

Herbarium Life: Annotations & Cross-Referencing

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SPNHC 2025 - Sustainable Futures: Challenges and Opportunities for Modern Collections
Back to Basics: Museum Techniques Skillshare



Harvard University Herbaria

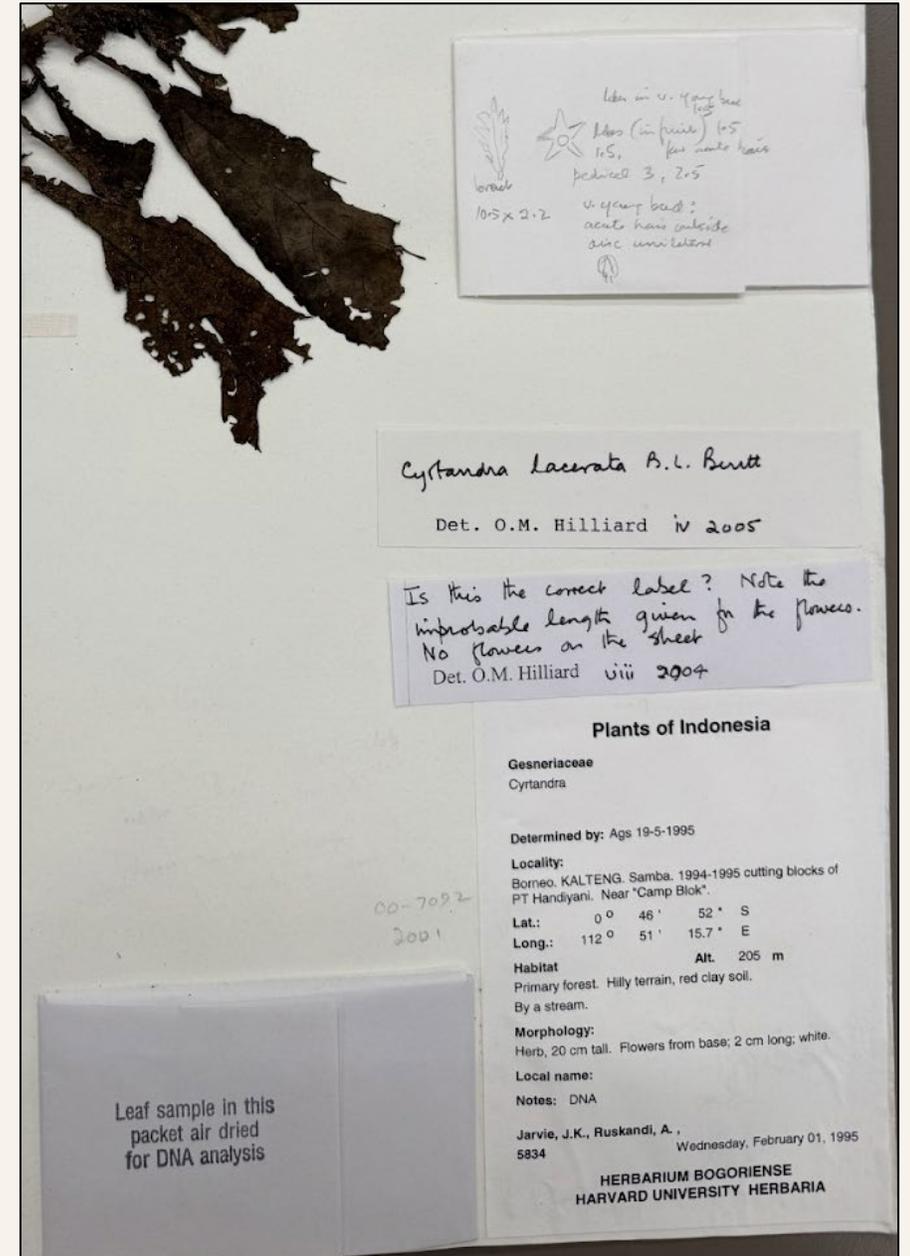
(Unofficial acronym: HUH)

- Six different herbaria: A, AMES, GH, ECON, FH, and NEBC
- About 5.5 million specimens in total, ~4 million are vascular plants
- Robust collections from mid-1800s
- Strong holdings from Americas and Asia
- Many ancillary collections
- Vascular plants are curated in significantly different ways than non-vascular cryptogams



Annotations

Annotations contain information about a particular specimen and are added after the original collector label. Annotations can include taxon determinations, type statuses, chemical and molecular analyses, morphological details, and other information. Annotations can originate locally or through virtual platforms. Best practices encourage updating this information for both the physical specimen and its digital record.



