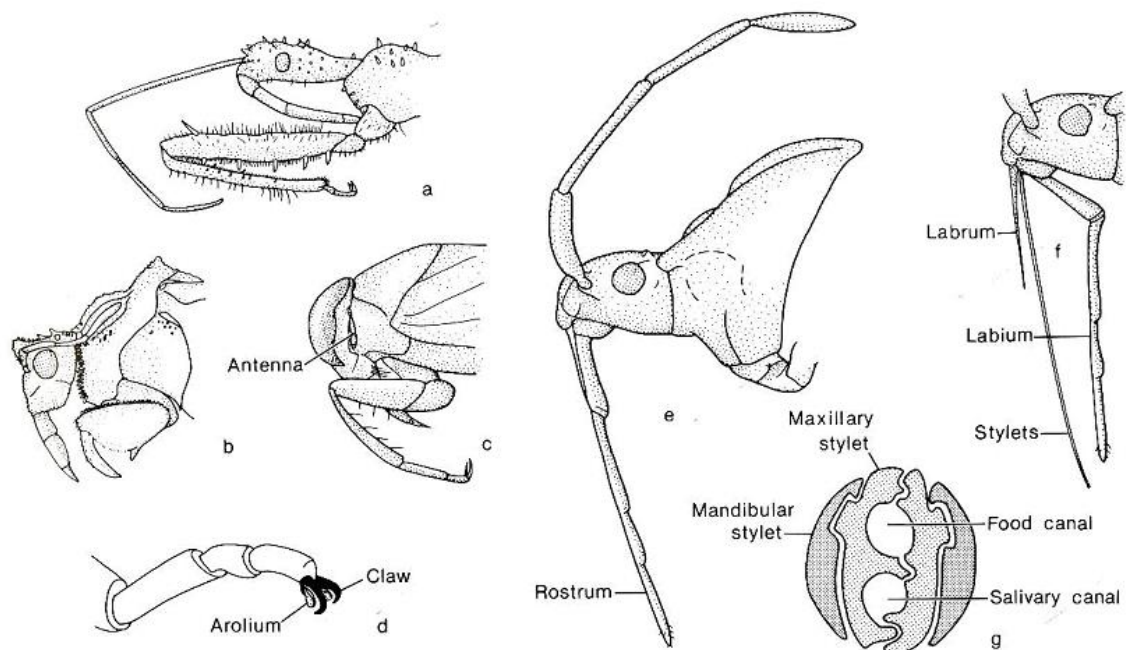


Agricultural insect pests in

Order: - Hemiptera

Bugs fore wings are hemelytra (with hardened basal portions and membranous tips)... Hind wing membranous, wings overlapping on abdomen. Mouth parts piercing sucking. The beak arises from the front part of the head. Antennae are fairly long in most of species and consist of four or five segments. Compound eyes always well developed. Ocelli may be present or absent. Tarsi 1--5 segments. Metamorphosis gradual



- Figure 1 Legs and mouthparts of Heteroptera: a, raptorial forelegs of *Sinea* (Reduviidae); b, same of *Phymata granulosa* (Reduviidae); c, same of *Notonecta* (Notonectidae); d, arolium of pretarsus; e, rostrum of *Anasa tristis* (Coreidae); f, rostrum with labium removed to show feeding stylets; g, cross section of feeding stylets. (Adapted from Daly, H.V. et al. 1978)

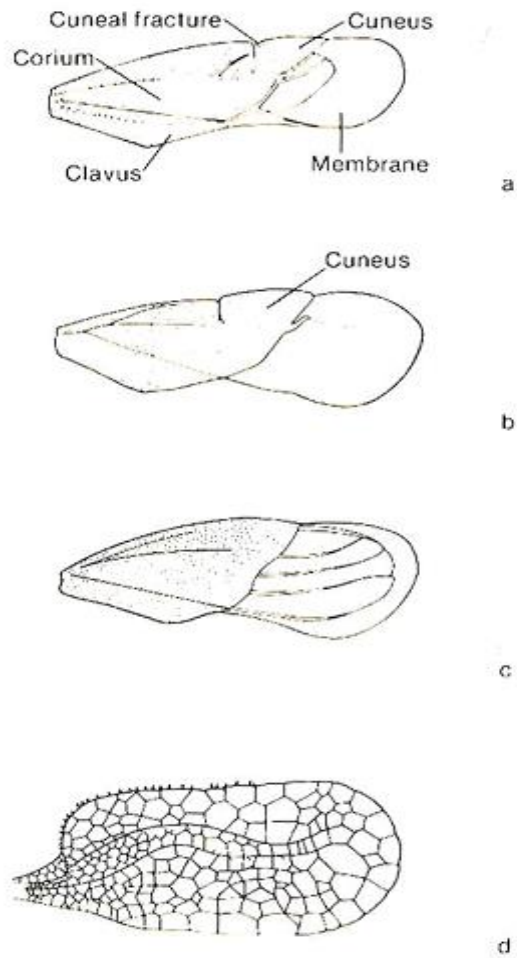


Figure 2 Wings of Heteroptera: a. Miridae (*Irbisia mollipes*); b. Anthocoridae (*Tetraphelps*); c. Saltidae (*Salda abdominalis*); d, Tingidae (*Corythuca obliqua*). (Adapted from Daly, H.V. et al. 1978)

