Metallic Flies in need of identification

Part 3 – Close-up (part 2)

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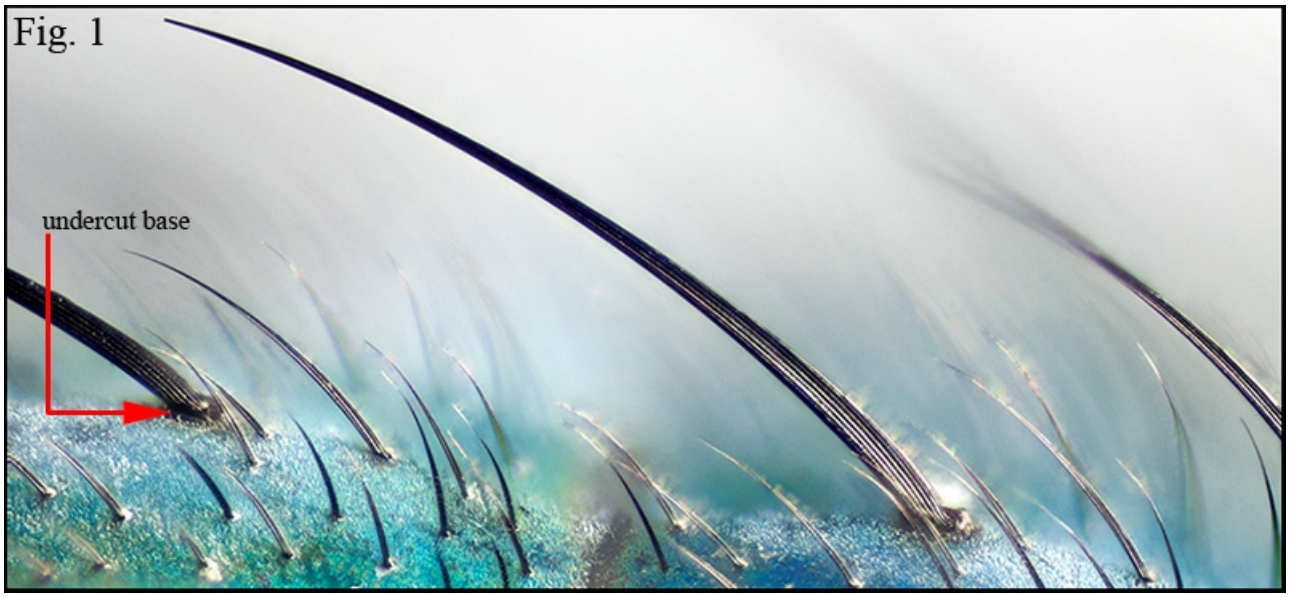
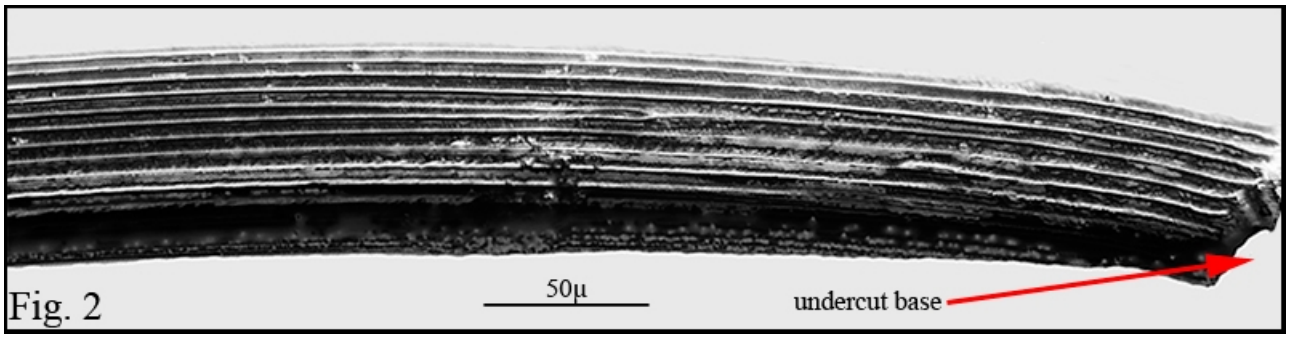
This is a follow-up to my articles, in issues 191 & 192: September & October 2011 Micscape Magazine, where I examine the setae detail, wing structure, spiracles, and tarsal pads of those flies.

