

SPIROCERCA LONGISPICULATA N. SP.

WILLIAM C. HILL



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SPIROCERCA LONGISPICULATA N. SP.

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Spirocerca longispiculata n. sp.*

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In an examination of 19 opossums, *Didelphis virginiana virginiana* Kerr, collected at various times in 1938 in central Oklahoma, 2 were found to harbor 7 and 26 specimens, respectively, of a new spiruroid stomach nema belonging apparently to the genus *Spirocerca* Railliet and Henry 1911, for which the name *Spirocerca longispiculata* is proposed.

The worms were all fixed in hot 70 percent alcohol, cleared in a mixture of glycerolactophenol (Magath 1916), and later transferred to glycerin for storage.

In order to study the arrangement of papillae and cuticular crests on the ventral surface of the male tail, the tail was cut off, just anterior to the alae, and straightened under heavy cover glass pressure. Ventral views of the female tail were prepared in much the same manner. For *en face* study a small square-cut section was taken from the front end of the worm and mounted upright in glycerin.

The terms, *pseudolabium*, *interlabium*, names of cephalic papillae, *amphid*, *deirid*, *phasmid*, *stoma*, *prostom*, *mesostom*, *telostom*, *prorhabdion*, *mesorhabdion*, and *telorhabdion*, are used as by Chitwood and Wehr (1934).

Spirocerca longispiculata sp. nov.

Description.—Body reddish-brown, translucent. Cuticle rather thick, with very fine transverse striations. Pseudolabia and interlabia present but not prominent. Pseudolabia reniform with tips directed forward. Amphids and external cephalic papillae on pseudolabia. Laterodorsal and lateroventral papillae prominent. Dorsodorsal and ventroventral papillae rudimentary but recognizable. Internal papillae, 3 pairs, small but well defined. Dorsodorsal, laterodorsal, and internodorsal papillae on either side connected to a single, large cephalic "pulp." Ventral papillae likewise associated with a single pair of pulps.

Stoma heavily chitinized. No "teeth" observed. Prorhabdion, with anterior and posterior internal annular flanges. Mesorhabdion narrower than prorhabdion and about 4 times as long, uniformly cylindrical. Telorhabdion, an outspreading flange. Boundary between short anterior muscular and much longer glandular parts of esophagus, distinct. Nerve ring near middle of muscular part of esophagus. Excretory pore slightly posterior to nerve ring. Excretory duct leads posteriad to an elongate, saccate, enlargement. Right deirid slightly posterior to nerve ring, left deirid near level of, or slightly behind, telostom.

* A contribution from the Zoological Laboratory of the Oklahoma Agricultural and Mechanical College, prepared under the direction of R. Chester Hughes.

Female.—Darker in color and considerably larger than male. Body curved dorsad. Measurements taken from 6 gravid, preserved specimens. Length 5.8 to 7.6 (average 6.9) mm. Width near middle of body 185 to 227 (average 198) μ . Length of stoma 72 to 87 (average 80) μ , width near middle, 19 to 21 (average 20) μ . From anterior end—right deirid 206 to 221 (average 215) μ , left deirid 82 to 121 (average 100) μ , nerve ring 167 to 191 (average 176) μ , excretory pore 213 to 238 (average 225) μ . Length of esophagus 1.4 to 1.5 (average 1.47) mm., length of muscular portion 190 to 216 (average 209) μ , width at base of muscular part 37 to 50 (average 44) μ , width at base of glandular part 85 to 114 (average 94) μ .

Vulva generally slightly protuberant, near middle of body, 2 to 3.36 (average 2.76) mm. from anterior end. Vagina short. Uteri divergent. Anterior ovary located just posterior to esophagus, posterior ovary slightly anterior to anus. Uteri, 71 to 142 (average 110) μ in width, filled with eggs. Embryonated eggs in distal part of uterus 18 to 31.5 (average 24) μ long by 10 to 15 (average 13) μ wide.

Tail short, curved dorsally, ends in a prominent variously shaped protuberance bearing from 1 to 4 smaller points or knobs. Phasmids large, ventrosubmedian, located about midway between anus and tip of tail.

Male.—Lighter in color and smaller than female. Posterior tip, in preserved specimens, curved ventrally in from 1 to 2 loose spiral coils. Measurements from 5 of the largest males. Length 4.2 to 5.36 (average 5.33) mm. Width near middle of body 121 to 149 (average 136) μ . Stoma 71 to 82 (average 79) μ long, width near middle 14.2 to 17.7 (average 16.6) μ . From anterior end—right deirid 192 to 245 (average 219) μ , left deirid 85 to 123 (average 94) μ , excretory pore 211 to 238 (average 222) μ , nerve ring 170 to 195 (average 175) μ . Esophagus length 1.4 to 2 (average 1.7) mm., length of muscular part 177 to 239 (average 208) μ , width at base of muscular part 37 to 44 (average 40.4) μ , width at base of glandular part 78 to 106 (average 88) μ .