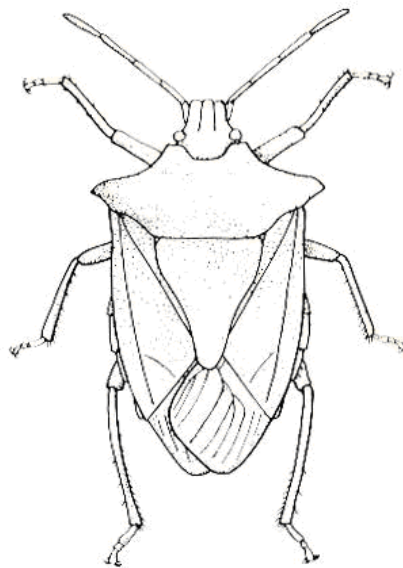


Figure 3 Representative Heteroptera : Pentatomidae

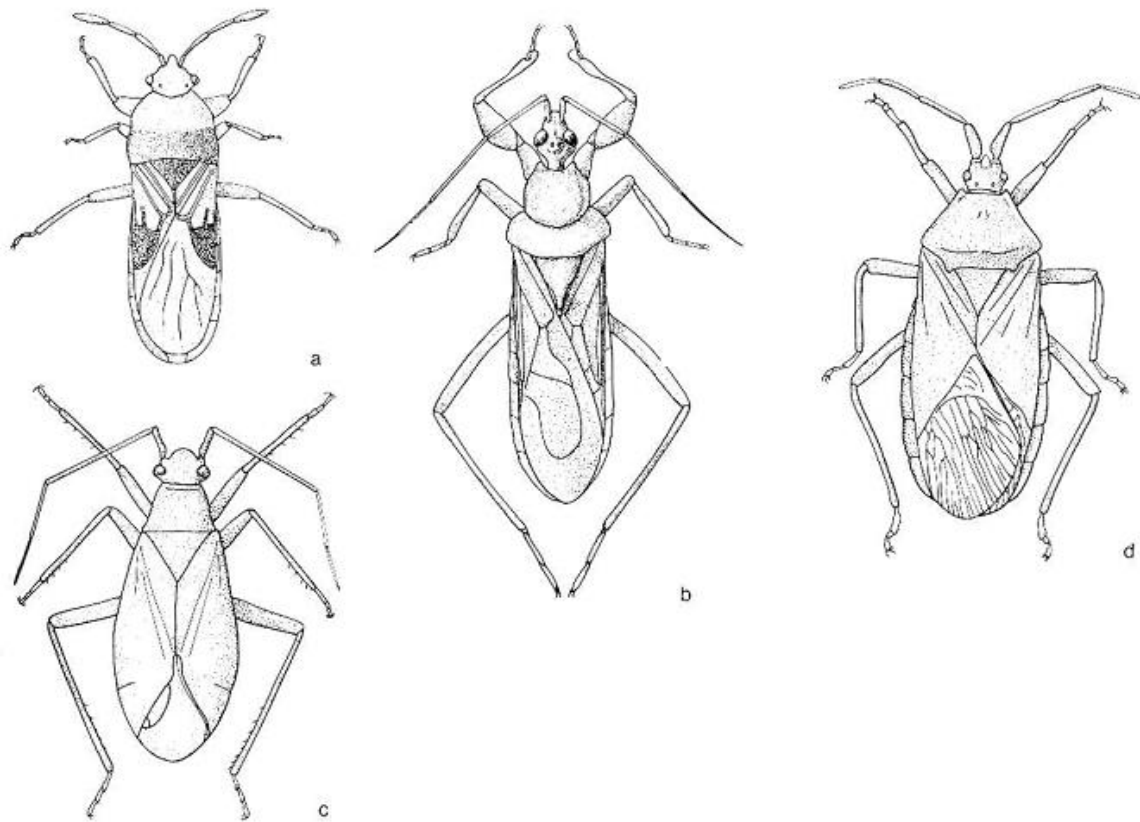
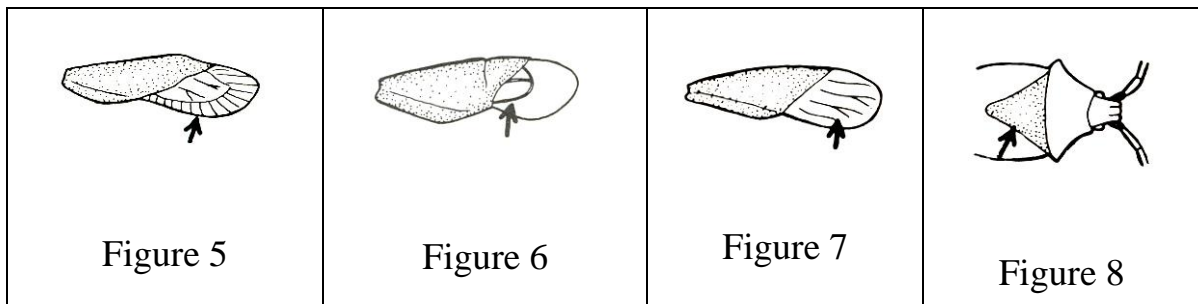


