

LEAF-LITTER & SOIL CRITTERS

Anthony Thomas, New Brunswick, Canada

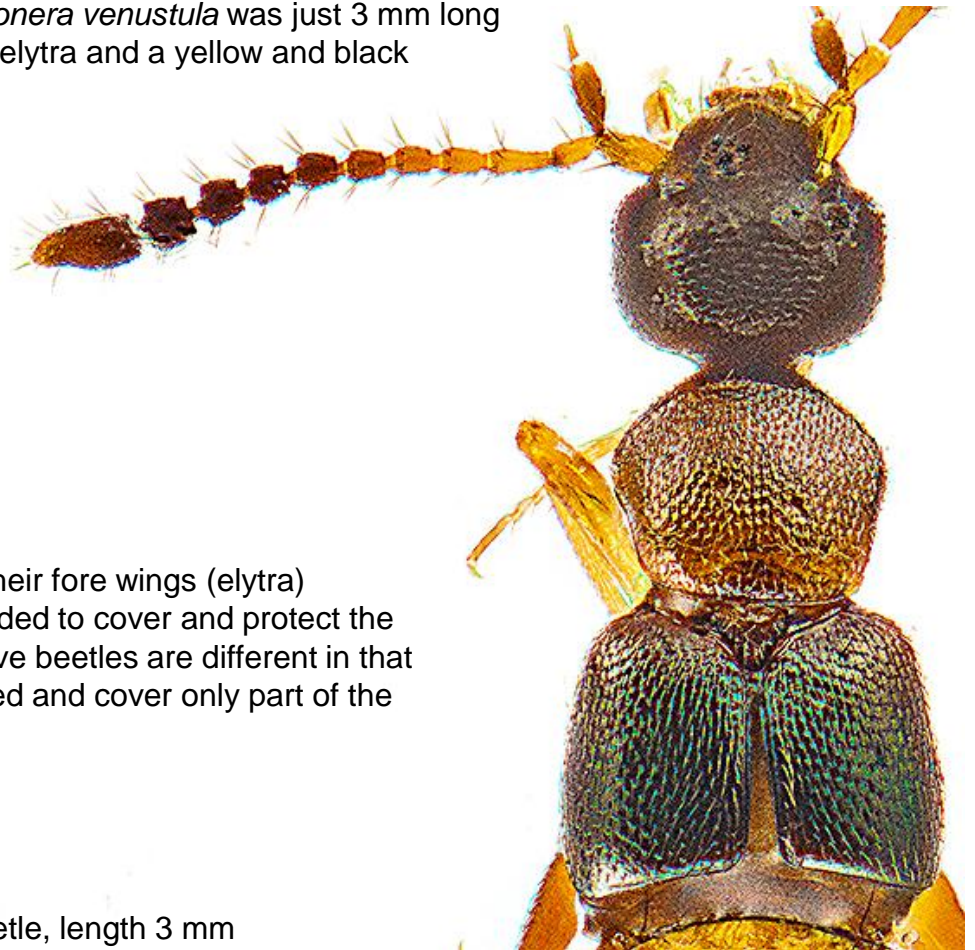
During the summer of 2024 I spent time surveying for ants, in New Brunswick. The methodology was to collect leaf-litter/soil into a plastic bag and then extract the ants using a Berlese Funnel as shown here:

<https://www.microscopy-uk.org.uk/mag/article20/at-garden.pdf>

Invariably, other critters were extracted along with ants and although they were not microscopic they were best appreciated when seen under a dissecting microscope and photographed at greater than 1x magnification.



Three colourful Rove Beetles were found, one identified on iNaturalist as *Meronera venustula* was just 3 mm long with green iridescent elytra and a yellow and black abdomen.



Most beetles have their fore wings (elytra) hardened and extended to cover and protect the entire abdomen. Rove beetles are different in that the elytra are reduced and cover only part of the thorax.

Rove Beetle, length 3 mm

The second, a “Whiplash Beetle” (genus: *Paederus*), was even more colourful and slightly larger, length 4.8 mm.

The third, a “Crab-like Rove Beetle” (genus: *Tachyporus*) was smallest of the three, length 2.8 mm; no idea what the moniker “Crab-like” refers to.

I am left wondering why these beetles are so colourful? Living in leaf-litter and soil I can see no need for such brilliant colours and would expect them to look more like the black colour of the long *Xantholinus* rove beetle.



