Entering Data into Symbiota

The software that runs OpenHerbarium

Mary E. Barkworth

Plants of Utah

Asteraceae

Balsamorhiza macrophylla Nutt.
Det by: LShultz

United States, Utah, Cache County, mouth of
Green Canyon, ca. 3 mi NE of Logan, Bear
River Range of the Wasatch Mountains.
TRS: T12N R2E sec 18 +-100 meters
Elev: 1585m. (5200 ft)
west-facing sagebrush slope.
gray limestone-derived soils.
Associated species: *with Artemisia tridentata*

Leila M Shultz 10042.3   20 May 1986

INTERMOUNTAIN HERBARIUM (UTC) -
Logan, UT

INTERMOUNTAIN HERBARIUM
UTC00275244

Table of Contents

Introduction

Good specimen information starts in the field, with the recording of good field notes. Recording detailed observations in the field is the first step to preparing informative biological specimens.

Specimen labels provide, or lead to, information on when, where, why, and by whom a specimen was collected. They may also contain descriptive information plus information on how the species is being used by other organisms, its abundance, or how it came to be where it was found. Because of the size of standard herbarium specimens, it is customary to include all the information in the field notes on the label. For many other kinds of organisms, the specimen label contains little information, but one item is critical: the catalog number.

A typical herbarium specimen, showing the location of its label, is shown on the cover page of this handout. Zoological specimens, and some herbarium specimens (cones etc.), often have much less information, the bulk of the information being transcribed into the collection's catalogue (or, today, transferred to its electronic catalogue) where its entry is linked to the specimen by the catalogue number.

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Before databasing a collection

Before being databased into a Symbiota network, such as OpenHerbarium, each collection must be registered with the network. If you are reading these notes to learn about data entry, skip this section.

Registering a collection

Before entering information for existing specimens into the collection database, whether an institutional database or a network database, a collection should register with *Index herbariorum* (Herbaria) or the Global Registry of Biodiversity Repositories (zoological collections) to obtain a globally unique identifier such as "EA" for the herbarium of National Museums Kenya, "NMK" for National Museums of Kenya. For institutions that have multiple collections, a collection may be given a code that is unique within the institution, e.g., "INV" for the invertebrate collections in NMK. This will appear in Symbiota networks as "NMK-INV").

Barcoding a collection

After a collection has been registered, it is strongly recommended that barcodes of the format "EA00001006" or "NMK-INV00001006" be attached to or associated with each specimen, *with each specimen having a different number portion*. Going forward, the barcode can be the specimen's catalog number. Some collections use QR codes ("square barcodes"), rather than linear barcodes such as those found on books and many items sold in stores. If standard (linear) are used, the barcode labels should also provide the coded information in a human-readable format.

For herbarium specimens, it is recommended that preprinted barcodes be purchased. This makes it easy to ensure that each specimen has a unique catalog number. The barcodes must be of archival quality and should be of the kind that are peeled off and then attached to the specimen. No attempt should be made to match the barcode number to an existing number on the specimen. Attempting to do so will take lots of time and, almost always, lead to the discovery that the existing number (frequently called an accession number) is not unique within the collection.

With herbarium specimens, only one label is needed for most specimens and it can be fastened to the specimen. There are, however, instances when an herbarium may wish to have two identical, or almost identical, barcodes for a specimen. For example, if a code or fruit is stored separately from the main sheet

or if a specimen has a plant or fungal symbiont/parasite and there is a specimen for both the host and the parasite/symbiont. The second specimen can be given a completely different barcode or, if there is a barcode printer, a modified barcode, for example UTC0001067 and UTC0001067repro where UTC0001067repro is stored with reproductive structures such as cones and fruits. The information that there is a second (or even more) specimen associated with a particular specimen is shown by entering the catalog number(s) (barcode) of the associated specimen(s) in the "Other number" field of the data entry form (see below)..

If there is a catalog associated with the specimens, there must be a way to associate the barcode with the appropriate catalog entry. How this is done has to be determined by the person in charge of and familiar with the collection and its catalog(s). What is essential is that it be easy for a person to go from a specimen to the appropriate catalog entry. The barcode can be attached to the specimen, either directly or on the pin holding an insect or a tag placed in the same jar as a wet specimen (specimen preserved in alcohol or some other fluid) so long as it is of archival material that will not be destroyed by the preserving fluid if one is used.

