

SNELLENIIUS IN THE NEOTROPICAL REGION
(HYMENOPTERA: BRACONIDAE: MICROGASTERINI)

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Snellenius was originally described by Westwood from specimens collected in New Guinea and has since been recorded from Borneo, China and Japan. In 1933 Brues described a species from the Oligocene Baltic amber which he included in the genus but the thoracic structure is such that the insect is probably incorrectly placed. If this fossil is omitted, *Snellenius* currently includes five species, all of which appear to be uncommon. It was therefore quite surprising to find in material from South America several undescribed species which were relatively well represented by specimens.

The generic placement of these insects proved to be difficult as the material would not fit into any of the tribes recognized by Telenga in 1955. The antennae and wing venation are definitely microgasterine in character, but the very deep notaulices and other features are aberrant. At the United States National Museum no identified comparable specimens were located, but Dr. Marsh remembered seeing a species of similar insects and kindly arranged to have the 24 specimens involved loaned to me for study.

Examination of the Neotropical material has disclosed that the characterization of the genus must be altered somewhat. The features which seem to help follow:

Eyes hairy; occiput immargined; antennal segments flattened to nearly terete; antennae 18-segmented; notaulices deeply impressed, crenulate; median lobe of mesoscutum distinctly higher than lateral lobes, with its side margins raised and a low longitudinal carina along the middle; the notaulices separated behind only by a high keel-like carina; prescutellar fovea broad and deep; scutellum margined along the sides by a distinct rounded carina; antero-laterad of scutellum and laterad of prescutellar fovea a pair of impressed ear-like lobes; band bordering scutellum broadly interrupted on posterior portion; sternauli deep, coarsely crenulate; prepectal carina either complete and distinct from in front of sternauli across the venter, or incomplete and reduced to a mere ridge across the anterior end of the median sternal groove only; median sternal groove broad, trough-like and crenulated; propodeum with a prominent median carina, the remaining sculpture varying from coarsely foveolate with very high carinae to nearly reticulate-rugose, the dorsal and posterior faces either distinctly separated by an angle or indistinctly limited and the profile appearing rounded. Forewing with three cubital cells, the second (areolet) small (but large for Microgasterinae) and closed by second intercubitus; second intercubitus mostly transparent, joining second abscissa of radius; third abscissa of radius indicated by pigmented line which may be curved so it appears concave behind; nervulus from nearly interstitial (see Westwood's drawing) to postfurcal to the point where the first abscissa of discoideus is at least two-thirds as long as the second. Cubitellan cell closed; nervellus not

sinuate, curved inwardly; vannal lobe differentiated. Hind coxa small, approximately as long as first abdominal tergite; spurs of hind tibia very small, their length less than the apical width of the robust hind tibia. Abdomen sessile; first abdominal tergite with a narrow median sclerotized plate with nearly parallel sides and with broad membranous lateral portions in which the spiracles are located (these side portions may be folded downward in mounted specimens so the abdomen appears to be petiolate).

The Neotropical species of *Snellenius* run to *Microplitis* in the keys by Muesebeck 1922, Fahringer 1936, Morley 1936, and De Saeger 1944. In Nixon's 1965 key they may not fit the first two characters given in couplet 11.

The major features assisting in recognition of the genus are the following: the unusual thoracic structure (including the deep notaulices, margined scutellum, the median sternal groove, the large, crenulated sternauli, and the foveolate area beneath the forewing); the narrow parallel-sided median plate of tergite 1; the relatively large second cubital cell; the short tibial spurs and robust hind tibiae. The head may or may not be relatively small; the propodeum may or may not be sharply angled as seen in profile from the side; the antennal segments may be strongly flattened to nearly terete.

The following key, which is practically that of Nixon in the first five couplets, should aid in recognition of the species included in the genus.

1. Disc of scutellum reduced to a small, blunt, erect cone; flagellar segments strongly flattened **vollenhovii** Westwood
 Disc of scutellum not cone-like but flattened and with strong raised lateral margin 2
2. Notaulices shallow, flagellar segments weakly flattened ... **radicalis** Wilkinson
 Notaulices very deep, crenulated, separated behind by only a narrow, keel-like carina; middle lobe of mesoscutum decidedly raised above lateral lobes 3
3. Propodeum with carinae high and so coarsely reticulate that between lateral and median carinae not more than 3 or 4 hollows occur along a transverse line 4
 Propodeum not so coarsely reticulate, the carinae lower and the number of hollows between the median carina and the lateral carina more numerous; median plate of first tergite a little more than twice as long as its apical width; notaulices narrowing anteriorly and lateral edges of median lobe of mesoscutum not upturned **theretrae** Watanabe
4. Temples rugose; hind femur with well developed keel on apical two-fifths on inner side 5
 Temples smooth or scabrous-punctate; hind femur without keel 6
5. Head deeply emarginate between the almost angular corners of the temples; forewing nearly hyaline **philippinensis** (Ashmead)
 Head weakly emarginate, temples without prominent angles; forewing deeply infuscated **gelleus** Nixon
6. Prepectal carina complete, extending from in front of sternauli across venter;

