



## The Gnatwork

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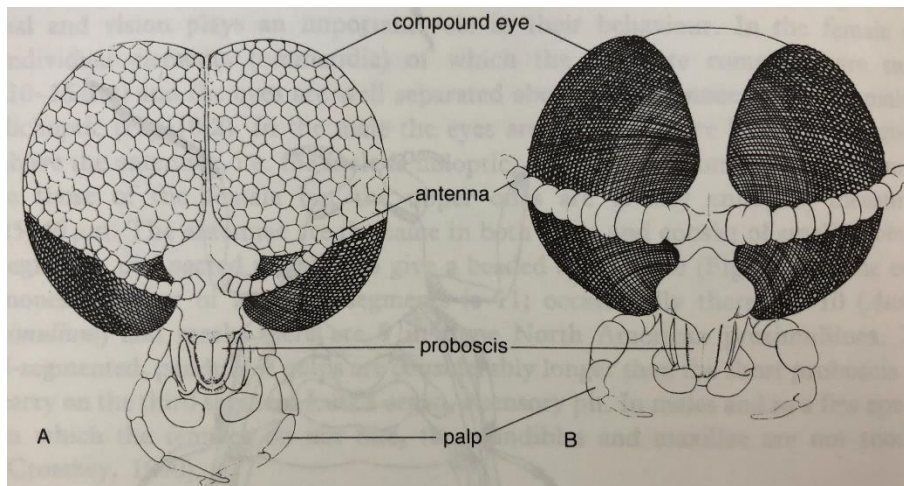
<b>Title of resource</b>
GN_03: Key characteristics of blackflies
<b>Authored by</b>
Robert A Cheke
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<b>Description</b>
Distinguishing blackflies from other Ceratopogonids. Characteristics of adults, eggs, larva and pupa. Protocol from the Gnatwork Bangladesh workshop, September 3-6 <sup>th</sup> 2018.
<b>Intended use</b>
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<b>Resource history</b>
N/A



## GN\_03: Key characteristics of blackflies

### Adult blackfly characteristics

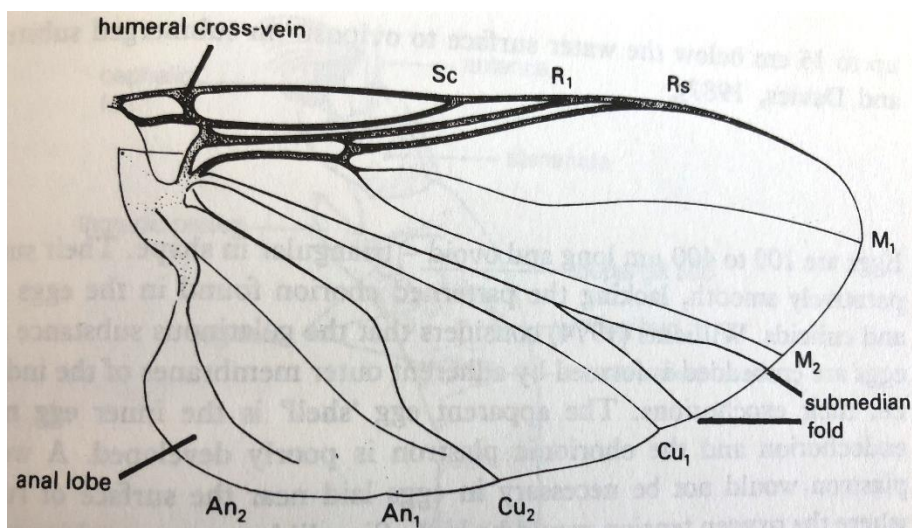
1. Generally small ( $\leq 4$  mm)
2. Stocky
3. Hump-backed
4. Short antennae



