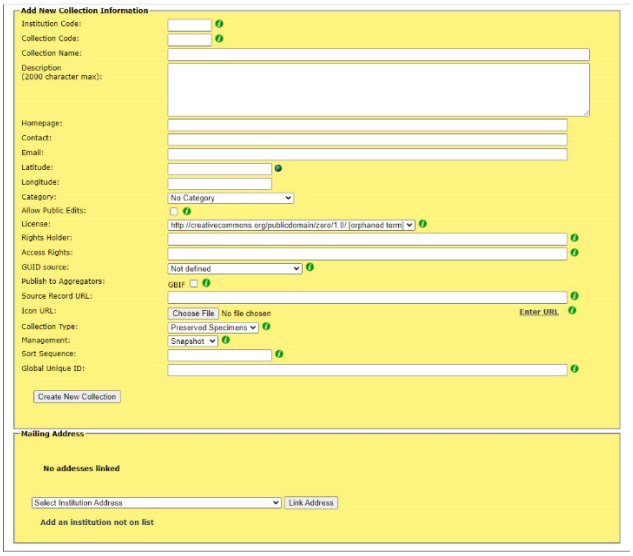
Symbiota2
Mobilizing Biodiversity Data

Help document for

Collection metadata



Author: Mary E. Barkworth

Introduction

"Metadata" refers to a set of data that describes other data. Before a collection can be added to a Symbiota or Symbiota2 network or portal[1], the collection's manager needs to provide the portal manager with metadata about the collection. This document explains the fields on the fields on the form (Fig.1) used by Symbiota and Symbiota2 to collect the metadata needed. Some of the metadata for a collection is publicly available. It can be viewed by clicking on the "more info" link by the collection's name (Fig. 2).

