

bluntly rounded at both ends, 60 to 80 $\mu$  (average 69 $\mu$ ) long, 4.5 to 6 $\mu$  wide, and divided usually by 6 to 8 (average 7.7) cross-walls.

Capturing and consuming *Geococcus vulgaris* and *Euglypha laevis*, it occurs in decaying plant roots, in soil, and especially often in leaf mold, near Beltsville, Maryland.

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ZOOLOGY.—*New millipeds of the American family Striariidae*.<sup>1</sup> H. F. LOOMIS, U. S. Plant Introduction Garden, Coconut Grove, Florida. (Communicated by O. F. Cook.)

The milliped family Striariidae is composed of a single genus containing species found only in the United States. The first species was described in 1888 by C. H. Bollman, who recognized it as the type of the genus *Striaria*, later designating a new subfamily for its accommodation. In 1895 O. F. Cook elevated the subfamily to full family rank, and in 1896 gave it position as a suborder of the Coelocheta, on the same footing as the Lysiopetaloidea and the Chordeumoidea, like the Chordeumoidea in the short body of 30 segments, and like the Lysiopetaloidea in having the segments longitudinally carinate, but contrasting with both these groups in the slow movements and heavily armored structure, with the head reduced and protected by the greatly expanded first segment, the lower carinae strongly developed, and the last segment broadly three-lobed, affording protection when the animals are coiled, as in several specialized families of the order Meropoda.

<sup>1</sup> Received June 18, 1936.



In 1899 Cook formulated descriptions of the order, its three subdivisions, and of the family, genus and type species, *Striaria granulosa* Bollman, and also added two new species, one from the District of Columbia, while the other, based on a female specimen, extended the distribution of the group to California. The next and last addition to the genus was made by R. V. Chamberlin, in 1910, of another species, from Portland, Oregon, also based on a female specimen.

In the material which led to the preparation of the present paper were two new species, both from California, giving a preponderance

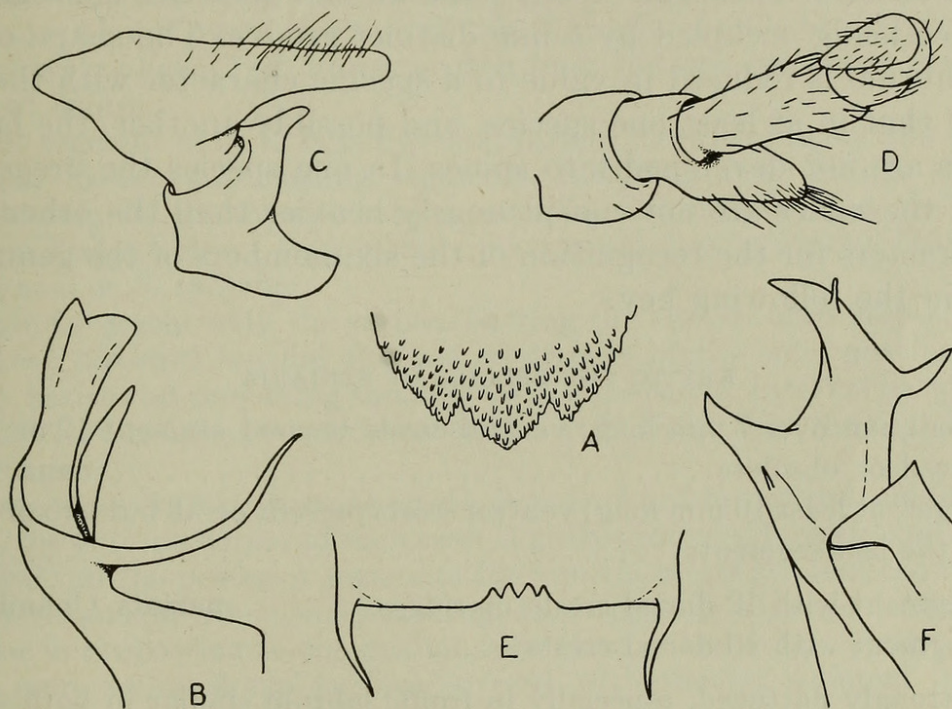


Fig. 1.—Structural features of *Striaria*. A. *S. nana*, last segment. B. *S. nana*, lateral view of apical two-thirds of anterior portion of a gonopod. C. *S. nana*, left posterior gonopod from behind. D. *S. imberbis*, second leg of male. E. *S. californica*, labrum of male. F. *S. californica*, lateral view of apex of anterior gonopod.

to the Pacific Coast. Also there were many specimens of *S. californica* Cook, from the males of which it has been possible to amplify the original description of the species.

