

Guidelines for making data labels for arthropod specimens in the Mississippi Entomological Museum (MEM)

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(Please note that these are guidelines used by the MEM and there are many variations used by other museums and individuals)

LABELS FOR PINNED SPECIMENS

Accuracy and consistency

The data label on an insect specimen is as important as the insect itself. An insect specimen without a data label or a data label without a specimen has limited value to science. However, properly labeled insect specimens are critical to our understanding of the taxonomy of a species, as well as to our understanding of many other aspects of a species' biology.

The data on a specimen must be accurate. Double-check your work at every step in the labeling process. Avoid typographical errors. Other types of errors can occur either when modifying a preexisting label or when "copying and pasting" parts of a preexisting label in order to create a new data label. It is especially common for the wrong set of locality coordinates to be "copied and pasted" or for the copied coordinates to be improperly modified. In order to avoid placing the wrong label on a specimen, have only one set of labels on your desk at a time.

Keep data labels consistent between each other. For example, each sample from a Malaise trap run weekly at the same location by the same collector, should have identical labels except for the range of dates. Insects collected at the same location by other collecting methods should also have the same locality data. Similarly, insects collected by two different individuals on the same day at the same location should have identical labels except for the collector's name. When labeling older specimens that are part of samples or projects where some of the specimens have been labeled in the past, always keep the new labels consistent with the older labels. In many cases this would mean using degree, minutes, seconds for coordinates rather than decimal degrees as is currently used by the MEM.

Font type, Font size, and Line spacing

Font: Helvetica

Font size: 4-point

Line spacing: exactly 4-point

FIRST LABEL

First label is normally five lines long.

The maximum width of a label should not be greater than 0.7" (a shorter width of 0.6" is preferred, if possible). If typing in Helvetica 4-point font, set the column width at 0.7" to avoid labels that are too long. If typing in Helvetica 12-point font (prior to reducing to 4-point), then the longest line should be no longer than 2 1/16" (a shorter width of 1 3/4" is preferred).

First line: COUNTRY, STATE (or PROVINCE, etc.), County (or Parrish, etc.)

COUNTRY: For locations outside of the United States, spell out name of country in full in all capital letters; for the United States, use "USA".

STATE: Use standard state abbreviations in all capital letters (abbreviations given below). When using the abbreviations, do not forget the period indicating the abbreviation. Note that a few state abbreviations (e.g. Louisiana: "LA.") appear the same as postal codes but are followed by a period. States with five letters or less and Alaska and Hawaii are spelled out (unless spelling the names makes the top line too long). Separate the state abbreviation from county with a comma.

County: Spell out county name in full. Abbreviate County, "Co.". Abbreviate Parish, "Par." or spell out "Parish".

Wrapping text

If the combination of the country, state, and county names makes the first line too long, then move "Co." to the second line, followed by a comma: "Co.,". If the first line is still too long use a shorter standard state abbreviation (preferred) [e.g. TEX. Instead of TEXAS] or use the two-letter state postal code.

If moving "Co." to the second line makes the second line too long, move the last word of the second line to the third line followed by a comma.

Examples:

USA, MISS., Oktibbeha Co.

USA, LA., Madison Par.

USA, TEXAS, Wood Co.

PANAMA, Chiriqui

Alabama (ALA.)	Montana (MONT.)
Alaska (ALASKA)	Nebraska (NEBR.)
Arizona (ARIZ.)	Nevada (NEV.)
Arkansas (ARK.)	New Hampshire (N.H.)
California (CALIF.)	New Jersey (N.J.)
Colorado (COLO.)	New Mexico (N. MEX.)
Connecticut (CONN.)	New York (N.Y.)
Delaware (DEL.)	North Carolina (N.CAR.)
District of Columbia (D.C.)	North Dakota (N. DAK.)
Florida (FLA.)	Ohio (OHIO)
Georgia (GA.)	Oklahoma (OKLA.)
Hawaii (HAWAII)	Oregon (ORE.)
Idaho (IDAHO)	Pennsylvania (PA.)
Illinois (ILL.)	Rhode Island (R.I.)
Indiana (IND.)	South Carolina (S.CAR.)
Iowa (IOWA)	South Dakota (S. DAK.)
Kansas (KANS.)	Tennessee (TENN.)
Kentucky (KY.)	Texas (TEXAS)
Louisiana (LA.)	Utah (UTAH)
Maine (MAINE)	Vermont (VT.)
Maryland (MD.)	Virginia (VA.)
Massachusetts (MASS.)	Washington (WASH.)
Michigan (MICH.)	West Virginia (W. VA.)
Minnesota (MINN.)	Wisconsin (WISC.)
Mississippi (MISS.)	Wyoming (WYO.)
Missouri (MO.)	

Second line: locality

The second line is the name of the locality within the county. Normally this is a named feature that can be found on a USGS topographic map or on Google Earth, such as a town, mountain, park, or refuge. Avoid using locality names that cannot be located on maps or are transitory, such as places of business, project sites, or habitat information (e.g. Walmart, Lowe's, Schiefer property, Oktibbeha County landfill, entomology building, good bog site, black belt prairie). This type of information, if necessary, is better suited to the second label.

For localities within the city limits of a town, simply list the name of the town. Other localities are often given as distance and direction from the nearest town. In order to avoid confusion, choose a town in the same county where the collection was made, even if it is more distant than a town in an adjacent county. Distances and direction are generally given in air miles from a geographic reference point, such as a town. Distance to the nearest 0.5 mile is usually sufficient, although distance to the nearest 0.1 mile might be desirable when the reference point is a point locality (e.g. road intersection). The use of the word "of" between direction and town is optional. Direction is given by compass points (N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW) that are capitalized and are not followed by a period.

All other words, if abbreviated, (except for some standard acronyms) should be followed by a period. When abbreviating words, use standard abbreviations when available, rather than truncating words or inventing your own abbreviation. Remember, your label needs to be easily interpreted by others who might not be familiar with the locality or language. Don't abbreviate if not necessary.

Elevation, if available, should be given in meters (e.g. 1219m). Abbreviate meters as "m" and do not leave a space between numbers and the "m". If there is room to add elevation to the locality line, that is recommended. But, if the locality line is already too long, make attempts to fit elevation on any line on the top label where there is room, such as after lat/long, before or after date, after collector, and as a last resort, include it on a second label.

Good tools for determining locality names and distance are Google Earth, and My Topo (<http://www.mytopo.com/maps/index.cfm>). Google Earth can be searched by coordinates or place name, and distances measured with the measure tool. More places are named on the topographic maps on My Topo than on Google Earth, and distances can be estimated from the mile square land survey grid. The museum also has copies of many topographic maps. For Mississippi, county road maps are very useful, and contain all the small-town names. These maps are available [online](#) and the museum has copies also. Again, distances are easily measured from the land survey grid.

Examples:

Starkville
2.5 mi. NE of Starkville
2.5 mi. NE Starkville
Noxubee N.W. Refuge
Tombigbee Nat. Forest
Woodall Mountain, 198m
Natchez Trace,mi 204.6 (the usual punctuation and spacing are removed to make a shorter line)

Third line: coordinates

There are a variety of ways to display GPS coordinates, and until 2019, MEM policy was to use geographic coordinates in "degrees, minutes, seconds." However, due to current trends in mapping data, the MEM has moved to using the "decimal degree" format. For MEM labels, we will not use N, S, W, or E symbols following the coordinates, but instead will insert the "-" symbol in front of longitudinal coordinates for the western hemisphere and in front of latitudinal coordinates for the southern hemisphere. We will round coordinates to four decimal places, leaving a space between the latitude and longitude coordinates.

Coordinates received in "degrees, minutes, seconds" or "decimal minutes" should be converted to "decimal degrees", except where specimens are part of samples or projects where other specimens have been previously labeled with "degrees, minutes, seconds" in the past. There are many tools on the web that will convert coordinates such as <https://www.latlong.net/degrees-minutes-seconds-to-decimal-degrees>, <http://www.earthpoint.us/Convert.aspx>, and other sites. After typing the coordinates for your label, copy them and paste them into Google Earth, to make sure that you did not make a typo and the coordinates indicate the correct locality.

Example of decimal degree format:

33.2733 -89.1275

Fourth line: date

Date is given by day, month, and year. The month is always written out or abbreviated, and never written with numerals. March, April, May, June, and July are written in full. Other months can be abbreviated as follows: Jan., Feb., Aug., Sept., Oct., Nov., and Dec. No comma is used to separate month and year. Specimens from trap samples collected over a range of dates are labeled from the date the trap was set to the date the sample was collected.

Examples:

12 June 2014
14 Sept. 1999
12-24 April 2002
25 Feb.-5 March 2008
27 Aug.-19 Sept. 2004
20 Dec. 2013-5 Jan. 2014

Fifth line: collector

List the collector's name by first initial, middle initial (if known) and last name. For multiple collectors, separate names by comma. If names are long and make the fifth line too long, shorten it by removing spaces or by deleting middle initials. If the collector is someone not likely to contribute many specimens to the museum (such as a homeowner, pest control operator, 4-H student, etc.), it is OK to give the first and last name in full, especially if the middle initial is unknown. If a specific collector is unknown but the specimen can be attributed to an organization or agency, the name of the group could be noted as collector.

