

**Agricultural insect pest  
in Diptera  
(Two winged or true flies)**

Insects of single membranous wings, the hind pair modified into halteres. Mouth parts lapping or suctorial, sometimes adapted for piercing. Prothorax and metathorax small and fused with the large mesothorax. Tarsi commonly 5-segments, metamorphosis complete, compound eyes usually large antennae very short, sometimes long as in culicidae. Larvae apodous with the head reduced. Pupae either free with or enclosed in the hardened larval cuticle.

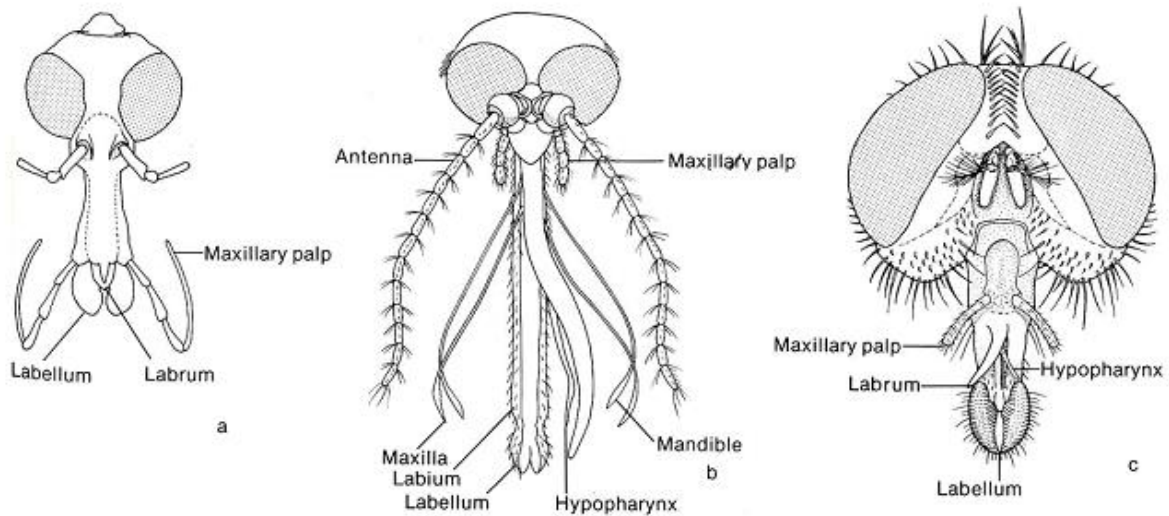


Figure 1 Mouthparts of adult Diptera: a, primitive nematoceran type (Tipulidae, *Ctenacroscelis*); b, piercing-sucking type (Culicidae, *Culex*); c, sponging type (Muscidae, *Musca*). (From Crampton and Snodgrass.)