Where Do Annotations Come From?

Direct Specimen Use

- Researchers examine specimens and provide information about identifications, type status, morphology, new preparations, or destructive sampling



Duplicate Data & Publications

- Staff locate/receive information about a duplicate specimen in another herbarium and add that information to a local specimen
- Staff find information about a specimen in their herbarium from a publication/database and add the relevant information to the specimen

Complete Annotations

Type Verifications

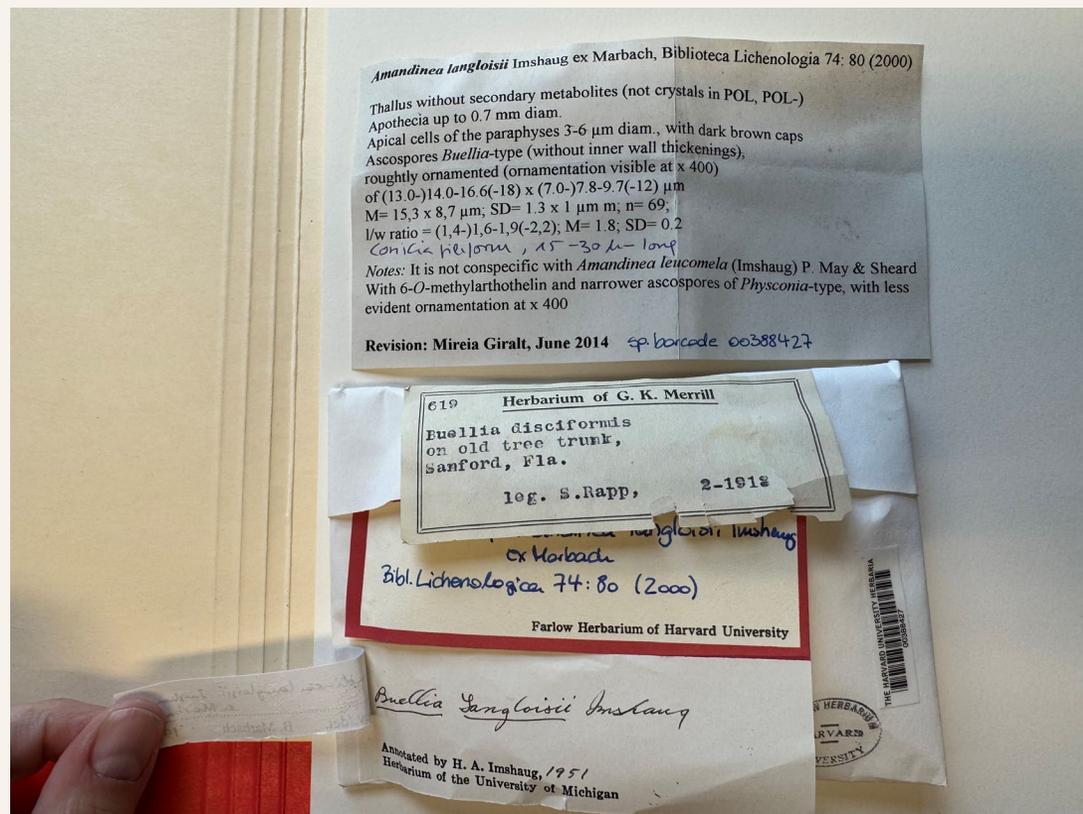
- Basionym with authors and original publication details
- Current taxon determination (optional) with authorship
- Name of verifier, affiliated institution, and date
- For Lectotypes, Neotypes, and Epitypes: Name of designator and publication details for designation