The point at which barcodes are added to existing specimens will vary with different collections. It should be integrated into collection's overall workflow. It should also minimize handling of the specimens involved any possibility of mismatching the barcode with the catalog entry if a catalog is involved.
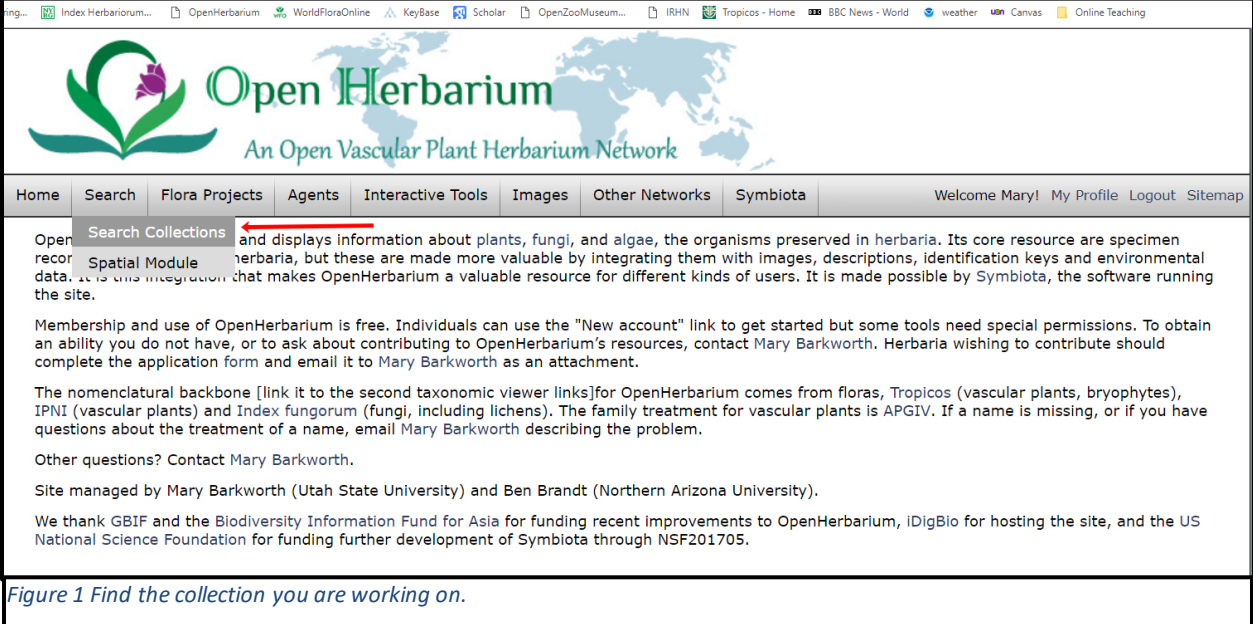
Authorizing data entry

Data entry personnel must have an account in the Symbiota network and have been given permission to edit the records for the collection concerned. The administrator of a collection gives this permission. The network administrator gives collection administrators the power to assign editing permissions for their

collections.

Starting data entry (for direct data entry)

The following instructions are for the data entry person.

1. Login to the network using your own account.
2. Using the "search" tab, choose the top choice (Fig. 1) bring up a list of collections in the network.

Figure 1 Find the collection you are working on.

3. This will bring up a page (Fig. 2) showing information about the collection with a pencil 🖉 in the top

right quarter. (When you see the pencil in Symbiota, it means you have editing privileges for the page).
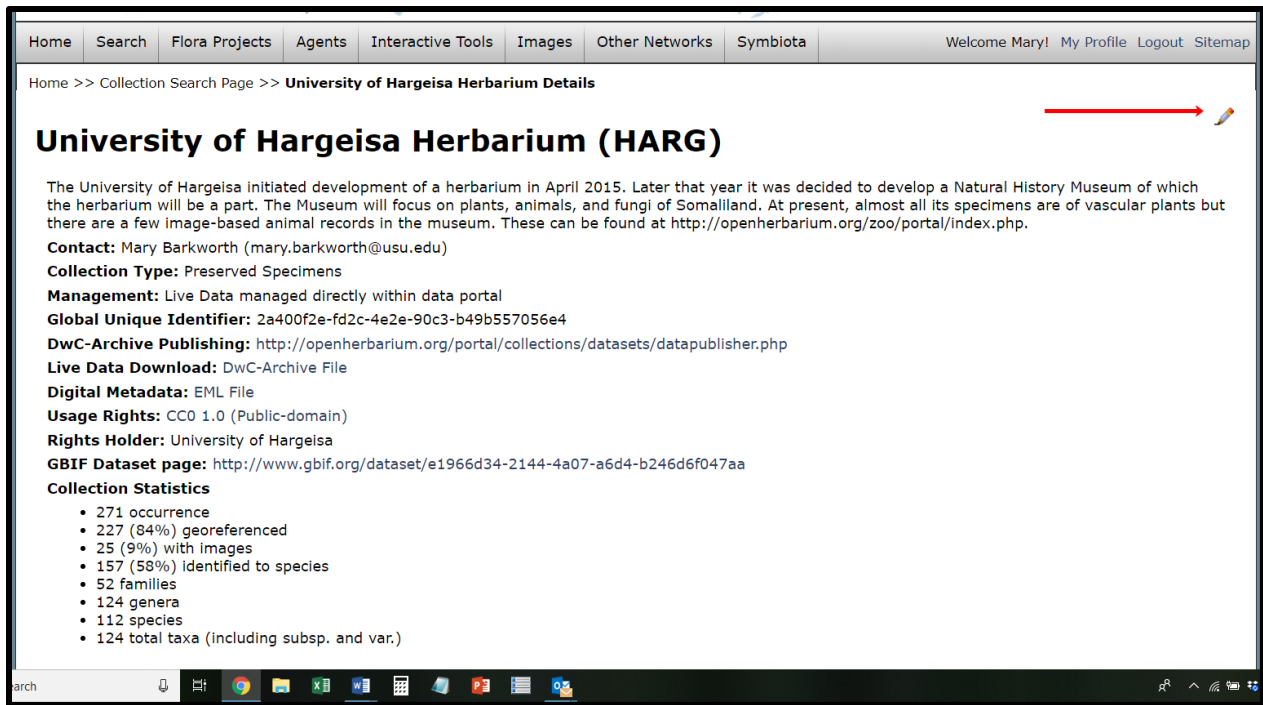
Figure 2 Click pencil to bring up page for editing records.