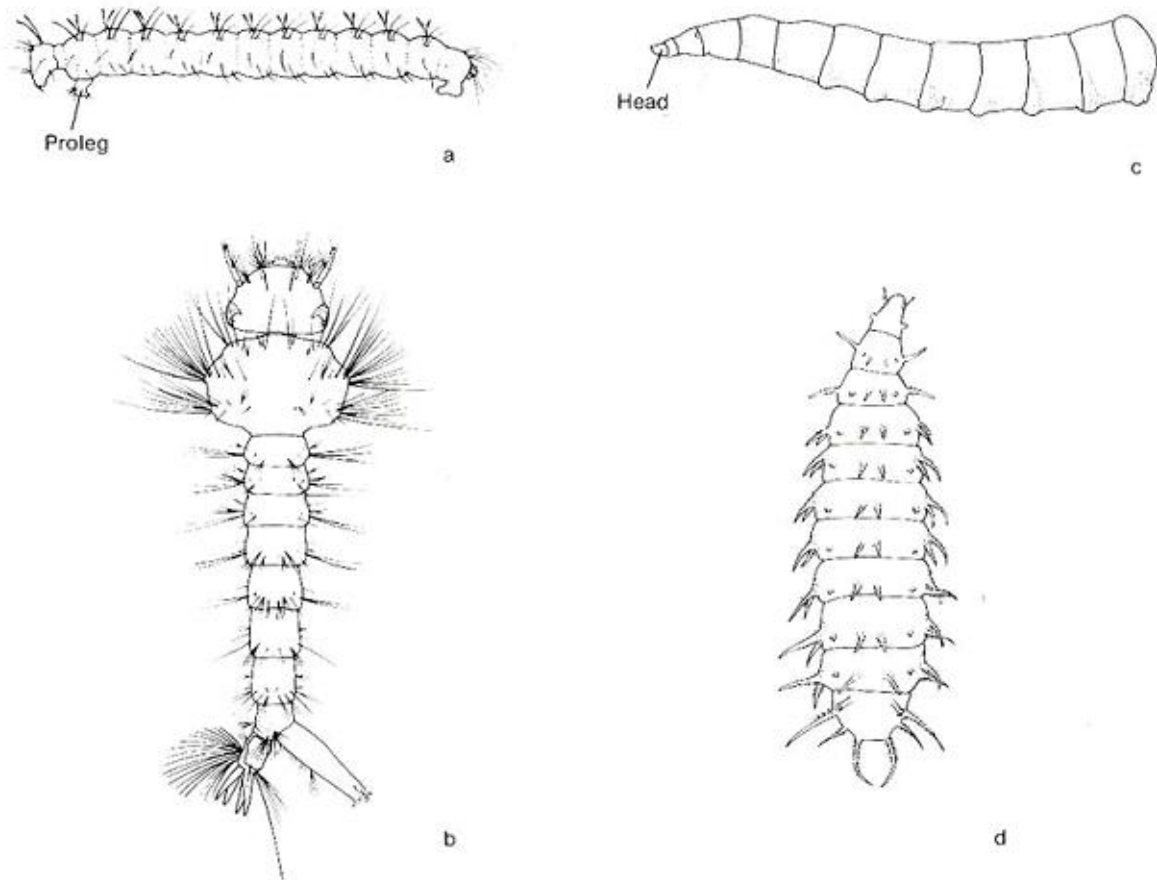


Figure 2 Representative Diptera larvae: a, Nematocera (Ceratopogonidae, *Forcipomyia specularis*); b, Nematocera (Culicidae, *Aedes stimulans*); c, Brachycera, Cyclorrhapha (Muscidae, *Musca domestica*); d, Brachycera, Cyclorrhapha (Anthomyiidae, *Fannia canicularis*). (adapted from Daly, H.V. et.al 1978)

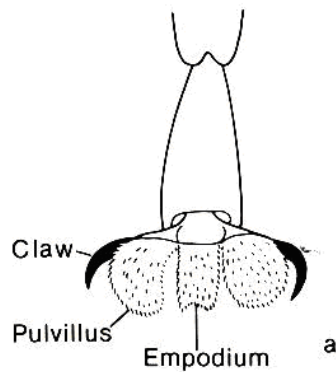



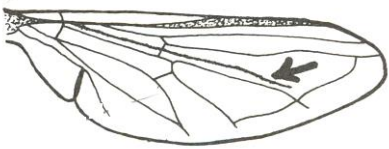
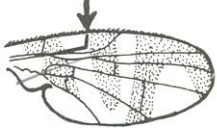


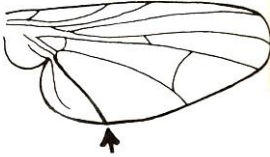
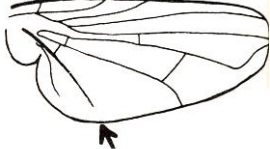



Figure 3 Taxonomic characters of Nematocera: a, tarsus of Bibionidae;







 <p>Figure 4</p>	 <p>Figure 5</p>	 <p>Figure 6</p>
 <p>Figure 7</p>	 <p>Figure 8</p>	 <p>Figure 9</p>
 <p>Figure 10</p>	 <p>Figure 11</p>	 <p>Figure 12</p>
 <p>Figure 13</p>		





**Key to the major economic Families .**





- 1--Antennae many segmented -----2.
- Antennae with five or three segmented -----3
- 2-- Wings with dense hair on veins / giving an opaque moth-like appearance ----
- Psychodidae (Figure 4)
- Wings with scales along the veins.---- - ----- Culicidae (Figure 5)