If this last line of the label contains any dangling characters (g, j, p, q, y), before copying the label, select the line, and add a 1-point space under the text (under Format, Paragraph, Spacing, After). This will make it much easier to cut between labels. When

copying and pasting to make different labels, take care that the 1-point space does not show up where unintended (i.e. after each of the first four lines of the label).

Examples of Collector line:

T.L. Schiefer
T.L. Schiefer, J.G. Hill
T.L.Schiefer, R.L.Brown (spaces removed to keep the line shorter)
T.Schiefer, J.MacGown (spaces and middle initials removed)
Coll: APHIS personnel (specific collector unknown)

Examples of a complete first label:

USA, MISS., Oktibbeha Co.
Noxubee N.W. Refuge
33.3017 -88.8680
27 May-3 June 2011
T.L. Schiefer

USA, TEXAS, Jeff Davis Co.
Davis Mts. St.Pk., 1499m
30.6014 -103.9156
21-25 July 2014
T.Schiefer, J.MacGown

(example of wrapped text)

USA, MISS., Montgomery
Co., 5 mi. E of Winona
33.4825 -89.6406
26 June 2021
T.L. Schiefer

(example of double wrapped text)

USA, MISS., Montgomery
Co., 3 mi. NW of Poplar
Springs, 33.3728 -89.6078
15 Aug. 2021
J.A. MacGown

SECOND LABEL

The second label can include a variety of different types of information including collecting method, habitat, and/or host. All specimens collected on the Cross Expedition must be labeled with "William H. Cross Expedition" or "W.H. Cross Expedition". Names

of plants and animals should be given by scientific name rather than common name, except where the common name is part of a standard habitat type. Use the genus name and "sp." when the species is unknown (e.g. *Quercus* sp.).

The second label should be no larger than the first label, preferably slightly smaller. When lower labels are larger than the first, they tend to damage adjacent specimens when being handled. Also, a smaller label is easier to line up below the top label. Second labels should be at least three lines long, including blank lines if there is limited information. The second label should be roughly the proportion of the first label, with extra blank space retained to the right of the text as needed. Labels with very short text that are trimmed right to the text are often too small to easily remove and replace without bending.

If the last line of the label is not blank and contains dangling characters (g, j, p, q, y), before copying the label, select the line, and add a 1-point space under the text (under Format, Paragraph, Spacing, After). This will make it much easier to cut between labels. When copying and pasting to make different labels, take care that the 1-point space does not show up where unintended (i.e. after each of the first four lines of the label).

Examples:

Blacklight Trap (include two blank lines)

Blacklight (include one blank line)
Trap

Malaise trap in
hardwood
forest

em. 20-25 June 2012
ex dead limbs of
Celtis laevigata

Lindgren funnel trap with
alpha-pinene in oak-
juniper-pinyon woodland
W.H. Cross Expedition

IDENTIFICATION TAGS

Identification tags should be kept smaller than the first label if possible. Include genus, species, and author as indicated by the identifier, the identifier's name, and year of identification. Labels should be roughly in the proportions of the first label, and labels with very short text should be cut with some blank space to the right of the text.

If the last line of the label contains dangling characters (g, j, p, q, y), before copying the label, select the line, and add a 1-point space under the text (under Format, Paragraph, Spacing, After). This will make it much easier to cut between labels. When copying and pasting to make different labels, take care that the 1-point space does not show up where unintended (i.e. after each of the first four lines of the label).

Examples:

Astylopsis
fascipennis Schiefer
det. 2014
T.L. Schiefer

Molorchus
bimaculatus
semiustus (Haldeman)
det. T.L. Schiefer, 2014

Prionus (Neopolyarthron)
imbricornis (Linnaeus)
det. 2014
T.L. Schiefer

LABELS FOR SPECIMENS STORED IN ALCOHOL

Font: Helvetica

Font size: 8-point

Line spacing: exactly 8-point (important, but easy to forget)

Alcohol labels should be formatted exactly as on the first label of a pinned specimen except for font size and line spacing. All collection data is included on a single label, so that the information normally on the second label of a pinned specimen is typed directly below the collector's name, without an intervening blank line. The information normally on the second label of the pinned specimen can be formatted to best fit the space for the alcohol label but should still be shorter than the longest line of the label (e.g. Type "Blacklight Trap" on one line rather than two).