The characters shown by the new species, and additional specimens of some of those previously known, force the modification of several statements which have been made pertaining to the characters of the genus *Striaria* or higher classification units. Dorsal setae, in the same number and position as in the Chordeumoidea, were found in four species examined and are inferred to be present in those not seen. Only in specimens of *S. nana* were these setae found in complete series, but careful inspection of examples of the other species us-



ually showed a few setae still remaining on some of the segments, especially those near the ends of the body, although most of the setae had been broken off. The disposition of these setae is as follows: On the first segment six setae are found a little back of the front margin, in front of the dorsal crests. The ensuing segments also have six dorsal setae, three on each side of the dorsum, the first located between ridges 1 and 2, the second between ridges 3 and 4, and the third between ridges 5 and 6. Segment one and the last segment are without a median ridge, while the other segments have a pronounced ridge on the anterior subsegment but none on the posterior subsegment, its place being occupied by a fine distinct groove. The shape of the male labrum is reduced in value to a specific character with the discovery that in at least one species, and possibly another, the lateral corners are not developed into spines. In one species the pregenital legs of the males are not conspicuously heavier than the other legs.

Characters for the recognition of the six members of the genus are given in the following key.

#### KEY TO THE SPECIES OF STRIARIA

- Size small, not over 7 mm long; ventral crests beyond segment 12 or 13 reduced or obsolete..... **nana** n. sp.
- Size larger, at least 10 mm long; ventral crests present on all but two or three of the last segments.....
- First segment with 12 dorsal crests or ridges.....**nazinta** Chamberlin
- First segment with 10 dorsal crests.....
- Body strongly flattened, especially in front; labrum similar in both sexes; second male legs with a very large lobe projecting from beneath the second joint.....**imberbis** n. sp.
- Body cylindrical or only slightly flattened; labrum of males with lateral corners produced into long spines; second male legs with lobes small or wanting.....
- Body reaching 15 mm in length; males with the anterior margin of the labrum nearly straight between the median teeth and the produced spine on either side.....**californica** Cook
- Body less than 12 mm long; male labrum with anterior margin strongly convex between the median teeth and the lateral spines.....
- Dorsal crests very coarse; lobes of the last segment separated by distinctly open sinuses; apex of anterior gonopods terminating in about six short spines or teeth.....**granulosa** Bollman
- Dorsal crests finer; lobes of the last segment separated by shallow notches rather than by deep and slender sinuses; apex of anterior gonopods terminating in about a dozen sharp teeth.....**columbiana** Cook



***Striaria nana* n. sp.**

Six mature specimens, including the male type, and several young, collected at Altamont Pass, above Niles, Calif., December 1, 1926, by O. F. Cook, who found a single female south of Pescadero, Calif., February 21, 1929. Male type in U. S. National Museum.

*Diagnosis:* The small size of the body; presence of all or nearly all dorsal setae; the lack of ventral crests on the posterior half of the body; and the shape of the gonopods distinguish this species.

*Description:* Body small, the dorsum somewhat depressed on the first few segments, but cylindrical thereafter; dorsal setae generally all present; length 6 to 7 mm, width .7 to .8 mm.

Head with not over 7 ocelli each side. Labrum of male broad, outer corners sharply angled but, unless broken from the two specimens examined, without spines.

First segment with 10 dorsal crests; surface elsewhere finely and densely granular as are the ensuing segments, including their lateral surfaces. Median ridge of the anterior subsegments fine but well elevated, the depression on either side of its posterior part much less extensive than in *S. californica* or *S. imberbis*.

Second segment with the surface bearing the ventral crest scarcely at all produced outward beyond the line of descent of the side, not forming a nearly horizontal projecting shoulder as in *S. imberbis*. Interval between the ventral crest and the lowest dorsal crest a little wider than the next interval above.

Large ventral crests present on the segments in front of the middle of the body, the anterior corner of each crest slightly produced forward and bluntly rounded; on the posterior segments the ventral crests are reduced to small low elevations or are entirely lacking. Last segment with the lateral lobes smaller in proportion to the median lobe than in the other species, and all lobes more acute; dorsal surface covered with slender suberect tubercles (Fig. 1, A).

Males with first pair of legs stouter than the second pair. Second legs lacking a conspicuous lobe on the under side of joint 2, the other joints also normal. Third legs with each coxa produced into an erect subcylindric lobe relatively as long as found in *S. granulosa*, the inner face glabrous and shining, the outer side finely hispid; remaining joints normal. Legs 4 to 7 with the four basal joints very greatly expanded horizontally but not thickened, their surface covered with short, stout, fusiform, almost scale-like hairs, in contrast to the common type of hairs found on the other legs. Anterior gonopods with the apex bilobed, not at all spinose (Fig. 1, B). Posterior gonopods with the distal joint more greatly produced inward than in the other species, the lobe thinner (Fig. 1, C).

This small species was at first thought to represent a new genus because of the presence of dorsal setae in the same position as they occur in the Chordeumoidea, but careful inspection of other species of *Striaria* showed nearly all individuals to have a few dorsal setae still in evidence, although it was apparent that most of the setae had been broken off. Immature specimens of these species show the setae in more complete series.



## STRIARIA NAZINTA Chamberlin

*Ann. Ent. Soc. Amer.*, 3: 242-243. 1910.

