



# A.C. Moore Herbarium

## Collection Management Policies



## **This document outlines the collection management policies of the A.C. Moore Herbarium.**

In keeping with the Herbarium's Strategic Plan ([https://herbarium.org/files/ACM\\_Herbarium\\_Strategic\\_Plan.pdf](https://herbarium.org/files/ACM_Herbarium_Strategic_Plan.pdf)), the Collections Management Policies presented herein will detail how the staff and daily operations fulfill its Mission and adhere to our Core Values of Preservation, Accessibility, Education, and Research.

Topics covered include acquisition of plant vouchers, deaccessioning of specimens, loans between organizations, general herbarium operations and management, additional resources, accessibility of the herbarium to researchers, students, and the public, and contact information.

### Introduction

The A.C. Moore Herbarium (USCH) at the University of South Carolina was established in 1907 by Andrew Charles Moore and is the largest herbarium in the state. The herbarium has formed the nucleus for much of the botanical research that has taken place at USC. During the 1950s and 1960s, substantial additions to the collection were made by Wade T. Batson, his colleagues, and his students. Important sets of collections have been made by Richard Porcher, John Logue, John Fairey, John Barry, Janice Coffee, Michael Dennis, Douglas Rayner, John Clonts, Cynthia Aulbach, John Nelson, Albert Pittman, Douglas Kennemore, and others. The herbarium also houses several special collections which are filed separately: the A.C. Moore collection, the H.W. Ravenel Collection of Converse College, the Congaree National Park collection (NPS), the Fort Sumter and Fort Moultrie collection (NPS), and a collection of type specimens.

### Purpose

The purpose of the A.C. Moore Herbarium (USCH) is to document plants and plant communities that occur and have occurred throughout the recent past, and to use the collection as an instrument for taxonomic studies and interpreting past environmental conditions and ecological processes. In support of these functions, the collections and their associated data must be made available for research and study, and to promote community engagement through education and outreach.

The collections number over 133,000 specimens representing all plant groups, including fungi, from around the world. The southeastern United States is particularly well represented, but other geographic strengths include Europe, the Middle East, Central and South America, and Southeast Asia.

The Type collection (vascular plants only) includes over 200 specimens which, exclusive of Paratypes, were digitized as part of the JSTOR Global Plants Initiative and can be accessed through the <https://plants.jstor.org/> website in addition to our primary collections data portals (see Table 1).

Kinds of collections (different plant groups), include primarily Vascular Plants, and to a lesser degree Algae, Bryophytes, Fungi, and Lichens.

Principal goals of the collection include:

1. Preserving botanical specimens and promoting their use in support of teaching, research, and community engagement.
2. Increasing the collections in a responsible manner with a focus on augmenting holdings of plant groups and/or specimens from geographic areas that are less-well represented in the collection.
3. Developing and maintaining an active inventory of the collections and ensuring associated data is accessible.
4. Enabling access to the physical collections for on-site visiting researchers and loans to recognized institutions.

#### Acquisitions

Specimens are considered acceptable for accession given they meet the following criteria:

1. The nature of specimens must be consistent with the goals of the herbarium and be useful for teaching, research, and/or community engagement.
2. Specimens must not require care that exceeds the herbarium's ability.
3. Specimens must be identified or identifiable.
4. Any individual collection must have sufficient material present for future analysis/research.
5. Specimen labels should include complete collection information (if permission was required to collect; this should be clearly stated on the label along with any associated permit numbers). Herbarium staff review potential accessions to ensure they meet acceptable provenance and were legally obtained.
6. Specimens approved for accession must be frozen and dried for a minimum of 3 days to destroy any possible insects, bacteria, mold, etc. Adjustments to the time specimens are frozen or dried are made only under the curator's discretion (i.e., shortened drying time for bryophytes to preserve plant physiology required for identification).
7. Once accessioned, specimens become the property of USCH and thereby the state of SC. Under special circumstances, exceptions may be granted as in the case of long term / semi-permanent loans. Exceptions include:
  - a. The Henry William Ravenel Collection of Converse College.
  - b. Federal National Park Service Collections (specifically Congaree National Park and Fort Sumter and Fort Moultrie National Historical Park).