4. Click on the pencil. This will bring up a page (Fig.3) with the following options:

    - Add New Occurrence Record
        - Create New Records Using Image
        - Add Skeletal Records
    - Edit Existing Occurrence Records
    - Add Batch Determinations/Nomenclatural Adjustments
    - Print Labels/Annotations
    - Batch Georeference Specimens
    - Loan Management
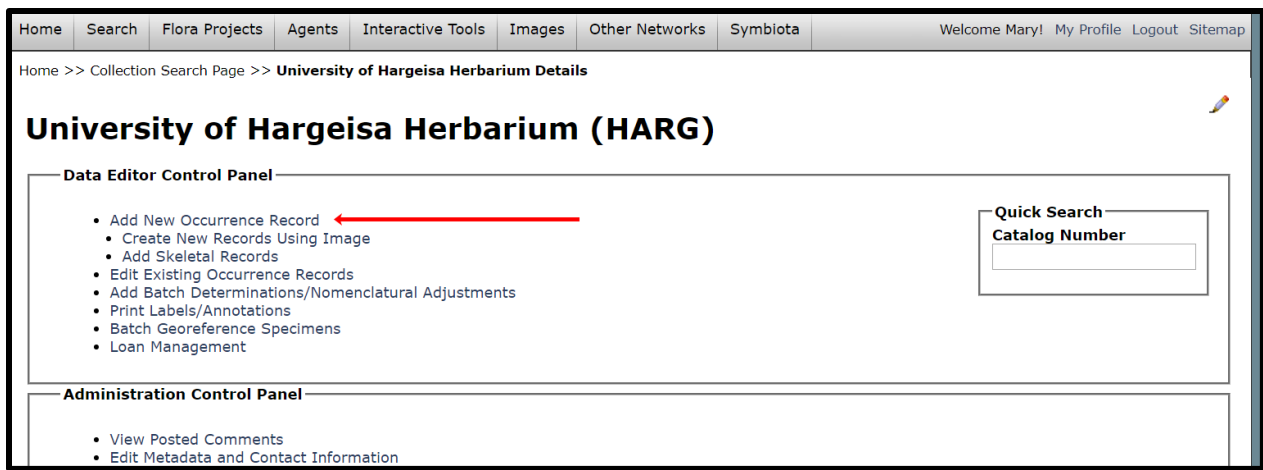
Figure 3 Choose "Add new occurrence record"

5. Click "Add New Occurrence Record". This will bring up Symbiota's basic data entry screen (Fig. 4, next page) with the name of your herbarium and its code at the top.

    Notice that the screen has five boxes for different kinds of information plus a shaded, smaller box at the end for use when adding the record.

    These instructions discuss each of these boxes in turn, but they do so in terms of the expanded version of each box. To see what this means, click on the "plus sign and pencil" icon beside a field. This will bring up additional related fields that are concealed because they are often not needed.

    The green question marks beside some of the fields link to web pages that explain what should go in that field.

    Blue is used for comments about a field, sometimes suggesting desirable developments, sometimes proving more information on how a field is used.

General Observations (OPEN)

Home >> Collection Management >> Personal Management >> **Editor**

New Occurrence Record

Collector Info

Catalog Number ?   Other Numbers ?   Collector ?   Number ?   Date ?   [Dupes?]
☐ Auto search

Associated Collectors ?   Verbatim Date ?   **Box 1**

Exsiccati Title   Number

Latest Identification

Scientific Name ?   Author ?

