Preparing herbarium labels

Part 2: From field notes to your personal profile

OpenHerbarium prints collection labels from your "Personal profile". These instructions assume you have your field notebook beside you. There are 5 major steps involved.

I. If necessary, **complete your field notes** by adding information for geographic coordinate fields to your field notes for each site and identification information for individual specimens. Links are to detailed information about these two aspects.

II. **Enter information from field notes** into the occurrence records in your personal profile *in the order you collected them*. This is the most time consuming step because each specimen must have its own record.

Entering the information for your specimens in the order you collected them enables you to carry over locality information from one record to the next. Do this only if both specimens were collected at the same site. ONLY the locality information is carried over, but even that that will save you a lot of time. This step is the last stage in entering information for a specimen.

III. **Print a trial set of labels** and note corrections needed to data plus those that will be needed in the file generated. Make corrections.

IV. **Print labels** and add to each specimen.

V. **Give specimens to herbarium**.

Completing your field notes

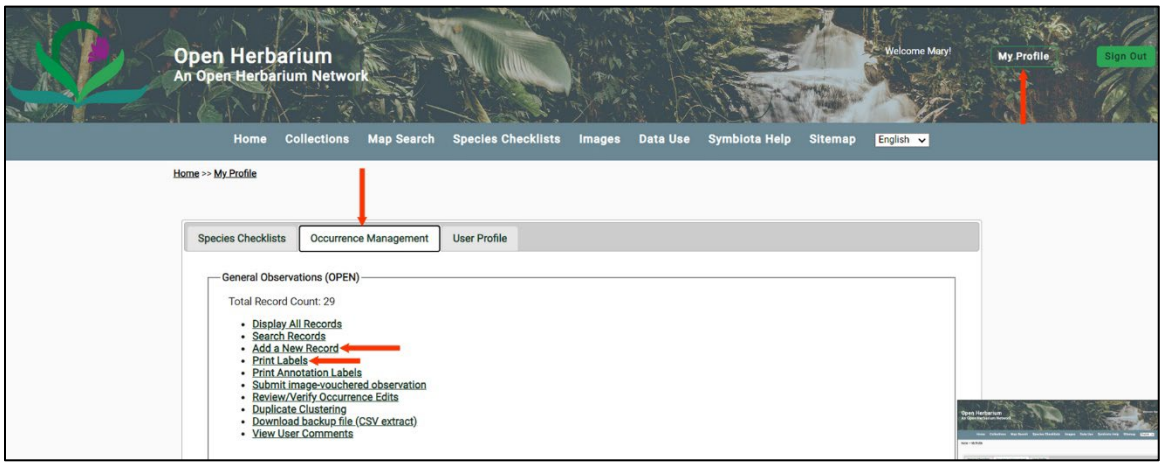
If you were not able to record the latitude and longitude (and the related information) in the field, look it up as soon as you can. See the "Geographic coordinates" document for more information. Another useful document to read is GBIF's Georeferencing Quick Reference Guide.

It is always best to identify all your specimens, ideally to species, before printing your labels, but that is not always possible. Identify it to the level you can, even if all you can say is that it is a fern. See the "Identification information" document for more details.