Setae

The setae, bristles, are grooved longitudinally (Figs. 1 & 2) with some on the dorsal thoracic surface especially large (Fig. 1). They slope backwards (Fig. 1) and are undercut on the posterior basal corner where they attach to the thorax (Figs 1 &. 2). I suspect this undercutting allows these setae to flex downwards.

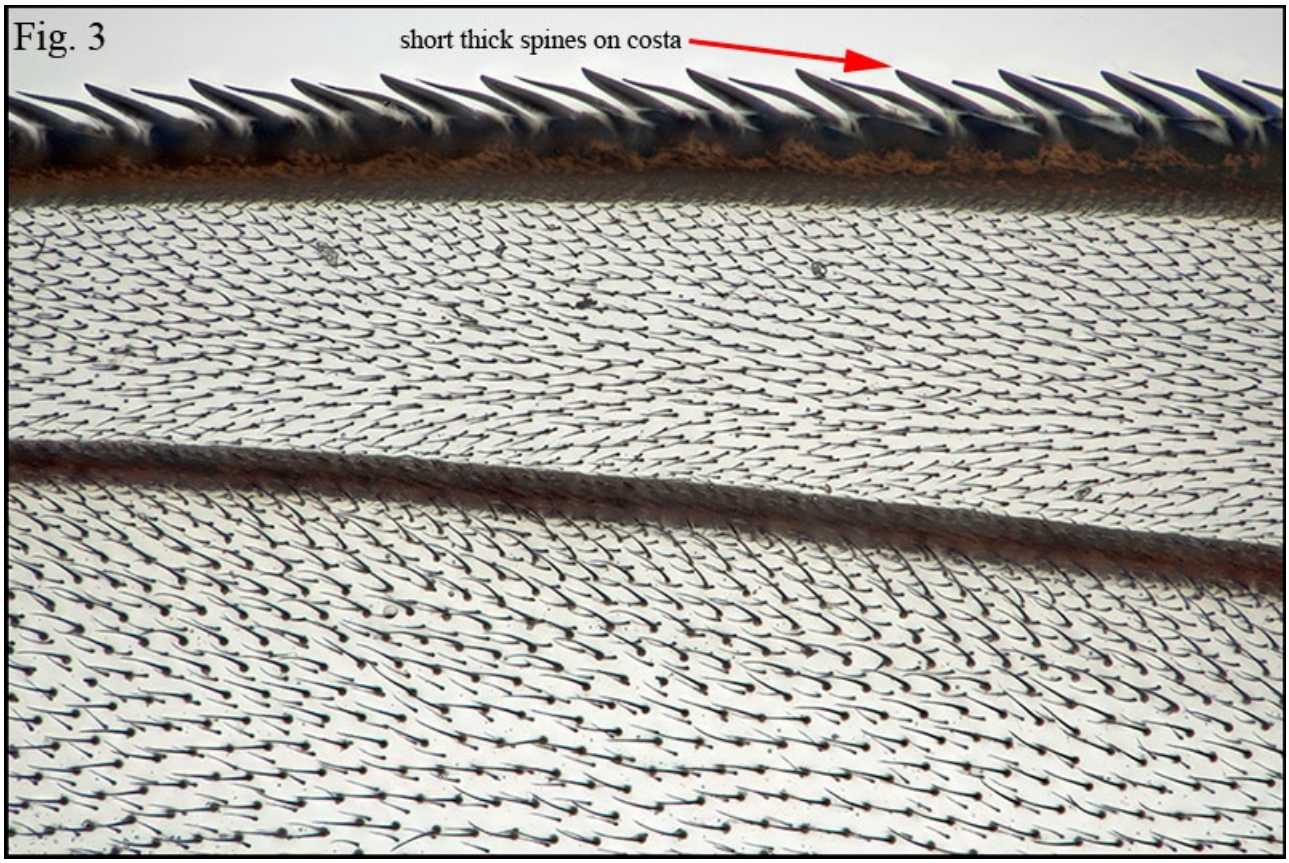




Wings

The wings are membranous and covered with many fine setae (Fig. 3). There are several thickened veins for structual support with the leading edge of each wing supported by the costa (vein) which has many short thick backward-pointing spines (Figs. 3, 4 enlarged).The trailing edge of each wing lacks a vein and has short fine setae that appear to be a continuation of the fine setae on the membrane (Fig. 5). But note the orientation of theses setae compared with the

setae adjacent to the costa.



