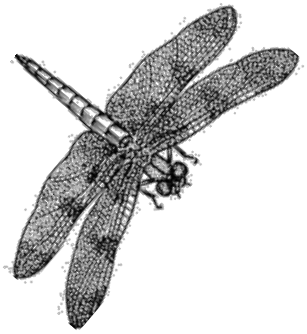
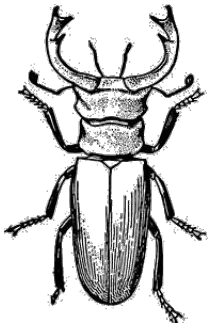
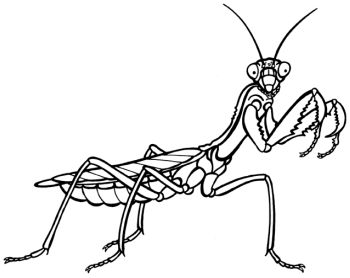
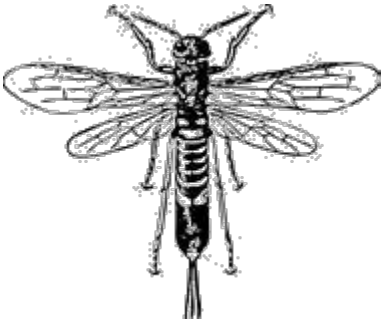
Kansas 4-H Entomology:

Guidelines for Collecting and Exhibiting









K·STATE Research and Extension

There are now three distinct categories of Entomology classes. A 4-Her may enroll and exhibit in one, two or all three of the categories. These categories are Entomology Insect Collection, Entomology Photo Collection Notebook and Entomology Educational Display.

<u>PLEASE NOTE:</u> You have two options for the Taxonomy you may use for this project. The option you chose to use should be printed on the box labels on the Display Box and your entry card.

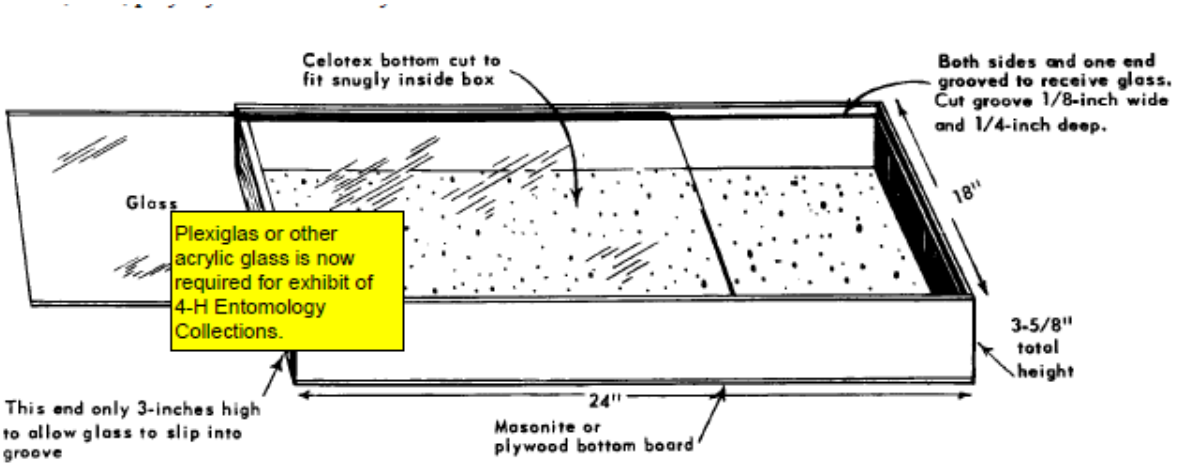
<u>Option A</u>: Taxonomy will be as printed in the "Insects In Kansas" book

<u>Option B</u>: Taxonomy will be as printed on the "Insects In Kansas Book: 2016 Revised Taxonomy", which follows www.bugguide.net

<u>ENTOMOLOGY INSECT COLLECTION CATEGORY:</u>

<u>Arrangement of Insects</u>

1. Arrange insects in a standard insect display box (18" X 24" X 3.5") with a **plexiglass cover** (**<u>glass covers are not allowed for safety reasons</u>**). Boxes can be homemade or purchased so long as they meet the required measurements. **<u>If boxes are the wrong size the collection will be dropped one ribbon placing.</u>**



<u>NOTE:</u> The groove needs to be cut <u>a wide</u> 1/8". Cut it once, reset the saw blade slightly off and cut again so a heavier piece of plexiglass will fit. Or you can use a Dado blade. The heavier Plexiglas will not bend so easily so if someone leans on the top, it will not pop out of the groove and crush down on your insects.

