

Guide for the collection and preservation of botanical samples in field

Most activities related to the study of plants require their identification. The lack of field guides that facilitate this process, added to the high diversity of species in our environment, make it necessary to collect the plants in the field in order to take them to the herbaria and initiate the identification process. Additionally, the botanical collections represent a physical endorsement of the assigned names, which allows a reassessment of a determination when more complete material is available.

Below is a detailed description of the botanical collection process that we use in the Forest Herbarium, which is the result of the experience of the botanists who have worked in the Herbarium, as well as the contributions we have received from the Herbariums COL and HUA.

1. Phase 1: Collection of samples in the field

1.1 Materials

Pruning shears; Branch-branches magnifying glass; Binoculars; Individual plastic collection bags (approx 30 x 40 cm); Field notebook; Sphere or pencil; Plastic fiber sack; GPS



1.2. Recommendations for taking the sample

The botanical sample is the terminal portion of a branch of approximately 30-35cm in length. Make a clean cut using the scissors and collect a branch with several leaves. In case the leaves are composed and occupy a lot of space, leave one or a few leaves, and cut the leaflets leaving the bases. If the leaves are very large, such as those of the yarumos, leave only one leaf on the branch, and taking into account the symmetry of the leaf, cut a portion leaving the base and apex complete.



In case the sample is sterile (without flowers or fruits), normally collected in vegetation surveys, no more than two duplicates should be collected. The duplicates are the samples taken from the same individual. On the contrary, if it is a fertile collection (with flowers and/or fruits) it is convenient to collect four duplicates. If they collect small herbs, in which the sample represents the complete individual, and as a consequence there are no duplicates, it is preferable to collect several different collection numbers, which are known as unicados. Never collect samples of different individuals under the same collection number, even if they belong to the same species.

When collecting tree samples in the forest, where the cups are intertwined, you must be sure that the sample corresponds to the desired tree and not to a vine, or to a neighboring tree. The use of binoculars is highly desirable to avoid this type of errors. The binoculars allow you to guide who drops the sample, in addition to having the certainty that the sample lowered corresponds to the tree in question.



1.3. Information you should take in the field notebook

It is important that your field notebook is properly marked with your data so that in case of loss it can be recovered.



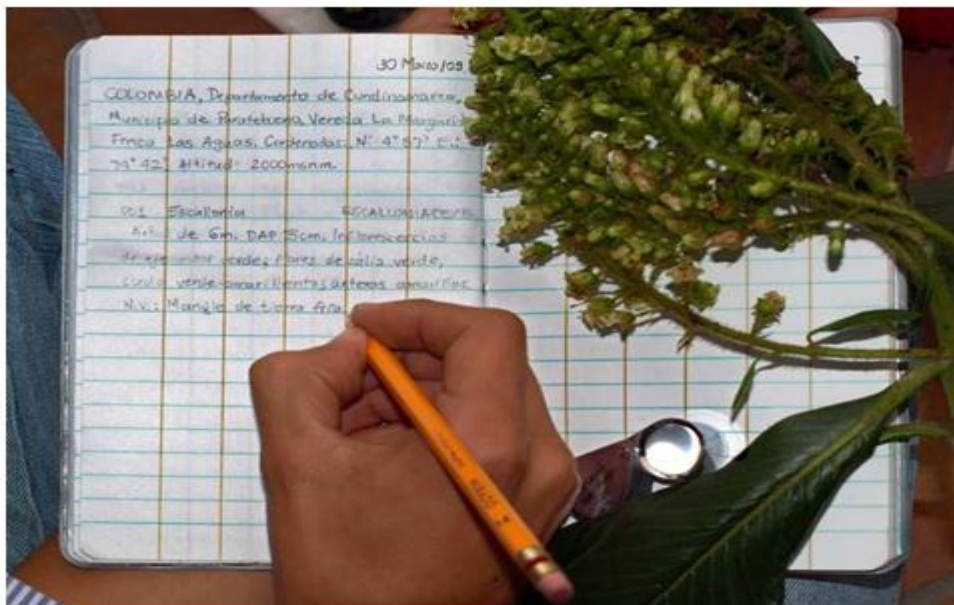
Initially, the data corresponding to the location in which the collection is being made should be recorded, always trying to be as specific as possible, and describing the place from the general to the particular. With GPS help take the coordinates and the altitude in m above sea level. It is assumed that the collector is the owner of the field book, so he must write down the names of the team accompanying the collection, as well as the date. When any of these data changes, the new one is recorded, otherwise it is assumed that the last information entered is valid.