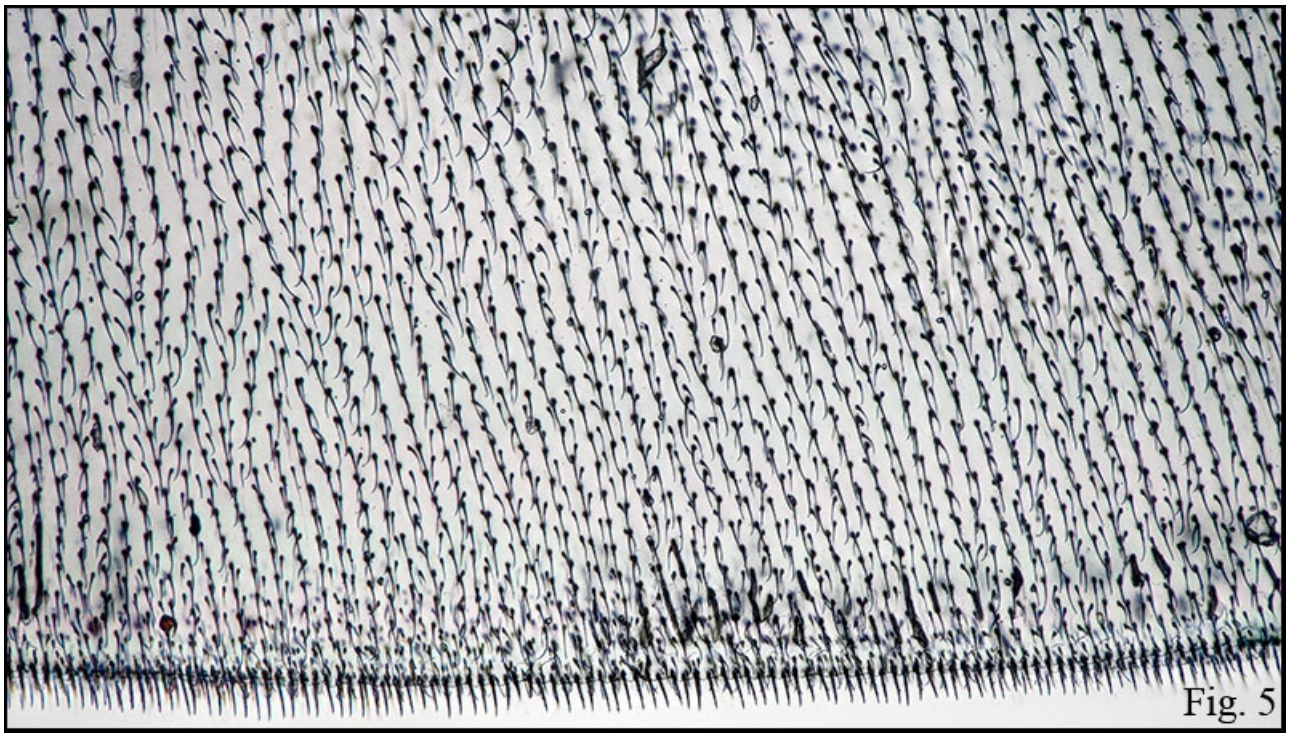


Fig. 5

Spiracles

These are openings in the body surfaces of most insects that allow for the entry/exit of gases. In the very active flyers such as blow flies there are 2 large spiracles on each side of the thorax to assist in gas exchange for the flight muscles (housed in the thorax). The anterior thoracic spiracle is especially obvious in *Calliphora vicina* (a species closely related to *Lucilia sericta*) as it shows as a bright orange 'teardrop' (Figs. 6, 7). The posterior thoracic spiracle is inconspicuos in most species and in blow flies it has a posterior triangular flap (valve) that can control the size of the spiracular opening (Fig. 8).