The exceptions to this guideline are the Introductory classes.

a. Introductory classes may use pencil boxes, shoe boxes, cake pans, etc. **Be sure to check your County rules for specific guidelines for this class. Some counties allow you to use one Standard Display Box.**

b. Beginning classes use one standard insect box.
c. Intermediate classes can use up to two standard insect boxes.
d. Advanced classes can use up to three standard insect boxes.

2. A piece of Styrofoam or Celotex should be snugly fitted into the bottom of each display box. These materials are easy to push the insect pins into to arrange your insects.

3. Arrange specimens parallel with the short sides of the box. Arrange specimens in groups by Order. Keep specimens within the same Order should be grouped together.

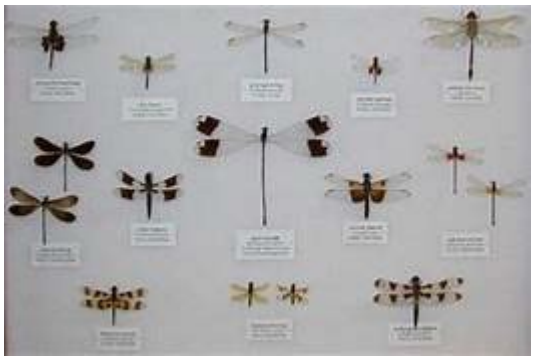
These two illustrations show insects arranged in the boxes with the insects parallel to the short sides of the box. The left one shows the boxes in the display stands at the Kansas State Fair. Boxes must fit in these display stands. If boxes are the wrong size or insects are arranged parallel with the long sides of the box (like the illustrations below) the collection will be dropped one ribbon placing.

These two illustrations show insects arranged in the boxes with the insects parallel to the long sides of the box. The boxes will not fit properly in the display stands at the Kansas State Fair.

The specimens in the two illustrations below are not grouped by Order. Butterflies are mixed with beetles that are mixed with grasshoppers. Be sure to group specimens that belong to the same Order together.

4. The sequence of arrangement of the Orders in the box is up to the exhibitor. It is suggested that you put Lepidoptera and/or Coleoptera in the center of the box, and then arrange the other Orders around them. For exhibitors using three boxes, Lepidoptera and/or Coleoptera could be put in the center box, then the other orders arranged around them and in the other two boxes on either side. You want to make a visually attractive and balanced display. You may use either Option A or Option B for your Orders (as explained on page 2)

5. For most insects, arrange specimens in neat columns within the order. Lepidoptera and Odonata specimens may need to be spaced differently to accommodate wing shapes to fit specimens in as little space as possible.



The beetles in the illustration on the left on the previous page are arranged in neat rows and columns within the Coleoptera order. The dragonflies and damselflies in the illustration on the right are arranged so that they look nice and take up less space in the collection.

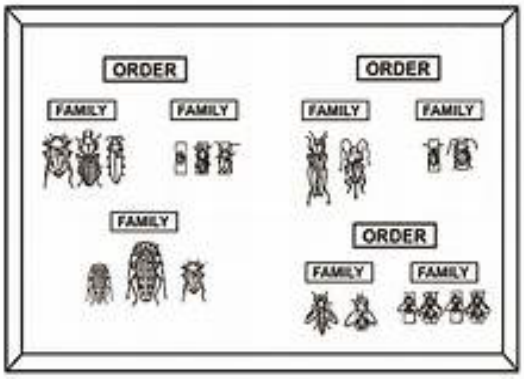
6. **In general,** arrange specimens within an Order from the largest specimen at the top of the Order and work down to the smallest insects at the bottom of the Order. To get more insects in the box, you can reverse this for a column and go from the smallest insect to the largest insect in a column. Then fit this group of insects between two other columns. Collections in the **Intermediate class must also group specimens by Family:**
   for any two of the following six orders for Option A:

Orthoptera	Hemiptera
Homoptera	Coleoptera
Diptera	Hymenoptera

for any two of the following six orders for Option B:

Orthoptera	Hemiptera
Odonata	Coleoptera
Diptera	Hymenoptera

Collections in the **Advanced class must group specimens by Family in all six of** the above listed Orders. Specimens within families **in general** should be arranged from the largest specimen at the top of the family and work down to the smallest insects at the bottom of the family.



7. Within the order Lepidoptera, arrange all butterflies together, all skippers together, and all moths together; order Orthoptera, arrange all grasshoppers together, all crickets together, all katydids together; order Odonata, arrange all dragonflies together, all damselflies together; order Hymenoptera, arrange all wasps together, all bees together, and all ants together.

