# Symbiota Database Manual



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## **Preparation**

#### Before you begin, you should have the following items available and set up:

- Specimens to be databased.
- A sheet of barcodes.
- A barcode scanner plugged into any USB port on the computer you will be using (when the computer starts up, the barcode scanner should turn on automatically signaled by a beep and/or the scanner light coming on).

## **Tips and Tricks**

- It will make your life much easier if you organize all your records according to Locality before you start. This will save you an enormous amount of time entering records, as you can carry over locality information.
- If you want a more detailed description of a field, you can click the <sup>?</sup> icon next to the field name.
- Always ask if you are unsure of something, it is always better to err on the side of caution.
- Historically the University of Colorado entered data off of physical specimens; in general specimens are now entered off of images and will involve a query to locate batches of records needing data entry rather than being handed a stack of specimens to enter.

## Accessing the Database

1. Turn on the computer and monitor.

#### 2. Log on to the computer:

- a. If you are officially affiliated with the university: use your CU username and password (Identikey).
- b. If you are a guest: ask a herbarium staff member for guest login credentials.

#### **3.** Open internet browser:

- a. Open the Firefox browser by clicking on the icon in either the taskbar or start menu.
- b. NOTE: You *must* access the database using the Mozilla Firefox browser. Symbiota is optimized for Firefox and unexpected errors may occur when using Google Chrome, Internet Explorer, etc.



#### 4. Access the database:

- a. Once the Firefox browser is open, type/copy the following link into the browser.
  - i. This will take you to the "public" level of the CU Herbarium Database where anyone can search our collection. If you want to enter specimens or edit information, you must log in to the database.

https://botanydb.colorado.edu/

#### 5. Log on to the database:

- a. If this is your first time logging into the database: ask a herbarium staff member for assistance to create a login and give you editing rights.
- b. If you already have a login for the database: click on the Log In button in the top right corner and enter your credentials.



## **Types of Collections**

There are two different categories of collections to enter into the database: vascular plants and cryptogams (further divided into bryophytes and lichens). For most of the fields in the database, the way you enter the information is the same. However, on the sections where they differ, we have divided the instructions under "Vascular" and "Cryptogam" headers.

## Adding a New Record

#### **Open a New Record**

1. Once you have logged in, click "Search Collections".



- 1. Click on University of Colorado Museum of Natural History Herbarium collection you want to add to. This takes you to the COLO homepage.
  - a. COLO-V is the vascular plant collection.
  - b. COLO-L is the lichen collection.
  - c. COLO-B is the bryophyte collection.
- 2. Click on the pencil icon in the upper right-hand corner of the page.
- 3. This will open a section at the top of the page called the 'Data Editor Control Panel'; within this panel, click on "Add New Occurrence Record".
  - a. Your screen should now show a blank specimen entry form.

The following sections cover the protocols for filling in each field of the database in the order they appear in the database.

#### Sections marked with an asterisk (\*) cannot be left blank.

## **Collector Info**

Catalog Number ?	Other Numbers ?	Collector ?	Number ?	Date ?	Dupes?
Associated Collector	s ?		Verbatim Date ?	t	Auto search

## Catalog Number (Barcode Number)\*

#### Vascular

• If the specimen does not have a COLO barcode, carefully place a barcode sticker in the *upper right-hand corner* of the specimen sheet (if the specimen is covering this area, place the sticker on the nearest available spot along the top of the sheet being careful not to cover any part of the specimen, accession number, or any other information on specimen sheet).

#### Cryptogams

- If the specimen is a **bryophyte** and does not have a barcode, carefully place a COLO-B barcode sticker in the *lower right-hand corner on the back of the packet*.
- If the specimen is **lichen** and does not have a barcode, carefully place a COLO-L barcode sticker in the *lower right-hand corner on the back of the packet*.

#### Both

- Now that the specimen has a barcode, click inside the "Catalog Number" field to place your cursor in the field and then scan the barcode with the scanner.
  - The barcode number should appear in the field.
  - Double check to make sure all eight numbers of the barcode were read by the scanner and that the barcode number in the box matches the one on the specimen (sometimes the scanner misses a number or puts in a random letter).
- NOTE: When you click in the next field, a box will appear that says "No Dupes Found"; don't be alarmed by the red font! This is a good thing, as we do not want two specimens to have the same barcode number. If a duplicate is found, and the barcode matches the specimen, alert a collection manager as the specimen has either already been entered or another specimen's barcode was improperly coded.

## Other Numbers (Accession Number)\*

#### Vascular

- The accession number can typically be found in the *upper left-hand corner* of the sheet; however some specimens require the number to be placed in other areas of the sheet.
  - The accession number is generally stamped in blue or black ink and is under or within a stamp that says "University of Colorado Herbarium "COLO".
  - NOTE: It can also be handwritten, not under a stamp, etc. If you have trouble identifying the accession number, ask a herbarium staff member.

#### Cryptogams

• Cryptogam packets have two accession numbers on the packet. The accession number that goes in this field will either begin with "L-" or "S-" for lichens, and "B-" for bryophytes. This is usually in the top left corner of the front of the packet.

- When you type the accession number into the field make sure to include the "-" after the letter, even if it does not appear on the packet (i.e. S 543 on the packet would be S-543 when entered into the database).
- The second accession number has no leading letter and is usually on the front of the packet (often under the label). Do not put this number in ANY field.

#### Both

• Carefully type the accession number in the "Other Numbers" field.

## **Collector (Primary)\***

#### Vascular

• For our vascular collections, this information can be found on the label located at the *bottom right-hand corner* of the sheet.

#### Cryptogam

• For our cryptogam collections, this information will be on the label on the front of the packet.

#### Both

- Type the primary collector's name in this field.
- Assume the first collector given is the primary collector.
  - Sometimes, the collector will be an institution (i.e. USGS). Enter the name given.
  - If you cannot locate the collector or are having a problem identifying the correct name, please ask a herbarium staff member for assistance.
  - If after seeking help you cannot identify a collector, write "Unknown" in the field, **do not leave the field blank**!

## Number (Collection Number)\*

- Type the primary collectors collection number in this field.
- This number can be found on the label. It can be made up of numbers, letters, or both (e.g. 4321 or 135A or R-16-50).
- Enter full collection number into field including numbers AND letters if they are used.
- If no number is given write "s.n." in the field; **do not leave blank**!