Spicules very unequal in length and width—in a 5-mm. worm the right spicule measured 140 μ in length and 90 μ in width at base, the left 380 μ by 60 μ .

Ventral surface of coiled region (approximately the posterior fifth of body) covered with a pattern of cuticular crests and bosses which spreads out to cover the surfaces of the small alae. Tail provided with 4 pairs of preanal, and 2 pairs of postanal, large pedunculated papillae supporting the alae, a very large median sessile precloacal papilla, and a group of five pairs of minute pedunculated papillae on posterior tip. Small paired marginal areas on dorsal surfaces of alae covered with fine transverse, almost parallel, wrinkles. These areas widest posteriorly. Subsurfical areas surrounding tips of the first 5 pairs of large pedunculated papillae filled with irregular granules.

Host.—*Didelphis virginiana virginiana* Kerr.

Habitat.—Stomach.

Locality.—Central Oklahoma.

Cotype specimens.—A vial of several alcoholic specimens in the United States National Museum.

DISCUSSION

According to Yorke and Maplestone (1926) the genus *Spirocerca* Railliet and Henry 1911 belongs to the family Spiruridae Oerley 1885 and the subfamily Spirurinae Railliet 1915. Chitwood and Wehr (1934) place the genus in the family Thelaziidae Railliet 1916 and the subfamily Spirocercinae Chitwood and Wehr 1932.

The genus now includes 4 species—(1) The type *Spirocerca lupi* (Rudolphi 1809) Chitwood 1933 [= *Spirocerca sanguinolenta* (Rudolphi 1819) Seurat 1913] parasitic in Canidae and reported from both hemispheres; (2) *Spirocerca arctica* Petrow 1927 in Canidae in northern Russia; (3) *Spirocerca heydoni* Baylis 1927 from *Dasyurus* sp. in Australia; and (4) *Spirocerca longispiculata* n. sp. Two other species formerly listed in the genus as *Spirocerca subaequalis* (Molin 1860) Seurat and *Spirocerca felineus* Chandler 1925, are now *Cylicospirura subaequalis* (Molin) Vevers and *Cylicospirura felineus* (Chandler) Sandground.

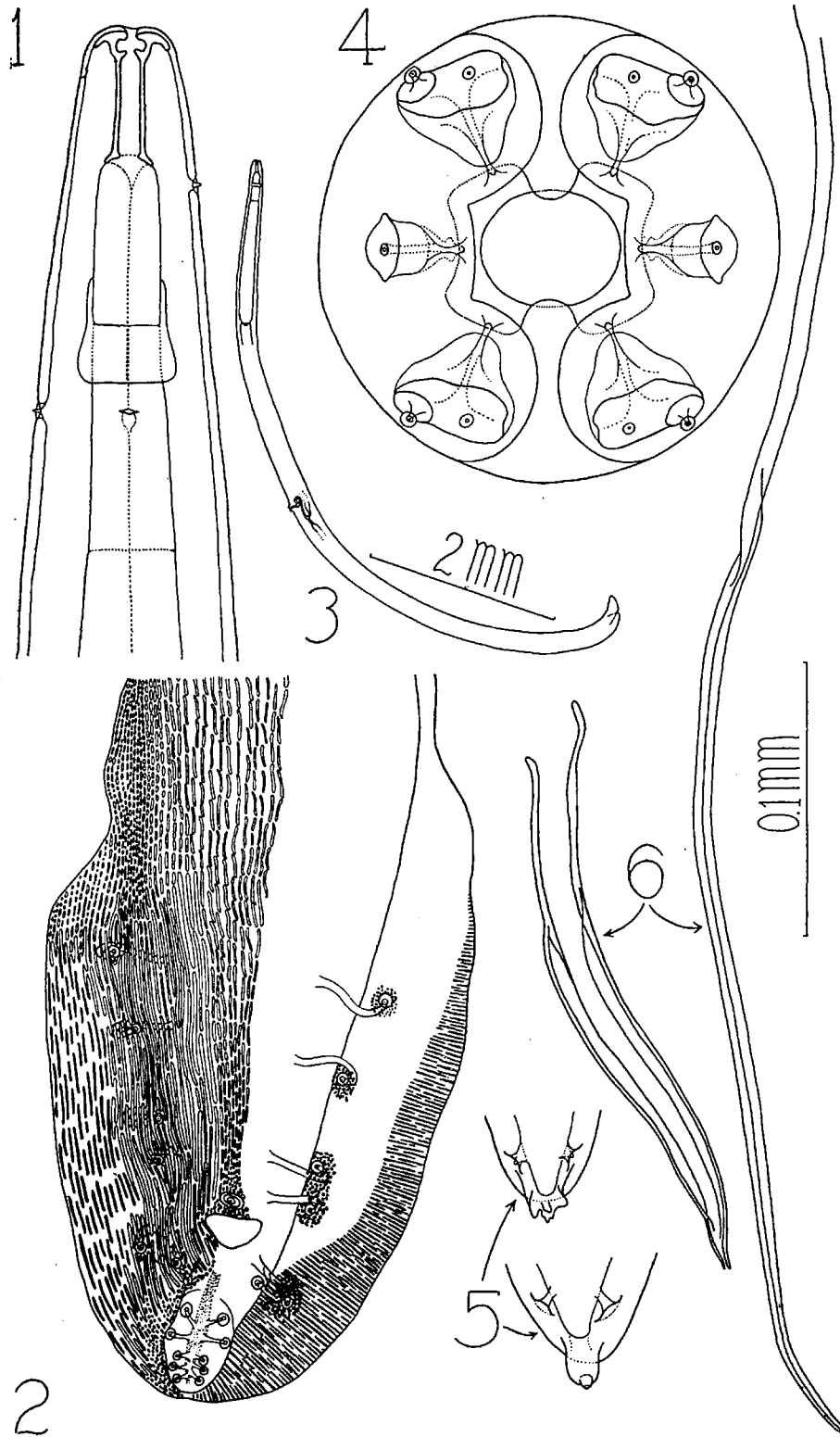
The new species is seemingly not closely related to any of the other species in the genus, differing apparently from all of them in having, (1) definite pseudolabia, (2) recognizable dorsodorsal and ventroventral external cephalic papillae, (3) an exceptionally long mesostom, (4) the cervical papillae in markedly asymmetrical arrangement, (5) no accessory piece observed, (6) paired caudal papillae of male all pedunculated, (7) dorsal transverse wrinkles on caudal alae of male, (8) a prominent posteroterminal protuberance on

