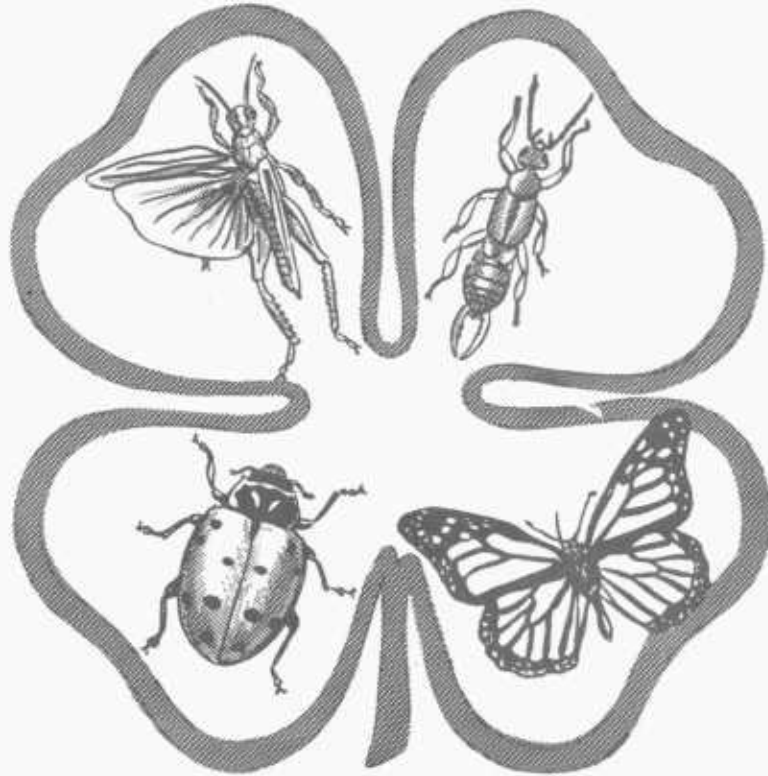


Know your bugs



4-H Entomology project

Name _____ Age _____ Club Year 19 _____

Address _____
(R. F. D. or Street Address) (Post Office)

Community or School _____ County _____

Name of Club _____ Club No. _____

Club Leader _____
(Address)

FEDERAL COOPERATIVE EXTENSION SERVICE / OREGON STATE COLLEGE / CORVALLIS

Cooperative Extension work in Agriculture and Home Economics, F. E. Price, director. Oregon State College, the United States Department of Agriculture, and the State Department of Education cooperating. Printed and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

KNOW YOUR BUGS

4-H Entomology II Project

Why



Purpose

The KNOW YOUR BUGS Project provides an opportunity for you:

- * To learn more about insects.
- * To learn how insects live and reproduce.
- * To go on field trips.
- * To make a collection of insects.
- * To learn how to control harmful insects.
- * To belong to a 4-H Club with other boys and girls.
- * To participate in county and state-wide 4-H Club activities.

What Do You Do

You



- * Make a collection of insects (page 5).
- * Make a life history mount of one insect (page 9).
- * Undertake the control of one insect (page 8).
- * Do ten or more of the "Electives" (page 9-10).
- * Make an exhibit (page 12).
- * Complete this project book and give it to your Club Leader at the end of the club year.

These are your project requirements.

Who May Be A Member



Any boy or girl who is:

- * 11 years old and has completed one or more years as a "Bug Catcher" or has studied insects.
- * Interested in learning more about insects.
- * Willing to do the requirements of this project.

This project may be repeated. If you take this project again, you can collect more insects, learn more about them, do more electives and make a better exhibit.

How to Know Your Bugs



- * Join a 4-H Entomology Club, if possible.
- * Attend club meetings regularly. Be on time.
- * Do your work promptly and neatly.
- * Use a pencil to fill out this project book.
- * Use your 4-H Insect Manual which you received when you were a "Bug Catcher." It will tell you many things.
- * Discuss this project with your father and mother. Ask them to help you.
- * Always do your share, and a little more.
- * Be courteous to your fellow club members, your club leader, your parents and others.
- * Always do your best.

