
AUTHOR

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Innovative Projects and Activities

Other ideas to consider for club activities are listed below. These are alternative activities that can be done in between, along with, or instead of the other meeting activities listed earlier. (For additional ideas on activities for younger 4-H'ers refer to the information on pages 4 and 5 of this book on working with 5-to 8-year-olds.) You and your 4-H'ers can:

- Make butterfly bowls and domes (glass containers filled with dried plants, galls and butterflies in a nice arrangement).
- Make plastic embedments (whole insects embedded in clear plastic).
- Do cartooning.
- Explore insect photography.
- Create insect puppets.
- Organize a quiz board.
- Make wing laminations (wings of insects sandwiched between clear contact paper).
- Make "bug" barns.
- Put together a bulletin board of insects in the news (this could be done as a club activity).
- Learn about butterfly gardens and plants.
- Visit insect terraria, aquaria and zoos.
- Do an exhibit on insect songs and sounds.
- Do insect word finds and crossword puzzles.
- Hold a contest with trivia questions.
- Conduct an insect "watch" or "count" to learn about insect populations.
- Study the possibilities of insects as human food.

Evaluating Member Progress

Evaluation is an important step in the learning process because it provides a review of knowledge and skills learned. The evaluation process also allows you to see how your members applied what they learned.

One of the most important parts of the evaluation process is the discussion that takes place between the 4-H member and leader. The best feature of these discussions is that they happen when needed. The opportunity may come before or after a presentation, when a new skill has been learned at a workshop or whenever the 4-H'er wants or needs to share feelings about an experience.

Once a project has been completed, it's helpful if you meet with each member to evaluate his or her project and discuss plans for the future. During this meeting, your discussion helps the 4-H'er think about his or her accomplishments and what he or she has learned from these experiences.

Some questions and areas for discussion can include:

- Did you find the experiences fun? What was fun?
- What was difficult? Boring? Most interesting?
- What things did you learn?
- How are you using the information you learned?
- Have you shared the information you've learned in this project with others?
- How well did you keep and maintain records?
- What could you have done differently to make it easier or more fun?



Awards and Incentives

EXHIBITING PROJECTS AT THE FAIR

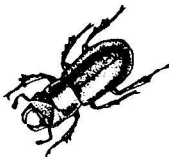
Exhibiting at the fair provides 4-H members with recognition and increases public awareness about insects. (Although as stated earlier, you should encourage your members to get involved in fun and valuable learning experiences that may not turn into fair projects.)

You and your club members should become familiar with the fairbook entry categories before members sign up for fair projects. This will help ensure that they sign up for the most appropriate entry for their project objectives. Knowing the criteria for each selected entry will also help prepare 4-H'ers for the judge's evaluation and feedback.

The State 4-H Entomology Developmental Committee has established suggested fairbook and judging guidelines for 4-H entomology projects. (See **Appendix A** for complete **Suggested Fairbook and Judging Guidelines**.) This information should be useful to you in helping your members prepare for the fair even if your county hasn't adopted these fairbook and judging guidelines. As a club, you and your members may want to use these guidelines to do a preliminary "judging" of projects before the fair. This will allow last minute corrections if needed. Be sure to not judge so harshly that members will not want to exhibit at all!

DISTRICT AND STATE AWARDS

Each year 4-H members can receive district, state and national recognition for their entomology accomplishments through the Michigan 4-H Awards Program. The first step the member must take is to fill out the computer form in December. Forms are available from county 4-H staff. (Completing this form is easier if 4-H members have kept good, accurate records of their progress and achievements!)



After the completed computer forms are reviewed, district award nominees are selected in each of the five different districts of the state. Each district nominee is required to assemble a record book which includes a national report form, a story and pictures. All district nominees are invited to attend the two-day Awards Assembly at Michigan State University in June. Selection of the state nominee is based on project accomplishments, leadership and citizenship. The state nominee earns the chance to attend the National 4-H Congress in Chicago and compete for a national scholarship. For more information on award and recognition opportunities, contact your county Cooperative Extension Service 4-H staff.

Resources

4-H PUBLICATIONS

The following 4-H publications are available from your county Cooperative Extension Service office.

