



Insect Study

Scouts BSA · Nature

Name

Started

Completed

Insect Study is about the most numerous animals on Earth and the surprising ways they shape our world. You'll observe insects up close, raise one through its life cycle, and learn how they help and challenge people. There are bugs everywhere, so you can start right outside your door.

Requirements

Every official requirement, in plain language. Check the official wording when you sign off (scouting.org/merit-badges/insect-study/). Tips and examples are ideas, not extra requirements.

1 Safety

Tips for this section: Learn which insects can sting or bite and the first aid for each. Know if anyone in your group has allergies.

- ☐ **1a** Explain to your counselor the hazards you're most likely to face around ants and bees and how to anticipate, prevent, reduce, and respond to them

- ☐ **1b** Discuss how to prevent and treat health problems from working with ants and bees, including bites, stings, and anaphylactic shock

2 Anatomy

Tips for this section: Use a magnifying glass to study an insect's head, thorax, and abdomen, and learn to recognize a few major groups.

Example for this section: Draw an insect and label the head, thorax, abdomen, six legs, antennae, and wings. Then make flash cards for major orders, like beetles with hard wing covers and butterflies with scaly wings.

- ☐ **2a** Tell what sets insects apart from other animals

- ☐ **2b** Show how insects differ from spiders and millipedes

- ☐ **2c** Point to and name an insect's main body parts

- ☐ **2d** Describe the features that tell the major insect orders apart

3 Life cycles

Tips for this section: Raise a caterpillar or mealworm in a clean container and record what happens at each stage.

Example for this section: Raise mealworms in a container with oats and a slice of carrot. Record the date you see larva, pupa, and adult beetle. Compare that complete metamorphosis with a grasshopper, which grows through nymph stages.

- ☐ **3a** Compare the life histories of a grasshopper and a butterfly, and tell how they differ

- ☐ **3b** Raise an insect through complete metamorphosis from larva to adult, such as a moth or butterfly from a caterpillar. Check with natural resources authorities first so you don't take a protected species or collect where it's banned, and usually return it where you found it (ask your counselor)

4 Observation and analysis

Tips for this section: Bring a small notebook or camera on walks and keep adding insects you see. A field guide or app can help with identification.

Example for this section: A scrapbook page might show a photo of a ladybug on milkweed, the date and place, its order (Coleoptera), and one note: "eating aphids." Release insects where you found them after you photograph them.

- ☐ **4a** Discuss why the Outdoor Code and Leave No Trace Seven Principles matter in insect study, and explain how you followed them while observing, collecting, and identifying insects

- ☐ **4b** Observe 20 different species of live insects in their habitats, including insects from at least 4 orders

- ☐ **4c** Make a scrapbook of the 20 insects from 4b with photos, sketches, drawings, and articles. Label each with its common and scientific name when you can, and share it with your counselor

- ☐ **4d** Pick 8 species from your scrapbook and identify the role each plays in its ecosystem

5 Social insects

Tips for this section: Compare bees or ants that live in colonies with insects that live alone. Try an activity like watching an ant farm.

Example for this section: Compare a honeybee colony, with a queen, workers, and drones sharing jobs, to a solitary mason bee that builds its own nest. For your colony activity, set up an ant farm or watch a hive with a beekeeper.

- ☐ **5a** Tell some ways social insects differ from solitary insects

5b Ant colony or beehive: Choose 1 of 2

- ☐ **5b1** Watch an ant farm (formicarium) colony. Find the queen and the workers, and explain to your counselor the different chambers in a colony

- ☐ **5b2** Study a beehive: take out the combs and find the queen, estimate how much brood there is, count the queen cells, and explain how to tell how much honey the hive holds. If you're allergic to bee stings, choose 5b1 instead

6 Ecology

Tips for this section: Watch flowers to see which insects visit, and think about which animals eat insects.

- ☐ **6a** Tell where insects fit in the food web, as food for fish, birds, mammals, and other insects

- ☐ **6b** Explain how insects pollinate plants

7 Insects and people

Tips for this section: Think about insects that help people and those that cause problems. Learn safer ways to handle pests than strong chemicals.

Example for this section: Explain how bees pollinate many fruits and vegetables people eat, and what colony collapse disorder could mean for the food supply. Then describe three ways farmers protect crops without insecticides, like rotating crops, releasing ladybugs to eat aphids, and covering rows with netting, with a pro and a con for each.

- ☐ **7a** Explain how bees and people depend on each other. Describe colony collapse disorder (CCD) and what might cause it, and discuss how it affects our food supply

- ☐ **7b** Describe 3 ways other than insecticides to keep insects from damaging crops and cutting harvests, and explain the pros and cons of each

8 Conservation

Tips for this section: Learn about insects that migrate, like monarch butterflies, and find out which insects are endangered.

Example for this section: Track monarch migration from Canada and the U.S. to Mexico on a map. Then pick an endangered insect, like the rusty patched bumble bee, and explain why its numbers dropped and what people are doing to help.

- ☐ **8a** Tell the migration route of an insect such as the monarch butterfly. Discuss the challenges it faces and how Scouts can help it thrive

- ☐ **8b** Learn about a threatened or endangered insect. Discuss the challenges it faces and how Scouts can help it thrive

9 Careers and hobbies: Choose 1 of 2

Tips for this section: Talk with an entomologist or extension agent, or try a hobby like beekeeping or butterfly gardening.

- ☐ **9a** Identify 3 careers that use insect study. Pick one and research its training, education, certification, experience, and startup costs, plus job outlook, starting pay, and advancement. Talk it over with your counselor, including whether it interests you

- ☐ **9b** Identify 3 careers that use insect study. Pick one and research its training, education, certification, experience, and startup costs, plus job outlook, starting pay, and advancement. Talk it over with your counselor, including whether it interests you