EXPLANATION OF PLATE

All figures concern *Spirocerca longispiculata* n. sp. and except Fig. 4 were drawn with the aid of a camera lucida. The scale at the right applies to figures 1, 2, 5, and 6.

FIGURES

1. Anterior end of body, ventral view—shows stoma, nerve ring, deirids, excretory pore, and boundary between muscular and glandular sections of esophagus.
2. Posterior end of male, ventral view. Superficial cuticular pattern of alternating depressed and elevated areas shown on left side. Over most of this surface the elevated areas are discontinuous as longitudinal ridges but in the marginal regions adjacent to the large pedunculated papillae the depressed areas become discontinuous as longitudinal grooves represented in heavy shading. On the right side are shown the subsurficial granules surrounding the tips of the 5 foremost lateral papillae and the dorsal area of transverse wrinkles.
3. Female, lateral view—shows dorsad curvature of body and relative positions of stoma, esophagus (muscular and glandular portions), vulva, and anus.
4. *En face* view—shows pseudolabia, interlabia, arrangement of cephalic papillae, and amphids.
5. Female tail, 2 specimens in ventral view—shows phasmids and variation in shape of posterior protuberance.
6. Pair of spicules, not in natural relationship to one another. The longer spicule is the left one.



the female, (9) not been found in cysts or tumors, and (10) a smaller size. Furthermore *S. longispiculata* differs from *S. lupi*, the only other species reported from North America, in having (1) divergent uteri, (2) the vulva near the middle of the body instead of near the esophagus, and (3) a much longer and narrower stoma; from *S. arctica* in having (1) a different arrangement of caudal papillae in the male with no postanal sessile papilla and (2) no teeth in the stoma; and from *S. heydoni*, the only other species found in a marsupial, in having (1) the vulva much farther posteriad and (2) no teeth in the stoma.

The new form has been placed in the genus *Spirocerae* because it agrees with the type species in having (1) the internal papillae ("dents"—Railliet and Henry 1911) within the stoma, (2) 6 prominent cephalic papillary pulps ("masses of dense parenchyma"—Yorke and Maplestone 1926), (3) the same number and general arrangement of male caudal papillae, including the especially prominent precloacal median sessile papilla, and (4) very unequal spicules, the left being the longer.

If the placement of the new species in the genus *Spirocera* should meet with the general approval of subsequent workers an emendation of the generic description will be necessary since it differs from the very brief definition of Baylis (1929) in the exceptional length of the vestibule and from the diagnosis of Yorke and Maplestone (1926) in having (1) pseudolabia, (2) recognizable dorsodorsal and ventroventral cephalic papillae, (3) the deirids in markedly asymmetrical arrangement, (4) the vulva farther posteriad, (5) divergent uteri, and (6) no gubernaculum observed.

KEY TO THE SPECIES OF SPIROCERCA

- | | |
|---|--------------------------|
| 1. Prostomatal teeth present..... | 2 |
| Prostomatal teeth lacking..... | 3 |
| 2. Prostomatal teeth "tricuspid" | <i>S. heydoni</i> |
| Prostomatal teeth simple..... | <i>S. arctica</i> |
| 3. Deirids nearly or quite opposed..... | <i>S. lupi</i> |
| Deirids asymmetrically placed | <i>S. longispiculata</i> |

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