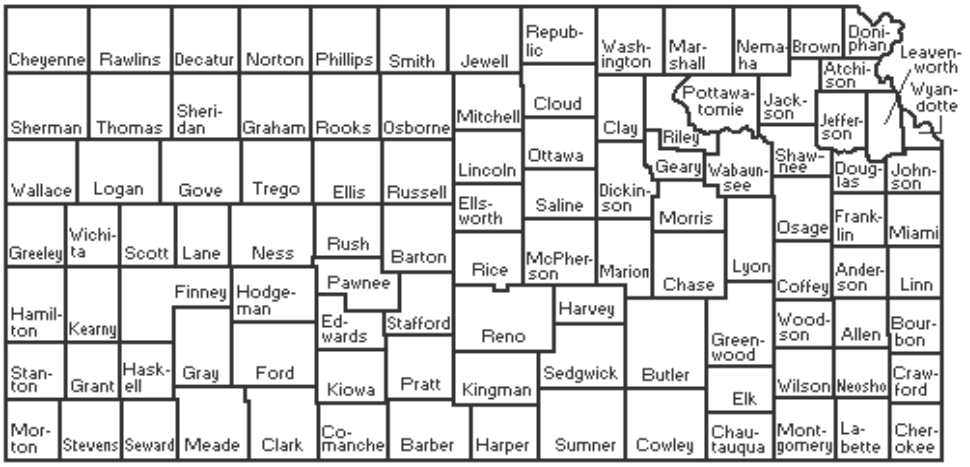
8. Moth balls, Vapona strips, or some sort of fumigant should be placed in the corners of each standard display box to prevent damage to specimens from Carpet Beetle larvae.

9. Many 4-Hers cover the Styrofoam in the bottom of the display box with a piece of plain colored fabric. This is acceptable and can improve the overall neatness look of the collection. Be careful to use a color of cloth that does not detract from the insect display. Light colors are best. No neon or bright colors should be used.
Remember: only adult insects can be used in the collection boxes.

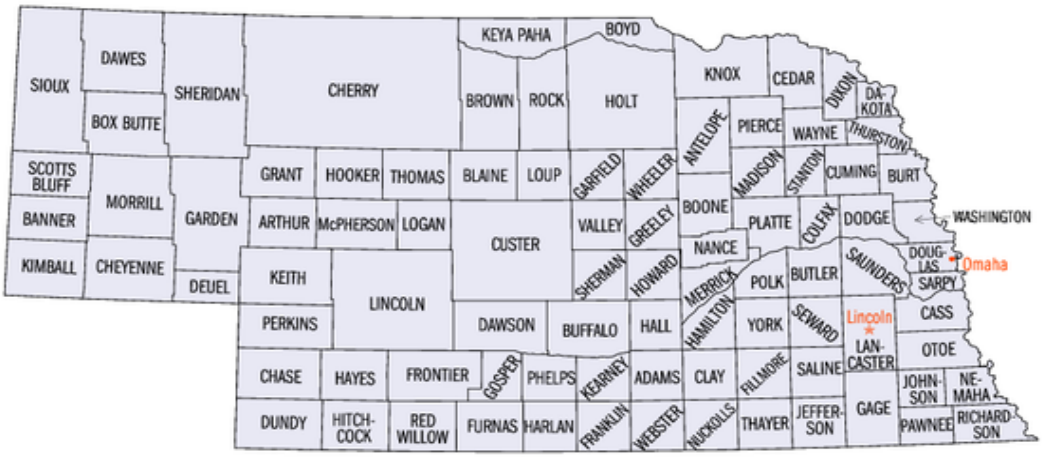
The two displays on the previous page have bats, scorpions, etc. in them. These are not insects and should not be in the insect collections.

