

ENTOMOLOGY

PLEASE NOTE: Any changes/updates from the previous year will be *BOLDED and ITALICIZED!* Pay special attention to any projects with *BOLD, ITALICIZED WORDS* because they have changed from last year.

There are more kinds of insects in the world than all other organisms combined. They live on the earth's surface, in the soil, and in water. Insects live in deserts, rain forests, hot springs, snowfields, and dark caves. This project will help you study insect and their relationship with people. You can also learn how to collect, preserve, and identify insects.

<i>Completion, exhibition participation, and State Fair information for Entomology</i>			
<i>Division/Level</i>	<i>Grades</i>	<i>Completion Activities Needed*</i>	<i>Maximum State Fair Entries</i>
<i>Level 1</i>	<i>Grades 3-5</i>	<i>Complete 5 Activities*</i>	<i>Max= 1 Display and 1 Poster</i>
<i>Level 2</i>	<i>Grades 6-8</i>	<i>Complete 5 Activities*</i>	<i>Max= 1 Display and 1 Poster</i>
<i>Level 3</i>	<i>Grades 9-12</i>	<i>Complete 3 to 4 Activities*</i>	<i>Max= 1 Display and 1 Poster</i>

****"Activities" are defined as project manual activities and/or Hendricks County 4-H Workshops related to this topic. Members must be able to prove attendance by getting a signature from 4-H Leader/Project Advisor that conducts the workshop. Activity sheets available in the Extension Office with Entomology Project Manuals. Fair Exhibit requirements are listed below.***

Remember: All posters, notebooks, and display boards **MUST** include a reference list indicating where information was obtained, giving credit to the original author, to complete the 4-H member's exhibit. This reference list should/might include web site links, people and professionals interviewed, books, magazines, etc. It is recommended this reference list be attached to the back of a poster or display board, be the last page of a notebook, or included as part of the display visible to the public. A judge is not to discredit an exhibit for the manner in which references are listed. Reference Sheets are available at the Extension Office for use. For personal safety, do not include personally identifiable information such as mailing address or phone numbers on posters/displays/exhibits.

RULES:

1. Refer to the Hendricks County 4-H Policies and Entry & Exhibit Requirements.
2. Create an exhibit that shows the public what you learned in the entomology project this year. State Fair Exhibits -- each county may send one (1) Insect Collection and one (1) Poster for each level (grades 3-5, grades 6-8, and grades 9 and up) for a maximum of six (6) exhibits per county. Follow the "Notes" under each section (Insect Collection and Poster).
3. Be sure to enroll in the project on 4-HOnline and enter exhibit information into FairEntry by designated date.

Important Notes:

- **References:** one (1) of the following:
 - 4-H 764, How to Study, Collect, Preserve and Identify Insects.
 - How to Make an Awesome Insect Collection, ID-401 (available online, extension.entm.purdue.edu/401Book/default.php?page=home, or through The Education Store).
- **Title:**
 - **Collection** - Insect Collection, Grade X (where X = your grade in school)
 - **Poster** - Choose one (1) of the topics listed below, appropriate for your grade in school, and use that topic for your exhibit title.

- **Orders:**
 - Use the orders listed in the reference material (above), which are found on page 57 in ID-401.
- **Display:**
 - Collect, mount (pins or vials), and identify insects personally collected in the U.S. only.
 - Display your best specimens in an 18 x 24-inch box(es), orientated horizontally. When multiple boxes are used: list the box order (i.e. "box 1 of 3 boxes") and include your name in each box.
 - ID 401 A-F cards (for grades 3-8) and 401-I cards (for grades 9 - 12) are to be placed inside the display box in an attractive manner.
- **Identification:**
 - Collection display boxes are expected to contain the specified number of insects, families, and orders specified (see chart below).
 - All insects must be in the adult stage and be properly mounted on insect pins or be contained in vials as directed.
- **Pin Labels:**
 - Each pin or vial must contain two (2) labels:
 - 1) Top label is to include collection date, location, and collector name.
 - 2) Bottom label is to include common name and other optional identification data
- **Box Labels:** Box labels (computer generated or neatly printed) are used for orders and families as required (see chart below) and are to be placed flat against the bottom of the box. Insects must be properly grouped directly under the correct order and family box label. For example, all insects belonging to a particular order must be placed under that order label. Orders to be used are listed in the reference book ID- 401. If family level identification is required, the insects should be further grouped together under that family label.
- **Educational Box:**
 - One (1) additional box (educational), based on the specific theme (see chart below), is required for grades 9-12, in addition to the insect collection boxes. This box can be created in any manner chosen (without the mounting, pinning or identifying restrictions specified above).

