

**The Use of TEX/LL Herbarium Specimens in Studies Requiring Destructive Sampling  
(Including DNA-based Studies)  
Plant Resources Center, The University of Texas at Austin (TEX/LL)**

The Plant Resources Center welcomes the use of its collections for appropriate systematics research projects. This includes studies that might require destructive sampling of small amounts of herbarium material, including SEM studies of pollen, seeds, etc., and molecular sequencing studies. Such destructive sampling is permitted only under specific conditions. To preserve the collections for present and future researchers, the following policies have been drawn up. **Note item 12** – all loaned specimens should be returned taxonomically annotated.

- 1) Samples taken from herbarium specimens are to be used solely for the purpose of supporting molecular phylogenetics and for studies aimed at improving our understanding of evolutionary mechanisms. Samples will not be made available for bioprospecting endeavors, screening for genes of interest in agricultural or applied research, or any other potential commercial application.
- 2) The investigator must have made a diligent and good faith effort to obtain appropriate material for extraction from other sources (field collections, horticultural sources, other herbaria, etc.)
- 3) A request to sample, including a brief description of the project involving the use of TEX/LL herbarium material, should be submitted to the Director or Curator. It should contain a brief outline of the study plan, a description of the experience of the individuals involved in the research, and a description of the material required to do the research. In the case of molecular studies, the researcher must demonstrate previous successful experience with herbarium material of the taxon and age requested, so as to insure a reasonable probability of successfully extracting useable DNA from the sampled material.
- 4) Permission to sample is requested and is granted on a specimen-by-specimen basis. In the case of material already on loan to the investigator's institution, descriptions or images of each specimen to be sampled may be required in some cases before permission is granted.
- 5) Only specimens with ample material should be used. Only the smallest amount of material necessary for the study should be extracted. Using material in packets is preferred to taking material glued to the herbarium sheets. Removal of material from type specimens is not allowed.
- 6) No more than two specimens per species or infraspecific taxon may be sampled.
- 7) A given specimen may not be sampled more than once, or for more than one type of study that involves different organs (e.g., molecular using leaves and SEM of pollen), without specific permission.
- 8) A small label indicating the person's name and institution, the type of material removed, the date on which the material was removed, and, in the case of molecular studies, the success or lack thereof of isolation and the gene(s) being sequenced, should be glued to the herbarium sheet. This label is separate from an annotation label giving the taxonomic determination, although the two can be combined if the combined label is not too large.
- 9) For molecular studies, GenBank accession numbers should be provided for sequence data obtained from any TEX/LL specimen.
- 10) In any publication in which data derived from sampling of TEX or LL specimens are used (molecular sequences, SEM images, etc.), the specific specimens used and the herbarium to

which each pertains (TEX or LL) must be listed. It is strongly suggested that collector names and collection number (not just barcode number, when present) be cited.

- 11) In the case of EM studies, copies of representative photomicrographs from each specimen used should be sent to TEX/LL with the return of the loan. If traditional microscope slides are made of pollen, a second slide should be made in each case and sent to TEX/LL for its pollen slide collection, unless making the additional slide is judged to be too harmful to the specimen.
- 12) Correct taxonomic identification of the specimens is not guaranteed by the Plant Resources Center. It is the responsibility of the investigator to verify the identification of the material, and taxonomic annotation labels to this effect should be attached to each specimen sampled.
- 13) The Plant Resources Center of the University of Texas at Austin should be properly acknowledged in any publication containing data derived from TEX/LL specimens.
- 14) Reprints should be supplied of any published work containing data derived from TEX/LL specimens.
- 15) Exceptions to certain of these policies may be made in specific cases but only after thorough review by the Curator of the Plant Resources Center.
- 16) The Plant Resources Center reserves the right to refuse to provide samples from herbarium material in its care for any reason, at its sole discretion.

The loan of specimens from the Plant Resources Center is generally made for research on monographs, revisions, and similar work in which careful study, identification, and taxonomic annotation of each specimen will provide both data for the researcher and benefit for TEX/LL and its other users. Loans for DNA studies for the sole purpose of minor destructive sampling for DNA (or similar studies that do not result in careful study and taxonomic annotation of the specimens) can be arranged, but in general only limited material will be sent. For such loans, the TEX/LL policy is to send one specimen per species, and this only when the specimen has abundant material such that its future utility will not be significantly diminished by the destructive sampling.

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