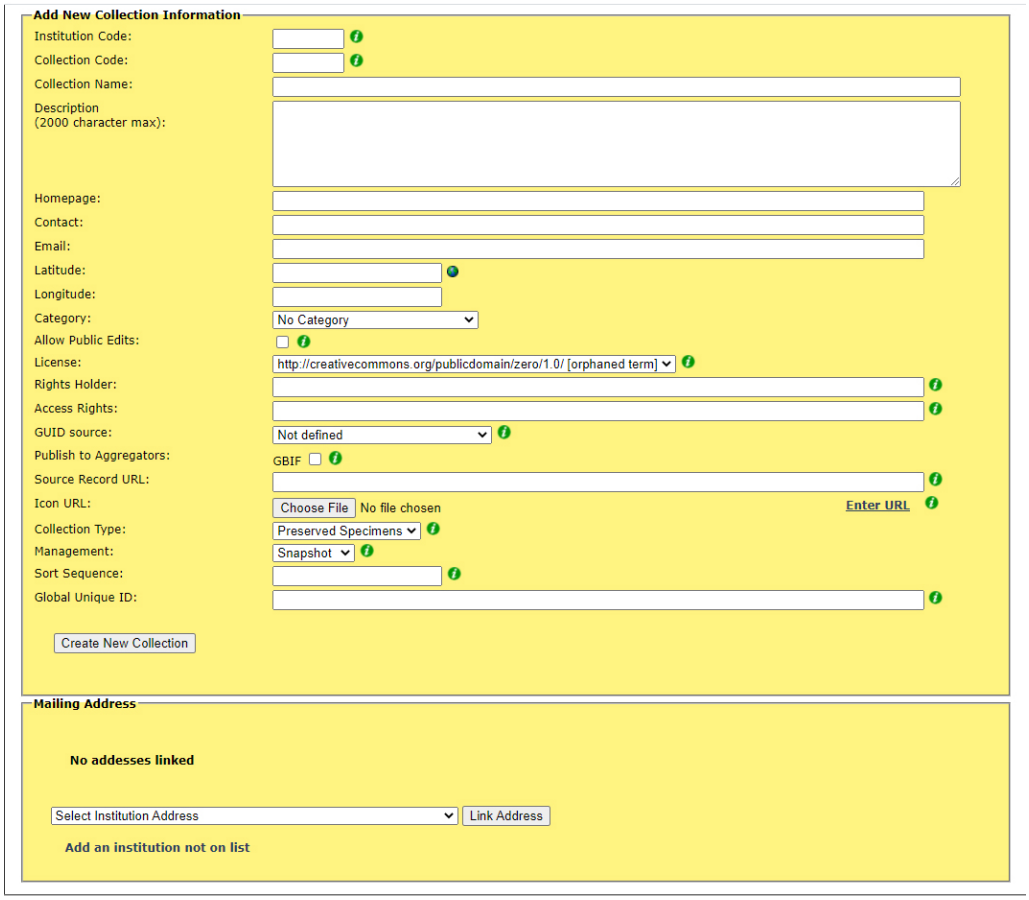


Figure 1 The form for entering and editing a collection's metadata

[1] "Network" refers to all parts of digitally connected entities; "portals" are subsets of networks. Portals may serve a subset of user groups, such as collections within a region or different kinds of specialists. Portals may provide different kinds of access to their users. Symbiota and Symbiota2 are content-management systems for networks. A network may have multiple portals, each with a different focus, that share skills and information across the network, eliminating the need for each portal to develop specialists in all aspects managing the network.

The initial version of a collection's metadata form will be completed by the portal manager, using information provided by the collection manager. Once a collection has added at least one specimen record, it will be included on the list of contributing herbaria revealed when the Search/Search collections link has been clicked (Fig. 2). After that, the collection manager collection is responsible for maintaining the currency of the data shown. Most fields will not change, but some, such as contact information and description, might.

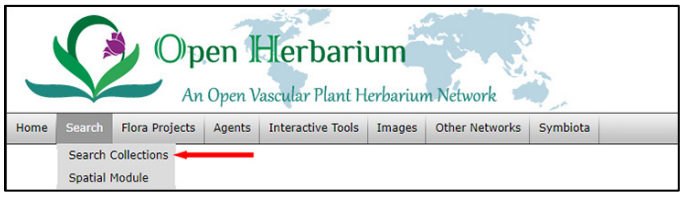


Figure 2 Link for finding the collections contributing to a Symbiota network

Finding the metada for your collection

To view the metadata for your collection, login to your network, click on the "more info´ link beside your collection's name (Fig. 3).

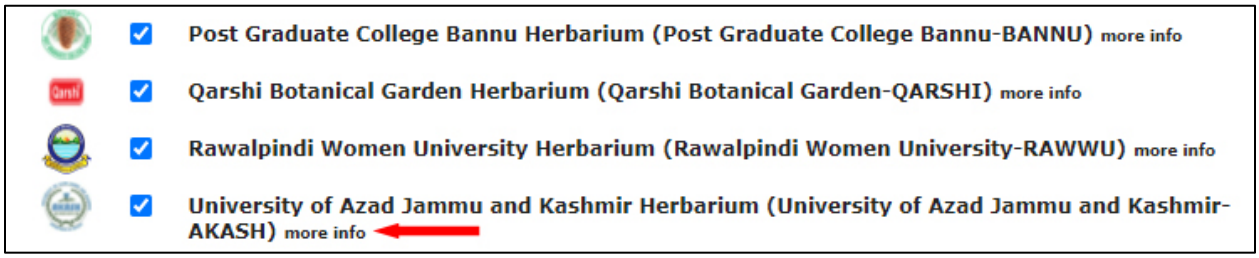


Figure 3 Link for viewing metadata (arrow)

You should see a pencil in the top right corner of the page that comes up (Fig. 4). It is visible only to those with editing privileges for the collection. Click it to see whether you have permission to edit the metadata.

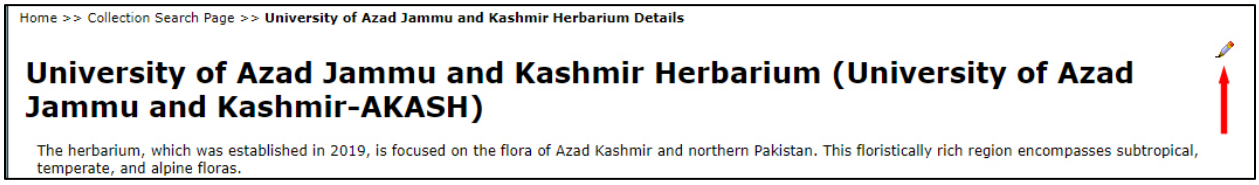


Figure 4 Link to editing panel for the University of Azad Jammu and Kashmir Herbarium

If you do, you will see two boxes (Fig. 5). The link that brings up the page editing version of the metada page is in the second panel. If you only see the Data Editor Control Panel, you do not have permission to edit the metadata. Initially, it is given only to the contact person for the collection. If that person is available, ask them for permission. If he or she is no longer available (retired, changed position, etc.) contact the portal manager and explain the situation.