Entering information

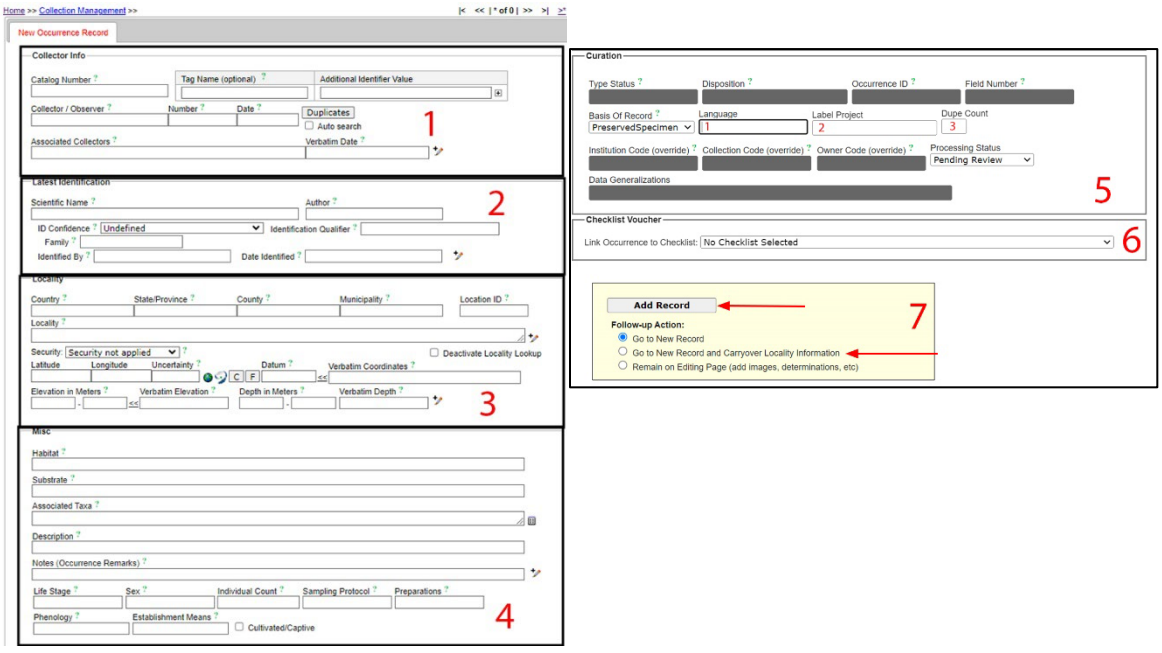
Opening the data entry screen

1. Login to OpenHerbarium and click the “My Profile” button and then select the “Occurrence Management” tab. That will bring up the screen shown below.



1. Click “Add a new record”. Notice that the option below says, “Print Labels”. Adding your new records comes first, but then you will use the “Print labels” link.

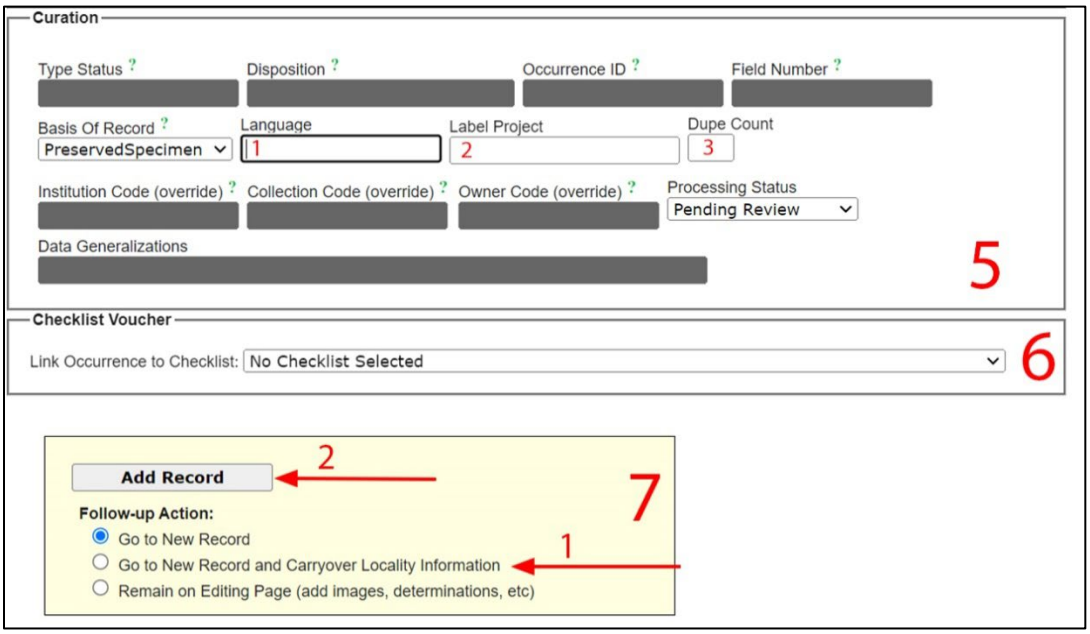
Clicking “add a new record” will bring up the data entry form shown on the left below. As you can see, it has 4 parts. There are brief notes about each part below. At first, entering data will be slow but, as you become familiar with the form it will become easier. The right hand figure shows the three additional boxes that increase the efficiency of label-making by using OpenHerbarium in addition to enabling you to add the records to a relevant checklist.



I have discussed the boxes in the right hand figures, boxes 5, 6, and 7, before those in the left hand figure because it will help you understand how the data you enter for each specimen is saved in ways that reduce the amount of work required for generating labels and for creating other useful resources.