ID Qualifier ?   Family ?   **Box 2**

Identified By ?   Date Identified ?

Locality

Country   State/Province   County   Municipality

Locality

☐ Locality Security

Latitude   Longitude   Uncertainty ?   Datum ?   Verbatim Coordinates   [Tools]   <<

Elevation in Meters   Verbatim Elevation   **Box 3**
-   <<

Misc

Habitat

Substrate

Associated Taxa

Description

Notes

Life Stage ?   Sex ?   Individual Count ?   Sampling Protocol ?   Preparations ?

Phenology ?   Establishment Means ?   **Box 4**
☐ Cultivated

Curation

Type Status ?   Disposition ?   Occurrence ID ?   Field Number ?

Owner Code ?   Basis of Record ?   Language   Label Project   Dupe Count
Observation

Processing Status   **Box 5**
Pending Review ▼

Add Record

Follow-up Action:
◉ Go to New Record
○ Go to New Record and Carryover Locality Information
○ Remain on Editing Page (add images, determinations, etc)

Fig. 4. The basic data entry page for Symbiota.

Box 1. Collector Information (Expanded)

Fig. 5. Box 1 on the basic data entry page after clicking on the pencil to obtain the expanded view.

Catalog Number: This is a number of alphanumeric sequence (such as HARD00004) that identifies that particular specimen. If the collection uses barcodes to identify its specimens, simply scan the barcode into this field.

Other Numbers: This has been put to varying uses. Sometimes it has been used for old accession numbers. It can also be used for a separate part of a specimen, such as a fruit or cone, that has been stored separately. Or it can be used for the catalog number of a different but associated specimen such as a pollinator, host organism, of herbivore found on the specimen. It seems likely that, in the near future, a separate field will be defined for the catalog number of such related species and that it will be associated with another field for recording the nature of the association. For now, inquire how it is used in the collection where you are working.

Collector: This is the name of the lead collector, the person whose field book is being used. Please, be consistent in how you enter your name. It should be in he order you would normally write your name. Think of it as forming part of your professional record.

It would be good if this field and the "associated collectors" field could filled in from a table of names, built up over time. This would reduce data entry errors. Another desirable development would be to make it possible for living collectors to have their name associated with their ORCID, thereby making it easier for others to track all their professional activities, not just publications. Unfortunately, neither option is currently available in Symbiota.

Number: This is the number in the collector's field notes. It may be an alphanumeric value rather than a number but it should be a unique number for that collector. Some collectors start at 1 and end wherever they happen to be when they stop collecting; others use different series for different years or different expeditions. If different numbers are used for different years or expeditions, the "number" must include some way of determining which year or which expedition was involved and the field notes should also use this form of the "number".

Many collectors do not assign field numbers to their collections. This is very unfortunate. It makes it impossible to cross reference a specimen to the person's field notes. It also prevents locating duplicates of a specimen in other collections.

Date: This is the date on which the specimen was collected. It needs to be in the format "2015-06-05" [year-month-day] or "5 June 2015". If you have the month but not the year, enter it as "2015-06-00" where "00" means the exact day of the month is not known. Similarly, 2015-00-00, would mean that the label only states the year in which the specimen was collected and 0000-06-18 would mean June 18 but the year is not known.

In addition, if the data is incomplete, add it, **as it appears on the label**, into the Verbatim Date field. This

If the date format on the label is not as above, you need to interpret it. If there is no difficulty in interpreting it, go ahead and enter the interpreted value in the date field. If you are not sure how to interpret it, for example if there is no way to determine whether 5/2/1900 refers to May 2 or February 5, just enter the year as 1900-00-00 and put "5/2/1900" in the "**verbatim date**" field (see below).

Dupes and Auto search: If you click "dupes" or if autosearch is checked, the program will look to see if there is a specimen that looks as if it might be a duplicate of the specimen you are entering. Potential duplicates are specimen collected by someone with the same last name and with a collection number and collection date the same or very close to those of the specimen being entered. If the program thinks it has found duplicates, you will be presented with a view of the records so that, if one really is a duplicate of the specimen you are working on, you can import all the locality and habitat information with a single click. Comments are not copied over, nor are annotations. The feature is very useful when collectors have distinctive last names; it is less useful if they have a common last name.

Associated Collectors: The names of people listed on the label other than the first person listed. If there was more than one person, separate their names with a semicolon (";"). The problem with a comma is that some people use a comma as part of their name (e.g., G.L. Stebbins, Jr.). Ask people to write their formal names in your field notebook when you start collecting to make sure you spell them correctly.

