

# 4-H Entomology/Beekeeping

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## Insect Basics

- Define entomology, entomologist, insect, arthropod and exoskeleton.
- Explain the importance of entomology.
- Identify the major insect body parts, including head, thorax, abdomen, antenna, compound eye, leg (coxa, trochanter, femur, tibia, tarsus), spiracle, tympanum and wing; explain their functions.
- Describe the importance of careful observation and record keeping.

## Arthropods

- Describe the Phylum Arthropoda.
- Explain how insects differ from other arthropods.
- List examples of insects (Class Insecta) and spiders and other arachnids (Class Arachnida).

## Insect Pollinators

- Define caste, worker, queen, drone and pollinator.
- Describe the castes of honey bees, the races of honey bees, honey and wax they produce.
- Explain the importance of honey bees and other types of bees.
- List five plants in Tennessee pollinated by honey bees and five plants pollinated by other types of bees.
- Create a list of the equipment that a beekeeper needs and an estimated budget.
- Compile beekeeping records.
- List five non-bee insects that are pollinators.
- List five food crops that need pollinators.



## Diversity of Life

- Define biodiversity and evolution.
- Explain the importance of biodiversity.
- Describe the value of insect diversity.
- Describe various ways that different insects communicate.
- Develop a definition of diversity and inclusion.

## Exotic and Invasive Insects

- Define exotic species and invasive species.
- Compare and contrast the differences between exotic and invasive species.
- Discuss why not all insects (in Tennessee and elsewhere) are native.
- Investigate 10 insects found in gardens, crop fields or households in Tennessee.

## Harmful and Beneficial Insects

- Define integrated pest management, predator, parasite, pathogen and parasitoid.
- Explain why some insects are pests and some are beneficial.
- Identify pest insects in Tennessee that affect plants, non-human animals and humans.
- Identify beneficial insects in Tennessee that affect plants, non-human animals and humans.
- Investigate invasive, beneficial and pest insects in Tennessee.

## Potential Activities

- Identify and label major insect body parts: head, thorax, abdomen, antenna, compound eye, leg (coxa, trochanter, femur, tibia, tarsus), spiracle, tympanum, wing.
- Investigate and describe 10 insects that you can find in a garden, crop fields or households in Tennessee.
- Investigate and describe several invasive, beneficial or pest insects in Tennessee.
- Create your own definitions of diversity and inclusion.

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