Level: Insect Collection Option: Grades 3-12 Exhibit

Grade	Display	Max. # Collection Boxes
3	10 insects, identified and pinned on cards (ID 401A)	1
4	20 insects, mounted (pins or vials). Identify all insects by common name and identify five (5) to order. Include card ID 401B.	1
5	30 insects, mounted (pins or vials). Identify all insects by common name and identify 15 to order. Include ID 401C.	1
6	40 insects, exhibit a minimum of 6 orders, mounted (pins or vials). Identify all insects by common name and order. Include ID 401D.	2
7	50 insects, exhibit a minimum of 8 orders, mounted (pins or vials). Identify all insects by common name and order. Identify ten (10) to family. Include card ID 401E.	2
8	60 insects, exhibit a minimum of 10 orders, mounted (pins or vials). Identify all insects by common name and order. Identify 30 to family. Include card ID 401F.	2

9	70 insects, exhibit a minimum of 12 orders, mounted (pins or vials). Identify all insects by common name, order, and family. One (1) educational box; theme: insect behavior. Include card ID 4011. (1-3 collection boxes plus 1 educational box*). Place 4011 in first collection box only. Card ID 4011 download.	3
10	80 insects, exhibit a minimum of 14 orders, mounted (pins or vials). Identify all insects by common name, order, and family. One (1) educational box; theme: insect pest management. Include card ID 4011. (1-3 collection boxes plus 1 educational box*). Place 4011 in first collection box only. Card ID 4011 download. Card ID 401 download.	3
11	90 insects, exhibit a minimum of 16 orders, mounted (pins or vials). Identify all insects by common name, order, and family. One (1) educational box; theme: insects in the environment. Include card ID 4011. ((1-3 collection boxes plus 1 educational box*). Place 4011 in first collection box only. Card ID 4011 download.	3
12	100 insects, exhibit a minimum of 18 orders, mounted (pins or vials). Identify all insects by common name, order, and family. One (1) educational box; theme: benefits of insects. Include card ID 4011. (1-3 collection boxes plus 1 educational box*). Place 4011 in first collection box only. Card ID 4011 download.	3

***Educational box - The educational box (grades 9 - 12) is in addition to the insect display box(es). This box should be created in such a way as to teach something about the assigned theme to the general public.**

Poster Options for Entomology

Create an exhibit that shows the public what you learned in the entomology project this year. Posters are to be displayed horizontally, sized 22" x 28", mounted on a firm backing (foam-core board or other), and covered in clear plastic or other transparent material. Choose one (1) of the topics listed below, appropriate for your grade in school, and use that topic for your exhibit title, so the judges know which activity you completed. You can also use a creative sub-title if you wish.

Level: Poster Entomology 1: Grades 3-5 (BU-8440)

Exhibit

Display a poster based on the following activities:

- **Big Mouth Bugs** -- Show the four (4) different mouth types that you studied. Create a chart listing the four (4) mouth types, an insect with this mouth type, food they eat, and where these insects might be found.
- **FACETnating!** -- Show how insects see (compound eyes) and explain how they see colors.
- **Pit Stop** -- Make two (2) pit traps and use them to collect insects. Exhibit your completed record sheet. You can use the format given for your data collection, or make your own. Include some of the insects, or pictures of your trap and insects collected.
- **Buz-z-zing Around** -- Present three (3) to five (5) ways that insects communicate. Include an insect, or picture of each insect that communicates in each of the ways you are describing.
- **Ants and Uncles** -- Compare insects with their non-insect relatives by completing the chart in your book (copy or make your own). Include some of the insects and their non-insect relatives, or pictures of them, on your poster.
- **Chirp, Chirp** -- Watch and listen to the crickets for five (5) minutes, three (3) times a day, for three (3) days. Include day and night observations. Record what you see and hear.

