

# More Fly (Diptera) Mouthparts

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This is a follow-up to my recent articles on Diptera mouthparts, issues 192 & 198: October 2011 & April 2012, where I examine the terminal mouthparts of 3 other species that have modifications for 'rasping' surfaces.

## The Stable Fly – *Stomoxys calcitrans*.

This common species (Fig. 1a) has a disproportionately long proboscis (Fig. 1a, pb; b) that is tipped with a horny ball accommodating 2 sets of 6, well developed, prestomal teeth (Fig. 2). These teeth are the main implements for cutting into mammalian skin, the resulting blood flow is then sucked up the long proboscis into the gut. Unlike most other blood-sucking flies both sexes feed on blood.

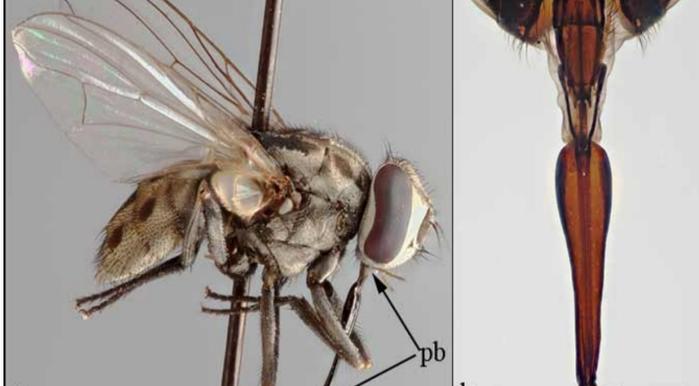


Fig. 1. a: Stable Fly showing long, 2.6 mm, proboscis (pb) [105 mm Micro Nikkor]; b: front view of proboscis showing position of teeth at tip [4x Nikon CF N plan achromat on bellows].



Fig. 2. Stable Fly, tip of proboscis showing 2 sets of prestomal teeth [10x Splan Apo + 2.5x NFK relay lens].

## Yellow Dung-fly - *Scatophaga stercoraria*.

These flies are predators that catch, kill and feed on other flies. The fleshy labella (Fig. 3a, lb) at the tip of the short proboscis has a paired-series of large prestomal teeth in the center line (Fig. 4.) Oldroyd (1964, p. 212) stated that they use these teeth "to cut a hole in the membrane of the neck, severing the nerve cord, and crippling the victim, and at the same time releasing the body fluids which are sucked out of the head and thorax [of the captured fly]". Later they feed on the abdomen (Fig. 3b).

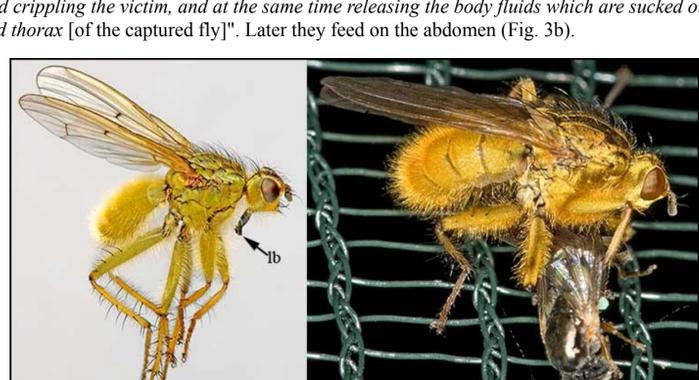


Fig. 3. Yellow Dung-fly, a: labella (lb) at tip of proboscis [105 mm Micro Nikkor]; b: with captured, killed, hover fly (Syrphidae) [200 mm Micro Nikkor].



Fig. 4. Yellow Dung-fly, one set of a pair of prestomal teeth [40x Splan Apo + 2.5x NFK relay lens].

## "House Fly".

This small grey fly is not the true House Fly (*Musca domestica*) but is in the same family and I find it around the outside of my house; it is in the genus *Muscina*. It is included here because of the large prestomal teeth which can be seen on the mid-ventral surface of the labella (Fig. 5 pt). They are used to abrade the surface of food and may be used to keep open a wound made by a blood-sucking fly in order to keep blood flowing, blood is then sucked up into the gut.

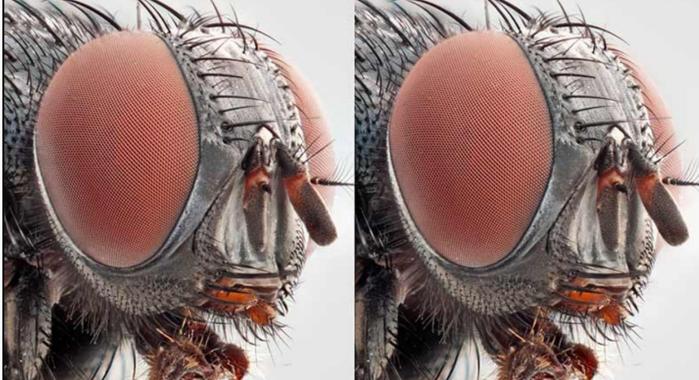


Fig. 5. *Muscina* sp. Showing prestomal teeth on mid-ventral surface of the labella [reversed 50mm El Nikkor enlarging lens on bellows]. Cross-eyed stereo pair, best seen with a stereo viewer.

After a short soaking in 5% KOH the labella swells and the 2 rows of prestomal teeth can be seen in more detail in a ventral view (Fig. 6 pt).



Fig. 6. *Muscina* sp. The 2 rows of prestomal teeth (pt) on mid-ventral surface of labella [4x Nikon CF N Plan achromat on bellows]. Cross-eyed stereo pair, best seen with a stereo viewer.

Figure 7 shows the labella flattened on a slide and rotated 90 degrees (to fit page); the 2 rows of strong prestomal teeth can be seen at the entrance to the food canal and surrounded by the pseudotracheae of the labella.

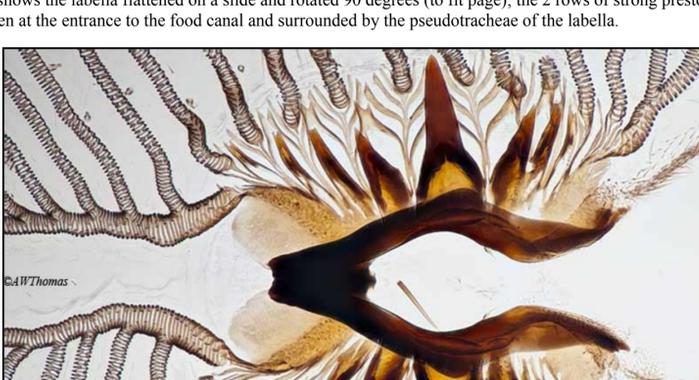


Fig. 7. *Muscina* sp. Labella flattened and rotated to show the 2 rows of prestomal teeth [10x Splan Apo + 2.5x NFK relay lens].

## Reference.

Oldroyd, H. 1964. The Natural History of Flies. Norton Library edition 1966. 324 pp.

## 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. I also have the components for Phase Contrast, DIC and Polarization. Camera is a Nikon D90 with Nikon PB-6 bellows; Nikon flash in place of Olympus' halogen lamp. For reflected light images I use Nikon CF objectives, El-Nikkor enlarging lenses, and a MF 105mm Micro Nikkor. Most images are stacks of several frames processed by Zerene Stacker. Zerene Stacker was also used to make the stereos.

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