Box 5: Curation

Most of the fields in this box are not needed when preparing labels. Even the three with numbers in are optional.



1. **Language**: Optional. At present, only languages using the Latin alphabet can be used.
2. **Label project**: Optional. It helps locate the right labels for printing. It can be used to specify that the data refer to a particular project or specimens collected in a particular month.
3. **Dupe count:** Useful. If you collected more than one specimen of a plant, you enter the number here and the label printing program will print that number of labels.

Box 6: Checklist Voucher

Checklists are lists of species that are known to grow in an area. If there has been a checklist set up in OpenHerbarium for the area where you made your collections, selecting it here will ensure your specimens are suggested as voucher specimens for the checklist. If they are the first collections of the species from the area, they will be suggested additions to the checklist.

There may be more than one checklist that includes the area where you collected. Select the smallest administrative level and the correct taxonomic group. Checklists in OpenHerbarium are set up so that they can add new records from the admin regions they include. For example, the checklist for a province in Pakistan will tell the administrators of the province's checklists of a potential new species and the specimen supporting its addition. It will also add the specimens to the list of potential checklist vouchers. Checklists for larger regions automatically include approved records for smaller regions included them.

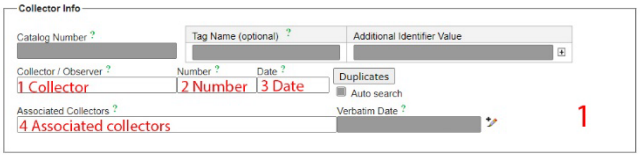
Box 7: Add record box

This is the magic box. If your next specimen was collected at the same location as the one you just entered, do **not** click "add records" until you have selected the second button – "Go to New Record and Carryover Locality Information" from the three options under "Follow-up Action". When you have selected it, click button 2, "Add Record". You will be presented with a data entry form that includes the locality information for the specimen you just entered, saving you from entering it again.

If your next specimen was collected at a different locality, you should select the first (default) option "Go to new record" before clicking "Add record".

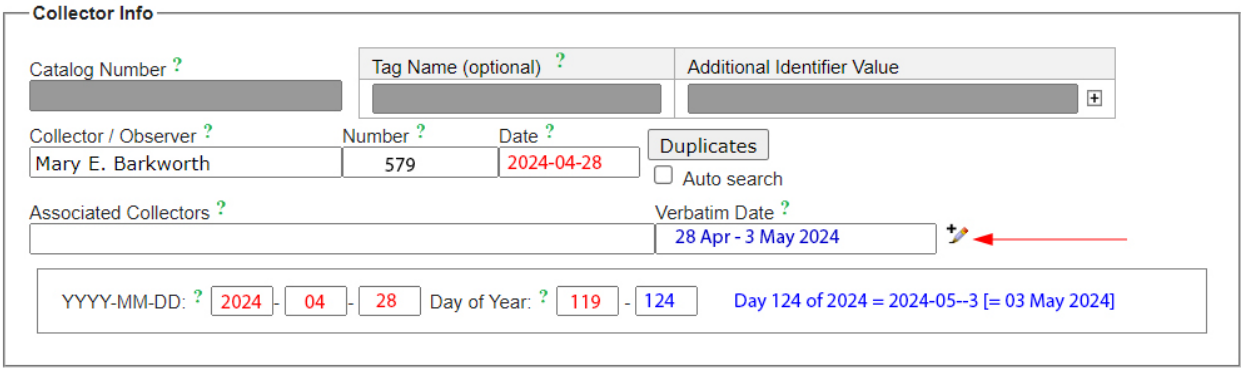
NOW – CREATE YOUR FIRST 5-10 SPECIMEN RECORDS FOLLOWING THE INSTRUCTIONS BELOW FOR COMPLETING BOXES 1 through 4.

Box 1: Collector Info



You do not fill out the shaded fields. They are only used when entering data from existing specimens.