Equipment and Materials



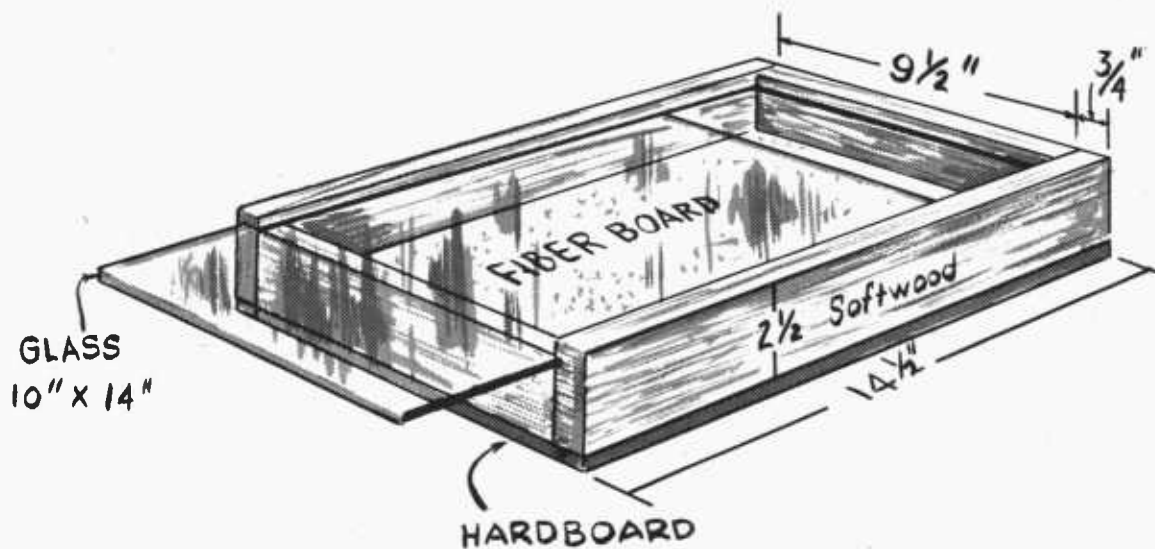
Equipment such as nets, spreading boards, and collection boxes may be purchased if you wish. You can, however, make most of the equipment you will need. A 10" x 14" wooden box or two cigar boxes will do.

Do not use cyanide in your killing jars because it is dangerous. Use carbon tetrachloride or chloroform. (You can buy these at a drug store.)

Place a thin layer (about 1/2 inch) of shredded rubber or a foam rubber pad in the bottom of the jar. Soak this with carbon tetrachloride or chloroform.

If you use shredded rubber, cover with a cardboard disk, tightly crumpled paper or cellulose cotton. (You can get shredded rubber from places where tires are recapped.)

On pages 7, 8, and 9 of your 4-H Insect Manual, you will find suggestions for making the equipment you need.



Collection Box

Material

Standard size glass 10" x 14"
2 pieces 1" x 3" - 9 1/2"

2 pieces 1" x 3" - 14 1/2"
Hard Board 11" x 14 1/2"

