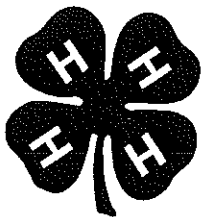
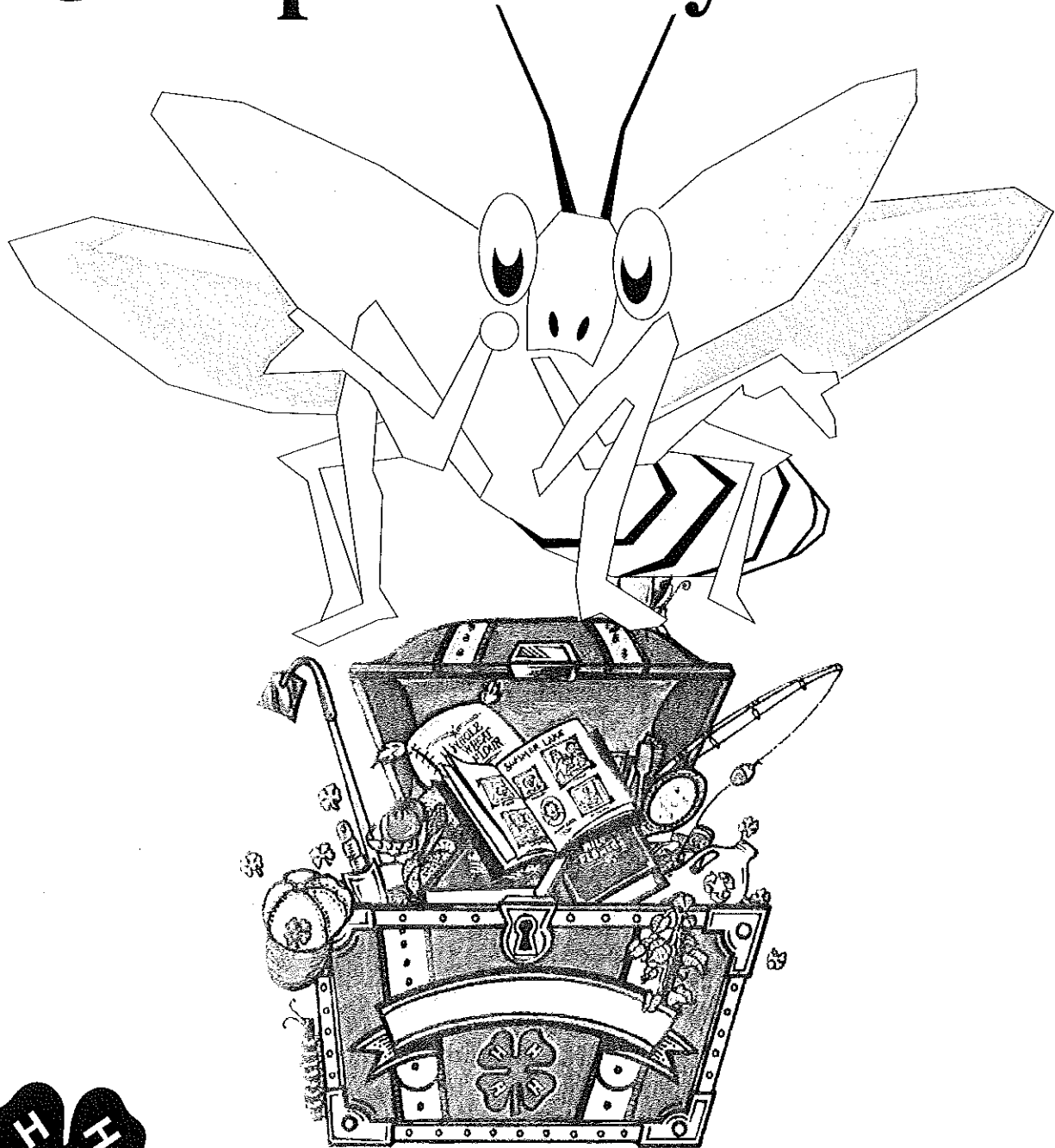


Bug Out

Group Activity Guide



K-3RD GRADE PROGRAM

North Carolina Cooperative Extension
North Carolina A&T State University
North Carolina State University

Dear Parent or Partner,

The activities in this guide are group activities, and all are designed with a special emphasis on experiential learning. Many of the activities are self-contained: you will need nothing more than this guidebook and common household items to lead 4-H'ers through them. Some activities require handouts, and originals of these handouts, which you can trace or photocopy, have been provided. Another source for these handouts is the North Carolina A&T Cooperative Extension Program's World Wide Web page (<http://www.ncat.edu/~soa/extension/programs/bugout/>). All these activities are readily adaptable to a variety of conditions, and large as well as small groups of children.

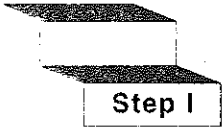
Each of these activities is designed to help children develop one or more "life skills." "Life skills" are abilities, knowledge, attitudes or behaviors that enable people to manage real-life situations and transitions, and live comfortably with others. This curriculum is designed to help children develop competencies in social interaction, decision-making, health and physical fitness, self-understanding and experiential education.