1. **Collector**: This will default to your name as registered in OpenHerbarium. If it is not spelled correctly, stop everything and correct it by clicking the "My Profile" button on the home page and selecting the "User Profile" tab. More instructions are here.
2. **Number**: This is the specimen number. You need to complete a data entry form for each different specimen but not for duplicate specimens (specimens of the same species collected at the same location and the same time). All specimen numbers should be different. It is customary to start at 1 and then continue until you collect your last specimen. If you find you have accidentally given two specimens the same number, add "a" to one and "b" to the other.
3. **Date**: This is the collection date. Enter it in one of two formats, either as YYYY-MM-DD (e.g., 2024-04-28) or as DD Mon YYYY (e.g., 28 Apr 2024).
4. **Associated collectors**: See your field notes. They do not need to be botanists. If they help you collect, perhaps by helping you put the specimens in the press, list them. Separate individuals with a comma (e.g., Assistant Person 1, Assistant Person 2). Make sure they use their "Official name", the one that they would use on an official document and, as with your own name, be sure to use capital letters as appropriate. Do not use titles.
5. **Verbatim date**: Normally this is not needed for your own collections, which is why it is shaded, but, if all you know is the month when it was collected, or a date range, such as, then that information goes in the "Verbatim Date" field, for example "May, 2022" or "April 28-May 3, 2024" and you need to use the fields revealed when you click the icon to add the range in a format computers can understand. Clicking the icon reveals the additional fields as shown below.

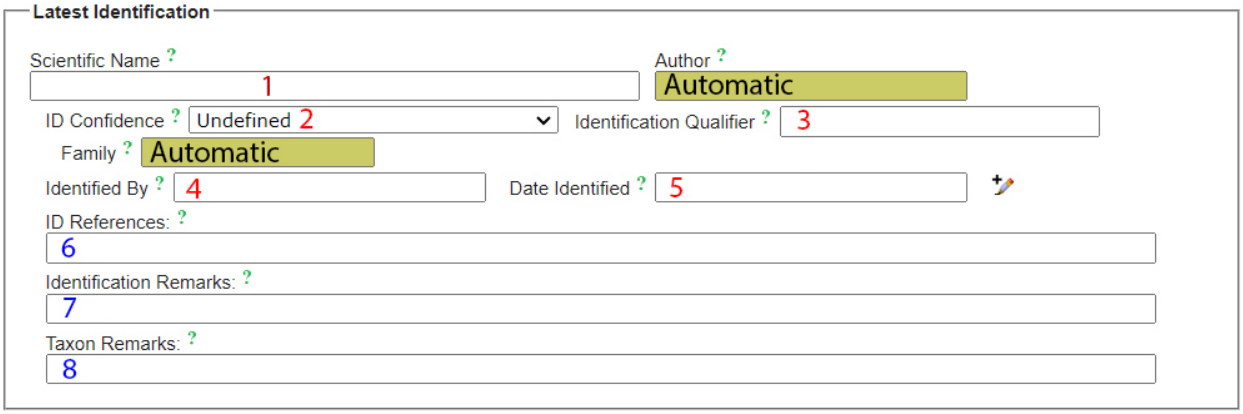


In the example, I have entered a date range in the "Verbatim Date" field and the first date, 2024-04-28, into the date box. OpenHerbarium will use this information to fill in the first four fields in the bottom row, those shown in red. "Day of year" is the number of days since the beginning of the year. 2024-04-28 is the 119th day of 2024 (1 Jan 2024 would be Day 1). To tell the program the second date, you need to calculate what day of the year it is. May 3 is 5 days after Apr 28 so the number to enter in the second "Day of year" box is 119+5 = 124.

If you only know the month, enter the first day of the month, e.g., 2024-04-01 (=1 April 2024) in the date field, then click the icon. You will see that it is day 92 of 2024. The last day of April is 29 days later. This makes the second day is 92+29=121st day of the year, so you need to enter 121 in the second box.

Box 2 Plus – Identification information

The second box is for the identification information. It can be left empty but try to put in some information, even if it is as vague as "Monocot". In the figure, the boxes with red numbers will show up before you click the pencil, those with blue numbers only after you click the icon. Click here for extended information about completing box 2. The important fields are 1, 4, 5 and 6.



1. **Scientific Name**: In OpenHerbarium, this means a name at the genus level or below. If you have entered a name that is in OpenHerbarium's taxonomic table, it will autocomplete once you start typing AND the "Author" and "Family" boxes will also be filled. You need to move to the next field to see whether they do so. If they are not automatically completed, check your typing of the name in the "Scientific Name" field. There are now enough names in OpenHerbarium nowadays that, unless you are working with algae or a newly described taxon, the reasons autocompletion does not

happen an error in completing the scientific name but, if your name seems fine, send me an email, telling me the name that is giving you problems. I shall response as quickly as I can.

