



## Insect Study Merit Badge Workbook

# SCOUTMASTER BUCKY

Scouts participating in a Scoutmaster Bucky merit badge opportunity, whether online or in person, should consider using the Insect Study merit badge pamphlet for discovery and knowledge, along with the class preparation pages for clarifications, insights, and expectations.

<https://scoutmasterbucky.com/merit-badges/insect-study/insect-study-pamphlet.pdf>

<https://scoutmasterbucky.com/merit-badges/insect-study/insect-study-cpp.pdf>

**REQUIREMENT 1a:** Explain to your counselor the most likely hazards associated with exposure to ants and bees and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.

### HAZARD #1

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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HAZARD #2

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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HAZARD #3

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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HAZARD #4

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



# SCOUTMASTER BUCKY

HAZARD #5

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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HAZARD #6

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



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**REQUIREMENT 1b:** Discuss the prevention of and treatment for health concerns that could occur while working with ants and bees, including insect bites and anaphylactic shock.

### INSECT BITES:

Prevention:

Treatment:

### ANAPHYLACTIC SHOCK:

Prevention:

Treatment:

Notes:



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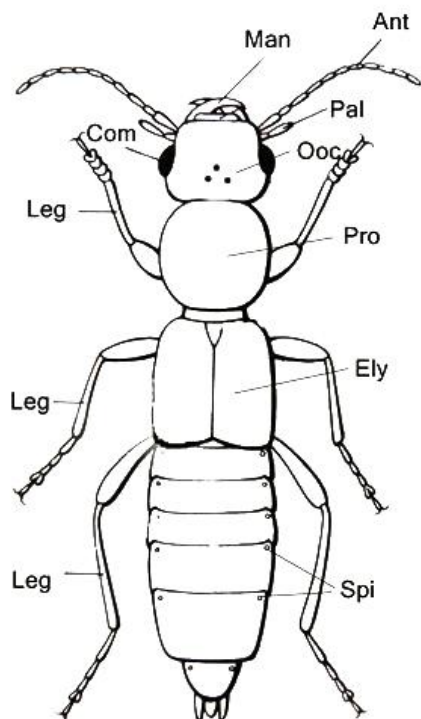
**REQUIREMENT 2a:** Tell how insects are different from other animals.

Notes:

**REQUIREMENT 2b:** Show how insects are different from millipedes and spiders.

Notes:

**REQUIREMENT 2c:** Point out and name the main parts of an insect.



## Insects (Class Insecta)

Three body parts:

### head

3 sets of mouth parts

1 pair of antennae

1 pair of compound eyes

simple eyes (ocelli)

### thorax

typically two pairs of wings

Three pairs of legs

### abdomen

Sexual organs

Respiratory Spiracles

Digestive and excretory structures





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**REQUIREMENT 2d:** Describe the characteristics that distinguish the major orders of insects.

Notes:

**REQUIREMENT 3a:** Compare the life histories of a butterfly and a grasshopper. Tell how they are different.

Butterfly:

Grasshopper:

Differences:



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**REQUIREMENT 3b:** Raise an insect through complete metamorphosis from its larval stage to its adult stage (e.g., raise a butterfly or moth from a caterpillar).

**SOME INSECTS ARE ENDANGERED SPECIES AND ARE PROTECTED BY FEDERAL OR STATE LAW. EVERY SPECIES IS FOUND ONLY IN ITS OWN SPECIAL TYPE OF HABITAT. BE SURE TO CHECK NATURAL RESOURCES AUTHORITIES IN ADVANCE TO BE SURE THAT YOU WILL NOT BE COLLECTING ANY SPECIES THAT IS KNOWN TO BE PROTECTED OR ENDANGERED, OR IN ANY HABITAT WHERE COLLECTING IS PROHIBITED. IN MOST CASES, ALL SPECIMENS SHOULD BE RETURNED AT THE LOCATION OF CAPTURE AFTER THE REQUIREMENT HAS BEEN MET. CHECK WITH YOUR COUNSELOR FOR THOSE INSTANCES WHERE THE RETURN OF THESE SPECIMENS WOULD NOT BE APPROPRIATE.**

You will need to do this requirement on your own over a period of time. Please bring proof of completion to share with your merit badge counselor during the class.

**THIS REQUIREMENT WILL NOT BE DONE AS A PART OF THE CLASS**

Review for this requirement will be offered as a part of the class for Scouts who have proof of their work to share with the merit badge counselor

**This requirement must be reviewed with your merit badge counselor.**

**BE PREPARED!**

**REQUIREMENT 4a:** Discuss the importance of the Leave No Trace Seven Principles and the Outdoor Code as they relate to insect study.