Crab-like Rove Beetle



Xantholinus Rove Beetle

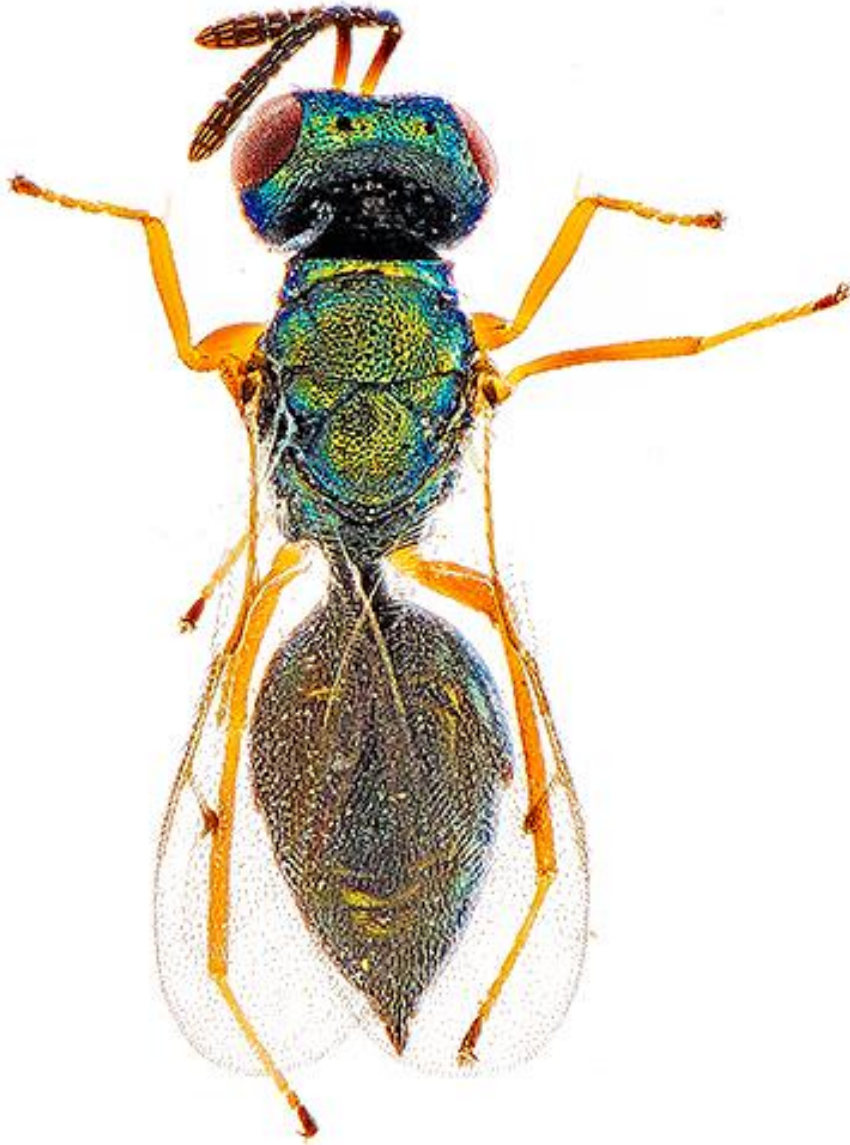


Whiplash Beetle

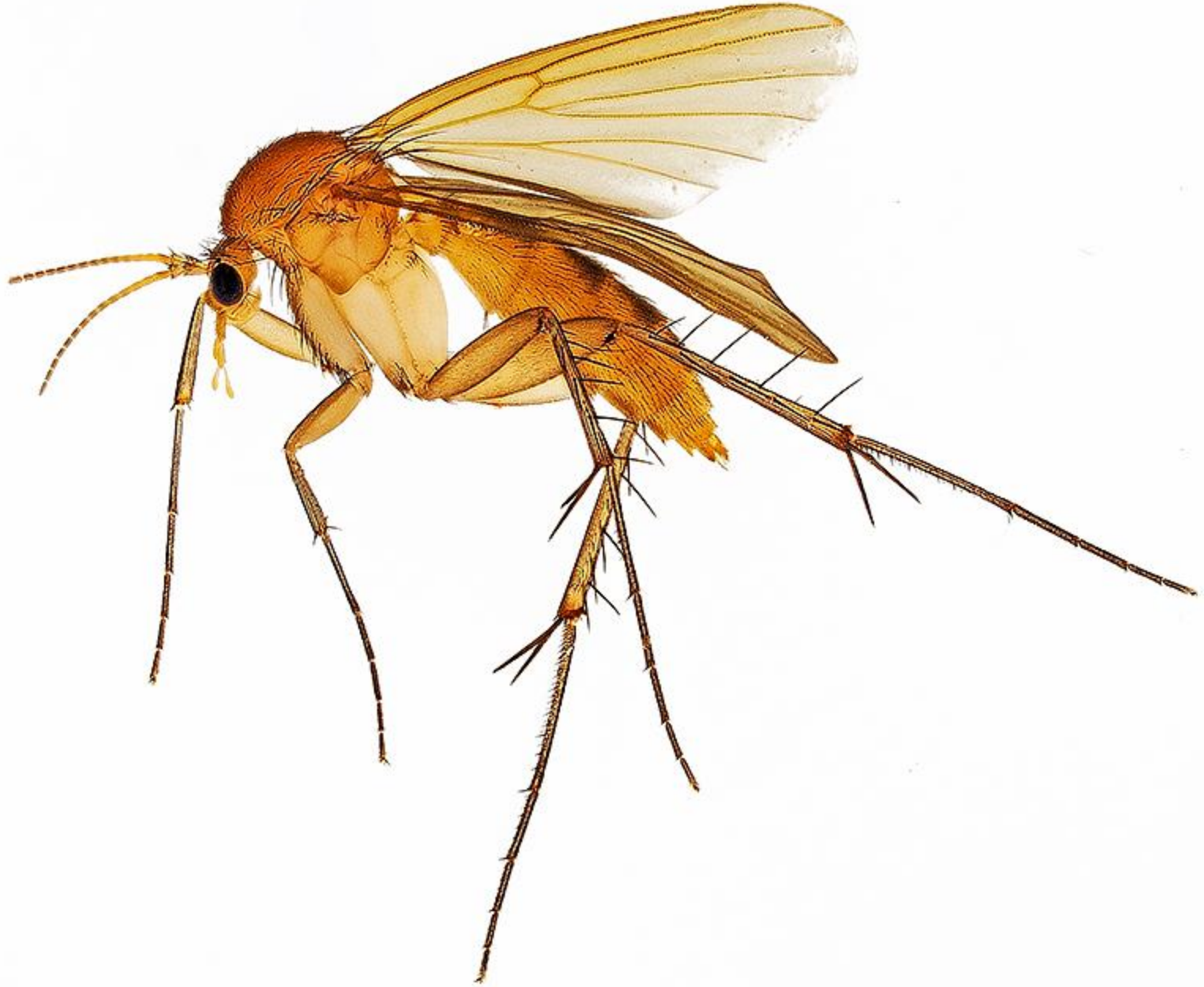
Rivalling the gaudy colours of the rove beetles was a 3 mm long Microleafhopper (genus: *Erythroneura*) with an alternating yellow and black banding on the body and somewhat bizarre patterning on the forewings.



Besides occurring in some rove beetles such as the Whiplash Beetle, metallic colouring also occurs in the Parasitoid Wasps. This 2 mm long beauty (genus: *Cyrtogaster*) was found in one litter sample. These insects lay eggs in other insects and the hatched larva devours the host from the inside, killing it. [Note that Parasites do not kill their hosts; Parasitoids do]



One unexpected insect was a delicate, length 5 mm, Fungus Gnat; surprised that it remained intact after the-less-than-delicate-sample-collection and the extraction process.