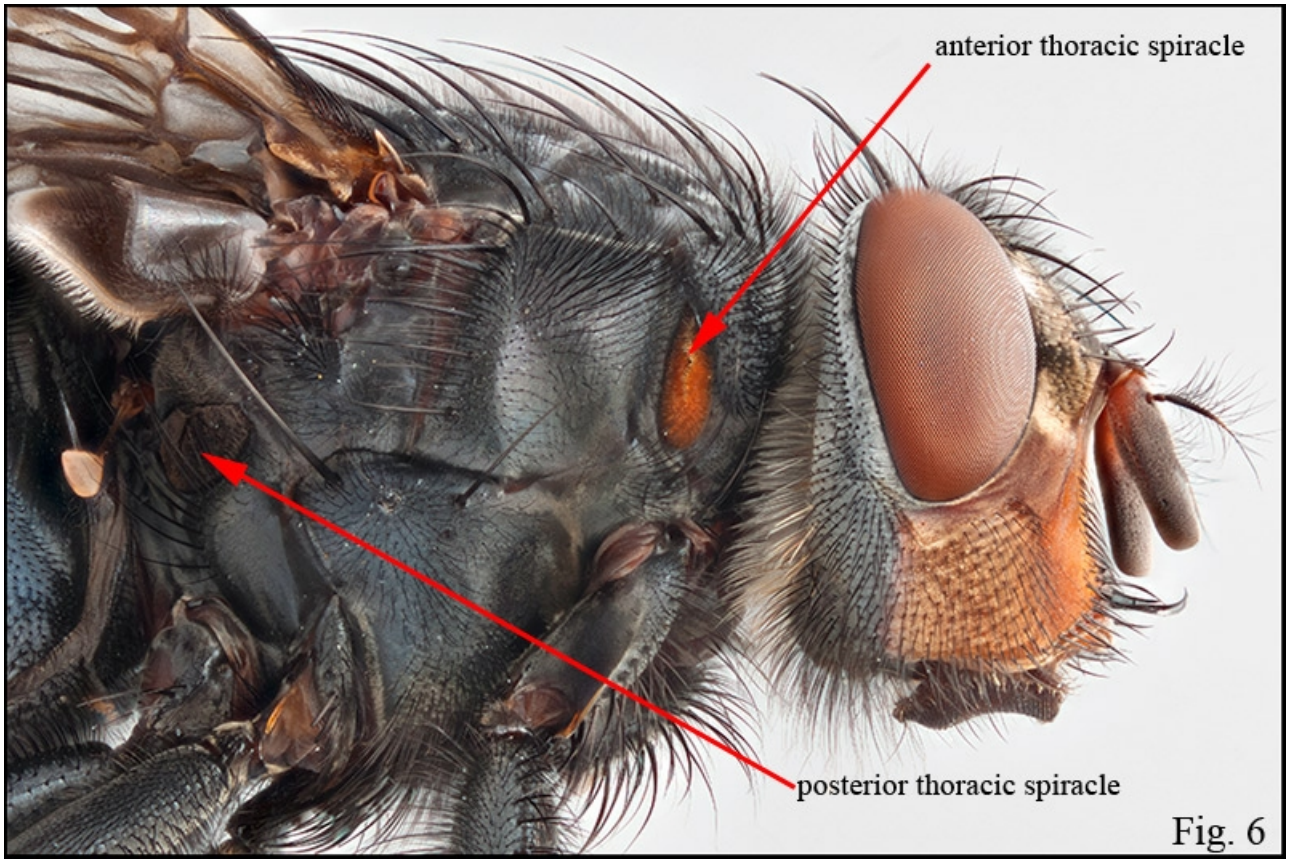


Fig. 6

Fig. 7

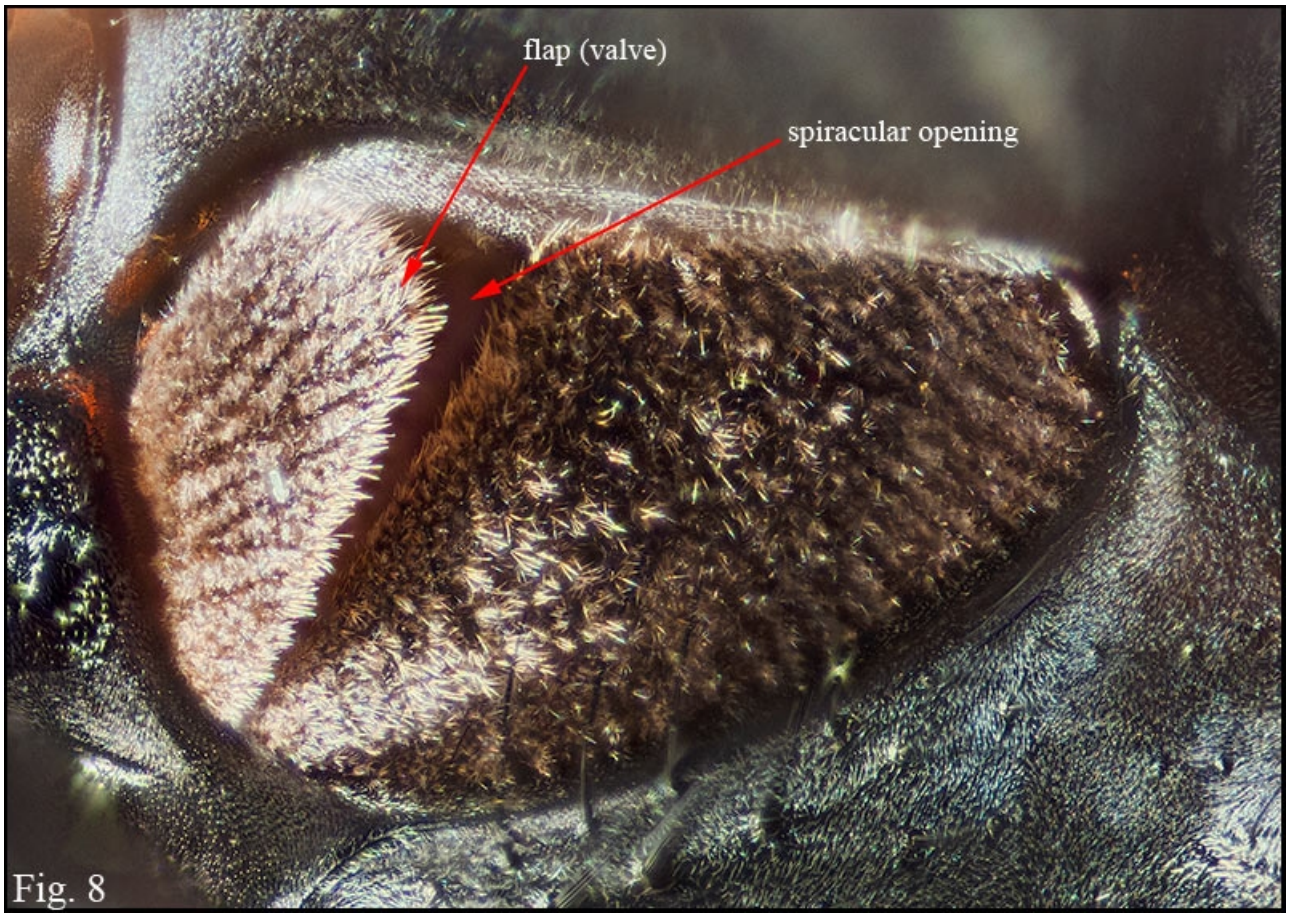


Fig. 8

This valve, the larger plate anterior to it and the vertical anterior and posterior valves of the anterior spiracle are actually a series of branching guard hairs that act as air filters. When the need for gas exchage is slight the hairs 'close' protecting the spiracular opening; when gas exchange demand is high the hairs can be raised so as not to impeded the rate of flow of air into and the rate of carbon dioxide out of the thorax. Figure 9 (flipped sideways) shows the partially opened guard hairs surrounding the anterior thoracic spiracle opening, of *L. Sericata;* and Fig. 10 shows a close-up of the hairs.