Next, the collection number of the collector's consecutive number is written down. The first collection you make of a plant will be your number one, the second will be number two, and so on. Keep in mind that this number is always ascending and should never be repeated. If, by mistake, two or more collections have the same number, differentiate them with letters (e.g. 121, 121a, 121b, etc.).

In front of the collection number write down the scientific name of the species and the botanical family. If you do not know this information, leave the line blank to be added later.

In the next line write the field notes. These correspond to the morphological features that are lost when the sample is taken. Start with the habit, indicating if it is about a tree, bush, grass or liana. Indicate the approximate height, and in the case of trees, the DAP (diameter at breast height, that is, 1.3 m from the base). You can make your own diametric tape using a seam meter where you cover it with masking tape on one side and divide it into successive units every 3.14 cm (n). Each unit is assigned a number starting with one, then two and so on, so that when evaluating perimeter, read the diameter. If you do not have a diametric tape, take the circumference data, and then convert it to a diameter. Then indicate all the traits that are lost in the field, such as the presence of exudate, color of the exudate, smell and colors of all the structures of the flowers and/or fruits. Always start with the vegetative traits and continue with the reproductive ones. In the case of the description of the colors of the flowers, start from the outside inwards (first color of the calyx, then the corolla, and then androecium and gynoecium).

With the help of the field guide, indicate the common name by which the plant is known in the area, and the uses, if any. You can also write data related to possible pollinators and/or dispersers of the fruits and seeds that the guide knows.



1.4. Packing samples in the field

Take all the duplicates of the collection and put them inside a plastic bag of approximately 30 x 40 cm. Before or after putting the samples, insert a piece of paper inside the bag indicating the collection number of the sample. If several collectors are collecting on the same day, also indicate the initials of the collector (eg AA 121). Do not knot the bag, this will increase the temperature and allow the sample to become dehydrated. Place the bag inside a nylon canvas, in which you will put all the samples that you collect during the day and that will allow you to transport them easily.



2. Phase 2: Pressing and alcoholizing the samples in the camp

2.2. Materials

News paper; Alcohol; Transparent plastic bags, thick gauge (>4), ca. 50 x 70m; Field notebook; Pencil or spherical; Crayon; Marker; Pruning shears; Nylon rope



After having finished the work day in the field, you should press and alcoholize the botanical samples in the shortest possible time to guarantee their quality. The first step is to take an individual collection bag and take out the botanical samples, along with the piece of paper that includes the collection number. At that moment, the number of duplicates is counted and this information is recorded in the field book below the collection number. So many periodic papers (a simple sheet of paper of 112 x 31 cm, folded in half) are taken as duplicates, and all are marked with the help of the wax pencil, indicating the initials of the collector and the collection number. These data are written in the central and marginal portion of all the papers.

Afterwards, a specimen is placed on each periodic paper, trying to spread the leaves in such a way that they are not piled up and trying to make some of them remain on the beam and others on the underside. This process is repeated with all the duplicates, which they are placed on top of each other. The assembly of all the specimens collected is then carried out, assembling blocks of material well aligned, in which no plant material protrudes.



With the help of 3 double newspapers, a T-shaped arrangement is assembled (as the photo shows), where an approximate amount of maximum 30 cm high is placed, oriented in such a way that the shortest length is in the opening of the package. The papers are closed, enough pressure is applied to the package and it is tied in a cross, just as a box is tied.