#### Date

- Type the date the collection was made in this field.
- Symbiota requires the date be entered in specified format or it will not accept it. If you do not follow the format, an error message will appear when you click out of the field.
  - Required format is: Year-Month-Day (yyyy-mm-dd).
  - Examples:
    - 1963-04-02 (April 2, 1963)
    - 1978-12-23 (12/23/1978)
  - Potentially ambiguous dates!
    - Assume that collections from North America are written mm/dd/yyyy. For example, 6/4/1999 is June 4<sup>th</sup>, 1999.
    - Collections from outside of North America are most often written in the dd/mm/yyyy format. For example, 6/4/1999 written on a European specimen most likely means 6<sup>th</sup> April, 1999.

- If only a year is given or if a year and month are given but no day, use a double zero (-00) as a placeholder for the month and/or day.
  - Examples:
    - 1945-00-00 (1945)
    - 1964-05-00 (May 1964)
- If the given date covers a range of days or a season, put only the year provided followed by two sets of double zeros.
  - Examples:
    - 1989-00-00 (Summer 1989)
    - 1979-00-00 (June September 1979)
- If only a month and day are given (e.g. May 25) with no year, leave this field blank; it is not equipped to handle dates without a year.
- If no date is given, leave this field blank.

## **Associated Collectors**

- Enter any additional collectors listed on the label in this field.
- These names usually follow the primary collector name. Enter name as it is on sheet and if there are multiple names, separate them with a comma (e.g. L. Fugere, S. Tsocanos, G. Maentz).
  - If there are collector numbers associated with the additional collectors, write collector numbers after each individual collector name (e.g. Wittmann 534).
- Leave this field blank if no additional collectors are given.

## Verbatim Date

- Use this field to include the collection date exactly as it is written on the label.
- This field does not have a format requirement and allows any date ranges, seasons, or other ambiguous date formats to be associated with the record.
- If no date is given, leave this field blank.

## Latest Identification

Latest Identification		
Scientific Name ?	Author ?	
ID Qualifier ?	Family ?	
Identified By ?	Date Identified ?	±⁄

## Scientific Name (Accepted Name)\*

- Start typing the scientific name of the specimen as it appears on the label OR as it is penciled in at the top of the label OR how it appears on the most recent annotation.
  - NOTE: This is the name that the specimen will be filed under. Because different herbaria sometimes file specimens under synonym names, be sure to look and see if the CU Herbarium staff have penciled in a different name. This indicates that, while the collector identified the specimen as one scientific name, the CU Herbarium files it under its synonym.
- A dropdown menu should pop up with name suggestions as you begin typing. Keep typing until the name you need appears, and click on it to select it.
  - NOTE: Using the dropdown prevents any spelling errors and speeds up the process of entering lengthy scientific names, but make sure that the predictive text exactly matches the specimen name it is very easy to select a name that is close.
- Once you have selected the appropriate name from the dropdown menu, click in the "Identified By" field. This will automatically populate the "Author" and "Family" fields.
  - Double-check to make sure they match what is on the label, and **alert the CU Herbarium staff** if they do not match.
- NOTE: If the name does not appear in the dropdown menu as you type, you will have to manually finish typing in the scientific name, as well as fill in the "Author", and "Family" fields as they will not automatically populate.
  - Make sure to double-check your spelling, and **alert the CU Herbarium staff** so they can add the name to the database.
- All scientific names appearing on the sheet will be entered into the database using the **Determination History** tab covered later.

#### **Annotation Labels**

- For the vascular collections, annotations are usually pasted above or around the original label.
- For the cryptogam collections, annotations can be found pasted to the back of the packet OR underneath the front flap. Be sure to check both places.

#### **Identified By**

- Type in the name of the person stated to have identified the collection.
- If you use a penciled in synonym for the Scientific Name, type COLO Staff in this field.
- If the label does not specify this information, type in the name of the primary collector.

## **Date Identified**

- This date usually follows the identifier's name. There is no format required for this field, but for consistency format it as you would following the rules given for the date field if possible (e.g. yyyy-mm-dd).
- If this is not possible because it is given as just a month for example enter the date identified verbatim as it is on the label.
- If no year is given enter the year the collection was made (without the month and day).

## Locality

Country	State/Province	County	Municipality
Locality			
Locality Security			
Latitude Longitu	de Uncertainty ?	Datum ?	/erbatim Coordinates
Elevation in Meters	Verbatim Elevation	* *	
Lat  Cong: Cinsert Lat/Long	N ▼ W ▼ Values	Zone: East: North: Hemisphere: North	T N ▼ R E ▼ Sec: Details: Meridian Selection ▼ Insert TRS Values
Georeferenced By	Georeference Sources	Georeference Remarks	
Georeference Protocol	? Georef Verification Status ?	footprint (polygon)	

## Country\*

- The country the collection was made in goes in this field. Type the country out and do not use abbreviations. For example, if the specimen is from the U.S., type out United States.
- This should represent the current country where the collection occurred. For historic collections old country names should be moved to the locality (i.e. enter "Russia" into the country field and "USSR" into the "Locality" field).

## State/Province

- The state or province the collection was made in goes in this field. Type the state/ province name out and do not use abbreviations. For example, if the collection is from Colorado, type out Colorado and do not use CO.
- If the label lists two states or counties/provinces they should be listed alphabetically and separated by a slash.
  - Example: if the label says Wyoming/Colorado this should be entered as Colorado/Wyoming.

- If the label lists multiple states but the collection clearly only occurred in one state, just put the one state in this field.
  - For example: the title of the label is Plants of the Four Corners (Arizona, Colorado, New Mexico, Utah) and the location is Montezuma County along HWY 160 3 miles north of the Colorado/New Mexico border we can see that the collection occurred in Colorado and so would only enter Colorado in the "State" field.
- Do the same thing for provinces, i.e. type out British Columbia instead of putting BC.

#### County

- The county the collection was made in goes in this field. Type the county name out and do not use abbreviations. For example, if the collection is from El Paso County, type out El Paso and do not use EP.
  - Sometimes the county is written in pencil at the top of the label if the collector did not include it on the label.
- If multiple counties are listed enter them in alphabetical order.
  - For example Larimer/Boulder on the label should be entered as Boulder/Larimer.
- NOTE: A parish is the equivalent to a county. If you see a parish listed on the label, put that in this field. For example, Louisiana is divided into parishes not counties.
- If not provided, leave this field blank.

