W 927-C
6-9 YEARS IN PROJECT

4-H Entomology/ Beekeeping

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Entomology Careers

- Identify various pathways of entomology careers.

Insect Classification

- Classify insects into orders and families using a dichotomous key.
- Compare and contrast the following orders of insects: Neuroptera, Coleoptera, Diptera, Hymenoptera, Hemiptera, Lepidoptera, Orthoptera, Blattodea, Mantodea, Odonata and Ephemeroptera.
- Develop a dichotomous key for the following orders of insects: Neuroptera, Coleoptera, Diptera, Hymenoptera, Hemiptera, Lepidoptera, Orthoptera, Blattodea, Mantodea, Odonata and Ephemeroptera.

Insect Collections and Recordkeeping

- Explain the importance of insect collections.
- Describe ways to store and display insect collections.
- Understand the five steps of the scientific method.
- Demonstrate ability to keep detailed records of observations and experiments.

Insect Diversity and Evolution

- Identify external body parts and unique morphological characters used to distinguish insects in the following orders: Orthoptera, Hymenoptera, Diptera, Coleoptera and Lepidoptera.
- Describe examples of character evolution in insects.
- Describe the natural history of social bees, ants and termites.
- Explain the effects of global climate change on insect biodiversity and species' ranges.

Invasive Species

- Understand and describe how invasive insects are introduced to new areas and how they may cause damage in natural and human-modified habitats.
- Understand and explain why many non-native insects are widespread and abundant, but others are not.
- Describe ways to prevent accidental introductions of insects.

Integrated Pest Management

- Define biological control, cultural control, chemical control, mechanical control and resistance.
- Describe advantages of integrated pest management approaches.
- Analyze insect control methods used for integrated pest management of one major row crop in Tennessee (e.g., corn, cotton, soybean).
- Analyze insect control methods used for integrated pest management in horticulture or ornamental plants of Tennessee.
- Analyze insect control methods used for integrated pest management of one animal and one human pest insect in Tennessee.
- Analyze insect control methods used for integrated pest management in a home or school.

Diversity in Plants, Insects and Humans

- Define symbiosis, mutualism, parasitism, commensalism and phenology.
- Describe the importance of plant diversity for different pollinators.
- Evaluate diversity in our food and explain reasons for food disparities in Tennessee and elsewhere.
- Investigate and describe insects intentionally eaten throughout the world.

Potential Activities

- Collect, pin and properly label 40 adult insects from a minimum of 10 insect orders from different habitats in Tennessee. Separate insects within each order into families using dichotomous key. Write a brief life history description for each family.
- Develop your own dichotomous key to identify insect orders in your collection.
- Create an educational display for the public or younger 4-H'ers on the natural history of social bees, ants and termites.
- Create an educational program to teach younger 4-H'ers the importance of plant diversity for different pollinators.
- Investigate and describe the basic biology and life history of a pest insect in Tennessee and discuss control methods used for integrated pest management of this pest.
- Develop an integrated pest management plan for a local nursery, farm, garden, home or school.
- Complete a capstone project about diversity that benefits a community in Tennessee.

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