If the last line of the label contains any dangling characters (g, j, p, q, y), before copying the label, select the line, and add a 1-point space under the text (under Format, Paragraph, Spacing, After). This will make it much easier to cut between labels. When copying and pasting to make other labels, take care that the 1-point space does not show up where unintended (i.e. after each of the first four lines of the label).

Labels should always be placed in vials with the left side down, with the writing against the glass and with no insects between the label and the glass. Care should be taken that the label is not caught between the glass and the cone of the lid, as this will allow the alcohol to evaporate. Fill alcohol up to the neck of the vial, but do not overfill. Overfilling creates pressure that can cause the vial to crack. When vials crack, it is often soon after putting on the lid. So, when working with alcohol vials, be aware of the sound of cracking glass so that the broken vial can be replaced before the alcohol evaporates.

A second label, identifying the contents, should always be placed in every vial. This includes specimens identified to species, genus, family, order, or sorted as "miscellaneous (Misc.) insects". Like the data label, this identification tag is typed in 8-point font. Family and order names should be in all capital letters. Tags should be at least two lines long to help prevent their spinning in the vial. They should be about the length of the data tag and trimmed with extra white space to the right of the text as needed. This helps keep the tags upright in the vials. If certain taxa are pulled from the vial, this should be indicated on the label but can be written in a smaller font.

The identification label should always be placed in vials with the left side down, on the opposite side of the vial from the data label, with the writing against the glass and with no insects between the label and the glass

Examples (alcohol data labels):

USA, MISS., Oktibbeha Co.
Noxubee N.W. Refuge
33.3017 -88.8680
27 May-3 June 2011
T.L. Schiefer
Malaise trap at edge
of bottomland
hardwood forest

USA, TEXAS, Jeff Davis Co.
Davis Mts. St. Pk., 1499m
30.6014 -103.9156
21-25 July 2014
T.L. Schiefer
Lindgren funnel trap in
riparian area in
desert scrub/grassland
W.H. Cross Expedition

Examples (alcohol identification labels):

CERAMBYCIDAE (include extra blank line)

COLEOPTERA (include extra blank line)

COLEOPTERA
(except Cerambycidae
and Scolytidae)

DIPTERA
NEMATOCERA

MISC. INSECTS
(except Coleoptera
and Formicidae)

Cnestus
mutilatus (Blandford)
det. T.L. Schiefer, 2014

PRINTING LABELS

Set up a labels template in Microsoft Word that maximizes paper use and can be used repeatedly. Margin settings are probably different for different printers. We use the following margins: 0.43" top, 0.58" bottom, 0.42" left, and 0.42" right. These margins will allow 12 columns of labels per page.

Type or copy and paste your label into a word document making sure your font is Helvetica. Add a following 1-point space to the bottom line if needed for dangling characters. Copy and paste as many labels as you need, with a few extra copies thrown in just in case you need them. Leave a blank line and type or copy your next label making as many copies as you need. After all your labels are typed, "select all", and under "format font", change the font to 4-point. Under "format paragraph", change line spacing to "exactly 4-point". Under "format columns", set number of columns to 12 (or whatever your template is formatted for) and click OK. [Note: for labels that are longer than usual, such as those from western states, the number of columns needs to be reduced]. Open "format columns" again and set the spacing for column 1 to 0.05"; the other columns will adjust automatically. The column spacing must be done separately from the setting of the number of columns in order for it to take effect.

Check to make sure that longer lines on labels do not wrap around to a second line (i.e. 5-line labels become 6-line labels). If they do, decrease the number of columns or decrease spacing between columns. After you are sure that all labels appear formatted as you desire, look at the bottom of the page for labels that are cut in two (i.e. they start at the bottom of one column and continue at the top of the next column). Starting with

the first column, type whatever blank lines are needed after the last complete label in the column, so that the first portion of the label that is divided is shifted to the second column. Continue with the other columns until all labels on the page fall completely in one of the columns. This will help prevent partial labels from being accidentally placed on specimens.

Label paper is expensive, so try not to waste it. If you have only a few labels to print, use a scrap of label paper from a previous printing. Most printers now have guides that center narrower pieces paper. If your printer allows it, you can use a template that allows three columns on a 3.5 " wide piece of label paper. Margin settings are the same as for a full sheet, but the left-hand margin is set at 3".