Fig. 9

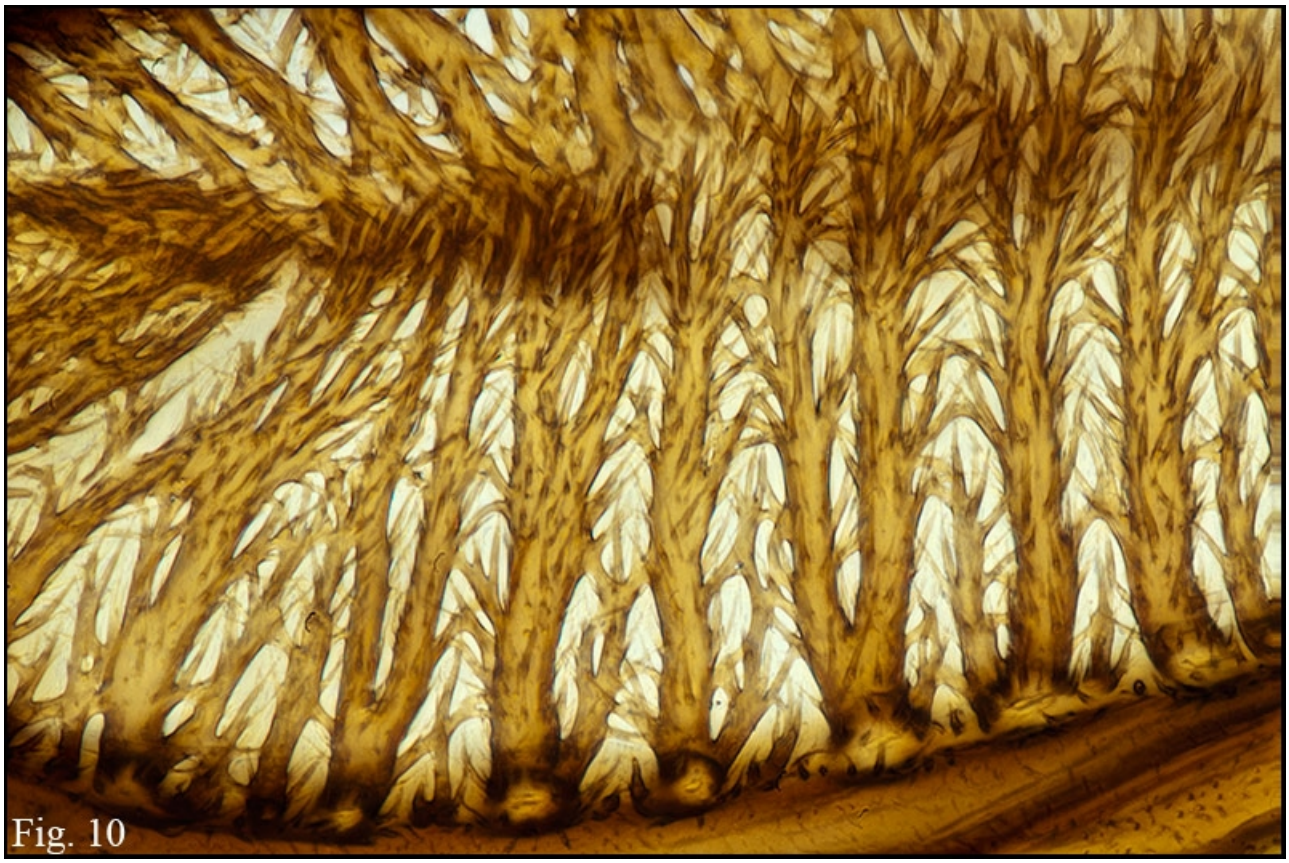


Fig. 10

Tarsal Pads

The terminal end of the legs of these flies has 2 claws and 2 sticky pads (pulvilii) (Fig. 11) all of which allow the fly to hold onto surfaces.

Fig. 11

The microscopic structure of each pulvillus is interesting. On the ventral surface (the side that makes contact with surfaces) are rows of hollow hairs through which a drop of viscous substance is secreted. It is the physical attraction between all these drops and a surface that allows the fly to walk on smooth surfaces such as glass. The tips of these hairs are about 0.4µ in diameter (Fig. 12).

