

A NEW MILLIPED OF THE GENUS SIGMORIA FROM WESTERN NORTH CAROLINA

(POLYDESMIDA, XYSTODESMIDAE)

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The following new species of *Sigmoria* is described in advance of a general revision of the genus as it is endemic to the region now being studied under the research program of the Highlands Biological Station and since publication of the generic synopsis cannot be expected for several years at the least.

Except for one specimen personally collected in 1949, all of the material at hand has been obtained either by investigators at the Highlands Station (largely through the influence of its Director, Thelma Howell) or my friend Leslie Hubricht, to all of whom I am indebted for their interest in collecting millipeds.

Sigmoria nantahalae, new species

(Figures 1 to 4)

Type specimens.—Male holotype and paratypes of both sexes, deposited in the U. S. Nat. Mus. (Myriapod Type No. 2460), from the Nantahala Gorge near Blowing Spring, 3 miles north of Nantahala, Swain County, North Carolina, collected on May 6, 1951, by Leslie Hubricht.

Diagnosis.—A small species of *Sigmoria* characterized by the black, gray, and red color pattern; by the slender gonopodial telopodite with two unequal subterminal processes; and by the strongly carinate transverse section of the cyphopod.

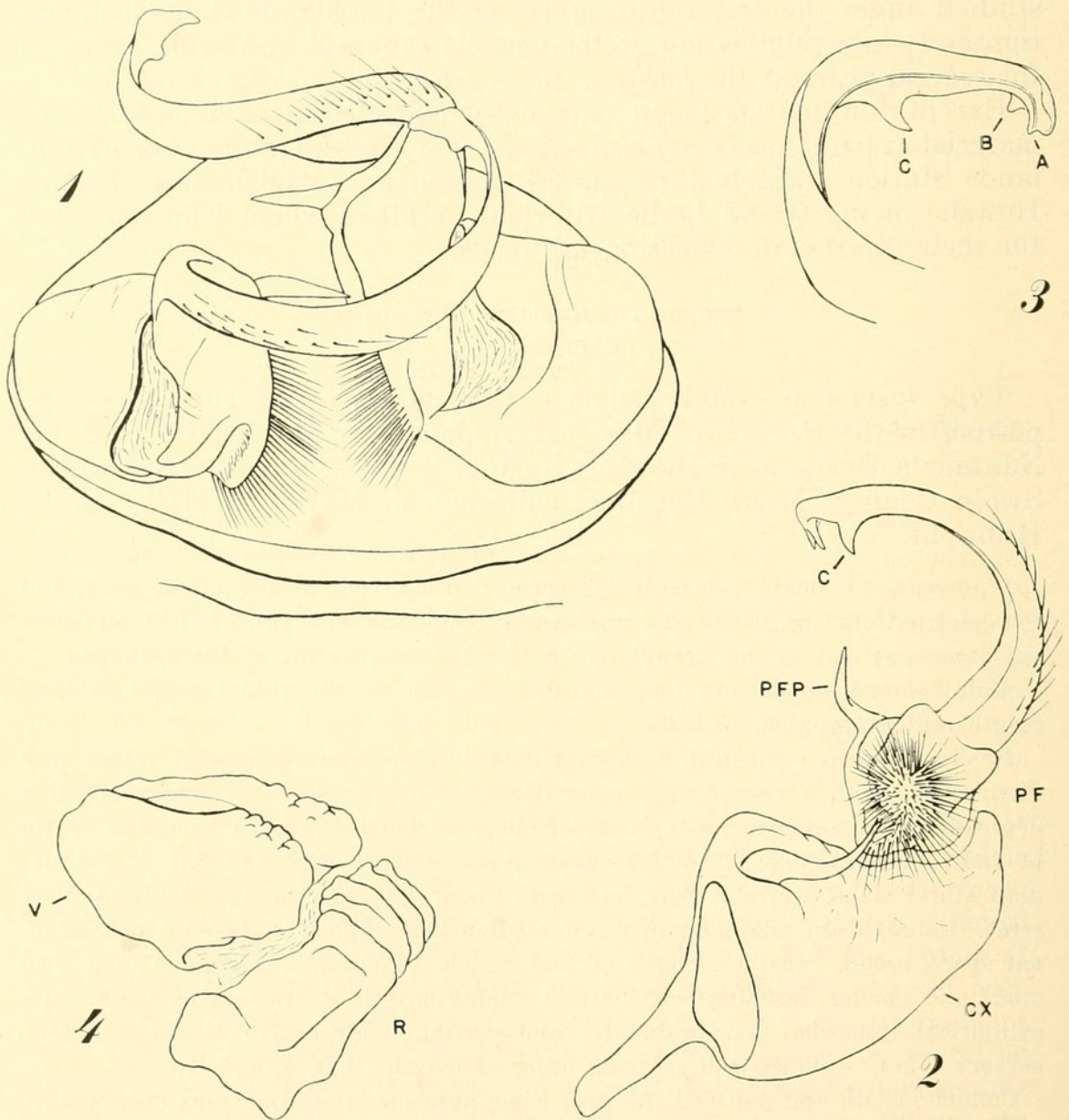
Male holotype.—39.0 mm. long and 9.3 mm. wide at the 12th segment; width/length ratio approximately 24%.