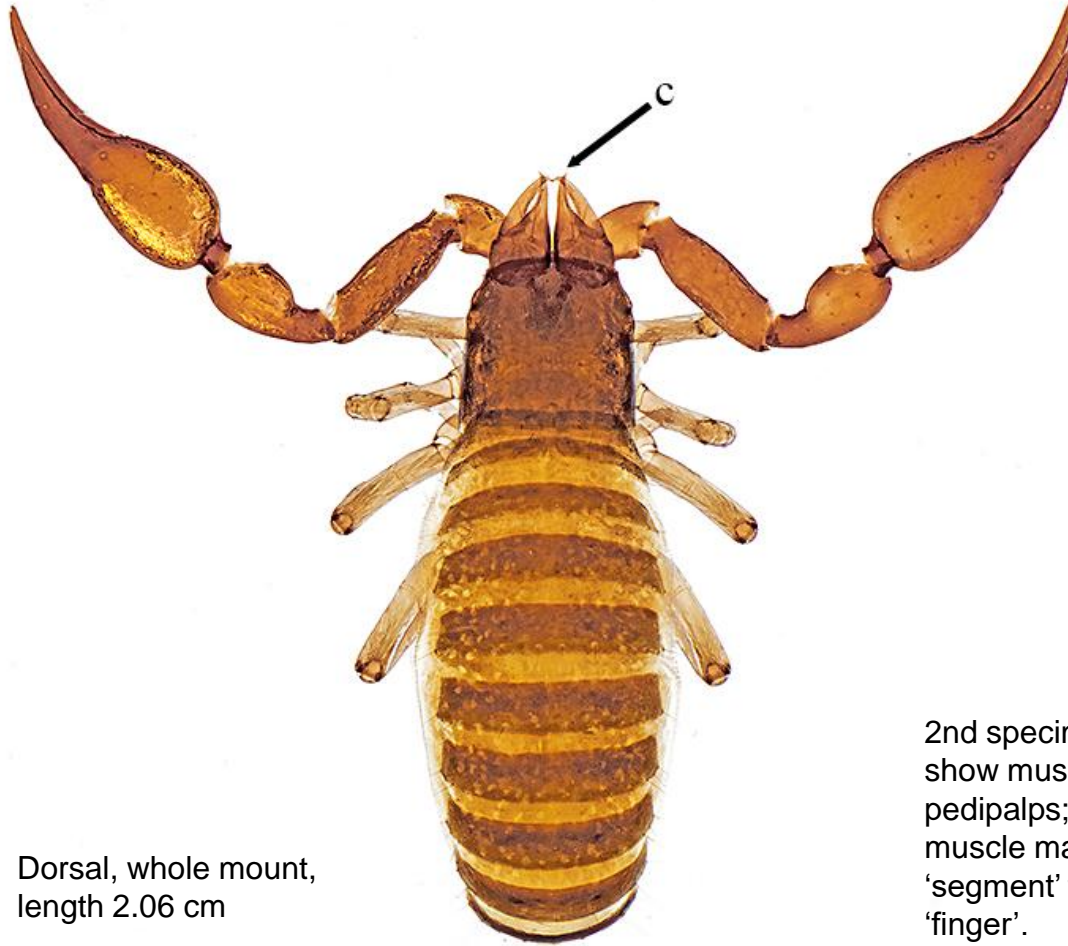


Spiders are relatively common in litter/soil samples, most are quite large and hardly qualify as microscopic. However, this colourful Cobweb Spider (also known as Comb-Footed Spider) with a body length of only 1.5 mm, can be considered 'microscopic'.

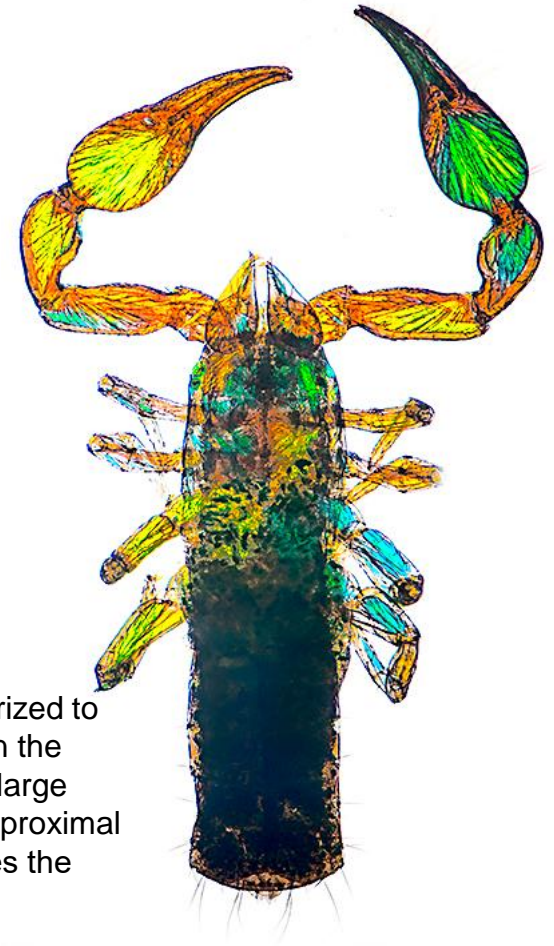


Pseudoscorpions are tiny predators that occur in some samples. They are in the same group (Class: Arachnida) as spiders and true scorpions. Their body is divided into an anterior cephalothorax (possibly the most interesting part for a microscopist) and a posterior abdomen. The cephalothorax has six pairs of appendages, the first two (chelicerae and pedipalps) are directly involved with prey capture and feeding; the next four pairs are walking legs.

The most distinctive feature of pseudoscorpions is the pair of pedipalps, jointed appendages that terminate in a claw. The claw consists of a bulbous proximal 'segment' that houses the muscles that move the distal 'segment' or 'finger'. The pedipalps capture prey and then transfer it to the tiny toothed chelicerae (c) where it is pulverized.



Dorsal, whole mount,
length 2.06 cm



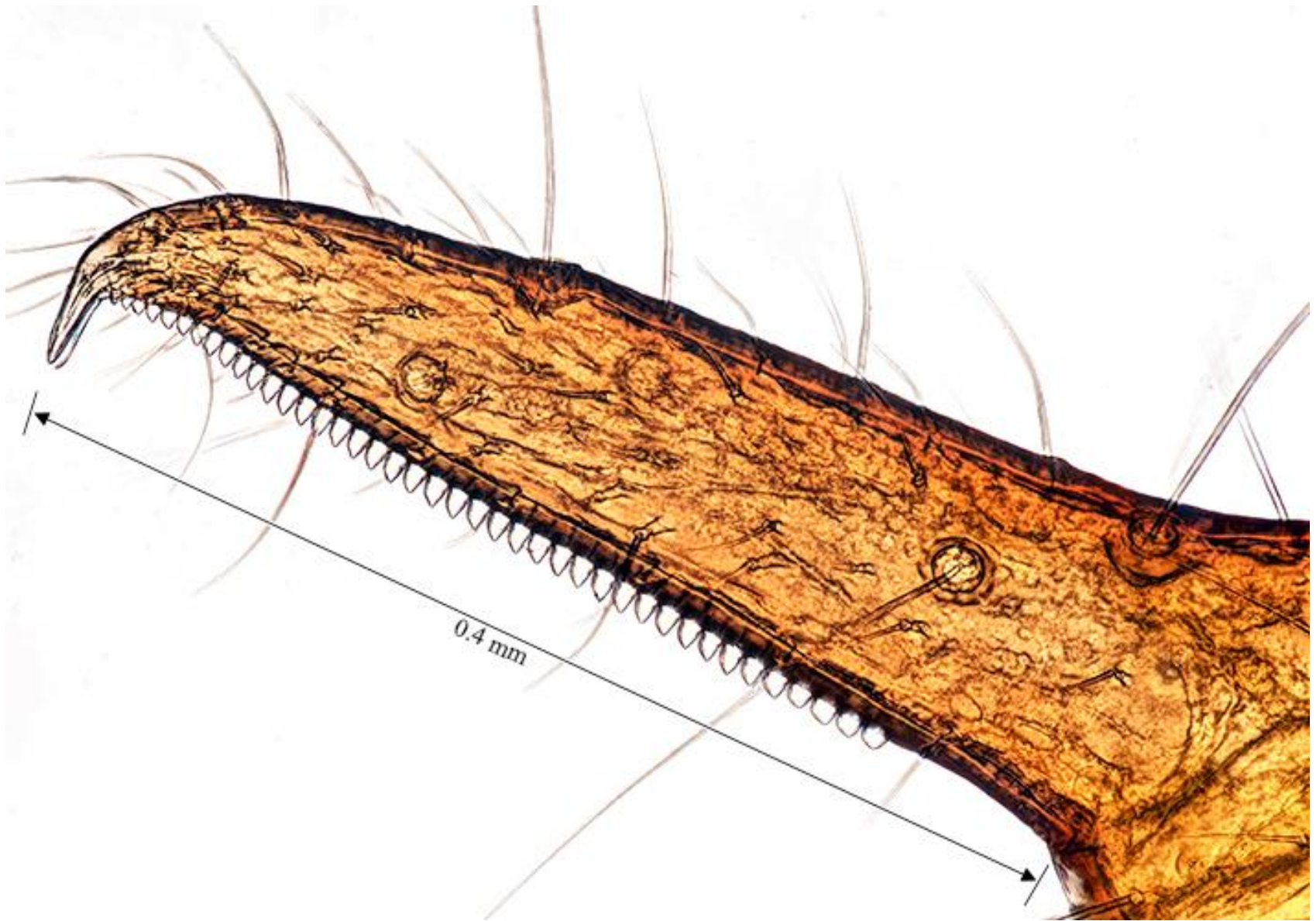
2nd specimen, polarized to
show musculature in the
pedipalps; note the large
muscle mass in the proximal
'segment' that moves the
'finger'.