## **Municipality**

• Municipality is roughly the equivalent of county in Mexico. This field should only be used for Mexican specimens. Municipality is often abbreviated as MPIO.

## Locality

- This field will require you to read all the information on the label in order to parse out what to put in this field. Generally, this should include proper names of cities, roads, specific trails, peaks, rivers, creeks, etc. where the collection was made.
  - NOTE: **Do not** enter county, state, UTM, Lat/Long, TRS, datum, or elevation information as these data have their own fields.
- Enter in locality information as it appears on the label.
  - NOTE: Make sure to always capitalize the first letter in the field and end it with a period.
- Things to be aware of:
  - If you need further information you can look in the *Gazetteer of Localities Mentioned Giving Location and Elevations* that can be found in multiple locations around the herbarium.
  - Sometimes the distinction between Location and Habitat is not clear. In this case, enter the information in question in both fields. It is better to repeat information than leave something out.
  - If a word is obviously misspelled, correct it if you are sure of the correct spelling If you are not sure of the correct spelling, ask a CU Herbarium staff member for assistance. (Historically COLO had entered [sic] after the original spelling to denote that the word is potentially misspelled since specimen labels appear in the

image of each record this practice has been abandoned, but may still appear in the database.

- The locality field should never be left blank.
  - If the only locality information provided is TRS or coordinates this should be entered in the locality field and the Verbatim Coordinates field.
  - If there is truly no locality or coordinate information provided on the label enter [No locality data provided on the label.]

## Coordinates

#### Latitude/Longitude

- If the label gives you Lat/Long coordinates as a decimal, enter them directly into the "Verbatim Coordinates" field as well as the "Latitude" and "Longitude" fields. Make sure to include a negative sign before longitude for the western hemisphere and latitude for the southern hemisphere.
  - $\circ$  Example: 40.0274 N, -105.2519 W = 40.0274, -105.2519
  - Example: 40.0274 S, -105.2519 E = -40.0274, 105.2519



- If the label gives you Lat/Long as Degrees, Minutes, Seconds (xx° xx' xx") then click on the "Tools" button to the left of the "Verbatim Coordinates" field.
  - This will open a new set of yellow boxes. Enter the coordinates into the first yellow box and then click "Insert Lat/Long Values". This will automatically populate both the "Latitude" and "Longitude" fields as well as the "Verbatim Coordinates" field.
- If the label gives you Lat/Long as Degrees and Decimal Minutes (xx° xx.xx') OR only gives Degrees and Minutes, then click on the "Tools" button to the left of the "Verbatim Coordinates" field.
  - This will open a new set of yellow boxes. Enter the coordinates into the first yellow box and then click "Insert Lat/Long Values". Degrees goes in the first field and the minutes as a decimal goes into the second field. Leave the seconds

field blank. This will automatically populate both the "Latitude" and "Longitude" fields as well as the "Verbatim Coordinates" field.

#### UTM

- If the label gives you UTM coordinates click on the "Tools" button to the left of the "Verbatim Coordinates" field.
  - This will open a new set of yellow boxes. Enter the coordinates into the second yellow box. The zone is usually the first number in the set. On most labels, the easting and northing will be labeled with an E and an N (Eastings should have six digits and Northings should have seven digits).
  - After you have entered the numbers, click the "Insert UTM Values" button. This will automatically populate both the "Latitude" and "Longitude" fields as well as the "Verbatim Coordinates" field.
    - Example: 13S 436924E 4358629N
- NOTE: If the database says it is "Unable to Parse Coordinates" when you click "Insert UTM Values," manually type the coordinates into the "Verbatim Coordinates" field (this usually occurs when the coordinates are incomplete and they will be corrected during the Georeferencing process).

#### TRS

- If the label gives you TRS coordinates click on the "Tools" button to the left of the "Verbatim Coordinates" field.
  - This will open a new set of yellow boxes. Enter the TRS as given on the label into the third yellow box. Check to make sure that the N/S label on the T value and the E/W value on the R value are correct in the drop down lists. After you have entered the numbers, click the "Insert TRS Values" button. This will automatically populate the "Verbatim Coordinates" field.
    - NOTE: If more than one section is given, put the first section listed in the "Sec" field and put the others in the "Details" field.
    - NOTE: If quarter or half sections are given, put them in the "Details" field.

#### Multiple Coordinate Forms Given

- If the label gives you Lat/Long and a TRS or UTM and a TRS, enter the Lat/Long or UTM first and make sure you click the "Insert Values" button (or if it is a decimal Lat/Long, make sure it is already typed into the "Verbatim Coordinates" field). Once the fields are automatically populated, *then* enter the TRS and insert those values. This will add the TRS values to the "Verbatim Coordinates" field along with the other coordinates.
  - NOTE! Doing this in reverse makes the database auto populate incorrect coordinates.

In all cases, leave the "Uncertainty" field blank. This field is used for uncertainty of the georeferenced point and will be filled out once the specimen is georeferenced.

#### Datum

• Datum is coupled with the (Decimal) Latitude and (Decimal) Longitude field to the left. This field should be filled with the datum used to derive the coordinates not the Datum that might appear on the specimen label. • If Datum appears on a label it should be entered into the Verbatim Coordinates field.

## **Verbatim Elevation**

- Type in the elevation verbatim from the label.
  - Make sure to include units and any qualifiers such as "ca." or "approx."
  - This field is equipped to handle ranges, so you may enter those if provided.
- Click on the  $\leq$  icon to the left of the field or simply click in the next field.
  - This will translate the elevation given to meters and populate the "Elevation in Meters" field(s).
    - NOTE: If the elevation given is already in meters, still place it in the verbatim elevation field.

If you used the "Tools" button to enter coordinates, it will have also made six fields related to Georeferencing (starting with "Georeferenced By" and ending with "footprint (polygon)") appear under the elevation fields. **Ignore these fields.** 

#### Misc

-Misc					
Habitat					
Substrate					
Associated Taxa					
Description					
Notes					+,
Life Stage ?	Sex ?	Individual Count ?	Sampling Protocol ?	Preparations ?	
Phenology ?	Establishment M	eans ?			

#### Habitat

- Enter information describing the area where the collection was made. This includes geological formations, riparian areas, N,S,E,W-facing slopes, etc.
- At times, Habitat can be difficult to discern from Locality. It might sometimes be appropriate to put the same information in both of these fields.
  - If unclear, ask a herbarium staff member to help you. As you continue to database, it will become easier to identify the difference between the two!

#### **Substrate**

- This field describes any specific substrate the collection was found in (i.e. dry soil, shale, muddy clay, etc.).
- **Only** fill this field out if the label *specifically* states that the collection was growing in a particular substrate. If not, put the information in the "Habitat" section.
  - For example, if a label states "Sandstone hillsides on north-facing slope", because the collector did not specifically state the collection was *growing* out of the sandstone, put this in the Habitat field. However, if a label states "Growing in muddy clay on banks of creek", place "Growing in muddy clay" in the Substrate field as the collector explicitly stated the collection was growing there.

#### Associated Taxa

- Enter any taxa that were found around where the collection was made.
  - Make sure to capitalize the genus and lowercase the species name. You do not need to italicize.
- This does not include generalities like "Pinon-juniper forest" or "sagebrush community", which belong in the "Habitat" field.
- Use the tool next to the Associated Taxa field to access the taxonomic thesaurus to ensure names are spelled correctly.

#### Description

- This field pertains to any descriptions of the collection itself.
  - Examples include: petal color, height, stem color, leaf shape, etc.

• Do not include information about the species in general not specific to the collection (i.e. ranges from Arizona to Wyoming, species ranges from 8-12 ft.)

#### **Notes**

- This field includes all information on the label and sheet that does not fit in any of the above fields. Some possible examples include:
  - Abundance (i.e. common, frequent, rare, etc.).
  - Include Topo Map Quadrangle if given
  - Any information regarding it is a gift from another herbarium (i.e. "Gift from ")
  - If a name other than the one you entered in the "Scientific Name" field appears on the label (i.e. there was a penciled-in name at the top of the label, or the collection has been annotated to something else), write "Original ID:..." and include original name with authorities.
  - If there are annotation labels: make sure to add any NON-CURRENT annotations to this field in the following order: Scientific name and author, name of annotator, institution, date annotated.
    - List them from most recent to least recent if there is more than one.
  - Include project name if any (e.g. "INSTAAR San Juan Ecology Project", "Floristic Inventory of \_\_\_\_\_", Bioblitzes, etc.).
  - List attachments such as letters which are sometimes stapled to a sheet.
  - Do not enter [County Voucher] if stamped on sheet.

#### **Phenology (Reproductive Status)**

- ONLY used for vascular collections. This field requires you to examine the specimen and determine if it was in Flower and/or Fruit or Vegetative when it was collected.
  - If the specimen has only flowers, type "Flrs" into the field.
  - If it is in fruit, type "Frt". If it has both, then type Flr/Frt.
  - If it does not appear to have either, type in "Veg".
  - NOTE: Sometimes this can be tricky to determine (especially with grasses!). If you are unsure, leave the field blank or ask a CU Herbarium staff member.

## Most specimens will not contain any more information and in most cases you will ignore all remaining fields in database! This includes the following:

Life Stage, Sex, Individual Count, Sampling Protocol, Preparations, Establishment Means and ALL fields under the Curation section (begins with "Type Status" and ends with "Processing Status").

## Cultivars

- Enter Specimen as usual in the "Collector Info" and "Latest Identification" section.
- However, once in "Locality" section of the form, only fill in the "Verbatim Elevation" field. In the Locality field, only enter "Cultivated".
  - The rest of the locality information should be recorded in the "Notes" field (this includes Country, State, County, Municipality, Verbatim Coordinates, and Datum) separated by a semicolon.
  - If information about Habitat, Substrate or Associated Taxa are included, place these in the "Notes" field after the locality information.
  - This will prevent cultivars coming up in searches of geographical locations.
- If it is included, you can fill in the "Description" field as usual.
- Also, be sure to fill in the "Phenology" field.

• Check the box at the bottom of the Misc. section that says "Cultivated"

# Cultivated specimens should be stored in yellow folders. If you come across one that is not, please alert a herbarium staff member.

## Submitting the New Record



- Once you have filled in all possible fields for a collection, it is time to officially submit the record into the database.
- This is done by hitting the "Add Record" button at the bottom of the page.
- NOTE: IF YOU DO NOT HIT THIS BUTTON, THE RECORD WILL NOT BE SAVED!! AND ALL YOUR HARD WORK WILL BE LOST.
- However, if you are entering more than one record, check the next record in you pile and see if the majority of the information on the label is shared with the current record. If it is, click the "Go to New Record and Carryover Locality Information" circle before pressing the "Add Record" button. This will carry over:
  - Collector
  - o Date
  - Associated Collectors
  - Verbatim Date
  - Country
  - State/ Province
  - o County

- Locality
- Verbatim Coordinates
- Verbatim Elevation
- Elevation in Meters
- Habitat
- Substrate
- Associated Taxa

If the records are not identical on ANY of those fields, MAKE SURE TO CHANGE THEM ON THE NEW RECORD before submitting it. For example, if all the information was shared between the two records except for Habitat, make sure you correct the "Habitat" field on the new record.

## **Adding Determination History**

- Before entering any Determination History make sure your record is saved; switching from the "Occurrence Data" to the "Determination History" tab will cause any unsaved data entry to be lost.
- Taxonomic identifications are not always static through time. Definitions of species can change resulting in lumping species together or splitting them into multiple species. In some cases specimens were misidentified and need to be updated. It is important to record these changes and to make sure the "Filed As" name appears as the primary identification in the database so staff can quickly move between the physical and digital realms of the collection.
- Adding additional identifications should be completed using the "Determination History Tab" and the same process can be used for both current "Filed As" names and historic records.
- To enter a name start typing in the "Scientific Name" Field. Predictive text should provide a list of options based on the text you enter. When the name is selected the "Author" field should auto populate from the Taxonomic Thesaurus.

- Determiner and Date are required fields in the database. If this information is not explicitly stated on the label or annotation label it is derived in two separate ways.
  - For original labels the collector is assumed to be the "Determiner" and the "Collection Year" is assumed to be the Date Determined.
  - If a synonym was penciled in above the label the "Determiner" should be entered as COLO Staff.
- If the Determination Date (Date) is know it should be entered. If the date is not known, the field cannot be left blank (because it is a required field) and should be entered as "Unknown".

