as *Index Herbariorum*³ or *iDigBio*⁴ (in the US).

The publication of the Swiss main collections on GRSciColl is a real asset:

- All collection units registered will receive a stable identifier, facilitating unambiguous linkage of information to these entities, their owner institution and contact persons.
- Based on GRSciColl, GBIF validates the *InstitutionCode* and *CollectionCode* elements used in the Darwin Core data standard. Whenever possible, GBIF links specimen-related occurrence data to these units (e.g. <https://www.gbif.org/occurrence/3120053498>).
- By being registered, the institutions and the collections are accessible to a wide international public in search of comprehensive information in a specific field. This public is made of, for example, professionals in the field of collection management, scientific researchers, professionals of the environmental sector or, of course, the general public.

³ <http://sweetgum.nybg.org/science/ih/>

⁴ <https://www.idigbio.org/>

Example: GRSciColl summary page of the entomological collection of the Naturmuseum Winterthur (NMWIN-ENTOMO)⁵:

SUMMARY	
Institution name:	Naturmuseum Winterthur
Code:	ENTOMO
Status of collection:	Active
Personal collection:	No
Accession status:	Institutional
Description:	Estimated number of specimens: 70000 (individual specimens). Formation period: 1855-ongoing. Geologic period: recent. Geologic context: none. Estimated number of species: 1500. Number of types: unknown (Holo- and Lectotypes: unknown; Syntypes: unknown). SCSPS: 5. [Sabrina Schnurrenberger, 2021-09-08]
Content types:	Biological preserved organisms
Preservation types:	Sample pinned

MAILING ADDRESS	
Address:	Museumsstrasse 52
State/Province:	ZH
Postal/Zip Code:	CH-8400
City/Town:	Winterthur
Country:	Switzerland

Other examples:

From the Naturhistorisches Museum Basel

- **Institution (NMB)** page on: <https://www.gbif.org/fr/grscicoll/institution/e772c6d6-bbc8-40c8-92e9-b74407e1f5bb>
- **Acari collection (NMB-ACARI)** page on: <https://www.gbif.org/grscicoll/collection/03c1c33e-e764-4281-983b-7c87a8a59cdb>

From the Naturmuseum Winterthur

- **Institution (NMWIN)** page on: <https://www.gbif.org/fr/grscicoll/institution/3ab4b761-c62f-4996-a6d8-ed1283fc161e>
- **Mineralogical collection (NMWIN-MIN)** page on: <https://www.gbif.org/grscicoll/collection/6b335eff-9c34-4599-8e1f-2c3f3b53c199>

⁵ <https://www.gbif.org/grscicoll/collection/e2275ea8-dde4-4878-8743-6bcca57209a0>

2. General information

2.1 Overview

Completing the survey consist in three steps (detailed in the guidelines below):

STEP 1: define the hierarchy of your collection units and subunits

STEP 2: describe each collection (sub)unit following the provided TABLE (excel file)

STEP 3: return your contribution

➔ **If you had completed the 2018 survey (part on collection metadata)**, the data you provided are in the excel file you received. Your objective is to go through your data, confirm their collection unit/subunit status (see definitions below) and update/complete the associated data (in the table, the yellow areas show where the main information is needed).

The time needed to complete the survey will vary according to several factors: the size of your collections, the proportion of available and/or digitized information and your strategy to define collection units and subunits (see point 3.2). Curators can adjust the amount of time they want to spend on this survey by selecting the degree of precision they want to apply. Of course, the level of precision returned in the survey is likely to vary between curators. As a rule of thumb, filling in the survey should take 2 to 3 days per curator.

2.2 Data publication

The information that the institutions will send back will be published online on the SCNAT server, with an easy access for all Swiss stakeholders active in the field of natural history collection management. A determined selection of fields about the collection units (see definitions, point 3.2) will be published for each institution on the GBIF registry of scientific collections (GRSciColl), which is accessible worldwide.

Web platform	Data published	Access by
SCNAT server	Collection units and-subunits, complete dataset	Swiss stakeholders
GRSciColl	Collection units, selection of fields	Open access

Unless otherwise specified and justified for by the senders, all data are considered to be openly available.