If all you know is the family, enter that name in the "Family" field. If you know even less, click the icon and enter what you know in "Identification remarks".

2. **ID Confidence:** Usually left to the default setting of ""undefined", but the other options available are shown in the table on the right. "Insignificant material" means that the specimen lacked some critical parts (e.g., flowers, fruits) for accurate identification.

Undefined
10 - Absolute
9 - Very High
8 - High
7 - High - verification requested
6 - Medium - insignificant material
5 - Medium
4 - Medium - verification requested
3 - Low - insignificant material
2 - Low
1 - Low - ID Requested
0 - ID Requested

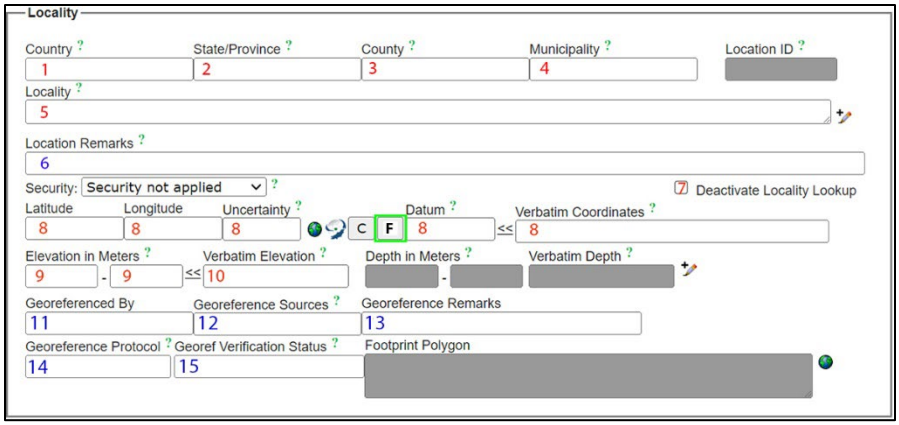
3. **Identification qualifier:** Usually left empty. It is for comments like "close to" or "aff." if you think the plant may belong to a different but similar species to the one named. Having such a comment on the label will encourage familiar with the group to look at it more closely.
4. **Identified By**: The name of the person who identified the specimen. Add your name if you identified it. If you asked someone else to do so, name that person. Again, write the name as it would appear on a scientific paper, without titles.
5. **Date Identified:** Use the standard date format or enter just the year or month and year.

Hidden fields

6. **ID References**: Often the name of a flora, e.g., *Flora of Pakistan v*. 217 or *Flora of Somali* v. 3. Multiple references can be added, but it is best to cite just the one that will help someone else understand how you interpreted a name.
7. **Identification remarks:** This can be used to explain how a difficult decision was reached, e.g., identified as … rather than …. because of the habitat information (or the anther length, or …). Use this field only if you found it difficult to make a final determination.
8. **Taxon remarks:** This the place to record comments about the *taxon* such as "possibly not distinct from …". It is not used often.

Box 3 Plus – Locality

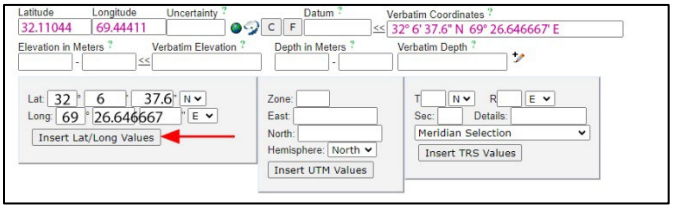
Fields in red show up by default; fields in blue after clicking one of the icons.