Occurrence Data	Determination History	Images	Linked Resources	Admin		
Identification Co	nfidence Ranking 🖍					
not ranked						
Determinatio	on History					
There are	e no historic annotati	ons for thi	s specimen			*
Add a l	New Determination					
Identifi	cation Qualifier:				>>	
Scient	ific Name:					
Author	:					
Confid	ence of Determination: M	edium 👻	_			
Detern	niner:	-				
Refere	nce:					
Notes:						
Ma	ke this the current determin	nation				
Ad	d to Annotation Queue					
Ad	d New Determination					

## Navigating Between Records (during a session)

• When entering more than one record at a time, you are able to navigate back and forth between the records you have entered since you logged in for the day.

## << |1 of 2| >> >| >\*

- You can do this by clicking on the  $\leq\leq$  and  $\geq\geq$  located at the top right-hand corner of the page.
- If you want to go to the very first or last record you have entered that day, click on  $|\leq$  or  $\geq$ , respectively.
- $\circ \geq^*$  takes you to a new blank record.
- 0

## **Searching for Existing Records**

- Once you have logged in, click "Search Collections".
- Make sure that the box next to "University of Colorado Museum of Natural History" is checked and press the green "next" button. This will bring you to the search page.
- For databasing purposes, you will most often be searching for records by their Catalog Number (Barcode) found under the Collection Object Criteria section of the search page. This is by far the most efficient way to locate an individual record.
  - You can either type in the barcode number or scan the barcode with the scanner.
- If you do not have the barcode information, use the next most specific piece(s) of information you have.
- You can pull up a group of records by searching for their common denominator.
  - Example: If you are looking for collections made around Squirrel Creek, enter that into the "Locality" field under the Locality Criteria section and it will pull all of the records that contain it.

## **Editing Existing Records**

- Follow the protocols "Searching for Existing Records".
- Once you have located the record you need to make changes to, click the pencil icon in the right hand corner of the record listing.
- Make the necessary changes and then click the "Save Edits" button at the bottom of the page.

The end of this document contains example specimen sheets, packets, labels, and filled in forms for you to reference.

## **Augmenting Skeletal Records**

- Increasingly records are being added to the database through our imaging process resulting in database entries that just contain our barcode, taxonomy and some basic geography.
- In general most database entry sessions now start with skeletal records generated when we upload images to the database. (For this reason it is rare for us to enter a specimen from scratch following the process above).

- To build a query to locate relevant records click on more info next to the collection name under the Search Collections tab.
  - University of Colorado Museum of Natural History Herbarium Vascular Plant Collection (COLO-V) more info
- Click on the pencil icon and select "Edit Existing Occurrence Records" under the "Data Editor Control Panel" header.

Record Search Form				
Collector:	Number:		Date:	
Catalog Number:	Othe	r Catalog Numb	ers:	
Entered by:	Date entered:		Date modified:	
Processing Status:	▼ With	images 🔲 \	Vithout images	
Custom Field 1: Locality	-	IS NULL	▼	* <b>/</b>
Custom Field 2: State/Pro	vince •	EQUALS	▼ Colorado	⁺∕
Custom Field 3: County	•	EQUALS	▼ Boulder	
Display Editor Displ	ay Table Reset Form	Sort by:	▼ ascending ▼	

- Data entry sessions will be started by building a query using the three custom fields and the "With Images" checkbox.
  - Most searches will involve using Locality and "Is Null" to find records without a locality, State/Provence "Equals" and County "Equals", but this can set to anything that is specifically being targeted for data entry.
- Since Locality is never left blank the only records that should show up are records that have been imaged and have skeletal information uploaded, but have not been completely transcribed.
- Once relevant records have been located follow the procedure from the "Adding a New Record" header skipping the fields that have already been filled out.
- Make the necessary updates and then click the "Save Edits" button at the bottom of the page.

## Database Backups

- All databases should be backed up at a regular interval. A backup should be run the first work day of each month and added to the "K" drive under SoRo\COLO\_DB\_backup.
- These backups represent a point in time backup system and previous months should not be deleted.
- To navigate to the backup process go to the collection page by selecting more info after the collection name.
  - University of Colorado Museum of Natural History Herbarium Vascular Plant Collection (COLO-V) more info

- Click on the pencil icon to bring up collection management tools. Under the Administrative Control Panel Select "Download Backup Data File"
   Administration Control Panel
  - View Posted Comments
    Edit Metadata and Contact Information
    Update Statistics
    Manage Permissions
    Import/Update Specimen Records
    Quick File Upload
    Skeletal File Upload
    Processing Toolbox
    Darwin Core Archive Publishing
    Review/Verify Occurrence Edits
    Data Cleaning Tools
    Duplicate Clustering
    Download Backup Data File
- Select UTF-8 for the export and click Perform Backup. The backup file will be added to your Download Folder. The file should be moved into a folder with the date in a year month day format (i.e. 2018-11-01).

Occurrences download X +	x
$\leftarrow \rightarrow \  \  \textcircled{0} \  \  \  \textcircled{0} \  \  \  \textcircled{0} \  \  \  \textcircled{0} \  \  \textcircled{0} \  \  \  \  \textcircled{0} \  \  \  \  \  \  \  \  \  \  \  \  \ $	≡
Download Module Data Set: O ISO-8859-1 (western) O UTF-8 (unicode) Perform Backup	• II
< <u> </u>	

## **Example Specimens**



			COLO	DRADO, U.S.	Α.	
	Aquilegia coe	rulea James		HEL/RA	N	
	FREMONT C N of Hayden I T47N R10E. Salix brachyca	O: Sangre de C Pass, UTM 13S Subalpine basin <i>urpa/S. planifoli</i>	Cristo Range 0423529 42 w/ <i>Picea er</i> <i>a</i> ; ca. 11,20	, Bushnell Lak 45186 (ca.), <i>agelmannii</i> and 00'. Limeston	e, e.	
	22 June 2006			Tim Hogan 45	21	
		Herbarium CC	LO (Boulde	r)	Е	
ersity of Colorado M	luseum of Natura	I History Herba	arium (COL)	D:V)	<u> &lt; &lt;&lt;</u>	* of 2   >> >
New Occurrence Record						
Collector Info						
Catalog Number ? Other	Numbers ? Collector	r ?	Number	r? Date ?	Dunce	2
00882241 522	517 Tim Ho	gan	4521	2006-0	)6-22 Dupes	earch
Associated Collectors ?			Verbatim Date 22 June 20	e ? 06	] <b>*</b> /	earch
Latest Identification						
Scientific Name ?			Author ?			
Aquilegia coerulea			James ex T	orrey		
ID Qualifier ? Identified By ? Tim Hoga	an	Family ? Date Identified	?	CEAE	*	
Locality						
Country	State/Province	County	Mun	icipality		
United States Locality	Colorado	Fremont				
Sangre de Cristo Rang	e, Bushnell Lake, N o	f Hayden Pass				
Locality Security						
Latitude Longitude	Uncertainty ?	Datum	? Verba	tim Coordinates		
38.35157 -105.875	181 🚳 🖣	Tools	<u>&lt;&lt;</u> 13S	0423529E 42451	186N ; TRS: T47N	R10E
Elevation in Meters	Verbatim Elevation	+,				
3414	<u>&lt;</u> ca. 11,200 ft.					
Lat	" N 🔻	Zone: 135	т	47 N - R1	0 E 🔻	
Long: °	• W +	East: 0423529	S	ec: Details:		
Insert Lat/Long Va	ues	North: 4245186	orth -	Meridian Selectio	n 🔻	
		Insert LITM V	alues	Insert IRS Valu	les	
		Insert One V				
Georeferenced By	Georeference Sources	? Georeference R	emarks			
Georeferenced By	Georeference Sources	Georeference R	emarks			

-Misc				
Habitat				
Subalpine basin. Lim	estone			
Substrate				
Associated Taxa				
<u>Picea engelmannii</u> ar	nd Salix brachycarpa/ S. pl	anifolia		
Description				
Notes				+.
				<i>¥</i>
Life Stage ?	Sex ? Indiv	vidual Count ? Sampling F	Protocol ? Preparations ?	r
Phenology ?	Establishment Means ?			
Flr		Cultivated		
Curation				
Type Status ?	Disposition ?	Occurrence ID ?	Field Number ?	
Owner Code ?	Basis of Record ?	Language	Label Project	Dupe Count
Processing Status	_			
Pending Review	•			

	Add Record	
Follo	w-up Action:	
۲	Go to New Record	
$\bigcirc$	Go to New Record and Carryover Locality Information	
$\bigcirc$	Remain on Editing Page (add images, determinations, etc)	



	COLORADO, USA
	RUBUS ARCTICUS L. SSP. ACAULIS (MX.) W. A. WEBER RDS
ANNOTATION LABEL	CLEAR CREEK CO. GENEVA PARK JUST ACROSS ROAD FROM ABYSS TRAILHEAD S OF GUANELLA PASS COMMON ON PEAT HUMMOCKS IN WILLOW BOG AT OUTLET OF MEADOW AREA
ANNOTATION LABEL	05 WU V 1070
Cylactis arctica ssp. acaulis	25 JULT 1977 W A. WEBER 15481
sensu Weber & Wittmann (1992) Catalog of the Colorado Flora	9 EX HERB. COLO
Herbarium COLO Staff - Summer, 1993	

#### New Occurrence Record

Collector Info							
Catalog Number ?	Other Numbers ?	Collector ?		Nu	mber ?	Date ?	Dunca?
00653857	330955	W.A. Web	er	13	5481	1979-07-2	25 Dupes?
Associated Collector	s?			Verbatim	Date ?		Auto search
				25 July	1979	5	۶
Latest Identification							
Scientific Name ?				Author ?			
Cylactis arctica ss	p. acaulis			(Micha	ux) W. A. We	eber	
ID Qualifier ?			Family ? ROS	SACEAE		]	
Identified By ? He	rbarium COLO Sta	f	Date Identified ?	Summe	er 1993		] 🍤
- Locality							
Country	State/Province		County		Municipality		_
United States	Colorado		Clear Creek				
Locality							
Geneva Park just	across road from	Abyss traill	nead S of Guanel	lla Pass.			
Locality Security							
Latitude Long	gitude Uncertair	ity ? 🌀 🈏 [	Datum ? Tools	\ <u>&gt;&gt;</u>	/erbatim Coor	dinates	
Elevation in Meters	Verbatim Ele	vation	<b>*</b>				

-Misc						
Habitat						_
On peat hummocks	in willow bog at outlet of me	eadow area.				
Substrate						_
Associated Taxa						1_
						: =
Description						
Notes	). Public preticus Li con i pos	ulia (MX.) W. A. Woha	r			+,
Common; Original IL	5. Rubus arcucus L. ssp. aca	Iulis (MA.) W. A. Webe	1			
Life Stage ?	Sex ? Individ	Jual Count ? Samplin	ig Protocol ?	Preparations ?		
Phenology ?	Establishment Means ?	Quilliveted				
Flr						
Curation						
Type Status ?	Disposition ?	Occurrence II	с?	Field Number ?		
ijpo olalao			-			
Owner Code ?	Basis of Record ?	Language	Label F	Project	Dupe Count	
	PreservedSpecimen					
					Processing Status	;
					Pending Review	v <del>-</del>