In the Step 1 *Bug Out* Mini Project, children learn what insects are, the different kinds of insects, and the parts of an insect's body. The Step 2 *Bug Out* Mini Project exposes children to places where insects live, how insects grow, and how insects change as they grow. This group activity guide is designed to extend the learning experiences and activities children gain in their Step 1 and Step 2 *Bug Out* Mini Project Books. These activities, designed for parents/partners to use with groups of 4-H'ers, will expose children to a variety of learning experiences related to insects. At several points in each activity, questions are provided for parents/partners to ask the 4-H'ers. To help children develop critical thinking skills, most questions are open-ended, without right or wrong answers. Occasionally, questions have possible answers which will help direct critical thinking, and answers are provided (marked with an asterisk) which may be helpful to parents/partners directing the activity.

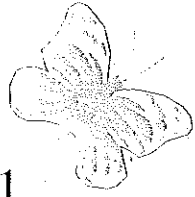
The description of each activity contains eight sections. The first three sections are the objectives, materials needed, and background information. The fourth section has detailed instructions for the activity, and it is at this point that the "Experiential Learning Process" begins. In the Experiential Learning Process, the activity is an *experience* for 4-H'ers. Experiential Learning does not stop with experience alone, and the final four sections — sharing, processing, generalizing, and applying — are equally important. These final four sections provide questions which the 4-H'ers should be asked, to help them think through their experience and evaluate it.

For additional information on the Experiential Learning Process, see the diagram inside the back cover of this group activity guide.

With your assistance, encouragement and guidance, your child and other members of the 4-H club will learn much and develop a positive attitude toward group dynamics and the learning process. Feel free to contact the 4-H Extension agent at your local Cooperative Extension Center for more information.



Step 1



Activity 1 Butterfly Wing Colors

Objective



4-H'ers will learn the colors on the wings of a butterfly or moth, and then use glue and construction paper to create their own renditions of a butterfly.

Materials Needed

- One outline-style drawing of a butterfly on a piece of paper for each 4-H'er. (Trace or photocopy the handout on page 2.)
- Construction paper in three or four different colors, torn into rectangles about the size of a dollar bill.
- Glue or paste.
- A dead butterfly or moth (look around the porch light or on the car radiator).
- A book with color photos or drawings of butterflies.

Background



Butterflies and moths have tiny, delicate scales covering their wings. These scales provide the insect with its color. With a dead butterfly or moth, children can be shown how the colors from the scales of a butterfly or moth will rub off on a piece of white paper. (There are usually plenty of dead butterflies and moths around porch lights and on car radiators, so please don't destroy a living insect just for this activity.) Let the 4-H'ers touch the colors which have rubbed off on the paper.

EXPERIENCE

Tell the 4-H'ers:

1. Today we are going to design our own butterfly. We will take tiny bits of colored paper, and paste them on the wings of this butterfly [show picture]. You may use any colors you wish. You may mix the colors, or make patterns. To color

your butterfly's wings, you will have to tear these strips of construction paper into smaller pieces.

2. Give each child a copy of the butterfly drawing, strips of colored construction paper, and glue or paste.

3. Allow the 4-H'ers to tear the construction paper into smaller pieces, and then paste these pieces onto the wings of their butterfly drawing.

LET'S TALK

When the 4-H'ers have completed their butterflies, ask one of them to tell the group what they did. Ask him or her to explain the hardest part of the project, and what was most enjoyable about it.

PROCESSING

Ask the 4-H'ers:

1. If you made another butterfly, what would you do differently?
2. What are the most colorful insects that come to mind?*
3. What colors do these insects have?
4. What part of an insect has the most color?
5. Do the colors or patterns look the same when seen from across a room as they do when you look at them up close?