- 3-- Head broad, thin, and convex, antennae with 3<sup>rd</sup> segment  
 Often toothed and distal portion annulated-----Tabanidae (Figure 6)  
 ---Head not broad, thin, and convex. Antennae without 3<sup>rd</sup> segment toothed or  
 distal portion annulated-----4
- 4 -Wing with false vein between third and fourth vein.- ----Syrphidae (Figure 7)  
 ---Wings with out false vein. ----- 5
- 5-- 2<sup>nd</sup> vein short, bends at right angle towards leading edge of wing, wings  
 usually with bands of color.----- Tephritidae (Figure 8)  
 --- 2<sup>nd</sup> vein not short and with right angle bend, wings no usually with color  
 bands-----6.
- 6--Hypopleural bristles absent, arista plumose (with branches) -----7 (Figure 9)  
 --- Hypopleural bristles present, arista bare-----8 (Figure  
 10)
- 7-- Sixth vein reaching wing margin -----Anthomyiidae (Figure 11)  
 ---- Sixth vein never reaching wing margin.----- Muscidae (Figure 12)
- 8—Post scutellum developed, arista usually bare, abdomen usually bristly-----  
 -----Tachinidae (Figure 13)  
 --postscutellum not developed arista usually plumose, abdomn not bristly ----9.
- 9--thorax typically gray with-3 black lines, never metallic -----Sarcophagidae  
 --Thorax not gray and with out black lines, strongly metallic blue or green-----  
 ----- Calliphoridae

Culex sp.	 <p data-bbox="727 1703 902 1732">Eis.ifas.ufl.edu</p>	
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<p><i>Anopheles</i> sp. (Culcidae)</p>	 <p><a href="http://www.searo.who.int">www.searo.who.int</a></p>	
<p><i>Aedes</i> sp. (culcidae)</p>	 <p><a href="http://bacs-s02.bacs.uq.edu.au">bacs-s02.bacs.uq.edu.au</a></p>	
<p><i>Tabanus taeniola</i> (Tabanidae)</p>	 <p><a href="http://www.nzitrap.com">www.nzitrap.com</a></p>	<p>( ذبابة مسرى )</p>
<p><i>Syrphus corellae</i> (Syrphidae) <i>Syrphus</i> sp.</p>	 <p><a href="http://commons.wikimedia.org">commons.wikimedia.org</a></p>	<p>ذبابة السرفس</p>
<p><i>Ceratitis capitata</i> Tephritidae</p>	 <p><a href="http://agspsrv34.agric.wa.gov.au">agspsrv34.agric.wa.gov.au</a></p>	<p>ذبابة الفاكهة</p>
<p><i>Dacus oleae</i> Tephritidae</p>	 <p><a href="http://www.ac-nice.fr">www.ac-nice.fr</a></p>	<p>ذبابة الزيتون</p>

<p><i>Dacus ciliates</i> Tephritidae</p>	 <p><a href="http://www.iaea.org">www.iaea.org</a></p>	<p>ذبابة القرعيات</p>
<p>Fam. Muscidae</p>		
<p><i>Musca domestica</i> Muscidae</p>	 <p><a href="http://commons.wikimedia.org">commons.wikimedia.org</a></p>	<p>الذبابة المنزلية</p>
<p><i>Tachina larvarum</i> (Tachinidae) <i>Tachina</i> sp.</p>	 <p><a href="http://www.entomart.be">www.entomart.be</a></p>	<p>الذبابة التاكينا الكبيرة</p>
<p>Sarcophagidae <i>Sarcophaga carnaria</i></p>	 <p><a href="http://www.uknature.co.uk">www.uknature.co.uk</a></p>	<p>ذبابة اللحم</p>
<p>Fam Calliphoridae</p>		

<p><i>Calliphora vicina</i></p>	 <p><a href="http://www.gardensafari.net">www.gardensafari.net</a></p>	<p>الذبابة الزرقاء</p>
<p><i>Lucilla papuensis</i> <i>Lucilla</i> Sp.</p>	 <p><a href="http://www.inspiring-photography.com">www.inspiring-photography.com</a></p>	<p>الذبابة الخضراء</p>
<p>Fam. Asilidae <i>Asilus</i> sp.</p>	 <p><a href="http://www.hr-rna.com">www.hr-rna.com</a></p>	<p>الذباب السارق</p>
<p>Fam Drosophilidae <i>Drosophila melanogaster</i></p>	 <p><a href="http://www.life.uiuc.edu">www.life.uiuc.edu</a></p>	<p>ذبابة الدروسفيلا</p>

## References

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- Pfadt, R.E., (1985) Fundamentals of Applied Entomology. 4<sup>th</sup> Ed. McMillan Publishing Company. New York.

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