General Annotations

- Any amount of relevant information is acceptable
- Taxon name preferably includes authorship
- Label will ideally include name of researcher, institution, and date

ISOLECTOTYPE Lectotype: (P)
Solanum viridipes var. *intermedium* Hassler
Repert. Spec. Nov. Regni Veg., 9: 118. 1911
Lectotypified by Marisa Matesevach
Fl. Argent. Fl. Vasc., 13: 290. 1013
D. Hanrahan February 2018
HARVARD UNIVERSITY HERBARIA

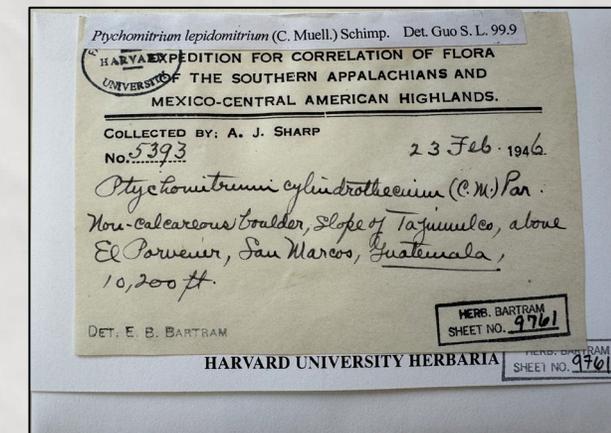
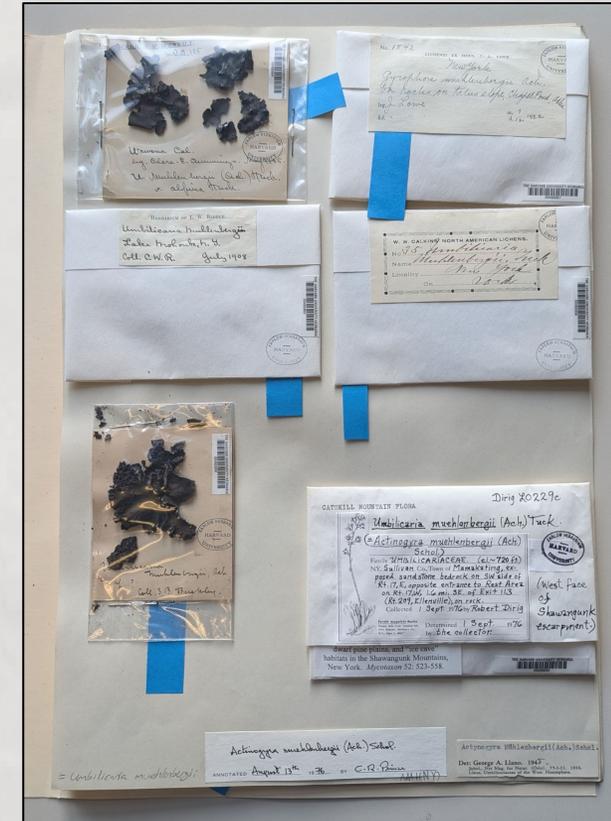
Affixing to Packets and Boxes



- Attach to outside of container for easier discovery
- Layer annotations with most recent on top (excluding types)
- Apply glue only to one short edge to make a "flap"
- If annotation is too large for container, it can be folded and placed inside

Curation Crimes: Things to Avoid

- Glueing over the original label
- One annotation that applies to multiple specimens on a sheet
- Covering botanical material with a glued down annotation slip
- Permanently obscuring information written on the sheet





Specimen Discoverability & Proper Filing

Many herbaria refile specimens under new determinations or shift collections based on taxonomic revisions. Almost no herbarium is completely up to date with revisions, as new taxonomic works are regularly published. So, how do you make sure you can find the needed specimens? Cross-referencing!

