



Papered Lepidoptera Storage Procedure

Milwaukee Public Museum
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INTRODUCTION

The Milwaukee Public Museum (MPM) houses tens of thousands of historical and new papered lepidoptera specimens from around the world. While rehydrating and mounting these specimens produces nice display specimens, the process of rehydration and mounting is time consuming, requires specific entomological skills, and the finished specimens consume a large amount of collection space. Given the limited time and resources of most collections, it is generally not practical, and in most cases not necessary for viewing many diagnostic characters, to rehydrate and mount tens of thousands of backlogged papered specimens. That being said, papered specimens cannot remain in non-archival field envelopes if a collection wishes to preserve them for the next couple hundred plus years. Papered specimens must be cataloged and transferred to archival materials essential for long term preservation.

Below are the procedures and supplies used by MPM to preserve and house their papered Lepidoptera specimens.



SUPPLIES

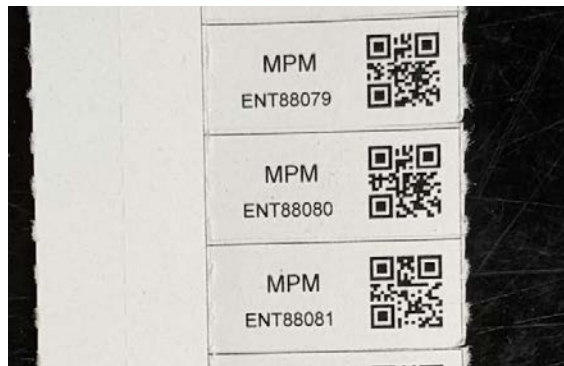
- Specimen cards: archival paper, cardstock thickness (thicker than normal printing paper). Dimensions: 7.5cm x 12.5cm.
 - This can potentially be bought precut, or manually cut in stacks using a paper cutter
- Clear specimen sleeves: Archival Polypropylene or other plastic sleeves. Dimensions: 8.26cm x 15.24cm.
- Drawers: archival extra high insect drawers and cabinets to house papered specimens neatly (9cm high internal bottom part of drawer; 11 cm high external including lid)
 - Shallower drawers can be used, but don't allow for specimen envelopes to stand upright leading to specimens needing to lay flat and potentially disorganized drawers.
 - [Link to Bioquip drawers](#) used at MPM
- Unit trays: archival unit trays that fit specimen cards and storage drawers
- Methyl cellulose (or other permanent archival glue). This comes in a powder to mix.
- Impulse heat sealer
- Unique catalog/ barcode labels
- Tools: Scissors, forceps, paintbrush, archival pen or marker
- Papered lepidoptera specimens in non-archival material to transfer
- Sorting trays or bins to retain any potential stray parts



Cards, plastic sleeves, & glue



Extra deep drawers for papered specimens



Scannable MPM catalog numbers with QR code

If using this protocol for any collection other than MPM, please modify paper, drawers, dimensions, etc., as appropriate for your collection.

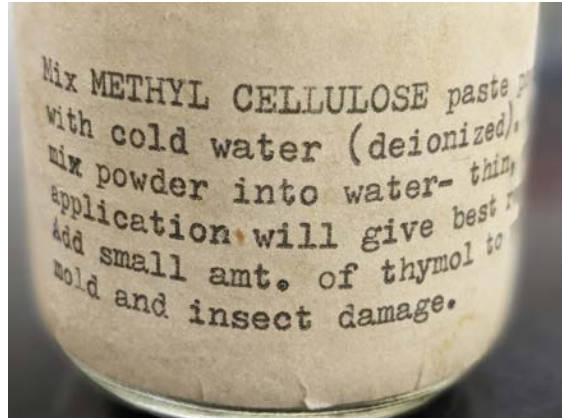
PROCEDURE

Pre-prep:

- Select specimens to be archivally papered
- Cut paper cards to size
- Obtain, print, cut, catalog number barcode labels
- Mix up Methyl Cellulose archival glue
- Set up work space with bin to organize and retain stray bits

Steps:

- 1) Carefully open papered specimen envelope and remove label(s) with forceps.
- 2) Using a paint brush, glue a unique catalog number or barcode label to the bottom of the new archival card with card oriented horizontally.
- 3) On the same side of the archival card, glue the specimen label(s) to the top of the archival card.
 - a) If specimen labels are double sided, information can be reprinted directly onto the card or onto a retroactive label.
 - b) Alternatively, if concerned about losing historical handwriting or if text on the reverse side of the label is illegible, the label can be left loose. Note: Loose labels increase the chances of knocking off parts of the specimen.



Glue mixing instructions



Preparation station set up



Glueing labels to card

- c) If data is found on the envelope itself, cut out the original information to directly glue on the new card if possible. Or if multiple specimens are associated with the original data labels, transcribe or print new labels on archival paper.
- 4) Let the card with labels glued to it dry (estimated 10 minutes).
- 5) While waiting for glue to dry, copy the human readable part of the catalog or barcode label number onto the lower corner of the plastic specimen sleeve with an archival pen. This is an extra precaution in case anything happens to the barcode label or if the sleeve were ever to get disassociated from the card with the barcode label.
- 6) Once glue is dry, open the plastic specimen sleeve and insert the archival card with labels on it into the plastic sleeve.
- 7) Open the plastic sleeve with the card in it and carefully insert the Lepidoptera specimen using forceps. Pick up specimens by base of wings or abdomen for minimal risk of damage during transfer. The specimen should be placed in the center of the card so as not to obscure any labels (when possible).
- 8) Close the plastic envelope and use an impulse heat sealer to seal the open end of the envelope. Cut off any excess plastic ends so envelopes fit neatly in the tray. This will help keep pests out and remove the possibility of anything accidentally falling out of the sleeve.
 - a) If it is anticipated that the specimen will need to frequently be removed



Carefully extracting specimen from envelope



Human readable part of catalog number on back



Inserting specimen into sleeve with labels

MPM Papered Lepidoptera Storage

from the envelope for examination, the open end of the envelope can be folded over and strongly creased instead of heat sealed to reduce the potential for specimen parts falling out of the envelope.

- 9) Place in the appropriate unit tray, drawer, and cabinet.
- 10) Repeat from step 1 as necessary.

Helpful hints:

- 1) This workflow can be performed in two stages for a high throughput workflow with multiple specimens : 1. Glue labels on cards for multiple specimens to reduce overall drying time. 2. Transferring specimens to envelopes and sealing.
- 2) When using a high throughput workflow, use bins or sorting trays to help prevent specimens or labels from being dissociated.



Trimming the excess plastic off the sleeve