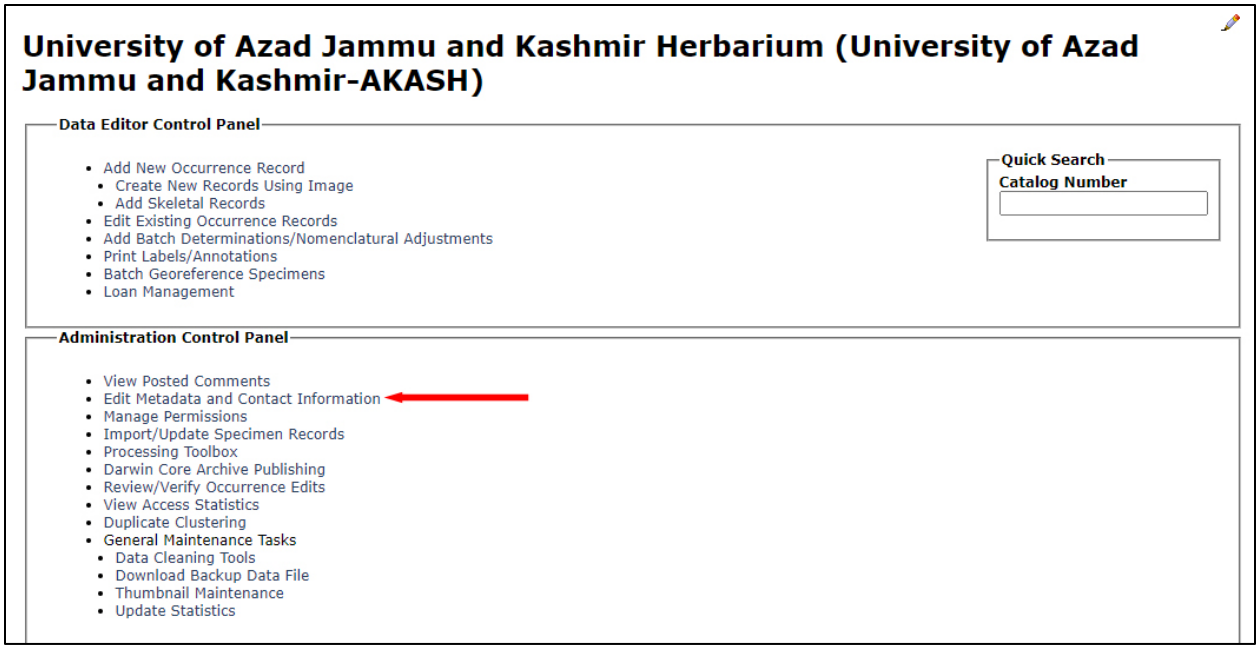


Figure 5 Link to the page for editing a collection's metadata

When a collection agrees to share its specimen data with additional networks such as the Global Information Facility (GBIF), its metadata is part of the shared data. In Symbiota2, portal administrators will be able to send out a such reminder to all in their portal managers on a regular basis. The most important fields to keep up to date are the name of the contact person and the contact email.

The metadata fields

The remainder of this document explains what should go in each of the fields used on the Collection metada page (Fig. 1). For each field, three comments are provided: a) how the field's data means and how they are used; b) recommendations on deciding what to put in the field; and c) differences or potential differences between Symbiota and Symbiota2+ with respect to the field.

The first priority for Symbiota2 is to ensure it offers all the functionality of Symbiota, but once that has been accomplished, it will be given additional functionality. The "Symbiota2+" comments indicate changes that are planned. Some of them will be in the first release of Symbiota2; when others are incorporated will depend on their perceived priority to users (and funding). This uncertainty is why they are listed as changes to come in version Symbiota2+, not Symbiota2.

Institution code

Explanation: The Institution Code is used by GBIF and other aggregators to report on data coming from different collections belonging to the same institution. All collections belonging to a single institution should have the same information in the Institution Code field even if they operate independently. GBIF and other aggregators will automatically copy the information to GRSciColl, an index it is developing of all the biodiversity collections in the world.

Recommendation 1: *For collections joining a Symbiota network for the first time:* Enter the institution's *name* in this field because it is likely to be globally unique. Examples: "Pakistan Museum of Natural History", "United States Forest Service", "University of Tennessee", "University of Texas", "Utah State University". There is no registry of Insitution code. GRSciColl is registering them. I am not sure that it is enforcing global uniqueness.

For collections already in a Symbiota network, make no change until the page contains two fields (see Symbiota2+).

Symbiota2+: There will be two fields for entering institution information, "Institution name" and "Institution code". These are both Darwin Core fields but, for some reason, only Insitution Code is included in Symbiota. It is highly improbable that two insitutions will have identical names, but highly probable that two or more will be referred to by the same code. For example, seven universities might be referred to locally as WU, but on a global scale there are at least seven niversities that might use that as their code: University of Warsaw, Universität Wien, Washburn University, Washington University, Waynesburg University, Webster University, Williamette University, The World University.

ADDITIONALLY: The Global Biodiversity Information Facility is building a global registry of scientific collections, GRSciColl. It took it over from other organizations and is still in the process of cleaning the data and adding functionality to it. To see how your institution is registered, search for it here. Clicking on the name of the institution will shown the collections that are currently linked to that name. If you wish to update the information, use the edit button and/or use the contact link near the bottom of the home page.

Collection code

Explanation: The Collection Code is used to identify individual collections. Ideally each collection would have a unique code, one that is not used by any other biodiversity collection. In practice, this is not easy because many older collections have codes that, although widely recognized within their discipline or region, are not globally unique.

Following the recommendations will help ensure *new* collections have a globally unique collection codes by preceding joining a Symbiota network with registration in one do two global registries, *Index herbariorum* (IH; collections of algae, fungi, and plants) and the Global Registry of Scientific Collections, GRSciCOLL (for all other biodiversity collections).

Recommendations: **Herbaria** should register with *Index herbariorum* before registering with a collection network. Registration can be completed online click the button to the right of the map). One requirement will be to suggest the code desired. It can be up to six letters long. Check that it is not not already being used by entering searching for it in IH. If it returns the name of a herbarium, it is already in use and you will have to come up with a different code. Also, if the herbarium is old but has not been active for some time, use the search feature to check that it does not already have a code by searching by location.

If the herbarium is already registered with IH, check the information in it, including the information about staff members, phone numbers, and emails. All information there will be automatically collected by GBIF.

Index herbariorum collects more data than GrSciColl. The additional data provide a more complete description of the collection and are used in generating annual reports about the world's herbaria.

Museums and zoological collections: Register with GRSciColl. Registration can be completed online. The individual registering the collection must first register with GBIF. As with *Index herbariorum*, check that the proposed code is not already in use within GRSciColl. If you have questions, contact GRSciColl using the contact link near the bottom of the home page.

Symbiota2+: Enable recording of institution name and institution code as two separate fields. Discuss with GBIF, which would be most effective data for use in GRSciColl.

Collection name

Explanation: This name is used to alphabetize the collections within a portal. It is also used by GBIF in identifying a collection.

Recommendation 1. Use a name that starts with a word or phrase familiar to those using it. For example, "University of Someplace Herbarium/Museum", rather than "Herbarium/Museum of the University of Someplace", "Elko BLM herbarium, rather than BLM herbarium Elko"

Recommendation 2. If subsets of a collection are managed separately or are sent to different networks, add a phrase to the herbarium name to explain which records are being sent to the network concerned. For example, The Intermountain Herbarium (collection code UTC) sends its records to four different Symbiota portals: vascular plants and algae [it has very few algae] go to Intermountainbiota (which feeds into the SEINet network), fungi other than lichens go to Mycoportal; lichens go to the Consortium of North American Lichen, and bryophytes to the Consortium of North American Bryophyte Herbaria. As listed in GBIF they are Intermountain Herbarium (vascular plants and algae), Intermountain Herbarium (fungi, not lichens), Intermountain Herbarium (Lichens), and Intermountain Herbarium (bryophytes), respectively.

Symbiota2+: No change anticipated.

Description:

Explanation: This tells people about the collection. Researchers use the description to decide which collections to visit or where to send loan requests.

Recommendation. Suggestions as to what to include are:

- The year the collection was started;
- An estimate of its current size (if it has many non-digitized specimens);
- Its purpose;
- Its taxonomic focus and/or purpose (all fauna, flowering plants, species used for food or medicine in an area, arachnids, ferns);
- Its geographic focus (country, vicinity of a town, a valley);
- Major projects for which the collection has or is playing a lead role;
- the names of well-known collectors for whom the collection was the primary depository during a significant part of their life;
- whether or not it includes type specimens present. It appears on the home page for the collection within the portal.

The maximum number of characters permitted (including spaces) is 2000. Most descriptions are shorter, often much shorter. The description of a young collection might, for example, say something like, "The herbarium of XYX University was founded in 2000 to document the plants and fungi sold by food vendors in and around XYX. It has about 1000 specimens".