Each package is placed inside a bag of alcohol. If the packages are small, they can fit two packages per bag. Packages must have the exposed portion at the top. Then a solution of half alcohol and half water is applied very carefully, taking into account that the material is totally impregnated by the solution. Subsequently the air is removed from the bag and closed in such a way that the solution does not evaporate.



The bags with the alcoholized packages are put in nylon sacks for transport. It is convenient to mark the sacks with the following sign: Botanical Material Alcoholised Without Commercial Value. In case of loss send to: Name, address, telephone and city.



In these conditions the plant material can be conserved up to three months, before arriving at a herbarium where it is subjected to an oven drying process and where it will be processed to be included in the collection.

3. Phase3: label development

The labels must have an approximate size of 14 x 9cm., And must be elaborated in machine or printer, with the following information:

- a. **Name of the Herbarium:** It refers to the Herbarium where the collector is linked (it is suggested to use the heading HERBARIO FORESTAL UDBC to the students of the District University). Normally students or researchers use the name of the herbarium to which they are associated.
- b. **Name of the family:** to which the collected plant belongs, if known.
- c. **Name of the species:** Scientific name of the plant, if known. Use italics or underlining in the name of the binomial (gender and species). The names of the authors of the species and the particles cf. or aff they are written in normal text format (example: *Retiniphyllum* cf. *truncatum* Müell.Arg.).
- d. **Person who determined the sample:** Initial of the name and surname of the determiner (who gives his opinion on the identity of the species), followed by the date of the determination; month (first three initials of each month) and year.
- e. **Location:** It is recommended to use the following sequence: Country (in capital letters), department, municipality, town or village, estate or farm and any other geographic data of interest that allows you to return to approximately the same location. If possible with geographic coordinates. If it is a vegetation survey, here you can indicate the plot No., transect, etc.
- f. **Altitude:** Height in meters above sea level.
- g. **Field characters:** Here are related the characteristics of the plant that are lost in the field, such as:
 - i. Habit (grass, shrub, tree, vine, etc.)
 - ii. Approximate size (high in meters (m) or centimeters (cm).), DAP (diameter at breast height) in the case of trees.
 - iii. Presence of exudates (latex, resins or gums), if any.
 - iv. Characteristic odors, if any.
 - v. Color of the parts of the flowers, fruits and/or seeds.
 - vi. Ecological information (abundant, scarce, rare, on the edge of a pipe, inside the forest, etc.).
 - vii. Use in the region, if known.
- h. **Common name:** Used in the collection site, if known. If it is a name in language, indicate ethnicity.
- i. **Name and number of the collector:** Assign each individual to collect a consecutive collection number, starting from one (1) to N. The important thing is that the number never repeats and is ascending (each time you go to collect have in tells his last collection number, to continue with his series). Keep in mind that duplicates have the same collection number, since they were taken from the same individual.
- j. **Collection equipment:** Use the initial of the name and surname of the people who accompanied you in the collection. If it is a very large number of people, briefly point out the collection team (for example: E. Steel & students of Dendrologia 2001 - II).
- k. **Collection date:** Use the format day, month (first three initials of each month) and year: 10 Feb 2006.

1. Institution, program or project that financed the collection: Name of the thesis or research project and the entity that funded it.

Faculty of the Environment and Natural Resources

- a) Forest Herbarium (UDBC)
- b) RUBIACEAE
- c) *Faramea capillipes* Müell.Arg.
- d) Det. : G. Mahecha, Jun-2006
- e) Colombia (Valle del Cauca): Mpio. of the Darién, high Calima River.
- f) Alt. 1300 ms.n.m.
- g) 3 m small tree, greenish bark, leaves with a somewhat bright beam. Flowers with blue-white petals. Species esciófita, very abundant, common in all the forests. Hard, glassy wood, with no known uses.
- h) N.V: "Corpus."
- i) G. Mahecha 2496
- j) E. Steel & dendrology students.
- k) May 14, 1999 With:
- l) Floristic Characterization of Alto Calima

