**Insect Orders**

**Apterygota** – Ametabola (4 Orders)

**1) Thysanura** Examples: Silverfish, Bristle tail

**2) Diplura** Examples: Diplurans

**3) Collembola** Examples: Springtails

**4) Protura** Examples: Proturans

**Exopterygota-** Hemimetabola (17 Orders)

**5) Ephemeroptera** Examples: Mayflies

**6) Odonota** Examples: Dragonflies,Damselflies

**7) Orthoptera** Examples: Grasshoppers, Locusts, Crickets

**8) Dictyoptera**  Examples: Cockroaches, Praying mantis (mantids)

**9) Grylloblattoda** Examples: Rock crawlers

**10) Phasmida** Examples: stick insect, leave insect

**11) Dermaptera** Examples: Earwigs

**12) Isoptera** Examples: Termites

**13) Embioptera** Examples: Webspinners

**14) Plecoptera** Examples: Stoneflies

**15) Zoroptera** Examples: Zoropterans

**16) Psocoptera**  Examples: Book lice

**17) Mallophaga** Examples: Chewing lice

**18) Siphunculata** Examples: Sucking lice

**19) Thysanoptera** Examples: Thrips

**20) Hemiptera**  Examples: True bugs (e.g. Red cotton bug, giant water bug)

**21) Homoptera** Examples: Aphids, jassids, whitefly, mealybugs

**Endopterygota-** Holometabola (9 Orders)

**22) Neuroptera** Examples: Lacewings (Green lacewing), Ant-lions

**23) Coleoptera**  Examples: Beetles (e.g. Click beetle, ground beetle, lady bird beetle)

**24) Strepsiptera** Examples: Stylopids

**25) Mecoptera**  Examples: Scorpion flies

**26) Trichoptera** Examples: Caddish flies

**27) Lapidoptera** Examples: Butterflies (e.g. lemon butterfly, ak butterfly), moths (hawk moth)

**28) Diptera** Examples: True flies (e.g. housefly, mosquitoes, blowflies, fruit flies)

**29) Siphonaptera** Examples: Fleas

**30) Hymenoptera** Examples: Bees, wasps, ants, sawflies

**Order matrix**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Orders** | **Metamorphosis** | **Wing development** | **Wing development category** | **Mouth parts** | **Wing types** | **Leg types** | **Antennae types** | **Mode of feeding** | **Examples** |
| Odonata | Hemimetabola | External | Exopterygota | Chewing | Forewings and hindwings both Membranous | Basket legs | Setaceous (bristle like) | All Predators | Dragon flies and Damsil flies |
| Homoptera | Hemimetabola | External | Exopterygota | Piercing sucking | Forewings membranous or thickened or with scales and hindwings membranous | Cursorial (Walking legs) | Setaceous (bristle like) | All Pests | Aphid, Jassid, mealybug, whitefly |
| Hempitera | Hemimetabola | External | Exopterygota | Piercing sucking | Forewings hemelytra and hindwings membranous | Cursorial (Walking legs) | Setaceous (bristle like) | Mostly Pests, Few predators | All true bugs e.g. red cotton bug |
| Thysanoptera | Hemimetabola | External | Exopterygota | Rasping sucking | Forewings and hindwings both fringed | Cursorial (Walking legs) | Setaceous (bristle like) | Mostly Pests, Few predators | All thrips |
| Isoptera | Hemimetabola | External | Exopterygota | Chewing | Forewings and hindwings both membranous | Cursorial (Walking legs) | Moniliform (beed like) | All pests | All termites |
| Dictyoptera | Hemimetabola | External | Exopterygota | Chewing | Forewings tegmina and hindwings membranous | Raptorial (Prolegs catching, grasping) | Filiform (thread like) | Many Pests, Many predators | Praying mantis and cockroaches |
| Orthoptera | Hemimetabola | External | Exopterygota | Chewing | Forewings tegmina and hindwings membranous | Saltatorial (Metalegs) | Filiform (thread like) | All pests | Grasshoppers, crickets |
| Coleoptera | Holometabola | Internal | Endopterygota | Chewing | Forewings Elytera and hindwings membranous | Cursorial (walking legs), Natatorial (Swimming legs) | Serrate (saw like), Pectinate (comb like), Capitate (knob like), Lamellate (leaf like) | Many Pests, Many predators | All beetles e.g. lady bird beetle, ground beetle |
| Lapidoptera | Holometabola | Internal | Endopterygota | Siphoning | Forewings and hindwings both membranous with scales | Cursorial (Walking legs) | Clavate (Club shaped) | All pests | Butterflies and moths e.g. lemon butterfly, ack butterfly, american boll worm, pink bollworm |
| Hymenoptera | Holometabola | Internal | Endopterygota | Chewing | Forewings and hindwings both membranous | Antenna cleaning legs, pollen collecting legs | Geneculate (Elbow shaped) | Many Pests, Many predators and parasitoids | Ants, Bees, Wasps, Saw flies |
| Diptera | Holometabola | Internal | Endopterygota | Sponging, piercing sucking, biting | Forewings and hindwings both membranous, hindwings reduced to form halteres | Cursorial (walking legs) | Aristate (Arista like), Plumose (Feather like) | Few Pests, few predators | All true flies and mosquitoes e.g. house fly, malarial mosquito |
| Neuroptera | Holometabola | Internal | Endopterygota | Chewing | Forewings and hindwings both membranous | Cursorial (walking legs) | Filiform (thread like), Clavate (club shaped) | All predators | Green lacewings, antlions |