Printer info: Print all labels for pinned specimens on a laser-jet printer at the highest resolution and quality settings. Currently, all of the laserjet printers used in the MEM are Hewlett Packard brand (HP). For these printers, the print quality and resolution information can be accessed by clicking "print" (under the file tab), then clicking the "copies & pages" scroll down button, then selecting the "color/quality" or "quality" tab, which will open up a dialog window for print settings. Choose as high resolution as possible (1200 dpi if possible) and highest quality as possible (this may be under a tab labeled "econo-mode", "quality", or something similar. Do not print in econo-mode.

Printing alcohol labels

The procedure for printing alcohol labels is the same as for other labels except: Font is 8-point, Line spacing is "exactly 8-point", and Number of Columns is 5. If line spacing is not set to "exactly 8-point ", the label will be much too long.

Printer info: We always print alcohol labels on an ink-jet (not laser-jet) printer with ink that is alcohol proof (printer cartridges are often labeled as waterproof). Our printers are Lexmark brand. For these printers, the print quality and resolution information can be accessed by clicking "print" (under the file tab), then clicking the "copies & pages" scroll down button, then selecting the "quality/media" or "quality" tab, which will open up a dialog window for print settings. Under the "Print Quality tab" (or similarly named tab), choose "best" or the highest setting possible; under the "Sharpen" tab (or similarly named tab), click "enhanced" or the highest possible setting if different; and if there is a check box for "print in black and white", then click that box.

CUTTING LABELS

With a pair of scissors, trim along the left side of the column of labels, being careful not to cut into the text. Trim close to, but not right up to the writing on the labels, so that there is a small white margin left of the text. The proper white margin is very narrow, about the same width as the space between lines, but wide enough that the text does not appear chopped off.

Trim the column of labels on the right side. For the main (top) data label, trim the right side similar to the left side, with the longest line (normally the coordinates) serving as the right-hand border. For second labels that are very short, leave some extra white space to the right of the text, while still keeping the second label shorter than the first.

When cutting between labels, cut straight, and be very careful not to cut into the text of the labels on either side.

The cut label should be flat (not warped from handling), and each corner should be 90°.

In order to help prevent mislabeling, cut only one set of first labels (all with identical data) and one set of second labels (all with identical data) at a time. Label the insects for the labels you have cut, and discard any extra labels before cutting another set of labels. If you have extra labels that you will use in the future, put them aside in a glassine envelope. Only first labels with identical data and second labels with identical data should be on your desk at any given time.

LABELING INSECTS

Labels are placed on insects so that they can be read from the left side of the insect (i.e. the top of the label is toward the right side of the insect), except in Lepidoptera where the labels are placed horizontally, parallel with the spread wings (i.e. the top of the label is toward the front of the insect).

The label should be centered on the insect, so as to give the specimen some protection from below. This means that the pin is rarely placed through the exact center of the label. On specimens longer than the length of a label, the label should not stick out beyond the insect to any appreciable extent. For insects like lacewings, horseflies, and many wasps, where the pin is placed far forward on the insect, the pin is also placed forward on the label. Most insects are pinned slightly right of center, and their labels will normally be pinned to the right of center as well, although this is often by a tiny amount. Pointed insects are usually pinned centered on the right-hand margin of the label; just in front of the "W" is a good target. Try to not stick the pin through the middle of characters, particularly the numbers in coordinates, which cannot be easily interpreted through context when they are obscured. Usually a pin can be placed between words or just slightly to the side of the line of text and still keep the label centered on the insect.

Examine each insect after you label it. If it is not quite centered over the label, make the adjustment to the next specimen you label. Experience is often necessary to visualize where the pin should be placed on the label for each type of insect. If you see that you have labeled an insect very poorly, place a new label on the insect rather than repositioning the old label. The only hole on the label should be the one with the pin through it.

The second label should be entirely below the first label and not visible when viewed directly from above. Examine specimens from above as you label in order to make sure

you have the second label positioned correctly. Second labels that stick out beyond the first label can cause damage to adjacent specimens when they are being moved.

Use a pinning block when labeling insects. Foam blocks allow pins to enter at an angle, and the labels will not be perpendicular to the plane of the pin. Labels should be flat. If labels are bending, either you are pinning too close to the edge of the label, the pinning surface is too soft, or the pinning block is wearing out.

When labeling, stick the tip of the pin into the correct spot on the label, and lift it to the pinning block. Push the label up the pin using the middle level of the pinning block for the first label and the lowest level of the pinning block for the second label. Do not push the label all the way up if it will damage the insect (e.g. break dangling legs) or will be pressed tight against the body of a large insect where it cannot be seen. All labels should be easy to read without having to reposition them.

The final product will be a pinned insect centered over the label, with labels neatly cut, flat, and perpendicular to the plane of the pin, and with the second label positioned completely beneath the first label.