(4-H 1120T) Career Ideas: Entomology

This sheet discusses how activities in a 4-H entomology project could lead 4-H'ers to an interest in careers in entomology, crop pest scouting, beekeeping, laboratory work and insect photography. (2 pages, Michigan 4-H, 1980)

(4-H 1231) 4-H Entomology Identification Labels

This sheet of identification labels is designed to simplify the task of labeling insect collections. Each label provides space for the location, collecting date, name of collector and name of insect. (1 page, Michigan 4-H, 1982)

(4-H 1331) Entomology Class and Order Labels

This sheet of class and order labels is designed to simplify the task of labeling insect collections. (1 page, Michigan 4-H, 1986)

(4-H 1335) Basic Entomology

This member's manual discusses what insects are, how they live and develop, and how to make an insect collection. (32 pages, Michigan 4-H, 1986)

(4-H 1336) Advanced Entomological Techniques

This member's manual acquaints the reader with unique collecting methods, advanced specimen preparation, specialty collections and ways to interact with other entomologists. (20 pages, Michigan 4-H, 1985)

(4-H 1406) Insect Life Cycle Studies

This bulletin is the third in a series of 4-H entomology manuals. It is designed to introduce 4-H members to rearing live in-

sects and studying insects in their natural environments. The manual will help members observe the behavior of insects, raise insects for profit or fun, and learn about insect life cycles under both artificial and natural conditions. (37 pages, Michigan 4-H, 1988)

(4-H 1393) 4-H Entomology Record and Report

This bulletin includes sections for recording collection and field notes, special entomology projects, special beekeeping projects, entomological studies, entomology experiments, and beekeeping purchases and sales. (6 pages, Michigan 4-H, 1986)

(4-H 1459) Kaleidoscope Overview Leader Guide

This booklet provides an overview of the Michigan 4-H Youth Programs 5- to 8-year-old curriculum, **Kaleidoscope**. **Kaleidoscope** materials focus on 5- to 8-year-olds' interests such as holidays, animals, how things work and things that happened long ago. (4 pages, Michigan 4-H, 1989)

(4-H 1460) Kaleidoscope:

Just Outside the Door Leader Guide

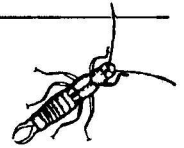
This leader's guide has plans for meetings on 12 different topics, with activities designed to help children learn more about the world that exists "just outside their door." Topics include water, plants, other people, insects and appropriate clothing for being outside. (40 pages plus a 7-page insert, Michigan 4-H, 1989)

(4-H 1461) Kaleidoscope:

Just Outside the Door Member Packet

This packet is a companion to the **Just Outside the Door** meeting plans. It includes response sheets and mini-posters for children to take home to parents. (Folder with 30 sheets, Michigan 4-H, 1989)

4-H NEWSLETTER



Michigan 4-H Today

This tabloid-sized periodical covers all 4-H project areas. Contact your county Cooperative Extension Service office to get on the mailing list.

4-H AUDIOVISUAL MATERIALS

The following 4-H audiovisual materials can be scheduled through your county Cooperative Extension Service office.

(4H0233) 4-H Entomology Black Light

This black light is used for trapping insects. It can operate off a car cigarette lighter. (Kit, source unknown, 1987, junior and senior high school ages.)

(4H0378) Exploring the Curious World of Insects

This slide set is designed to promote interest in the 4-H entomology program for beginners and those already enrolled. (79 slides, tape, script, 15 minutes, National 4-H Council, 1977, all ages.)

(4H0116) 4-H Insect Collecting

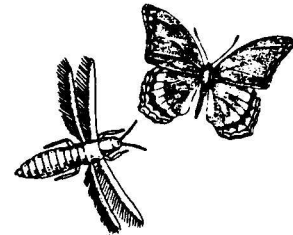
This video illustrates insect collecting equipment and techniques for collecting insects in the field. It's most suitable for experienced collectors. (VHS video, 17 minutes, Clemson University, 1980, all ages.)

(4H0184) Insect Order Flashcards

Twenty-six North American insects are illustrated on these cards. The backs of the cards list the appropriate insect family, habitat and importance. (26 flashcards, Gull Lake Environmental Education Project, 1987, all ages.)

(4H0302) It's a Buggy World

This video tells the story of a bored boy who finds a new hobby and friends in the world of insect collecting. Boys and girls demonstrate the process of collecting and classifying insects. It's an excellent introductory video. (VHS video, 15 minutes, 1975, all ages.)



MATERIALS FROM OTHER MSU DEPARTMENTS

The following materials are available from the MSU Instructional Media Center. Write to 126 Instructional Media Center, Michigan State University, East Lansing, MI 48824, or phone (517) 353-3960. Rental fees are indicated below. Customers are responsible for round-trip shipping and insurance charges.

Eclosion

This film shows, through time-lapse and microphotography, a seemingly insignificant white sphere on a leaf. To the strains of classical and pop music, this mysterious growth matures from egg to caterpillar to brilliantly colored butterfly. (16mm film, 17 minutes, 1974, \$10.50, ages 12 and up)

Secrets of the Ant and Insect World

This film presents facts about the ant world, discussing in detail the honeycast, hunting and leafcutter ants. (16mm film, 13 minutes, 1956, \$8.75, all ages)

MATERIALS FROM OTHER ORGANIZATIONS

The following material is available from the Entomological Society of America, 9301 Annapolis Road, Lanham, MD 20706.

Coloring Fun With Insects by Edwin W. King (1983). This is a delightful insect coloring book. Cost is \$3.50 each, or \$2 each if 25 or more are ordered.

Discover Entomology. This is an eight-page illustrated brochure containing information on what entomology is, why people study insects and how to prepare for a challenging career as an entomologist. Single copies are free upon request from the ESA.

The following material is available from the Michigan Entomological Society, Department of Entomology, Michigan State University, East Lansing, MI 48824-1115, as part of a minimal annual membership fee. Send inquiries and fees to the attention of MES.

Entomology Notes. This is a 19-part series of single page project/fact sheets on various entomological topics. (Available to non-members at 15 cents per sheet.)

Great Lakes Entomologist. This is the society's quarterly technical journal.

Michigan Entomological Society Newsletter. This is a quarterly newsletter.

The following material is available from the Young Entomologists' Society (YES), 1915 Peggy Place, Lansing, MI 48910.

Insect World

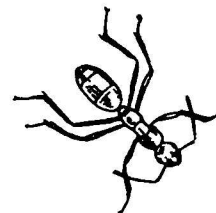
This is a bimonthly "funletter" for young people aged 6 to 14 who are interested in insects. There is an annual subscription fee. Send inquiries to the attention of YES.

YES Quarterly

This is an international journal devoted to young and amateur entomologists. There is a minimal annual membership and subscription fee. Send inquiries and subscriptions to the attention of YES.

YES International Entomological Resource Guide (Second Edition)

This 75-page resource guide is designed to help amateur entomologists locate entomological supplies and resources. This guide contains listings of businesses from around the world that sell entomological equipment, supplies, preserved specimens, live stock, books and publications, audiovisual materials, software and gift and novelty items. The guide also contains a list of entomological organizations and insect zoos. There is a minimal cost for each copy, payable to the Young Entomologists' Society. Send inquiries to the attention of YES.



Appendix A.

Suggested Fairbook Guidelines for 4-H Entomology Projects

The State 4-H Entomology Developmental Committee proposes that fair boards allow entomology projects to be exhibited under **any** of the following categories. Young people may exhibit in one level of each category.

Minimum Requirements

Entomology Collections:	Different species	Different orders	Identification
Basic Entomology I	25 adults	8	common or family name
Basic Entomology II	50 adults	11	common or family name
Basic Entomology III	100*	14	common or family name
Basic Entomology IV	175*	15	common and family name
Basic Entomology V	250*	16	common and family name
Basic Entomology VI	300*	16	common and family name
Basic Entomology VII	350*	17	common and family name
Basic Entomology VIII	400*	18	common and family name

*Credit given for adult specimens and/or immatures, phases or both sexes of one species.

Entomology Science: (Choose one)

- Option 1** **Special collections:** Collect, prepare and preserve 25 different insect immatures (nymphs and larvae) **or** 25 noninsect arthropods **or** 25 species from a single order. Include a one-page report.
- Option 2** **Economic entomology:** Collect, preserve and exhibit 30 different economic insects (pests and beneficials, adults and immatures) and include a one-page report on their relationship to human society.
- Option 3** **Entomological studies:** Can include slides, photos, observations, live specimen exhibits, identification demonstrations or drawings. Include a one-page report.
- Option 4** **Entomological experiments:** Can include experiments in biology, ecology, genetics or behavior of insects. Include a one-page report.