The Ronald L. McGregor Herbarium (KANU) University of Kansas, Lawrence KS USA

	Cercocarpus montanus Raf.			
	Colorado. Custer Co. 2.0 mi S, 1.0 with Hwy 67 in Wetmore: 2.1 mi S upslope on Cronk Gulch Road). So Mountains. T21S R69W Sec 21 S 105°06'15"W determined by topo	) mi W Wetmore (from jun on Hwy 96, then 0.4 mi W an Isabel National Forest: 2/3 of E 1/4. 38°12'30"N map. Elev 2040–2070 m.	ction / Wet	
	Douglas fir-pine forest on steep, ± understorey with mountain mahog sandy soil.	N–S-trending ridges. Gra any and gambel oak. Red	ssy , rocky-	
	Scattered at top of ridge. Shrub to	2.5 m high.		
	26 May 1999			
	Caleb A. Morse 3127			
	The Ronald L. McGreg University of Kansa	gor Herbarium (KANU) s, Lawrence KS USA		
Collector Info				
Catalog Number ? Other Numbers	? Collector ?	Number ?	Date ?	Dupes?
00664482 474589	Caleb A. Morse	3127	1999-05-26	Auto search
Accession Collectors ?		Varbatim Data ?		Auto search
Associated Collectors		26 May 1999	1	
		201407 1999		
Latest Identification				
Scientific Name ?		Author ?		
Cercocarpus montanus		Rafinesque		
ID Qualifier ?	Family ? RC	DSACEAE	7	
Identified By ? Caleb a. Morse	Date Identified	?		/
Country State/Bray	inco County	Municipality		
United States Colorado	Custer	Municipality		
Locality		l		
San Isabel National Forest, Wet	Mountains, 2.0 mi. S, 1.0 mi.	W of Wetmore (from	jct. w/ Hwy 67 i	n Wetmore: 2.1 mi. S c
Locality Security				
Latitude Longitude Unce	rtainty? Datum?	Verbatim Coo	rdinates	
38.208333 -105.104167		< 38° 12' 30"	N 105º 06' 15"	W; TRS: T21S R
Elevation in Meters Verbatim	Elevation			,
2040 - 2070 << 2040 -	2070 m			
Lat 38 ° 12 ' 30 ' N	▼ Zone:	T21 9	<b>7</b> R 69 W	<b>•</b>
Long: 105 ° 06 ° 15 "	W - East	Sec: 21	Details: S 2/3	of E 1/4
	North:	Meridia	n Selection	<u>→</u>
Insert Lat/Long Values	Hemisphere: No	rth 🚽 🛛 Incor	t TPC Volues	
	Insert LITM V			
Georeferenced By Georefere	nce Sources ? Georeference R	emarks		

PLANTS OF COLORADO, USA

ROSACEAE

-Misc			
Habitat			_
n steep +/- N-S-trend	ding ridges, grassy understory w/ mountain mahoga	ny and gambel oak; red, rocky sandy soil	
Substrate			_
Associated Taxa			_
			=
Description			_
Shrub to 2.5 m high.			
Notes			
Scattered at top of ri	dge. Lat/long det. by topo map.		*
Life Stage ?	Sex ? Individual Count ? Sampling Pro	otocol ? Preparations ?	
Phenology ?	Establishment Means ?		
Flr	Cultivated		
- Curation			
Curation			
Type Status ?	Disposition ? Occurrence ID ?	Field Number ?	
Owner Code ?	Basis of Record ? Language	Label Project Dupe Count	
	PreservedSpecimen		
		Processing Status	
			•
Kov: 15469 Mod	ifind: 2015-07-21-12:26:42 Entered by: Access DP (2	015 07 01 10:08:041	
Ney. 10400 M00	Entered by: Access DB [2	010-07-21 12.20.34]	



N C. strictum	ASN
Caryophyllaceae	COLORADO, U.S.A.
<u>Cerastium</u> arvense L.	
EAGLE COUNTY Central Colorado: Saw Continental Divide: area, 2 road mi or Camp Hale Memorial, Vail; ca 7 air mi N Aspen with sagebrush contorta at mesa to	T7S R80W S10 atch Range, West Slope Resolution Creek Forest Road 702 from ca 13 air mi SSE of I of Tennessee Pass. hills and Pinus pp.
2 Jun 2000	Elev. 9,400-10,080 ft.
Emily A. Holt # 306	
ROCKY MOUNTAIN HERBARIUM	(RM), University of Wyoming

Collector Info						
Catalog Number ?	Other Numbers ?	Collector ?		Number ?	Date ?	Dupos?
00878462	521808	Emily A. Holt		306	2000-06-0	2 Jupes?
Associated Collecto	re ?			Verbatim Date ?		Auto search
	13			2 June 2000	*	•
Latest Identification	n ————					
Scientific Name ?				Author ?		
Cerastium strictu	IM			L. {emend.} Hae	enke	
ID Qualifier ?		F	amily ? ALS	INACEAE		
Identified By ? CO	DLO	Date	e Identified ?			*∕
Country	State/Provinc	Cour	t.	Municipali	t.	
United States	Colorado	Eag	le	wunicipali	ty	
Locality	Contrado	209				
carea, 2 road mi	on Forest Road 70	2 from Camp Ha	le Memorial	, ca 13 air mi SSE	of Vail; ca 7 ai	r mi N of Tennessee Pass.
Locality Security	/					
Latitude Lon	aitude Uncertai	nty ?	Datum ?	Verbatim Co	ordinates	
			3	< T7S R80W	/ Sec 10	
Elevation in Meters	Verbatim El	evation				
2865 - 3072	<u>&lt;&lt;</u> 9,400 - 10	),080 ft. 🛛 🏷				

-Misc						
Habitat						_
Aspen with sage	brush hills and Pinus conto	orta at mesa top.				
Substrate						
Associated Taxa						
Description						
Notes						
Original ID: Ceras	stium arvense L.					*⁄
Life Stage ?	Sex ?	ndividual Count ?	Sampling Proto	col ? Preparations ?		
Phenology ? Flr	Establishment Means	Cultivated				
Curation						
Type Status ?	Disposition ?	Oc	currence ID ?	Field Number ?		
Owner Code ?	Basis of Record ? PreservedSpecime	Language	L	abel Project	Dupe Count	
					Processing Status	5 •
Key: 123610	Modified: 2015-08-04 14:58:	13 Entered	by: Access DB [20	15-08-04 13:58:08]		

	S 5754	Р	LANTS OF COL	ORADO, U.S.A.		
"S	5-"	HERBARIU	M OF THE UNIV	ERSITY OF COLORA	DO	
Acce	ssion A.tu	scata				
	ACAR	OSPORA RO dup	DSULATA H.Ma L. det. H.Ma	gnusson gnusson, 1957		
	Boulde formati Red Hi	er Co.: on ion, 6,000 ill, between	shale-limeston ) ft. alt.,west si n Altona and L	e-sandstone outcro lope, 0.5 mi. S. of yons, T. 2 N., R. 71	ps, Lykins summit of W., Sec. 1	
	14 Nov	v. 1954		S. Shushan & W.	A. Weber	
	\$ 5754		77.155			-
			Back	]		
					This is a lichen so it	
					has a "COL	.O-
					L" barcode	
				Univers	ity of Colorado (COLO)	L <sup>L</sup>
	CU			COL	0-L-0000145	
Collector Info						
Catalog Number ?	Other Numbers ?	Collector ?		Number ?	Date ?	
COLO-L-0000145	S-5754	S. Shusha	n	s.n.	1954-11-14	Dupes?
	2					Auto search
Associated Collectors	3 f			Verbatim Date -	+	
W. A. Weber				14 NOV. 1954		
Latest Identification						
Scientific Name ?				Author ?		
Acarospora fuscat	ta			(Nyl.) Arnold		
ID Qualifier ?			Family ?	ACAROSPORACEAE		
Identified By? CO	LO		Date Identified ?			*