Front view of the heads of (A) male and (B) female *Simulium*

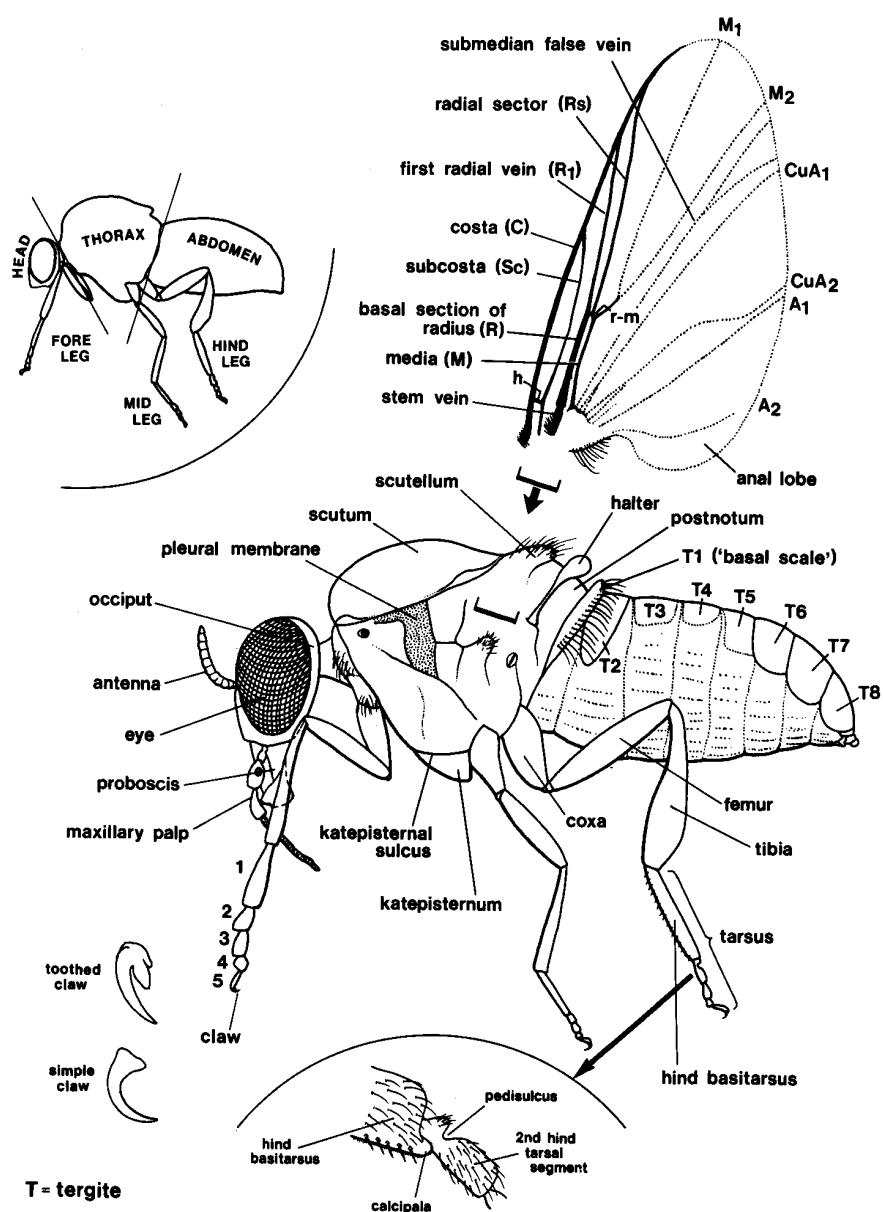
Source: Kettle (1995)

5. Ocelli absent
6. Wings broad at base, narrowing distally, anterior veins (costa, sub-costa and radius) heavy and remaining veins weak



Wing of female *Simulium*

Source: Kettle (1995)



Basic morphology of adult female *Simulium*  
Source: Crosskey (1990)