Special Entomological Skills: (Choose one)

- Option 1** **Illustration:** Prepare at least five illustrations (any medium) of insects showing form, habits, life cycle or other interesting information.
- Option 2** **Laminations:** Prepare at least 20 wing laminations, including a name for each species.
- Option 3** **Plastic embedments:** Prepare at least five plastic embedments of various insects and arthropods and include names of species.

Appendix B. Suggested Entomology Collection Evaluation and Feedback



BASIC ENTOMOLOGY COLLECTIONS

4-H member's name: _____ Age by December 31: _____

(Check one)	Classes	Required Specimens	Actual Specimens	Required Orders	Actual Orders	Required Identification
_____	Entomology I	25	_____	8	_____	common or family name
_____	Entomology II	50	_____	11	_____	common or family name
_____	Entomology III	100	_____	14	_____	common or family name
_____	Entomology IV	175	_____	15	_____	common and family name
_____	Entomology V	250	_____	16	_____	common and family name
_____	Entomology VI	300	_____	16	_____	common and family name
_____	Entomology VII	350	_____	17	_____	common and family name
_____	Entomology VIII	400	_____	18	_____	common and family name

Totals

Basic Requirements (30 points)	_____
Identification Accuracy (40 points)	_____
1. order identification (10 points)	_____
2. common name and/or family/species identification (30 points)	_____
Mounting of Specimens (10 points)	_____
1. pinning and pointing techniques (5 points)	_____
2. wing spreading (5 points)	_____
Labeling (10 points)	_____
1. proper alignment (5 points)	_____
2. style, neatness, legibility (5 points)	_____
Collection Arrangement (10 points)	_____
1. condition and alignment of specimens (5 points)	_____
2. display box and overall neatness (5 points)	_____
Total Score (100 points)	_____

Judge's name: _____

Please see reverse side for comments



Comments

Note To 4-H Member: This information is provided so that you may study the suggestions and comments given below and improve your collection for future years. If you have any questions about these comments, please discuss them with the judge.

	Expected	Actual	Good	Needs Improvement
1. Minimum number of orders	_____	_____	_____	_____
2. Minimum number of species	_____	_____	_____	_____
3. Mounting techniques				
a. location of pins			_____	_____
b. height of specimens			_____	_____
c. spreading technique			_____	_____
d. pointing technique			_____	_____
4. Labeling				
a. labels oriented correctly			_____	_____
b. proper spacing on pins			_____	_____
c. neatness and legibility			_____	_____
5. Neatness of collection				
a. alignment of rows and columns			_____	_____
b. consistent orientation of labels and specimens			_____	_____
c. neatness of lettering			_____	_____
d. condition of specimens			_____	_____
e. display box			_____	_____
6. Comments on incorrect identifications				

7. Additional comments



Appendix C. Evaluation Tips for 4-H Entomology Fair Judges

This short guide was prepared to assist you with the hope that it will make the job easier and ensure a positive learning experience for the 4-H member. If you have any questions about your duties as a fair judge, consult with a county 4-H staff person or fair exhibit superintendent.

4-H members participate in entomology projects for a variety of reasons, but they all should achieve the following goals:

1. Acquire information and understanding of insects in the environment.
2. Increase their awareness of beneficial and harmful effects of insect populations in the world.

3. Improve alertness to surroundings, observation and study skills.
4. Develop a hobby or special interest as a basis for positive self-esteem and interaction with others.
5. Develop neatness, orderliness, taxonomic skills (including the use of insect keys) and manual dexterity.
6. Create a curiosity to explore entomology related careers.

Keep these goals in mind when you evaluate 4-H entomology projects. **Be concerned about the quality of the project, but be more concerned about the quality of the learning experience!**

GENERAL PROCEDURES AND CONSIDERATIONS

Setting the stage for evaluation

Greet the 4-H member and try to make him or her feel at ease. Conduct the interview in a conversational manner.