Collecting Specimens

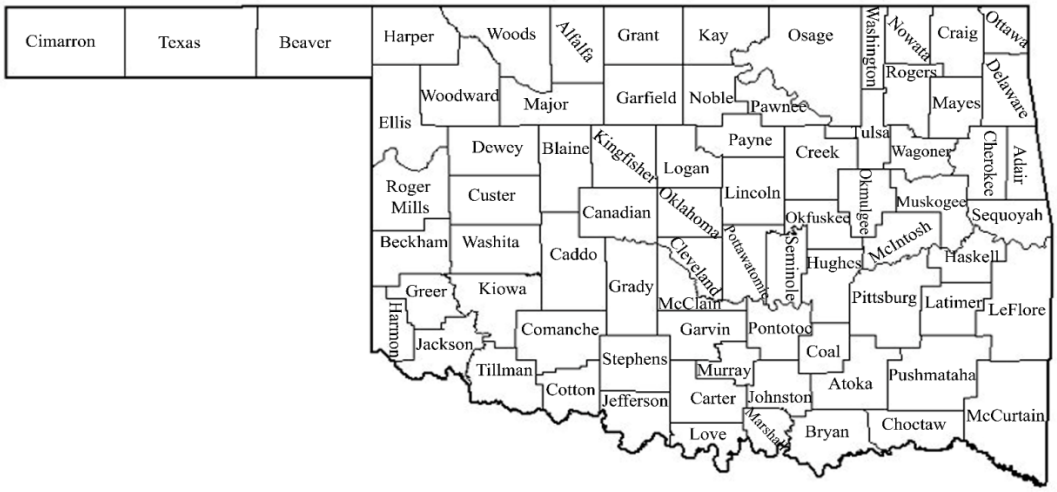
Specimens for the collection and photography classes of the Kansas 4-H Entomology Project must be collected or photographed **in the state of Kansas or one county just over the Kansas State border** in Nebraska, Missouri, Oklahoma or Colorado. **Only adult specimens can be used!!!!**



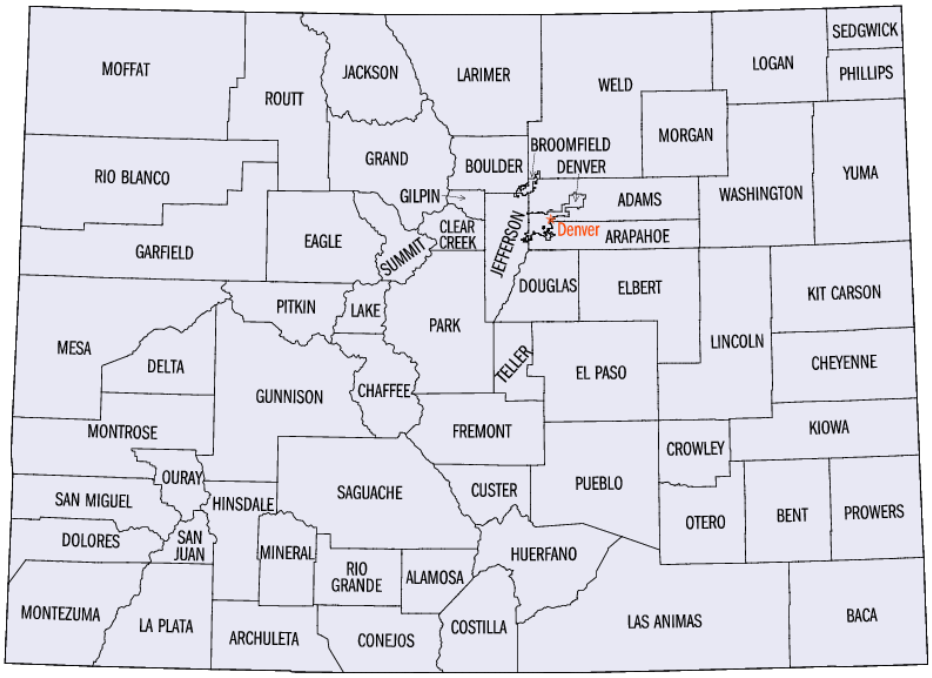
Kansas Counties



Missouri counties would include (from top to bottom on the left edge of the map) Atchison, Holt, Andrew, Buchanan, Platte, Clay, Jackson, Cass, Bates, Vernon, Barton, Jasper, Newton, and McDonald.



Oklahoma counties would include (from left to right on the top edge of map) Cimarron, Texas, Beaver, Harper, Woods, Alfalfa, Grant, Kay, Osage, Washington, Nowata, Craig, and Ottawa.



Colorado counties would include (from top to bottom on right edge of map) Sedgwick, Phillips, Yuma, Kit Carson, Cheyenne, Kiowa, Prowers, and Baca.

All other insects are considered “Out of State Insects”. If used in the collection, they must be put in a separate section with a label above them that says “Out of State”. They must also be identified correctly and have the correct Common Name and Date/Locality labels on the insect pin below the insect. They **will not** be counted for points when scoring the collection for judging. They may be used in an Educational Exhibit or pictures of them may be used as a Special Project in the Entomology Notebook classes. **Purchased specimens may not be used in the collection classes. Immature insects cannot be used in collections.** Immature specimens may be used to show the life cycle of a species in Educational Exhibits or pictures of them may be used in the Special Projects section of an Entomology Photo Collection Notebook.

