

SCOLOPSYLLUS COLOMBIANUS, NEW GENUS AND SPECIES OF THE FAMILY RHOPALOPSYLLIDAE (SIPHONAPTERA) FROM COLOMBIA

By **Eustorgio Méndez**¹

Abstract: A description and detailed illustration of *Scolopsyllus colombianus*, n. gen. and sp. from Colombia are presented. Comments pertaining to the systematic position and affinities of this new taxon are given. It is also remarked that some of its features, particularly the possession of a pronotal comb, modify the criteria that presently define the family Rhopalopsyllidae.

The new taxon considered in this paper was contained in a collection of fleas submitted to me for identification by Dr Harold Trapido of the Rockefeller Foundation Unit of the Universidad del Valle, Cali, Colombia. The discovery of this form is of great interest since it brings a modification to the concept established for the family Rhopalopsyllidae (Hopkins & Rothschild 1953, 1956, 1962; Johnson 1957) and, consequently, to the superfamily Malacopsylloidea. It has been believed that the members of this group were devoid of genal or pronotal combs; however, the form here described is characterized by having a well developed comb of false spines on the pronotum.

Family RHOPALOPSYLLIDAE Oudemans
Subfamily RHOPALOPSYLLINAE Oudemans
Tribe RHOPALOPSYLLINI Johnson
SCOLOPSYLLUS, new genus

Generic diagnosis: Distinct from other known genera of the family by the possession of a pronotal comb. It is further separable by the chaetotaxy and morphology of the head, particularly the projecting subconical frontoclypeal margin which is more reduced and evenly rounded in its relatives.

Description: ♂ and ♀ with fracticipit head. Frontoclypeal margin subconical. Chaetotaxy of head somewhat prominent, with 2 or 3 preantennal bristles near ventral margin. Clypeal tubercle acute, directed upward. Eye moderately large, well pigmented. Antennae asymmetrical. Antennal groove marginated by row of very short spiniform bristles. Genal comb absent. Anterior tentorial arm present. Trabecula centralis absent. Labial palpus relatively short, 5-segmented. Maxillary lobe subacute. Maxillary palpus 4-segmented. Pronotum with 1 irregular row of bristles, its posterior margin slightly arched, armed with comb of about 33 sharp, medium-sized spines². Prothorax basally subquadrate, with anterior area wider

than posterior. Legs stout, typical of the tribe, with tibiae having strong laterodorsal bristles inserted in notches. Hind tarsal segment with 4 pr of plantar bristles and unmodified claws. Abdominal terga I-VII with 2 rows of bristles. Apical spinelets present on terga I-IV. Aedeagus not highly complex, fundamentally as in *Polygenis* Jordan, with broad apodeme, reduced crochet and apical portion of inner tube coiled. Spermatheca of ♀ with clear demarcation between bulga and hilla.

TYPE-SPECIES: *Scolopsyllus colombianus* n. sp.

The generic name *Scolopsyllus* refers particularly to the comb of spines on the pronotum.

Scolopsyllus colombianus, n. sp. FIG. 1-14.

♂. **Head:** (FIG. 1) Fracticipit, slightly suggesting a helmet. Frontoclypeal margin subangular, somewhat protuberant. Clypeal tubercle short, acuminate, directed upward, dividing frons into a more convex dorsal area and an almost straight ventral area. Preantennal region with 2 widely spaced pits near upper margin, followed by numerous pores of microsetae fairly distributed. Chaetotaxy of this region consists of conspicuous rows of medium-sized dark bristles of moderate strength distributed as follows: frontal row of 5 bristles; middle row of 1 or 2 bristles near margin, preceding preocular row of 3 bristles and postocular row of 2, including ocular bristle which reaches middle of prothorax. Postantennal region with 2 or 3 pits and 3 rows of bristles with following arrangement: proximal row of 4 bristles, middle row of 5 and distal row of 5, besides short intercalaries. 3 additional short bristles are located in front of 1st antennal segment. Antennae asymmetrical, with 1st segment provided with several short bristles of irregular distribution; 2nd segment slightly cup-shaped, bearing few short bristles; antennal club asymmetrical, with fine bristles almost totally concentrated on dorsal margin. Hind margin of antennal groove with single row of short, spiniform bristles. Genal process basally broad, suddenly tapering into subacuminate apex. Anterior tentorial arm curved, well sclerotized. Eye subovate, moderately large and well pigmented, with small ventral indentation. Labial palpus 5-segmented, relatively short, extending to middle of precoxa. Maxillary lobe subacuminate, reaching 3rd segment of labial palpus. Maxillary palpus 4-segmented, reaching to proximal .50 of 5th segment of labial palpus.

Thorax: (FIG. 1, 2) Pronotum with 2 rows of bristles and a comb of about 33 narrow, sharp, medium-sized false spines; dorsal margin slightly arched. Prothorax subquadrate, broader anteriorly than posteriorly. Mesonotum with 2 irregular rows of medium-sized and short bristles per side. Mesepisternum with 2 or 3 bristles per side. Mesepimere with about 3 bristles. Metanotum with essentially 3 rows of bristles; with lateral metanotal flange typical of the tribe, armed with about 5 spinelets on each side. Lateral metanotal area with 5 bristles. Metepisternum with patch of about 4 short bristles on anteroventral process and isolated inner bristle near pleural ridge. Metepimere with dorsocaudal margin slightly angular.

Legs: Procoxa with many marginal and inner bristles profusely distributed. Mesocoxa subtriangular, with basal

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²R. Traub points out (J.M.E. 5(3): 375-404) that the comb consists of spiniform bristles, not true spines.

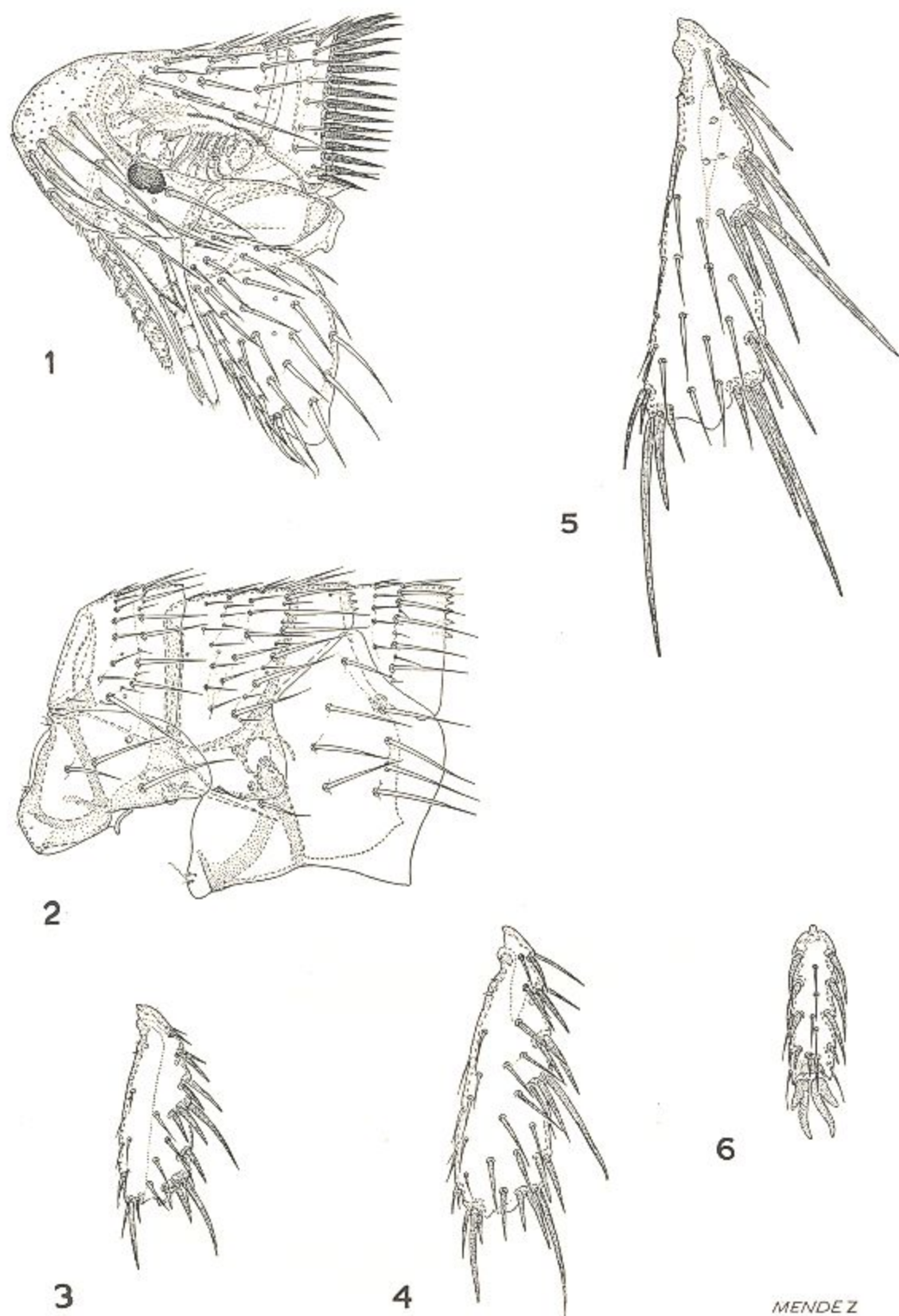


FIG. 1-6. *Scolopsyllus colombianus*, n. gen., n. sp. ♂: (1) Head, prothorax and fore coxa; (2) Mesothorax, metathorax and tergum I; (3) Protibia; (4) Mesotibia; (5) Metatibia; (6) Metatarsus.

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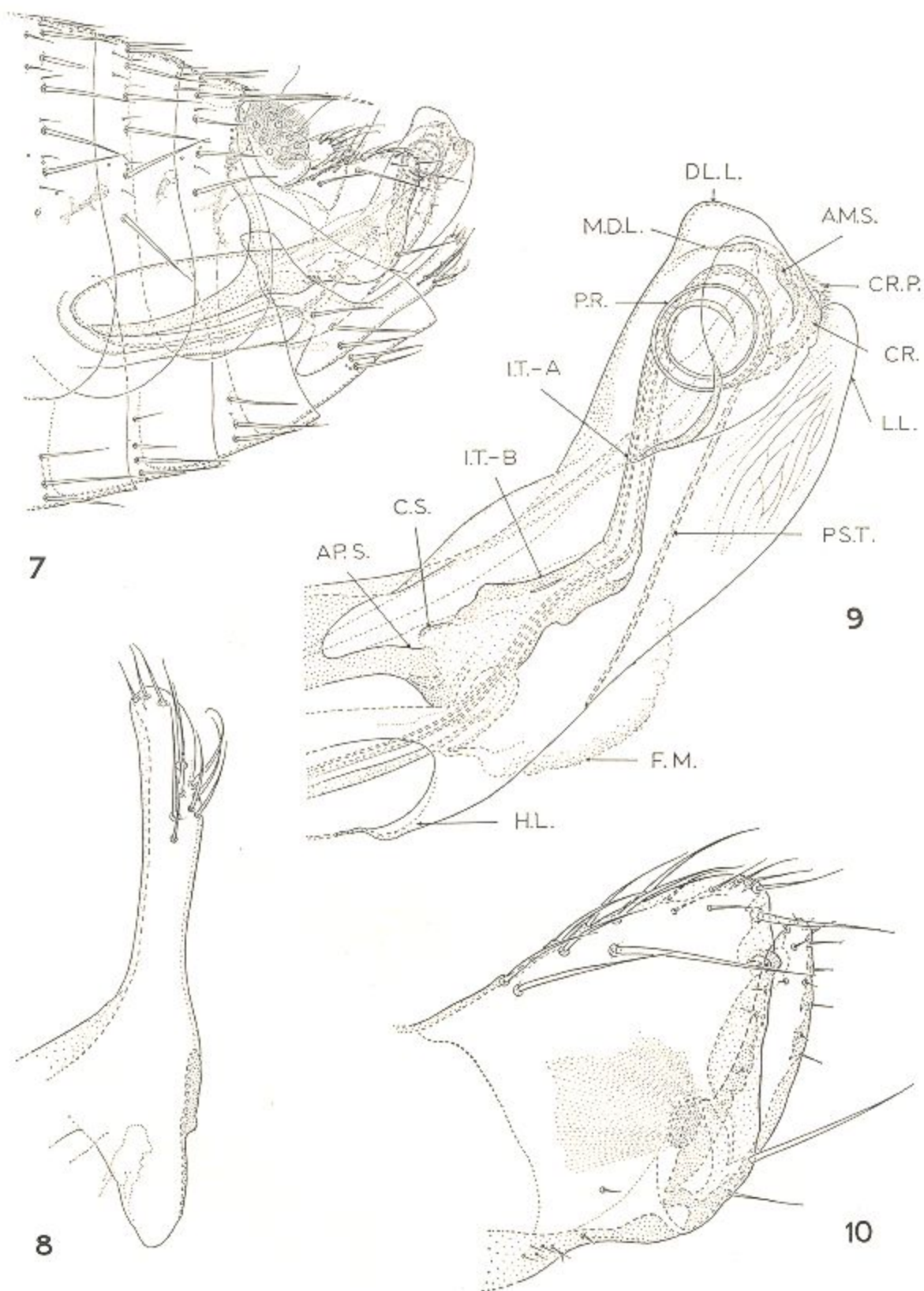


FIG. 7-10. *Scolopsyllus colombianus*, n. gen., n. sp. ♂: (7) Modified abdominal segments; (8) Distal arm of 9th sternum; (9) Apex of aedeagus; (10) Fixed process and digitoid of clasper.

half broader than apical .50, bearing few marginal bristles. Metacoxa with few submarginal and submedian lateral bristles. Profemur with several lateromarginal bristles besides few mesal and submarginal bristles. Meso- and metafemur having 2 subventral bristles; these segments also with 2 subapical bristles on ventral margin. Protibia (FIG. 3) bearing several inner normal bristles, its dorsal margin armed with 4 groups of unequal, stout bristles inserted in notches. This group uneven in size; outermost longer, median slightly over .50 the length of this bristle; innermost smaller than 2nd; ventral margin with several normal bristles and single pair of apical stout bristles very unequal, the outer bristle about 4.5 × the length of inner bristle. Mesotibia (FIG. 4) with lateral margin provided with several marginal and submarginal bristles besides apical group of 3 unequal bristles; dorsal margin armed with row of groups of 2 and 3 strong bristles of unequal length inserted in well sclerotized notches. Inner area of this segment with more bristles than protibia. Metatibia (FIG. 5) having dorsal margin with 6 notches provided with stout bristles as follows: ventro-apical group consists of 3 stout bristles unlike group of other tibial segments, outermost bristle more than 2 × the length of median, which is longer than innermost. Tarsal segments of all legs with bristles uniformly distributed in rows; those of lateral rows usually associated in pairs, with main exception of hind tarsal segment (FIG. 6) which has single lateral plantar bristles.

Abdomen: Tergum I with 2 rows of bristles: 1st row consisting of small bristles without intercalaries; 2nd row has long bristle and intercalaries. Dorsal margin of this segment armed with apical row of about 7 spinelets per side. Terga II-VII each having 2 rows of bristles arranged as in preceding segment. 2 or 3 spinelets are present in terga II-IV. Basal sternum with 3 or 4 ventromarginal bristles and 1-4 submedian bristles accompanied by few punctuations. Sterna II-VII with 1 row of bristles of moderate length; apparently only the 1st of these segments has 1 marginal bristle in front of row. With only 1 antensensilial bristle on each side.

Modified abdominal segments: (FIG. 7) Tergum VIII reduced, having only 2 or 3 apical bristles per side and prominent spiracle. Sensillum provided with about 16 trichobothria on each side; its dorsal margin shallowly convex, ventral margin concave. Dorsal anal lobe subconical, with subapical group of bristles of different length. Ventral anal lobe triangular, showing apical group of bristles. Fixed process of clasper (FIG. 10) somewhat broad, having upper margin moderately convex, lower and posterior margins irregularly sinuate. This last margin shows irregular incassations and has in apical .33 a sclerotized tooth which barely projects out of margin. Chaetotaxy of fixed process consists of several marginal, submarginal and inner bristles on upper region, including those of angular apex; a single, moderately long acetabular bristle followed by short bristles near caudal area and group of several short bristles located before manubrium, separated from more isolated inner bristle. Digitoid of clasper (FIG. 10) inconspicuous, 4 × as long as maximum breadth, very slightly narrowing from base to apex, not reaching apex of fixed process, slightly curved inward, with several short marginal, submarginal and inner bristles almost restricted to apical .50. Sternum VIII subtriangular, with slightly sinuate dorsocaudal margin, provided with single row of 5 bristles. Manubrium projected as a curved blade, wide at base, narrowly tapering to sub-acuminate apex which is gently turned upward. Proximal arm of sternum IX an irregular spatula with apex turned cephalad. Distal arm of sternum IX (FIG. 8) barely longer than proximal arm, with apical .50 club shaped, gently curved inward, bearing several marginal, submarginal and inner bristles of different sizes, apical ones being shorter. Heel of sternum IX very protuberant, subconical.

Aedeagus: (FIG. 7, 9) Essentially similar to the common type found in *Polygenis*. Apodeme moderately long, broad, with rounded apex. Penis rods somewhat short, barely exceeding length of apodeme. Distolateral lobes (DL. L.) evenly rounded. Median dorsal lobes (M.D.L.) sinuate, with distal area thickened. Apico-median sclerite (A.M.S.) slightly elongate, sinuate. Crochet (CR.) reduced, appearing as heavily sclerotized irregular plate. Crochet processes (CR.P.) spiculose. Apical portion of sclerotized inner tube (I.T.-A) longer than proximal arm, with apex moderately coiled. Basal portion of inner tube (I.T.-B) short, broad. Crescent sclerite (C.S.) reduced, slightly convex. Apodemal strut (AP.S.) barely projected, ending in knoblike apex. Lateral lobes (L.L.) broad, extensively convex, with inner area reticulate. Pseudo tube (P.S.T.) sclerotized, slender, shallowly sinuate. Fluted membrane (F.M.) of moderate length, not conspicuous. Heel (H.L.) prominent, with narrow apex slightly up-turned.

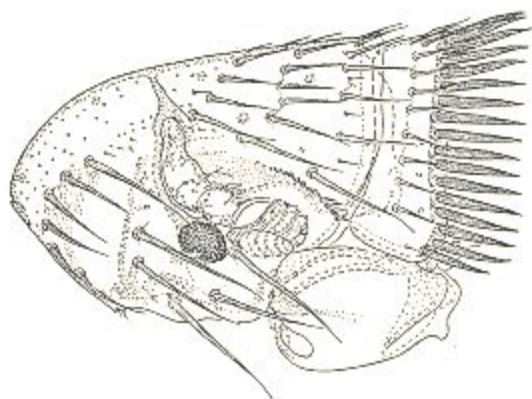
♀. Head: (FIG. 11) This structure differs slightly from that of the ♂. The frons is more subconical and the dorsal margin, after interantennal suture, is almost straight, not shallowly convex. In addition, the interantennal ridge is more developed and antennal club is smaller than in the opposite sex.

Modified abdominal segments: (FIG. 12) Sternum 6 with posterior margin slightly sinuate; anterior margin evenly convex, bearing 1 row of 5 medium-sized bristles on dorso-caudal .50. 7th sternum somewhat subtriangular, its height exceeding length of ventral margin. Posterior margin of 7th sternum almost straight, interrupted at caudal angle by short sinus produced by indentation. This segment bearing about 11 marginal and submarginal bristles limited to caudal .50. Sensillum with outer margin convex, inner margin concave; having about 14 trichobothria on each side; marginal bristles shorter than in ♂. This structure preceded by 1 spiniform bristle per side, accompanied by 3 small, weak bristles. These bristles separated by almost length of sensillum from antensensilial bristle. Dorsal anal lobe (FIG. 13) subangular, provided with several bristles profusely distributed. Anal stylet (FIG. 13) slightly over 3 × as long as maximum width, with 2 tiny bristles on lower margin, before long apical bristle. Ventral anal lobe subtruncate, with apical group of several bristles. Spermatheca (FIG. 14) with bulga subpyramidal, moderately constricted on subapical region, with dorsal margin irregularly sinuate, producing definite, but not conspicuous elevation near line of constriction; with ventral margin shallowly sinuate. Hilla of spermatheca shorter than bulga, with base wider than semiglobular apex, strongly curved upward so that apical .50 is oriented dorsad of bulga.

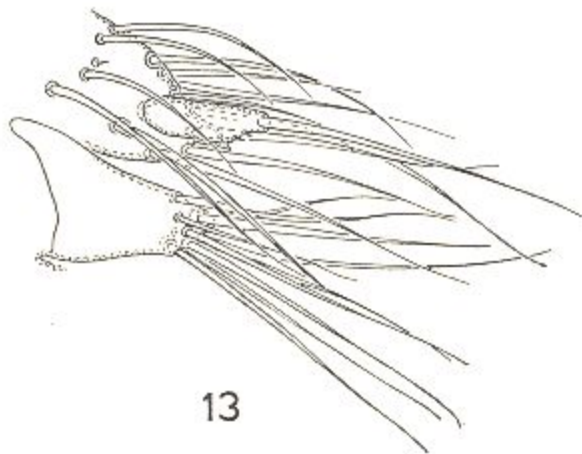
Length: ♂, 2.4 mm.; ♀, 2.9 mm.

Both ♂ and ♀ have a dark brown coloration.

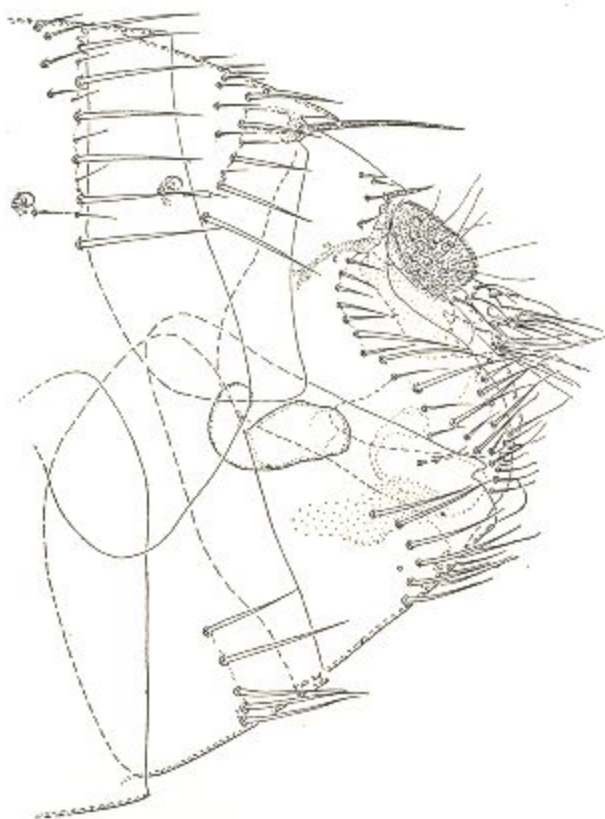
TYPE MATERIAL. Holotype ♂ and allotype ♀ (both with number HTC-207) from *Oryzomys caliginosus*, Colombia, Departamento del Valle, Municipio de Cali, Quebrada Honda near Pichindé, elevation 1800 m, 4.IX.1965; 1 ♂ paratype (HTC-303) from *Oryzomys (Oligoryzomys) sp.* or *Reithrodontomys mexicanus*, same locality, 6.X.1965; 1 ♀ paratype (HTC-451) from *O. caliginosus*, 13.XII.1965; 1 ♀ paratype (HTC-619), same host, same Departamento and Municipio, but from Valle del Rio Pichindé, elevation 1700-1900 m, 5.IV.1966; 1 ♂ paratype (HTC-1261) from *Oryzomys alfaroi*, same locality as in HTC-619, 4.XI.1966; 1 ♀ paratype (HTC-1476) from *O.*