- vertex and temple scabrous-punctate; plate of tergite 1 a little more than twice as long as broad at apex 7
- Prepectal carina incomplete, extending across median sternal groove only; vertex and temple mostly smooth; plate of tergite 1 at least 3 times as long as broad at apex 8
7. Coloration involving red, black, and yellow; mediella nearly as long as first abscissa of basella **tricolor**, n. sp.
- Coloration involving only red and black; mediella approximately three-fourths as long as first abscissa of basella **bicolor**, n. sp.
8. General body color piceous; penultimate segment of maxillary palpus less than half as long as the ultimate **atratus**, n. sp.
- General body color testaceous; penultimate segment of maxillary palpus at least half as long as the ultimate **peruensis**, n. sp.

Snellenius tricolor, n. sp.

Holotype: ♀, bearing the following data on the label "Argentina: Horco Molle, Tuc. Apr. 3-10, 1966 L. A. Stange." Deposited in the U. S. National Museum.

Length: Head and thorax 1.7 mm, abdomen 1.3 mm, antenna 3.5 mm, forewing 3 mm.

Black or piceous: Head, sides of thorax below, venter, scutellum and portions of propodeum. Antennae deep brown, mesoscutum (and other portions of thorax which are not dark) ferrugineous to light brown. Plate of abdominal tergite 1 plus hypopygium and tergites beyond 2, except on the sides, brown. Ovipositor sheaths brown. Sides of abdomen, second and third tergites (excepting a slightly browned area in the anterior central portion of tergite three), lateral thirds of tergite 4, and lateral fourths of tergite 5 contrasting yellow to yellow-testaceous. Maxillae and labium, including palpi, yellow. Legs primarily fuscous but distal portions of anterior femora, basal parts of tibiae and tarsi yellowish, and a band of proximal portions of mid and hind tibiae testaceous.

Temple: $0.7 \times$ as wide as eye in lateral view, eyes from in front one-fourth further apart above than at narrowest part of face, slightly emarginate opposite antennal bases. Reticulation of propodeum moderately coarse, with about 3-4 hollows along a transverse line from median carina to lateral carina. Plate of tergite 1 twice as long as its apical width, rugose on posterior third and with apex curved; remaining abdominal segments polished.

Allotype: ♂, data same as on holotype. Differs from the holotype in being less dark. The scape slightly lighter in color above, the legs, including all coxae, mostly yellowish. The apical two-thirds of hind tibiae and posterior tarsi brown. Labial palpi small, their length about equal to the width of the labrum. Plate of tergite one yellowish with darkened edges. Deposited in U.S. National Museum.

Paratypes: 22 ♂♂ from the same locality. Three collected in the same week as the holotype and the other 19 taken Mar. 7-13, 1966 by Mr. Stange. In collections of Instituto Miguel Lillo at Tucuman, U.S. National Museum and the author.

Among the paratypes the color varies considerably, but the head is

always black, the mesoscutum has a distinct reddish cast and the anterior portion of the abdomen is yellowish. The coloration of the legs varies from nearly all yellow to nearly all brown. In most of the specimens the scape is ferrugineous above, contrasting with the brown in the remainder of the antenna.

***Snellenius bicolor*, n. sp.**

Very similar to *tricolor* but differing in that the areas showing as yellowish in *tricolor* are ferrugineous (and unicolorous with the mesoscutum); the temple is as broad or broader than the eye; the labial palpus in the ♂ is distinctly longer than the labrum is wide.

Holotype: ♀, bearing the labels "Avispas, Peru IX-1962." "Collection R. D. Shenefelt." Taken by L. Peña in Malaise trap. In collection of author.

Length: Head and thorax 1.8 mm, abdomen 1.3 mm, antenna 3.4 mm, forewing 3.1 mm.

Head black. Eyes reddish. Thorax and legs ferrugineous (Maerz & Paul Plate 5 D-12). Antennae, all pretarsi, posterior tibiae and apical three-fourths of posterior femora brown. Abdomen yellow ochre (Maerz & Paul Plate 11 L-7) with the plate of tergite 1 darker and the membranous area paler than the remainder. Palpi not contrasting in color with anterior leg.