Be selective on the specimens you put in your collection for competition. Cut out any specimens that are damaged or badly broken. About one-half of the total points in scoring the collection are based on the overall appearance of the display. The display is to represent a collection of adult Kansas insects.

The wings of butterflies, skippers and moths should be spread in order to show the interesting markings and color patterns. The wings of dragonflies and damselflies should also be spread. Spreading the wings of other insects such as grasshoppers, cicadas, antlions, dobsonflies, praying mantids, and wasps is optional, but is a good pinning technique to learn and master. Spreading the wings on one side of grasshoppers is sometimes critical in identifying the specimen correctly. You may spread either the left or right side, but be sure to spread wings on all your grasshopper specimens on the same side. Remember torn or ragged wings usually detract from the collection and loose the exhibitor points in scoring.

Labels Required on Each Insect

Label #1: Common Name Label – is place directly below the insect on the insect pin. The insect pin should go through the center of the label both horizontally and vertically. This label has the Common Name of the insect on it. This label can be larger than the Date/Locality Label or the same size. Common Name Labels should also indicate the sex of the insect if you are going to include a male and a female of the same species. ♂ is the symbol for male and ♀ is the symbol for female. This should be placed either before or after the Common Name on the label. You can print these on the label as you type them by using some combination of the keys Control + Alt + 11 (or 12) or Open + Apple + 11 (or 12) or Windows + Alt + 11 (or 12). You will have to play with your computer a little bit to figure out what works. Or you can neatly hand print it on the labels.

Figure. 3. Illustration of labels on pin.

These two illustrations correctly show the spacing of the two labels on the pin below the insect.

Label #2: Date/Locality Label – is placed on the insect pin below Label #1. The insect pin should go through the center of the label. This label has the **full name of the County** and **State abbreviation** where the insect was caught and the date (month, day, year) the insect was caught. The collector's name may be added to this label or the host the insect was caught on. These are **optional**. There will be no extra points awarded for the addition of these to the label. Many exhibitors make this label smaller than the Common Name Label. Other exhibitors make the Common Name Label and the Date/Locality Label the same size. Either way is acceptable.

Green Darner Dragonfly ♀	Green Darner Dragonfly ♂	Forest Bumble Bee	Monarch Butterfly

Figure 1. Above are examples of Common Name Labels that meet guidelines.

Green Darner ♀	Green Darner Dragonfly	Alfalfa Caterpillar

Figure 2. Above are examples of Common Name Labels that do not meet guidelines. In the left one, different sizes of font are used. In the middle one, three different fonts are used. In the right one, the font is too hard to read.

Neosho Co.KS. 10/21/2019 Vicky Wallace	Pawnee Co.KS. 10-21-2019	LeavenworthCo.Ks. . 02/04/2020	Yuma Co.CO. 07-21-2019 Wild Daisy	WoodsonCo.KS. 10/21/2019 V. Wallace

Figure 5. Above are examples of Date/Locality Labels that meet guidelines.

Pawnee Co.KS. USA 10-21-19 Vicky Wallace	10-21-2019 Pawnee Co.KS. V. Wallace	Leavenworth Co.KS. USA 2/04/20	10/21/2019 Pn.Co.KS.

Figure 6. Above are examples of Date/Locality Labels that <u>do not</u> meet guidelines.

Green Darner Dragonfly ♂	Pawnee Co.KS. 10-21-2019	Green Darner Dragonfly ♂	Pawnee Co.KS. 10-21-2019
Common Name Label and		**Common Name Label and**	
Date/Locality Label different sizes		**Date/Locality Label the same size**	

Figure 7. Either way meets guidelines

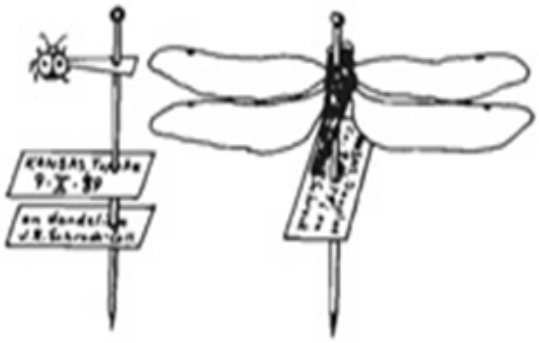
Exception #1: Insect specimens displayed in vials. The labels may be pinned to the Styrofoam base underneath the vial. Or the labels may be paced on a separate insect pin and pinned in the Styrofoam base above, below, or beside the vial in the display box. **This is the best method for the Judge to be able to read your labels.** The labels may be placed in the vial with the insect, but the ink used on the label has to be some that will not fade or dissolve in alcohol. Whichever way you choose, **all your specimens in vials should have the labels placed uniformly in the same position in the vials or by the vials throughout the collection.**

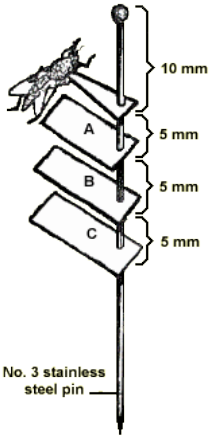
Example of labels underneath the vial.

Example of labels above the vial.

Example of labels in the vial with the insect.

Exception #2: Insect specimens pinned on points. All points in the collection should point to the same side of the pin – either left or right. Insects glued to the point should have the head of the insect facing the top of the display box. **NOTE:** The insect pin goes though the labels so that the insect is centered on the label.





Labels under insects on points. NOTE: In Kansas, the top label under the insect is the Common Name label. The label under that is the Date/Locality label. In Kansas, we only have 2 labels.

An improper or incomplete identification label is one of the most frequently observed mistakes judges find when scoring collections.

Position of Labels: labels may be positioned parallel to the length of the insect on the pin or crosswise to the insect on the pin. Either way is acceptable, but **ALL** labels need to be place the same way in the collection for uniformity. (See examples in the pictures on the next page.)

The labels in the picture on the left are crosswise with the insects on the pin. The labels in the picture on the right are parallel to the insect on the pin.

Many collectors prefer the labels parallel to the insect to save space in the collection. As much as possible, all Common Name labels should be the same height on the insect pin below the insect. And as much as possible, all Date/Locality labels should be the same height on the insect pin below the Common Name label – (having the Date/Locality label lay flat on the Styrofoam surface is a good way to get these labels uniform in height).

Printing on Labels: Must be **easily readable and uniform.**

Handwritten labels are acceptable as long as they are **easily readable**. Use the smallest label possible that you can write on. Also, they all need to be printed with the same writing tool – example all pencil or all the same color ink; not some in pencil and some in pen or some in blue ink and some in black ink.

Typewritten or computer generated labels are also acceptable and more easily readable. **All labels must be uniform – they must be made the same way.** You can not have some hand written and some computer generated labels.

Be consistent with label size. All Common Name labels should be the same size. All Date/Locality labels should be the same size. However, Date/Locality labels are usually smaller than the Common Name labels but they can be the same size. (See Figures 1, 5, 6 and 7 on pages 12 and 13).

Use the same style font for both the Common Name and Date/Locality labels. Use the **same size font for all printing on each label**. Refer back to pages 12 and 13 for examples.

General rule: 8 to 10 size font is best for Common Name labels. Choose a plain font style – not something fancy. Remember the **key is easily readable and consistent.** Arial and Times New Roman are good fonts to use.

General rule: 8 size font is good for the Date/Locality label. However, with the new guideline of having to put the entire county name on the label, if you have a lot of insects from counties with long names like Leavenworth, you will have to drop to 7 font for your Date/Locality labels to get the full county name on it. If you only have a few insects from a county with a long name like Leavenworth, use 8 font for the majority of your Date/Locality labels and 7 font for the 4 or 5 insects from Leavenworth County.

Labels Required on the Collection Display Box

Order Labels: One label for each order should be centered above the group of insects for that order. It is pinned flat on the surface of the Styrofoam.

Family Labels: Intermediate and Advanced collections must have specimens identified and grouped by Family. Refer to page 6 of this publication for specific guidelines. This label should be pinned flat on the surface of the Styrofoam. Family labels are usually smaller than Order labels and printed in smaller font. For Advanced collections, the exhibitor may identify and group all insects by Family in the collection. However, only Families in the six orders listed on page 6 will be given 3 points each. A few points may be given to the collection for effort by the Judge if all insects in

the collection are identified and grouped by Family as long as accuracy is maintained.

Order and Family labels may be glued to a piece of colored paper to form a border around the white label. This helps people looking at the collection see these labels better. The order and family labels may have the same color border or different color borders. Uses of dark colors such as red, black, dark blue, or dark green are best. **Do not use** florescent colors such as hot pink or lime green. **Remember you are showing off your insects**, not the labels. If you use a different color border for the order and family labels, use complimentary colors. Use **one color for the order labels** and **one color for the family labels**. Don't do a rainbow mix of colors. Again, remember you are showing off your insects, not your labels. Too much color or too bright colors tend to detract from your insects.

