Reprinted from JOURNAL OF THE NEW YORK ENTOMOLOGICAL SOCIETY,
Vol. LXI, March, 1953, pages 53–59.

THE NEOTROPICAL SPECIES OF THE ANT GENUS STRUMIGENYS FR. SMITH: GROUP OF MANDIBULARIS FR. SMITH

BY WILLIAM L. BROWN, JR.

MUSEUM OF COMPARATIVE ZOOLOGY, HARVARD UNIVERSITY

Below are offered results of studies on *Strumigenys mandibularis* and a few related New World species. Other groups will be treated in separate papers, to be followed by a key to the genus as found in our hemisphere. In citing measurements and proportions, I have used the abbreviations standard in my works on the dacetines: TL, total outstretched length of insect, including mandibles, as measured by separate tagmata; HL, maximum measurable length of head from dorsal view, including all of clypeus and occipital lobes; ML, distance to which closed mandibles extend beyond most anterior point of clypeal margin; WL, length of alitrunk measured along a diagonal in side view. Otherwise, "L" denotes length of part referred to, while "W" refers to maximum measurable width. All measurements are in millimeters, and, except for TL and WL, are subject to an error not exceeding $\pm$ .01 mm. The indices are given as percentages of HL: the cephalic index, or CI, being the maximum measurable head width/HL $\times$ 100, while the mandibulo-cephalic index, or MI, equals ML/HL $\times$ 100.

Strumigenys mandibularis Fr. Smith

Strumigenys mandibularis Fr. Smith, 1860, Jour. Ent. 1: 72, pl. 4, figs. 6, 8, 10, female *nec* worker (original description). Mayr, 1887, Verh. zool.-bot. Ges. Wien, 37: 574, (restriction of type to female of Smith). (*Nec* Forel, 1911, Sitzb. Bayer. Akad. Wiss., p. 263, worker.) Wheeler, 1908, Bull. Amer. Mus. Nat. Hist. 24: 146. Donisthorpe, 1948, Psyche 55: 78–80 (redescription of type female).

Strumigenys batesi Forel, 1911, Sitzb. Bayer. Akad. Wiss., p. 264, worker. NEW SYNONYMY.

I have been able to examine briefly the holotype of this species in the British Museum. It is easily the largest member of the genus known from the New World, and is one of the largest anywhere. Smith first described under this name a female of one species and workers of another, much smaller species, the latter to be called correctly *S. prospiciens* Emery. In 1887, Mayr realized Smith's error, and in effect restricted the type to the large female as *S. mandibularis.*

The *mandibularis* type has been redescribed by Donisthorpe, but rather vaguely and with doubtful measurements. Another set of measurements sent by Mr. Donisthorpe in a letter do not agree with those he published. Mr. G. E. J. Nixon had the type measured for me separately, and, while his methods are somewhat different from mine, the dimensions may be regarded as approximately comparable to those I have given for other species. He gives the head of the type as 1.31 mm. long, 1.34 mm. wide, and the length of the mandibles measured from the *center* of the anterior clypeal border as 0.51 mm. Indices on this basis would be CI 102 ± and MI 37 to 39. There can be no doubt that the head is slightly broader than long, a condition unique among American *Strumigenys.* Otherwise, *mandibularis* can be readily distinguished by its very short, thick, strongly arcuate mandibles, which are relatively considerably shorter and thicker than are those of *S. godmani.* Furthermore, the entire first gastric tergite of *mandibularis* is densely and finely longitudinally striolate. Other characters were not noted in detail during the short time available to me in London.

In 1911, Forel published on *Strumigenys* material evidently sent earlier by Smith to the Munich Museum; among this material was part of the original type series of *mandibularis* with both species Smith had confused under the name *mandibularis.* These specimens were labelled as having been taken by H. W. Bates in Amazonas, Brazil, whereas Smith gave "St. Paul" as the type locality in his paper. I believe that the nature of the two included species, backed by a review of Bates' collecting localities and the fact that neither species has since been taken again in the São Paulo region, indicates that the Amazonian locality is the correct one for Smith's original series. That

Smith was in error in citing the *mandibularis* type locality is no novelty to those familiar with his entomological works.