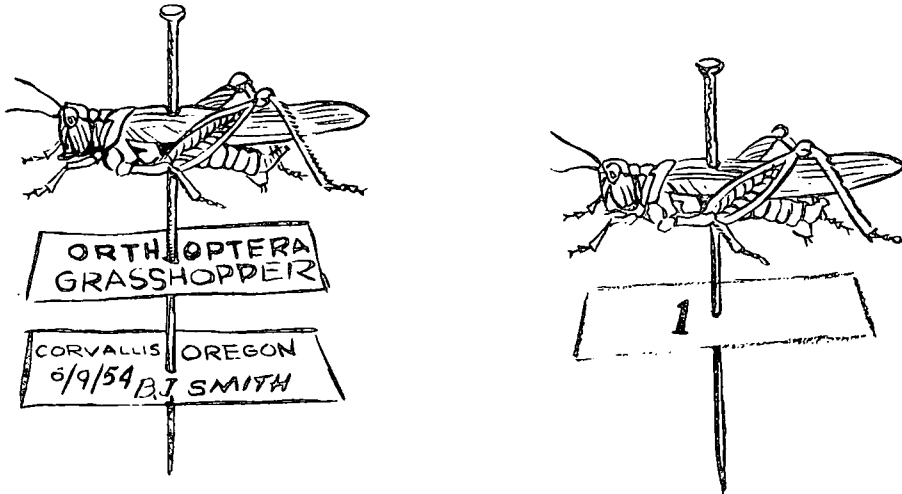
Fiber Board 9 1/2" x 13"

Mounting

All insects in your collection should be correctly mounted and labeled. The locality where the insect was collected, the date collected, the collector's name, and the order to which the insect belongs should be recorded in the record book for the 25 specimens required for your exhibit.

We suggest you use numbers to identify your insect specimens. For example, if the order Orthoptera is represented by a grasshopper, write "1" on a small label to agree with number 1 on page 5 - 6 - 7 "Collecting Insects" of your record book.

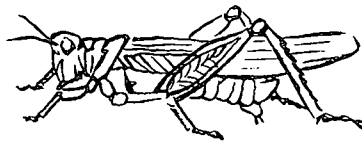

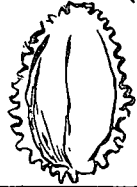
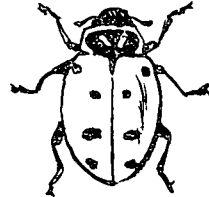


In permanent insect collections, the collection data are placed on small labels with the insect as shown on page 9 of your Manual. If you prefer, you may follow this procedure, but to do so will require writing or printing small letters and numbers. On pages 8 and 9 of your 4-H Club Insect Manual you will find diagrams and information on pinning insects.




Mounting pins are available from your county extension agent (4-H).

Collecting Insects

You must catch, mount, and identify 25 insects representing at least twelve different orders. Follow the system of naming orders used in your 4-H Club Insect Manual.

Order	Spec. no.	Common name (if known)	Date caught	Locality
ORTHOPTERA (grasshoppers and others) 1. 				
HEMIPTERA (true bugs) 2. 				
HOMOPTERA (bugs) 3. 				
COLEOPTERA (beetles) 4. 				
LEPIDOPTERA (butterflies and moths) 5. 				
DIPTERA (flies and others) 6. 				

Order	Spec. no.	Common name (if known)	Date caught	Locality
HYMENOPTERA (wasps, bees and others)				
7. 				
NEUROPTERA (lacewings, others)				
8.				
ODONATA (dragonflies, damsel flies)				
9.				
DERMAPTERA (earwigs)				
10.				
11.				
12.				
13.				
14.				
15.				



You shall undertake the control of one insect.

1. Name of insect to be controlled _____
2. What does the insect eat? _____
3. How is this insect harmful? _____
4. At what stage in the life cycle is the insect harmful? _____
5. What type of mouthparts does the insect have?
 chewing _____ sucking _____
6. At what stage in life cycle was control directed? egg _____ larva _____
 pupa _____ adult _____ nymph _____
7. Tell briefly what you did to control this insect and what the results were.

Date _____

Parent's or leader's signature _____

Life History Mount

One of your requirements is to make a mount showing the different stages in the growth of an insect. For example, the eggs, the larva, the pupa and adult of the tent caterpillar or the eggs nymph, and adult squash bug.

You can use a cardboard or wooden box about 6 inches wide, 8 inches long and about 1 inch deep to place the specimens in. You can, if you prefer, purchase a Riker mount. It will increase the usefulness of this mount if you can show an example of the insect injury.