The labels in the collection on the left are have a light border and are hard to find in the box on the white background. The labels in the box on the right have a dark border and are easy for find and read (Note: The collection on the left is for a school project and does not meet exhibit guidelines for Kansas 4-H).

Box Identification Labels: Two identification labels are required for each display box. One label goes inside the box in the upper left hand corner. The other label goes on the outside of the box on the lower right hand corner (see diagrams on the next 2 pages). **These labels are required to have the following information on them:**

1. Exhibitor's name
2. Exhibitor's County or District

3. Class name and number exhibit is entered in
4. Total number of Orders in the collection
5. Total number of specimens in the collection
6. For Intermediate and Advanced collections: total number of Families in the required two orders for Intermediate or six orders for Advanced collections. Refer back to page 6 for specific Orders to identify Families. **(Note: for Intermediate – please list what two orders you counted families in)**
7. Statement of taxonomy used: Either Option A or Option B (refer to page 2 for explanation of these options).

Vials: Soft bodied insects such as silverfish, termites, etc. may be displayed and preserved in a small vial filled with rubbing alcohol.

Vial on the left has a screw on lid. Vial on the right has a cork stopper lid. Either one is acceptable.

Vials should be secured in the display box with insect pins crossed in an "X" neatly over the top of the vial in two places and a pin in front and in back of the vial. You can also use floral "U" shaped pins over the top of the vial. You can also use a piece of double sided tape below the vial to help secure it in place.

<u>All vials should be facing the same direction in the collection.</u> The ones in the collection above are all horizontal with the labels below the vial. You can also secure the vials vertically in the collection with the labels either above or below the vial.

<u>Entomology Collection Classes</u>

Introductory Entomology Collection: This class is designed for young 4-Hers that are just getting started making an insect collection. It does not have a class at the Kansas State Fair so rules may vary by County. **Check with your County Extension Office and/or your County Fair Book for your county's specific guidelines.** We recommend the following guidelines:

Introductory Collection – Display in one or two shoe boxes, pencil boxes, plastic storage boxes, cake pan with a clear lid or one standard display box a minimum of 15 and a maximum of 30 species representing at least 6 orders. The boxes should be covered with a piece of plastic wrap, plexiglass or other protective covering taped across the top of the box or covering the box. Follow the general guidelines listed for Collections. Members may exhibit in this class for a maximum of 2 years once they become a 4-H member. There is no Kansas State Fair class for this level.

Beginning I Entomology Collection: Display in one standard display box a minimum of 50 and a maximum of 125 species representing at least 7 orders. Specimens should be grouped according to order with the order labels pinned to the base of the box. Follow the general guidelines listed for Collections. Members may exhibit in this class for a maximum of 3 years, or

until they receive a purple ribbon at the Kansas State Fair, whichever comes first.

Beginning II Entomology Collection: Display in one standard display box a minimum of 75 and a maximum of 150 species representing at least 9 orders. Specimens should be grouped according to order with the order labels pinned to the base of the box. Follow the general guidelines listed for Collections. Members may exhibit in this class for a maximum of 3 years, or until they receive a purple ribbon at the Kansas State Fair, whichever comes first.

Intermediate Entomology Collection: Display a minimum of 100 and a maximum of 300 species representing at least 10 orders. Two standard display boxes can be used. All specimens should be grouped according to Order with the order labels pinned to the base of the box. In addition, family identification is required:

for any two of the following six orders for Option A:

Orthoptera	Hemiptera
Homoptera	Coleoptera
Diptera	Hymenoptera

for any two of the following six orders for Option B:

Orthoptera	Hemiptera
Odonata	Coleoptera
Diptera	Hymenoptera

On a piece of paper list what you did to improve your collection during the current year. Examples: what insects did you add or replace; what orders and/or families you added; what Leadership you provided in this project; and/or what insects you have studied**. Attach paper to the *front* of one of the display boxes. If this paper is missing, the collection will be dropped one ribbon placing.** Follow the general guidelines listed for Collections. Members may exhibit in this class for a **maximum** of 3 years. A 4-H'er may move up if they receive a purple ribbon before the 3 years if they desire.