If there were more than two other collectors, consider summarizing who they were, for example, "other workshop participants", or "et al." or "and others". ["et al." is Latin for "et alius", "et alia", "et alii", or "et aliae". The first two mean "and one other person", "et alius" meaning a male, "et alia" meaning a female. The other two mean "and two or more others"; "et alii" means that one of the other people was male; "et aliae" means that none of the other people were male. Gender bias has a long history].

Verbatim date: This field is used if the information about date is given in some non-standard form. Some people use it is even if the original date, although clear, is not in the format XXXX-XX-XX (Year, month, day); others use if only for phrases such as "summer, 2008", "late spring 2002".

Exsiccatae Title and **Number:** In the past, some collectors would collect many duplicates of a species at one location for exchange with another collection. Labels of such duplicates are usually clearly identified as EXSICCATAE from some collection or collector. reater awareness of the impact of mass collecting has stopped the practice of collecting large sets of duplicates (sometimes as many as 100) so you are unlikely to encounter a need to use these fields.

Expanded form

The following fields will be revealed if the pencil is clicked.

YYYY-MM-DD line: This line is used for specimens for which only date information given covers several days, for example, "Feb 5-8, 2016" or "Spring, 2015". For information such as "Feb 5-8, 2016", enter the first date (Feb. 5, 2016) in the normal date location, as 2015-02-05, on the top line. This will automatically populate the first three fields (see red in Fig. 6). The fourth box will also be completed automatically. It says how many days that first date is from the start of the year. The fifth box, which has to be entered by the data entry person, gives the equivalent number for the last date mentioned, Feb. 8 in the example

used. (Feb 5 = 36, Feb. 6 = 37, Feb. 8 =38).

Fig. 6. Capturing date information for specimens collected over a span of time: date range given.

Box 2. Latest Identification (Expanded)

If this is your own collection, can be left blank until you have had time to check that your plant fits published descriptions or, if you do not know what it is, until you have had time to identify it or until you hear back from an expert to whom you sent a duplicate specimen.

Scientific Name: This usually means the name of the species or infraspecies. Remember, the name of a species is a binomial, for example, "*Balanites rotundifolia*" not just "*rotundifolia*". For plants, fungi, and algae, it is important to indicate the rank of the infraspecies, usually a subspecies (abbreviated subsp.) or variety (abbreviated var.) but sometimes form (abbreviated f.). Another rule in the nomenclatural code governing these three groups states that only the lowest infraspecies rank should be stated. This means that, for plants, fungi, and algae, the name of an infraspecies has four parts, as in "*Balanites aegyptiacea* var. *pallida*". Zoologists need not state the mname of ranks below species because the International Code of Nomenclature for Zoology recognizes only one rank below species, that of subspecies. Consequently, zoological names may consist of three parts:

When entering data directly into a Symbiota network, the computer should show you the possible names once you start typing. If it does not, there are two possible reasons: a) you have misspelled it when typing it in or b) the name is not yet in the system (or not in correctly which amounts to the same thing).

First, check your spelling to make sure that is not the problem. If it is not, send me an email (mary.barkworth@usu.edu) telling me the name you need to enter and your source for it. There are names that have had their spelling changed for one reason or another and that is why knowing where you found it would be useful. I shall add it as soon as possible and will send you an email when I have done so. There are over 633,000 names in OpenHerbarium but global catalogues contain many more entered all the names from the *Flora of Somalia* are in but I may have accidentally overlooked some or failed to provide the information needed to link them in correctly.

You can enter just the generic name if you do not know the species. This will make it possible to file the specimen where it can easily be found which is a lot better than having it in a large pile of unidentified specimens.

Author: This is the name of the person who first published the scientific name. It will be filled in

automatically if the name is in the network's database.

ID Qualifier: This is usually left blank but sometimes one is not sure of the exact scientific name of a plant but knows something it is very similar to. In such a case, put the name in "scientific name" and put "close to" or "similar to" in **ID Qualifier**.

Family: If you have entered a scientific name that is in the network's database, this should be filled in automatically. If it does not, send me an email telling me the scientific name that you were entering. I will get back to you when I have resolved the problem.

Identified by: Whoever identified the plant. It is usually the collector but, if someone else did it for you, their name goes here.

Date identified: This can be just the year but, if you wish to provide more information, provide it in the same format as the collection date, i.e., 2015-06-05. If you know the month but not the day, use 2015-06-00. For just the year you could use 2015-00-00 but most of the time we simply put the year.

ID Reference: This is the reference you consulted when identifying the plant or, if it is a plant you know, the name of the reference you would consult if you had to work it out (e.g., *Trees of Somalia* or *Flora of Somalia*). It is important information. I shall be asking that it show up by default, not just when the pencil is clicked.

ID Remarks: The kind of information that goes here is an explanation why you chose one scientific name rather than that of a very similar species, e.g., "Very similar to *Commophora gileadensis* but flowers pink, not white or cream".