Level: Poster Entomology 2: Grades 6-8 (BU-8441)

Exhibit

Display a poster based on the following activities:

- **Collecting Insects** -- Use two (2) of the insect collecting traps described in Activity 2 (Berlese Funnel,

Indoor Insect Trap), Activity 3 (Modified Wilkinson Trap), Activity 4 (Fruit Bait), or Activity 5 (Light Attractor) to collect insects. Exhibit a picture of your traps and an Insect Collection Data Chart that gives the trap location (for example, in the basement or in the back yard), date collected, and insects collected.

- **Spread Your Wings and Fly** -- Make and use a spreading board. Exhibit two (2) pictures of your spreading board and three (3) butterflies or moths that you prepared using your board.
- **Insect Experiments** -- Complete one of the following activities: Activity 8 (Color My World), Activity 9 (Sowbug Investigations), or Activity 10 (Life's Stages). Exhibit your data sheet and answers to the "Talk It Over" questions. For activities 8 and 9 include your hypothesis and a conclusive statement about your hypothesis (indicate if it was proved or disproved).
- **Invasive Species Investigations** -- Create an informational exhibit about one (1) Indiana invasive insect. Include the information requested in the activity for this insect (first eight (8) questions on page 29).
- **A Sticky Situation** -- Make and use sticky traps for four (4) weeks as described in Activity 13. Exhibit your data sheet and the answers to "Talk It Over" questions.
- **Footprint Clues** -- Study the tracks of three (3) different species of insect and one (1) arthropod as described in Activity 14. Exhibit your data sheet and the answers to "Talk It Over" questions.

Level: Poster Entomology 3: Grades 9-12 (BU-8442)

Exhibit

Display a poster based on the following activities:

- **The Scientific Method** - Use the scientific method to complete one (1) of the problems listed in Activity 3. Describe what you did to complete the five (5) scientific method steps and include your data and drawings or pictures of your experiment.
- **Transecting for Insects** - Compare three (3) habitats using the scientific method to determine which one has the most terrestrial insect activity. Display your transect data sheet for each habitat and answer the "Talk It Over" questions.
- **Please Drop In** -- Create your own hypothesis and collect insects in five (5) pitfall traps to prove or disprove your hypothesis, as described in Activity 7. Display how you completed your experiment (including each step in the scientific method) and your data for each habitat.
- **Aliens Among Us** -- Complete the "Natives vs Non-natives Survey Data Sheet" by checking two (2) boxes (Native or non-native and damage or no damage) for five (5) native and five (5) non-native insects as shown in Activity 9. Answer the "Talk It Over" questions.
- **IMP** -- Learning and Teaching - Make an informational flier and use it to teach younger 4-H members about five (5) insect pests that might be found in a home or school in your county. Exhibit your flier, lesson plan, and photograph of you teaching. Answer the "Talk It Over" questions.
- **Meal from a Worm** -- Use the scientific method to study how mealworm larvae grow. Include your hypothesis, data charts, and conclusions. Answer the "Talk It Over" questions.

Level: Independent Study: Grades 9-12 (One State Fair Entry)

Exhibit

- **Advanced Topic** - Learn all you can about a topic of your choice and present it on a poster or in an Entomology box. Include a short manuscript, pictures, graphs, and list the works cited to describe what you did and what you learned. "Title your poster, "Advanced Entomology – Independent Study."
- **Mentoring** - Exhibit a poster that shows how you mentored a younger 4-H member. Include your planning, the time you spent, the challenges and advantages of mentoring, and how the experience might be useful in your life. Photographs and other documentation are encouraged. Title your poster, "Advanced Entomology - Mentor"