Advanced Entomology Collection: Display a minimum of 150 and a maximum of 450 species representing at least 12 orders. Three standard display boxes can be used. All specimens should be grouped according to

Order with the order labels pinned to the base of the box. In addition, family identification is required:

for all of the following six orders for Option A:

Orthoptera	Hemiptera
Homoptera	Coleoptera
Diptera	Hymenoptera

for all of the following six orders for Option B:

Orthoptera	Hemiptera
Odonata	Coleoptera
Diptera	Hymenoptera

Only families in the above listed six orders will be counted for points. Family identification for insects in the remaining orders is optional, but desirable as long as accuracy is maintained. Follow the general guidelines listed for Collections. **On a piece of paper list what you did to improve your collection during the current year.** Examples: what insects did you add or replace; what orders and/or families you added; what Leadership you provided in this project; and/or what insects you have studied. **Attach this paper to the front of one of the display boxes. If this paper is missing, the collection will be dropped one ribbon placing.** Members may continue to exhibit in this class at the Kansas State Fair for an unrestricted number of years as long as they remain eligible for 4-H membership.

Starting in 2022, a completed 4-H Entomology Photo Release Form must be attached to the Entry Card for all Entomology exhibits at the Kansas State Fair.

What Judges look for

Judges look at several things when scoring an insect collection.

1. First is the correct identification of specimens by common name and correct placement of specimens in the proper order (and family where required).
2. Second is the overall variety of insect specimens. This is determined by the number of orders, number of species, and number of families, where required, in the collection.

3. Third is the overall neatness and appearance of the collection. The kind, condition, uniformity and neatness of the labels are looked at. The appearance of the specimens includes correct pinning, uniform height on the pin, proper wing spreading, position of legs, wings, and antennae, etc. In addition, overall arrangement and the general appearance of the display are also considered. Remember, a few minutes taken to straighten specimens and labels when you enter your collection for competition can make a difference in how it is judged.

Educational Display Category:

The purpose of an educational display is to teach others more about the importance, life cycles, biology, ecology, diversity, economic importance, etc. of insects and related arthropods. Subject matter can be as varied as the animals themselves. Displays may consist of specialized groups of insects or relate to any aspect of insect life. Displays should be presented in a clear, concise and interesting manner. **Immature specimens may be used to demonstrate life cycles, but not as the only representation of a species.** There are several classes of Educational Displays to choose from.

Educational Displays (Kansas State Fair 4-H Guidelines)

1. Share with others what you learned in this project. Exhibit any activity or learning experience related to the Teaming with Insects curriculum that does not fit into Entomology Collection or Notebook classes above.
2. Follow copyright laws as explained in the General Rules.
3. The exhibit may be, but isn't limited to, original works, digital presentations (must provide printed hardcopy for exhibit purposes for duration of state fair), programs, websites, games, apps, display box, notebook, display or poster which you have made.
4. If the exhibit is in a wooden display box, it must be 18 x 24 x 3.5/8 inches with a clear plastic top (such as plexiglass) and displayed horizontally. **If the box is the wrong size or insects are arranged parallel with the long sides of the box, the Educational Exhibit will be dropped one ribbon placing.**

The display box must be identified by the use of two identification labels which have the information in #5 on them. One label goes in the upper left corner inside the box; the other label goes in the lower right hand corner on the outside of the box. Title of the exhibit should be indicated inside the box. If the exhibit is a poster, it must not be larger than 22"x 28". If the exhibit is a tri-fold display, maximum size is not to exceed a standard commercial 3' x 4' tri-fold display board.

5. Exhibitor name and county/district must be clearly marked on educational exhibits. Also the class name and number entered in.

BEGINNING EDUCATIONAL EXHIBIT
Class for individuals that are exhibiting in the Beginning I and II Collection or Beginning Notebook Classes. If only exhibiting in this category, then ages 9-12.

INTERMEDIATE EDUCATIONAL EXHIBIT
Class for individuals that are exhibiting in the Intermediate Collection or Intermediate Notebook Classes. If only exhibiting in this category, then ages 11-14.

ADVANCED EDUCATIONAL EXHIBIT
Class for individuals that are exhibiting in the Advanced Collection or Advanced Notebook Classes. If only exhibiting in this category, then ages 13 or older.

Insect Notebook Category:

Insect Collection Notebooks are similar to insect collections except you are not collecting and preserving the insect specimens. Instead the exhibitor is taking pictures of the insects and making a notebook using the pictures. Please see the **"Entomology Collection Notebooks Guidelines and Requirements"** publication for more information and rules for exhibiting.

This publication was originally prepared by Vicky Wallace, Pawnee County 4-H Entomology project leader - January 2016. Directed and supervised by Diane Mack, 4-H Youth Development Specialist, Kansas State University; Sharon Dobesh, Great Plains Diagnostic Network Associate Director, Plant Pathology Department, Kansas State University; Dale Weishaar, Kansas State Fair 4-H Entomology Superintendent; David and Dana Williams, Sedgwick County 4-H Entomology project leaders.

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