1. **Country**: Fields 1-4 refer to administrative levels. Country is level 1. It should autocomplete. If it does not, email me telling me the name you wish to enter. Remember to capitalize the name.
   If the country's administrative units have been entered into OpenHerbarium's geographic table, entering the country will enable autocompletion of the next two levels ("State/Province" and "County"). This helps ensure they are spelled correctly in all records.
2. **State/Province:** This administrative level 2, the one below Country. It is called different things in, and even within, countries. Remember to capitalize the name.
   The name must be entered in full, "Khyber Pakhtunkhwa", not "KP". This is where autocomplete helps: if you type "Khyb" in the box, the program will complete the entry.
3. **County:** Technically, this refers to administrative level 3 but, in Pakistan, collectors treat Districts as the level below admin level 2, ignoring Division, so OpenHerbarium does so too. Like State/Province, the county field autocompletes, but be careful. If two "counties" start off with the same string of letters, be sure to select the correct one for autocompletion. Remember to capitalize the name.
4. **Municipality:** This is administrative level 4. In Pakistan, it may be a Tehsil or Union Council. Be sure to state which it is. Admin level 4 is not part of OpenHerbarium's geographic table. This means, among other things, that autocompletion does not work. I recommend not using this field, instead placing the information into the locality field, field 5. Do not put it in both places. Remember to capitalize the name and the name of the unit, a Tehsil or Union Council.
5. **Locality:** This should be in your field notes. Start with the largest or best known area, and then work down. Remember to start all place names, including names of rivers and mountains, with a capital letter.
6. **Location remarks:** Not needed when entering your own data.
7. **Deactivate Locality Lookup:** By default, Symbiota will look for other entries with the same locality information and give you the option of copying data for the boxes numbered 8 from that entry. Sometimes you are offered several alternatives in which case, you need to make a choice as to which, if any, to accept. If you check the box, it will not look up information.
8. **Geographic coordinate fields:** For more information about these fields see the "Geographic coordinates" document.

   Latitude and **Longitude:** These two fields **require** data in decimal degrees, not degrees minutes and seconds (32° 6' 37.6"), nor degrees and decimal minutes (32° 6.626667"). If you have degrees minutes and seconds or degrees and decimal minutes they must be changed. 32.110448608030495, 69.44410253156938

   Converting data in the wrong format: Click the **F** button. That will bring up the screen shown below.



   Enter the degree-minute-second data into the boxes on the lower left (being sure to put the latitude data in the latitude row and the longitude data in the longitude row). The latitude data in the example was in degrees, minutes, and seconds; the longitude data was in degrees and decimal minutes. Then click the "Insert Lat/Long Values" button. When you do that, the program will calculate the decimal degrees for each value and enter it into the appropriate box above (see pink

entries) AND it will enter the original information into the "Verbatim Coordinates" field. This is the only use of this field when entering your own data.

Uncertainty: The purpose of the field is to enable data users to know how precise the coordinates are. To understand how to use it, take the time to read Zermoglio et al. (2022). It is designed for users working with any data entry software, not just Symbiota, the software used by OpenHerbarium. The diagrams in the appendix are particularly helpful. The "Geographic coordinates" document also provides some information. It was written for users of websites, such as OpenHerbarium and OpenZooMuseum, run by Symbiota software.

The accuracy your GPS device reports is not the same as uncertainty. It is the accuracy the device can provide under ideal conditions and is based on several assumptions, most of which are not accurate, for example, that the air density between it and the satellites sending the data it uses decreases in a uniform manner.

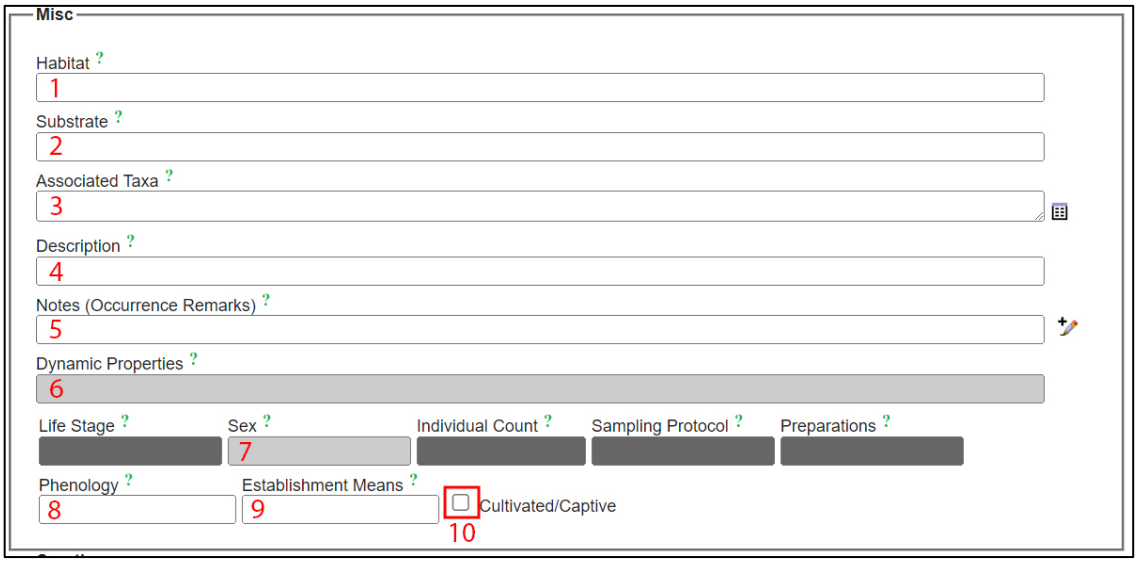
How many decimal places? It is tempting to enter all the decimal places for the latitude and longitude that you obtain from the device or web site you use. Resist that temptation! A difference of 0.0001° means the number is accurate to within about 10m. Few, if any, botanists can afford equipment or devices that are more accurate than that so **do not report more than 4 decimal places**. This will provide a location within 10 m of the precise location, AT BEST.