Head smooth and polished, somewhat flattended in front, groove of vertex very distinct and with a row of tiny punctations. Genae broad, with shallow median depressions, the edges not margined; distal ends rounded, greatly exceeded by tip of 2nd antennal article. About 6 moderate sized macrosetae each side of the median labral sinus, which is margined with about 12 much smaller and closer setae. Labral teeth small, rounded, the median tooth lightly recessed. Interantennal space broad, equal to length of 2nd article (1.3 mm.). Antennae long (8.0 mm.) and slender, reaching back beyond caudal margin of 3rd tergite, the articles cylindrical, somewhat clavate distally, and sparingly setose; 7th article with four sensory cones. Articles in decreasing order of length: 2, 3, 4, 5, 6, 1, 7.

Collum smooth and polished, 7.0 mm. wide, anterior lateral margins only weakly set off by a faint submarginal groove; in lateral aspect the ends are at the same level as the following paranota. Tergites of segments 2-5 completely smooth, their paranota only slightly bent forward; following segments are smooth but distinctly rugulose or coriaceous, the paranota broad and depressed, continuing slope of dorsum, the anterior and posterior corners rounded, and lateral edges set off by a distinct submarginal groove. Ozopores opening somewhat dorsolateral in their swellings, fully visible in lateral aspect. Tergites 17-19 almost completely smooth,

the paranota produced caudad into acutely triangular lobes except those of the 19th which are small, distally rounded processes, greatly exceeded by the elongate conical telson. Depth-width ratio of 12th segment: approximately 62%.

Anal valves nearly flat, slightly wrinkled, with strongly produced marginal ridges. Preanal scale large, with convex margins, the lateral tubercles located almost at the apex and nearly confluent with the terminal angle; lateral ends of preanal scale somewhat depressed.



Sigmoria nantahalae, new species, male and female genitalia drawn from paratypes: fig. 1, gonopods, in situ, with outline of sternal aperture; fig. 2, left gonopod, mesial aspect; fig. 3, distal half of telopodite blade of left gonopod, an oblique caudolateral aspect, somewhat more magnified than other figures; fig. 4, left cyphopod, in caudolateral aspect. Abbreviations: A, B, C, terminal processes of gonopod; CX, coxa; PF, prefemur, PFP, prefemoral process; R, receptacle; V, valve.

Pleural regions smooth and unmodified, the interzonal furrow a broad shallow depression down to level of stigmata, thence continuous across venter as a fine groove. Sternal areas flat to concave, sloping upward from the transverse groove to form a sharp-edged shelf between the second legpair of each segment. Sternites of segments 8-10 each with a few tiny setae, those of other segments completely glabrous.

