

Herbarium Supplies and Equipment and Sources

Based on those used at The New York Botanical Garden

Specimen Preparation Supplies

At NYBG, we keep the majority of our macrofungus specimens boxes, although we sometimes use packets for these, and always use packets for bryophytes and lichens. There are a few macrofungus collections (usually hypogeous or truffle-like fungi) that preserved in formalin and stored in glass jars. We do not recommend liquid preservation if it can be avoided – it is messy, expensive and a potential health/fire risk.

Packets. Some fungal specimens, e.g., microfungi, small but non-fragile macrofungi, can be stored in paper packets. Our packet paper, which is Strathmore Pure Cotton 100% cotton fiber acid free 24lb. writing paper, comes in large sheets which we send to a local printer who cuts it to the packet size specified (we send them a sample each time), fold it for us, so that the top fold comes down to about a half inch from the bottom, and then scores the sides, which we fold when we put the specimen inside. The most basic size is what we call a #4 [dimensions]. We can fit 8 packets on a sheet of mounting paper. Some institutions store packets separately by lining them up in boxes (cubbyhole boxes are ideal, but shoeboxes work well).

Specimen Boxes. We use boxes which we order from a local supplier, American Package Co. We have set sizes that are multiples of each other, so that they fit in our cubby boxes (like those Russian nesting dolls).

Mounting Paper. We attach our packets to herbarium mounting sheets using double-sided tape. We purchase mounting paper is from St. Louis Paper Co. It is 100% cotton, .013 caliper in thickness, and acid free. Suitable mounting paper in small supplies can be purchased from Herbarium Supply (see below). To save space, we try to mount as many packets on a sheet as possible, but we do mount only one species per sheet, and we group specimens on the sheet by geography, so, for example, all of one state goes on one sheet.

Labels. For labels and annotations, acid-free stock should be used. One option is International Paper Hammermill Great white copy paper, which is acid free (although you might want to retest each new batch using an acid detection pen (see suppliers below). However, we prefer using Royal 25% cotton paper. Paper containing cotton is stronger than just cellulose. For printing on label stock, make certain your ink is waterproof. We use laser jet printers because ink jet printers tend not to use waterproof ink, but this is not hard to test (better than learning the hard way).

Glue. We use basic white glue for attaching labels and annotations to packets, using a thin strip along the top of the label, in case the specimen needs to be repacketed later on (rarely, but more often with lichens, packets get torn when sent out on loan). Labels to boxes are glued more completely. Most Elmer's is fine. The chemical name for water soluble glue is polyvinyl acetate, PVA adhesive. Some curators also use U-HU glue sticks to attach annotation labels.

Acid testing pens. These can be used to test the acid level of paper or boxes that is going to come in contact with specimens. Highly acid storage materials may alter the chemistry of the specimen, and may degrade faster. Often acid free paper is not or only slightly more expensive than non-archival materials, so it is worth both testing and investing in acid free paper whenever possible. This website: <http://cool.conservation-us.org/byorg/abbey/ap/ap03/ap03-5/ap03-508.html> gives a detailed comparison of acid testing pens. Note that the cheapest model tested (the pH Testing Pen from Light Impressions @ \$2.95) is also one of the cheapest.

Insect traps: These can be placed with specimens in storage to easily monitor insect activity. There are a number of different types. These can be purchased from Herbarium Supply Co. or Insects, Ltd. (see suppliers below).

Humidity test strips: Can be used to test the humidity in the specimen cabinets – relevant for storage in non-traditional herbarium cabinets. High humidity can lead to the development of mold on specimens. We are not aware of any information on the exact humidity levels that are acceptable for specimens, but certainly the lower the better. At NYBG, we set the relative humidity at 50%. These are available from Herbarium Supply Co.

Specimen Storage Supplies

Cubbyhole boxes. Our older cubby boxes had really nice lids, but now we use a cardboard box that comes flat, and is pre-scored to fold into a box with a finger hole. These boxes come from Crown Products Company in Yonkers NY. They are item no. SP004386, 175 lb. test plain tray, 17 3/16“ x 12 1/8” x 5 1/4”. Not having lids is not a problem here as all specimens are stored in herbarium cabinets, and the fungi, which are especially vulnerable to bugs, are kept in a refrigerated room. Although our older boxes were not, our new boxes are acid free, but expensive (custom sizes), even though we order 1000 of a size at a time. From the DUKE Bryophyte department: We order the cubby boxes that fill the cabinet space and that we can pull out like a drawer via finger holes. We get them from Cap Offut at Herbarium Supply (they have a website).

Arranging specimens within cubbyhole boxes: Space will dictate how you do this, but if possible, we recommend arranging your specimens alphabetically by family or genus, and then alphabetically by species. If you have more than one box full of a particular species, consider grouping your collections by geography. Often one wants to locate just those locations from a particular area, so segregating them by state, region. This organization may reduce the time it takes to look through a cubbyhole box for a particular specimen.

Equipment

Dryer: Many different types of food dehydrators have been used as specimen dryers. A current product that fits the need for mushroom drying is the Nesco Garden Master Pro: <http://www.nesco.com/products/Dehydrators/Dehydrators/FD-1010/>. Features to look for are a fan that forces the air through the collections, and a thermostat so that you can regulate the temperature.

Freezer: Freezing is the safest means of pest control for herbarium beetles. Any freezer will work, assuming it reaches a temperature of -20°C . A chest-type freezer is ideal. Once filled with specimens, the freezer should not be opened for 2—5 days. The larger the specimens, the longer the freezing regimen

Herbarium Cabinets: Herbarium cabinets represent an investment in terms of funds and space. A cabinet with 26 cubbyholes, that will hold 500-1500 specimens, depending on their size, will cost at least \$1200, not including shipping. There are less expensive storage options, but what makes the herbarium cabinet ideal is that the specimens are protected from water and pests. A metal storage cabinet with adjustable shelves can substitute, and is much cheaper (maybe \$200) but will require constant management for pests and humidity.

Sources

(Note that there are many other possible sources for these products in your area).

American Package Co. No website. 226 FRANKLIN ST, Brooklyn, New York 11222 USA. Phone: (718) 389-4444. Supplier of specimen boxes

Crown Products Co. (<http://www.crownproducts.com/>). Supplier to NYBG for cubbyhole boxes. Note that Herbarium Supply Co. also sells these.

Herbarium Supply Co. (<http://herbariumsupply.com/>). Source for cubbyhole boxes, fieldbooks, 100% rag and acid-free paper; acid-free annotation labels and specimen labels; 11X17" mounting paper, specimen folders, humidity indicators, insect traps, herbarium cabinets

Insects, Ltd. <http://store.insectslimited.com/>. At NYBG we use the Serrico traps for *Lasioderma serricornis*, the so-called cigarette beetle.

Light Impressions (<http://www.lightimpressionsdirect.com/>). A source for acid testing pens and other archival supplies

Nesco food dehydrators: <http://www.nesco.com/products/Dehydrators/Dehydrators/FD-1010/>.

St. Louis Paper Co. <http://www.stlpaper.com/>. Source for specimen mounting paper. For small supplies, Herbarium Supply Co. is a better option, because the minimum order size for St. Louis Paper Co. is large.

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