Taxon Remarks: Usually left blank. Useful when one is very familiar with a group and wishes to comment that the species is "Doubtfully distinct from …".

Box 3: Locality (Expanded)

Country: There is a pick list. I shall try to add Somaliland to the list this weekend. Once a recognized country is in, it restricts which choices are offered for the stateprovince field. From what I understand, there is no third level political area that is used in Somaliland. In the US, and Symbiota was designed for

and is still primarily used in the US where herbarium labels routinely include the state and county.

Locality: A verbal description of where the specimen was collected – information that someone with access to a map could locate. So many miles or kilometers and direction from a permanent landmark (an oasis, or well known cave) or village/town/city.

Locality Security: If this is checked, only people with special permission will be able to see the locality, latitude and longitude fields. To get permission, ask the person in charge of the herbarium you are associated with. That person needs to ask me to give the necessary level of permission. The reason for this two step process is that I do not know most of the people with accounts in OpenHerbarium.

One reason for checking the box would that the location is sensitive, perhaps because it has lots of fascinating plants that are in danger of being eliminated by collectors. One can block access to detailed locality data about particular taxa by asking me to put them on the sensitive species list.

Latitude and **Longitude:** The information should be in decimal degrees. If you are using a GPS, you can set it to provide data in this format.

Do not use more than 5 decimal places. In Somaliland, a difference of 0.00001 degrees corresponds to about 1 m, more precise than most GPS units enable you to be. IN Somaliland, there is little difference between the difference in the distance corresponding to a degree of latitude and a degree of longitude. Towards the poles, the distance for a degree of longitude is much less than for a degree of latitude. To find out how different, go tohttp://www.csgnetwork.com/degreelenllavcalc.html.

If your data are in degrees, minutes, and seconds, click the "Tools" button. This will reveal the fields shown in the box that has a pale yellow background (if you are looking at an electronic version of this document) or grey (if you are looking at a black and white print version of this document). You can enter the data as degrees and decimal minutes or degrees, minutes, and seconds.

There are two cautions:

1. You may have to change the directions from North and West to North and East. I shall try to change the defaults in the near future.
2. You must click "Insert Lat/Long values" to have the program calculate and enter the decimal degree values. When you do, the data you entered will be transferred to "Verbatim Coordinates". "Verbatim" means "exactly what was entered".

If you have UTM coordinates, click the tools button and enter them into the second set of boxes in the shaded area. "UTM" stands for "Universal Transverse Mercator" and it is a system that is used on printed maps. For more information, check the article in Wikipedia. Note that you MUST include the zone as part of the information you provide. There is an interactive map at http://whatutmzoneamiin.blogspot.com/p/map.html for locating your zone. The Easing and Nothing can be read from the map you are using or, if you have set your GPS to give readings in UTM, you can obtain them there.

When you click "Enter UTM Values", Symbiota will calculate the decimal latitude and longitude values and transfer the UTM data to the "Verbatim Coordinates Field".

Uncertainty: This is NOT the uncertainty that is recorded by your GPS unit or camera. It is an estimate, in meters of the radius of a circle around the point where you took the GPS reading within which you collected the plant. Even if you recorded the GPS data right by the plant, it will be at least 25 m unless you have a high end GPS unit. If you took one reading for an area and collected several plants in the area, the uncertainty is the distance from the GPS reading to the most distant plant.

The uncertainty reported by a GPS unit is its statement of how accurately it can interpret that satellite data that it is using. This can be affected by the terrain (uncertainty is higher in mountainous terrain) and whether the area is densely forested or not and various other factors. It will be lower than the uncertainty

in your measurement.

The reason uncertainty is important is that, if someone wants to use herbarium records to estimate the ecological niche of a species, they need to know whether how accurate the geographic coordinates are. For instance, those associated with records from the *Flora of Pakistan* have an uncertainty of 293295m (yes, 293 km). The *Flora* states where species occur within Pakistan in terms of a 2 degree grid so each record is just the center of a square 2 degrees by 2 degrees. One can see whether a species is restricted to the mountains or the plains but that is about all. Records from the *Flora of Somalia* vary in their uncertainty because the regions used in reporting distribution differ in shape.

Datum: A datum is a model of the earth that is used to when measuring latitude and longitude. Before GPS units came into play, countries used different datums, choosing one based on measurements in their own country or a nearby country. Reference points were defined through the country and marked by more or less permanent markers. The problem is that the lat/long values will differ depending on the datum used. It can be compared to measuring the distance over a bumpy surface using rulers of differing flexibility. A very flexible ruler will enable you to fit the ruler closely to the surface and will give you a longer measurement than one that is so stiff you have to lay it on top of the bumps.

