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THREE NEW MILLIPEDS OF THE ORDER COLOBOG-
NATHA FROM TENNESSEE, TEXAS, AND LOWER
CALIFORNIA, WITH RECORDS OF PREVIOUSLY
KNOWN SPECIES

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A PAPER in which the 12 known species of the milliped order Colobognatha in the United States were alluded to in descriptions, keys, or diagnoses appeared in 1928.¹ Since then three additional species of the order have been discovered, and although one of them was found in an unrecorded locality in Lower California, all its close relatives are members of our fauna, and there is possibility of its range extending into the United States in the southern California mountains adjacent to the Mexican Boundary. This species and another new one from Tennessee belong in the genus *Brachyeybe*, and they double the number of species it contains. The third species is from near Brownsville, Tex., and extends the tropical genus *Siphonophora* within our borders. Descriptions of these new species and several new locality records of previously known forms are herein presented. The type specimens of the new species are in the United States National Museum.

¹ Cook, O. F., and Loomis, H. F., Millipeds of the order Colobognatha, with descriptions of six new genera and type species, from Arizona and California. Proc. U. S. Nat. Mus., vol. 72, art. 18, pp. 1-26, 1928.

Genus SIPHONOPHORA Brandt

SIPHONOPHORA LIMITARE, new species

Two males, one the type (U.S.N.M. milliped no. 1159), and three females collected at Brownsville, Tex. (without date), by H. S. Barber, of the U. S. Bureau of Entomology and Plant Quarantine.

Diagnosis.—The combination of characters exhibited by the head, i. e., the rounded sides, short beak, and the short and stout antennae, has not been reported for any other Central American or Mexican species of this genus. The broad, thin, truncated terminal joint of the anterior gonopods also seems very distinctive of this species.

Description.—Body slender; the largest specimen, a female, is 16 mm long and 0.7 mm wide and has 80 segments; the other two females have 44 and 63 segments; the male type has 78 segments, and the other male 68. Dorsal surface of body invested with very short, erect pubescence.

Head short, subglobose, the sides slightly rounded (fig. 32, *a*). Beak a little over half the length of rest of head, very slightly decurved, and with a cluster of long hairs at base on under side. Antennae short and stout, not so long as head, and with tip of beak reaching opposite middle of sixth joint (fig. 32, *b*).

First segment with anterior margin evenly and shallowly emarginate. Segments 2, 3, and 4 shorter than ensuing ones and much more convex longitudinally. Repugnatorial pores large and opening from slight conic elevations.

Anterior gonopods short and crassate, subglobose, coarsely hairy, the joints indistinct. What appears to be the terminal joint is short, broad, and thin, and the apex is transversely and obliquely truncated. Posterior gonopods long and slender, extending forward between anterior gonopods and exceeding their tips; apical joint longer than other joints.

Remarks.—This is the first record of a species of this genus in the United States, although species of closely related genera are known from Arizona and California. Partly on the basis of finding, in a few especially favored localities in south Texas, a number of delicate, humus-inhabiting arthropods and two millipeds associated with tropical forms, it has been inferred that in former times extensive forests were present in the region and allowed a general distribution of humus animals, which later were restricted and isolated by changing conditions.² The discovery of a species of *Siphonophora* in the

² Cook, O. F., Change of vegetation on the south Texas prairies. U. S. Bur. Plant Industry Circ. 14, 1908.

Cook, O. F., Notes on the distribution of millipeds in southern Texas, with descriptions of new genera and species from Texas, Arizona, Mexico, and Costa Rica. Proc. U. S. Nat. Mus., vol. 40, pp. 147-167, 1911.

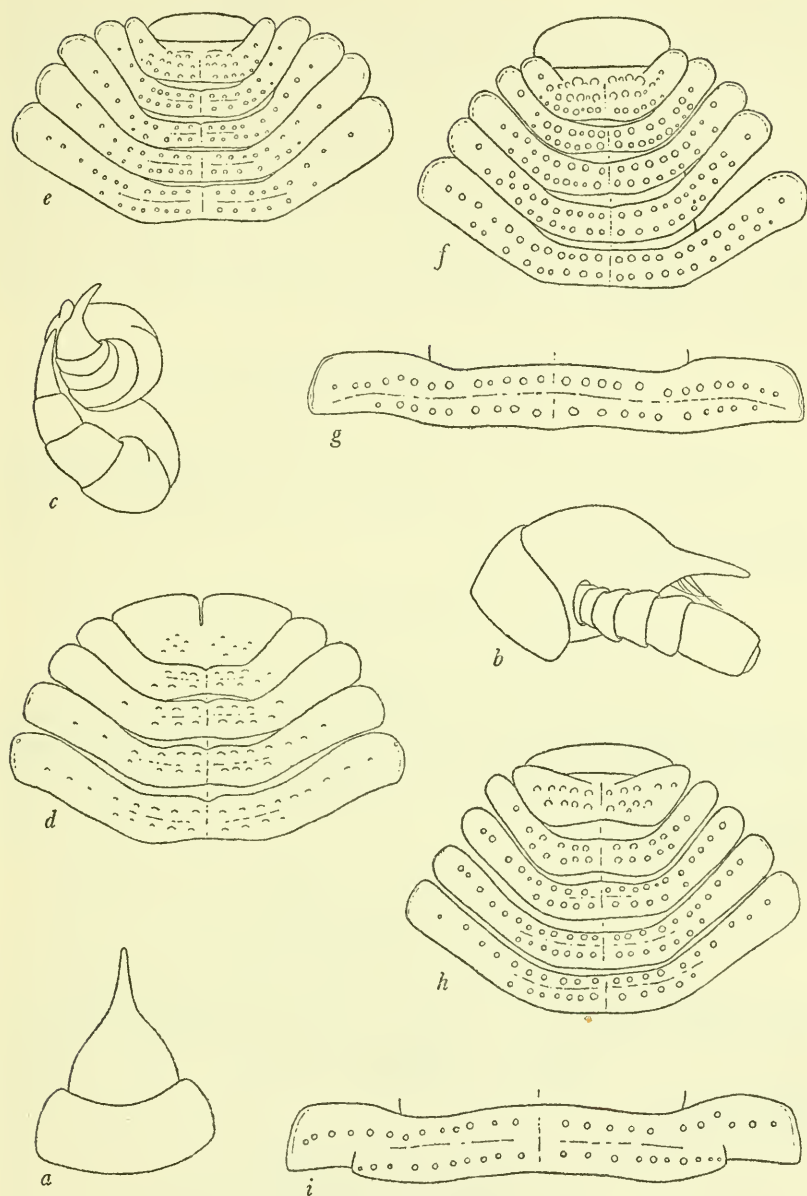


FIGURE 32.—*a, b*, *Siphonophora limitare*, new species, *a*, dorsal, and *b*, lateral view of head and first segment; *c*, *Gosodcsmus clarcmontus* Chamberlin, anterior and posterior gonopod; *d*, *Brachygybe petasata*, new species, dorsal view of anterior end of body; *e*, *B. lecontei* Wood, dorsal view of anterior end of body; *f*, *g*, *B. rosca* Murray, *f*, dorsal view of anterior end of body, *g*, dorsal view of a mid-body segment; *h*, *i*, *B. producta*, new species, *h*, dorsal view of anterior end of body, *i*, dorsal view of a mid-body segment. (All figures of *Brachygybe* drawn to same scale.)

region is additional and more conclusive evidence of the previous existence of tropical conditions, for all the members of this genus are distinctly tropical and of delicate structure and sluggish habits, which combine to restrict their distribution and make migration a slow process dependent on the constant protection of a moist humus layer, such as usually is found in tropical forests. Because of the persistence of such types as *Siphonophora*, it is evident that in small areas in south Texas satisfactory environmental conditions for humus animals have been maintained with unbroken continuity since the disappearance of the forests, and through the period of changing vegetation, to the present day.

Genus SIPHONACME Cook and Loomis

SIPHONACME LYTTONI Cook and Loomis

In addition to the type locality, which is near the highest point of the road between Miami and Superior, Ariz., the species has since been collected by me at Prescott and in Cave Creek Canyon of the Chiricahua Mountains, Ariz.

Genus ANDROGNATHUS Cope

ANDROGNATHUS CORTICARIUS Cope

Previously reported from Virginia and Tennessee. Specimens have been collected at Quincy, Fla., by Dr. O. F. Cook, thus considerably extending the range to the south and indicating that the species will probably be found in several States from which it has never been reported.

Genus GOSODESMUS Chamberlin

GOSODESMUS CLAREMONTUS Chamberlin

As the names implies, the type locality of this species is Claremont, Calif. Additional specimens have been collected by Dr. O. F. Cook in the following California localities: "South of Pescadero"; Santa Cruz Mountains, between Santa Cruz and Holy City; Santa Monica.

The male gonopods are shown in figure 32, *c*.

Genus BRACHYCYBE Wood

This is probably the most interesting genus of the order in the United States because of its wide distribution, its species being found on the Pacific coast as well as on the Atlantic seaboard, whereas the other genera are monospecific, except *Siphonacme* and *Siphonophora*, and their species restricted to one side of the continent or the other.

One of the chief differences recognized between the previously established species of *Brachycybe* has been the number of segments, the eastern *lecontei* having less than 50 and the western *rosea* more than 60. Two new members of this genus are herein described, one from each side of the continent. The conformity of each new species, in number of segments, with the species previously known in its respective region, may signify descent from a common ancestor, but the structural differences between the two eastern species, or between the two western ones, are sufficiently numerous and extreme to have required a very long time for their development. The common prehistoric home of the two branches of the genus is a matter of doubt but may have been Mexico or Central America rather than the United States, as extension from a single source in the United States to both sides of the continent is more difficult to explain than migration from a more southern source.

The four species of this genus are separated in the following key:

KEY TO THE SPECIES OF BRACHYCYBE

1. Head completely hidden beneath first segment, which has the lateral carinae produced forward and expanded inward, occupying almost the entire front margin; surface of disk very faintly tuberculate..... *petasata*, new species
 Head exposed between the short, oblique, lateral carinae of first segment, the disk of which is strongly tuberculate..... 2
2. Body stout, 4 or 5 times as long as broad; number of segments not exceeding 50..... *lecontei* Wood
 Body slenderer, 7 to 12 times as long as broad and with 60 to 75 segments..... 3
3. Body about 7 times as long as broad; first segment with 3 transverse rows of tubercles and with lateral carinae obliquely produced forward; posterior margin of mid-body segments continuous throughout..... *rosea* Murray
 Body 10 to 12 times as long as broad; first segment with 2 transverse rows of tubercles and with lateral carinae scarcely produced; posterior margin of mid-body segments interrupted at base of each lateral carina..... *producta*, new species

BRACHYCYBE PETASATA, new species

Many specimens were collected in the Cherokee National Forest, Tenn., November 1, 1929, by Dr. O. F. Cook. The type (U.S.N.M. milliped no. 1160) is a male.

Diagnosis.—The enlarged first segment, which completely hides the head from above, immediately distinguishes this species.

Description.—Length of largest specimen 18 mm, width 3 mm; number of segments 40 to 49. Anterior end of body suddenly broadened from in front.

Head hidden beneath first segment when viewed from above (fig. 32, *d*).

First segment large, lateral carinae produced forward and expanded inward, almost joined along longitudinal axis of body above head, sinus between carinae long and narrow; surface of segment with a few small indistinct tubercles on posterior portion.

Other segments with two transverse rows of rather large, low, rounded tubercles; anterior row crossing dorsum and median portion of lateral carinae almost to lateral margin and containing 14 to 22 tubercles; posterior row containing but 6 to 12 tubercles and these not extending onto lateral carinae; a transverse furrow is strongly evident on dorsum between the two rows of tubercles but does not extend onto the carinae.

Anal valves together are hemispherical, the inner margins not meeting in a reentrant angle as in the other three species.

The alcoholic specimens are creamy white; the living colors are not recorded.

BRACHYCYBE LECONTEI Wood

Brachycybe lecontei Wood, Proc. Acad. Nat. Sci. Philadelphia, 1864, p. 187.

In order to place this species on the same taxonomic footing as the other members of the genus, the following brief description has been prepared:

Description.—Length of largest specimen 13 mm, width 3 mm. Number of segments in the two specimens examined 40 and 42 (Wood reported 47 segments); anterior end of body suddenly broadened from in front (fig. 32, *e*).