Symbiota2+: No change expected.

Home page

Explanation: if a collection has a home page, this field helps people find it.

Recommendation: Leave empty if there is no home page.

Symbiota2+: No change expected.

Contact

Explanation: Used by 1) individuals wishing to ask a question about the collection and 2) by portal and network managers wishing to alert collection managers about pending updates, outages, requests, or reminders.

Recommendation: The should be someone with administrative privileges on the collection.

Symbiota2+: There will be space for the name, email, and role of two contact individuals. The purpose of the secondary contact is to ensure that portal and network administrators can contact someone responsible for the collection even if the primary contact retires or leaves.

Email

Explanation: This is the email of the person names as the collection's contact person.

Recommendation: Large herbaria may prefer to use an email address that can be opened by several individuals, for example, by the director and all curators or by the collection manager and the director.

Symbiota2+: Symbiota2 will provide space for two contacts, together with their emails and roles in the herbarium. See comment for "Contact".

Latitude and longitude

Explanation: Required by GBIF. Symbiota2 will use it to generate maps of networks and their portals. The data must be in decimal format. It can be determined from Google maps.

Recommendation: Do not provide more than 3 decimal places; extra places are Explanationless. A difference in latitude of 0.001° corresponds to a length of 11 m. The distance in meters corresponding to a longitude difference of 0.001° varies because lines of longitude come together at the poles. At the equator, a difference in longitude of 0.001° corresponds 11 m; at 45° north or south, it corresponds to 8 m; at 80° north or south, it corresponds to 2 m.

Symbiota2+: No change expected

Category

Explanation: Networks with many contributing collections may divide them into categories based on some criterion, such as geographic location. By default, the search page lists collections alphabetically by category.

Recommendation: If in doubt, ask the portal or network manager to determine the appropriate category.

Symbiota2+: No change expected.

Allow public edits

Explanation: By default, only people with explicit permission can edit the records in a collection; their edits are applied immediately. Checking this button enables anyone with an account on the network to edit a collection's records, but the changes are not applied until approved by the collection manager.

Recommendation: Leave box unchecked unless there is someone who can be assigned to checking any edits submitted.

Symbiota2+: No change expected.

License

Explanation: This is a legal statement about who and under what conditions others can use the data and images provided by a collection. Individual networks may vary in their license policies. For

OpenHerbarium and OpenZooMuseum, the default license is Public Domain (CC 0) which ["… allows creators to give up their copyright and put their works into the worldwide public domain. CC0 allows reusers to distribute, remix, adapt, and build upon the material in any medium or format, with no conditions." The most restrictive license acceptable to these networks and GBIF is the Creative Commons license CC BY-SA. , "This license allows reusers to distribute, remix, adapt, and build upon the material in any medium or format, so long as attribution is given to the creator. The license allows for commercial use. If you remix, adapt, or build upon the material, you must license the modified material under identical terms."

If there is a list of "species of concern" for an area, access to "Locality" information and specimen images for those species from that area will require special permission even if the default license for the collection is "Public domain." " Species of concern" should include species on endangered species lists but may also contain species which are not formally listed as endangered but are the focus of poaching. If such a list exists, ask the network administrator to include it in the network's checklists. It is also possible to put similar blocks on all species growing in specific geographic areas such as private land.

Recommendation: Use the CC 0 license because few collections have the resources for pursuing those who do not comply with the conditions of a more restrictive license.

Symbiota2+: No change expected.

Rights holder

Explanation: Name of the entity who manages the access rights for a collection. It is usually the organization to which the collection ultimately belongs, often a university or a government agency.

Recommendation: If you are not sure, ask the administrator above you in the chain of command. Before doing so, find out whether there is a list of "Species of concern" for your country in case you are asked about protection from biopiracy.

Symbiota2+: No change expected.

Management

Explanation: This refers to how records are made available to the network. There are three methods. The method used by a collection should be selected in consultation with portal or network manager.

- Live data entry: record information is added directly into the network base through the appropriate data entry form. The collection does not maintain a separate database. Edits made online appear immediately.
- Upload from a file generated by an internal database system such as BRAHMS or Specify and mapped to Symbiota. This is referred to as "Snapshot" data entry. If any of the records need to be modified, the modifications must be made in the internal database. They will appear online when the data from the internal database are next uploaded to the network.
- Spreadsheet data entry: When data are entered into a spreadsheet for subsequent upload, data entry is said to be live. Corrections to a record should either be made online or by uploading a spreadsheet with, where appropriate, revised data for one or more records. When the a spreadsheet with revised data is uploaded, incoming data will be matched to existing data by the CatalogNumber [barcode] and all the old data for that record replaced.

Recommendation: It there is reliable, fast internet and no existing database, use live data entry. If there is an existing, well-designed relational database, work with the portal/network manner to develop an export/upload routine. This only needs to be done once, after which uploading data will be a matter of 2-3 clicks. If there is no existing relational database and internet access is slow or unreliable, use a spreadsheet. Ask for a spreadsheet designed for use in your country.

Symbiota2+: It will be relatively simple for collections to intall a local version of the online database that is synchronized with the online database when internet access is available. Installing the local version and providing training on its use will require someone with IT skills, but this could be someone associated with the portal's lead institution.

GUID source

Explanation**:** This is a globally unique identifier for an occurrence record. For live data and spreadsheet data entry (see "management"), it is provided by the network. For data imported from a database managed by the collection, that database should provide a GUID for each record. The GUID format is a randomly generated string of 128 integers.

Recommendation: If unsure about the GUID source for your collection, ask the portal/network manager.

Symbiota2+: No change expected.

Publish to Aggregators

Explanation: Aggregators aggregate records from different institutions. Symbiota portals and networks are aggregators, but there are many other aggregators, such as GBIF, which pull data from collections. Symbiota makes it very easy to share data with GBIF. Collections need to apply to become a GBIF publlisher using the online form. When approved, they will be sent a password. Once received, the collection's administrator should check the GBIF box in the collections metadata page, and click the Darwin Core Archive Publhing Link in the Administrative toolbox. This will ask for the password. Once inserted, the data will be published in a format that GBIF can ingest. The data will appear in GBIF with 48 hours.

Recommendation: **Do not check** the box if you are already sharing the colletion's records with GBIF. If the collection's records are not currently being shared, apply to become a GBIF publisher once you have digitized 100 specimen records and are able to start a regular program of digitization, even if only of 5 specimens a week (of course, more would be better), until it is completely digitized.

Symbiota2+: It will become easier for a collection to share its records, or subsets of records, with multiple specialist aggregators, such as Mycoportal (for fungi excluding lichens) or Pteridoportal (for Pteridophytes).

Source Record URL

Explanation: The source record field is used when a collection maintains its own database on a separate server from that of the Symbiota network.

Recommendation: The IT person in charge of the locally maintained database should provide the necessary information to the portal manager.

Symbiota2+: No change expected.

Icon URL

Explanation: The icon is displayed whenever a record from the collection is displayed. It helps draw attention to the source of the record.

Recommendation: Review the icons displayed on the Search page of a Symbiota network to help decide on an icon to use for your collection. Icons are always small, so should be simple. Color helps make them memorable.

Symbiota2+: No change expected.

Collection Type

Explanation: This field indicates the basis for the majority of the occurrence records in a collection. There are five recognized terms: PreservedSpecimen, LivingSpecimen, FossilSpecimen; HumanObservation, MachineObservation, or MaterialCitation. For natural history museums, the appropriate choice is probably "PreservedSpecimen". Symbiota also allows for recording image-based voucher occurrence records. For these, the appropriate collection type is "MachineObservation." For field notes, the BasisofRecord is "MaterialCitation".

Recommendation: Use appropriate recognized terms.

Symbiota2+:

- Enable overriding the default collection type setting for individual records, for example, to allow for occasional image-documented records provided by a collection's staff.
- Enable incorporating more explicit descriptions from the Dublin core as recommended for use in DwC. The more explicit types are "Still image", "Moving image", and "Sound". This will require additional modification of the backend which makes it a more significant change than enabling some records to override a default collection type.

Sort sequence

Explanation: Determined by the portal manager. By default, the order within a *category* is alphabetical, using the *CollectionName*. This is one reason the *Collection name* should start with words people use, not "herbarium", "Fish collection".

Recommendation: Leave empty so that sorting is alphabetical.

Symbiota2+: No change

Globally Unique ID

Explanation: This is a GUID for the collection. If the collection already has a GUID (assigned by a local database such as BRAHMS, Specify, or a data aggregator, that value should be entered here. It not, a value will be assigned by the Symbiota network.

Recommendation: If using a local database, ask its manager whether it assigned the collection a GUID. If so, contact the portal or network manager about entering it here. If not, let the network set the value.

Symbiota2+: No change expected.

Security key

Explanation: Set by the network; No change allowed.

Symbiota2+: No change expected.