Figure 4 Representative Heteroptera: a. Lygaeidae (*Blissus leucopterus*); b. Reduviidae (*Triatoma protracta*); c. Miridae (*Irbisia mollipes*); d. Coreidae (Adapted from Daly, H.V. et al. 1978)





Key to the Economic families:-




- 1-- Wings entirely reticulate, ocelli absent-----Tingidae
- Wings not reticulate, ocelli present-----2
- 2--Front leg enlarged, raptorial-----3
- Front leg not raptorial.-----4





3-- Membrane with row of small cells around margin. ----- Nabidae (Figure 5)



- Membrane with two large cells and with out cells around margin
-----Reduviidae
- 4--Membrane portion of fore wing with two closed cells. -- Miridae (Figure 6)
- Membranous portion of forewing with out two closed cells.-----5.
- 5--Small size, membrane with no cells -----Anthocoridae.
- Larger size membrane with many veins-----6
- 6--Membrane with 4--5 open veins-----Lygaeidae (Figure 7)
- Membrane without 4---5 open veins-----7
- 7--Membrane with many branched, veins and cells-----Pyrrhocoridae
- Membrane with out many branched veins and cells but with numerous longitudinal veins.-----8
- 8--Antennae four segmented, scutellum usually not large -----
-----Coreidae
- Antennae five segmented,scutellum very large -----
Pentatomidae (Figure 8)

Representative of the families :

<p><i>Urentis echinus</i> (Tingidae)</p>	 <p>www.bio.mie-u.ac.jp</p>	<p>البقعة البراعم الزهرية</p>
<p><i>Orius</i> sp. (Anthocoridae)</p>	 <p>www.biconet.com</p>	<p>بقعة الأوريس</p>

<p><i>Nabis</i> sp. (Nabidae)</p>	 <p>www.ruf.rice.edu</p>	<p>البقّة النّـابـس</p>
<p><i>Reduvius</i> sp. (Reduviidae)</p>	 <p>www.ento.psu.edu</p>	<p>البقّة السّفاح</p>
<p><i>Geocoris</i> sp. (Lygaeidae)</p>	 <p>www.uky.edu</p>	<p>البقّة ذو العيـون</p>

<p><i>Oxycarinus hyalinipennis</i></p>	 <p>www.forestryimages.org</p>	<p>بقعة بذرة القطن</p>
<p><i>Phytocoris</i> sp. (Miridae)</p>	 <p>www.pbase.com</p>	<p>بقعة اسقاط الأوراق</p>
<p><i>Daraeocois</i> sp (Miridae)</p>	 <p>austmus.gov.au</p>	<p>بقعة أوراق النباتات</p>
<p><i>Nezara viridula</i> (Pentatomidae)</p>	 <p>insects.tamu.edu</p>	<p>البقعة ا</p>

<p><i>Aspongoapus viduatus</i> (Pentatomidae)</p> <p><i>Aspongopus</i> sp.</p>	 <p>asia.geocities.com</p>	<p>البقصة السوداء</p>
<p><i>Eysarcoris inconspicuous</i> (Pentatomidae)</p> <p><i>Eysarcoris</i> sp.</p>	 <p>www.pbase.com</p>	<p>بقصة الأرز</p>

References

- Daly, H.V., J.T. Doyen, P.Q. Ehrlich. (1978) Introduction to Insect Biology and Diversity. McGraw-Hill. New York.
- Borror, D.J., D.M. DeLong, and C.A. Triplehorn, (1981) An Introduction to The Study of Insects. 5th ed. Saunders. Philadelphia
- Pfadt, R.E., (1985) Fundamentals of Applied Entomology. 4th Ed. McMillan Publishing Company. New York.