Cross-References: Collection Maps

Cross-references (CRs) are notes to help locate where specimens are filed, should be filed, or where ancillary collections are found

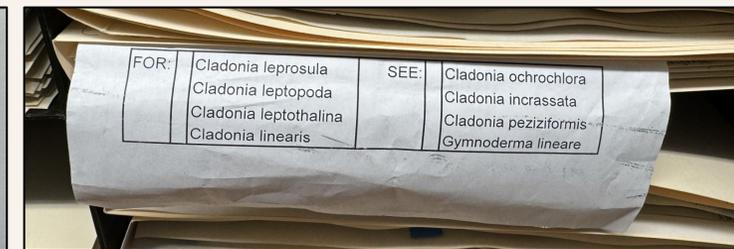
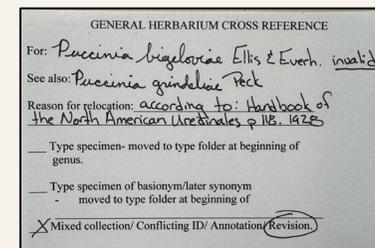
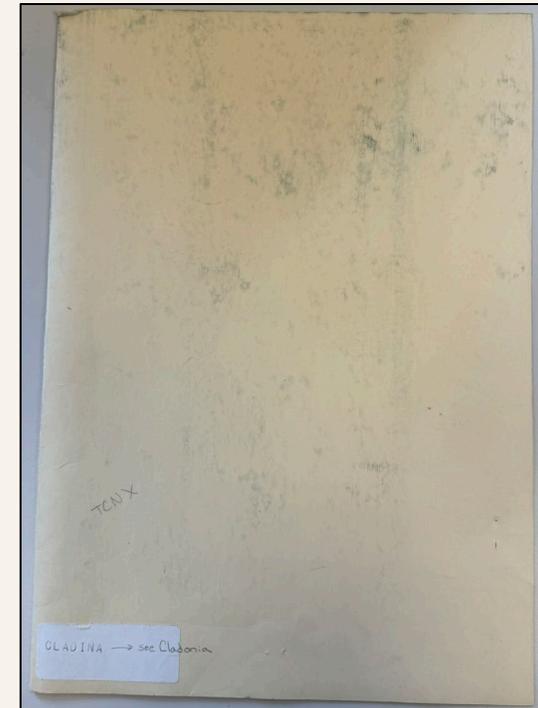
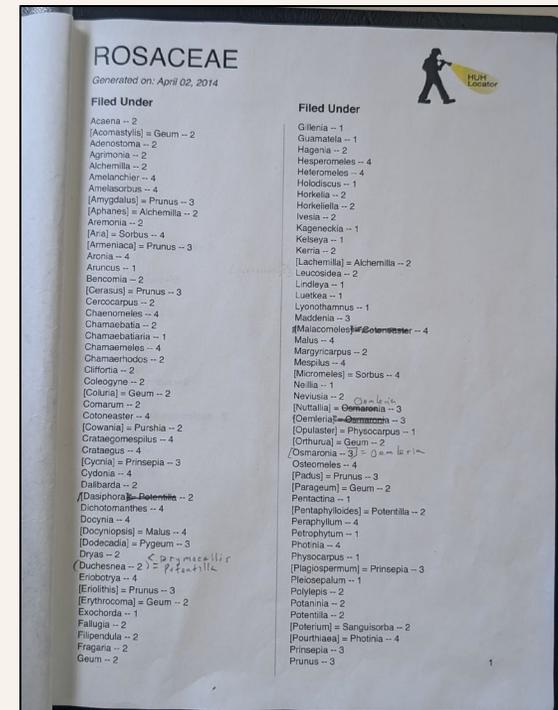
- Specimens are less likely to be "lost" when CRs are used on a consistent basis
- With proper CRs, users will be able to find relevant taxa, ancillary preparations, and types
- The taxon name on specimen may not be used for filing, so CRs help to ensure species aren't filed in multiple places
- Things to cross-reference:
 - Taxon moves based on revisions
 - Types
 - Specimens with ancillary preparations
 - Mixed collections
 - Individual specimen moves

GENERAL HERBARIUM CROSS REFERENCE	
For:	
See also:	
Reason for relocation:	_____

Type specimen- moved to type folder at beginning of genus.	
___ Type specimen of <u>basionym</u> /later synonym	
-	moved to type folder at beginning of
___	Mixed collection/ Conflicting ID/ Annotation/ Revision.