Temple and eye subequal in width when viewed from the side. Eyes above 20 units apart, separated by 17 units at the narrowest part of the face, slightly emarginate opposite antennal bases. Reticulation of propodeum coarser than in *tricolor*, with 2-3 hollows along a transverse line from median carina to lateral carina. Plate of tergite 1 twice as long as wide at apex, rugose in apical half.

Allotype: ♂, bearing the labels "Quincemil, Peru 10-15 XI-1962." "Collection R. D. Shenefelt." Taken by L. Peña in Malaise Trap. In collection of author. Agrees with the holotype in essential features. Base of scutellum and posterior edge of postnotum browned.

Paratypes: 6 ♂♂: two with same data as allotype; four from Quincemil, Peru IX-62. Two in U.S. National Museum and remainder in author's collection.

***Snellenius atratus*, n. sp.**

Holotype: ♀, with labels "Avispas, Peru 20-30 IX-1962." "Collection of R. D. Shenefelt" on the pin. Collected by L. Peña in Malaise Trap. In collection of author.

Length: Head and thorax 1.6 mm, abdomen 1.3 mm, antenna 3.2 mm, forewing 3 mm.

Black or very dark brown except as follows: antennae brown; palpi dark tan; middle coxae, all trochanters, proximal and distal areas on anterior femora, fore and middle tarsal segments pale brown (like the palpi). Wings uniformly infuscated.

Temple smooth, $\frac{1}{4}$ broader than eye; posterior margin of eye broadly and shallowly concave when eye is viewed from side; maxillary palpus longer than

height of head, space between eyes at narrowest point of face two-thirds the distance between eyes above. Labial palpi longer than width of labrum. Penultimate segment of maxillary palpi 0.4 times length of ultimate. Areolet of forewing unusually long, narrow, nearly triangular (the second abscissa of radius and second intercubitus forming practically a straight line with first abscissa of radius and the cell about twice as long as high). Third abscissa of radius indistinct.

Mediella 13 units long, first abscissa of basella 22 and curved near base. Posterior side of cubitellian cell more than twice as long as the cell is wide at apex.

Median plate of abdominal tergite one $3\frac{1}{3}$ times as long as wide at apex, with sharp carinae along sides on basal two-thirds, the carinae turning inwardly onto the plate near their ends and causing it to appear contracted in this area; rugose on apical third, excepting the smooth raised area at the very end. Propodeum strongly areolated with about three hollows along a transverse line between median and lateral carinae; not sharply angulate in profile. Spurs of hind tibiae $\frac{1}{4}$ as long as hind basitarsis.

Allotype: ♂, same data as associated with holotype. In collection of author. Agrees with the holotype except that second abscissa of radius and second intercubitus do not form straight line with first abscissa of radius, the areolet appearing four sided as usual. Median plate of tergite 1 nearly smooth on apical half. Mid-coxae brown on outer half and all trochanters brown. Eye relatively larger than in ♀, temple only about $\frac{1}{10}$ wider than eye.

Paratypes: 4 ♀ ♀: 3 Avispas, Peru 1-15 X-1962; 1 Avispas, Peru IX-1962. One in collection of U.S. National Museum. Three in author's collection. 17 ♂ ♂: 2 Avispas, Peru 20-30 IX-1962; 6 Avispas, Peru 1-15 X-1962; 3 Avispas, Peru IX-1962; 3 Quincemil, Peru IX-1962; 3 Quincemil, Peru 20-30 X-1962. Two in collection of U.S. National Museum. Remainder in collection of author.

In the paratypes the coloration is very constant. The shape of the areolet varies as indicated under the notes regarding the allotype. The amount of roughness on the apical half of median plate of tergite one is variable.

***Snellenius peruensis*, n. sp.**

Structurally very similar to *atratus* but the middle lobe of mesonotum more concave with the lateral margins raised higher and tending towards tuberculate on each side at a little behind the middle. Penultimate segment of maxillary palpi at least half as long as the ultimate. The median plate of tergite 1 with the lateral carinae extending nearly to the apex and the plate concave for most of its distance and usually with a central narrow to carinate raised area along the posterior portion just before the smooth terminal swelling. Spurs of hind tibiae relatively longer.

Holotype: ♀, with the following labels on the pin "Avispas, Peru

IX-1962" "Collection of R. D. Shenefelt." Taken by L. Peña in Malaise trap. In collection of author.

