

Order 4
Hemiptera

Derivation: (Gk. Hemi=half; petron=a wing)

Common names: (Bugs, aphids, hoppers, etc.)

Metamorphosis: Incomplete (Paurometabolous)	-	Distribution: Worldwide
Number of families: 134		

Bugs, which comprise about **8 %** of all insect species, are the largest and most successful of the **Exopterygote orders**. They range from minute, wingless, scale insects, hardly resembling insects at all, to giant water bugs with raptorial front legs capable of catching fish and frogs. Almost every type of terrestrial and freshwater habitat has a particular and characteristic bug fauna, and ocean striders of genus *Halobates* (**Gerridae**) can found on the sea, hundreds of miles from the land.

In the past, the order was split into two large suborders, the **Heteroptera** (the true land and water bugs) and the **Homoptera** (the aphids, scale insect, hoppers, plant lice, mealy bugs, and related species), on the base of wing characteristics. Two pairs of wings are usually present and in **heteropterans**, the basal part of the front wing is toughened, leaving a membranous region on the tip. In **homopterans**, the front wings and hind wings may be membranous, or the front wings may be entirely toughened.

Modern classification recognize four distinct suborders: the **Coleorrhyncha** (**beetle bugs**, a single family of bugs found in the southern hemisphere); **Heteroptera** (73 families of true bugs); **Auchenorrhyncha** (31 families of the plantoppers, leafhoppers, treehoppers, froghoppers, lantern bugs and cicadas); **Sternorrhyncha** (29 families of whiteflies, aphids, conifer woolly aphids, scale insects, mealy bugs, phylloxerans, jumping plant lice). All Auchenorrhyncha, Coleorrhyncha and Sternorrhyncha are **herbivorous**, feeding on the sap or cell contents of vascular plants. While the Heteroptera contains many **predacious** species, mixed feeders, and a few specialist **blood feeders**, the majority of species are herbivorous.

Diagnostic characters:

1. *Compound eyes are often large, and ocelli may be present or absent.*
2. *Antennae vary from short with few segments to filiform and multi-segmented.*
3. *The mouthparts are piercing and sucking, comprise mandibles and maxillae modified as needle-like stylets, lying in a beak-like grooved labium, collectively forming a rostrum or proboscis. Mouthparts are absent in some aphids, and in some female and all male scale insects.*

4. *The thorax often consists of large pro- and mesothorax, but a small metathorax.*
5. *Two pairs of wings are usually present, the anterior pair most often harder consistency than the posterior ones, either uniformly or with the apical portion more membranous than the remainder to form hemelytra (Heteroptera). Both pairs of wings often have reduced venation. When at rest the wings are usually folded flat over the abdomen or sloping over the sides of the body. Some hemipterans are apterous, and rarely there may be just one pair of wings (in male scale insects).*
6. *The legs are frequently gressorial, sometimes raptorial, often with complex pretarsal adhesive structures.*
7. *The abdomen is variable, and cerci are absent.*
8. *Development is hemimetabolous (paurometabolous).*

Key to the suborders of Hemiptera

1. Beak arising from front part of head; antennae 4-5 segmented, not bristlelike; front wings, if present, usually thickened at base, membranous apically (hemelytra).....**Heteroptera**
 - Beak arising from back of head or apparently from between front coxae; antennae bristle-like **OR** with more than 5 segments; front wings of uniform texture throughout2
2. Antennal flagellum short, bristle-like; beak arising from back of head; tarsi 3 segmented; free-living insects**Auchenorrhyncha**
 - Antennae (when present) long and filiform, with evident segmentation; beak, when present, arising between front coxae; tarsi 1-2 segments; often sessile insects**Sternorrhyncha**