Synchronisation with Index Herbariorum

Index Herbariorum (IH) is synchronized with GRSciColl. If your institution is already registered in IH, your IH collection record(s) **will be updated synchronously with the units defined or confirmed via this survey**. New herbaria will be registered in IH. There is no need for specific action. In case of questions, please contact contact.gbif@unine.ch

2.3 Procedure

There are several stages in the collection survey:

Stages
Complete the survey The collection-holding institutions complete the survey.
Troubleshooting Contact SwissCollNet (swisscollnet@scnat.ch) or GBIF.ch (contact.gbif@unine.ch).
Screening Once returned, the collection information will be screened by GBIF.ch to ensure that the necessary information is available and unambiguous before the upload. The participants may be contacted during this phase.
Upload GBIF.ch will upload the data on GrSciColl.
Maintainance Collection-holding institutions can update their own entries and send them to contact.gbif@unine.ch .

2.4 What will happen next

- GBIF.ch will create a national synopsis (all datasets combined, units and subunits) that will be available to all participants and Swiss stakeholders (to be downloaded from a SCNAT server)
- After GBIF.ch has uploaded your data on GrSciColl, you will receive a confirmation and instructions for subsequent updates. In any case, institutions can update and maintain their own entries.

3. Guidelines

3.1 Files provided

All institutions receive two documents:

- the present guidelines explain the steps to follow and provide examples in the appendix
- the EXCEL file with a survey table where your collection data are reported (if you had completed the 2018 survey)

The EXCEL file contains the table you have to complete, but also useful definitions and examples. It will be your main tool to fill in the survey.

Guidelines and empty EXCEL templates can also be downloaded:

https://swisscollnet.scnat.ch/en/implementation/collection_survey

3.2 Definitions

This section provides important definitions and information about the collection units, collection subunits and curatorial units. These terms are important to define your collection hierarchy.

Examples of collection units and subunits are provided in Appendix I (subunit definition).

3.2.1 Collection Unit

- A collection unit is usually a larger collection in the institution that corresponds, for example, to a broad taxonomic group (e.g., Entomological collection, Cryptogams, ...), an important collector (e.g., De Candolle collection, Frey collection...) or to an institutional department (e.g. "Zoology", "Geology", ...). It may correspond to an administrative level (with a designated curator) and is also used for communication (e.g. listed on the institution website).
- A collection unit may also consist of a small holding of particular relevance for your institution which should gain public visibility on GRSciColl.
- In order to permit the use of GRSciColl entries as reference units for linkage of various information in digital environments, as well as easily obtain an overview of important collections at a national and a larger scale, GRSciColl is conceived as a registry of larger collection units. As reference units, their name and description are preferably stable over the long term.
- The collection unit is the level that will be **published on the GBIF registry GRSciColl** (GRSciColl Collection unit)
- The description of collection units in the survey is **mandatory**.

3.2.2 Collection Subunit

- A collection subunit is part of a collection unit.
- A collection subunit allows to declare specific holdings, either with respect to taxonomy (usually lower rank such as family), origin (geography or author) and/or conservation status.
- Subunits represent the working units at a national level, e.g. to identify inter-institutional priorities or leverage coordinated digitization efforts.
- A collection subunit may be used by curators to organize and track the impact of their work with respect to their objectives (e.g., conservation, identification, communication, research).
- Subunits may allow to highlight (partial) holdings of particular interest or relevance for the institution and in need of action to ensure its conservation, accessibility, required identification level or digitization (e.g., SCSPS score ≤ 4).
- The collection subunits are not published on GRSciColl, but will be available on the server of SCNAT.
- The description of the collection subunits in the survey is **optional, but highly encouraged**

PLEASE NOTE 1. The collection subunit that we describe here corresponds to the collection unit in the 2018 survey.

3.3 Completing the survey

3.3.1 STEP 1 - collection hierarchy

The first step consists in deciding which are your institutional collection units and their (potentially) associated subunits. Please refer to the definitions given above (3.2) and the Appendix I to see how to define subunits.

EXAMPLE

In the case of the Naturhistorisches Museum Basel (NMB), the curator decided to define 4 collection subunits (lines 3 to 6) within the collection unit "ACARI" (line 2). This example is fully detailed in the EXCEL file you received.

	A	B	C	D	E	F
1	INSTITUTION*	HIERLEVEL* ▼	UNITCODE*	NAME*	NAME_CH	PARTOFUNIT
2	NMB	unit	ACARI	Acar	Milben	
3	NMB	subunit		Water mites	Wassermilbensammlung Carl Bader	ACARI
4	NMB	subunit		Land mites	Landmilbensammlung Josef Schweizer	ACARI
5	NMB	subunit		Parasitic mites	Parasitensammlung Milben Willi Büttiker	ACARI
6	NMB	subunit		other mites	Sammlung Milben Mironov	ACARI

3.3.1 STEP 2 - collection description

After having listed your collection units and their (potential) associated subunits, the aim is to describe them in the provided table. In this table ("sheet 1 - TABLE" in the excel file), each line corresponds to a single collection sub(unit) and each column to a descriptor.

Only the description of the collection units is mandatory and will be uploaded on GRSciColl. However, **completing the survey also for the subunits will really matter for the Swiss network** of persons working in/with the natural history collections. This information will be shared within the network and facilitate the collaborations.

3.3.3. STEP 3 - return your contribution

You just have to return your Excel file completed to **both** SwissCollNet (swisscollnet@scnat.ch) and GBIF.ch (contact.gbif@unine.ch) at the latest on November 26th 2021.

4. Contributions

This survey and its associated guidelines have been created by: Pascal Tschudin (GBIF), Aline Dépraz (SCNAT), Holger Frick (NMB), Michelle Price (CJB) and Yves Gonseth (GBIF).

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APPENDIX I - SUBUNIT DEFINITION

This appendix gives some advice on how to define subunits in order to have an interesting level of information for you and the Swiss network of collection-holding institutions, while keeping the amount of work manageable.

The Natural History Museum of London defines a subunit as “a named group of objects that share core characteristics” (Woodburn 2019): a storage location, a curatorial unit type, a taxonomic level, a responsible curator and an object count/size estimate.

The definition of collection subunits is arbitrary since it is connected to the practical work of the curator. To be operational, a collection subunit should neither be too large (extreme: one subunit for all specimens), nor too small (extreme: one subunit for each single specimen). As this might vary a lot between collections, a “collection subunit” is not a universal criterion to compare collections. This will, of course, result in varying levels of detail between curators and collections.

SITUATION 1

Say there are 30'000 specimens of birds in your museum, they could be defined as:

- one subunit if curated by one individual in one storage location, maybe even unordered
- as separate subunits for each taxonomic order in a scientific collection
- as separate subunits for each type of specimens like full mounts, nests, eggs, tissues and skins (with different storage requirements)
- hypothetically, the 500 bird skins of Darwin might be considered as a separate subunit outside the other “birds” to distinguish this historical collection
- two subunits, one for the scientific “closed” collection and one for the several hundred specimens stored in boxes waiting for integration

The Vertebrates curator chose the taxonomic level “class” to describe her/his units, among which figures a unit “Aves” (see below). For the subunits, she/he decided to define them according to the types of specimens to facilitate the monitoring of her/his curation work.

Collection unit	Collection subunit
Aves	Birds - full mounts
Aves	Birds - eggs
Aves	Birds - nests
Aves	Birds - tissues
Aves	Birds - skins

SITUATION 2

In **case A**, the curators chose to consider the invertebrates as a unit (subdivided in 3 subunits following a taxonomic logic (i.e. class)).

In **case B**, entomology (insects) is considered a unit (maybe because of its size, its scientific or historic significance), subdivided in subunits defined according to the taxonomic "order".

	Collection unit	Collection subunit
A	Invertebrates	Insects
	Invertebrates	Gastropods
	Invertebrates	Other invertebrates
B	Entomology	Coleoptera
	Entomology	Hymenoptera
	Entomology	Diptera
	Entomology	Orthoptera
	Entomology	Odonata
	Entomology	Other

Iconic collections, such as the "Herbier de Candolle" housed in Conservatoire et jardin botaniques de la Ville de Genève, could either be a subunit of the Phanerogams (**case C**) or figure as a collection unit if the institution wished to give this collection an increased visibility (by being published on GRSciColl) due to its importance (**case D**).

	Collection unit	Collection subunit
C	Phanerogams	Angiosperms
	Phanerogams	Gymnosperms
	Phanerogams	Herbier "de Candolle"
D	Herbier "de Candolle"	