### Blackfly egg characteristics

1. Imperfectly ovoid, sub-triangular, in shape without floats
2. Shell surface smooth, micropyle at narrower end
3. Length 0.1 - 0.5 mm

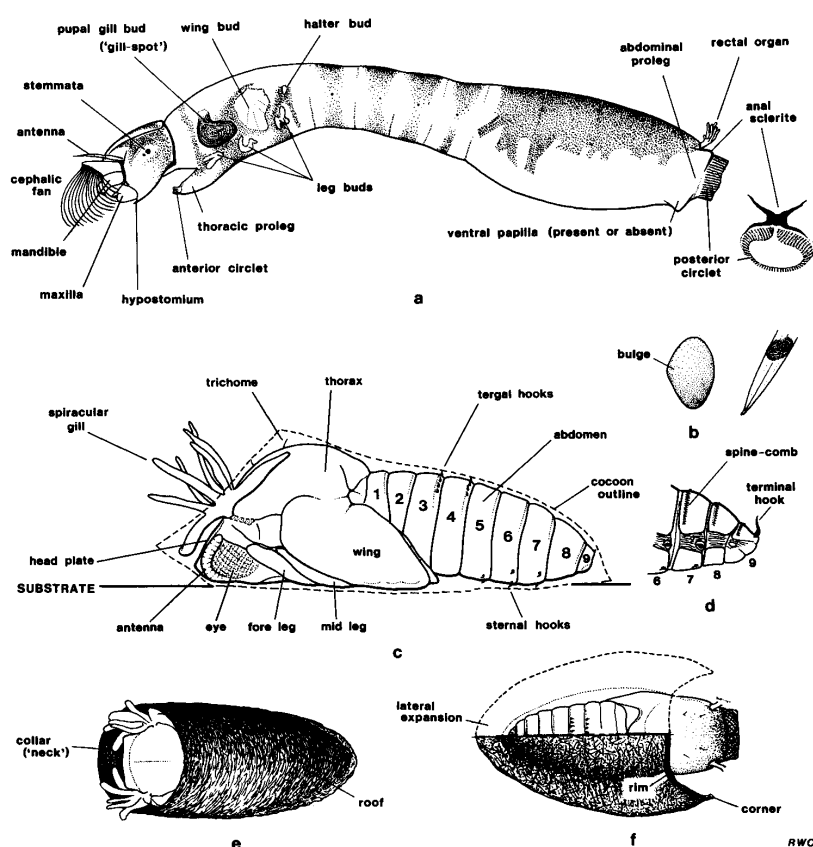


## Blackfly larva characteristics

1. Elongate and wormy with two pseudopods (prolegs), one mid-ventral on thorax other terminal on abdomen each with circlet
2. Head prognathous with pairs of cephalic fans, mandibles, and maxillae
3. Later instars with visible histoblasts (developing pupal gills), wing buds and leg buds
4. Abdomen feebly segmented
5. Trilobed rectal organ
6. Mature larvae 3.5 – 12 mm long

## Blackfly pupa characteristics

1. Sheathed in cocoon, open at head end
2. Head flexed beneath thorax, face horizontal
3. Thorax convex dorsally, flattened ventrally with pair of pupal gills rooted antero-dorsally and usually with many branches
4. Abdomen elongate with 9 segments and has onchotaxy of hooks or tubercles on at least some of mid-segments
5. Length 2 – 7 mm



**Figure 6.1** Basic morphology of the immature stages of Simuliidae: (a) mature larva in left side view (with apex of the abdomen in dorsal view); (b) egg, showing typical bulged shape (with small group of layered eggs on leaf tip); (c) pupa in left side view with outline of cocoon shown by pecked line (drawn from *Simulium lineatum*); (d) tip of pupal abdomen of *Prosimulium*, showing long terminal hooks; (e) cocoon of shoe-shaped type, dorsal view (collar present); (f) cocoon of slipper-shaped type, dorsal view (collar absent).

Source: Crosskey (1990)