A single female, discovered at Portland, Oregon, is the only known specimen.

The presence of 12 dorsal ridges on segment 1 is the species' most striking character, 10 ridges being the usual number in the other species, with occasionally an additional, small, rudimentary ridge on one or both sides of this segment in some specimens.

Although the description states that the labrum has only two teeth, and the illustration shows this condition, it is doubtful if other specimens exhibiting this feature would be found, since a three-toothed labrum is an ordinal character of the *Coelocheta*.

***Striaria imberbis* n. sp.**

A mature male and female and a number of young, the eldest of which have 26 segments, collected south of Atascadero, Calif., January 1, 1928, by O. F. Cook. Male type in U. S. National Museum.

*Diagnosis:* This species is distinguished by the flattened dorsum; the similarity of the labrum in both sexes; the unusually prominent lateral production of each side of segment 2 supporting the ventral crest; and the very large lobe of the second joint of the second male legs.

*Description:* Length of male 10 mm, female 12 mm, width 1 and 1.2 mm respectively.

Head narrower in front than in the other species; labrum of the male similar to that of the female, the lateral corners broadly rounded; ocelli 5 to 7 arranged in two irregular rows.

Second segment with the lateral surface which supports the ventral crest much more strongly projecting than in the other species, the interval between the marginal crest and the lowest dorsal crest double the width of the next interval above. Dorsum of the segments depressed throughout, but the anterior ones more strikingly so. Posterior subsegments relatively longer than in the other species. Dorsal crests high but much thinner than those of *S. columbiana*. Surface between the crests with numerous granules on the anterior segments but caudally the granules decreased in size and number; on the lateral surfaces only the anterior segments have a few granules; however, the last segment is densely covered with fine granules. Ventral crests extending to the posterior end of the body, those in front with the anterior corner projecting forward as a large acute tooth. Median ridge very prominent on the anterior subsegments, especially those in front, the depression on either side of its back half is more extensive than that in *S. californica*. Last segment with the lobes very narrowly, although deeply, separated, the median lobe much the largest.

Gonopods of the type not dissected but the apex of the anterior portion does not appear to be spinose; the shoe-like posterior joints are of the same general shape as in the other species. First legs of the male stouter than the second pair; the latter with a very large, bluntly conic lobe projecting outward and backward from the under side of the second joint, the posterior side and apex with long hairs (Fig. 1, D); other joints normal. Coxal lobes



of the third male legs considerably shorter than in the other species of which males are known. Legs 4 to 7 of the male with none of the joints conspicuously enlarged as compared with the post-genital legs, their surfaces invested with similar hairs.

STRIARIA CALIFORNICA Cook

*Proc. U. S. Nat. Mus.*, 21: 675. 1899.

Specimens collected by O. F. Cook in the following California localities have been examined: Santa Cruz Mts., Jan. 2, 1928; Cordelia, Feb. 20, 1929; Davenport, Feb. 21, 1929. Several males are included which allow more tangible characters to be given than from the single female on which the species was founded.

Body attaining a length of 15 mm, making the species the largest of the genus.

Eyes with 7 to 9 ocelli. Males with the labrum produced at each corner into a long spine, the margin between the spine and the median teeth almost straight in contrast with the strongly convex margin of the other species (Fig. 1, E).

Segment 1 and a few segments succeeding it rather thickly and coarsely granular, the granules thereafter decreasing in size and number and, except those bearing the dorsal setae, none are evident on the segments immediately preceding the anal segment, the surface of which is densely but finely granular. Sides of body without granules after the first few segments. Anterior subsegments, particularly those at the front of the body, with a median ridge which is especially pronounced on the posterior part of each subsegment, and the surface on each side is depressed to the level of the posterior subsegment which has a fine median furrow but no ridge. Second segment with the lateral surface supporting the ventral crest scarcely at all produced outward to form a strong shoulder as in the other species; the interval between the ventral crest and the lowest dorsal crest little broader than the interval between crests 5 and 6. Ensuing segments, to near the posterior end of the body, with thick ventral crests, those on the anterior segments bluntly produced forward.

Gonopods with the apex of the anterior portion more simple than in either eastern species (Fig. 1, F); shoe-like joint of the posterior portion thickest near its mesial extremity. The second male legs have joint 2 bearing a much smaller, more inconspicuous lobe on the under side than that in *S. imberbis*, but with longer apical hairs; joint 3 greatly swollen except at base; outer joints normal. The third male legs have the coxal lobes longer than in the other species, their tips exceeding the distal end of joint 3. Male legs 4 to 7 with the inner joints quite strongly crassate, the outer joints more normal.

STRIARIA GRANULOSA Bollman

*Ann. N. Y. Acad. Sci.*, 4: 108. 1888.

*Locality*: Tennessee.

STRIARIA COLUMBIANA Cook

*Proc. U. S. Nat. Mus.*, 21: 674-675. 1899.

*Localities*: District of Columbia and Maryland.



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