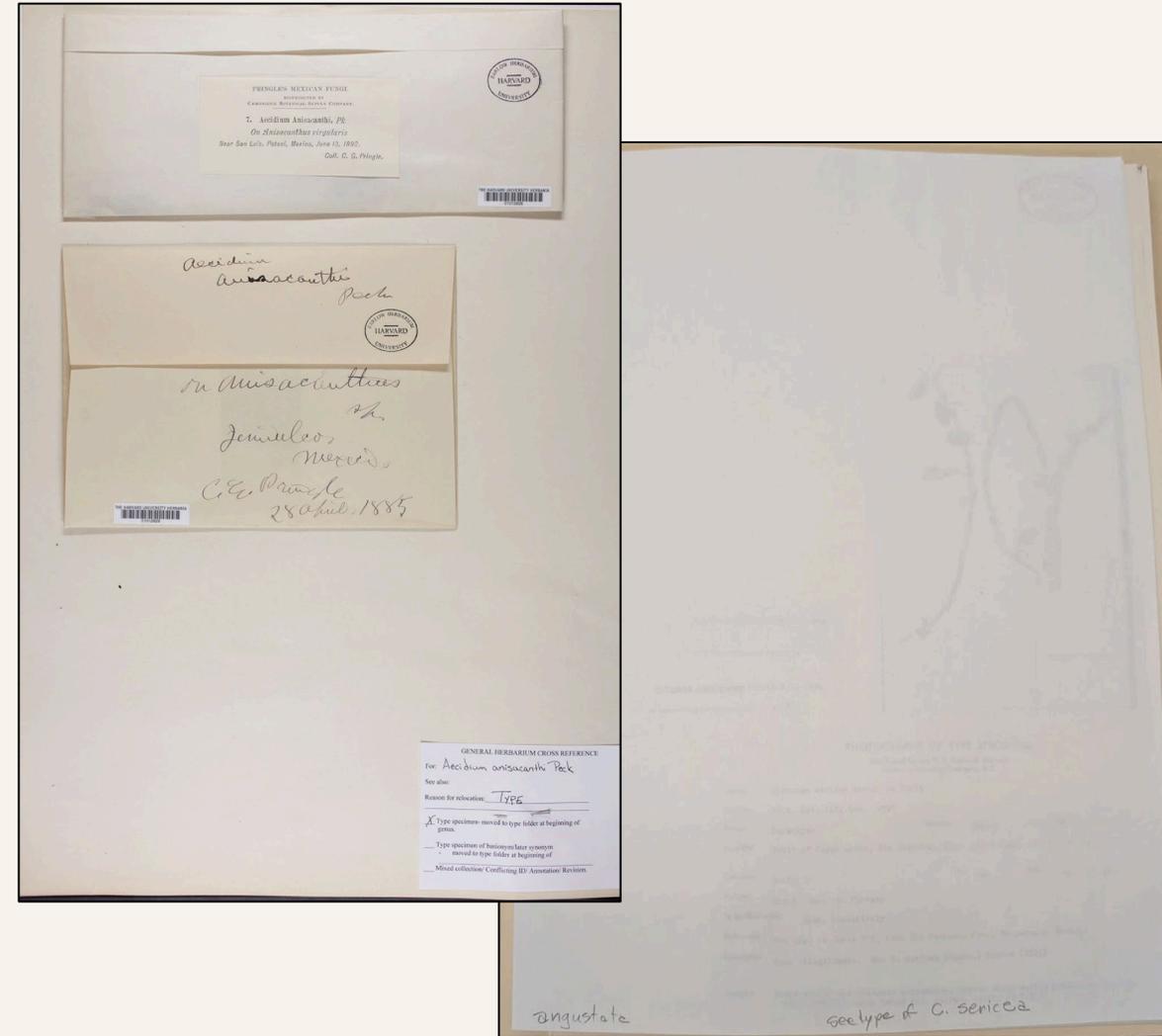
Taxonomic Revisions: Where do we file that?