By default, most GPS units use the World Geodetic System defined in 1984, which is usually abbreviated to WGS84, as the datum but they can be set to use other datums. Google Earth (and web sites that use it or Google Maps) provides information in terms of WGS84.

Georeferenced By: The name of the person who determines the georeference values (lat/lon, uncertainty, and datum). It is usually the collector but might be someone else on the collecting trip.

Georeference Sources:. This could be a GPS unit or, if you did not have one with you, there are various resources on the web:

- http://itouchmap.com/latlong.html
- http://mynasadata.larc.nasa.gov/latitudelongitude-finder/;
- http://mygeoposition.com/.

The first one uses satellite imagery which may make it easier to identify a location.

Georeference Remarks: If you had to move away from your plant to obtain a GPS reading, that information should go here ("Lat/lon from 50 m south of plant; trees prevented closer reading") but it is often left blank.

Georeference Protocol: Usually not needed when making labels. It might be if you collected a plant near the road and had no GPS unit. Then you might have to record the distance to the nearest town from your car's odometer. There are a set of recommended practices in a downloadable booklet at http://herpnet.org/herpnet/documents/biogeomancerguide.pdf.

Elevation: Elevation should be entered in meters. A topographic map or one of the web sites listed below ill give you a better reading than most GPS units.

- http://www.altitude.nu/ Provides best satellite image which helps in identifying location)
- http://veloroutes.org/elevation/
- http://www.freemaptools.com/elevation-finder.htm
- http://www.whatismyelevation.com

If you have just one elevation estimate, put it in the left hand box and leave the one to its right empty. If collections were made at and between two locations that were at different elevations, the highest elevation goes in the box to the right. If you have a measurement in feet, put it in "**Verbatim Elevation**" in the format "2024 ft" or "2024-3600 ft". Symbiota will fill in the appropriate values in meters.

Box 4: Miscellaneous

This box is basically for ecological information.

Habitat: There are no rules foe what should go in here. It is good to start with the physical habitat and then go to the biological aspects. For example, Flat sandy desert with lots of exposed soil and occasional trees"; "Steep (10 degree) northwest facing slope; plants growing in seepage area". "Landscaped grounds of hotel"; "Area between road and open, disturbed space used for playing soccer".

Substrate: Often left blank when collecting vascular plants with informationi, if any, put into the habitat field but it can be used. For instance "Sandy desert" could be considered substrate. "Calcareous soil" would go here. If you have collected a parasitic plant, you could name the plant that was being parasitized here: "Parasitic on *Acacia somalensis*". Substrate is very important when collecting lichens, fungi, and bryophytes which is why there is a separate field for the information.

Associated taxa: The scientific names of the taxa the plant was growing with. If you click on the icon on the right of the field, it will help you spell the names correctly. If you do not know the scientific names but do know the vernacular names, list the vernacular names in the habitat field but it would be more useful to people elsewhere if you used the scientific names.

Description: Comments about the plant that YOU collected. It is particularly important to include information that will not be evident from your specimen. For instance, was it woody and if so was it woody just at the base or was it a tree or shrub. How tall was it? Had it been severely grazed or eaten by insects? Did it exude a milky juice or colored sap when you collected it. What color were the flowers (flower color often does not preserve well). If the plants are unisexual, this would be the place to state whether the plant was male or female.

Notes: This is very open ended. This is the place to state how common the species was at the location. Very common, sparse, growing only where protected by a shrub or among rocks. In addition, if you have a collecting permit, enter the number here. If you were collecting in connection with a particular project, name the project here.

Phenology: This means what phase was the plant at. Examples are "Vegetative", "Budding", "Flowering", "Fruiting", "Seed dispersal", "Post seed dispersal". You can include two phases. For ferns and gymnosperms, do not use "Flowering" or "Fruiting". For ferns, "With spores" would indicate that there were spores present. Or you could simply state "Reproductive". For gymnosperms, state whether there were mature cones present or not. Note that junipers may be unisexual.

Establishment Means: This is left blank unless you know the plant was deliberately placed there by humans. There are a few options here. "Seeded", "Planted", or "Cultivated". Cultivated means there is

ongoing care being given, for example, watering, removal of competing weeds. "Seeded" and "planted" means that humans were responsible for there being introduced to the site but the plants were then left to grow on their own.

Cultivated: Check this box for plants that are being cultivated. It is repetitive if you have also entered "Cultivated" in "Establishment Means" but the standardized format makes it easier to exclude such specimens when calculating the ecological niche of a taxon.