**butterflies*

GENERALIZING

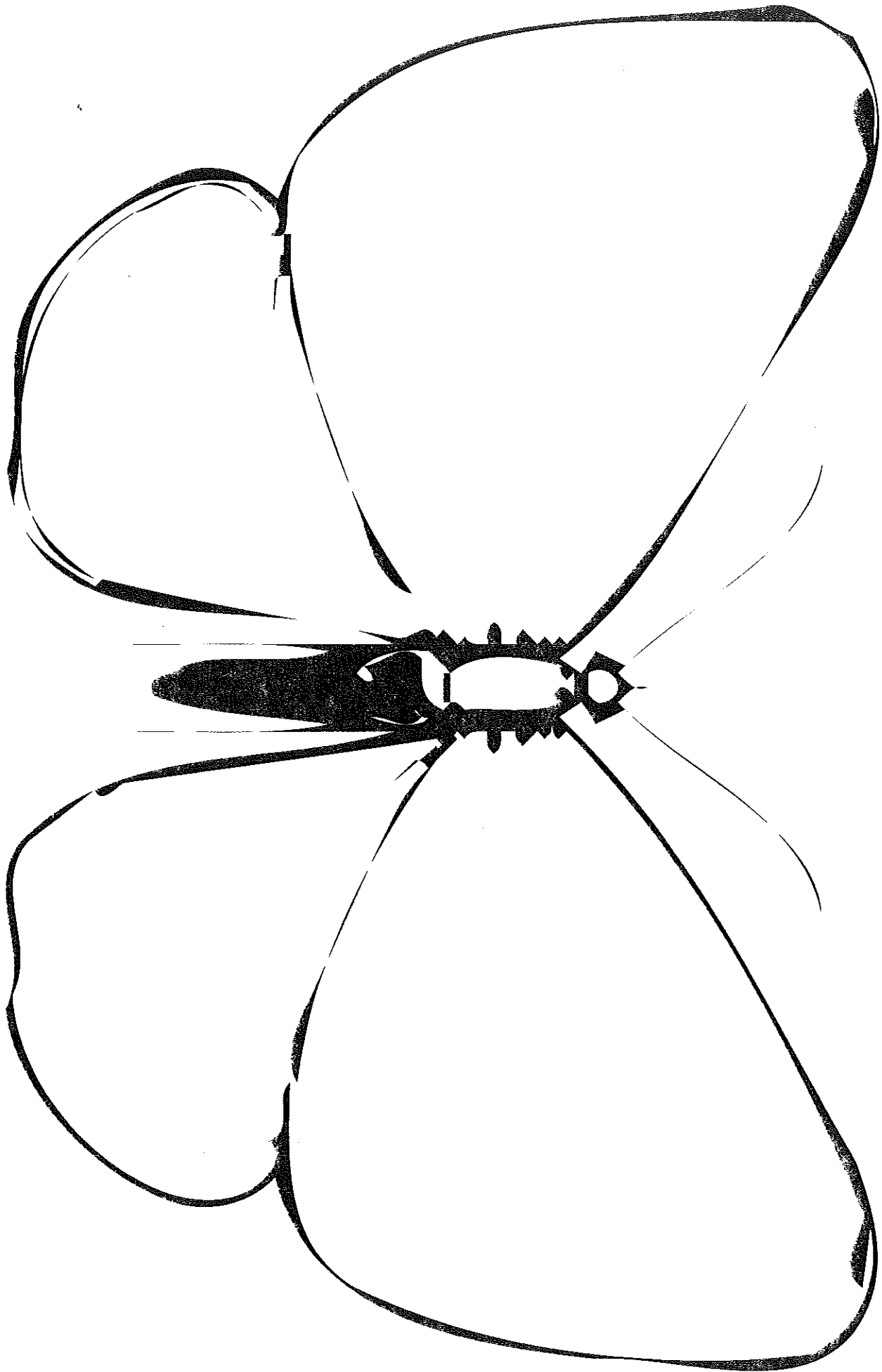
Ask the 4-H'ers:

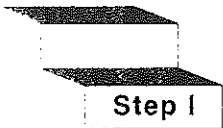
1. Do other animals or flowers have the same colors as butterflies?
2. Is a dog colored the way a butterfly is?
3. Would the butterfly you made be easy or difficult to see if it were flying around outdoors? Could a hungry bird spot it easily?

APPLYING

Ask the 4-H'ers:

1. What will you think of the next time you see a butterfly?





Activity 2 Insect Walk

Objective

4-H'ers will learn to walk like an insect, with six legs, by using their gross motor skills.

Materials Needed

- One broom, broom-handle or yardstick for every three children. The insect walk can take place in a large room or hallway, or outside.

Background

A distinguishing characteristic common to all insects is six legs. For insects to move, it takes a different type of coordination than two- or four-legged movement requires. If you can find a large insect, such as a beetle, ask the children to watch the way it moves across a desk or table.

⊛ EXPERIENCE

Although several groups of children may do the insect walk at the same time, races or competition should be strongly discouraged.

Tell the 4-H'ers:

1. Today we are going to find out what it's like to walk as an insect does.
2. Divide the 4-H'ers into groups of three. If the total number of your group isn't a multiple of three, have the children take turns.
3. Give one child the head of the broom, and ask him or her to grasp the broom and straddle it.
4. Have a second child stand behind the child at the head of the broom, and likewise grasp the broom and straddle it.
5. Have a third child grasp and straddle the broom. Make

sure the children line up on the broom so closely together that their feet will interfere if they don't move in unison.

6. Turn them loose to walk toward a specific destination, then have them turn around and come back.

7. Have the children trade positions on the broom, and try another journey.

⊛ LET'S TALK

When the 4-H'ers have all had an opportunity to walk with six legs, bring the group together and ask one of them to tell the group what they just did. Ask what they found the hardest part of the insect walk.

⊛ PROCESSING

Ask the 4-H'ers:

1. If you did the insect walk again, what would you do differently?

⊛ GENERALIZING

Ask the 4-H'ers:

1. What animals other than insects have four legs?
2. If you had four legs and no arms, how would you hold things?*
3. Will anything you've learned today help you in the future?
4. When you were walking like an insect, you were part of a team. Can you think of other times when you worked as part of a team?

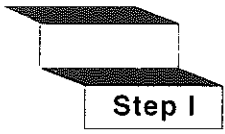
* mouth

⊛ APPLYING

Ask the 4-H'ers:

1. Is there any advantage to having six legs?*
2. Do you think it would be better to have four legs than to have six?
3. Do animals with two legs move them forward at the same time?
4. How many legs do insects have?

* climbing, and loss of a leg is not so disabling for a six-legged animal as for an animal with four legs or two



Activity 3 Life Stages



Objective



4-H'ers will learn the life stages of insects and how they differ. They will learn the stages of insect metamorphosis by representing one of the stages in a role-playing activity.