Length: Head and thorax 1.8 mm, abdomen 1.4 mm, antenna 4.0 mm, forewing 3.8 mm.

Fuscous, with the antenna beyond the scape, the distal halves of the hind tibiae and the posterior tarsi darker brown. Wings uniformly brown.

Temple smooth, narrower than eye (eye 22, temple 18) receding more strongly than in *atratus*; space between eyes above 18, at narrowest part of face 15. Flagellar segments nearly terete. Penultimate segment of maxillary palpi 9 units long, ultima 18. Areolet 0.7 as high as long along cubitus (measurements made inside of veins), four-sided, the second abscissa of radius forming a slight angle with first abscissa and a definite angle with second intercubitus. Mediella 14 units long, first abscissa of basella 25 and not so strongly bent near base as in *atratus*. Wing veins broader (heavier) than in *atratus*.

Median plate of tergite 6 wide at apex, 20 long, with side margins raised, mostly rugulose, with a high central carina located in the middle in front of a terminal smooth raised boss. Propodeum coarsely and strongly areolated with posterior and dorsal faces evident but not sharply angled in profile. Spurs of hind tibia 0.3 as long as posterior basitarsus.

Allotype: ♂, with data labels same as those on holotype. In collection of author. Agrees well with holotype. The flagellar segments approximately oval in cross section, i.e., two times as wide as deep.

Paratypes: 5 ♀ ♀: three from Avispas, Peru IX-1962; 1 from Avispas 1-15 X-1962; and one from Quincemil, Peru 10-15 XI-1962. One in collection of U.S. National Museum. Remainder in collection of author. 13 ♂ ♂: 5 from Avispas, Peru IX-1962, 2 from Avispas 20-30 XI-1962, 6 from Quincemil, Peru 10-15 XI-1962. Two in U.S. National Museum. Remainder in collection of author.

In two of the paratypes the body is much lighter brown than in the remainder but the wings and antennae are as dark as in the other specimens.

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ON THE TRUE IDENTITIES OF TUOBA AND NESOGEOPHILUS (CHILOPODA: GEOPHILOMORPHA: GEOPHILIDAE)

In his 1920 treatment of the Chilopoda of the Australian Region, Chamberlin (Bull. Mus. Comp. Zool. 64:35) described a curious new geophilomorph from the Solomons, referring it to the Gonibregmatidae, which is for many an emunctory catch-all of arcane genera, and called it *Tuoba curticeps*, new genus and species. And there it has reposed, unevoked and generically unidentifiable, for Chamberlin's delineation, published without figures, entails several crucial errors that have led subsequent workers down error's garden path.

So when in 1924 Verhoeff (Nat. Hist. Juan Fernandex 3:413) proposed within *Geophilus* a new subgenus, *Nesogeophilus*, from Juan Fernandez, he forgivably failed to identify its two species as proper congeners of the unknowable *Tuoba curticeps*. Having studied all of the pertinent types, I can assert confidently that since *laticollis* (Attems), the type-species of *Nesogeophilus* (by Attems' subsequent designation in 1929) is congeneric with *curticeps* Chamberlin, type-species of *Tuoba* (by original designation), it follows that *Nesogeophilus* 1924 is a junior subjective synonym of *Tuoba* 1920.

I imagine Chamberlin assigned *Tuoba* to the Gonibregmatidae because, as is clear from his description, he failed to discern the actual condition of the coxopleural glands, which are not manifest as freely-opening surface pores as he suggested. Rather each coxopleuron has a single large, ventral, concealed, glandular crypt that is heterogeneous, multiglandular, and multicanalicate. A second and most distinctive feature of the genus, that no one has yet detected, is the pretarsal anterior parunguis, which is both strictly spiniform and greatly elongate, being as long as the claw proper and much longer than the minute posterior parunguis. This extraordinary condition surely seems associated with the genus' distinctively littoral preferences; it probably serves as a special hold-fast adaptation. *Tuoba* belongs where Attems and Verhoeff stationed *Nesogeophilus*, in Geophilidae.

The genus, which is predominantly littoral and world-wide, is represented in the Australian Region by the following:

curticeps Chamberlin, 1920, Solomons

*hartmeyer*i (Attems, 1911) (= *laticeps* q.v., part, and *sydneyensis* q.v., part. New Synonymies and Combinations, Australia)

laticeps (Pocock, 1891), New Combination, Australia

sydneyensis (Pocock, 1891), New Combination, Australia

xylophagus (Attems, 1903) (= *laticeps* q.v., New Synonymy and Combination, New Zealand).

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