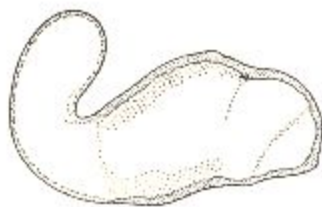
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FIG. 11-14. *Scolopsyllus colombianus*, n. gen., n. sp. ♀: (11) Head and prothorax; (12) Modified abdominal segments; (13) Dorsal and ventral anal lobes of proctiger; (14) Spermatheca.

caliginosus, same locality as in HTC-1261, 4.III. 1967. All types collected by Dr Harold Trapido. Holotype and allotype will be deposited in U. S. National Museum. 1 ♂ and 1 ♀ paratypes will be deposited in British Museum (Nat. Hist.). Remaining paratypes will be distributed as follows: 1 ♂ in Gorgas Memorial Laboratory collection, 1 ♀ in Universidad del Valle, Colombia, and 1 ♀ in collection of Dr Phyllis T. Johnson.

DISCUSSION

Although *Scolopsyllus*, n. gen. has some striking characters not shared by its known relatives, it is evident that it belongs to the tribe Rhopalopsyllini. It shows closest affinities to *Polygenis* Jordan most notably in the nature of the genitalia of both sexes. In the male the aedeagus presents an inner tube with the apical portion strongly coiled as is typical in the latter genus. The fluted membrane, apodemal and penis rods, apodemal strut, lobes, crochet and other features of the intromittent organ are also analagous. Similarities in other specialized structures of the male sexual apparatus, such as the claspers and the 8th and 9th sterna, are also evident. The female spermatheca is like the more general type found in *Polygenis*, in which the bulga is well demarcated from the hilla and has the dorsal margin somewhat cribose. The hilla is short and curved upward.

In addition to the present genus and *Polygenis*, the tribe Rhopalopsyllini Johnson includes the genera *Rhopalopsyllus* Baker and *Tiamastus* Jordan. The finding of *Scolopsyllus*, n. gen. on specimens of *Oryzomys caliginosus* which is apparently the

main host of this genus, does not offer a clue that would lead to an explanation of the development of specialized structures such as the pronotal comb and subangular and protuberant head frons. This rodent is parasitized by other Rhopalopsyllids, as are other members of the genus *Oryzomys* and other genera of the family Cricetidae. Factors related to the micro-habitat of the flea on the host pelage, rather than the habits of the rodent or climatological conditions, are perhaps responsible for such modifications.

It appears to me that *Scolopsyllus* might be a recent genus of the tribe with a limited distribution that may be restricted to Colombia. It seems that our knowledge of the family Rhopalopsyllidae is still fragmentary. Other additions to this group that could fill the gaps in our knowledge may well remain undiscovered on isolated South American mountains.

Acknowledgements: For the privilege of studying the new genus and species described herewith, as well as other interesting flea material from Colombia, I wish to express my deep gratitude to Dr Harold Trapido. I am also much indebted to Col. Robert Traub who has kindly reviewed the manuscript.

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