Legs smooth and polished, coxae and prefemora with 1 to 12 ventral setae, femora and postfemora glabrous except for a distal ring of small setae, tibiae and tarsi distinctly more setiferous, the tarsal joints particularly so on the dorsal side. Sterna not produced at bases of legs, but both coxae and prefemora with sharp conical distal spines. Leg joints, in decreasing order of length, 3, 6, 2, 5, 1, 4. Tarsal claws long and bisinuate, each with a high thin carina on the dorsal side and a much smaller carina on each side of it.

Coxal process of 2nd legpair high, erect, and distally globose, smooth and shining with a few setae around the aperture. Sternum between 3rd legpair with two short, medially confluent digitiform processes; those between 4th legs lower, flattened and distinctly transverse; those between 5th legs low and hemispherical.

Gonopod aperture large and suboval, approximately 3.0 mm. wide and 2.3 mm. long; the gonopods fully exposed in ventral aspect (fig. 1), their prefemoral portions adjacent or in contact. Coxae connected by membrane and a large intercoxal muscle, no sclerotized sternal remnant present. Prefemora elongated and subcylindrical, densely setose on the mesial side; the prefemoral process a simple arcuate spine. Femur about half the length of telopodite blade, setose on its outer surface. Postfemur or tibiotarsus glabrous, sigmoidally curved, its inner margin with a conspicuous dentate process (C) and a smaller rounded subterminal lobe (B); the seminal groove being carried out to the extreme end on a tiny lobe (A).

Female paratype.—40.0 mm. long and 9.7 mm. wide at 12th segment, width/length ratio approximately 24%.

Body similar to that of male in structural details except for the more bulky form and wider sternal areas, the depth/width ratio of 12th segment being 70%. The antennae are actually as well as relatively shorter than in males, 7.0 mm. in length and not extending back beyond caudal margin of 2nd segment.

Cyphopods small, of the form shown in figure 4. The caudal arm of the receptacle is larger than the cephalic (not shown in the drawing), the transverse section is strongly ridged with five or six distinct striations. Upper surface of valves, at their basal ends, conspicuously tuberculate.

Color in life.—Prozonites and anterior third of metazonites shining black; caudal two-thirds of metazonites, tip of telson, and caudal edge of collum light pearl gray; entire dorsal surface of paranota and front edge of collum bright vermillion. Underparts whitish, legs becoming pink distally. Antennae and labrum brown. Living specimens are rich and glossy in coloration, appearing as though enameled, and are the most attractive diplopods which I have encountered.

Distribution.—*Sigmoria nantahalae* has been collected so far at a number of localities in extreme western North Carolina and adjacent northern Georgia, chiefly in the mountain ranges surrounding the headwaters of the Nantahala and Hiwassee Rivers. These ranges include the Nantahala, Cowee, and Valley River Mountains, and the

Blue Ridge in north Georgia. Almost certainly the species occupies the Snowbird and Cheoah ranges as well, a matter which can be determined by future collecting. Specimens at hand bear the following locality and collection data:

NORTH CAROLINA. *Clay County*: White Oak Bottom, June 18, 1954, Julian T. Darlington; Buck Creek, June 5, 1952, C. E. Wood, Jr., and Leland Rodgers; U. S. Hy. 164, 4 miles west of Glade Gap, June 18, 1954, J. T. Darlington; Glade Gap, 3673 ft., July 20, 1952, Thelma Howell; Tuni Gap, eastern end of Tusquitee Mountains, July 20, 1954, Howell. *Macon County*: west side of Wesser Bald, 4 miles southwest of Nantahala, July 29, 1949, R. L. Hoffman; Cowee Mountains, 8.8 miles northeast of Franklin, U. S. Hy. 23, June 23, 1950, Leslie Hubricht; road to Wayah Gap, July 14, 1951, R. L. Humphries. *Swain County*: U. S. Hy. 19, 8 miles southwest of Bryson City, May 6, 1951; base of Cliff Ridge at Nantahala, May 6, 1951; near Blowing Spring, 3 miles north of Nantahala, May 6, 1951; Smokemont Camp Ground, 6 miles north of Cherokee, June 22, 1950, all by Hubricht.

GEORGIA. *Towns County*: Enota Glade Picnic Area, east side of Brasstown Bald near the top, June 7, 1953, Hubricht.