Datum: The datum for geographic coordinates functions like the units for a length or temperature measurement. In the recent past, different datums were used in different parts of the world, even within different parts of larger countries. They were developed by surveyors walking from one point to another. Today, almost all resources used by collectors use WGS84, the World Geographic Standard of 1984, as their datum. It is based on satellite data and allows smoothly zooming in and out on maps and satellite images over all parts of the world. It is the default setting for GPS units and for all the online resources I am aware of. Unless you know otherwise, enter WGS84 as the datum you used.

9. **Elevation in Meters:** If you have only one elevation measurement for an area, enter it as the lowest elevation. Enter only the number. If you have an elevation in feet, enter it into field 10, "Verbatim elevation".
10. **Verbatim elevation:** Used if your elevation measurement is in feet (or any other unit). You can enter a single measurement, "4500 ft", or a range of measurements such as "4500-5000 ft".
11. **Georeferenced by:** This is the name of the person who determined the geographic coordinates, possibly you. As always, use the person's formal name.
12. **Georeference sources:** State how the geographic coordinates and uncertainty were determined, for example, Cell phone, Google maps, Geolocate, or the publisher of the paper map you use. If you use two sources, for example Google Maps followed by Geolocate, enter "Google Maps, Geolocate".
13. **Georeference remarks**: Provide a short explanation of what the coordinates refer to, For example, "Coordinates are for midpoint of trail, uncertainty is distance from midpoint to the ends, measured along the trail; all collections made within 2 m of trail", or "Collected within 100 m of coordinates" or "Searched over talus slopes in area specified".
14. **Georeference protocol**: It you are following a published set of instructions, such as Zermoglio et al. (2022), cite it. It includes several useful examples and is worth reading
15. **Georeference verification**: Not needed when entering your own data.

Box 4 -Ecological information [Misc]

The information for this box should be relatively easy to identify in your field notes.