You will find some suggestions on page 48 of your 4-H Club Insect Manual which will be helpful in making your life history mount.

Electives

You are required to do ten of these. You will want to do as many more as you can. You may think of other things you would like to do. Add them to this list.

(Have your parent or leader sign opposite each elective you have satisfactorily completed.

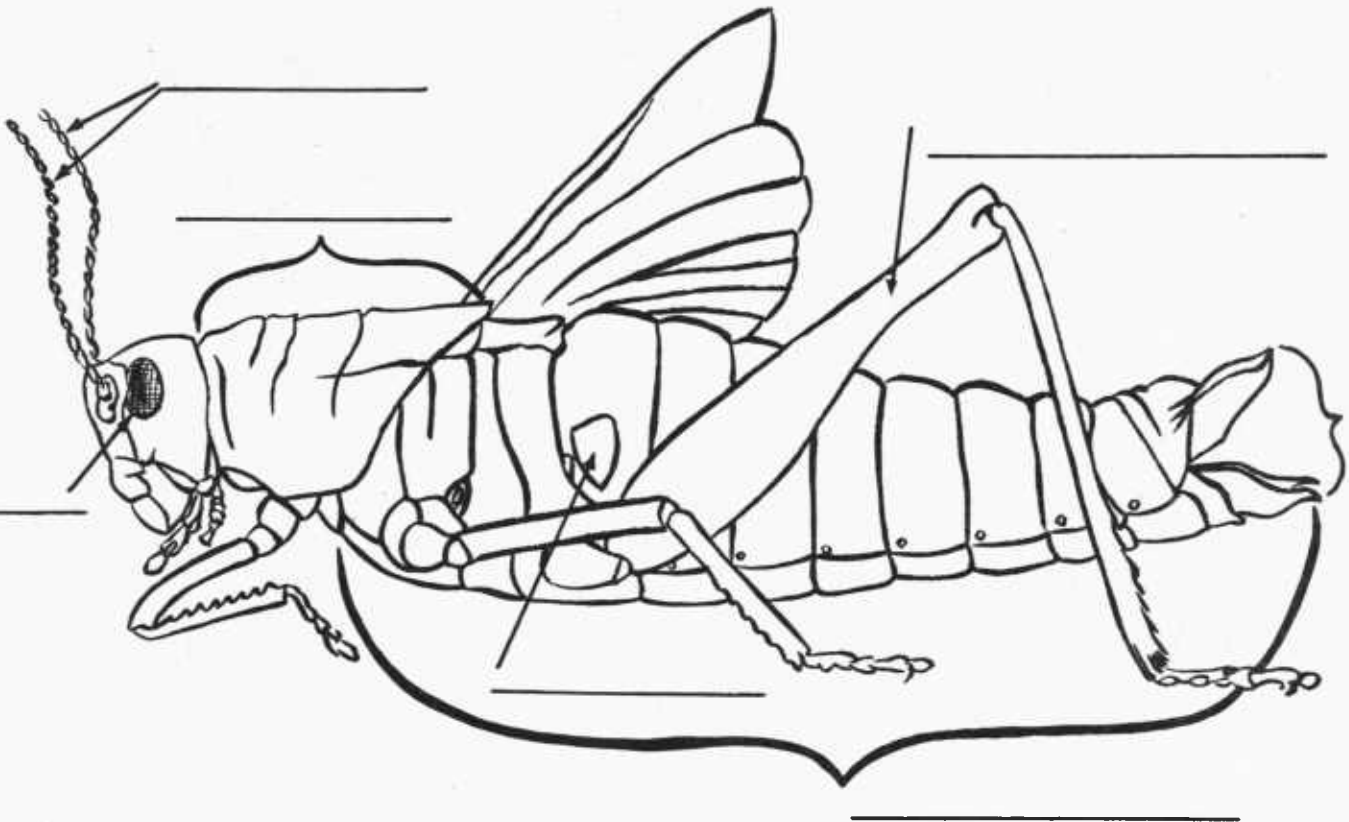
	<u>Date</u>	<u>Signature</u>
1. Label the drawing on page 11 of your record book.	_____	_____
2. Tell three ways insects are different from other animals.	_____	_____
3. Tell your club about some insect, how to identify it, how it lives, how to control it, if it is injurious.	_____	_____
4. Make a pinning block.	_____	_____
5. Make a spreading board.	_____	_____
6. Name 3 insecticides.	_____	_____
7. Make an insect display box.	_____	_____
8. Help plan a field trip.	_____	_____
9. Learn the life history of an insect with <u>complete</u> metamorphosis.	_____	_____
10. Learn the life history of an insect with an <u>incomplete</u> metamorphosis.	_____	_____
11. Help prepare an exhibit to put in a store window or use at some meeting.	_____	_____
12. Name 3 beneficial insects and tell what good they do.	_____	_____
13. Name 5 harmful insects and tell what damage they do.	_____	_____

