



# INSECT CLASSIFICATION

## INTRODUCTION TO THE INSECT ORDERS





# INSECT CLASSIFICATION

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- **Phylum**-Arthropoda
- **Class**-Insecta
- **Order**-Orthoptera
- **Family**-Acrididae
- **Genus**-*Romalea*
- **Species**-*microptera*
- **Scientific name:** *Romalea microptera*

# BINOMIAL NOMENCLATURE

*"Naming with two names"*

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- Combined generic name and specific name
- Standard worldwide
- Latinized scientific name



Carolus Linnaeus (1707 – 1778)

**The Scientific Name is composed of two parts: The **Genus** name and the **Species** name.**

**Since two names are used, we call it Binomial Nomenclature system.**

# BIONOMIAL NOMENCLATURE

- **Order** names end in *ptera* (Greek for wing)
  - **Diptera**
- **Family** names end in *idae*
  - **Muscidae**



# INSECT ORDERS



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- Hemiptera – “True bugs”
- Homoptera – Aphids, scales, mealybugs
- Isoptera - Termites
- Coleoptera – Beetles
- Lepidoptera – Butterflies and moths
- Diptera – “True flies”
- Hymenoptera – Ants, bees, wasps, sawflies



# HEMIPTERA

## “Half Wing”

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- “True bugs”
- **Hemelytra** or “**half wing**”
- Piercing-sucking mouthparts
- “**Shield**” on back
- Some are economic pests
- Many are predators of other insects



# HEMIPTERA

## “Half Wing”







# HOMOPTERA

## “Same Wing”

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- Aphids, scales, mealybugs, cicadas, leafhoppers, whiteflies
- Wing structure is similar
- **Piercing-sucking mouthparts**
- Wings folded back to the side of the body
- Major greenhouse and interiorscape pests
- Some produce **honeydew**
- Can multiply quite rapidly

# HOMOPTERA

## “Same Wing”





# ISOPTERA

## “Equal Wing”

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- **Social insects** with a **caste system**
- All wings are of equal length
- Broad waisted
- Bead-like antennae
- Workers and soldiers are sterile
- Queen is sole egg producer
- Cause serious economic damage to homes and other structures

# ISOPTERA

“Equal Wing”





# COLEOPTERA

## “Sheath Wing”

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- Beetles
- **Largest order of insects**
- **Sheath wing** called an **elytra**
- Second pair of wings membranous
- Chewing mouthparts
- Larval stage called “**grubs**”
- Prolegs lacking
- Includes economic pests and beneficials



# COLEOPTERA

## "Sheath Wing"





# LEPIDOPTERA

## “Scale Wing”

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- Butterflies and moths
- Wings covered with **scales**
- **Siphoning mouthparts**
- Clubbed or feathery antennae
- Larvae called caterpillars
- Larvae have **prolegs** with **crotchets**



# LEPIDOPTERA

## “Scale Wing”





# DIPTERA

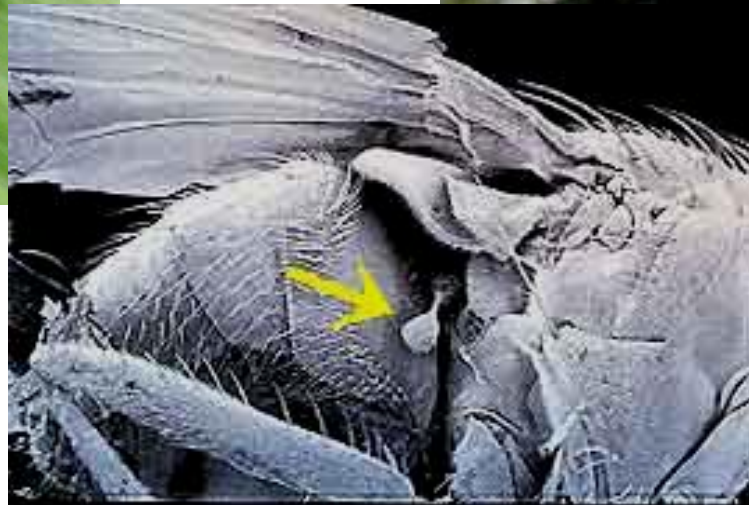
## “Two Wings”

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- “True flies”
- Membranous wings
- Possess modified wings called **halteres**
- **Sponging or cutting sponging mouthparts**
- Larvae called **maggots** or **wigglers**
- **Prolegs lacking**
- Includes economic pests and beneficial insects

# DIPTERA

## “Two Wings”





# HYMENOPTERA

## “Membranous Wings”

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- Sawflies, wasps, bees, ants, honeybees, and hornets
- Membranous wings
- Elbowed or **geniculate** antennae
- Chewing mouthparts
- Larvae may have **prolegs**, but lack **crotchets**
- Includes economic pests and beneficials



# HYMENOPTERA

## “Membranous Wings”





# SUGGESTED WEBSITES ON GOOGLE

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- [insects.tamu.edu/fieldguide/orders](http://insects.tamu.edu/fieldguide/orders)
- [ento.ento.vt.edu/facilities/oncampus/  
idlab/insect\\_orders](http://ento.ento.vt.edu/facilities/oncampus/idlab/insect_orders)
- [bugscope.beckman.uiuc.edu/resources/  
insects/insectorders](http://bugscope.beckman.uiuc.edu/resources/insects/insectorders)

# END OF PRESENTATION