Box 5: Curation

Disposition: This is usually not used for labels but collectors could use it to show where they are sending duplicate specimens. For instance, if enough material was collected to make 5 herbarium specimens and, as the collector, you wanted one of the duplicate to go to UTC and another to ACD, the herbarium of Alemaya University of Agriculture, Ethiopia, entering "UTC, ACD" in this field will help the herbarium manager when it comes time to distribute duplicates. It would be assumed that one goes to the home herbarium. This means that there would be two more specimens that can be sent to other herbaria. Herbaria like obtaining specimens on exchange so think about duplicates as being a currency for making friends with other herbaria.

Basis of Record: Change this ti "PreservedSpecimen". It stays at Observation if you are reporting it but have no specimen or "Image" if you have an image to document the record.

Label Project: Putting a name on a set of labels helps retrieve them for such purposes as printing and editing. It can be left blank.

Dupe Count: This is the number of labels that will be needed for this specimen. If you have enough material for five herbarium specimens, enter "5"; if only 1, enter "1".

Processing Status: Ignore. It is used in herbaria that are digitizing specimens that were not databased at

the time of collection.

Box 6: Adding the record

To add the record to your profile, you need to click "Add Record" but, before doing so, read the options.

If you have images of the plant and/or its habitat, choose the third option. It will save the record and bring up a page with the record and tabs across the top. Click on "Images" and follow the directions that ome up. Please edit your images before adding them.

If you collected more than one specimen from the location, chose the second option. It will open up another data entry page but with the locality information filled out.

If you have just one specimen and no images from a particular location, choose the first option.

You can add images after printing your labels so if your images are not yet ready for uploading, do not

worry about it. Complete data entry for all your specimens.

Printing Labels

Go back to "My Profile/Specimen Management". The third option on the list is "Print Labels". Select it.

This brings up a screen that allows you to select the records you wish to print.

I had some that were collected in Hargeisa and I named them as Hargeisa in the label project field. You have to check which ones you want to print. You can also change the number of labels you wish to print at this stage.

After that, you can set some of the printing defaults. I suggest selecting Country for the heading Mid-section and leaving the Heading suffix blank. You might wish to put "University of Hargeisa Herbarium" in

the footer field. It is good advertising.

Do NOT select any of the five boxes below :Label Footer.

Select two label rows per page and "Export to Doc".

REVIEW THE DOCUMENT. I always end up doing some editing. For example, eliminating redundancy – the country often appears twice on the label, in the header and as part of the locality information. In addition, proof read for spelling errors and consider whether you would like to phrase something differently. If you correct any of the fields, you need to make the corrections in the data entry form, not just in the DOC file. I have attached the unedited and edited version of labels generated by Symbiota. I would print them landscape orientation so the resulting labels would be wider than tall.

UNEDITED LABEL DOCUMENT

Plants of Somaliland

Asteraceae

Parthenium hysterophorus L.
  Det by: Ahmed Awale 2015-05-06

Somaliland, Waqoyi-Galbeed, Hargeysa County, Hargeisa, grounds of Maan-Soor Hotel. southof hotel.
9.575058N44.031746E +-7 meters[WGS84]
Elev: 1334m.
Weedy area at edge of construction zone.
Height to 0.8 m; perennial herb; plant dug previously had swollen tap root.
Associated species: *Tecoma stans, Datura stramonium*
Also present immediately behind the hotel
Training Participants 2015.001
6 May 2015

Plants of Somaliland

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Plants of Somaliland

Asteraceae

Verbesina encelioides (Cav.) Benth. & Hook. f. ex A. Gray
  Det by: Mary E. Barkworth 2015-05-06

Somaliland, Waqoyi-Galbeed, Hargeysa County, Hargeisa, grounds of Maan-Soor Hotel. south of hotel.
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Training Participants
6 May 2015

EDITED LABEL DOCUMENT

Plants of Somaliland

Asteraceae

Parthenium hysterophorus L.

Det by: Ahmed Awale 2015-05-06

Waqoyi-Galbeed: Hargeisa, grounds of Maan-Soor Hotel, south of hotel.

:9.57506N 44.03175E +-7 meters[WGS84]

Elev: 1334m.

Weedy area at edge of construction zone.

Height to 0.8 m; perennial herb; plant dug previously had swollen tap root.

Associated species: *Tecoma stans, Datura stramonium*

Also present immediately behind the hotel

Training Participants 2015.001

6 May 2015

Plants of Somaliland

Asteraceae

Verbesina encelioides (Cav.) Benth. & Hook. f. ex A. Gray

Det by: Mary E. Barkworth 2015-05-06

Waqoyi-Galbeed: Hargeisa, grounds of Maan-Soor Hotel, south of hotel.

:9.57506N 44.03175E +-7 meters[WGS84]

Elev: 1334m.

Weedy area at edge of construction zone.

Associated species: *Tecoma stans, Datura stramonium, Parthenium hysterophorus*

Training Participants 2015.002

6 May 2015