Electives (continued)

	<u>Date</u>	<u>Signature</u>
14. Lead your club in the pledge of allegiance and the 4-H Club pledge.	_____	_____
15. Make an insect survey.	_____	_____
16. Collect 25 additional insects.	_____	_____
17. Show and tell others how to do or make something relating to entomology.	_____	_____
18. _____	_____	_____
_____	_____	_____
_____	_____	_____
19. _____	_____	_____
_____	_____	_____
_____	_____	_____
20. _____	_____	_____
_____	_____	_____
_____	_____	_____
21. _____	_____	_____
_____	_____	_____
_____	_____	_____
22. _____	_____	_____
_____	_____	_____
_____	_____	_____
23. _____	_____	_____
_____	_____	_____
_____	_____	_____
24. _____	_____	_____
_____	_____	_____
_____	_____	_____

CAN YOU FIND THESE PARTS? (Elective No. 1)

- Antennae------(feelers) Insects have two antennae which are either in front of or between the eyes. The shape of insect antennae vary and this helps us to identify insects. Besides being feelers, antennae help some insects to smell.
- Compound Eye-----Most insects have two compound eyes. They are called compound because each eye is made up of many single eyes.
- Thorax -----The thorax is the body segment between the head and abdomen. The legs and wings are attached to the thorax.
- Abdomen-----The abdomen of insects consists of several segments or rings. The small holes on the side of the thorax and abdomen are spiracles through which the insect breathes.
- Tympanum -----The tympanum helps insects to hear. It is located on the side of the first segment of the abdomen. It is found on the front leg of some crickets.
- Ovipositor-----The ovipositor is found on the last segment of the abdomen of grasshoppers. It is used in laying eggs, that is, it helps when eggs are laid.
- Leg -----An insect leg is made up of several parts. Each leg has a coxa, trochanter, femur, tibia, and tarsus.



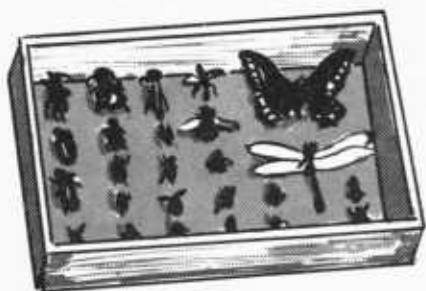
Exhibit

You shall make an exhibit at a community, city or county fair. Your exhibit may be selected to go to the State Fair.

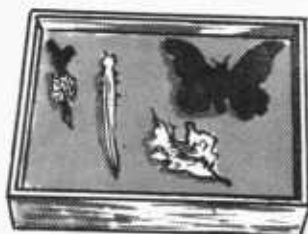
Your exhibit shall include this project book complete with your 4-H Story, 25 insects representing at least 12 different orders properly mounted and labeled, and your life history mount.

Your insects must be labeled. If you use numbers on your insect labels you must attach a sheet of paper showing the Order, common name (if known), date caught and locality or you may place a sheet in the bottom of your box as you did in your "Bug Catchers" Project.