Determine what the 4-H'er has learned. The project you are evaluating, as well as your evaluation and interview, are important learning tools. The exhibit, to a degree, indicates the member's growth and personal development. Try to judge both the quality of the project **and** the degree of learning. Look for signs of maturity, dexterity and attention to detail.

Questions you may want to ask include:

1. How old are you?
2. How much experience did you have before starting this project?
3. Were you able to learn from your leader or leaders, older club members or other resources?
4. What part of the project did you find most difficult?
5. What would you do differently if you were to do the project again?
6. How do you plan to use your new knowledge to assist younger 4-H members?

Determine the quality of work

Your judgment on the quality of work on the project is probably the best way to determine the outcome of this part of the evaluation. The "Entomology Collection Evaluation" form on pages 27 and 28 may help you make uniform and equal evaluations. At this point in the evaluation process a few specific questions about the project might be appropriate.

Evaluation wrap-up

Tell the member the outcome of his or her evaluation and why he or she received it. Completing the "Evaluation Feedback" section on the reverse side of the evaluation form will help you provide thoughtful, encouraging and constructive comments. Suggest ways to improve the exhibit, but always try to be encouraging and positive. You may be able to assist the member with plans for future projects through your comments.



ENTOMOLOGY PROJECT AND EXHIBIT EVALUATION: SPECIFIC POINTERS

Note: This section specifically refers to judging collections. Other projects and exhibits will have to be evaluated in a “free-style” manner.

The overall evaluation of an entomology collection takes place in five parts:

1. Basic requirements.
2. Identification accuracy.
3. Mounting technique evaluation.
4. Labeling.
5. Collection arrangement.

The evaluation form indicates the relative importance of each of these components.

A collection evaluation should operate something like the following; however, procedures may vary from county to county. An exhibit clerk or other assistant should check the 4-H’ers exhibit tag, count all the specimens in the box (orders and species) and indicate whether the collection meets the minimum requirements for the category of entry. The first thing you should do is examine the collection to see if all the identifications are correct, and then record the appropriate score on an evaluation form.

Keep in mind that there may be some allowable flexibility in ordinal classification. Although we encourage 4-H’ers to use the pre-printed order labels available through the county offices, you may find that they have applied different order names than you are used to, especially in the Orthopteroid and Hemipteroid complexes. This should be considered allowable because taxonomic classification schemes are not set in concrete and are subject to interpretation. You may, however, want to question the member about his or her reasoning behind the name selection to determine his or her level of understanding.

Next, examine the collection for accuracy and neatness in the various mounting techniques (pinning, pointing and wing spreading). Then, check the collection for alignment, neatness and style of labeling. The 4-H entomology collection is allowed to contain a mixture of one-label and two-label formats. This variation is a reflection of changes in project guidelines, **not** an inconsistency on the part of the 4-H member. Please **do not** penalize members for this variation.

Also look at the number of labels that identify someone other than the 4-H member as the one who collected the insect. The more the 4-H member is involved in doing his or her own collecting, the better. However, it’s fine for them to encourage family and friends to be on the lookout for insects. If the member appears to be the only collector, you might let him or her know that it’s all right to display insects caught by others. On the other hand, if most labels identify someone else as the collector, you may want to encourage them to become more involved. You might ask if they received the insects through trading or from the travels of friends or family members. Another thing to check are the collecting dates. How many insects have been added since last year?

Lastly, look at the overall collection arrangement. Evaluate for alignment and condition of specimens, overall neatness, and display box appearance. A wood display case with a glass top is strongly recommended, however, cigar, shoe, shirt or pizza boxes can also be used by beginning exhibitors. Record your evaluation and comments on an evaluation form.

After completing your evaluation of the projects, take a few moments to offer some helpful comments and suggestions for improvement (if any are warranted). The feedback you provide can be very important to stimulating further development in this and other project areas. The comment section on the back of an evaluation form is probably the most convenient way to deal with this. Then, if time allows, take a moment to talk with the 4-H’er and briefly explain your evaluation and comments. Answer the member’s questions as honestly and positively as possible.

We hope you enjoy your interaction with 4-H entomology members. You will find them knowledgeable and eager to learn. Your interaction with them can have a long-term effect on their progress and development in the entomology project area, so positive reinforcement is important!