Collections made on the periphery of the presently known range will be of interest in establishing the distribution of this interesting species. Collectors who may have the occasion to obtain millipeds in the Cowee range, particularly its eastern extension which approaches the Highlands Plateau near Cashiers, North Carolina, are urged to be on the alert for the large and colorful *nantahalae*.

A NOTE ON THE STATUS OF SIGMORIA

The generic name *Sigmoria* was proposed by R. V. Chamberlin in 1939 for seven species from Tennessee and North Carolina, and defined by the following statement: "Includes large, robust species which are characterized by the sigmoidally curved blade of the telopodite."

Since that time a number of species have been added to the genus, many of which are not very closely related to the type species, and it appears that *Sigmoria* is now a sort of "catch-all" for species which do not readily fall into any of the other established genera. A thorough study is needed of the groups of species currently called *Apheloria*, *Sigmoria*, *Cleptoria*, and *Sigiria*, all being "genera" which are defined more by their traditionally allocated species than by tangible morphological characters. Although resolution of this problem remains to be accomplished, it is evident on the basis of preliminary studies that much shifting of species, as well as redefinition of the generic groups using newly discovered characters, is to be expected. *Sigmoria*, as represented by its type species, *S. munda* Chamberlin, will probably include only those forms in which the telopodite of the gonopod is provided on the inner margin with a distinct triangular process about a third of the length back from the distal end. Such a process is present in *nantahalae*, and is indicated by the symbol "C"

on the drawings. On the other hand, several forms described in this genus lack the process, and are probably referable either to *Cleptoria* or to some genus which has yet to be proposed. Since process C is usually concealed when the gonopods are examined *in situ*, it is necessary that a gonopod be removed for careful study or for illustration, and the mesial aspect is the one which normally shows the greatest amount of structural details. The practice of publishing drawings of the gonopods of related species from various different aspects cannot be too strongly disparaged.

The family name Xystodesmidae, not used in the recent checklist of North American diplopods by Dr. Chamberlin and me, is once more employed on the strength of recent studies which have disclosed important differences between the North and South American genera of the families involved.

ANNOTATED CATALOGUE OF AFRICAN GRASSHOPPERS. By H. B. Johnston. Anti-Locust Research Centre. Cambridge Univ. Press, American Branch: 32 East 57th St., New York 22. xxii + 833 pp. \$18.50 (Cloth bound, 26 cm.)

The author of this invaluable catalogue has had much experience with African grasshoppers, and the sponsoring organization, the Anti-Locust Research Centre, has also been especially concerned with African problems for many years. The Director of the Centre, Dr. B. P. Uvarov, has been one of the very active students of African Acridoidea, and he is credited with the arrangement of genera in groups and tribes for the catalogue. Because of the happy combination of these factors, the preparation of the volume is assumed to be very thorough.

This catalogue is an index to what has been published; it does not contain new synonymy, new type designations, or other revisionary changes. As regards the literature on five outstanding locusts, only taxonomic and faunistic references are given, but full information on other grasshoppers is included. Condensed annotations following each species indicate references to the following topics: Descriptions; keys; figures; morphology; nymphs; ecology; bionomics; economic importance; distribution. The type species of each genus is shown as orthotype, haplotype, or logotype. Type localities of species and the museum containing each type are shown. References are given in abbreviated form, corresponding to the bibliography of 981 books and papers.

As now known, about 500 genera containing 2,000 species of grasshoppers inhabit Africa and the immediately adjacent islands. Much revisionary work remains to be done, which doubtless will place many currently valid names in synonymy, but new species have been recognized at a rapid rate in recent years, and the trend probably will continue. The hope is expressed in the preface that supplements to the catalogue will appear as a need arises. With the agricultural development of Africa, grasshoppers have become so important, and the fauna is so rich, that this catalogue is extremely practical and useful.—ASHLEY B. GURNEY, *Entomology Research Division, A.R.S., U.S.D.A., Washington, D. C.*



1958. "A new milliped of the genus *Sigmoria* from Western North Carolina." *Proceedings of the Entomological Society of Washington* 60, 281–285.

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