Forel rightly realized that the smaller workers described by Smith were the same as Emery's *prospiciens,* but overlooked Mayr's restriction of the type to the large female of Smith, which caused him wrongly to place *prospiciens* in the synonymy of *mandibularis.* At the same time, Forel found with the smaller workers a large worker which he described as *S. batesi* new species. From his description, it is obvious that *batesi* is the worker of the true *mandibularis* as limited by Mayr, and it seems probable that the Munich worker and the type of *mandibularis* in the British Museum are actually part of the same collection and possibly of the same nest series.

S. mandibularis is the genotype of the (monobasic) genus *Strumigenys.* It is apparently an Amazonian rainforest species, and it has not been taken a second time to my knowledge. A whole series of related forms graduated in ever-decreasing size (correlated with decreasing head width and lengthening, narrowing and straightening of the mandibles) begins with *mandibularis,* the largest, and culminates in *S. smithii* Forel. These species, with variants in other directions, are grouped as the *mandibularis* series, characterized by having two strong preapical teeth on the inner mandibular border; most species in this series also have a single well-developed intercalary tooth between the two larger teeth of the apical fork of the mandible.

Strumigenys godmani Forel

Strumigenys godmani Forel, 1899, Biol. Centr.-Amer., Hym. 3: 42, pl. 3, fig. 5, female (original description). Wheeler, 1908, Bull. Amer. Mus. Nat. Hist. 24: 147, female.

Strumigenys ferox Weber, 1934, Revista Ent., Rio de Janeiro, 4: 41–43, fig. 4, worker. NEW SYNONYMY.

Worker, measurements based on 8 specimens from British Guiana and Costa Rica, including 3 cotypes of *ferox:* TL 4.84–5.42, HL 1.06–1.20, ML 0.51–0.55, WL 1.09–1.22 mm.; CI 87–93, MI 46–48.

Weber gives a fairly good likeness with his characterization of *S. ferox,* showing the head and mandibles. The head is mas-

sive, with convexly raised vertex and depressed occipital lobe dorsa; posterior excision very deep; median longitudinal sulcus present but weak. Eyes large, convex, protruding, oriented obliquely outward and forward; preocular regions moderately deeply concave, but these gentle hollows not interrupting the antennal scrobe or terminating the preocular laminæ. Mandibles very robust, arcuate, thickest at about midlength. Basal tooth or process reduced, flat and truncate, continuing the inner mandibular border beneath the clypeus. Apical fork of two large teeth, the ventral longer than the dorsal, with a smaller intercalary tooth. Two stout preapical teeth, slightly variable in size, shape and position, but the proximal one much the shorter and more triangular of the two and usually placed at or near the mandibular midlength. This proximal tooth may or may not trail an indistinct lamellate ridge which diminishes proximally toward the condyle; this ridge, the absence of which Weber accepted as a distinguishing character for *ferox,* is best developed in the (female) type of *godmani,* but even here is far from conspicuous. The few available specimens show all intergradient conditions between its presence and absence without regard to locality series.

The petiolar and postpetiolar nodes are relatively large, particularly the latter, which is very large, longer than broad (in an average-sized specimen L 0.44 mm., W about 0.38 mm.) in the free portion of its densely punctulate, evenly convex dorsal surface or disc. The base of the gaster bears short longitudinal costulæ, but the gastric surface is otherwise smooth and shining. The postpetiole and gaster especially bear rather coarse, stiffly erect hairs.

In the brief time available to me for examining the female type, which rests in the British Museum (Natural History), I was able merely to satisfy myself of the identity of this specimen with those available to me from Costa Rica: Hamburg Farm, 3 workers (F. Nevermann) [Museum of Comparative Zoology, U. S. National Museum, Borgmeier Coll.] and British Guiana: Kartabo, 3 worker cotypes of *ferox* (W. M. Wheeler) and two stray workers (R. Wheeler), deposited in the same collections and in Weber Coll. The type locality is Volcan de Chiriqui, Panama (Champion).

Strumigenys planeti new species

Worker, holotype: TL 3.76, HL 0.89, ML 0.47, WL 0.90 mm.; CI 81, MI 53. Paratypes, 39 workers from at least 5 nest series from all of the localities listed below: TL 3.45–4.00, HL 0.80–0.89, ML 0.45–0.50, WL 0.80–0.90 mm.; CI 80–86, MI 52–57. A species intermediate between *S. godmani* and *S. smithii* in total size, structure and sculpture of petiole and postpetiole, proportions of head and mandibles and mandibular dentition, yet perfectly distinct from both species. The new species has in the past been confused with *S. smithii,* which is perhaps its closest ally, and agreement with *smithii* is close except in the following characters:

1. Head similar, but larger and relatively broader, with deeper and broader posterior excision and more broadly expanded occipital lobes.

