Llano Estacado Texas Master Naturalists Curriculum Guide

Unit 13: Entomology

*"Nature will bear the closest inspection. She invites us to lay our eye level with her smallest*

 *leaf, and take an insect view of its plain."* -Henry David Thoreau

Unit Goals: After completing this unit, volunteers should be able to:

* demonstrate an appreciation for insects and an interest in entomology
* discuss why insects are so biologically diverse, why this diversity is threatened, and why the conservation of insect biodiversity is important
* understand the systemic relationships among various insect groups
* discuss basic principles of insect behavior and ecology and relate those to environmental adaptations
	+ understand the role that insects play in local ecosystems and various ecosystems in Texas
* demonstrate familiarity with the insect fauna of Texas
1. List 8 reasons for the richness or diversity of insect species (pg. 411).

a.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 e. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ f. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 g. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ h. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Describe three ways **metamorphosis** provides an advantage to the success of insects.
2. There are about 30 orders of insects depending upon the reference. List at least two things the divisions of insects are based upon.
3.
4.
5.
6. As a naturalist, you should recognize on sight some of the more abundant orders like Coleoptera, Hymenoptera, Heteroptera and Lepidoptera. Other orders contain common insects you will see in Midland and Texas like Odonata, Orthoptera and Diptera. Match the orders with representative species by writing the letter of the species in front order. You will find this information from diagrams in the text, the APPENDIX to Unit 13, the Internet and the presentation.

\_\_\_\_\_Coleoptera A. Butterflies or Moths

\_\_\_\_\_Hymenoptera B. Grasshoppers or crickets

\_\_\_\_\_Hemiptera C. Bees and Wasps

\_\_\_\_\_Lepidoptera D. Dragonflies or Damselflies

\_\_\_\_\_Odonata E. Cicadas and Water Bugs

\_\_\_\_\_Orthoptera F. Flies and Mosquitoes

\_\_\_\_\_Diptera G. Beetles

1. List and describe six reasons why the study of insects is important (pgs. 415-416).

a.

b.

 c.

 d.

 e.

 f.

1. List at least four important ways insects function within ecosystems

a. b.

c. d.

1. Be able to discuss specific adaptations to functions of an insect in an ecosystem.

EXAMPLES: Mouthparts of pollinators or digging appendages of burrowers.

1. Be able to discuss some conservation concerns for insects, what are some major contributions to insect decline and how can you as a Master Naturalists make a difference?

The following is a list of terms you will need to know in order to better understand what to photograph and what is used to identify bees in particular. Use the bee diagram created by Dr. Shaun McCoshum that follows to help you identify where these are located. Be prepared to answer questions on these during the Training Session (Insect Jeopardy!) and later in the online Curriculum Review.

**Head**

Antennae

-Flagellum

-Pedicil

-Scape

Compound and Simple eyes (ocelli)

Mandible

Tongue

**Thorax**

Wings

-Wing Venation

Submarginal Cells

Recurrent vein

Basal Vein

**Legs**

-Femur

-Tibia

-Tarsi and claws

-Arolium

Scopa

Corbicula

Foreleg

Midleg

**Abdomen**

Terga

Sterna

Scopa (leaf cutter bees)

**Other**

Ventral

Dorsal