Materials Needed

- A copy of the handout on page 5, cut along dotted lines into nine cards.

Background



Insects grow and develop through a process called metamorphosis. The insect's metamorphosis may be simple, with newly hatched insects looking like smaller versions of what they will look like as adults. Other insects go through complete metamorphosis, with four stages:

(1) Egg (2) Larva (3) Pupa (4) Adult

In complete metamorphosis, the insect looks completely different at each stage in its development.

EXPERIENCE

Tell the 4-H'ers:

1. When some insects hatch from eggs, they look very much as they will look when they become adults. They may add wings or go through other minor changes as they grow up, but the newly hatched insect looks like it will look when it is a grown-up. When the appearance of an insect does not change much as it grows, this is called simple metamorphosis.
2. Show the "simple metamorphosis" card.
3. Pronounce the word "metamorphosis" slowly and clearly. Ask several of the 4-H'ers to pronounce the word.

Tell the 4-H'ers:

4. Beetles, butterflies and other insects go through four distinct stages as they grow up. They begin as an egg, then become larvae, then pupas, and finally adults. At each of these four stages, the insect does not look at all as it looks in the other stages. When insects go through four stages of development as they grow up, it is called complete metamorphosis.
5. Show the "complete metamorphosis" card.
6. Ask one 4-H'er to distribute the other nine cards to other 4-H'ers.
7. Have the nine 4-H'ers with cards hold their cards in front

of them, so the dealer can see them.

8. Have the dealer separate the card holders into two groups—the simple metamorphosis and the complete metamorphosis.
9. Ask the dealer to then arrange the card holders in each of the two groups in the proper order, reflecting the life of an insect from birth to adulthood.
10. Repeat steps 1-4, giving other 4-H'ers a chance to be the dealer.

LET'S TALK

After the activity has been completed, ask one of the 4-H'ers to describe what he or she just did.

Ask the 4-H'ers:

1. Do you remember the four stages of complete metamorphosis? What are they?
2. Of the two ways insects grow up, which is more like the way humans grow up?
3. How are insects similar to humans? Do they eat?
4. How are insects and humans different? How many legs do humans have? What about insects? Do humans have distinct body parts? What about insects: how many distinct body parts do they have?
5. Can a young insect do all the same things an adult insect can? Can the young insect fly? Do some young insects live in water, and will they live on land and in the air when they are adults?

PROCESSING

Ask the 4-H'ers:

1. Have you ever done anything like this before?
2. Have you ever had to place objects or ideas in order?
3. Can the life stages of insects occur in different orders, or do they always happen in the same order?
4. How did you know where to place each person?

GENERALIZING

Ask the 4-H'ers:

1. Which of the insect life stages have you seen before?
2. As people grow up, is the process like simple metamorphosis, or complete metamorphosis?

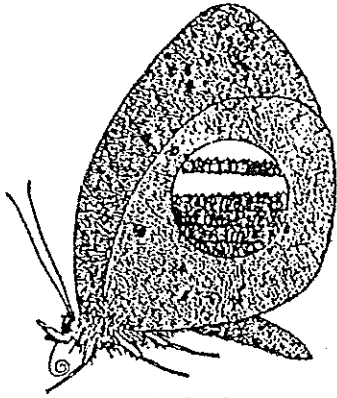
APPLYING

Ask the 4-H'ers:

1. What do puppies become when they grow up? What do kittens become when they grow up?
2. What do you become when you grow up? What were you before you were at the stage you are in now?*