- When an entire family or genus is filed in a different location
- Species-level changes to a different location
- Strategies:
 - Family/Tribe level finding guide at the beginning of the family
 - An empty folder labeled with the corresponding genus and where to find it
 - Half a species cover with information on where the species is filed
 - Tag on a sheet interfiled with other collections pointing to the correct species location



Segregated Types (Under Basionyms)

- Species cover with a note that says to see the type under its basionym. Place with other specimens under:
 - Basionym
 - Current name
 - Any relevant synonyms
- Tag on a sheet with relevant specimens that says to see type in same locations as above



Ancillary Collections

- Archives/Photo/35mm Slides
- Fruit/Carpology
- Microscope Slides
- Oversize
- Spirit Collections
- Wood/Rhizomes



SEE FRUIT COLLECTION
Flora of Indonesia
Pyrenaria cf. *taiwanensis* Keng
THEACEAE
Cabang Panti Research Site. UB 84.01n3.
Nr. Sukadana, Kalimantan Barat, Indonesia
(Borneo island). Elev: 900 m.
1.21° S 110.13° E. Collected by C. O. Webb,
Hamid on 3-Feb-98.
Tree, DBH 5 cm
rough (dense sm
fissures), pale-g
dark-red-brown
sutures. Habita
Submontane for
ARNOLD ARBOR



GENERAL HERBARIUM CROSS REFERENCE
for: *Cordyceps* sp.
see also: Oversize Collection
Reason for relocation: _____
— Type specimen
beginning of ge
— Type specimen
- moved to type
— Mixed collectio
tation/Revision



Mixed Collections: All Together Now

- Extremely common for lichens, bryophytes, and plant pathogens
- Sometimes multiple specimens are mounted on one sheet
- Collection users can find all relevant material