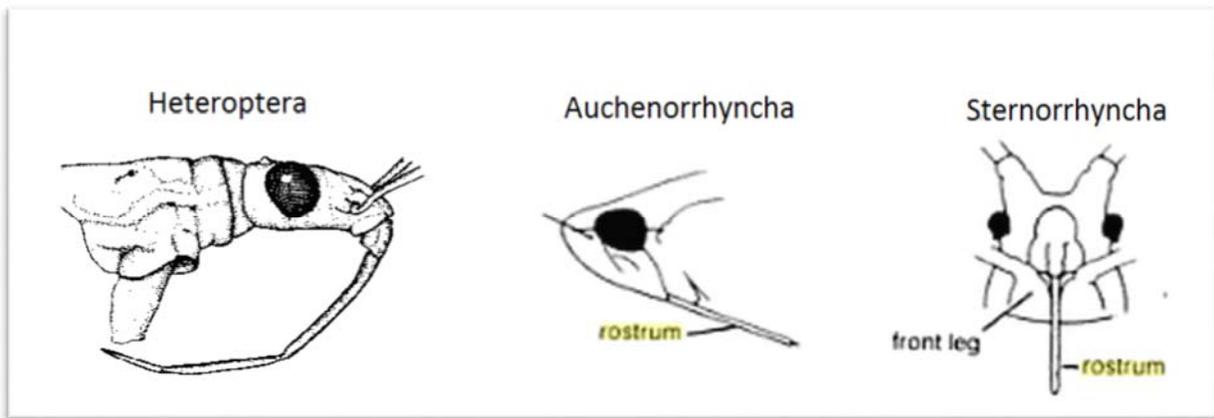


Fig.1

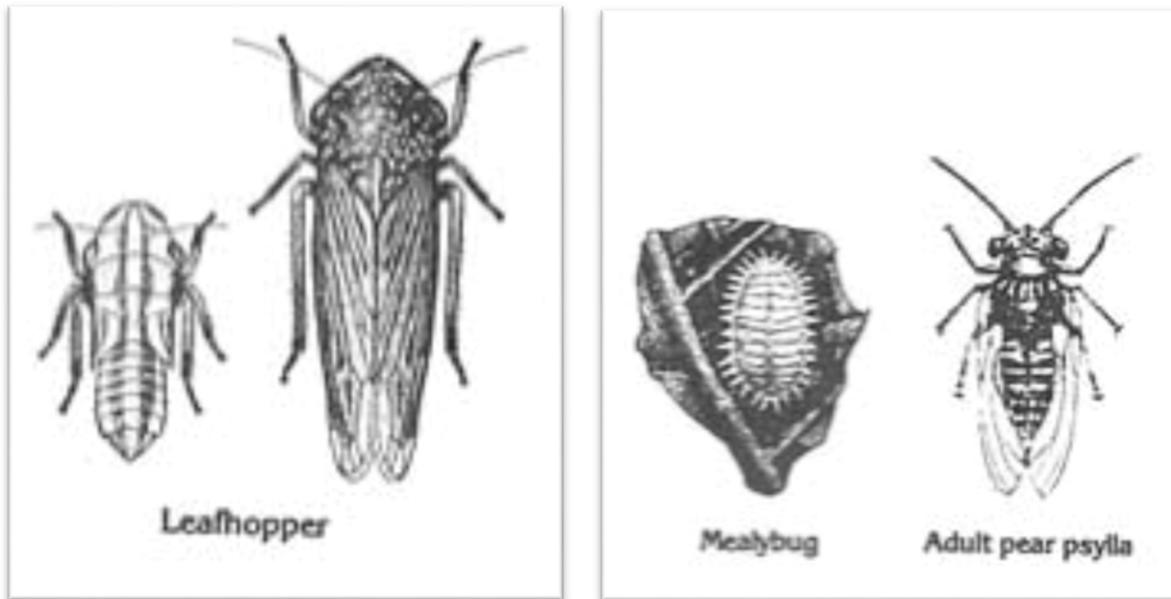


Fig.2 Auchenorrhyncha

Sternorrhyncha

Suborder Heteroptera

This suborder contains a wide variety of forms ranging from a few millimeters to a few centimeters in length. It includes terrestrial, semiaquatic and aquatic types. They also include predacious species and Plant-feeding species. The predacious species feed chiefly on smaller insects.

