

Kalamazoo County 4-H

Entomology Project Guidelines

Project Leader/ Superintendents: N/A

Project Social Media: N/A

Project Objectives & Life Skills*

- Explore the biology of insects.
- Connect biodiversity, invasive species, and integrated pest management to your study of insects.
- Explore forensic entomology by completing insect research and using the scientific method.

- **Head**

- Keeping Records
- Planning/Organizing
- Goal Setting
- Critical Thinking

- **Heart**

- Communication
- Concern for others
- Cooperation
- Social Skills

- **Hands**

- Leadership
- Responsible citizenship
- Marketable skills
- Self-motivation

- **Health**

- Personal safety
- Stress management
- Self-discipline
- Self-responsibility

**note these life skills are just some examples of what 4-H members will learn in this project*

Additional Resources

[Shop 4-H Entomology and Beekeeping Curriculum](#)
[4-H Entomology Project Snapshot](#)
[Entomology Workbook - Colorado \(OPTIONAL\)](#)
[Entomological Society of America](#)
[BioQuip Presents - Choosing the Right Pin Size For Your Specimens](#)
[How to Make a 4-H Insect Collection](#)
[Preparing Insect Specimens for Exhibit](#)

[Entomological Techniques Member's Guide- MSU Extension](#)
[Xerces Society for Invertebrate Conservation](#)
[Missouri 4-H Entomology Members Guide](#)
[Pinning Bees Tutorial](#)
[Butterfly Mounting](#)
[Insect Hunter - YouTube](#)
[Virtual Insect Collection Lab](#)
[Entomology Resource](#)

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Entomology

Guidelines:

- Projects can be exhibited under ANY category in this section. Collections may be exhibited multiple times over the years but must be added to each year.
 - One class in section ZB is allowed per year.
 - Multiple classes are allowed to be exhibited in sections ZC and ZD.
- Display cases for your projects must have a clear window to see your project without opening the lid as to keep your entomology project safe.
- Collecting Insects
 - Killing Jars are not allowed in the 4-H Entomology project as they are poisonous and deadly to not only the insects/bugs but also pets and humans too. If you want to study insects, the usual way is to catch and keep them. The kindest way to make sure they don't feel pain is by freezing them. Insects with hard shells, like beetles, are usually pinned to a board and stored in a box. Softer insects, like caterpillars and aphids, are better kept in a special liquid, such as ethanol, to preserve them.
 - "If you want to freeze your insects, start by placing the insects in small containers as you collect them. Many things can function as a container, including baby-food jars, old spice bottles, and even zip-lock bags. It is a good idea to carry both large and small containers. Preferably, put only one insect in each container, so that the insects will not harm one another. When you are finished collecting, put the containers in the freezer for at least 3 hours. The insects can then be removed and are ready for pinning after a few minutes." Taken from the [Missouri 4-H Entomology](#) guide.
- Pinning Insects
 - It is recommended to start with [insect pin size #2](#) and use insect pins instead of sewing pins as sewing pins will rust. Size #2 pins will work well with most insects.
- Labeling Insects
 - All insects must be properly labeled. Each label should include: Order of the insect, Name of the insect (common and/or scientific), Male/Female marker (optional), location caught (county, state), collection date and collector's name.
- Collection Arrangement
 - Insects for display should be in good condition (legs, wings, etc. are attached to the body). A missing limb does not mean you can't include the specimen. Insects are fragile and breaks happen.
 - The display should be neat and orderly. Insects should be lined up in rows and columns within the display box and should be displayed with like orders. (ie. a butterfly is not the same order as a bee).

Section ZB–Basic Entomology

- 4-H'ers entomology collections may use boxes 10"x16"x4" or standard boxes 18"x24"x3.5" or similar type boxes.
 - Suggested boxes for purchasing
 - [Home Science Insect Exhibit Case](#)
 - [Ecology Supplies Insect Exhibit Case](#)
 - [Bioquip Bugs Insect Display Case](#)
 - [Instructions to make your own bug box](#)
- [Instructions to make your own Spreading Board](#)
- [Catching Insects With a Net](#)
- [Printable Order Labels](#) for labeling the orders of your insect collections.
- [Printable Specimen Label](#) for labeling the specimens in your insect collection.
- Each year youth should add a minimum of 10 species to their entomology collections while following the chart below for other requirements for the Class that they will be entering

Entomology Class	Amount of Different Species	Orders
Entomology 1	25-49 species	8 different orders
Entomology 2	50-99 species	11 different orders
Entomology 3	100-149 species	14 different orders
Entomology 4	150-199 species	16 different orders
Entomology 5	200-249 species	16 different orders
Entomology 6	250-299 species	16 different orders
Entomology 7	300-349 species	16 different orders
Entomology 8	350+ species	18 different orders

Section ZC–Entomology Science

- Special Collections
 - Collect, prepare and preserve one of the below options
 - 25 different immature insects (nymphs & larvae)
 - 25 non-insect arthropods
 - 25 species from a single order
 - Project should be in a single display case.
- Economic Entomology
 - Collect, preserve and exhibit 30 different economic insects (pests & beneficials) (adults and/or immatures) and include some information on their relationship to human society.
- Entomological Studies
 - This can include slides, photos, video recordings, tape recordings, observations, live specimen exhibits, identification demonstration, or drawings.
 - Project should be in a thoughtfully organized display to share your findings with others.
- Entomological Experiments
 - This can include experiments in biology, ecology, genetics or behavior of insects.
 - Exhibited projects should be displayed in a careful and organized manner to share your findings with others.
 - Projects are recommended to use the scientific method (observe, question, research, hypothesize, experiment, test hypothesis, draw conclusions, report) to share the experiment and their findings.
- Educational Exhibit
 - An exhibit can be any poster, notebook, 3-D exhibit or any other display that shares your knowledge of entomology that does not relate to any of the above topics.