GENERAL HERBARIUM CROSS REFERENCE

For: *Anomodon attenuatus*
 See also: *Plagiopus oederiana*

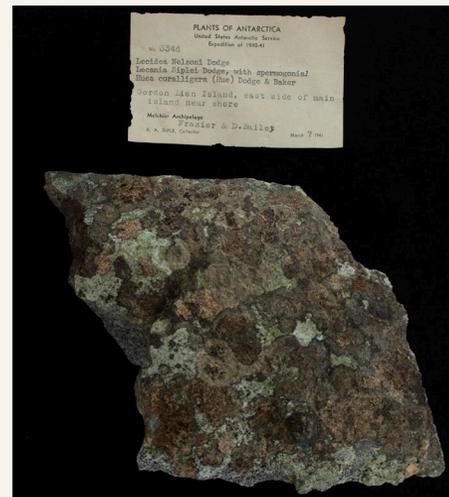
Reason for relocation: _____

___ Type specimen - moved to type folder at beginning of genus.

___ Type specimen of basionym/later synonym moved to type folder at beginning of _____

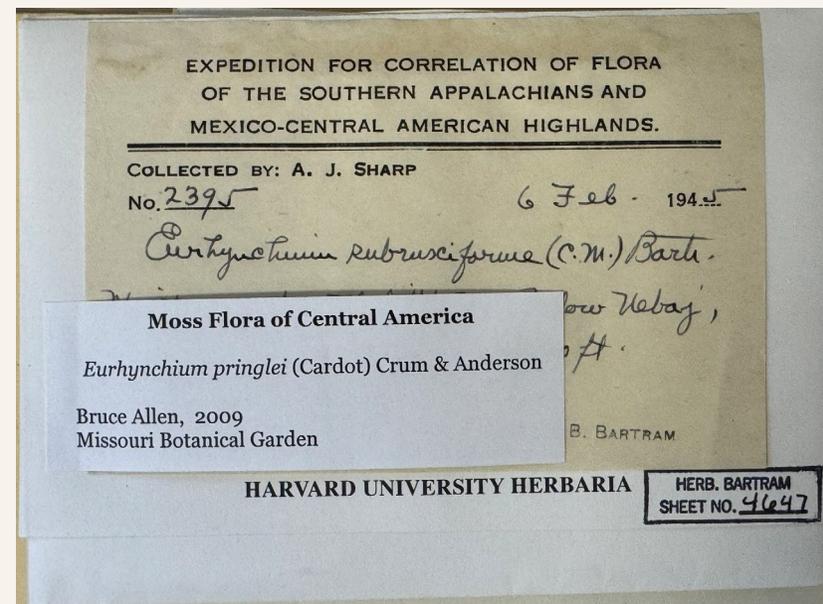
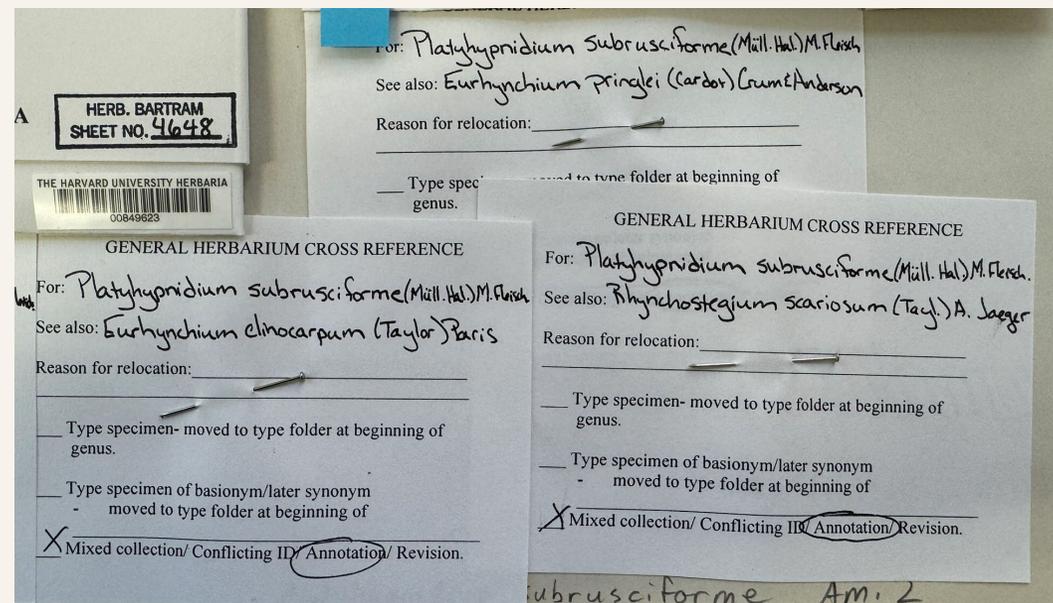
Mixed collection/ Conflicting ID/ Annotation/ Revision.

IOWA, USA



Individual Changes

- Extremely tedious and potentially time consuming
- Based on single specimen determinations, not revisions
- Useful for historical collections where single specimens are being asked for under old names
- Useful when full data capture of all specimens is not complete
- At HUH this is only done in the Farlow Herbarium (FH) where the cryptogams are housed





Findable Specimens!

Annotations provide information about the current taxon, type status, and other details researchers may need.

Cross references aid in locating desired material and prevent misfiling of new or returned material.

Acknowledgements

Questions?

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Photographs and screenshots were made by the authors and used with permission from the Harvard University Herbaria. Specimen images used with permission from The Herbarium of the Arnold Arboretum of Harvard University, Farlow Herbarium of Harvard University, and Gray Herbarium of Harvard University.



Harvard University is located on the traditional and ancestral land of the Massachusett, the original inhabitants of what is now known as Boston and Cambridge. We pay respect to the people of the Massachusett Tribe, past and present, and honor the land itself which remains sacred to the Massachusett People.