**Lab 19**

**Insect Taxonomy 3**

**Endopterygota (Insects having complex metamorphosis)**

1. **Order: Coleoptera (beetles)**

**Ordinal Characteristics:**

1. Chewing mouthparts
2. Complete metamorphosis
3. Two pairs of wings, the first pair hardened (elytra), the second pair membranous.

**Order Coleoptera:**

1. **Suborder: Adephaga**
2. **Suborder: Polyphaga**
3. **Suborder: Adephaga**

**Family:** Carabidae (Ground beetle).

***Calosoma***  spp

1. head near eye narrower than pronotum
2. antennae threadlike
3. the color black and shiny and sometime metallic or colorful
4. most nocturnal (coming out at night)
5. **Suborder: Polyphaga**

**Family:** Scarabaeidae (Dung beetle)

* Food: dung
* ***Copris***  spp

**Family:** Buprestidae (Metallic wood borer)

* Food: Foliage, nectar
* ***Capnodis miliaris***

**Family:** Coccinellidae (Lady beetle)

* Food: Insects
* ***Coccinella sptempunctata*** (seven-spot ladybird)

**Family:** Tenebronidae (flour beetles)

*Tribolium confusum* (clavate antenna) *Tribolium castaneum* (capitate antenna)

1. **Order: Lepidoptera (Butterflies and moths)**

* **BODY CHARACTERISTICS:** Small to very large, covered with scales
* **MOUTH PARTS:** siphoning proboscis, vestigial in some species; Chewing in larvae
* **ANTENNAE:** Variable in form e.g. (bipectinate, unipectinarte. Clavate)
* **WINGS:** Two pairs, membranous, covered with scales (scaly wings).
* **LEGS:** Tarsi 5 segmented
* **ABDOMEN:** Cerci lacking

**Lipidoptera grouped into two suborders Ditrysia and Monotrysia**

**Suborder:** Ditrysia

**1-Family:** Papilionidae (tail on hind wings)

******e.g. ***papilio machaon***

**2-Family**: Nymphalidae

e.g. ***Vanessa cardui***



Female

**3-Family:** Pieridae

e.g. ***Pieris rapae***

Male



**4-Family:** Saturniidae

e.g. ***Saturnia pyri***

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**5-Family:** Sphingidae

***e.g. Hyles lineata***

**3- Order: Diptera: Flies and mosquitoes (two winged insects or true flies)**

* **Antennae** mostly 3 segmented (except in Nematocera ) stylate and aristate.
* **Mouth parts** sucking type usually forming a proboscis. In many they are piercing and sucking and in others they are sponging (lapping) with labium distally expanded in to a pair of fleshy lobes.
* **Mesothorax** large supporting the functional wings, pro and metathoracic segments small and fused with mesothorax
* **Wings** only front pair of wings present. Hind pair modified into halters which act as
* balancers
* **Legs** well developed, tarsus usually 5 segmented pulvilli and an empodium Usually present
* **Metamorphosis** is complete
* **Larvae** eruciform and apodous known as maggots
* **Pupa** either free or enclosed in the hardened larval cuticle known as puparium, (coarctate pupa) and some have active pupa.
* **This order is sub divided into several suborders:**

**1-Suborder:** Nematocera (thread horn)

**Family:** Culicidae

Eg. ***Culex pipiens*** ,

***Anopheles albimanus***

**2- Suborder:** Brachycera (short horn)

**Family:** Tabanidae (Horse flies)

Eg. ***Tabanus bromius***

**3-Suborder:** Cyclorrhapha (circular crack)

**Family:** Muscidae

Eg. ***Musca domestica***

****4-Suborder:** Brachycera

**Family:** Drosophilidae

***Drosophila melanogaster***