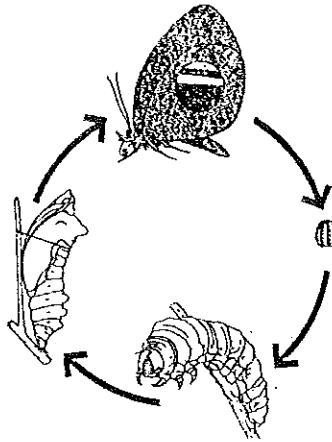
* a baby

Complete Metamorphosis

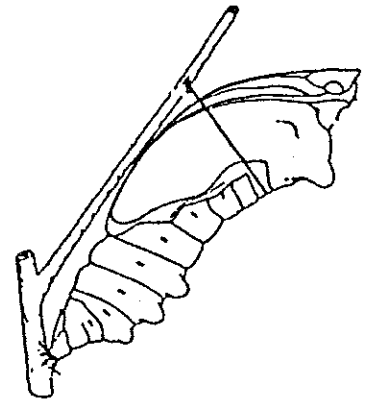


Adult

Complete Metamorphosis

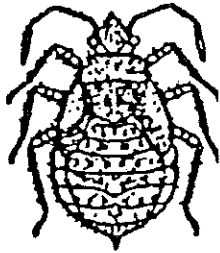


Complete Metamorphosis



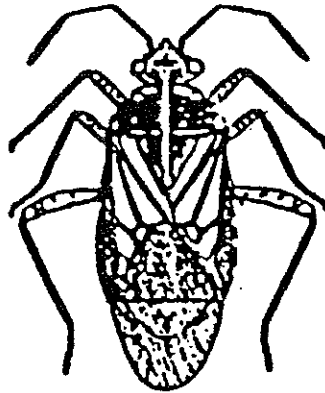
Pupa

Simple Metamorphosis



Nymph

Simple Metamorphosis



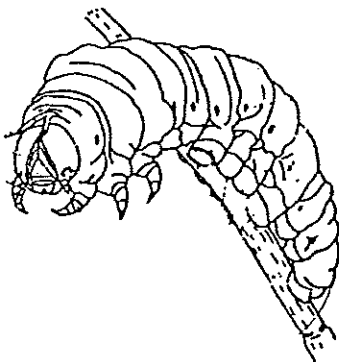
Adult

Simple Metamorphosis



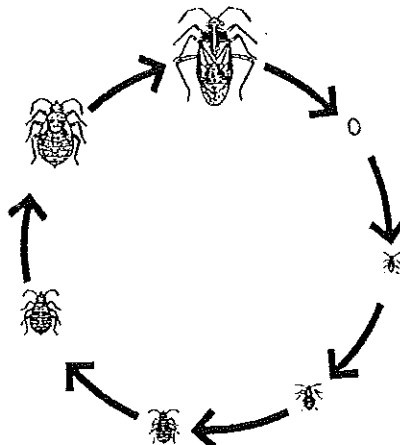
Egg

Complete Metamorphosis



Larva

Simple Metamorphosis



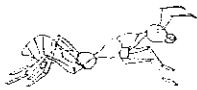
Complete Metamorphosis



Egg

Step II

Activity 4 Ant Song



Objective



4-H'ers will learn to sing the "Ant Song," and apply their creativity to inventing new lyrics.

Materials Needed

- A copy of the Ant Song (on page 7) for each 4-H'er.
- Pie pans, scrap wood blocks and other items to serve as simple percussion instruments.

Background



Ants live in organized colonies. They have a structured society in which each ant has specific tasks to perform. From this comes ants' reputation for being hard-working, or even army-like. Sometimes an entire ant colony will move to a new location, and they can be seen marching in an orderly fashion. Although ant societies are not identical to human societies, 4-H'ers can invent song lyrics which are relevant to the movement of an ant colony.

✪ EXPERIENCE

1. Distribute a copy of the Ant Song to each 4-H'er, and lead them through two verses of "The Ants Go Marching." The song is sung to the tune of "When Johnny Comes Marching Home."
2. Explain the song's pattern: how the process of determining "what the little one did" begins by coming up with a word which rhymes with "one," then "two," and so forth.
3. Go over the suggested rhymes for verses three through ten on the handout, then lead the 4-H'ers as they sing these verses.

4. If space permits, go through the entire song again, and this time allow the 4-H'ers to march and play their instruments as they sing.

5. Ask the 4-H'ers if they have any ideas for rhyming any of the numbers between one and ten with "what the little one did." If they do, write them down.

6. Sing the ant song a third time, inserting the lyrics composed by the 4-H'ers for those on the handout.

✪ LET'S TALK

Ask the 4-H'ers if they actually started feeling like ants as they sang the Ant Song. Find out what their favorite verses were, and discuss which musical instruments the song made them wish they could play.

✪ PROCESSING

Ask the 4-H'ers:

1. Was it easy to sing the Ant Song? Why?
2. Will you be able to teach this song to your brothers or sisters, or to your parents?

✪ GENERALIZING

Ask the 4-H'ers:

1. What will you think of the next time you see an ant?
2. Can you name other songs about insects?
3. What special songs do people sing?

✪ APPLYING

Ask the 4-H'ers:

1. Can insects sing?
2. Can you make up new rhymes at home?
3. Do you know another song which is similar to the Ant Song?



- 1) The ants go marching one by one, hurrah, hurrah,
The ants go marching one by one, hurrah, hurrah,
The ants go marching one by one,
The little one stopped to have some fun _____
And they all go marching down, in the earth, to get out, of the rain.
Bum, bum, bum.

- 2) The ants go marching two by two, hurrah, hurrah,
The ants go marching two by two, hurrah, hurrah,
The ants go marching two by two,
The little one stopped to tie his shoe _____
And they all go marching down, in the earth, to get out, of the rain,
Bum, bum, bum.

- 3) The little one stopped to climb a tree _____
- 4) The little one stopped to shut the door _____
- 5) The little one stopped to see a hive _____
- 6) The little one stopped to pick up sticks _____
- 7) The little one stopped to go to heaven _____
- 8) The little one stopped to shut the gate _____
- 9) The little one stopped to dig a mine _____

- 10) The ants go marching ten by ten, hurrah, hurrah,
The ants go marching ten by ten, hurrah, hurrah,
The ants go marching ten by ten,
They all stopped..(pause)...And started over again
And they all go marching down, in the earth, to get out, of the rain,
Bum, bum, bum.

Activity 5

Insect Sounds

Objectives



4-H'ers will acquire the skills for distinguishing the sounds used by insects to communicate.

Materials Needed

- Two copies of the Insect Sound Cards handout on page 9, cut along the dotted lines.

Background



Some insects use sounds for scaring away their enemies. Other insects use sound to attract a mate. Grasshoppers and crickets make sounds by rubbing their wings or legs together. These sounds are similar to codes, and each kind of insect makes a slightly different sound. For example, the agile meadow grasshopper goes "zip, zip, zip, zee," while the common meadow grasshopper goes "zeeeeeeeee, zeeeeeeee."

★ EXPERIENCE

For 1-7 4-H'ers:

1. Choose one 4-H'er as a seeker, and give all but one of the other 4-H'ers a slip of paper with an insect different from the one the seeker has. The seeker's job will be to find the other 4-H'er who has the same insect sound as he or she has.
2. Have the seeker stand in the doorway, and ask the other 4-H'ers to scatter around the room.
3. When told to "start," the other 4-H'ers should begin to hop around the room slowly, and make the insect noise on their slip of paper.
4. Next, the seeker should be turned loose to also slowly hop around the room and make the insect noise he or she was given. The seeker should locate the other 4-H'er making the same sound.
5. Repeat the activity two or three times, giving additional 4-H'ers the chance to be the seeker, and assigning them new insect noise sounds each time.

For 8-16 4-H'ers:

1. Distribute insect sound cards in pairs among the 4-H'ers. For every sound card you hand out, two of the 4-H'ers will have the same sound on their slip. As you hand out the cards, tell the 4-H'ers their insect noise is to be a secret.
2. Have the 4-H'ers scatter around the room in different locations.
3. Tell them that when you say "start," they should slowly hop around and make the insect sound described on the slip of paper they were given.
4. Explain that the object of the game is for all the 4-H'ers to find their partner, who is making the same noise they are.
5. After all the 4-H'ers have located the partner who is making the same insect noise they are, collect the slips of paper and distribute them again. Repeat the activity two or three times, with the 4-H'ers working on different insect sounds each time.

★ LET'S TALK

When the 4-H'ers have completed the project, ask one of them to describe what they did for the rest of the group.

★ PROCESSING

Ask the 4-H'ers:

1. What was the hardest part of this activity?
2. What was the most fun?
3. Have you ever done anything like this before?

★ GENERALIZING

Ask the 4-H'ers:

1. Why is it important for some insects to make sounds?
2. How can insects which don't make sounds find each other?*
3. Could we have done this activity at night, or if we were all blindfolded?

* *sight, smell*

★ APPLYING

Ask the 4-H'ers:

1. Have you ever heard any of the insect sounds we made in your backyard?
2. Could you ever use sounds to locate someone in a large crowd?

<p>Agile meadow grasshopper</p> <p>zip zip zee</p>	<p>Slender meadow grasshopper</p> <p>tip tip tip</p>	<p>Forked-tailed katydid</p> <p>zeep zeep zeep</p>
<p>True conehead katydid</p> <p>katy-did katy-she-did</p>		<p>Angular-winged katydid</p> <p>tuh-zeet tuh-zeet tuh-zeet</p>
<p>Common meadow grasshopper</p> <p>zee - e - e zee - e - e</p>	<p>Sword-bearing conehead grasshopper</p> <p>tick tick tick</p>	<p>Robust conehead grasshopper</p> <p>zuh zuh zuh</p>

Step II

Activity 6 Bug Ball



Objective



4-H'ers will learn what insects eat and where they live by playing the game "Bug Ball."

Materials Needed

- A soft playground ball
- A playground or gymnasium

Background



The insect kingdom is diverse. Insects live in many types of habitats.

EXPERIENCE

1. Photocopy the Insect Table handout on the next page, cut along the dotted lines, and distribute the slips with insects' foods and habitats among the 4-H'ers.
2. When all the 4-H'ers have been given their insect, go through a roll-call of insects, and ask the 4-H'ers to respond with their home and food when their insect's name is called.
3. Have all but one of the 4-H'ers join hands and form a circle. The 4-H'er not holding hands then takes the ball and goes to the center of the circle.
4. Instruct the 4-H'er with the ball to shout the name of one of the other insects they heard in the roll-call, and throw the ball straight up in the air.
5. Tell the group that when the ball is thrown and the name of the insect shouted, everyone should run from the circle except the individual assigned the name of the insect shouted.
6. The 4-H'er who was assigned to be the insect shouted must retrieve the ball. Once he or she has the ball, that child then yells, "bugs," and all the other 4-H'ers must freeze right where they are.
7. The 4-H'er with the ball then throws or rolls the ball at another 4-H'er (be sure to caution the child throwing the ball not to hit other children in the head).

8. If another 4-H'er is struck with the ball, he or she must tell what kind of insect they are, what their habitat is, and what kind of food they like to eat.
9. But if the 4-H'er throwing the ball does not hit another one with the throw, then it's the child throwing who must repeat what kind of insect they are, where they live and what kind of food they eat.
10. If the child throwing succeeds in hitting another 4-H'er with the ball, then that 4-H'er becomes the thrower and the game begins again at Step 8. If the child throwing misses, then he or she remains as child throwing, and the game likewise begins again at Step 8.

LET'S TALK

Bring the group back together at a quiet place away from the playing field. Ask one of the 4-H'ers to tell the group what they just did. Ask him or her, what was the hardest part? What was the most fun?

PROCESSING

Ask the 4-H'ers:

1. If we played Bug Ball again, what could we do differently?
2. Would it work to play this kind of game with different animals?
3. Have you ever done anything like this before?

GENERALIZING

Ask the 4-H'ers:

1. What did you learn from this activity?
 2. Did you learn anything about yourself from this activity?*
- * *listening carefully, making quick decisions when necessary*

APPLYING

Ask the 4-H'ers:

1. How can you apply what you just learned to other activities?
2. Do animals live in a few places, or many places?
3. Do animals eat just a few things, or do they eat many things?
4. What other activities require quick reactions and decisions?*

* *hitting a baseball, riding a bicycle, baby-sitting*

Insect Table

INSECT	FOOD	HOME
grasshopper	grass	grass
lady beetle	little insects	garden
house fly	sweets	barns & houses
honey bee	nectar	beehive
dragonfly	mosquitoes	stream banks
caterpillar	leaves	trees & gardens
termite	wood	logs & houses
butterfly	nectar	flowers
leafhopper	plant juices (sap)	leaves
lightning bug	snails & slugs	woods
paper wasp	caterpillars	paper nests
ant	sweets & other insects	underground
asparagus beetle	asparagus	gardens & farms
preying mantis	other insects	fields & woods
tiger beetle	other insects	on the ground
cricket	grass	fields & woods
whirlygig beetle	little insects in water	streams & ponds

Step II



Activity 7

Peanut Butter Bugs

Important Note: For this activity, the "insect dough" must be mixed and refrigerated the day before it is given to the 4-H'ers. And then, before distributing the "insect dough," be sure to ask if any of the 4-H'ers are allergic to peanut butter, and have an alternative snack on hand in case someone is.

Insect Dough

3/4 cup honey
1 cup peanut butter
2 cups nonfat dry milk
Mix honey and peanut butter. Slowly stir in dry milk. Mix to the consistency of cookie dough. Roll into balls about the size of a mounded tablespoon (1/4 cup). Refrigerate in an airtight container for use the following day. Makes about eight.

Objective



4-H'ers will get to employ their creativity and problem solving skills, as they put together a nutritious snack. They also get to practice communication and social skills, as they explain to the other 4-H'ers how and why they created the edible insect that they did.

Materials Needed

- Wax paper
- Insect dough (see recipe at top)
- Raisins, chocolate chips, cake decorating sprinkles, carrot slivers
- Juice or milk
- Crackers, chips or other additional snacks
- Napkins or paper towels

Background



Insects may look different, but almost all adult insects have the same number of body parts, legs, antennae and wings. Insects are an essential link in the food chain. In many African cultures, and some Asian and Native American cultures, insects are a part of the standard diet.

EXPERIENCE

1. Have the children wash their hands, and then assemble them at tables or desks.
2. Give each 4-H'er a sheet of wax paper to work on, and a ball of insect dough, raisins, chocolate chips and other decorative items.
3. Tell the 4-H'ers they can construct any insect — real or imaginary — from the insect dough and other materials.

Remind them that if their creation is to be an insect, however, it must have the important body parts: head, thorax, abdomen, six legs, two antennae, and two pairs of wings, if it's an adult insect. Remind them also that the wings should be attached to the thorax, the insect's middle section.

4. Allow the 4-H'ers 5-10 minutes to construct their insects.
5. Once their insects are complete, go around the room asking them to describe their insects. Have the 4-H'ers point to the various body parts as they describe their insects, and be ready to ask questions which probe further into their explanations.
6. Once all the 4-H'ers have described their insects, it's time to eat them and the other snacks.

LET'S TALK

While the group is finishing the snack, ask one of the 4-H'ers to explain what he or she did. Ask him or her to tell what is the favorite ingredient in their insect.

PROCESSING

Ask the 4-H'ers:

1. What was the hardest part of making the insect?
 2. Have you ever done anything like this before?*
- * *made gingerbread men, ate gummy worms*

GENERALIZING

Ask the 4-H'ers:

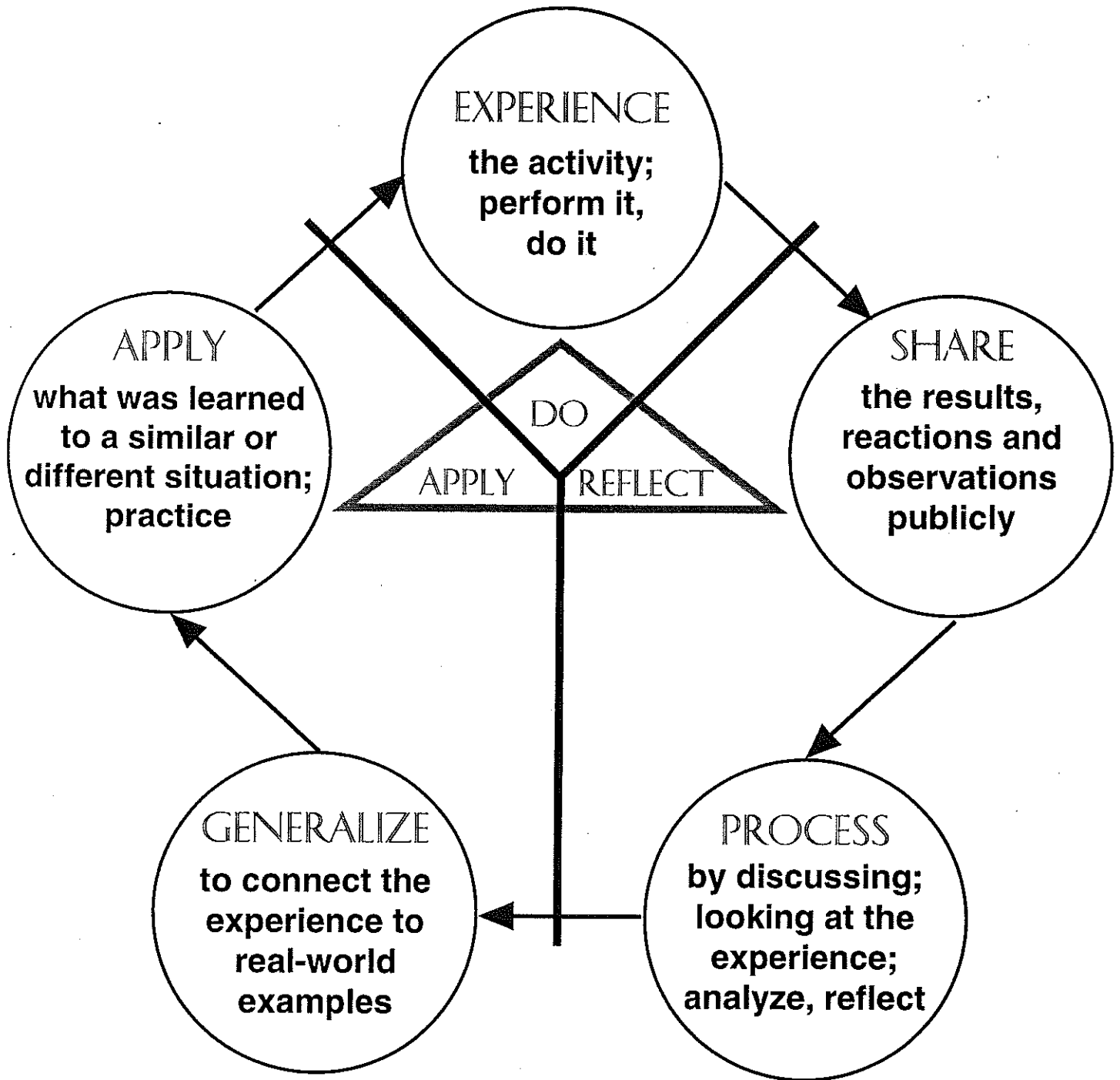
1. What will you think of the next time you see a bird with an insect in its beak?
 2. What if no other animals ate insects, or what if insects didn't eat each other?*
 3. If you were a tasty insect, how could you avoid being eaten?*
- * *There would be too many insects in the world*
** *hide, run, fly away*

APPLYING

Ask the 4-H'ers:

1. Do you think eating certain insects can be nutritious and good for animals?*
 2. Do you think all insects are good to eat?*
 3. Could you eat an insect if you were starving?*
- * *Insects are a good source of protein*
** *No, some do not taste very good at all*

EXPERIENTIAL LEARNING MODEL



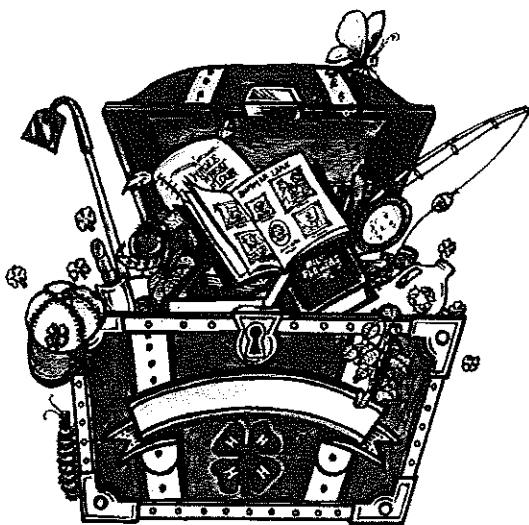
Reprinted with permission from K-3rd Youth in 4-H: *Guidelines for Programming*

North Carolina Cooperative Extension Program

North Carolina Agricultural and Technical State University at Greensboro, North Carolina State University at Raleigh and the U.S. Department of Agriculture cooperating, Greensboro, N.C., D. D. Godfrey, Administrator. Distributed in furtherance of the Food and Agriculture Act, September 29, 1977, PL 95-113, Sec. 1444, as amended. An Equal Opportunity Employer.

North Carolina A&T State University is committed to equality of educational opportunity and does not discriminate against applicants, students, or employees based on race, color, national origin, religion, gender, age or disability. Moreover, North Carolina A&T State University is open to people of all races and actively seeks to promote racial integration by recruiting and enrolling a larger number of white students.

Bug Out



Developed by:

Stephen Bambara

Extension Entomology Specialist
North Carolina State University

Special Thanks to:

Shirley B. McNeill, Ph.D

Extension 4-H Youth Development Specialist
North Carolina A&T State University

Gary Dunn

Director of Education
Young Entomologists Society

Sharon Rowland

Extension 4-H Youth Development Specialist
North Carolina State University

Susan Whitney

Extension Pesticide Specialist
University of Delaware



5000 copies of this public document were printed at a cost of \$1420.00 or 0.2840 per copy.