2. Mandibles heavier, broader and more strongly bowed (less so than in *mandibularis* or *godmani*), and with longer, more widely spaced and more acute teeth. Apical fork of two long spiniform teeth, the ventral slightly the longest and with a weakly deflected tip; small acute intercalary tooth present. Preapical teeth at about the apical fifth and again at about the second apical fifth of the shaft, the distance between the apical fork and distal preapical tooth usually very slightly greater than that separating the distal from the proximal preapical teeth. Distal preapical tooth about $\frac{3}{5}$ the length of the dorsal tooth of the apical fork, proximal preapical tooth $\frac{3}{4}$ to $\frac{4}{5}$ the length of the distal.

3. Fifth funicular segment very slightly shorter than I–IV taken together, or rarely about equal to I–IV. In holotype, scape L 0.58, funiculus L 0.78 mm.

4. Alitrunk as in *smithii,* but more robust. Propodeal lamellæ each forming upper and lower subequal triangular teeth, acutely angular, but with extreme apices usually more or less blunt; portion of lamella separating the upper and lower teeth deeply excavated as a subangular or sharply rounded excision. Metanotal groove well marked.

5. Anterior slope of petiolar node distinctly and evenly convex in both directions, summit gently rounded and disappearing

without interruption beneath its thick posterodorsal spongiform collar.

6. Postpetiolar disc approximately as broad as long, varying very slightly among my series in favor of length or width in different specimens; anterior border truncate, disc itself subcircular and weakly convex in both directions, its surface evenly and densely reticulo-punctate and opaque, with some short weak longitudinal rugæ ranged along its anterior border and varying in distinctness in different specimens; posterior border subtruncate.

7. Threadlike costulæ at base of first gastric segment short and weak (much as in *godmani*), about half as numerous as those of the *smithii* cotypes and much more widely spaced, shorter.

8. Pilosity as in *smithii* cotypes, except that the shorter reclinate and subreclinate hairs of head and scapes are perhaps a trifle longer and more conspicuous.

Color yellowish- to medium ferrugineous; gaster reddish-brown to deep piceous or near-black; appendages somewhat paler in many specimens.

Variation among the paratypes other than that already mentioned is seen in slight differences in the length, acuteness and position of the preapical teeth and in the shape of the propodeal lamellæ. A few specimens show rudimentary development of a trailing lamella from the proximal side of the proximal preapical tooth, recalling the condition in the type of *S. godmani,* but less extreme. The two Trinidad specimens have slightly the longest mandibles (MI 57), while in the specimen from Pará, the MI is 56; the Bolivian series show a range of MI from 52–56, with an average of about 54. This variation, considering the numbers of series involved and the ± 1 error for MI determination, is not significant.

Strumigenys planeti appears to be widespread and probably rather common in the Amazon-Orinoco Basins, with an extension to Trinidad. It appears to be a rainforest species, as are also *S. mandibularis* and *S. godmani* in all probability. The holotype [U. S. National Museum, Mann Collection] was taken at Huachi, Rio Beni, Bolivia (W. M. Mann) together with a group

of fourteen paratype workers and a dealate female. The female is similar to the workers, with only the usual differences, and the proportions of head and mandibles, as well as the absolute measurements for these parts, is well within the variation shown by the workers from the same nest (HL 0.86, ML 0.45, CI 85, MI 52).

Additional paratypes were seen from Bolivia: Tumupasa, twenty workers; Covendo, two workers (W. M. Mann). Brazil: Pará, now Belém, one worker (W. M. Mann). Trinidad: Maracas Valley, two workers (N. A. Weber, No. 454). Paratypes in Museum of Comparative Zoology, U. S. National Museum, Borgmeier Coll., and, by exchange, in other collections.

This species can be distinguished readily from all members of its group by means of the dimensions and proportions of head and mandibles, by the shape and dentition of the mandibles, and by the shape of the petiolar and postpetiolar nodes.