Locality	
Country State/Province County Municipality	
United States Colorado Boulder	
Locality	_
Lykins formation, .5 mi S of summit of Red Hill, between Altona and Lyons	
Locality Security	
Latitude Longitude Uncertainty? Datum? Verbatim Coordinates	
Tools << TRS: T2N R71W sec 1	
Elevation in Meters Verbatim Elevation	
1829 - << 6000 ft *	
Long. We East. Sec. 1 Details.	
Insert Lat/Long Values	
Hemisphere: North  Insert TRS Values	
Insert UTM Values	
Georeferenced By Georeference Sources ? Georeference Remarks	
Georeference Protocol ? Georef Verification Status ? footprint (polygon)	
_ Misc	
Habitat	
Lykins formation, west slope	
Substrate	
On shale-limestone-sandstone outcrops	
Associated Taxa	
Description	
Notes	
Original ID: Acarospora rosulata H. Magnusson, dupl. det. H. Magnusson, 1957 🏷	
Life Stage ? Sex ? Individual Count ? Sampling Protocol ? Preparations ?	
Phenology ? Establishment Means ?	
Cultivated	
Curation	
Type Status ? Disposition ? Occurrence ID ? Field Number ?	
Type Status ? Disposition ? Occurrence ID ? Field Number ?	
Type Status ?       Disposition ?       Occurrence ID ?       Field Number ?         Owner Code ?       Basis of Record ?       Language       Label Project       Dupe Count	
Type Status ?       Disposition ?       Occurrence ID ?       Field Number ?         Owner Code ?       Basis of Record ?       Language       Label Project       Dupe Count         PreservedSpecimen       PreservedSpecimen       Dupe Count       Dupe Count	
Type Status ?       Disposition ?       Occurrence ID ?       Field Number ?         Owner Code ?       Basis of Record ?       Language       Label Project       Dupe Count         PreservedSpecimen       Image       Image       Image       Image       Image         Disposition ?       Image       Image       Image       Image       Image       Image         Disposition ?       Image       Image	
Type Status ?       Disposition ?       Occurrence ID ?       Field Number ?         Owner Code ?       Basis of Record ?       Language       Label Project       Dupe Count         Processing Status       Processing Status       Pending Review       Total Status       Total Status	

C	L-56863	Correct accession to use because "L-"	ARIZONA, U.S.A.
	ACAROSPORA SI	MARAGDULA (Wahl	enb.) Ach.
	COCHISE CO.: from Sugarlos	Chiricahua Nat af to Echo Park	ional Monument; trail ; on rhyolite
	8 Jan. 1973	W.A.	Weber & Greg Kunkel
		Herbarium of the Un Bould	iversity of Colorado Ier
		Under Fl	ap
	Acc He Det. by 1	rbarium – Univer Kerry Knudsen	americana H. Magn sity of California Riverside Dec. 3 2004

-Collector Info-Catalog Number ? Other Numbers ? Date ? Collector ? Number? Dupes? COLO-L-0000076 L-56863 W. A. Weber 1973-01-08 s.n. Auto search Associated Collectors ? Verbatim Date ? \*⁄> 8 Jan. 1973 Greg Kunkel

Latest Identification		
Scientific Name ?	Author ?	
Acarospora americana	H. Magn	
ID Qualifier ? Family	ly? ACAROSPORACEAE	
Identified By ? Kerry Knudsen Date Identifie	ied ? 2004-12-03 *	
Locality		
Country State/Province County	Municipality	
United States Arizona Cochise		
Locality	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	
Chiricahua National Monument; trail from Sugarloaf to Echo	o Park.	
Locality Security		
Latitude Longitude Uncertainty? Datur	m ? Verbatim Coordinates	
O S Tools	<<	
Elevation in Meters Verbatim Elevation		
- << *		
Misc		
Habitat		
Substrate		
On rhyolite.		
Associated Taxa		
	.4 🔳	
Description		
Notes		
Original ID: Acarospora smaragdula (Wahlenb.) Ach.	*	•
Life Stage : Sex : Individual Count :	Sampling Protocol + Preparations +	
Phenology ? Establishment Means ?		
I		



- Collector Info				
Catalog Number ? Other Numbers ? Collector ?		Number ?	Date ?	Dunas?
COLO-B-0000007 B-112834 Mazureck		18	2002-09-01	Dupes?
· · · · · · · · · · · · · · · · · · ·				Auto search
Associated Collectors ?		Verbatim Date ?	+	
Wittmann		1 September 200	2 🎽	
Scientific Name ?		Author ?		
Abietinella abietina		(Hedw.) Fleisch.		
ID Qualifier ?	Family?	Thuidiaceae		
Identified By ? Mazurek	Date Identified ?			*
- Locality				
Country State/Province	County	Municipality		
United States Colorado	Larimer			
Locality				
Crystal Mt. Rd (marked BK29) near the junction with 44H Rd at mile 29 (ca 12 miles NW of Masonville). N of road near Bu				
Locality Security				
Latitude Longitude Uncertainty?	Datum ?	Verbatim Coo	rdinates	
40.569167 -105.429444 69	Tools	<u>&lt;&lt;</u> 40° 34' 09"	N 105° 25' 46	5" W
Elevation in Meters Verbatim Elevation				
2347 - <u>&lt;</u> 7700 ft				
Lat 40 ° 34 ° 09 " N -	Zone:	Т	I 🕶 R 🛛 E	· •
Long: 105 ° 25 ° 46 " W 🗸	East	Sec:	Details:	
	North:	Meridia	n Selection	
Insert Lat/Long Values	Hemisphere: Nor	th 🔻		
		Inser	t TKS Values	
	Insert UTM Val	ues		
Georeferenced By Georeference Sources ? Georeference Remarks				
Georeference Protocol ? Georef Verification Status ? footprint (polygon)				
Mine				
MISC				
Habitat				
Qubatrata				
Substrate				
Associated Taxa				
				<b>H</b> (ئىر
Description				
NOTES +				
Life Stage ? Sex ? Ind	ividual Count ?	Sampling Protocol ?	Preparations ?	
Phenology ? Establishment Means ?				
Cultivated				