## Collection Management

The collections of USCH are actively maintained in room 208 of the Coker Life Science building on the University of South Carolina's Columbia Campus.

Once specimens are accessioned, they are queued for digitization (digital image capture + database record entry).

1. Images are uploaded via Globus to reliable storage facilities at Arizona State University (through a long-standing cooperative agreement).
2. Specimen data is entered into the corresponding taxon portals for online access (see Table 1).

USCH maintains data standards for digitization as defined in our "South Carolina Herbaria Data Entry Standards" pdf:

[https://acmooreherbarium.github.io/digitarium/SC\\_Herbaria\\_Data\\_Standards\\_Workshop\\_Printer\\_Friendly\\_2023-08-31.pdf](https://acmooreherbarium.github.io/digitarium/SC_Herbaria_Data_Standards_Workshop_Printer_Friendly_2023-08-31.pdf)

- a. If the provided label data appears inaccurate or inconsistent for the specimen, this will be noted within the occurrence metadata, typically within brackets, in accordance with our data standards. If possible, the original collector will also be asked to review the data for clarification.
  - b. If human errors are found in the data entry process, they will be corrected by a staff member to reflect USCH's data standards.
3. Once digitization is complete, specimens are sorted taxonomically and intercalated into the main collection.
  4. Collections are filed in 84" tall single-door, fire-resistant steel herbarium cabinets.
  5. An active filing program ensures that specimens are routinely inspected for any signs of pests or deterioration.

## Deaccessioning

On rare occasions specimens that are property of USCH may be considered for deaccessioning if they meet one of the following criteria:

1. Exact duplicates – more than one specimen with matching label information. This does not apply to parts of large specimens mounted on multiple sheets.
2. Overrepresentation from the same geographic location – multiple collections of the same species from the same county at a similar time of year and the specimen folder is 'bloated' or cabinet space is limited.

Any specimen deemed worthy of deaccession but of good quality will be queued for exchange with a recognized institution.

## Loans

The collections of the A. C. Moore Herbarium serve as an important research tool for scientists around the world. We eagerly and regularly seek annotations from qualified colleagues and frequently loan material to partner institutions for review, confirmation of identification, and annotation. An active program involving loans, gifts, and exchange of specimens improves the quality of the collection by ensuring that all specimens are correctly identified by botanical specialists. Additionally, requesting institutions benefit by having the use of a more comprehensive data set. Most collection information is available online through taxon-specific portals and data aggregators such as GBIF and researchers are encouraged to consult these resources prior to making a loan request. If a particularly high number of specimens must be consulted, researchers may find it more advantageous to visit the herbarium in person.

1. Outgoing (requested by an institution other than USCH)
  - a. Loans are made in response to a written (paper or email) request from an individual associated with an established and recognized botanical institution (typically those registered with Index Herbariorum).
  - b. While the request is made by a representative of a recognized institution, the loan agreement is made between institutions (not their representatives).
  - c. Loans may be refused to any institution or representative who has demonstrated a lack of regard for the invaluable nature of herbarium specimens.
  - d. Once approved, a member of the collections management staff will select and prepare the specimens for shipment.
  - e. Each parcel of loaned specimens is carefully packed by collections management staff and includes a copy of the Loan Agreement (transaction number, date, general description and count of specimens) and a specimen manifest detailing scientific name, accession number, and collector number for each specimen included.
  - f. For most domestic shipments with the United States specimens are shipped via USPS Library Rate. Other couriers such as FedEx, UPS, or DHL may be used when feasible or required.
  - g. A paper copy of the Loan Agreement and manifest is retained for the herbarium's records.
  - h. Loaned specimen records are flagged as 'On Loan' and the loan details are entered in the corresponding collections data portal.
  - i. Loans are typically granted for a period of one year from the date of receipt. Extensions may be granted but require a written request from a representative of the recipient institution which is entrusted to the stewardship of the loaned specimens.
  - j. It is expected that borrowing institutions will pay the costs of return shipment.

