

Getting Acquainted with Insects

What is an Insect?

Arthropods

Crustaceans

Arachnids

Millipedes

Centipedes

Insects

Insect Characteristics

Body divided into three main regions

Three pairs of legs

One pair of antennae

Wings

The Main Groups of Insects

Insect Classification

Order Orthoptera: Grasshoppers, Crickets, Katydid

Order Dermaptera: Earwigs

Order Hemiptera: True bugs

 Suborder Heteroptera: True bugs

 Suborder Homoptera: Cicadas, Aphids, Leafhoppers, Mealybugs, Scales, Whiteflies

Order Neuroptera: Lacewings, Antlions, Dobsonflies, Others

Order Coleoptera: Beetles

Order Lepidoptera: Butterflies, Moths, Skippers

Order Diptera: Mosquitoes, Gnats, Midges, True flies

Order Hymenoptera: Sawflies, Ants, Bees, Wasps

The Basics of Insect Biology: Growth, Reproduction and Development

The Success of insects

Exoskeleton

Small size

Wings

High reproductive potential

Adaptability

Molting

Instars

Reproduction

Mortality factors

Insect Development

Metamorphosis

Gradual Metamorphosis

Complete Metamorphosis

Insect Feeding and Damage

“Bad” Insects

Mouthparts & Damage

Basic Insect Mouthparts – for chewing

Modified Insect Mouthparts

Piercing-sucking
Siphoning
Sponging
Rasping & others

Main Types of Feeding Damage

Chewing Damage

Defoliation

plant parts missing

Skeletonizing

Shotholes

Stippling

Leafmining: blotches or trails in leaves

Boring or tunneling

Wilting or death
“Sawdust” piles near holes
Emergence holes

Piercing-Sucking Insect Injury

Sap removal
Local necrosis
Disease transmission
Symptoms of Sucking Damage
Wilting
Leaf curling
Stippling
Yellowing
Stunted or distorted growth
Sooty mold
Disease Transmission
Aster yellows

Ecological Roles of Insects

Not ALL Bugs are Bad

“Bad” Insects

Beneficial Activities of Insects

Pollination

Honeybees

Pollen Bees

Pest Regulation

Natural enemies = beneficial insects or other organisms that destroy harmful insects

Predators

Parasitoids

Plant Feeders

Nutrient Recycling

As Food

Insect Products

Honey

Beeswax

Silk

Cochineal

Shellac

Beauty & Culture