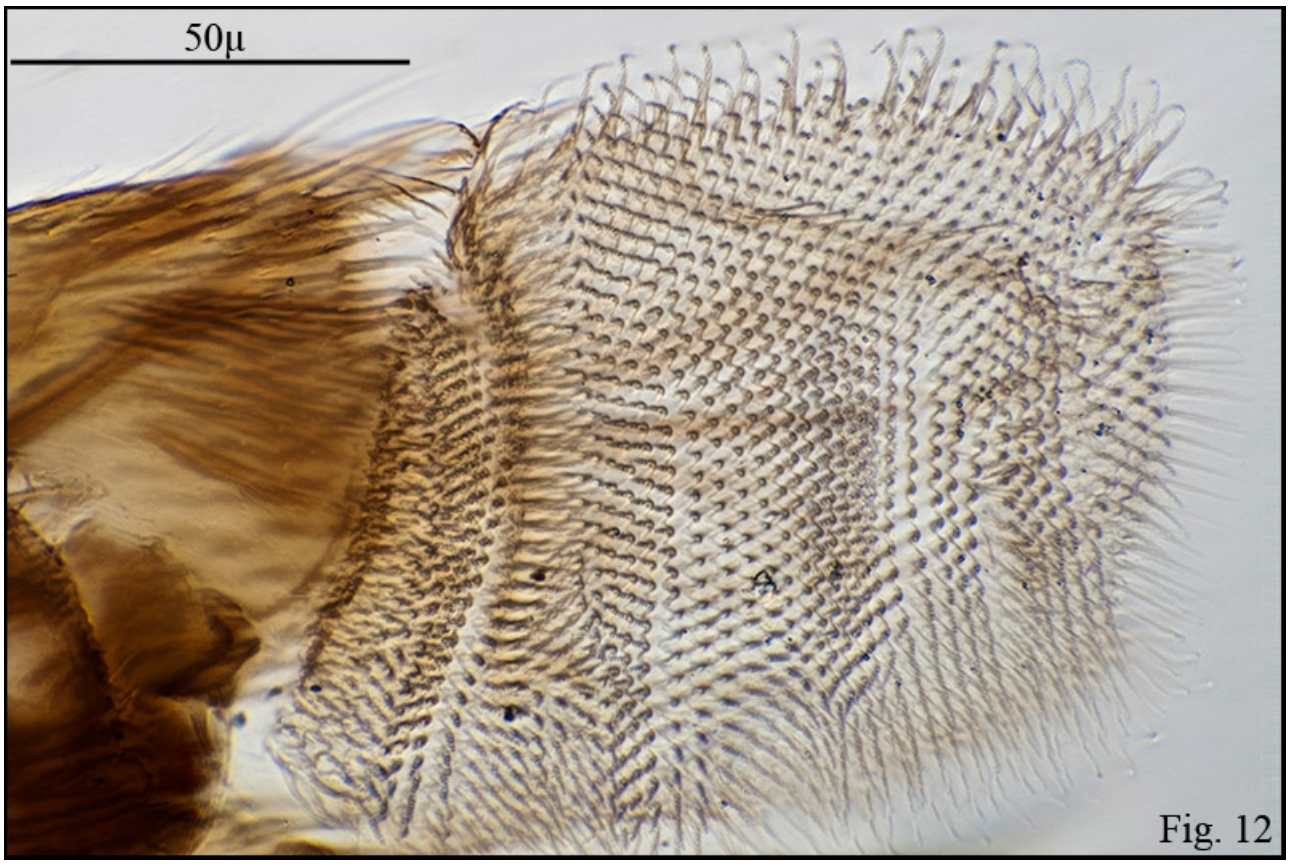


Fig. 12

Microscope and Photographic Equipment

My basic equipment is an Olympus BH2 with 2x, 4x, 10x, 20x, 40x, 60x, and 100x objectives; Olympus 2.5x NFK relay lens; Nikon D90 with Nikon PB-6 bellows; Nikon flash in place of Olympus' halogen lamp.
All images are stacks of several frames processed by Zerene Stacker.

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