Diagnostic characters:

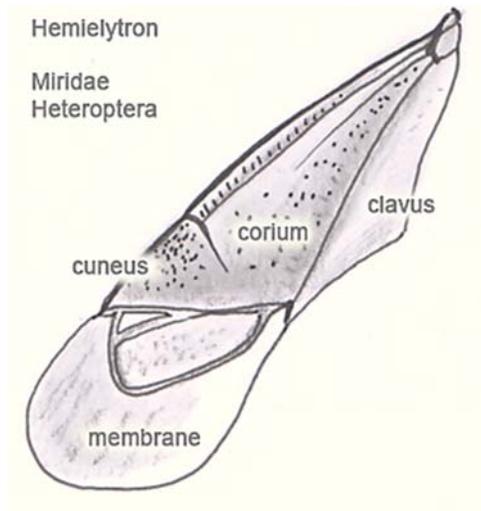
1. *Antennae 4-5-segmented.*
2. *Compound eyes are well developed except in parasitic forms.*
3. *Wings folded flat over abdomen, the front ones usually sclerotized basally and membranous apically.*
4. *Base of rostrum not touching anterior coxae.*
5. *Pronotum large.*
6. *Trochanters small; tarsi commonly 3-segmented.*

Key to the some Economic families

- 1. Antennae 5-segmented **Pentatomidae**
- Antennae 4-segmented2
- 2. Forewing with numerous closed cells (reticulate), without distinct division into corium, clavus and membrane. Ocelli absent; small somewhat flattened bugs, usually less than 5 mm in length]**Tingidae**



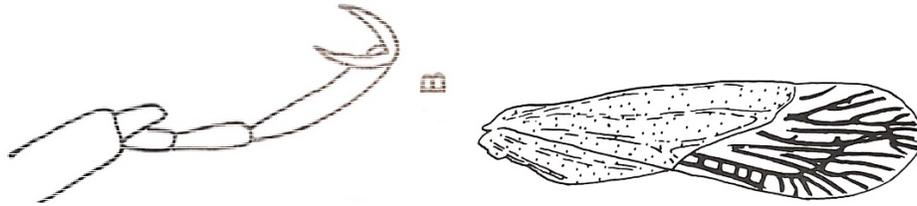
- Wings not reticulate, corium, membrane, usually clavus differentiated3



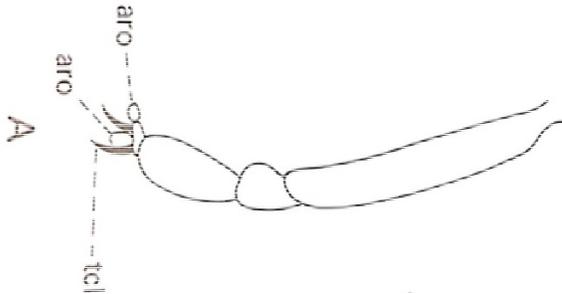
- 3. Ocelli absent..... **Miridae**
- Ocelli present4
- 4. Hemelytra with a cuneus; small to minute bugs, 1.2-5.0 mm in length, usually 2-3 mm**Anthracoridae**



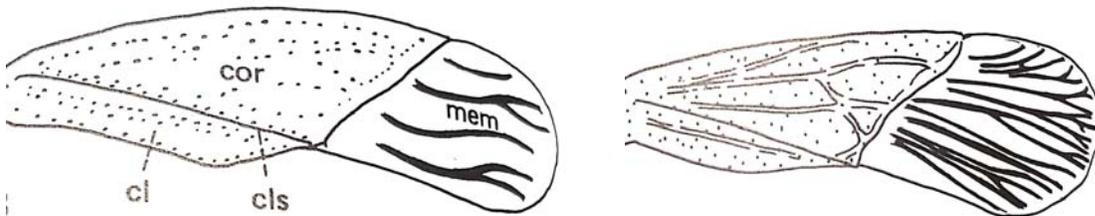
- Hemelytra without a cuneus; size variable5
- 5. Tips of front and middle tibiae with broad flat apical process; arolia absent; membrane of hemelytra (when developed) with numerous marginal cells**Nabidae**



- Tips of front and middle tibiae without such a process; arolia present6



- 6. Membrane of hemelytra with only 4 or 5 veins**Lygaeidae**
- Membrane of hemelytra with many veins **Coreidae**



Tingidae

Urentius echinus

بق الاوراق الباذنجانية



Anthocoridae

Orius sp.

بق الاوريوس



Nabidae

Nabis sp.

بق النابيس



Lygaeidae

Geocoris sp.

البق ذو العيون الكبيرة



Lygaeidae

Oxycarinus hyalinipennis

بق بذرة القطن



Miridae

Creontiades pallidus

بق إسقاط البراعم الزهرية واللوز



Pentatomidae

Coridius viduatus

البقة السوداء



Pentatomidae
Nezara viridula

البقة الخضراء



Coreidae
Cletus ochraceus