Head not covered by first segment.

First segment with lateral carinae short but extending obliquely forward a considerable distance, the head visible between them. Anterior median margin transverse. Surface with small but very evident tubercles in three irregular transverse rows.

Other segments with two transverse rows of small hemispherical tubercles extending across dorsum and onto lateral carinae, the anterior row with 20 to 32 tubercles and the posterior row with a somewhat smaller number. The transverse furrow between the rows of tubercles is strongly impressed on dorsum and extends across each lateral carina to margin, just behind repugnatorial pore; the furrow is broader and less conspicuous on the carinae.

Anal valves strongly inflated, meeting at a reentrant angle.

Remarks.—The two females from which these notes were derived were collected at Tallulah, Ga., in 1887, and probably are those reported by Bollman.³ Wood's specimens came from Georgia, and his figures of them leave no doubt as to the identity of the Tallulah specimens. The recognition of *B. petasata* from Tennessee places

³ U. S. Nat. Mus. Bull. 46, p. 189, 1893.

previous records of *B. lecontei* from there and from Arkansas (Bollman) in question. The Tennessee specimens may have been *petasata* and the Arkansas ones the same or even an undescribed species. Considerable collecting must be done in these States to determine what species occur, the old records no longer being reliable.

BRACHYCYBE ROSEA Murray

Brachycybe rosea MURRAY, Economic entomology, Aptera, p. 21, 1877.

Platydesmus californicus KARSCH, Mitth. Münch. Ent. Vereins, vol. 4, p. 144, 1880.

Murray and Karsch gave only "California" as the locality for their specimens. Those I have seen were collected at the Sunnyside mine, near Seneca, Plumas County, Calif., by H. S. Barber in 1922, and a description and photographs of this material appeared in the paper hereinbefore referred to.⁴

Drawings of the head and anterior segments of one of these specimens are shown in figure 32, *f* and *g*, for purposes of comparison with drawings of other species. The gradual widening of the anterior segments from in front is a character of the two Pacific coast species, as is the rapid widening of the same segments characteristic of the eastern species.

BRACHYCYBE PRODUCTA, new species

Two bottles in the National Museum collection contain specimens labeled: (1) "*Platydesmus*, Lower Calif. Com. Dr. Marx"; (2) "Calif. Acad. Sci. Com. Dr. Marx 10/93." The first bottle contains one female, the other two males and three females. Although the latter bottle is without locality data, the similarity of the females to the one in the first bottle is unmistakable, and it is quite possible, and indeed probable, that all specimens were collected at about the same time and in the same place, which may have been in a wooded section of the central mountainous portion of Lower California. If the latter conjecture should prove true, it would not be unreasonable to suppose that the species may occur in some of the southern California mountains.

The type (U.S.N.M. milliped no. 1161) is a male.

Diagnosis.—The principal differences between this species and *B. rosea* are the longer body, the shape of the first segment, its fewer rows of tubercles, the interrupted posterior margin of the median segments, and the abbreviated posterior row of tubercles on these segments.

Description.—Body longer and slenderer than any other species and slightly more convex. The largest specimen, a female, is 38

⁴ Proc. U. S. Nat. Mus., vol. 72, art. 18, pp. 24–25, pl. 1, 1923.

mm long and 3.3 mm wide and has 72 segments. The male type is 35 mm long, 3.2 mm wide, and has 75 segments. Anterior end of body widening gradually from in front (fig. 32, *h*).

First segment scarcely wider than head; lateral carinae less developed than in other species and more transverse; surface with two transverse rows of rounded tubercles.

Except for a few segments at each end of the body, the others have the posterior margin abruptly interrupted on each side of the dorsum at the base of the lateral carina, the margin between the carinae being produced backward and having a right-angled corner at the base of the carina (fig. 32, *i*).

Segments with two transverse rows of smaller tubercles on the dorsum than in *B. rosea*, the anterior row extending across lateral carinae and containing 20 to 30 tubercles; posterior row ending near angulation of posterior margin, not extending onto carinae, and containing 14 to 22 tubercles.

Anal valves inflated and meeting at a reentrant angle.