You may exhibit your insects in cigar or similar boxes or you may make or buy cardboard or wooden boxes with or without glass covers. (Glass covers let people look at your collection without damaging the insects.) Make your exhibit as neat and attractive as possible. Your life history mount should be in a separate box and should be properly labeled. Your name and address should be on each box.



Insect Collection



Life History Mount



Record Book

Score Sheet

Twenty-five (only) mounted insects representing twelve different orders - - - - -		50
Condition of mounted insects	15	
Correctly identified and labeled	15	
Neatness of exhibit	10	
Life History Mount	10	
Record Book - - - - -		50
Collection record	10	
Record of electives done	10	
Insect control record	10	
Story of field trips	10	
4-H Club Story	10	

My Story of Field Trips

(Give a brief account of things you saw and did on each of your field trips.)

Trip 1 Date _____ Locality _____

Trip 2 Date _____ Locality _____

Trip 3 Date _____ Locality _____

Trip 4 Date _____ Locality _____

Pictures and Clippings

JIMMIE CRACK CORN

When I was young I used to wait
 On master and give him his plate,
 And pass the bottle when he got dry,
 And brush away the blue-tail fly.

Chorus:

Jimmie crack corn an' I don't care,
 Jimmie crack corn an' I don't care,
 Jimmie crack corn an' I don't care,
 My Master's gone away.

An' when he'd ride in the afternoon
 I'd follow along with a hickory broom
 The pony being very shy
 When bitten by a blue-tail fly.

3. One day he ride around the farm,
 The flies so numerous they did swarm,
 One chance to bite him on the thigh,
 The devil take the blue-tail fly.
4. The pony run, he jump, he pitch.
 And tumble master in the ditch.
 He died, and the jury wondered why,
 The verdict was the blue-tail fly.
5. They lay him under a 'simmon tree,
 His epitaph is there to see:
 "Beneath this stone I'm forced to lie,
 A victim of the blue-tail fly."

Oregon 4-H Entomology Projects

Bug Catchers: 4-H Entomology I (for boys and girls 9 to 11 years)

- * collect at least one insect from 10 different orders
- * undertake the control of one insect
- * do five or more electives

Know Your Bugs: 4-H Entomology II

- * collect 25 or more insects representing at least 12 different orders
- * make a life history mount of an insect
- * do ten or more electives
- * undertake the control of an insect

Insect Life: 4-H Entomology III

- * collect at least 50 species of insects of economic importance
- * conduct a life history study of at least one insect
- * prepare mounts of plant material showing 10 types of insect injury
- * control study of one insect pest
- * conduct a survey on the time of emergence or degree of infestation of an insect pest

Junior Entomologist: 4-H Entomology IV (for boys and girls 14 years and older)

- * collect at least 25 species in each of two groups of insects such as moths and butterflies, aquatic insects, parasites and predators, and Oregon economic pests
- * take part in a public demonstration and write a report for a project book
- * prepare a list of 10 important insect pests of Oregon
- * do at least 3 special activities
- * draw and label insect parts
- * make an insect survey
- * do at least 3 elective projects

4-H CLUB PLEDGE

I Pledge --

MY HEAD to clearer thinking,
 MY HEART to greater loyalty,
 MY HANDS to larger service, and
 MY HEALTH to better living, for
 My club, my community, and my
 country.

4-H CLUB MOTTO

TO MAKE THE BEST BETTER

Paste pictures and clippings on the inside of the back cover if you wish.

RECORD OF MY 4-H ACTIVITIES

Date record started _____

No. of meetings my club held _____ No. I attended _____

Club office I held _____

Tours or camps I attended _____

Demonstrations I gave _____

Contests I entered _____

Exhibits I made _____

Parent's Statement

Please tell briefly how 4-H Club Work has helped your son or daughter

Parent's signature _____

Leader's Statement

_____ has satisfactorily completed the requirements
(Club member's name)

of this project.

Leader's signature _____

Comments: _____