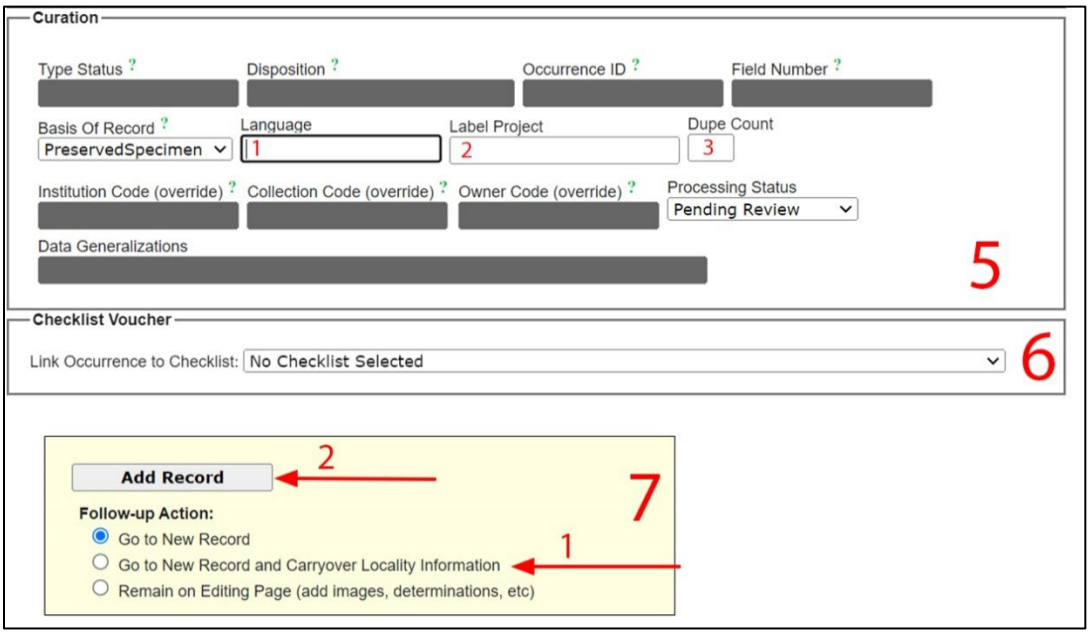


1. **Habitat**: From your field notes. Remember, you may have to add additional information for some specimens.
2. **Substrate**: An important field for bryophytes and fungi (including lichens). Usually not used for vascular plants because soil is assumed but, if you have more detail, you can enter it here *or* add it to the habitat field.
3. **Associated taxa**: Scientific names only. Separate the names with a comma. They will autocomplete if the name is in the database. As before, if a name does not autocomplete, check your entry for spelling errors. It is possible to enter a name not in the database but please tell me about it if you find such a name. I will add it to the database so future users will benefit.
4. **Description**: From your field notes. The features of the plant that cannot be observed on your specimen (e.g., whether it came from a tree or shrub) or may change with drying and age (e.g., flower color).
5. **Notes**: From your field notes. How abundant the species was where you were collecting.
6. **Dynamic properties**. This field is concealed unless you click the icon. It is usually not used for label making. It is for measurements recorded for a specimen.
7. **Sex**: The boxes in this row were added for insect collectors but if you have collected a dioecious species, you may wish to indicate the sex of your specimen.
8. **Phenology:** This refers to the plant's stage of development at the time of collection. If there are lots of reproductive structures, it refers to the condition of most of them at the time of collection. That is why the information should be recorded in your field notes, not based only on your specimen. I shall set up a controlled list later this year. Remember – bryophytes, ferns, and gymnosperms never flower. They may be in reproductive condition or, in the case of ferns, have sporangia or sori.
9. **Establishment means:** Used only if you know the species was deliberately seeded or planted in the area, for example in connection with a restoration project. Do not use for specimens collected being cultivated in a field, orchard, or garden.

10. **A VERY IMPORTANT BOX**: Cultivated plants are those which are deliberately planted *and continue to be taken care of* (watered, trimmed, weeds removed, given the right amount of shade, etc.) long after they were planted.

Box 5: Curation

Most of the fields in this box are not needed when preparing labels. Even the three with numbers in are optional.



1. **Language**: Optional. At present, only languages using the Latin alphabet can be used.
2. **Label project**: Optional. It helps locate the right labels for printing. It can be used to specify that the data refer to a particular project or specimens collected in a particular month.
3. **Dupe count**: Useful. If you collected more than one specimen of a plant, you can enter the number here and the label printing program will print that number of labels.

Box 6: Checklist Voucher

Checklists are lists of species that are known to grow in an area. If there has been a checklist set up in OpenHerbarium for the area where you made your collections, selecting it here will ensure your specimens are suggested as voucher specimens for the checklist. If they are the first collections of the species from the area, they will be suggested additions to the checklist.

There may be more than one checklist that includes the area where you collected. Select the smallest administrative level and the correct taxonomic group. Checklists in OpenHerbarium are set up so that they can add new records from the admin regions they include. For example, the checklist for a province in Pakistan will tell the administrators of the province's checklists of a potential new species and the specimen supporting its addition. It will also add the specimens to the list of potential checklist vouchers. Checklists for larger regions automatically include approved records for smaller regions included them.

Box 7: Add record box

This is the magic box. Do NOT click “add records” until you have decided which of the three options indicated by red arrow 1 to select. IF the next specimen was collected at:

- A different locality, select option 1, the default option.
- The same locality, select option 2, “Go to New Record and Carryover Locality Information”. This will save you from having to retype the locality information.
- Select option 3 *only* if the next specimen was collected in a different locality. The screen will have tabs that allow adding images or references to GenBank or databases. You will NOT be able to copy over the locality information if you select this option.

Click “Add Record” after selecting the appropriate option.

When you have added records for all the specimen labels you wish to print, go to the next document. Label printing – 3.

Mary E. Barkworth
2024-05-09