## THE 7 PRINCIPLES of Leave No Trace

1. Plan Ahead & Prepare
2. Travel & Camp on Durable Surfaces
3. Dispose of Waste Properly
4. Leave What You Find
5. Minimize Campfire Impacts
6. Respect Wildlife
7. Be Considerate of Other Visitors

## Outdoor Code

As an American, I will do my best to-  
Be Clean in my outdoor manners,  
Be Careful with fire,  
Be Considerate in the outdoors, and  
Be Conservation-minded

Notes:



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**REQUIREMENT 4a:** Explain how you have followed the Leave No Trace Seven Principles and the Outdoor Code during field observation, specimen collection, and identification.

Field Observation:

Specimen Collection:

Identification:



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**REQUIREMENT 4b:** Observe 20 different live species of insects in their habitat. In your observations, include at least four orders of insects.

Number	Species	Order	Description	Habitat
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				



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**REQUIREMENT 4c:** Make a scrapbook of the 20 insects you observe in 5(b) Include photographs, sketches, illustrations, and articles. Label each insect with its common and scientific names, where possible. Share your scrapbook with your merit badge counselor.

**This requirement must be reviewed with your merit badge counselor.**

**BE PREPARED!**

**REQUIREMENT 4d:** From your scrapbook collection, select eight species of insects and identify what role they play in the ecosystem.

Insect #1:

Insect #2:

Insect #3:

Insect #4:



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Insect #5:

Insect #6:

Insect #7:

Insect #8:



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**REQUIREMENT 5a:** Tell things that make social insects different from solitary insects.

Notes:

**DO ONE OF THE FOLLOWING (5B1 or 5B2) FOR REQUIREMENT 5B**

**REQUIREMENT 5b1:** Observe an ant colony in a formicarium (ant farm). Find the queen and worker ants. Explain to your counselor the different chambers found within an ant colony.

Notes:

**REQUIREMENT 5b2:** Study a hive of bees. Remove the combs and find the queen. Estimate the amount of brood and count the number of queen cells. Explain how to determine the amount of honey in the hive. **(IF YOU ARE ALLERGIC TO BEE STINGS, PICK OPTION 1 ABOVE.)**

Notes:



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**REQUIREMENT 6a:** Tell how insects fit in the food web of other insects, fish, birds, and mammals.

Insects:

Fish:

Birds:

Mammals:





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**REQUIREMENT 6b:** Explain the role insects serve as pollinators for plants.

Notes:

**REQUIREMENT 7a:** Explain the symbiotic relationship between bees and humankind.

Notes:

**REQUIREMENT 7a:** Explain what colony collapse disorder (CCD) is and some of the possible causes.

Notes:

**REQUIREMENT 7a:** Discuss how CCD affects our food supply.

Notes:



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**REQUIREMENT 7b:** Describe three alternatives to insecticides as a way of preventing crop injury and subsequent yield loss. Explain the advantages and disadvantages of these alternatives.

### INSECTICIDE ALTERNATIVE #1:

Name / Method and Description:

Advantages:

Disadvantages:



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## INSECTICIDE ALTERNATIVE #2:

Name / Method and Description:

Advantages:

Disadvantages:



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## INSECTICIDE ALTERNATIVE #3:

Name / Method and Description:

Advantages:

Disadvantages:



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**REQUIREMENT 8a:** Tell the migration route of an insect (e.g., monarch butterfly).

Notes:

**REQUIREMENT 8a:** Discuss the challenges they face and how Scouts can contribute to their success.

Notes:

**REQUIREMENT 8b:** Find out about an insect that is a threatened or endangered species.

Notes:

**REQUIREMENT 8b:** Discuss the challenges they face and how Scouts can contribute to their success.

Notes:



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**DO ONE OF THE FOLLOWING (9A or 9B) FOR REQUIREMENT 9**

**REQUIREMENT 9a:** Identify three career opportunities that would use skills and knowledge in Insect Study.

Career Opportunity #1:

Career Opportunity #2:

Career Opportunity #3:

**REQUIREMENT 9a:** Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field.

Selected Career Opportunity:

Training Requirements:

Education Requirements:

Certification Requirements:



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Experience Requirements:

Expenses Associated with this Career:

**REQUIREMENT 9a:** Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career.

Prospects for Employment:

Starting Salary:

Advancement Opportunities:

Career Goals associated with this career:



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**REQUIREMENT 9a:** Discuss what you learned with your counselor and whether you might be interested in this career.

Notes:

**REQUIREMENT 9b:** Identify how you might use the skills and knowledge in Insect Study to pursue a personal hobby. Research the additional training required, expenses, and affiliation with organizations that would help you maximize the enjoyment and benefit you might gain from it. Discuss what you learned with your counselor and share what short-term and long-term goals you might have if you pursued this.

Additional Training:

Expenses:

Affiliations / Organization:

Short-Term and Long-Term Goals: