

## Entomology

Description: This project will help you study insects and their relationship with people. You can also learn how to collect, preserve, and identify insects.

- Enroll in 4-H, pay annual program fee, and enter project in V2.4online by May 15
- Enter exhibit(s) in FairEntry by May 19, 2023. See page 7 Rule #24.
- Exhibits checked-in Saturday, June 17, 2023 from 9am-12 noon, judging starts at 12:30 pm

State Fair Entries:

- 3 collection exhibits per county, one per level
- 3 educational exhibits per county, one per level

An Allen County 4-H General Record Sheet must be completed, signed and turned in at the beginning of check-in for All Exhibit Building Projects.

**Educational Exhibit Guidelines:** 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 way references are listed.

Posters are to be 22"x28" and displayed horizontally and placed in a clear plastic sleeve or covered with clear plastic to protect contents. Display boards should be designed to sit on a table using no more than 36" of tabletop space. Space should be left in the lower right hand corner to place an exhibit tag provided by Purdue Extension staff.

Judges evaluating exhibits should recognize individual differences and creativity, therefore using information in this document as a guide rather than a requirement.

**Level 1: Grades 3-4-5**

**Level 2: Grades 6-7-8**

**Level 3: Grades 9-10-11-12**

In Allen County - If a 4-H member is taking Entomology for the first time they may select to exhibit at the Grade 3 level (10 insects) one (1) time only. HOWEVER this exhibit is NOT eligible to advance to the State Fair.

Collection Exhibit Guidelines: Collections are to include the following:

- Title as Insect Collection year in Entomology
- Order – refer to ID-401, page 57.
- Display – mounted insects are to have been legally and personally collected in the United States and displayed in an 18"x24" collection box displayed horizontally. Collections including multiple boxes are to be numbered 1 of 3, etc. ID 401 A-F cards (for Beginner and Intermediate) and 401-I cards (for Advanced) 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 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 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 the correct family label.

- Educational Box – One 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).

Judges evaluating collection exhibits should judge based on educational content, scientific accuracy, eye appeal and creativity

**Monarch Butterfly Statement:**

**Q:** Many have noticed the decrease in number of Monarch butterflies both in Indiana and throughout the country and wonder if and how Entomology at Purdue is responding. Are 4-H and youth still required to catch these endangered insects for their collection boxes?

**A:** Monarch butterflies are now officially on the threatened species list. While we know that collecting Monarch butterflies for 4-H collections or displays does not constitute a significant risk to their population when compared to the effects of climate change, pesticide contamination and habitat loss, capitalizing on this opportunity to discuss their decline is an excellent way to bring public focus to this important issue. We want our youth (and all IN citizens) to recognize the Monarch butterfly, understand its biology and be empathetic to its conservation.

Therefore, we have instituted the following update to our youth and 4H Entomology programs. Effective immediately, we no longer encourage students to ‘collect’ Monarch butterflies for exhibits, displays or 4-H insect collections. But, rather than simply removing the Monarch butterfly from the list of 150 insects that 4-H students are to recognize, we want to highlight it so that students really do learn to recognize them and understand their peril. After all, the more we are familiar with this species, the more apt we will be to assist and support the conservation of this iconic species.

Link to a recent article from our Department pertaining to Monarch butterflies

<https://www.purduelandscapereport.org/article/where-have-all-the-monarch-butterflies-gone/>

**Spotted Lanternfly Statement**

**Q:** Are there any new changes to rules or directions for the 4H or FFA youth projects or competitions that students and coaches should look for?

**A:** To keep the youth Career Development (CDE judging) and 4-H collection projects current, it is important to occasionally add new insects to the list. Due to the invasion of a serious new insect pest throughout the Midwest called the Spotted Lanternfly, we have added it to the list of insects found in the “How to Make an Awesome insect Collection and (ID-401) and Who Let the Bugs Out (ID-402) extension resources. Please be aware that students are now expected to identify and understand its biology and behavior as well as its potential impact in Agriculture. Indiana 4-H Youth Development partners with Purdue University academic departments to develop 4-H project guidelines. The Monarch butterfly and Spotted Lanternfly statements are provided by Dr. Timothy J. Gibb, Department of Entomology.

**Exhibit Class Guidelines:**

**Beginner (1<sup>st</sup>-3<sup>rd</sup> Year in Entomology):** Create a collection based on the year in Entomology or an educational exhibit.

Year in Entomology	Collection Information	Total Boxes
1 <sup>st</sup> year	10 insects, identified and pinned on cards (ID 401A)	1
2 <sup>nd</sup> year	20 insects, mounted (pins or vials). Identify all insects by common name and identify five (5) to order. Include card ID 401B.	1
3 <sup>rd</sup> year	30 insects, mounted (pins or vials). Identify all insects by common name and identify 15 to order. Include ID 401C.	1

**Intermediate (4<sup>th</sup>-6<sup>th</sup> Year in Entomology):** Create a collection based on the year in Entomology or an educational exhibit.