2. Destructive sampling
  - a. Requests for destructive sampling must be approved by the curator.
  - b. Plant parts must be taken from the specimen's fragment packet before attempting to remove material affixed to the sheet.
  - c. An annotation label for the specimen sheet regarding the sampling purpose is required upon return and should include the sampling date, name of the individual who sampled the specimen, project name, and DOI's for any resulting or proposed publication or published genetic sequence data.
3. Incoming (requested by USCH from another institution)
  - a. USCH will not take ownership of loaned materials.
  - b. USCH will act as the custodian of specimens requested and received from other institutions for research by USCH staff and research associates.
  - c. Loan requests to other institutions are initiated by USCH collections management staff on USCH letterhead on behalf of staff and/or research associates.
  - d. Upon receipt of requested loans, receipt acknowledgement is provided to the loaning institution and specimens are stored separately from accessioned collections in a 'working' cabinet (all shipping containers and packing materials are retained for return shipment).
  - e. Staff and research associates who initiate loan requests are encouraged to complete their examination of loaned material within one year of receipt and to supply appropriate annotation labels so that materials may be returned in a timely manner with documentation of use.
  - f. Paper copies of all loan transaction documents are maintained for the herbarium's records.

#### Gifts and Exchange Programs

1. Gifts of unmounted duplicate material are frequently sent to recognized institutions. Some gifts may contain material from particular taxonomic groups and sent to recognized experts in exchange for their determinations (i.e. 'gift for det.')
2. Formal exchange programs are designed to augment the collection where taxonomic or geographic representation is lacking. An exchange is similar to a gift of specimens with the addition of a formal agreement between USCH and the exchange partner institution. The agreement details the nature of specimens to be exchanged and the agreed upon quantity. Once the quantity is fulfilled, the exchange is terminated but can be renewed at the discretion of the curator and the exchange partner.

### Care and Control of Collections

1. Fire prevention: The collections are maintained in a non-sprinklered building, but meet South Carolina State Fire Marshall required fire safety standards for a non-sprinklered, research storage facility with 18” clearance below the ceiling, fire extinguishers, and steel, closed-door, fire-resistant cabinets. No open flames or smoking is allowed.
2. Climate control: The Coker Life Sciences building which houses the herbarium does not have advanced climate controls. However, HVAC settings are generally set to as low a temperature (between 50°F-60°F) as possible which also lowers relative humidity. Herbarium cabinet doors are fitted with a snug neoprene seal situated in a U-shaped channel which minimizes airflow between specimens and outside air.
3. Pest control
  - a. Collections management staff engage in pest surveillance during regular filing activities.
  - b. The U-shaped channel and neoprene door seal on herbarium cabinets prevents most pests from entering. However, in the rare event that active pest damage is evident, collections management staff may remove and freeze entire folders that appear to be affected. Concurrently, open glass containers of naphthalene (mothballs) may be added to affected cabinets until pest activity appears to cease. Other alternative treatment for smaller lots of specimens include fumigation in a ‘death chamber’ – a large, sealed cylinder of naphthalene. Periodic application of diatomaceous earth perimeter zones is used to deter any infiltration into the main collection space.

### Additional Resources

Additional equipment available in adjacent rooms includes a classroom, a wet lab, a fume hood for drying at air-temperature, two plant specimen drying ovens, a -80°C freezer, specimen digitization equipment, and a botanical library.