Terminal claw of a pedipalp showing the large muscles that open and close the 'finger'. Polarized.



Pedipalp claw. Note the 40 peg-like 'teeth' on the immovable proximal 'segment' and a similar but smaller row on the 'finger'.

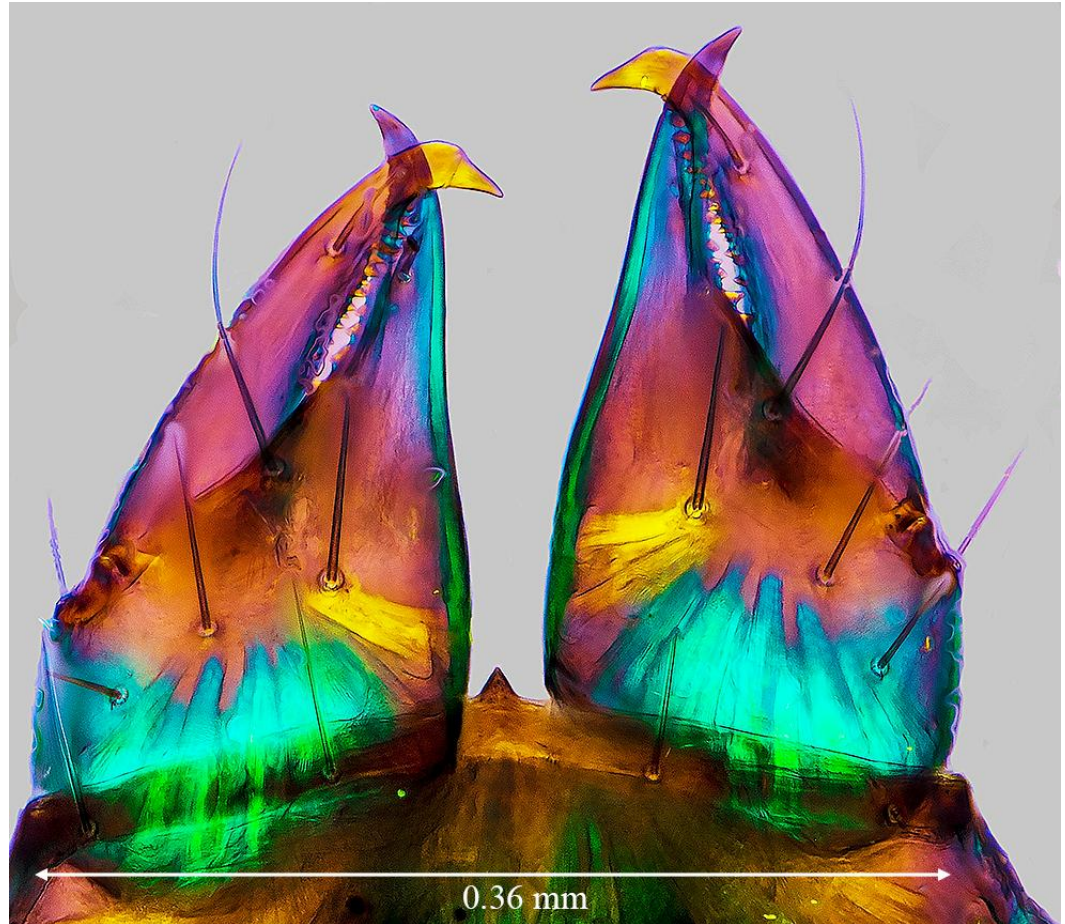


Proximal 'segment' of pedipalp claw. Length 0.40 mm. The 40 peg-like 'teeth' occupy 0.317 mm, thus each 'tooth' is about 8 microns wide at base. Note the pair of large hooks at the terminal point. Brightfield, under polarization 'teeth' appear black – see previous image.

The chelicerae have a structure similar to that of the pedipalps, a claw with an opposable 'finger'. Both, the proximal base and the distal finger have their inner edges lined with 'teeth' and the moveable finger terminates in a sharp downward pointing spike.



Chelicerae, brightfield



Chelicerae, polarized

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Published in the December 2024 issue of *Micscape* magazine.