Year in Entomology	Collection Information	Total Boxes
4 <sup>th</sup> year	40 insects, exhibit a minimum of 6 orders, mounted (pins or vials). Identify all insects by common name and order. Include ID 401D.	2

5 <sup>th</sup> year	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
6 <sup>th</sup> year	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

**Advanced (7<sup>th</sup>-10<sup>th</sup> Year in Entomology):** Create a collection based on the year in Entomology or an educational exhibit. Advanced level insect collections are to also include an education box, for a total of four boxes. Advanced level youth may instead create an independent study topic of choice.

Year in Entomology	Collection Information	Total Boxes
7 <sup>th</sup> year	70 insects, exhibit a minimum of 12 orders, mounted (pins or vials). Identify all insects by common name, order, and family. One educational box, theme; insect behavior. Include card ID 401I. (1-3 collection boxes plus 1 educational box*). Place ID 401I in first collection box only. Card ID 401I download	3
8 <sup>th</sup> year	80 insects, exhibit a minimum of 14 orders, mounted (pins or vials). Identify all insects by common name, order, and family. One educational box, theme: insect pest management. Include card ID 401I. (1-3 collection boxes plus 1 educational box*). Place ID 401I in first collection box only. Card ID 401I download	3
9 <sup>th</sup> year	90 insects, exhibit a minimum of 16 orders, mounted (pins or vials). Identify all insects by common name, order, and family. One educational box, theme: insects in the environment. Include card ID 401I. (1-3 collection boxes plus 1 educational box*). Place ID 401I in first collection box only. Card ID 401I download	3
10 <sup>th</sup> year	100 insects, exhibit a minimum of 18 orders, mounted (pins or vials). Identify all insects by common name, order, and family. One educational box, theme: benefits of insects. Include card ID 401I. (1-3 collection boxes plus 1 educational box*). Place ID 401I in first collection box only. Card ID 401I download	3

**POSTER OPTION:** Poster options will be in 3 levels Level 1 Grade 3 - 5; Level 2 Grades 6-8; Level 3 Grades 9 - 12. All posters must have the title of the activity and a label in the lower right hand corner (1) See Allen County General 4-H Rules: Poster Rule & Label Rule. Use that topic for your exhibit title, so the judges know which activity you completed. You can also use a creative subtitle if you wish.

### Level 1: Grade 3-4-5

Display a poster based on one of the following activities:

1. Big Mouth Bugs: Show the four (4) different mouth types that you studied. Create a chart listing the four mouth types, an insect with this mouth type, food they eat, and where these insects might be found.
2. Pit Stop: Make two pit traps and use them to collect insects.

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.

3. Buz-z-zing Around: Present three to five ways that insects communicate. Include an insect, or picture of each insect that communicates in each of the ways you are describing.
4. FACETnating!: Show how insects see (compound eyes) and explain how they see colors.
5. 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.
6. Chirp, Chirp: Watch and listen to the crickets for five minutes three times a day, for three days. Include day and night observations. Record what you see and hear.

### **Level 2: Grade 6-7-8**

Display a poster based on one of the following activities:

1. Collecting Insects: Use two 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.
2. Spread Your Wings and Fly: Make and use a spreading board. Exhibit two pictures of your spreading board and three butterflies or moths that you prepared using your board.
3. Insects 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).
4. Invasive Species Investigations: Create an informational exhibit about one (Indiana) invasive insect. Include the information requested in the activity for this insect (first eight (8) questions).
5. A Sticky Situation: Make and use sticky traps for four weeks as described in Activity 13. Exhibit your data sheet and the answers to "Talk it Over" questions.
6. Footprint Clues: Study the track of 3 different species of insect and one arthropod as described in Activity 14. Exhibit your data sheet and the answers to "Talk It Over" questions.

### **Level 3: Grade 9-12**

Display a poster based on one of the following activities:

1. The Scientific Method: Use the scientific method to complete one of the problems listed in Activity 3. Describe what you did to complete the five scientific method steps and include your data and drawings or pictures of your experiment.
2. Transecting for Insects: Compare three 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.
3. Please Drop In: Create your own hypothesis and collect insects in five 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.
4. Aliens Among Us: complete the "Natives vs Non-Natives Survey Data Sheet" by checking two boxes (Native or non-native and damage or no damage) for five native and five non-native insects as shown in Activity 9. Answer the "Talk In Over" questions.
5. IMP: Learning and Teaching—Make an informational flier and use it to teach younger 4-H members about five 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.
6. 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 3: Grades 9-12: Independent Study**

**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".