### Herbarium Access

The herbarium is open Monday through Friday, from 9 a.m. – 5 p.m., and is located in the Coker Life Sciences building on the University of South Carolina’s Columbia campus. Our full address is:

A.C. Moore Herbarium  
Department of Biological Sciences  
University of South Carolina  
Coker Life Sciences  
715 Sumter Street  
Columbia, SC 29208

1. The herbarium can be found on the second floor, rooms 204-208.
  - a. Main collection space: 208
  - b. ‘Annex’ – mounting and specimen preparation: 206
  - c. ‘Digitalium’ – specimen digitization: 204
2. Visiting researchers are encouraged to call or email ahead of time and notify herbarium staff of their research topics and any requests for assistance.
  - a. All visitors are asked to use our sign-in sheet and include their name, institutional affiliation or organization (if applicable), and email or phone number.
3. Group tours are available by appointment.
4. Botany Walks on USC’s “Horseshoe” campus are available to the public free of charge on the third Wednesday of each month from 11 a.m. – 12 p.m.
5. Free plant identification is available on request for physical or digital specimens.

Table 1: List of Collections Data Portals with URLs to USCH datasets.

Plant Group/Type	Online dataset access
USCH all collections (GBIF)	<a href="https://www.gbif.org/publisher/3124bdd8-b38c-46f0-b354-5e1d2c2cd9d2">https://www.gbif.org/publisher/3124bdd8-b38c-46f0-b354-5e1d2c2cd9d2</a>
Types	<a href="https://plants.jstor.org/search?Query=repositoryCode%3A+USCH">https://plants.jstor.org/search?Query=repositoryCode%3A+USCH</a>
Vascular	<a href="https://serneportal.org/portal/collections/misc/collprofiles.php?collid=147">https://serneportal.org/portal/collections/misc/collprofiles.php?collid=147</a>
Algae	<a href="https://macroalgae.org/portal/collections/misc/collprofiles.php?collid=40">https://macroalgae.org/portal/collections/misc/collprofiles.php?collid=40</a>
Bryophyte	<a href="https://bryophyteportal.org/portal/collections/misc/collprofiles.php?collid=142">https://bryophyteportal.org/portal/collections/misc/collprofiles.php?collid=142</a>
Lichen	<a href="https://lichenportal.org/portal/collections/misc/collprofiles.php?collid=105">https://lichenportal.org/portal/collections/misc/collprofiles.php?collid=105</a>
Fungi	<a href="https://www.mycportal.org/portal/collections/misc/collprofiles.php?collid=69">https://www.mycportal.org/portal/collections/misc/collprofiles.php?collid=69</a>

### Data Requests

Non-sensitive data can be easily downloaded online for free through our portals as a public viewer. A detailed guide is available here, courtesy of Symbiota:

<https://biokic.github.io/symbiota-docs/user/download/>

Redacted data requests can be made through Symbiota using their online form:

[https://docs.google.com/forms/d/e/1FAIpQLSfIGOzLMq2-d8bmrXj3XDU\\_rrgA\\_NhTce1VHcKEIKHvsQZxtw/viewform](https://docs.google.com/forms/d/e/1FAIpQLSfIGOzLMq2-d8bmrXj3XDU_rrgA_NhTce1VHcKEIKHvsQZxtw/viewform)

Requests for access to sensitive species data from USCH will not be considered without:

1. Submission of the Symbiota Redacted Data Request form.
2. Verifiable contact information.
3. Explanation of how the data will be used.
4. A valid research need that necessitates access to the data.
5. All requests for sensitive species data may be subject to consultation with appropriate State or Federal agencies before final approval.



USCH Contact Information

General email: [herbarium@mailbox.sc.edu](mailto:herbarium@mailbox.sc.edu)

Curator email: [hbrown@mailbox.sc.edu](mailto:hbrown@mailbox.sc.edu)

Assistant Curator email: [averyob@mailbox.sc.edu](mailto:averyob@mailbox.sc.edu)

Phone: 803.777.8175

Website: <https://herbarium.org/>